

G.M.T.	ARIES			VENUS -3.4			MARS +1.8			JUPITER -1.4			SATURN +1.2			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
30 ^d 00	307 32.6	148 43.1	N10 27.6	209 00.4	N23 48.8		121 44.3	S 1 12.1		121 40.8	S 0 01.5		Acomar	315 36.8	S40 22.5			
01	322 35.0	163 42.8	26.4	224 01.0	48.8		136 46.5	12.3		136 43.0	01.6		Achernar	335 44.7	S57 19.6			
02	337 37.5	178 42.4	25.2	239 01.7	48.7		151 48.6	12.4		151 45.3	01.7		Acruz	173 36.9	S63 00.0			
03	352 39.9	193 42.0	24.1	254 02.3	48.6		166 50.7	12.6		166 47.6	01.8		Adhara	255 32.0	S28 56.7			
04	7 42.4	208 41.7	22.9	269 03.0	48.5		181 52.8	12.7		181 49.9	01.9		Aldebaran	291 17.5	N16 28.3			
05	27 44.9	223 41.3	21.7	284 03.6	48.5		196 54.9	12.9		196 52.2	01.9							
06	37 47.3	238 41.0	N10 20.5	299 04.2	N23 48.4		211 57.0	S 1 13.1		211 54.4	S 0 02.0		Alioth	166 42.2	N56 04.0			
07	52 49.8	253 40.6	19.4	314 04.9	48.3		226 59.1	13.2		226 56.7	02.1		Alkaid	153 18.1	N49 24.7			
08	67 52.3	268 40.3	18.2	329 05.5	48.2		242 01.2	13.4		241 59.0	02.2		Al Na'ir	28 13.7	S47 02.9			
I 09	82 54.7	283 39.9	17.0	344 06.2	48.2		257 03.4	13.5		257 01.3	02.3		Alnilam	276 11.3	S 1 12.8			
H 10	97 57.2	298 39.5	15.9	359 06.8	48.1		272 05.5	13.7		272 03.5	02.4		Alphard	218 20.3	S 8 34.6			
U 11	112 59.7	313 39.2	14.7	14 07.5	48.0		287 07.6	13.9		287 05.8	02.5							
S 12	128 02.1	328 38.8	N10 13.5	29 08.1	N23 47.9		302 09.7	S 1 14.0		302 08.1	S 0 02.6		Alphecca	126 31.5	N26 46.9			
D 13	143 04.6	343 38.5	12.3	44 08.8	47.9		317 11.8	14.2		317 10.4	02.7		Alpheratz	358 08.5	N28 59.2			
A 14	158 07.1	358 38.1	11.2	59 09.4	47.8		332 13.9	14.3		332 12.7	02.7		Altair	62 31.6	N 8 49.3			
Y 15	173 09.5	13 37.8	10.0	74 10.1	47.7		347 16.0	14.5		347 14.9	02.8		Ankaa	353 39.4	S42 24.2			
16	188 12.0	28 37.4	08.8	89 10.7	47.6		2 18.1	14.7		2 17.2	02.9		Antares	112 55.9	S26 23.5			
17	203 14.4	43 37.1	07.7	104 11.4	47.6		17 20.2	14.8		17 19.5	03.0							
18	218 16.9	58 36.7	N10 06.5	119 12.0	N23 47.5		32 22.3	S 1 15.0		32 21.8	S 0 03.1		Arcturus	146 17.9	N19 17.0			
19	233 19.4	73 36.4	05.3	134 12.7	47.4		47 24.5	15.1		47 24.0	03.2		Atria	108 19.3	S68 59.9			
20	248 21.8	88 36.0	04.1	149 13.3	47.3		62 26.6	15.3		62 26.3	03.3		Avior	234 28.6	S59 27.0			
21	263 24.3	103 35.7	02.9	164 13.9	47.2		77 28.7	15.5		77 28.6	03.4		Bellatrix	278 58.3	N 6 20.0			
22	278 26.8	118 35.3	01.8	179 14.6	47.2		92 30.8	15.6		92 30.9	03.5		Betelgeuse	271 27.9	N 7 24.3			
23	293 29.2	133 35.0	10 00.6	194 15.2	47.1		107 32.9	15.8		107 33.1	03.5							
31 ^d 00	308 31.7	148 34.6	N 9 59.4	209 15.9	N23 47.0		122 35.0	S 1 15.9		122 35.4	S 0 03.6		Canopus	264 07.4	S52 41.0			
01	323 34.2	163 34.3	58.2	224 16.5	46.9		137 37.1	16.1		137 37.7	03.7		Capella	281 10.7	N45 58.6			
02	338 36.6	178 33.9	57.1	239 17.2	46.8		152 39.2	16.3		152 40.0	03.8		Deneb	49 47.6	N45 12.9			
03	353 39.1	193 33.6	55.9	254 17.8	46.8		167 41.3	16.4		167 42.2	03.9		Denebola	182 58.6	N14 40.7			
04	8 41.5	208 33.2	54.7	269 18.5	46.7		182 43.4	16.6		182 44.5	04.0		Diphda	349 20.1	S18 05.2			
05	23 44.0	223 32.9	53.5	284 19.1	46.6		197 45.5	16.7		197 46.8	04.1							
06	38 46.5	238 32.5	N 9 52.3	299 19.8	N23 46.5		212 47.7	S 1 16.9		212 49.1	S 0 04.2		Dubhe	194 21.9	N61 51.3			
07	53 48.9	253 32.2	51.2	314 20.4	46.4		227 49.8	17.1		227 51.3	04.3		Elnath	278 43.6	N28 35.4			
08	68 51.4	268 31.8	50.0	329 21.1	46.3		242 51.9	17.2		242 53.6	04.3		Eltanin	90 57.0	N51 29.7			
F 09	83 53.9	283 31.5	48.8	344 21.7	46.3		257 54.0	17.4		257 55.9	04.4		Enif	34 10.7	N 9 47.4			
R 10	98 56.3	298 31.1	47.6	359 22.4	46.2		272 56.1	17.5		272 58.2	04.5		Fomalhaut	15 50.4	S29 43.1			
I 11	113 58.8	313 30.8	46.4	14 23.0	46.1		287 58.2	17.7		288 00.4	04.6							
D 12	129 01.3	328 30.5	N 9 45.2	29 23.7	N23 46.0		303 00.3	S 1 17.9		303 02.7	S 0 04.7		Gacrux	172 28.4	S57 00.7			
A 13	144 03.7	343 30.1	44.1	44 24.3	45.9		318 02.4	18.0		318 05.0	04.8		Gienah	176 17.5	S17 26.3			
Y 14	159 06.2	358 29.8	42.9	59 25.0	45.8		333 04.5	18.2		333 07.3	04.9		Hadar	149 22.5	S60 17.2			
15	174 08.7	13 29.4	41.7	74 25.6	45.8		348 06.6	18.4		348 09.5	05.0		Hamal	328 28.2	N23 22.4			
16	189 11.1	28 29.1	40.5	89 26.3	45.7		3 08.7	18.5		3 11.8	05.1		Kaus Aust.	84 15.7	S34 23.6			
17	204 13.6	43 28.7	39.3	104 26.9	45.6		18 10.8	18.7		18 14.1	05.1							
18	219 16.0	58 28.4	N 9 38.1	119 27.6	N23 45.5		33 12.9	S 1 18.8		33 16.4	S 0 05.2		Kochab	137 18.9	N74 14.3			
19	234 18.5	73 28.1	36.9	134 28.2	45.4		48 15.0	19.0		48 18.6	05.3		Markab	14 02.3	N15 06.3			
20	249 21.0	88 27.7	35.8	149 28.9	45.3		63 17.1	19.2		63 20.9	05.4		Menkar	314 40.5	N 4 01.0			
21	264 23.4	103 27.4	34.6	164 29.5	45.2		78 19.2	19.3		78 23.2	05.5		Menkent	148 36.3	S36 16.8			
22	279 25.9	118 27.0	33.4	179 30.2	45.2		93 21.4	19.5		93 25.5	05.6		Miaplacidus	221 45.7	S69 38.5			
23	294 28.4	133 26.7	32.2	194 30.8	45.1		108 23.5	19.7		108 27.7	05.7							
I 00	309 30.8	148 26.3	N 9 31.0	209 31.5	N23 45.0		123 25.6	S 1 19.8		123 30.0	S 0 05.8		Mirfak	309 15.4	N49 47.5			
01	324 33.3	163 26.0	29.8	224 32.1	44.9		138 27.7	20.0		138 32.3	05.9		Nunki	76 28.1	S26 19.2			
02	339 35.8	178 25.7	28.6	239 32.8	44.8		153 29.8	20.1		153 34.6	06.0		Peacock	53 56.8	S56 47.7			
03	354 38.2	193 25.3	27.4	254 33.5	44.7		168 31.9	20.3		168 36.8	06.0		Pollux	243 57.8	N28 04.3			
04	9 40.7	208 25.0	26.3	269 34.1	44.6		183 34.0	20.5		183 39.1	06.1		Procyon	245 25.5	N 5 16.4			
05	24 43.2	223 24.7	25.1	284 34.8	44.5		198 36.1	20.6		198 41.4	06.2							
06	39 45.6	238 24.3	N 9 23.9	299 35.4	N23 44.4		213 38.2	S 1 20.8		213 43.6	S 0 06.3		Rasalhague	96 28.8	N12 34.6			
07	54 48.1	253 24.0	22.7	314 36.1	44.4		228 40.3	21.0		228 45.9	06.4		Regulus	208 09.7	N12 03.6			
S 08	69 50.5	268 23.6	21.5	329 36.7	44.3		243 42.4	21.1		243 48.2	06.5		Rigel	281 35.7	S 8 13.3			
A 09	84 53.0	283 23.3	20.3	344 37.4	44.2		258 44.5	21.3		258 50.5	06.6		Rigel Kent.	140 25.0	S60 45.7			
T 10	99 55.5	298 23.0	19.1	359 38.0	44.1		273 46.6	21.4		273 52.7	06.7		Sabik	102 40.2	S15 42.1			
U 11	114 57.9	313 22.6	17.9	14 38.7	44.0		288 48.7	21.6		288 55.0	06.8							
D 12	130 00.4	328 22.3	N 9 16.7	29 39.3	N23 43.9		303 50.8	S 1 21.8		303 57.3	S 0 06.9		Schedar	350 08.0	N56 25.9			
R 13	145 02.9	343 22.0	15.5	44 40.0	43.8		318 52.9	21.9		318 59.5	06.9		Shaula	96 54.6	S37 05.5			
A 14	160 05.3	358 21.6	14.3	59 40.6	43.7		333 55.0	22.1		334 01.8	07.0		Sirius	258 55.5	S16 41.4			
Y 15	175 07.8	13 21.3	13.1	74 41.3	43.6		348 57.1	22.3		349 04.1	07.1							

G.M.T.	ARIES		VENUS -3.4		MARS +1.8		JUPITER -1.4		SATURN +1.2		STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
2 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	310 30.0	148 18.3 N	9 02.4	209 47.2 N23	42.8	124 16.0 S	1 23.7	124 24.5 S	0 07.9	Acamar	315 36.8	S40 22.5	
	325 32.4	163 18.0	01.2	224 47.8	42.7	139 18.1	23.9	139 26.8	08.0	Achernar	335 44.7	S57 19.6	
	340 34.9	178 17.7	9 00.0	239 48.5	42.6	154 20.2	24.1	154 29.1	08.1	Acruz	173 36.9	S62 59.9	
	355 37.4	193 17.3	8 58.8	254 49.1	42.5	169 22.3	24.2	169 31.3	08.2	Adhara	255 32.0	S28 56.7	
	10 39.8	208 17.0	57.6	269 49.8	42.4	184 24.4	24.4	184 33.6	08.3	Aldebaran	291 17.5	N16 28.3	
	25 42.3	223 16.7	56.4	284 50.5	42.3	199 26.5	24.5	199 35.9	08.4				
	40 44.8	238 16.3 N	8 55.2	299 51.1 N23	42.2	214 28.6 S	1 24.7	214 38.1 S	0 08.5	Alioth	166 42.2	N56 04.0	
	55 47.2	253 16.0	54.0	314 51.8	42.1	229 30.7	24.9	229 40.4	08.6	Alkaid	153 18.1	N49 24.7	
	70 49.7	268 15.7	52.8	329 52.4	42.0	244 32.8	25.0	244 42.7	08.7	Al Na'ir	28 13.7	S47 02.9	
	85 52.1	283 15.4	51.6	344 53.1	41.9	259 34.9	25.2	259 45.0	08.8	Alnilam	276 11.3	S 1 12.8	
	100 54.6	298 15.0	50.4	359 53.7	41.8	274 37.0	25.4	274 47.2	08.9	Alphard	218 20.3	S 8 34.6	
	115 57.1	313 14.7	49.2	14 54.4	41.7	289 39.1	25.5	289 49.5	09.0				
	130 59.5	328 14.4 N	8 48.0	29 55.1 N23	41.6	304 41.2 S	1 25.7	304 51.8 S	0 09.0	Alphecca	126 31.5	N26 46.9	
	146 02.0	343 14.1	46.8	44 55.7	41.5	319 43.3	25.9	319 54.0	09.1	Alpheratz	358 08.5	N28 59.2	
	161 04.5	358 13.7	45.6	59 56.4	41.4	334 45.4	26.0	334 56.3	09.2	Altair	62 31.6	N 8 49.3	
	176 06.9	13 13.4	44.4	74 57.0	41.3	349 47.5	26.2	349 58.6	09.3	Ankaa	353 39.4	S42 24.2	
	191 09.4	28 13.1	43.2	89 57.7	41.2	4 49.6	26.4	5 00.8	09.4	Antares	112 55.9	S26 23.5	
	206 11.9	43 12.8	41.9	104 58.3	41.1	19 51.7	26.5	20 03.1	09.5				
	221 14.3	58 12.4 N	8 40.7	119 59.0 N23	41.0	34 53.8 S	1 26.7	35 05.4 S	0 09.6	Arcturus	146 17.9	N19 17.0	
	236 16.8	73 12.1	39.5	134 59.7	40.9	49 55.9	26.9	50 07.6	09.7	Atria	108 19.3	S68 59.9	
	251 19.3	88 11.8	38.3	150 00.3	40.8	64 58.0	27.0	65 09.9	09.8	Avior	234 28.6	S59 26.9	
	266 21.7	103 11.5	37.1	165 01.0	40.7	80 00.1	27.2	80 12.2	09.9	Bellatrix	278 58.3	N 6 20.0	
	281 24.2	118 11.1	35.9	180 01.6	40.6	95 02.2	27.3	95 14.5	10.0	Betelgeuse	271 27.9	N 7 24.3	
296 26.6	133 10.8	34.7	195 02.3	40.5	110 04.3	27.5	110 16.7	10.1					
3 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	311 29.1	148 10.5 N	8 33.5	210 02.9 N23	40.3	125 06.4 S	1 27.7	125 19.0 S	0 10.1	Canopus	264 07.4	S52 41.0	
	326 31.6	163 10.2	32.3	225 03.6	40.2	140 08.5	27.8	140 21.3	10.2	Capella	281 10.7	N45 58.6	
	341 34.0	178 09.9	31.1	240 04.3	40.1	155 10.6	28.0	155 23.5	10.3	Deneb	49 47.6	N45 12.9	
	356 36.5	193 09.5	29.9	255 04.9	40.0	170 12.7	28.2	170 25.8	10.4	Denebola	182 58.6	N14 40.7	
	11 39.0	208 09.2	28.7	270 05.6	39.9	185 14.8	28.3	185 28.1	10.5	Diphda	349 20.1	S18 05.2	
	26 41.4	223 08.9	27.5	285 06.2	39.8	200 16.9	28.5	200 30.3	10.6				
	41 43.9	238 08.6 N	8 26.3	300 06.9 N23	39.7	215 19.0 S	1 28.7	215 32.6 S	0 10.7	Dubhe	194 21.9	N61 51.3	
	56 46.4	253 08.3	25.0	315 07.6	39.6	230 21.1	28.8	230 34.9	10.8	Elnath	278 43.6	N28 35.5	
	71 48.8	268 07.9	23.8	330 08.2	39.5	245 23.2	29.0	245 37.1	10.9	Eltanin	90 57.0	N51 29.7	
	86 51.3	283 07.6	22.6	345 08.9	39.4	260 25.3	29.2	260 39.4	11.0	Enif	34 10.3	N 9 47.4	
	101 53.7	298 07.3	21.4	0 09.5	39.3	275 27.4	29.3	275 41.7	11.1	Fomalhaut	15 50.4	S29 43.1	
	116 56.2	313 07.0	20.2	15 10.2	39.2	290 29.5	29.5	290 43.9	11.2				
	131 58.7	328 06.7 N	8 19.0	30 10.9 N23	39.1	305 31.6 S	1 29.7	305 46.2 S	0 11.3	Gacrux	172 28.4	S57 00.7	
	147 01.1	343 06.4	17.8	45 11.5	39.0	320 33.7	29.8	320 48.5	11.3	Gienah	176 17.5	S17 26.3	
	162 03.6	358 06.0	16.6	60 12.2	38.9	335 35.8	30.0	335 50.7	11.4	Hadar	149 22.6	S60 17.2	
	177 06.1	13 05.7	15.4	75 12.8	38.8	350 37.9	30.2	350 53.0	11.5	Hamal	328 28.2	N23 22.4	
	192 08.5	28 05.4	14.1	90 13.5	38.6	5 40.0	30.3	5 55.3	11.6	Kaus Aust.	84 15.7	S34 23.6	
	207 11.0	43 05.1	12.9	105 14.2	38.5	20 42.0	30.5	20 57.5	11.7				
	222 13.5	58 04.8 N	8 11.7	120 14.8 N23	38.4	35 44.1 S	1 30.7	35 59.8 S	0 11.8	Kochab	137 18.9	N74 14.3	
	237 15.9	73 04.5	10.5	135 15.5	38.3	50 46.2	30.8	51 02.1	11.9	Markab	14 02.3	N15 06.3	
	252 18.4	88 04.2	09.3	150 16.1	38.2	65 48.3	31.0	66 04.3	12.0	Menkar	314 40.5	N 4 01.0	
	267 20.9	103 03.8	08.1	165 16.8	38.1	80 50.4	31.2	81 06.6	12.1	Menkent	148 36.3	S36 16.8	
	282 23.3	118 03.5	06.9	180 17.5	38.0	95 52.5	31.3	96 08.9	12.2	Miaplacidus	221 45.7	S69 38.5	
297 25.8	133 03.2	05.6	195 18.1	37.9	110 54.6	31.5	111 11.1	12.3					
4 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	312 28.2	148 02.9 N	8 04.4	210 18.8 N23	37.7	125 56.7 S	1 31.7	126 13.4 S	0 12.4	Mirfak	309 15.3	N49 47.5	
	327 30.7	163 02.6	03.2	225 19.5	37.6	140 58.8	31.8	141 15.7	12.5	Nunki	76 28.1	S26 19.2	
	342 33.2	178 02.3	02.0	240 20.1	37.5	156 00.9	32.0	156 17.9	12.5	Peacock	53 56.8	S56 47.7	
	357 35.6	193 02.0	8 00.8	255 20.8	37.4	171 03.0	32.2	171 20.2	12.6	Pollux	243 57.8	N28 04.3	
	12 38.1	208 01.7	7 59.6	270 21.4	37.3	186 05.1	32.3	186 22.4	12.7	Procyon	245 25.5	N 5 16.4	
	27 40.6	223 01.4	58.3	285 22.1	37.2	201 07.2	32.5	201 24.7	12.8				
	42 43.0	238 01.0 N	7 57.1	300 22.8 N23	37.1	216 09.3 S	1 32.7	216 27.0 S	0 12.9	Rasalhague	96 28.8	N12 34.6	
	57 45.5	253 00.7	55.9	315 23.4	37.0	231 11.4	32.8	231 29.2	13.0	Regulus	208 09.7	N12 03.6	
	72 48.0	268 00.4	54.7	330 24.1	36.8	246 13.4	33.0	246 31.5	13.1	Rigel	281 35.6	S 8 13.3	
	87 50.4	283 00.1	53.5	345 24.8	36.7	261 15.5	33.2	261 33.8	13.2	Rigil Kent.	140 25.0	S60 45.7	
	102 52.9	297 59.8	52.2	0 25.4	36.6	276 17.6	33.3	276 36.0	13.3	Sabik	102 40.2	S15 42.1	
	117 55.4	312 59.5	51.0	15 26.1	36.5	291 19.7	33.5	291 38.3	13.4				
	132 57.8	327 59.2 N	7 49.8	30 26.8 N23	36.4	306 21.8 S	1 33.7	306 40.6 S	0 13.5	Schedar	350 08.0	N56 25.9	
	148 00.3	342 58.9	48.6	45 27.4	36.3	321 23.9	33.8	321 42.8	13.6	Shaula	96 54.6	S37 05.5	
	163 02.7	357 58.6	47.4	60 28.1	36.1	336 26.0	34.0	336 45.1	13.7	Sirius	258 55.5	S16 41.4	
	178 05.2	12 58.3	46.1	75 28.7	36.0	351 28.1	34.2	351 47.4	13.8	Spica	158 57.0	S11 03.8	
	193 07.7	27 58.0	44.9	90 29.4	35.9	6 30.2	34.3	6 49.6	13.9	Suhail	223 10.8	S43 21.4	
	208 10.1	42 57.7	43.7	105 30.1	35.8	21 32.3	34.5	21 51.9	13.9				
	223 12.6	57 57.3 N	7 42.5	120 30.7 N23	35.7	36 34.4 S	1 34.7	36 54.1 S	0 14.0	Vega	80 55.1	N38 46.2	
	238 15.1	72 57.0	41.3	135 31.4	35.5	51 36.5	34.8	51 56.4	14.1	Zuben'ubi	137 32.3	S15 57.8	
	253 17.5	87 56.7	40.0	150 32.1	35.4	66 38.5	35.0	66 58.7	14.2				
	268 20.0	102 56.4	38.8	165 32.7	35.3	81 40.6	35.2	82 00.9	14.3				
	283 22.5	117 56.1	37.6	180 33.4	35.2	96 42.7	35.3	97 03.2	14.4				
298 24.9	132 55.8	36.4	195 34.1	35.1	111 44.8	35.5	112 05.5	14.5					
Mer. Pass.	3 13.5	v -0.3	d 1.2	v 0.7	d 0.1	v 2.1	d 0.2	v 2.3	d 0.1				
										S.H.A.	Mer. Pass.		
										Venus	196 41.4	14 08	
										Mars	258 33.8	9 59	
										Jupiter	173 37.3	15 37	
										Saturn	173 49.9	15 36	

G.M.T.	SUN				MOON				Lat.	Twilight		Sunrise	Moonrise						
	G.H.A.		Dec.	v	G.H.A.		Dec.	d		H.P.	Naut.		Civil	2	3	4	5		
	°	'			h	m					h		m	h	m	h	m	h	m	h	m
2 00	178	26.7	N17	50.7	154	42.5	10.8	N13	00.9	9.7	57.3	N 72	////	////	01 42	05 29	07 17	08 58	10 35
01	193	26.8		50.1	169	12.3	10.9		12 51.2	9.7	57.3	68	////	////	02 24	05 46	07 26	09 01	10 33
02	208	26.8		49.4	183	42.2	11.0		12 41.5	9.7	57.2	66	////	00 51	02 52	06 00	07 34	09 04	10 31
03	223	26.8	..	48.8	198	12.2	11.0		12 31.8	9.8	57.2	64	////	01 50	03 14	06 11	07 41	09 06	10 29
04	238	26.9		48.1	212	42.2	11.1		12 22.0	9.9	57.2	62	////	02 22	03 31	06 21	07 46	09 08	10 28
05	253	26.9		47.5	227	12.3	11.2		12 12.1	9.9	57.1	60	00 46	02 46	03 45	06 29	07 51	09 10	10 27
06	268	27.0	N17	46.9	241	42.5	11.3	N12	02.2	9.9	57.1	N 58	01 39	03 04	03 57	06 36	07 55	09 12	10 26
07	283	27.0		46.2	256	12.8	11.3		11 52.3	10.1	57.1	56	02 09	03 19	04 07	06 43	07 59	09 13	10 25
08	298	27.1		45.6	270	43.1	11.4		11 42.2	10.0	57.0	54	02 31	03 32	04 16	06 48	08 02	09 14	10 24
S 09	313	27.1	..	44.9	285	13.5	11.5		11 32.2	10.1	57.0	52	02 49	03 44	04 24	06 53	08 05	09 15	10 23
U 10	328	27.1		44.3	299	44.0	11.6		11 22.1	10.2	57.0	50	03 03	03 53	04 32	06 58	08 08	09 16	10 23
N 11	343	27.2		43.7	314	14.6	11.6		11 11.9	10.2	57.0	45	03 32	04 14	04 47	07 08	08 14	09 19	10 21
D 12	358	27.2	N17	43.0	328	45.2	11.7	N11	01.7	10.2	56.9	N 40	03 53	04 30	05 00	07 16	08 19	09 20	10 20
A 13	13	27.3		42.4	343	15.9	11.8		10 51.5	10.3	56.9	35	04 09	04 43	05 11	07 23	08 24	09 22	10 19
Y 14	28	27.3		41.7	357	46.7	11.9		10 41.2	10.3	56.9	30	04 23	04 54	05 20	07 29	08 27	09 23	10 18
15	43	27.4	..	41.1	12	17.6	11.9		10 30.9	10.4	56.8	20	04 45	05 13	05 36	07 40	08 34	09 26	10 16
16	58	27.4		40.4	26	48.5	12.0		10 20.5	10.4	56.8	N 10	05 02	05 28	05 50	07 49	08 40	09 28	10 15
17	73	27.5		39.8	41	19.5	12.1		10 10.1	10.4	56.8	0	05 16	05 41	06 03	07 58	08 45	09 30	10 13
18	88	27.5	N17	39.1	55	50.6	12.1	N	9 59.7	10.5	56.7	S 10	05 28	05 53	06 15	08 06	08 50	09 32	10 12
19	103	27.5		38.5	70	21.7	12.2		9 49.2	10.5	56.7	20	05 39	06 06	06 29	08 15	08 56	09 34	10 11
20	118	27.6		37.9	84	52.9	12.3		9 38.7	10.5	56.7	30	05 50	06 19	06 44	08 26	09 03	09 37	10 09
21	133	27.6	..	37.2	99	24.2	12.3		9 28.2	10.6	56.7	35	05 56	06 26	06 53	08 32	09 06	09 38	10 08
22	148	27.7		36.6	113	55.5	12.4		9 17.6	10.6	56.6	40	06 02	06 34	07 03	08 39	09 11	09 40	10 07
23	163	27.7		35.9	128	26.9	12.5		9 07.0	10.7	56.6	45	06 08	06 43	07 14	08 47	09 16	09 42	10 06
3 00	178	27.8	N17	35.3	142	58.4	12.6	N	8 56.3	10.7	56.6	S 50	06 15	06 54	07 29	08 56	09 21	09 44	10 05
01	193	27.8		34.6	157	30.0	12.6		8 45.6	10.7	56.5	52	06 18	06 58	07 35	09 01	09 24	09 45	10 04
02	208	27.9		34.0	172	01.6	12.6		8 34.9	10.7	56.5	54	06 21	07 04	07 42	09 05	09 27	09 46	10 04
03	223	27.9	..	33.3	186	33.2	12.8		8 24.2	10.8	56.5	56	06 24	07 09	07 51	09 11	09 30	09 47	10 03
04	238	28.0		32.7	201	05.0	12.8		8 13.4	10.8	56.4	58	06 28	07 15	08 00	09 17	09 34	09 49	10 02
05	253	28.0		32.0	215	36.8	12.8		8 02.6	10.8	56.4	S 60	06 32	07 23	08 10	09 23	09 38	09 50	10 01
06	268	28.1	N17	31.4	230	08.6	12.9	N	7 51.8	10.8	56.4								
07	283	28.1		30.7	244	40.5	13.0		7 41.0	10.9	56.4								
08	298	28.2		30.0	259	12.5	13.0		7 30.1	10.9	56.3								
M 09	313	28.2	..	29.4	273	44.5	13.1		7 19.2	10.9	56.3								
U 10	328	28.3		28.7	288	16.6	13.2		7 08.3	10.9	56.3								
N 11	343	28.3		28.1	302	48.8	13.2		6 57.4	11.0	56.2								
D 12	358	28.4	N17	27.4	317	21.0	13.3	N	6 46.4	10.9	56.2	N 70	22 24	////	////	22 10	22 02	21 56	21 49
A 13	13	28.4		26.8	331	53.3	13.3		6 35.5	11.0	56.2	68	21 44	////	////	21 58	21 57	21 55	21 53
Y 14	28	28.5		26.1	346	25.6	13.4		6 24.5	11.0	56.2	66	21 17	23 10	////	21 49	21 53	21 55	21 57
15	43	28.5	..	25.5	0	58.0	13.4		6 13.5	11.0	56.1	64	20 56	22 18	////	21 41	21 49	21 55	22 00
16	58	28.6		24.8	15	30.4	13.5		6 02.5	11.1	56.1	62	20 39	21 47	////	21 35	21 45	21 54	22 03
17	73	28.6		24.1	30	02.9	13.5		5 51.4	11.0	56.1	60	20 26	21 24	23 16	21 29	21 42	21 54	22 05
18	88	28.7	N17	23.5	44	35.4	13.6	N	5 40.4	11.1	56.0	N 58	20 14	21 06	22 29	21 24	21 40	21 54	22 08
19	103	28.7		22.8	59	08.0	13.7		5 29.3	11.1	56.0	56	20 04	20 51	22 00	21 19	21 37	21 54	22 10
20	118	28.8		22.2	73	40.7	13.7		5 18.2	11.0	56.0	54	19 55	20 38	21 39	21 15	21 35	21 54	22 11
21	133	28.8	..	21.5	88	13.4	13.7		5 07.2	11.1	56.0	52	19 47	20 27	21 22	21 11	21 33	21 53	22 13
22	148	28.9		20.9	102	46.1	13.8		4 56.1	11.1	55.9	50	19 40	20 18	21 07	21 08	21 31	21 53	22 14
23	163	28.9		20.2	117	18.9	13.8		4 45.0	11.2	55.9	45	19 24	19 58	20 40	21 00	21 28	21 53	22 17
4 00	178	29.0	N17	19.5	131	51.7	13.9	N	4 33.8	11.1	55.9	N 40	19 12	19 42	20 19	20 54	21 24	21 53	22 20
01	193	29.1		18.9	146	24.6	13.9		4 22.7	11.1	55.8	35	19 01	19 29	20 02	20 48	21 21	21 52	22 22
02	208	29.1		18.2	160	57.5	14.0		4 11.6	11.2	55.8	30	18 52	19 18	19 49	20 44	21 19	21 52	22 24
03	223	29.2	..	17.5	175	30.5	14.0		4 00.4	11.1	55.8	20	18 36	18 59	19 27	20 35	21 14	21 52	22 28
04	238	29.2		16.9	190	03.5	14.1		3 49.3	11.2	55.8	N 10	18 22	18 44	19 10	20 28	21 11	21 51	22 31
05	253	29.3		16.2	204	36.6	14.1		3 38.1	11.1	55.7	0	18 10	18 31	18 56	20 21	21 07	21 51	22 34
06	268	29.3	N17	15.6	219	09.7	14.2	N	3 27.0	11.2	55.7	S 10	17 57	18 19	18 44	20 14	21 03	21 51	22 37
07	283	29.4		14.9	233	42.9	14.1		3 15.8	11.1	55.7	20	17 44	18 07	18 33	20 06	20 59	21 50	22 40
08	298	29.4		14.2	248	16.0	14.3		3 04.7	11.2	55.7	30	17 28	17 54	18 22	19 57	20 55	21 50	22 44
09	313	29.5	..	13.6	262	49.3	14.2		2 53.5	11.2	55.6	35	17 20	17 46	18 17	19 52	20 52	21 49	22 46
10	328	29.6		12.9	277	22.5	14.3		2 42.3	11.1	55.6	40	17 10	17 39	18 11	19 46	20 49	21 49	22 48
11	343	29.6		12.2	291	55.8	14.4		2 31.2	11.2	55.6	45	16 58	17 30	18 05	19 40	20 45	21 49	22 51
12	358	29.7	N17	11.6	306	29.2	14.4	N	2 20.0	11.2	55.5	S 50	16 44	17 19	17 58	19 32	20 41	21 48	

G.M.T.	ARIES			VENUS -3.4			MARS +1.8			JUPITER -1.4			SATURN +1.2			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Mer.	Pass.		
5 W E D N E S D A Y	00	313 27.4	147 55.5 N 7 35.1	210 34.7 N23 35.0	126 46.9 S 1 35.7	127 07.7 S 0 14.6	Acomar	315 36.8	S40 22.5									
	01	328 29.8	162 55.2 33.9	225 35.4 34.8	141 49.0 35.8	142 10.0 14.7	Achernar	335 44.6	S57 19.6									
	02	343 32.3	177 54.9 32.7	240 36.1 34.7	156 51.1 36.0	157 12.2 14.8	Acrux	173 37.0	S62 59.9									
	03	358 34.8	192 54.6 31.5	255 36.7 34.6	171 53.2 36.2	172 14.5 14.9	Adhara	255 32.0	S28 56.7									
	04	13 37.2	207 54.3 30.2	270 37.4 34.5	186 55.3 36.3	187 16.8 15.0	Aldebaran	291 17.4	N16 28.3									
	05	28 39.7	222 54.0 29.0	285 38.1 34.3	201 57.4 36.5	202 19.0 15.1												
	06	43 42.2	237 53.7 N 7 27.8	300 38.7 N23 34.2	216 59.4 S 1 36.7	217 21.3 S 0 15.2	Alioth	166 42.2	N56 04.0									
	07	58 44.6	252 53.4 26.6	315 39.4 34.1	232 01.5 36.9	232 23.6 15.3	Alkaid	153 18.1	N49 24.7									
	08	73 47.1	267 53.1 25.3	330 40.1 34.0	247 03.6 37.0	247 25.8 15.4	Al Na'ir	28 13.7	S47 02.9									
	09	88 49.6	282 52.8 24.1	345 40.7 33.9	262 05.7 37.2	262 28.1 15.5	Alnilam	276 11.3	S 1 12.8									
	10	103 52.0	297 52.5 22.9	0 41.4 33.7	277 07.8 37.4	277 30.3 15.5	Alphard	218 20.3	S 8 34.6									
	11	118 54.5	312 52.2 21.7	15 42.1 33.6	292 09.9 37.5	292 32.6 15.6												
	12	133 57.0	327 51.9 N 7 20.4	30 42.7 N23 33.5	307 12.0 S 1 37.7	307 34.9 S 0 15.7	Alphecca	126 31.5	N26 46.9									
	13	148 59.4	342 51.6 19.2	45 43.4 33.4	322 14.1 37.9	322 37.1 15.8	Alpheratz	358 08.4	N28 59.2									
	14	164 01.9	357 51.3 18.0	60 44.1 33.2	337 16.2 38.0	337 39.4 15.9	Altoir	62 31.6	N 8 49.3									
	15	179 04.3	12 51.0 16.7	75 44.7 33.1	352 18.2 38.2	352 41.7 16.0	Ankaa	353 39.4	S42 24.2									
	16	194 06.8	27 50.7 15.5	90 45.4 33.0	7 20.3 38.4	7 43.9 16.1	Antares	112 55.9	S26 23.5									
	17	209 09.3	42 50.4 14.3	105 46.1 32.9	22 22.4 38.5	22 46.2 16.2												
	18	224 11.7	57 50.1 N 7 13.1	120 46.7 N23 32.7	37 24.5 S 1 38.7	37 48.4 S 0 16.3	Arcturus	146 18.0	N19 17.0									
	19	239 14.2	72 49.8 11.8	135 47.4 32.6	52 26.6 38.9	52 50.7 16.4	Atria	108 19.3	S68 59.9									
	20	254 16.7	87 49.5 10.6	150 48.1 32.5	67 28.7 39.0	67 53.0 16.5	Avior	234 28.6	S59 26.9									
	21	269 19.1	102 49.2 09.4	165 48.8 32.4	82 30.8 39.2	82 55.2 16.6	Bellatrix	278 58.2	N 6 20.0									
	22	284 21.6	117 48.9 08.1	180 49.4 32.2	97 32.9 39.4	97 57.5 16.7	Betelgeuse	271 27.9	N 7 24.3									
23	299 24.1	132 48.6 06.9	195 50.1 32.1	112 34.9 39.6	112 59.7 16.8													
6 T H U R S D A Y	00	314 26.5	147 48.3 N 7 05.7	210 50.8 N23 32.0	127 37.0 S 1 39.7	128 02.0 S 0 16.9	Canopus	264 07.4	S52 41.0									
	01	329 29.0	162 48.0 04.4	225 51.4 31.8	142 39.1 39.9	143 04.3 17.0	Capella	281 10.7	N45 58.6									
	02	344 31.5	177 47.7 03.2	240 52.1 31.7	157 41.2 40.1	158 06.5 17.1	Deneb	49 47.6	N45 12.9									
	03	359 33.9	192 47.4 02.0	255 52.8 31.6	172 43.3 40.2	173 08.8 17.2	Denebola	182 58.2	N14 40.7									
	04	14 36.4	207 47.2 7 00.7	270 53.4 31.5	187 45.4 40.4	188 11.0 17.3	Diphda	349 20.1	S18 05.2									
	05	29 38.8	222 46.9 6 59.5	285 54.1 31.3	202 47.5 40.6	203 13.3 17.3												
	06	44 41.3	237 46.6 N 6 58.3	300 54.8 N23 31.2	217 49.5 S 1 40.7	218 15.6 S 0 17.4	Dubhe	194 21.9	N61 51.3									
	07	59 43.8	252 46.3 57.0	315 55.5 31.1	232 51.6 40.9	233 17.8 17.5	Elnath	278 43.6	N28 35.5									
	08	74 46.2	267 46.0 55.8	330 56.1 30.9	247 53.7 41.1	248 20.1 17.6	Eltanin	90 57.1	N51 29.8									
	09	89 48.7	282 45.7 54.6	345 56.8 30.8	262 55.8 41.3	263 22.3 17.7	Enif	34 10.7	N 9 47.5									
	10	104 51.2	297 45.4 53.3	0 57.5 30.7	277 57.9 41.4	278 24.6 17.8	Fomalhaut	15 50.4	S29 43.1									
	11	119 53.6	312 45.1 52.1	15 58.1 30.5	293 00.0 41.6	293 26.9 17.9												
	12	134 56.1	327 44.8 N 6 50.9	30 58.8 N23 30.4	308 02.1 S 1 41.8	308 29.1 S 0 18.0	Gacrux	172 28.4	S57 00.7									
	13	149 58.6	342 44.5 49.6	45 59.5 30.3	323 04.1 41.9	323 31.4 18.1	Genah	176 17.5	S17 26.3									
	14	165 01.0	357 44.2 48.4	61 00.2 30.1	338 06.2 42.1	338 33.6 18.2	Hadar	149 22.6	S60 17.2									
	15	180 03.5	12 43.9 47.1	76 00.8 30.0	353 08.3 42.3	353 35.9 18.3	Hamal	328 28.2	N23 22.4									
	16	195 06.0	27 43.6 45.9	91 01.5 29.9	8 10.4 42.4	8 38.2 18.4	Kaus Aust.	84 15.7	S34 23.6									
	17	210 08.4	42 43.4 44.7	106 02.2 29.7	23 12.5 42.6	23 40.4 18.5												
	18	225 10.9	57 43.1 N 6 43.4	121 02.8 N23 29.6	38 14.6 S 1 42.8	38 42.7 S 0 18.6	Kochab	137 19.0	N74 14.3									
	19	240 13.3	72 42.8 42.2	136 03.5 29.5	53 16.6 43.0	53 44.9 18.7	Markab	14 02.3	N15 06.3									
	20	255 15.8	87 42.5 41.0	151 04.2 29.3	68 18.7 43.1	68 47.2 18.8	Menkar	314 40.5	N 4 01.0									
	21	270 18.3	102 42.2 39.7	166 04.9 29.2	83 20.8 43.3	83 49.4 18.9	Menkent	148 36.4	S36 16.8									
	22	285 20.7	117 41.9 38.5	181 05.5 29.1	98 22.9 43.5	98 51.7 19.0	Miaplacidus	221 45.7	S69 38.5									
23	300 23.2	132 41.6 37.2	196 06.2 28.9	113 25.0 43.6	113 54.0 19.1													
7 F R I D A Y	00	315 25.7	147 41.3 N 6 36.0	211 06.9 N23 28.8	128 27.1 S 1 43.8	128 56.2 S 0 19.2	Mirfak	309 15.3	N49 47.5									
	01	330 28.1	162 41.0 34.8	226 07.6 28.7	143 29.1 44.0	143 58.5 19.3	Nunki	76 28.1	S26 19.2									
	02	345 30.6	177 40.8 33.5	241 08.2 28.5	158 31.2 44.1	159 00.7 19.3	Peacock	53 56.8	S56 47.7									
	03	0 33.1	192 40.5 32.3	256 08.9 28.4	173 33.3 44.3	174 03.0 19.4	Pollux	243 57.8	N28 04.3									
	04	15 35.5	207 40.2 31.0	271 09.6 28.3	188 35.4 44.5	189 05.2 19.5	Procyon	245 25.5	N 5 16.4									
	05	30 38.0	222 39.9 29.8	286 10.3 28.1	203 37.5 44.7	204 07.5 19.6												
	06	45 40.4	237 39.6 N 6 28.6	301 10.9 N23 28.0	218 39.6 S 1 44.8	219 09.8 S 0 19.7	Rasalhague	96 28.8	N12 34.6									
	07	60 42.9	252 39.3 27.3	316 11.6 27.8	233 41.6 45.0	234 12.0 19.8	Regulus	208 09.7	N12 03.6									
	08	75 45.4	267 39.0 26.1	331 12.3 27.7	248 43.7 45.2	249 14.3 19.9	Rigel	281 35.6	S 8 13.3									
	09	90 47.8	282 38.8 24.8	346 13.0 27.6	263 45.8 45.3	264 16.5 20.0	Rigel Kent.	140 25.0	S60 45.7									
	10	105 50.3	297 38.5 23.6	1 13.6 27.4	278 47.9 45.5	279 18.8 20.1	Sabik	102 40.2	S15 42.1									
	11	120 52.8	312 38.2 22.4	16 14.3 27.3	293 50.0 45.7	294 21.0 20.2												
	12	135 55.2	327 37.9 N 6 21.1	31 15.0 N23 27.1	308 52.0 S 1 45.9	309 23.3 S 0 20.3	Schedar	350 08.0	N56 25.9									
	13	150 57.7	342 37.6 19.9	46 15.7 27.0	323 54.1 46.0	324 25.6 20.4	Shaula	96 54.7	S37 05.5									
	14	166 00.2	357 37.3 18.6	61 16.3 26.9	338 56.2 46.2	339 27.8 20.5	Sirius	258 55.5	S16 41.4									
	15	181 02.6	12 37.1 17.4	76 17.0 26.7	353 58.3 46.4	354 30.1 20.6	Spica	158 57.0	S11 03.8									
	16	196 05.1	27 36.8 16.1	91 17.7 26.6	9 00.4 46.5	9 32.3 20.7	Suhail	223 10.8	S43 21.4									
	17	211 07.6	42 36.5 14.9	106 18.4 26.4	24 02.4 46.7	24 34.6 20.8												
	18	226 10.0	57 36.2 N 6 13.7	121 19.0 N23 26.3	39 04.5 S 1 46.9	39 36.8 S 0 20.9	Vega	80 55.1	N38 46.2									
	19	241 12.5	72 35.9 12.4	136 19.7 26.2	54 06.6 47.1	54 39.1 21.0	Zuben'ubi	137 32.4	S15 57.8									
	20	256 14.9	87 35.6 11.2	151 20.4 26.0	69 08.7 47.2	69 41.4 21.1												
	21	271 17.4	102 35.4 09.9	166 21.1 25.9	84 10.8 47.4	84 43.6 21.2												
	22	286 19.9	117 35.1 08.7	181 21.7 25.7	99 12.9 47.6	99 45.9 21.3	Venus	193 21.8	h 14 09									
23	301 22.3	132 34.8 07.4	196 22.															

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	8	9	10	11
									h m		h m	h m	h m	h m	h m
8 00	178 35.4	N16 13.9	89 58.7	14.6	S12 10.0	8.9	54.3	N 72	////	////	01 33	16 00	18 30	19 31	19 40
01	193 35.5	13.2	104 32.3	14.5	12 18.9	8.8	54.3	68	////	00 23	02 53	15 05	16 38	18 12	19 40
02	208 35.6	12.4	119 05.8	14.4	12 27.7	8.7	54.3	66	////	01 45	03 15	14 47	16 12	17 35	18 49
03	223 35.6	11.7	133 39.2	14.5	12 36.4	8.7	54.3	64	////	02 20	03 33	14 32	15 52	17 09	18 17
04	238 35.7	11.0	148 12.7	14.4	12 45.1	8.6	54.3	62	00 21	02 45	03 47	14 20	15 36	16 48	17 54
05	253 35.8	10.3	162 46.1	14.4	12 53.7	8.6	54.3	60	01 34	03 04	03 59	14 10	15 22	16 32	17 35
06	268 35.9	N16 09.6	177 19.5	14.4	S13 02.3	8.5	54.2	N 58	02 06	03 20	04 10	14 01	15 11	16 18	17 19
07	283 36.0	08.9	191 52.9	14.3	13 10.8	8.5	54.2	56	02 29	03 33	04 19	13 53	15 01	16 06	17 06
S 08	298 36.0	08.2	206 26.2	14.3	13 19.3	8.4	54.2	54	02 48	03 45	04 27	13 46	14 52	15 55	16 54
A 09	313 36.1	07.5	220 59.5	14.2	13 27.7	8.3	54.2	52	03 03	03 54	04 34	13 40	14 44	15 46	16 44
T 10	328 36.2	06.8	235 32.7	14.3	13 36.0	8.3	54.2	50	03 15	04 03	04 40	13 34	14 37	15 38	16 35
U 11	343 36.3	06.1	250 06.0	14.2	13 44.3	8.2	54.2	45	03 41	04 21	04 54	13 22	14 22	15 20	16 16
R 12	358 36.4	N16 05.3	264 39.2	14.1	S13 52.5	8.2	54.2	N 40	04 00	04 36	05 06	13 13	14 09	15 06	16 01
D 13	13 36.5	04.6	279 12.3	14.1	14 00.7	8.1	54.2	35	04 15	04 48	05 15	13 04	13 59	14 54	15 47
A 14	28 36.5	03.9	293 45.4	14.1	14 08.8	8.1	54.2	30	04 28	04 58	05 24	12 57	13 50	14 43	15 36
Y 15	43 36.6	03.2	308 18.5	14.1	14 16.9	8.0	54.2	20	04 48	05 15	05 38	12 44	13 34	14 25	15 16
16	58 36.7	02.5	322 51.6	14.0	14 24.9	7.9	54.2	N 10	05 03	05 29	05 50	12 33	13 20	14 09	14 59
17	73 36.8	01.8	337 24.6	13.9	14 32.8	7.9	54.2	0	05 16	05 41	06 02	12 22	13 08	13 55	14 44
18	88 36.9	N16 01.1	351 57.5	14.0	S14 40.7	7.8	54.3	S 10	05 26	05 52	06 13	12 12	12 55	13 40	14 28
19	103 37.0	16 00.4	6 30.5	13.9	14 48.5	7.8	54.3	20	05 36	06 03	06 26	12 01	12 41	13 24	14 11
20	118 37.0	15 59.6	21 03.4	13.8	14 56.3	7.7	54.3	30	05 46	06 14	06 39	11 49	12 26	13 07	13 52
21	133 37.1	15 58.9	35 36.2	13.8	15 04.0	7.6	54.3	35	05 51	06 21	06 47	11 42	12 17	12 56	13 40
22	148 37.2	58.2	50 09.0	13.8	15 11.6	7.6	54.3	40	05 55	06 28	06 56	11 33	12 07	12 44	13 27
23	163 37.3	57.5	64 41.8	13.7	15 19.2	7.5	54.3	45	06 01	06 35	07 06	11 24	11 55	12 31	13 12
9 00	178 37.4	N15 56.8	79 14.5	13.7	S15 26.7	7.4	54.3	S 50	06 06	06 45	07 19	11 13	11 41	12 14	12 53
01	193 37.5	56.1	93 47.2	13.7	15 34.1	7.4	54.3	52	06 08	06 49	07 25	11 07	11 34	12 06	12 45
02	208 37.6	55.3	108 19.9	13.6	15 41.5	7.3	54.3	54	06 11	06 53	07 31	11 02	11 27	11 57	12 35
03	223 37.6	54.6	122 52.5	13.6	15 48.8	7.3	54.3	56	06 13	06 58	07 38	10 55	11 18	11 47	12 24
04	238 37.7	53.9	137 25.1	13.5	15 56.1	7.1	54.3	58	06 16	07 03	07 46	10 48	11 09	11 36	12 11
05	253 37.8	53.2	151 57.6	13.5	16 03.2	7.1	54.3	S 60	06 19	07 09	07 55	10 40	10 58	11 23	11 56
06	268 37.9	N15 52.5	166 30.1	13.4	S16 10.3	7.1	54.3								
07	283 38.0	51.7	181 02.5	13.4	16 17.4	7.0	54.3	Lat.	Sunset	Twilight		Moonset			
08	298 38.1	51.0	195 34.9	13.3	16 24.4	6.9	54.3			Civil	Naut.	8	9	10	11
S 09	313 38.2	50.3	210 07.2	13.4	16 31.3	6.8	54.3								
U 10	328 38.2	49.6	224 39.6	13.2	16 38.1	6.7	54.3								
N 11	343 38.3	48.9	239 11.8	13.2	16 44.8	6.7	54.3	N 72	22 29	////	////	20 52	19 56	19 31	19 40
D 12	358 38.4	N15 48.1	253 44.0	13.2	S16 51.5	6.6	54.3	N 70	21 44	////	////	21 25	21 11	20 34	20 40
A 13	13 38.5	47.4	268 16.2	13.1	16 58.1	6.6	54.3	68	21 15	23 24	////	21 49	21 50	21 54	22 09
Y 14	28 38.6	46.7	282 48.3	13.1	17 04.7	6.5	54.3	66	20 53	22 21	////	22 08	22 16	22 32	23 00
15	43 38.7	46.0	297 20.4	13.1	17 11.2	6.4	54.4	64	20 36	21 47	////	22 23	22 37	22 58	23 32
16	58 38.8	45.2	311 52.5	12.9	17 17.6	6.3	54.4	62	20 22	21 23	23 29	22 36	22 54	23 19	23 56
17	73 38.9	44.5	326 24.4	13.0	17 23.9	6.2	54.4	60	20 10	21 04	22 32	22 47	23 08	23 36	24 14
18	88 39.0	N15 43.8	340 56.4	12.9	S17 30.1	6.2	54.4	N 58	20 00	20 49	22 01	22 56	23 20	23 50	24 30
19	103 39.1	43.1	355 28.3	12.8	17 36.3	6.1	54.4	56	19 51	20 36	21 39	23 05	23 30	24 02	00 02
20	118 39.1	42.3	10 00.1	12.8	17 42.4	6.0	54.4	54	19 43	20 25	21 21	23 12	23 39	24 13	00 13
21	133 39.2	41.6	24 31.9	12.8	17 48.4	5.9	54.4	52	19 36	20 15	21 06	23 19	23 48	24 23	00 23
22	148 39.3	40.9	39 03.7	12.7	17 54.3	5.9	54.4	50	19 29	20 06	20 54	23 25	23 55	24 31	00 31
23	163 39.4	40.2	53 35.4	12.7	18 00.2	5.8	54.4	45	19 16	19 48	20 29	23 38	24 11	00 11	00 49
10 00	178 39.5	N15 39.4	68 07.1	12.6	S18 06.0	5.7	54.4	N 40	19 05	19 34	20 10	23 49	24 24	00 24	01 04
01	193 39.6	38.7	82 38.7	12.5	18 11.7	5.6	54.5	35	18 55	19 22	19 55	23 58	24 35	00 35	01 17
02	208 39.7	38.0	97 10.2	12.6	18 17.3	5.6	54.5	30	18 47	19 12	19 43	24 06	00 06	00 45	01 27
03	223 39.8	37.3	111 41.8	12.4	18 22.9	5.4	54.5	20	18 33	18 56	19 23	24 20	00 20	01 02	01 46
04	238 39.9	36.5	126 13.2	12.5	18 28.3	5.4	54.5	N 10	18 20	18 42	19 08	24 32	00 32	01 16	02 03
05	253 40.0	35.8	140 44.7	12.3	18 33.7	5.3	54.5	0	18 09	18 30	18 55	00 00	00 44	01 30	02 18
06	268 40.1	N15 35.1	155 16.0	12.4	S18 39.0	5.2	54.5	S 10	17 58	18 19	18 44	00 09	00 56	01 44	02 33
07	283 40.2	34.3	169 47.4	12.2	18 44.2	5.2	54.5	20	17 46	18 08	18 35	00 18	01 08	01 58	02 50
08	298 40.3	33.6	184 18.6	12.3	18 49.4	5.0	54.5	30	17 32	17 57	18 25	00 29	01 22	02 15	03 09
M 09	313 40.3	32.9	198 49.9	12.2	18 54.4	5.0	54.5	35	17 24	17 51	18 21	00 36	01 30	02 25	03 20
O 10	328 40.4	32.1	213 21.1	12.1	18 59.4	4.9	54.6	40	17 15	17 44	18 16	00 43	01 40	02 37	03 32
N 11	343 40.5	31.4	227 52.2	12.1	19 04.3	4.8	54.6	45	17 05	17 36	18 11	00 51	01 51	02 50	03 47
D 12	358 40.6	N15 30.7	242 23.3	12.0	S19 09.1	4.7	54.6	S 50	16 53	17 27	18 05	01 02	02 04	03 06	04 05
A 13	13 40.7	29.9	256 54.3	12.0	19 13.8	4.6	54.6	52	16 47	17 23	18 03	01 06	02 11	03 14	04 14
Y 14	28 40.8	29.2	271 25.3	12.0	19 18.4	4.5	54.6	54	16 40	17 19	18 01	01 12	02 18	03 22	04 24
15	43 40.9	28.5	285 56.3	11.9	19 22.9	4.5	54.6	56	16 33	17 14	17 58	01 17	02 26	03 32	04 35
16	58 41.0	27.7	300 27.2	11.8	19 27.4	4.3	54.6	58	16 25	17 08	17 56	01 24	02 34	03 43	04 47
17	73 41.1	27.0	314 58.0	11.8	19 31.7	4.3	54.7	S 60	16 16	17 03	17 53	01 31	02 44	03 55	05 02
18	88 41.2	N15 26.3	329 28.8	11.8	S19 36.0	4.2	54.7								
19	103 41.3	25.5	343 59.6	11.7	19 40.2	4.1	54.7								
20															

G.M.T.	ARIES			VENUS -3.4			MARS +1.8			JUPITER -1.3			SATURN +1.2			STARS			
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.	
T U E S D A Y	11 ^d 00	319 22.2	147 15.1 N 4	35.8	212 12.3 N23	14.3	131 46.4 S	2 00.4		132 32.5 S	0 28.5		Acamar	315 36.7	S40 22.5				
	01	334 24.7	162 14.8	34.5	227 13.0	14.1	146 48.4	00.6		147 34.8	0 28.6		Achernar	335 44.6	S57 19.6				
	02	349 27.1	177 14.6	33.3	242 13.7	13.9	161 50.5	00.8		162 37.0	0 28.7		Acrux	173 37.0	S62 59.9				
	03	4 29.6	192 14.3	32.0	257 14.4	13.8	176 52.6	01.0		177 39.3	0 28.8		Adhara	255 31.9	S28 56.7				
	04	19 32.1	207 14.0	30.8	272 15.1	13.6	191 54.6	01.2		192 41.5	0 28.9		Aldebaran	291 17.4	N16 28.3				
	05	34 34.5	222 13.8	29.5	287 15.8	13.4	206 56.7	01.3		207 43.8	0 29.0								
	06	49 37.0	237 13.5 N 4	28.2	302 16.5 N23	13.3	221 58.8 S	2 01.5		222 46.0 S	0 29.1		Alioth	166 42.3	N56 04.0				
	07	64 39.5	252 13.3	27.0	317 17.1	13.1	237 00.9	01.7		237 48.3	0 29.2		Alkaid	153 18.2	N49 24.7				
	08	79 41.9	267 13.0	25.7	332 17.8	12.9	252 02.9	01.9		252 50.5	0 29.3		Al Na'ir	28 13.7	S47 03.0				
	09	94 44.4	282 12.7	24.4	347 18.5	12.8	267 05.0	02.0		267 52.7	0 29.4		Alnilam	276 11.2	S 1 12.7				
	10	109 46.9	297 12.5	23.2	2 19.2	12.6	282 07.1	02.2		282 55.0	0 29.5		Alphard	218 20.3	S 8 34.6				
	11	124 49.3	312 12.2	21.9	17 19.9	12.4	297 09.1	02.4		297 57.2	0 29.6								
	12	139 51.8	327 12.0 N 4	20.6	32 20.6 N23	12.2	312 11.2 S	2 02.6		312 59.5 S	0 29.7		Alphecca	126 31.5	N26 46.9				
	13	154 54.3	342 11.7	19.4	47 21.3	12.1	327 13.3	02.7		328 01.7	0 29.8		Alpheratz	358 08.4	N28 59.2				
	14	169 56.7	357 11.5	18.1	62 22.0	11.9	342 15.3	02.9		343 04.0	0 29.9		Altair	62 31.6	N 8 49.3				
	15	184 59.2	12 11.2	16.8	77 22.7	11.7	357 17.4	03.1		358 06.2	0 30.0		Ankaa	353 39.3	S42 24.2				
	16	200 01.6	27 10.9	15.6	92 23.4	11.6	12 19.5	03.3		13 08.5	0 30.1		Antares	112 56.0	S26 23.5				
	17	215 04.1	42 10.7	14.3	107 24.1	11.4	27 21.5	03.4		28 10.7	0 30.2								
	18	230 06.6	57 10.4 N 4	13.0	122 24.8 N23	11.2	42 23.6 S	2 03.6		43 13.0 S	0 30.3		Arcturus	146 18.0	N19 17.0				
	19	245 09.0	72 10.2	11.8	137 25.5	11.0	57 25.7	03.8		58 15.2	0 30.4		Atria	108 19.4	S68 59.9				
	20	260 11.5	87 09.9	10.5	152 26.1	10.9	72 27.7	04.0		73 17.5	0 30.5		Avior	234 28.6	S59 26.9				
	21	275 14.0	102 09.7	09.2	167 26.8	10.7	87 29.8	04.2		88 19.7	0 30.6		Bellatrix	278 58.3	N 6 20.0				
	22	290 16.4	117 09.4	08.0	182 27.5	10.5	102 31.9	04.3		103 22.0	0 30.7		Betelgeuse	271 27.8	N 7 24.3				
23	305 18.9	132 09.2	06.7	197 28.2	10.4	117 33.9	04.5		118 24.2	0 30.8									
W E D N E S D A Y	12 ^d 00	320 21.4	147 08.9 N 4	05.4	212 28.9 N23	10.2	132 36.0 S	2 04.7		133 26.5 S	0 30.9		Canopus	264 07.3	S52 40.9				
	01	335 23.8	162 08.6	04.2	227 29.6	10.0	147 38.1	04.9		148 28.7	0 31.0		Capella	281 10.6	N45 58.6				
	02	350 26.3	177 08.4	02.9	242 30.3	09.8	162 40.1	05.0		163 30.9	0 31.1		Deneb	49 47.6	N45 13.0				
	03	5 28.7	192 08.1	01.6	257 31.0	09.7	177 42.2	05.2		178 33.2	0 31.2		Denebola	182 58.7	N14 40.7				
	04	20 31.2	207 07.9	00.3	272 31.7	09.5	192 44.3	05.4		193 35.4	0 31.3		Diphda	349 20.0	S18 05.2				
	05	35 33.7	222 07.6	0 59.1	287 32.4	09.3	207 46.3	05.6		208 37.7	0 31.4								
	06	50 36.1	237 07.4 N 3	57.8	302 33.1 N23	09.1	222 48.4 S	2 05.7		223 39.9 S	0 31.5		Dubhe	194 22.0	N61 51.3				
	07	65 38.6	252 07.1	56.5	317 33.8	09.0	237 50.5	05.9		238 42.2	0 31.6		Elnath	278 43.5	N28 35.5				
	08	80 41.1	267 06.9	55.3	332 34.5	08.8	252 52.5	06.1		253 44.4	0 31.7		Eltanin	90 57.1	N51 29.8				
	09	95 43.5	282 06.6	54.0	347 35.2	08.6	267 54.6	06.3		268 46.7	0 31.8		Enif	34 10.6	N 9 47.5				
	10	110 46.0	297 06.4	52.7	2 35.9	08.4	282 56.7	06.5		283 48.9	0 31.9		Fomalhaut	15 50.4	S29 43.1				
	11	125 48.5	312 06.1	51.5	17 36.6	08.2	297 58.7	06.6		298 51.2	0 32.0								
	12	140 50.9	327 05.9 N 3	50.2	32 37.3 N23	08.1	313 00.8 S	2 06.8		313 53.4 S	0 32.1		Gacrux	172 28.4	S57 00.7				
13	155 53.4	342 05.6	48.9	47 38.0	07.9	328 02.8	07.0		328 55.6	0 32.2		Gienah	176 17.6	S17 26.3					
14	170 55.9	357 05.4	47.6	62 38.6	07.7	343 04.9	07.2		343 57.9	0 32.3		Hadar	149 22.6	S60 17.2					
15	185 58.3	12 05.1	46.4	77 39.3	07.5	358 07.0	07.3		359 00.1	0 32.4		Hamal	328 28.1	N23 22.4					
16	201 00.8	27 04.9	45.1	92 40.0	07.4	13 09.0	07.5		14 02.4	0 32.5		Kaus Aust.	84 15.7	S34 23.6					
17	216 03.2	42 04.6	43.8	107 40.7	07.2	28 11.1	07.7		29 04.6	0 32.6									
18	231 05.7	57 04.4 N 3	42.6	122 41.4 N23	07.0	43 13.2 S	2 07.9		44 06.9 S	0 32.7		Kochab	137 19.1	N74 14.3					
19	246 08.2	72 04.1	41.3	137 42.1	06.8	58 15.2	08.1		59 09.1	0 32.8		Markab	14 02.2	N15 06.4					
20	261 10.6	87 03.9	40.0	152 42.8	06.6	73 17.3	08.2		74 11.4	0 32.9		Menkar	314 40.5	N 4 01.1					
21	276 13.1	102 03.6	38.7	167 43.5	06.5	88 19.4	08.4		89 13.6	0 33.0		Menkent	148 36.4	S36 16.8					
22	291 15.6	117 03.4	37.5	182 44.2	06.3	103 21.4	08.6		104 15.8	0 33.1		Miaplacidus	221 45.7	S69 38.4					
23	306 18.0	132 03.1	36.2	197 44.9	06.1	118 23.5	08.8		119 18.1	0 33.2									
T H U R S D A Y	13 ^d 00	321 20.5	147 02.9 N 3	34.9	212 45.6 N23	05.9	133 25.5 S	2 08.9		134 20.3 S	0 33.3		Mirfak	309 15.2	N49 47.5				
	01	336 23.0	162 02.6	33.7	227 46.3	05.7	148 27.6	09.1		149 22.6	0 33.4		Nunki	76 28.1	S26 19.2				
	02	351 25.4	177 02.4	32.4	242 47.0	05.5	163 29.7	09.3		164 24.8	0 33.5		Peacock	53 56.8	S56 47.7				
	03	6 27.9	192 02.1	31.1	257 47.7	05.4	178 31.7	09.5		179 27.1	0 33.6		Pollux	243 57.7	N28 04.3				
	04	21 30.4	207 01.9	29.8	272 48.4	05.2	193 33.8	09.7		194 29.3	0 33.7		Procyon	245 25.4	N 5 16.4				
	05	36 32.8	222 01.6	28.6	287 49.1	05.0	208 35.9	09.8		209 31.6	0 33.8								
	06	51 35.3	237 01.4 N 3	27.3	302 49.8 N23	04.8	223 37.9 S	2 10.0		224 33.8 S	0 33.9		Rasalhague	96 28.8	N12 34.6				
	07	66 37.7	252 01.1	26.0	317 50.5	04.6	238 40.0	10.2		239 36.0	0 34.0		Regulus	208 09.7	N12 03.6				
	08	81 40.2	267 00.9	24.7	332 51.2	04.5	253 42.0	10.4		254 38.3	0 34.1		Rigel	281 35.6	S 8 13.3				
	09	96 42.7	282 00.6	23.5	347 51.9	04.3	268 44.1	10.6		269 40.5	0 34.2		Rigel Kent.	140 25.1	S60 45.7				
	10	111 45.1	297 00.4	22.2	2 52.6	04.1	283 46.2	10.7		284 42.8	0 34.3		Sabik	102 40.2	S15 42.1				
	11	126 47.6	312 00.1	20.9	17 53.3	03.9	298 48.2	10.9		299 45.0	0 34.4								
	12	141 50.1	326 59.9 N 3	19.6	32 54.0 N23	03.7	313 50.3 S	2 11.1		314 47.3 S	0 34.5		Schedar	350 07.9	N56 25.9				
13	156 52.5	341 59.6	18.4	47 54.7	03.5	328 52.4	11.3		329 49.5	0 34.6		Shaula	96 54.7	S37 05.5					
14	171 55.0	356 59.4	17.1	62 55.4	03.3	343 54.4	11.4		344 51.7	0 34.7		Sirius	258 55.4	S16 41.3					
15	186 57.5	11 59.1	15.8	77 56.1	03.2	358 56.5	11.6		359 54.0	0 34.8		Spica	158 57.0	S11 03.8					
16	201 59.9	26 58.9																	

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	P.	Dec.	d		H.P.	Naut.		Civil	11	12	13	14
									h m		h m	h m	h m	h m	h m
TUESDAY	11 00	178 41.8 N15 21.8	56 32.6 11.5	S19 59.7	3.7	54.8	N 72	////	////	02 00	■	■	■	23 21	
	01	193 41.9 21.1	71 03.1 11.4	20 03.4	3.5	54.8	N 70	////	////	02 39	■	■	■	21 45	
	02	208 42.0 20.4	85 33.5 11.4	20 06.9	3.4	54.8	68	////	01 14	03 06	19 40	20 38	20 59	21 05	
	03	223 42.1 19.6	100 03.9 11.3	20 10.3	3.4	54.8	66	////	02 03	03 26	18 49	19 45	20 18	20 37	
	04	238 42.2 18.9	114 34.2 11.3	20 13.7	3.2	54.8	64	////	02 33	03 42	18 17	19 12	19 50	20 15	
	05	253 42.3 18.2	129 04.5 11.2	20 16.9	3.2	54.8	62	01 06	02 56	03 55	17 54	18 48	19 29	19 58	
	06	268 42.4 N15 17.4	143 34.7 11.2	S20 20.1	3.1	54.9	N 58	02 18	03 28	04 16	17 19	18 13	18 57	19 31	
	07	283 42.5 16.7	158 04.9 11.2	20 23.2	2.9	54.9	56	02 39	03 40	04 25	17 06	17 59	18 44	19 21	
	08	298 42.6 15.9	172 35.1 11.1	20 26.1	2.9	54.9	54	02 56	03 51	04 32	16 54	17 48	18 33	19 11	
	09	313 42.7 15.2	187 05.2 11.1	20 29.0	2.8	54.9	52	03 09	04 00	04 39	16 44	17 37	18 24	19 03	
	10	328 42.8 14.4	201 35.3 11.0	20 31.8	2.6	54.9	50	03 21	04 08	04 45	16 35	17 28	18 15	18 55	
	11	343 42.9 13.7	216 05.3 11.0	20 34.4	2.6	55.0	45	03 45	04 25	04 58	16 16	17 09	17 57	18 39	
	12	358 43.0 N15 13.0	230 35.3 10.9	S20 37.0	2.5	55.0	N 40	04 03	04 39	05 08	16 01	16 53	17 41	18 26	
	13	13 43.1 12.2	245 05.2 10.9	20 39.5	2.3	55.0	35	04 18	04 50	05 17	15 47	16 39	17 29	18 15	
	14	28 43.2 11.5	259 35.1 10.8	20 41.8	2.3	55.0	30	04 30	05 00	05 25	15 36	16 28	17 18	18 05	
	15	43 43.3 10.7	274 04.9 10.8	20 44.1	2.2	55.0	20	04 49	05 16	05 39	15 16	16 08	16 58	17 48	
	16	58 43.4 10.0	288 34.7 10.8	20 46.3	2.0	55.1	N 10	05 03	05 29	05 51	14 59	15 51	16 42	17 33	
	17	73 43.5 09.2	303 04.5 10.7	20 48.3	2.0	55.1	0	05 15	05 40	06 02	14 44	15 34	16 26	17 19	
	18	88 43.6 N15 08.5	317 34.2 10.7	S20 50.3	1.9	55.1	S 10	05 26	05 51	06 12	14 28	15 18	16 11	17 05	
	19	103 43.7 07.8	332 03.9 10.6	20 52.2	1.7	55.1	20	05 35	06 01	06 24	14 11	15 01	15 54	16 50	
	20	118 43.8 07.0	346 33.5 10.6	20 53.9	1.7	55.1	30	05 43	06 12	06 37	13 52	14 41	15 35	16 32	
	21	133 43.9 06.3	1 03.1 10.6	20 55.6	1.5	55.2	35	05 48	06 18	06 44	13 40	14 29	15 24	16 22	
	22	148 44.0 05.5	15 32.7 10.5	20 57.1	1.5	55.2	40	05 52	06 24	06 52	13 27	14 16	15 11	16 11	
23	163 44.1 04.8	30 02.2 10.5	20 58.6	1.3	55.2	45	05 57	06 31	07 02	13 12	14 00	14 56	15 57		
WEDNESDAY	12 00	178 44.2 N15 04.0	44 31.7 10.5	S20 59.9	1.3	55.2	S 50	06 01	06 40	07 14	12 53	13 41	14 37	15 41	
	01	193 44.3 03.3	59 01.2 10.4	21 01.2	1.1	55.2	52	06 03	06 43	07 19	12 45	13 32	14 28	15 33	
	02	208 44.4 02.5	73 30.6 10.4	21 02.3	1.0	55.3	54	06 06	06 47	07 25	12 35	13 22	14 18	15 24	
	03	223 44.5 01.8	88 00.0 10.3	21 03.3	1.0	55.3	56	06 08	06 52	07 32	12 24	13 10	14 07	15 14	
	04	238 44.6 01.0	102 29.3 10.3	21 04.3	0.8	55.3	S 58	06 10	06 57	07 39	12 11	12 57	13 55	15 03	
	05	253 44.7 15 00.3	116 58.6 10.3	21 05.1	0.7	55.3	50	06 13	07 02	07 48	11 56	12 41	13 40	14 50	
	06	268 44.8 N14 59.5	131 27.9 10.2	S21 05.8	0.6	55.3									
	07	283 44.9 58.8	145 57.1 10.2	21 06.4	0.5	55.4	Lat.	Sunset	Twilight		Moonset				
	08	298 45.0 58.0	160 26.3 10.2	21 06.9	0.4	55.4			Civil	Naut.	11	12	13	14	
	09	313 45.2 57.3	174 55.5 10.1	21 07.3	0.3	55.4					h m	h m	h m	h m	
	10	328 45.3 56.5	189 24.6 10.1	21 07.6	0.1	55.4	N 72	22 03	h m	h m	h m	h m	h m	h m	
	11	343 45.4 55.8	203 53.7 10.1	21 07.7	0.1	55.5	N 70	21 26	////	////	■	■	■	■	
	12	358 45.5 N14 55.0	218 22.8 10.0	S21 07.8	0.1	55.5	68	21 01	22 46	////	22 09	22 57	24 25	00 25	
	13	13 45.6 54.3	232 51.8 10.1	21 07.7	0.1	55.5	66	20 41	22 02	////	23 00	23 50	25 05	01 05	
	14	28 45.7 53.5	247 20.9 9.9	21 07.6	0.3	55.5	64	20 26	21 33	////	23 32	24 23	00 23	01 33	
	15	43 45.8 52.7	261 49.8 10.0	21 07.3	0.4	55.6	62	20 13	21 12	22 55	23 56	24 47	00 47	01 54	
	16	58 45.9 52.0	276 18.8 9.9	21 06.9	0.5	55.6	60	20 02	20 54	22 15	24 14	00 14	01 06	02 11	
	17	73 46.0 51.2	290 47.7 9.9	21 06.4	0.6	55.6	N 58	19 52	20 40	21 49	24 30	00 30	01 22	02 25	
	18	88 46.1 N14 50.5	305 16.6 9.9	S21 05.8	0.7	55.6	56	19 44	20 28	21 29	00 02	00 44	01 35	02 38	
	19	103 46.2 49.7	319 45.5 9.8	21 05.1	0.8	55.6	54	19 37	20 18	21 12	00 13	00 55	01 47	02 48	
	20	118 46.3 49.0	334 14.3 9.9	21 04.3	0.9	55.7	52	19 30	20 09	20 59	00 23	01 05	01 57	02 58	
	21	133 46.4 48.2	348 43.2 9.8	21 03.4	1.1	55.7	50	19 24	20 01	20 47	00 31	01 15	02 06	03 06	
	22	148 46.5 47.5	3 12.0 9.7	21 02.3	1.1	55.7	45	19 11	19 44	20 24	00 49	01 34	02 26	03 24	
23	163 46.7 46.7	17 40.7 9.8	21 01.2	1.3	55.7	N 40	19 01	19 30	20 06	01 04	01 50	02 41	03 39		
THURSDAY	13 00	178 46.8 N14 45.9	32 09.5 9.7	S20 59.9	1.4	55.8	35	18 52	19 19	19 51	01 17	02 03	02 55	03 51	
	01	193 46.9 45.2	46 38.2 9.7	20 58.5	1.5	55.8	30	18 44	19 09	19 40	01 27	02 15	03 06	04 02	
	02	208 47.0 44.4	61 06.9 9.7	20 57.0	1.6	55.8	20	18 31	18 54	19 21	01 46	02 34	03 26	04 20	
	03	223 47.1 43.7	75 35.6 9.7	20 55.4	1.7	55.8	N 10	18 19	18 41	19 06	02 03	02 52	03 43	04 36	
	04	238 47.2 42.9	90 04.3 9.6	20 53.7	1.8	55.9	0	18 08	18 30	18 55	02 18	03 08	03 59	04 51	
	05	253 47.3 42.1	104 32.9 9.7	20 51.9	1.9	55.9	S 10	17 58	18 19	18 44	02 33	03 24	04 15	05 06	
	06	268 47.4 N14 41.4	119 01.6 9.6	S20 50.0	2.1	55.9	20	17 46	18 09	18 35	02 50	03 41	04 32	05 22	
	07	283 47.5 40.6	133 30.2 9.6	20 47.9	2.2	55.9	30	17 34	17 58	18 27	03 09	04 01	04 52	05 40	
	08	298 47.7 39.9	147 58.8 9.6	20 45.7	2.2	56.0	35	17 26	17 53	18 23	03 20	04 13	05 03	05 51	
	09	313 47.8 39.1	162 27.4 9.5	20 43.5	2.4	56.0	40	17 18	17 46	18 18	03 32	04 26	05 16	06 03	
	10	328 47.9 38.3	176 55.9 9.6	20 41.1	2.5	56.0	45	17 08	17 39	18 14	03 47	04 41	05 32	06 17	
	11	343 48.0 37.6	191 24.5 9.5	20 38.6	2.7	56.0	S 50	16 57	17 31	18 09	04 05	05 01	05 51	06 34	
	12	358 48.1 N14 36.8	205 53.0 9.5	S20 35.9	2.7	56.1	52	16 51	17 27	18 07	04 14	05 10	06 00	06 42	
	13	13 48.2 36.1	220 21.5 9.6	20 33.2	2.8	56.1	54	16 46	17 23	18 05	04 24	05 20	06 10	06 51	
	14	28 48.3 35.3	234 50.1 9.5	20 30.4	3.0	56.1	56	16 39	17 19	18 03	04 35	05 32	06 21	07 01	
	15	43 48.4 34.5	249 18.6 9.4	20 27.4	3.1	56.1	58	16 32	17 14	18 01	04 47	05 45	06 34	07 13	
	16	58 48.6 33.8	263 47.0 9.5	20 24.3	3.2	56.2	S 60	16 23	17 09	17 58	05 02	06 01	06 49	07 26	
	17	73 48.7 33.0	278 15.5 9.5	20 21.1	3.3	56.2									
	18	88 48.8 N14 32.2	292 44.0 9.5	S20 17.8	3.4	56.2	Day	SUN		MOON					
	19	103 48.9 31.5	307 12.5 9.4	20 14.4	3.5	56.3		Eqn. of Time	Mer. Pass.	Mer. Pass.		Age		Phase	
	20	118 49.0 30.7	321 40.9 9.4	20 10.9	3.6	56.3		00 ^h	12 ^h	Upper	Lower				
	21	133 49.1 29.9	336 09.3 9.5	20 07.3	3.8	56.3		m s	m s	h m	h m	h m	d		
	22	148 49.2 29.2	350 37.8 9.4	20 03.5	3.8	56.3	11	05 13	05 08	12 05	20 56	08 31	11		
23	163 49.4 28.4	5 06.2 9.4	19 59.7	4.0	56.4	12	05 03	04 58	12 05	21 47	09 21	12			
						13	04 53	04 48	12 05	22 39	10 13	13	☉		

G.M.T.	ARIES			VENUS -3.4			MARS +1.8			JUPITER -1.3			SATURN +1.2			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.			
14 ^d 00	322 19.6	146 56.9 N	3 04.3	213 02.4 N	23 01.5		134 15.0 S	2 13.2	135 14.2 S	0 35.8			Acamar	315 36.7	S40 22.5			
01	337 22.1	161 56.7	03.1	228 03.1	01.3		149 17.1	13.4	150 16.4	35.9			Achernar	335 44.5	S57 19.6			
02	352 24.6	176 56.5	01.8	243 03.8	01.1		164 19.1	13.6	165 18.6	36.0			Acrux	173 37.0	S62 59.9			
03	7 27.0	191 56.2	3 00.5	258 04.5	.. 00.9		179 21.2	.. 13.8	180 20.9	.. 36.1			Adhara	255 31.9	S28 56.6			
04	22 29.5	206 56.0	2 59.2	273 05.2	00.7		194 23.3	14.0	195 23.1	36.2			Aldebaran	291 17.4	N16 28.3			
05	37 32.0	221 55.7	57.9	288 05.9	00.5		209 25.3	14.1	210 25.4	36.3								
06	52 34.4	236 55.5 N	2 56.7	303 06.6 N	23 00.3		224 27.4 S	2 14.3	225 27.6 S	0 36.4			Alioth	166 42.3	N56 03.9			
07	67 36.9	251 55.2	55.4	318 07.3	23 00.1		239 29.4	14.5	240 29.9	36.5			Alkaid	153 18.2	N49 24.7			
08	82 39.3	266 55.0	54.1	333 08.0	22 59.9		254 31.5	14.7	255 32.1	36.6			Al Na'ir	28 13.7	S47 03.0			
F 09	97 41.8	281 54.8	.. 52.8	348 08.8	.. 59.8		269 33.6	.. 14.9	270 34.3	.. 36.7			Alnilam	276 11.2	S 1 12.7			
R 10	112 44.3	296 54.5	51.6	3 09.5	59.6		284 35.6	15.0	285 36.6	36.8			Alphard	218 20.3	S 8 34.6			
I 11	127 46.7	311 54.3	50.3	18 10.2	59.4		299 37.7	15.2	300 38.8	36.9								
D 12	142 49.2	326 54.0 N	2 49.0	33 10.9 N	22 59.2		314 39.7 S	2 15.4	315 41.1 S	0 37.0			Alphecca	126 31.6	N26 46.9			
A 13	157 51.7	341 53.8	47.7	48 11.6	59.0		329 41.8	15.6	330 43.3	37.1			Alpheratz	358 08.4	N28 59.2			
Y 14	172 54.1	356 53.5	46.4	63 12.3	58.8		344 43.8	15.8	345 45.5	37.2			Altair	62 31.6	N 8 49.3			
15	187 56.6	11 53.3	.. 45.2	78 13.0	.. 58.6		359 45.9	.. 15.9	0 47.8	.. 37.3			Ankaa	353 39.3	S42 24.2			
16	202 59.1	26 53.1	43.9	93 13.7	58.4		14 48.0	16.1	15 50.0	37.4			Antares	112 56.0	S26 23.5			
17	218 01.5	41 52.8	42.6	108 14.4	58.2		29 50.0	16.3	30 52.3	37.5								
18	233 04.0	56 52.6 N	2 41.3	123 15.1 N	22 58.0		44 52.1 S	2 16.5	45 54.5 S	0 37.6			Arcturus	146 18.0	N19 17.0			
19	248 06.5	71 52.3	40.0	138 15.8	57.8		59 54.1	16.7	60 56.7	37.7			Atria	108 19.4	S68 59.9			
20	263 08.9	86 52.1	38.8	153 16.5	57.6		74 56.2	16.8	75 59.0	37.8			Avior	234 28.6	S59 26.9			
21	278 11.4	101 51.9	.. 37.5	168 17.2	.. 57.4		89 58.2	.. 17.0	91 01.2	.. 37.9			Bellatrix	278 58.2	N 6 20.0			
22	293 13.8	116 51.6	36.2	183 17.9	57.2		105 00.3	17.2	106 03.5	38.0			Betelgeuse	271 27.8	N 7 24.3			
23	308 16.3	131 51.4	34.9	198 18.6	57.0		120 02.4	17.4	121 05.7	38.1								
15 ^d 00	323 18.8	146 51.1 N	2 33.6	213 19.3 N	22 56.9		135 04.4 S	2 17.6	136 07.9 S	0 38.2			Canopus	264 07.3	S52 40.9			
01	338 21.2	161 50.9	32.4	228 20.0	56.7		150 06.5	17.7	151 10.2	38.3			Copella	281 10.6	N45 58.6			
02	353 23.7	176 50.7	31.1	243 20.7	56.5		165 08.5	17.9	166 12.4	38.4			Deneb	49 47.6	N45 13.0			
03	8 26.2	191 50.4	.. 29.8	258 21.4	.. 56.3		180 10.6	.. 18.1	181 14.7	.. 38.5			Denebola	182 58.7	N14 40.7			
04	23 28.6	206 50.2	28.5	273 22.2	56.1		195 12.6	18.3	196 16.9	38.6			Diphda	349 20.0	S18 05.2			
05	38 31.1	221 49.9	27.2	288 22.9	55.9		210 14.7	18.5	211 19.1	38.7								
06	53 33.6	236 49.7 N	2 26.0	303 23.6 N	22 55.7		225 16.8 S	2 18.6	226 21.4 S	0 38.8			Dubhe	194 22.0	N61 51.3			
07	68 36.0	251 49.5	24.7	318 24.3	55.5		240 18.8	18.8	241 23.6	38.9			Elnath	278 43.5	N28 35.5			
S 08	83 38.5	266 49.2	23.4	333 25.0	55.3		255 20.9	19.0	256 25.9	39.0			Eltanin	90 57.1	N51 29.8			
A 09	98 40.9	281 49.0	.. 22.1	348 25.7	.. 55.1		270 22.9	.. 19.2	271 28.1	.. 39.1			Enif	34 10.6	N 9 47.5			
T 10	113 43.4	296 48.8	20.8	3 26.4	54.9		285 25.0	19.4	286 30.3	39.2			Fomalhaut	15 50.4	S29 43.1			
U 11	128 45.9	311 48.5	19.6	18 27.1	54.7		300 27.0	19.6	301 32.6	39.3								
R 12	143 48.3	326 48.3 N	2 18.3	33 27.8 N	22 54.5		315 29.1 S	2 19.7	316 34.8 S	0 39.4			Gacrux	172 28.4	S57 00.7			
D 13	158 50.8	341 48.0	17.0	48 28.5	54.3		330 31.1	19.9	331 37.0	39.5			Gienah	176 17.6	S17 26.3			
A 14	173 53.3	356 47.8	15.7	63 29.2	54.1		345 33.2	20.1	346 39.3	39.7			Hadar	149 22.7	S60 17.2			
Y 15	188 55.7	11 47.6	.. 14.4	78 29.9	.. 53.9		0 35.3	.. 20.3	1 41.5	.. 39.8			Hamal	328 28.1	N23 22.4			
16	203 58.2	26 47.3	13.1	93 30.7	53.7		15 37.3	20.5	16 43.8	39.9			Kaus Aust.	84 15.7	S34 23.6			
17	219 00.7	41 47.1	11.9	108 31.4	53.5		30 39.4	20.6	31 46.0	40.0								
18	234 03.1	56 46.9 N	2 10.6	123 32.1 N	22 53.3		45 41.4 S	2 20.8	46 48.2 S	0 40.1			Kochab	137 19.2	N74 14.3			
19	249 05.6	71 46.6	09.3	138 32.8	53.1		60 43.5	21.0	61 50.5	40.2			Markab	14 02.2	N15 06.4			
20	264 08.1	86 46.4	08.0	153 33.5	52.9		75 45.5	21.2	76 52.7	40.3			Menkar	314 40.4	N 4 01.1			
21	279 10.5	101 46.2	.. 06.7	168 34.2	.. 52.7		90 47.6	.. 21.4	91 54.9	.. 40.4			Menkent	148 36.4	S36 16.8			
22	294 13.0	116 45.9	05.4	183 34.9	52.5		105 49.6	21.5	106 57.2	40.5			Miaplacidus	221 45.7	S69 38.4			
23	309 15.4	131 45.7	04.2	198 35.6	52.3		120 51.7	21.7	121 59.4	40.6								
16 ^d 00	324 17.9	146 45.4 N	2 02.9	213 36.3 N	22 52.1		135 53.7 S	2 21.9	137 01.7 S	0 40.7			Mirfak	309 15.2	N49 47.5			
01	339 20.4	161 45.2	01.6	228 37.0	51.9		150 55.8	22.1	152 03.9	40.8			Nunki	76 28.1	S26 19.2			
02	354 22.8	176 45.0	2 00.3	243 37.8	51.7		165 57.9	22.3	167 06.1	40.9			Peacock	53 56.8	S56 47.7			
03	9 25.3	191 44.7	1 59.0	258 38.5	.. 51.4		180 59.9	.. 22.5	182 08.4	.. 41.0			Pollux	243 57.7	N28 04.3			
04	24 27.8	206 44.5	57.7	273 39.2	51.2		196 02.0	22.6	197 10.6	41.1			Procyon	245 25.4	N 5 16.4			
05	39 30.2	221 44.3	56.5	288 39.9	51.0		211 04.0	22.8	212 12.8	41.2								
06	54 32.7	236 44.0 N	1 55.2	303 40.6 N	22 50.8		226 06.1 S	2 23.0	227 15.1 S	0 41.3			Rasalhague	96 28.8	N12 34.6			
07	69 35.2	251 43.8	53.9	318 41.3	50.6		241 08.1	23.2	242 17.3	41.4			Regulus	208 09.7	N12 03.6			
08	84 37.6	266 43.6	52.6	333 42.0	50.4		256 10.2	23.4	257 19.6	41.5			Rigel	281 35.6	S 8 13.3			
S 09	99 40.1	281 43.3	.. 51.3	348 42.7	.. 50.2		271 12.2	.. 23.5	272 21.8	.. 41.6			Rigel Kent.	140 25.1	S60 45.6			
U 10	114 42.6	296 43.1	50.0	3 43.5	50.0		286 14.3	23.7	287 24.0	41.7			Sabik	102 40.3	S15 42.1			
N 11	129 45.0	311 42.9	48.8	18 44.2	49.8		301 16.3	23.9	302 26.3	41.8								
D 12	144 47.5	326 42.6 N	1 47.5	33 44.9 N	22 49.6		316 18.4 S	2 24.1	317 28.5 S	0 41.9			Schedar	350 07.9	N56 26.0			
A 13	159 49.9	341 42.4	46.2	48 45.6	49.4		331 20.4	24.3	332 30.7	42.0			Shaula	96 54.7	S37 05.5			
Y 14	174 52.4	356 42.2	44.9	63 46.3	49.2		346 22.5	24.5	347 33.0	42.1			Sirius	258 55.4	S16 41.3			
15	189 54.9	11 41.9</																

G.M.T.	SUN				MOON				Lat.	Twilight		Sunrise	Moonrise			
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.	Naut.		Civil	14		15	16	17	
								h m		h m	h m		h m	h m	h m	h m	h m
14 00	178 49.5	N14 27.6	19 34.6	9.5	S19 55.7	4.1	56.4	N 72	////	////	02 23	23 21	22 02	21 38	21 21	
01	193 49.6	26.9	34 03.1	9.4	19 51.6	4.2	56.4	N 70	////	////	02 55	21 45	21 30	21 20	21 11	
02	208 49.7	26.1	48 31.5	9.4	19 47.4	4.3	56.4	68	////	01 42	03 19	21 05	21 06	21 05	21 04	
03	223 49.8	25.3	62 59.9	9.4	19 43.1	4.4	56.5	66	////	02 20	03 37	20 37	20 47	20 53	20 57	
04	238 49.9	24.6	77 28.3	9.4	19 38.7	4.5	56.5	64	////	02 46	03 51	20 15	20 32	20 43	20 51	
05	253 50.1	23.8	91 56.7	9.4	19 34.2	4.7	56.5	62	01 31	03 06	04 03	19 58	20 19	20 34	20 47	
06	268 50.2	N14 23.0	106 25.1	9.5	S19 29.5	4.7	56.5	60	02 05	03 22	04 14	19 44	20 08	20 27	20 42	
07	283 50.3	22.2	120 53.6	9.4	19 24.8	4.9	56.6	N 58	02 29	03 35	04 23	19 31	19 59	20 20	20 39	
08	298 50.4	21.5	135 22.0	9.4	19 19.9	5.0	56.6	56	02 48	03 47	04 30	19 21	19 50	20 14	20 35	
09	313 50.5	20.7	149 50.4	9.4	19 14.9	5.1	56.6	54	03 03	03 57	04 37	19 11	19 43	20 09	20 32	
F 10	328 50.6	19.9	164 18.8	9.4	19 09.8	5.2	56.6	52	03 16	04 05	04 44	19 03	19 36	20 04	20 29	
R 11	343 50.8	19.2	178 47.2	9.4	19 04.6	5.3	56.7	50	03 27	04 13	04 49	18 55	19 30	20 00	20 27	
D 12	358 50.9	N14 18.4	193 15.6	9.5	S18 59.3	5.4	56.7	45	03 50	04 29	05 01	18 39	19 17	19 51	20 21	
A 13	13 51.0	17.6	207 44.1	9.4	18 53.9	5.5	56.7	N 40	04 07	04 42	05 11	18 26	19 06	19 43	20 17	
Y 14	28 51.1	16.8	222 12.5	9.4	18 48.4	5.6	56.7	35	04 21	04 53	05 20	18 15	18 57	19 36	20 13	
15	43 51.2	16.1	236 40.9	9.5	18 42.8	5.8	56.8	30	04 32	05 02	05 27	18 05	18 49	19 30	20 09	
16	58 51.3	15.3	251 09.4	9.4	18 37.0	5.8	56.8	20	04 50	05 17	05 40	17 48	18 35	19 20	20 03	
17	73 51.5	14.5	265 37.8	9.5	18 31.2	5.9	56.8	N 10	05 04	05 29	05 51	17 33	18 22	19 11	19 58	
18	88 51.6	N14 13.7	280 06.3	9.4	S18 25.3	6.1	56.9	0	05 15	05 40	06 01	17 19	18 11	19 02	19 53	
19	103 51.7	13.0	294 34.7	9.5	18 19.2	6.2	56.9	S 10	05 25	05 50	06 11	17 05	17 59	18 54	19 48	
20	118 51.8	12.2	309 03.2	9.5	18 13.0	6.2	56.9	20	05 33	05 59	06 22	16 50	17 47	18 44	19 42	
21	133 51.9	11.4	323 31.7	9.5	18 06.8	6.4	56.9	30	05 41	06 09	06 34	16 32	17 32	18 34	19 36	
22	148 52.1	10.6	338 00.2	9.5	18 00.4	6.5	57.0	35	05 45	06 15	06 41	16 22	17 24	18 28	19 33	
23	163 52.2	09.9	352 28.7	9.5	17 53.9	6.6	57.0	40	05 49	06 20	06 48	16 11	17 15	18 21	19 29	
15 00	178 52.3	N14 09.1	6 57.2	9.5	S17 47.3	6.7	57.0	45	05 52	06 27	06 57	15 57	17 04	18 13	19 24	
01	193 52.4	08.3	21 25.7	9.5	17 40.6	6.8	57.0	S 50	05 57	06 35	07 08	15 41	16 50	18 03	19 18	
02	208 52.6	07.5	35 54.2	9.5	17 33.8	6.9	57.1	52	05 58	06 38	07 13	15 33	16 44	17 59	19 16	
03	223 52.7	06.8	50 22.7	9.6	17 26.9	7.0	57.1	54	06 00	06 42	07 19	15 24	16 37	17 54	19 13	
04	238 52.8	06.0	64 51.3	9.6	17 19.9	7.1	57.1	56	06 02	06 46	07 25	15 14	16 29	17 48	19 09	
05	253 52.9	05.2	79 19.9	9.5	17 12.8	7.2	57.1	58	06 04	06 50	07 32	15 03	16 20	17 42	19 06	
06	268 53.0	N14 04.4	93 48.4	9.6	S17 05.6	7.3	57.2	S 60	06 06	06 55	07 40	14 50	16 10	17 35	19 02	
07	283 53.2	03.6	108 17.0	9.6	16 58.3	7.4	57.2									
S 08	298 53.3	02.9	122 45.6	9.6	16 50.9	7.5	57.2	Lat.	Sunset	Twilight		Moonset				
A 09	313 53.4	02.1	137 14.2	9.7	16 43.4	7.5	57.2			Civil	Naut.	14	15	16	17	
T 10	328 53.5	01.3	151 42.9	9.6	16 35.9	7.7	57.3					h m	h m	h m	h m	
U 11	343 53.7	14 00.5	166 11.5	9.7	16 28.2	7.8	57.3	N 72	21 40	////	////	23 54	27 01	03 01	05 13	
R 12	358 53.8	N13 59.7	180 40.2	9.7	S16 20.4	7.9	57.3	N 70	21 09	23 35	////	00 25	01 29	03 33	05 29	
D 13	13 53.9	59.0	195 08.9	9.7	16 12.5	8.0	57.3	68	20 47	22 20	////	00 25	02 08	03 55	05 42	
A 14	28 54.0	58.2	209 37.6	9.7	16 04.5	8.1	57.4	66	20 30	21 44	////	01 05	02 35	04 13	05 53	
Y 15	43 54.2	57.4	224 06.3	9.7	15 56.4	8.2	57.4	64	20 15	21 19	23 39	01 33	02 56	04 27	06 02	
16	58 54.3	56.6	238 35.0	9.7	15 48.2	8.2	57.4	62	20 04	21 00	22 32	01 54	03 13	04 39	06 09	
17	73 54.4	55.8	253 03.7	9.8	15 40.0	8.4	57.4	60	19 53	20 45	22 00	02 11	03 27	04 49	06 16	
18	88 54.5	N13 55.0	267 32.5	9.8	S15 31.6	8.5	57.5	N 58	19 45	20 31	21 37	02 25	03 38	04 58	06 21	
19	103 54.7	54.3	282 01.3	9.8	15 23.1	8.5	57.5	56	19 37	20 20	21 18	02 38	03 49	05 06	06 26	
20	118 54.8	53.5	296 30.1	9.8	15 14.6	8.7	57.5	54	19 30	20 11	21 03	02 48	03 58	05 13	06 31	
21	133 54.9	52.7	310 58.9	9.8	15 05.9	8.7	57.5	52	19 24	20 02	20 51	02 58	04 06	05 19	06 35	
22	148 55.0	51.9	325 27.7	9.8	14 57.2	8.8	57.6	50	19 19	19 54	20 40	03 06	04 13	05 24	06 39	
23	163 55.2	51.1	339 56.5	9.9	14 48.4	8.9	57.6	45	19 07	19 39	20 18	03 24	04 28	05 36	06 46	
16 00	178 55.3	N13 50.3	354 25.4	9.9	S14 39.5	9.0	57.6	N 40	18 57	19 26	20 01	03 39	04 41	05 46	06 53	
01	193 55.4	49.5	8 54.3	9.9	14 30.5	9.1	57.6	35	18 49	19 15	19 47	03 51	04 52	05 54	06 59	
02	208 55.5	48.8	23 23.2	9.9	14 21.4	9.2	57.7	30	18 41	19 06	19 36	04 02	05 01	06 02	07 04	
03	223 55.7	48.0	37 52.1	9.9	14 12.2	9.2	57.7	20	18 29	18 52	19 19	04 20	05 17	06 14	07 12	
04	238 55.8	47.2	52 21.0	10.0	14 03.0	9.4	57.7	N 10	18 18	18 40	19 05	04 36	05 31	06 25	07 19	
05	253 55.9	46.4	66 50.0	10.0	13 53.6	9.4	57.7	0	18 08	18 29	18 54	04 51	05 44	06 35	07 26	
06	268 56.0	N13 45.6	81 19.0	10.0	S13 44.2	9.5	57.8	S 10	17 58	18 19	18 44	05 06	05 57	06 46	07 33	
07	283 56.2	44.8	95 48.0	10.0	13 34.7	9.6	57.8	20	17 47	18 10	18 36	05 22	06 10	06 56	07 40	
08	298 56.3	44.0	110 17.0	10.0	13 25.1	9.6	57.8	30	17 35	18 00	18 28	05 40	06 26	07 08	07 49	
S 09	313 56.4	43.2	124 46.0	10.1	13 15.5	9.8	57.8	35	17 29	17 55	18 25	05 51	06 35	07 15	07 53	
U 10	328 56.6	42.4	139 15.1	10.0	13 05.7	9.8	57.8	40	17 21	17 49	18 21	06 03	06 45	07 23	07 59	
N 11	343 56.7	41.7	153 44.1	10.1	12 55.9	9.9	57.9	45	17 12	17 42	18 17	06 17	06 57	07 33	08 05	
D 12	358 56.8	N13 40.9	168 13.2	10.1	S12 46.0	10.0	57.9	S 50	17 01	17 35	18 13	06 34	07 12	07 44	08 12	
A 13	13 56.9	40.1	182 42.3	10.2	12 36.0	10.1	57.9	52	16 56	17 32	18 11	06 42	07 18	07 49	08 15	
Y 14	28 57.1	39.3	197 11.5	10.1	12 25.9	10.1	57.9	54	16 51	17 28	18 10	06 51	07 26	07 54	08 19	
15	43 57.2	38.5	211 40.6	10.2	12 15.8	10.2	58.0	56	16 45	17 24	18 08	07 01	07 34	08 01	08 23	
16	58 57.3	37.7	226 09.8	10.1	12 05.6	10.3	58.0	58	16 38	17 20	18 06	07 13	07 43	08 08	08 28	
17	73 57.5	36.9	240 38.9	10.2	11 55.3	10.3	58.0	S 60	16 30	17 15	18 04	07 26	07 54	08 15	08 33	
18	88 57.6	N13 36.1	255 08.1	10.3	S11 45.0	10.5	58.0									
19	103 57.7	35.3	269 37.4	10.2	11 34.5	10.5	58.0	Day	SUN		MOON					
20	118															

G.M.T.	ARIES		VENUS -3.4		MARS +1.8		JUPITER -1.3		SATURN +1.2		STARS			
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
17 M O N D A Y	00	325 17.0	146 39.9 N	1 32.0	213 53.5 N	22 47.1	136 43.0 S	2 26.3	137 55.3 S	0 43.2	Acamar	315 36.7 S	40 22.5	
	01	340 19.5	161 39.6	30.8	228 54.2	46.9	151 45.0	26.5	152 57.6	43.3	Achernar	335 44.5 S	57 19.6	
	02	355 22.0	176 39.4	29.5	243 54.9	46.7	166 47.1	26.6	167 59.8	43.4	Acruz	173 37.0 S	62 59.9	
	03	10 24.4	191 39.2	28.2	258 55.6	46.5	181 49.2	26.8	183 02.0	43.5	Adhara	255 31.9 S	28 56.6	
	04	25 26.9	206 38.9	26.9	273 56.3	46.3	196 51.2	27.0	198 04.3	43.6	Aldebaran	291 17.4 N	16 28.3	
	05	40 29.4	221 38.7	25.6	288 57.0	46.0	211 53.3	27.2	213 06.5	43.7				
	06	55 31.8	236 38.5 N	1 24.3	303 57.7 N	22 45.8	226 55.3 S	2 27.4	228 08.7 S	0 43.8	Alioth	166 42.3 N	56 03.9	
	07	70 34.3	251 38.2	23.0	318 58.5	45.6	241 57.4	27.6	243 11.0	43.9	Alkaid	153 18.2 N	49 24.7	
	08	85 36.8	266 38.0	21.8	333 59.2	45.4	256 59.4	27.7	258 13.2	44.0	Al Na'ir	28 13.7 S	47 03.0	
	09	100 39.2	281 37.8	20.5	348 59.9	45.2	272 01.4	27.9	273 15.5	44.1	Alnilam	276 11.2 S	1 12.7	
	10	115 41.7	296 37.5	19.2	4 00.6	45.0	287 03.5	28.1	288 17.7	44.2	Alphard	218 20.3 S	8 34.6	
	11	130 44.2	311 37.3	17.9	19 01.3	44.8	302 05.5	28.3	303 19.9	44.3				
	12	145 46.6	326 37.1 N	1 16.6	34 02.0 N	22 44.6	317 07.6 S	2 28.5	318 22.2 S	0 44.4	Alphecca	126 31.6 N	26 46.9	
	13	160 49.1	341 36.9	15.3	49 02.8	44.3	332 09.6	28.7	333 24.4	44.5	Alpheratz	358 08.4 N	28 59.3	
	14	175 51.5	356 36.6	14.0	64 03.5	44.1	347 11.7	28.8	348 26.6	44.6	Altair	62 31.6 N	8 49.3	
	15	190 54.0	11 36.4	12.8	79 04.2	43.9	2 13.7	29.0	3 28.9	44.7	Ankaa	353 39.3 S	42 24.2	
	16	205 56.5	26 36.2	11.5	94 04.9	43.7	17 15.8	29.2	18 31.1	44.8	Antares	112 56.0 S	26 23.5	
	17	220 58.9	41 35.9	10.2	109 05.6	43.5	32 17.8	29.4	33 33.3	44.9				
	18	236 01.4	56 35.7 N	1 08.9	124 06.4 N	22 43.3	47 19.9 S	2 29.6	48 35.6 S	0 45.0	Arcturus	146 18.0 N	19 17.0	
	19	251 03.9	71 35.5	07.6	139 07.1	43.0	62 21.9	29.8	63 37.8	45.2	Atria	108 19.5 S	68 59.9	
	20	266 06.3	86 35.3	06.3	154 07.8	42.8	77 24.0	29.9	78 40.0	45.3	Avior	234 28.5 S	59 26.9	
	21	281 08.8	101 35.0	05.0	169 08.5	42.6	92 26.0	30.1	93 42.3	45.4	Bellatrix	278 58.2 N	6 20.0	
	22	296 11.3	116 34.8	03.7	184 09.2	42.4	107 28.1	30.3	108 44.5	45.5	Betelgeuse	271 27.8 N	7 24.3	
23	311 13.7	131 34.6	02.5	199 10.0	42.2	122 30.1	30.5	123 46.7	45.6					
18 T U E S D A Y	00	326 16.2	146 34.3 N	1 01.2	214 10.7 N	22 42.0	137 32.2 S	2 30.7	138 49.0 S	0 45.7	Canopus	264 07.3 S	52 40.9	
	01	341 18.7	161 34.1	0 59.9	229 11.4	41.7	152 34.2	30.9	153 51.2	45.8	Capella	281 10.6 N	45 58.6	
	02	356 21.1	176 33.9	58.6	244 12.1	41.5	167 36.3	31.1	168 53.4	45.9	Deneb	49 47.6 N	45 13.0	
	03	11 23.6	191 33.7	57.3	259 12.8	41.3	182 38.3	31.2	183 55.7	46.0	Denebola	182 58.7 N	14 40.7	
	04	26 26.0	206 33.4	56.0	274 13.6	41.1	197 40.4	31.4	198 57.9	46.1	Diphda	349 20.0 S	18 05.2	
	05	41 28.5	221 33.2	54.7	289 14.3	40.9	212 42.4	31.6	214 00.1	46.2				
	06	56 31.0	236 33.0 N	0 53.4	304 15.0 N	22 40.7	227 44.5 S	2 31.8	229 02.4 S	0 46.3	Dubhe	194 22.0 N	61 51.3	
	07	71 33.4	251 32.7	52.1	319 15.7	40.4	242 46.5	32.0	244 04.6	46.4	Elnath	278 43.5 N	28 35.5	
	08	86 35.9	266 32.5	50.9	334 16.4	40.2	257 48.6	32.2	259 06.8	46.5	Eltanin	90 57.1 N	51 29.8	
	09	101 38.4	281 32.3	49.6	349 17.2	40.0	272 50.6	32.3	274 09.1	46.6	Enif	34 10.6 N	9 47.5	
	10	116 40.8	296 32.1	48.3	4 17.9	39.8	287 52.7	32.5	289 11.3	46.7	Fomalhaut	15 50.4 S	29 43.1	
	11	131 43.3	311 31.8	47.0	19 18.6	39.6	302 54.7	32.7	304 13.5	46.8				
	12	146 45.8	326 31.6 N	0 45.7	34 19.3 N	22 39.3	317 56.7 S	2 32.9	319 15.8 S	0 46.9	Gacrux	172 28.5 S	57 00.7	
	13	161 48.2	341 31.4	44.4	49 20.0	39.1	332 58.8	33.1	334 18.0	47.0	Gienah	176 17.6 S	17 26.3	
	14	176 50.7	356 31.2	43.1	64 20.8	38.9	348 00.8	33.3	349 20.2	47.1	Hadar	149 22.7 S	60 17.2	
	15	191 53.1	11 30.9	41.8	79 21.5	38.7	3 02.9	33.4	4 22.5	47.3	Hamal	328 28.1 N	23 22.4	
	16	206 55.6	26 30.7	40.5	94 22.2	38.5	18 04.9	33.6	19 24.7	47.4	Kaus Aust.	84 15.7 S	34 23.7	
	17	221 58.1	41 30.5	39.3	109 22.9	38.2	33 07.0	33.8	34 26.9	47.5				
	18	237 00.5	56 30.3 N	0 38.0	124 23.7 N	22 38.0	48 09.0 S	2 34.0	49 29.1 S	0 47.6	Kochab	137 19.2 N	74 14.3	
	19	252 03.0	71 30.0	36.7	139 24.4	37.8	63 11.1	34.2	64 31.4	47.7	Markab	14 02.2 N	15 06.4	
	20	267 05.5	86 29.8	35.4	154 25.1	37.6	78 13.1	34.4	79 33.6	47.8	Menkar	314 40.4 N	4 01.1	
	21	282 07.9	101 29.6	34.1	169 25.8	37.3	93 15.2	34.6	94 35.8	47.9	Menkent	148 36.4 S	36 16.8	
	22	297 10.4	116 29.4	32.8	184 26.5	37.1	108 17.2	34.7	109 38.1	48.0	Miaplacidus	221 45.7 S	69 38.4	
23	312 12.9	131 29.1	31.5	199 27.3	36.9	123 19.2	34.9	124 40.3	48.1					
19 W E D N E S D A Y	00	327 15.3	146 28.9 N	0 30.2	214 28.0 N	22 36.7	138 21.3 S	2 35.1	139 42.5 S	0 48.2	Mirfak	309 15.2 N	49 47.5	
	01	342 17.8	161 28.7	28.9	229 28.7	36.4	153 23.3	35.3	154 44.8	48.3	Nunki	76 28.1 S	26 19.2	
	02	357 20.3	176 28.5	27.7	244 29.4	36.2	168 25.4	35.5	169 47.0	48.4	Peacock	53 56.8 S	56 47.7	
	03	12 22.7	191 28.2	26.4	259 30.2	36.0	183 27.4	35.7	184 49.2	48.5	Pollux	243 57.7 N	28 04.3	
	04	27 25.2	206 28.0	25.1	274 30.9	35.8	198 29.5	35.8	199 51.5	48.6	Procyon	245 25.4 N	5 16.4	
	05	42 27.6	221 27.8	23.8	289 31.6	35.5	213 31.5	36.0	214 53.7	48.7				
	06	57 30.1	236 27.6 N	0 22.5	304 32.3 N	22 35.3	228 33.6 S	2 36.2	229 55.9 S	0 48.8	Rasalhague	96 28.8 N	12 34.6	
	07	72 32.6	251 27.3	21.2	319 33.1	35.1	243 35.6	36.4	244 58.2	48.9	Regulus	208 09.7 N	12 03.6	
	08	87 35.0	266 27.1	19.9	334 33.8	34.9	258 37.6	36.6	260 00.4	49.0	Rigel	281 35.5 S	8 13.3	
	09	102 37.5	281 26.9	18.6	349 34.5	34.6	273 39.7	36.8	275 02.6	49.2	Rigel Kent.	140 25.1 S	60 45.6	
	10	117 40.0	296 26.7	17.3	4 35.2	34.4	288 41.7	37.0	290 04.8	49.3	Sabik	102 40.3 S	15 42.1	
	11	132 42.4	311 26.4	16.0	19 36.0	34.2	303 43.8	37.1	305 07.1	49.4				
	12	147 44.9	326 26.2 N	0 14.8	34 36.7 N	22 34.0	318 45.8 S	2 37.3	320 09.3 S	0 49.5	Schedar	350 07.9 N	56 26.0	
	13	162 47.4	341 26.0	13.5	49 37.4	33.7	333 47.9	37.5	335 11.5	49.6	Shaula	96 54.7 S	37 05.5	
	14	177 49.8	356 25.8	12.2	64 38.2	33.5	348 49.9	37.7	350 13.8	49.7	Sirius	258 55.4 S	16 41.3	
	15	192 52.3	11 25.5	10.9	79 38.9	33.3	3 52.0	37.9	5 16.0	49.8	Spica	158 57.0 S	11 03.8	
	16	207 54.8	26 25.3	09.6	94 39.6	33.0	18 54.0	38.1	20 18.2	49.9	Suhail	223 10.8 S	43 21.3	
	17	222 57.2	41 25.1	08.3	109 40.3	32.8	33 56.0	38.3	35 20.5	50.0				
	18	237 59.7	56 24.9 N	0 07.0	124 41.1 N	22 32.6	48 58.1 S	2 38.4	50 22.7 S	0 50.1	Vega	80 55.1 N	38 46.2	
	19	253 02.1	71 24.6	05.7	139 41.8	32.4	64 00.1	38.6	65 24.9	50.2	Zuben'ubi	137 32.4 S	15 57.8	
	20	268 04.6	86 24.4	04.4	154 42.5	32.1	79 02.2	38.8	80 27.1	50.3				
	21	283 07.1	101 24.2	03.1	169 43.2	31.9	94 04.2	39.0	95 29.4	50.4				
	22	298 09.5	116 24.0	01.9	184 44.0	31.7	109 06.3	39.2	110 31.6	50.5	Venus	180 18.2 S	14 14	
23	313 12.0	131 23.8	00.6	199 44.7	31.4	124 08.3	39.4	125 33.8	50.6	Mars	247 54.5 S	9 43		
										Jupiter	171 16.0 S	14 48		
										Saturn	172 32.8 S	14 43		

Mer. Pass. 2 14.6

v -0.2 d 1.3

v 0.7 d 0.2

v 2.0 d 0.2

v 2.2 d 0.1

S.H.A. Mer. Pass. h m

Venus 180 18.2 14 14

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise										
	G.H.A.	Dec.	G.H.A.	v	Dec.	d		H.P.	Naut.		Civil	17		18		19		20			
									h m		h m	h m	h m	h m	h m	h m	h m	h m	h m		
17 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	178	58.4	N13	31.3	342	03.7	10.3	S10	41.3	10.8	58.1	N 72	////	////	02 43	21 21	21 07	20 53	20 38		
	193	58.5		30.5	356	33.0	10.4	10	30.5	10.9	58.2	N 70	////	01 11	03 11	21 11	21 04	20 57	20 49		
	208	58.6		29.7	11	02.4	10.3	10	19.6	11.0	58.2	N 68	////	02 04	03 31	21 04	21 02	21 00	20 59		
	223	58.8		29.0	25	31.7	10.4	10	08.6	11.0	58.2	N 66	////	02 35	03 47	20 57	21 00	21 03	21 07		
	238	58.9		28.2	40	01.1	10.4	9	57.6	11.1	58.2	N 64	01 02	02 58	04 00	20 51	20 59	21 06	21 14		
	253	59.0		27.4	54	30.5	10.4	9	46.5	11.1	58.2	N 62	01 50	03 16	04 11	20 47	20 57	21 08	21 19		
	268	59.2	N13	26.6	68	59.9	10.4	S	9	35.4	11.2	58.3	N 60	02 18	03 31	04 21	20 42	20 56	21 10	21 25	
	283	59.3		25.8	83	29.3	10.5	9	24.2	11.3	58.3	N 58	02 40	03 43	04 29	20 39	20 55	21 12	21 29		
	298	59.4		25.0	97	58.8	10.4	9	12.9	11.3	58.3	N 56	02 57	03 54	04 36	20 35	20 54	21 13	21 33		
	313	59.6		24.2	112	28.2	10.5	9	01.6	11.4	58.3	N 54	03 11	04 03	04 43	20 32	20 54	21 15	21 37		
	328	59.7		23.4	126	57.7	10.5	8	50.2	11.4	58.3	N 52	03 23	04 11	04 48	20 29	20 53	21 16	21 40		
	343	59.8		22.6	141	27.2	10.5	8	38.8	11.5	58.4	N 50	03 33	04 18	04 54	20 27	20 52	21 17	21 43		
	359	00.0	N13	21.8	155	56.7	10.5	S	8	27.3	11.6	58.4	N 45	03 54	04 33	05 05	20 21	20 51	21 20	21 50	
	14	14	00.1	21.0	170	26.2	10.5	8	15.7	11.6	58.4	N 40	04 11	04 45	05 14	20 17	20 49	21 22	21 55		
	15	29	00.3	20.2	184	55.7	10.5	8	04.1	11.6	58.4	N 35	04 23	04 55	05 22	20 13	20 48	21 24	22 00		
	16	44	00.4	19.4	199	25.2	10.6	7	52.5	11.7	58.4	N 30	04 34	05 04	05 29	20 09	20 47	21 25	22 04		
	17	59	00.5	18.6	213	54.8	10.6	7	40.8	11.7	58.5	N 20	04 51	05 18	05 41	20 03	20 46	21 28	22 12		
	18	74	00.7	17.8	228	24.4	10.5	7	29.1	11.8	58.5	N 10	05 04	05 29	05 51	19 58	20 44	21 31	22 18		
	19	89	00.8	N13	17.0	242	53.9	10.6	S	7	17.3	11.9	58.5	0	05 15	05 39	06 00	19 53	20 43	21 33	22 25
	20	104	00.9		16.2	257	23.5	10.6	7	05.4	11.9	58.5	S 10	05 23	05 48	06 10	19 48	20 42	21 36	22 31	
	21	119	01.1		15.4	271	53.1	10.6	6	53.5	11.9	58.5	20	05 31	05 57	06 20	19 42	20 40	21 39	22 38	
	22	134	01.2		14.6	286	22.7	10.6	6	41.6	11.9	58.5	30	05 38	06 06	06 31	19 36	20 39	21 42	22 46	
	23	149	01.3		13.7	300	52.3	10.6	6	29.7	12.1	58.6	35	05 41	06 11	06 37	19 33	20 38	21 44	22 50	
18	164	01.5		12.9	315	21.9	10.7	6	17.6	12.0	58.6	40	05 45	06 17	06 44	19 29	20 37	21 46	22 55		
19	179	01.6	N13	12.1	329	51.6	10.6	S	6	05.6	12.1	58.6	45	05 48	06 22	06 53	19 24	20 36	21 48	23 01	
01	194	01.8		11.3	344	21.2	10.7	5	53.5	12.1	58.6	S 50	05 51	06 29	07 03	19 18	20 34	21 51	23 08		
02	209	01.9		10.5	358	50.9	10.6	5	41.4	12.2	58.6	52	05 53	06 32	07 07	19 16	20 34	21 52	23 12		
03	224	02.0		09.7	13	20.5	10.7	5	29.2	12.2	58.6	54	05 54	06 36	07 12	19 13	20 33	21 54	23 15		
04	239	02.2		08.9	27	50.2	10.6	5	17.0	12.2	58.7	56	05 56	06 39	07 18	19 09	20 32	21 56	23 20		
05	254	02.3		08.1	42	19.8	10.7	5	04.8	12.3	58.7	58	05 57	06 43	07 24	19 06	20 31	21 57	23 24		
06	269	02.4	N13	07.3	56	49.5	10.7	S	4	52.5	12.3	58.7	S 60	05 59	06 47	07 31	19 02	20 30	21 59	23 29	
07	284	02.6		06.5	71	19.2	10.7	4	40.2	12.3	58.7										
08	299	02.7		05.7	85	48.9	10.7	4	27.9	12.4	58.7	Lat.	Sunset	Twilight		Moonset					
09	314	02.9		04.9	100	18.6	10.7	4	15.5	12.4	58.7			Civil	Naut.	17	18	19	20		
10	329	03.0		04.1	114	48.3	10.7	4	03.1	12.4	58.7					h m	h m	h m	h m		
11	344	03.1		03.3	129	18.0	10.7	3	50.7	12.4	58.8	N 72	21 19	////	////	05 13	07 16	09 16	11 18		
12	359	03.3	N13	02.5	143	47.7	10.7	S	3	38.3	12.5	58.8	N 70	20 53	22 46	////	05 29	07 23	09 15	11 09	
13	14	03.4		01.7	158	17.4	10.7	3	25.8	12.5	58.8	N 68	20 33	21 58	////	05 42	07 28	09 14	11 01		
14	29	03.6		00.8	172	47.1	10.7	3	13.3	12.5	58.8	N 66	20 18	21 28	////	05 53	07 33	09 14	10 55		
15	44	03.7	13	00.0	187	16.8	10.7	3	00.8	12.5	58.8	N 64	20 05	21 06	22 55	06 02	07 37	09 13	10 50		
16	59	03.8	12	59.2	201	46.5	10.6	2	48.3	12.6	58.8	N 62	19 54	20 49	22 13	06 09	07 41	09 13	10 46		
17	74	04.0		58.4	216	16.1	10.7	2	35.7	12.6	58.8	N 60	19 45	20 35	21 45	06 16	07 44	09 12	10 42		
18	89	04.1	N12	57.6	230	45.8	10.7	S	2	23.1	12.6	58.9	N 58	19 37	20 23	21 25	06 21	07 46	09 12	10 38	
19	104	04.3		56.8	245	15.5	10.7	2	10.5	12.6	58.9	N 56	19 30	20 12	21 08	06 26	07 48	09 11	10 35		
20	119	04.4		56.0	259	45.2	10.7	1	57.9	12.6	58.9	N 54	19 24	20 03	20 55	06 31	07 51	09 11	10 32		
21	134	04.5		55.2	274	14.9	10.7	1	45.3	12.6	58.9	N 52	19 18	19 55	20 43	06 35	07 52	09 11	10 30		
22	149	04.7		54.4	288	44.6	10.7	1	32.7	12.7	58.9	N 50	19 13	19 48	20 33	06 39	07 54	09 11	10 28		
23	164	04.8		53.5	303	14.3	10.7	1	20.0	12.6	58.9	N 45	19 02	19 33	20 12	06 46	07 58	09 10	10 23		
19	179	05.0	N12	52.7	317	44.0	10.6	S	1	07.4	12.7	58.9	N 40	18 53	19 21	19 56	06 53	08 01	09 10	10 19	
01	194	05.1		51.9	332	13.6	10.7	0	54.7	12.7	58.9	N 35	18 45	19 12	19 43	06 59	08 04	09 09	10 15		
02	209	05.3		51.1	346	43.3	10.6	0	42.0	12.7	59.0	N 30	18 38	19 03	19 33	07 04	08 06	09 09	10 12		
03	224	05.4		50.3	1	12.9	10.7	0	29.3	12.7	59.0	N 20	18 27	18 49	19 16	07 12	08 10	09 08	10 07		
04	239	05.5		49.5	15	42.6	10.6	0	16.6	12.7	59.0	N 10	18 17	18 38	19 03	07 19	08 13	09 08	10 02		
05	254	05.7		48.7	30	12.2	10.7	S	0	03.9	12.7	59.0	0	18 07	18 28	18 53	07 26	08 17	09 07	09 58	
06	269	05.8	N12	47.8	44	41.9	10.6	N	0	08.8	12.7	59.0	S 10	17 58	18 19	18 44	07 33	08 20	09 06	09 53	
07	284	06.0		47.0	59	11.5	10.6	0	21.5	12.7	59.0	N 20	17 48	18 11	18 37	07 40	08 23	09 06	09 49		
08	299	06.1		46.2	73	41.1	10.6	0	34.2	12.7	59.0	N 30	17 37	18 02	18 30	07 49	08 27	09 05	09 43		
09	314	06.3		45.4	88	10.7	10.6	0	46.9	12.8	59.0	N 35	17 31	17 57	18 27	07 53	08 29	09 04	09 40		
10	329	06.4		44.6	102	40.3	10.5	0	59.7	12.7	59.0	N 40	17 24	17 52	18 23	07 59	08 32	09 04	09 37		
11	344	06.5		43.8	117	09.8	10.6	1	12.4	12.7	59.0	N 45	17 15	17 46	18 20	08 05	08 35	09 03	09 33		
12	359	06.7	N12	42.9	131	39.4	10.5	N	1	25.1	12.7	59.1	S 50	17 06	17 39	18 17	08 17	08 38	09 03	09 28	
13	14	06.8		42.1	146	08.9	10.6	1	37.8	12.7	59.1	N 52	17 01	17 36	18 16	08 15	08 39	09 02	09 26		
14	29	07.0		41.3	160	38.5	10.5	1	50.5	12.7	59.1	N 54	16 56	17 33	18 14	08 19	08 41	09 02	09 23		
1																					

G.M.T.	ARIES			VENUS +3.4			MARS +1.8			JUPITER -1.3			SATURN +1.2			STARS			
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.	
20 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	328 14.5	146 23.5	S 0 00.7	214 45.4	N22 31.2		139 10.3	S 2 39.6		140 36.1	S 0 50.7		Acamar	315 36.7	S40 22.5				
	343 16.9	161 23.3	02.0	229 46.2	31.0		154 12.4	39.7		155 38.3	50.8		Achernar	335 44.5	S57 19.6				
	358 19.4	176 23.1	03.3	244 46.9	30.7		169 14.4	39.9		170 40.5	51.0		Acrux	173 37.1	S62 59.9				
	13 21.9	191 22.9	04.6	259 47.6	30.5		184 16.5	40.1		185 42.8	51.1		Adhara	255 31.9	S28 56.6				
	28 24.3	206 22.6	05.9	274 48.3	30.3		199 18.5	40.3		200 45.0	51.2		Aldebaran	291 17.3	N16 28.3				
	43 26.8	221 22.4	07.2	289 49.1	30.0		214 20.5	40.5		215 47.2	51.3								
	58 29.2	236 22.2	S 0 08.5	304 49.8	N22 29.8		229 22.6	S 2 40.7		230 49.4	S 0 51.4		Alioth	166 42.3	N56 03.9				
	73 31.7	251 22.0	09.8	319 50.5	29.6		244 24.6	40.9		245 51.7	51.5		Alkaid	153 18.2	N49 24.7				
	88 34.2	266 21.8	11.1	334 51.3	29.3		259 26.7	41.0		260 53.9	51.6		Al Na'ir	28 13.7	S47 03.0				
	103 36.6	281 21.5	12.3	349 52.0	29.1		274 28.7	41.2		275 56.1	51.7		Alnilam	276 11.2	S 1 12.7				
	118 39.1	296 21.3	13.6	4 52.7	28.9		289 30.7	41.4		290 58.4	51.8		Alphard	218 20.3	S 8 34.6				
	133 41.6	311 21.1	14.9	19 53.5	28.6		304 32.8	41.6		306 00.6	51.9								
	148 44.0	326 20.9	S 0 16.2	34 54.2	N22 28.4		319 34.8	S 2 41.8		321 02.8	S 0 52.0		Alphecca	126 31.6	N26 46.9				
	163 46.5	341 20.6	17.5	49 54.9	28.2		334 36.9	42.0		336 05.0	52.1		Alpheratz	358 08.4	N28 59.3				
	178 49.0	356 20.4	18.8	64 55.7	27.9		349 38.9	42.2		351 07.3	52.2		Altair	62 31.6	N 8 49.3				
	193 51.4	11 20.2	20.1	79 56.4	27.7		4 41.0	42.4		6 09.5	52.3		Ankaa	353 39.3	S42 24.2				
	208 53.9	26 20.0	21.4	94 57.1	27.5		19 43.0	42.5		21 11.7	52.4		Antares	112 56.0	S26 23.5				
	223 56.4	41 19.8	22.7	109 57.8	27.2		34 45.0	42.7		36 14.0	52.6								
	238 58.8	56 19.5	S 0 24.0	124 58.6	N22 27.0		49 47.1	S 2 42.9		51 16.2	S 0 52.7		Arcturus	146 18.0	N19 17.0				
	254 01.3	71 19.3	25.3	139 59.3	26.8		64 49.1	43.1		66 18.4	52.8		Atria	108 19.5	S68 59.9				
	269 03.7	86 19.0	26.5	155 00.0	26.5		79 51.2	43.3		81 20.6	52.9		Avior	234 28.5	S59 26.9				
	284 06.2	101 18.9	27.8	170 00.8	26.3		94 53.2	43.5		96 22.9	53.0		Bellatrix	278 58.2	N 6 20.0				
	299 08.7	116 18.7	29.1	185 01.5	26.0		109 55.2	43.7		111 25.1	53.1		Betelgeuse	271 27.8	N 7 24.3				
314 11.1	131 18.4	30.4	200 02.2	25.8		124 57.3	43.8		126 27.3	53.2									
21 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	329 13.6	146 18.2	S 0 31.7	215 03.0	N22 25.6		139 59.3	S 2 44.0		141 29.6	S 0 53.3		Canopus	264 07.3	S52 40.9				
	344 16.1	161 18.0	33.0	230 03.7	25.3		155 01.3	44.2		156 31.8	53.4		Capella	281 10.5	N45 58.6				
	359 18.5	176 17.8	34.3	245 04.4	25.1		170 03.4	44.4		171 34.0	53.5		Deneb	49 47.6	N45 13.0				
	14 21.0	191 17.6	35.6	260 05.2	24.9		185 05.4	44.6		186 36.2	53.6		Denebola	182 58.7	N14 40.7				
	29 23.5	206 17.3	36.9	275 05.9	24.6		200 07.5	44.8		201 38.5	53.7		Diphda	349 20.0	S18 05.2				
	44 25.9	221 17.1	38.2	290 06.6	24.4		215 09.5	45.0		216 40.7	53.8								
	59 28.4	236 16.9	S 0 39.5	305 07.4	N22 24.1		230 11.5	S 2 45.2		231 42.9	S 0 53.9		Dubhe	194 22.0	N61 51.2				
	74 30.9	251 16.7	40.7	320 08.1	23.9		245 13.6	45.3		246 45.1	54.0		Elnath	278 43.5	N28 35.5				
	89 33.3	266 16.5	42.0	335 08.8	23.7		260 15.6	45.5		261 47.4	54.2		Eltanin	90 57.2	N51 29.8				
	104 35.8	281 16.2	43.3	350 09.6	23.4		275 17.7	45.7		276 49.6	54.3		Enif	34 10.6	N 9 47.5				
	119 38.2	296 16.0	44.6	5 10.3	23.2		290 19.7	45.9		291 51.8	54.4		Fomalhaut	15 50.3	S29 43.1				
	134 40.7	311 15.8	45.9	20 11.1	22.9		305 21.7	46.1		306 54.0	54.5								
	149 43.2	326 15.6	S 0 47.2	35 11.8	N22 22.7		320 23.8	S 2 46.3		321 56.3	S 0 54.6		Gacrux	172 28.5	S57 00.6				
	164 45.6	341 15.4	48.5	50 12.5	22.4		335 25.8	46.5		336 58.5	54.7		Gienah	176 17.6	S17 26.3				
	179 48.1	356 15.1	49.8	65 13.3	22.2		350 27.8	46.7		352 00.7	54.8		Hadar	149 22.7	S60 17.2				
	194 50.6	11 14.9	51.1	80 14.0	22.0		5 29.9	46.8		7 03.0	54.9		Hamal	328 28.1	N23 22.4				
	209 53.0	26 14.7	52.4	95 14.7	21.7		20 31.9	47.0		22 05.2	55.0		Kaus Aust.	84 15.7	S34 23.7				
	224 55.5	41 14.5	53.7	110 15.5	21.5		35 34.0	47.2		37 07.4	55.1								
	239 58.0	56 14.3	S 0 55.0	125 16.2	N22 21.2		50 36.0	S 2 47.4		52 09.6	S 0 55.2		Kochab	137 19.3	N74 14.3				
	255 00.4	71 14.0	56.2	140 16.9	21.0		65 38.0	47.6		67 11.9	55.3		Markab	14 02.2	N15 06.4				
	270 02.9	86 13.8	57.5	155 17.7	20.8		80 40.1	47.8		82 14.1	55.4		Menkar	314 40.4	N 4 01.1				
	285 05.3	101 13.6	0 58.8	170 18.4	20.5		95 42.1	48.0		97 16.3	55.5		Menkent	148 36.4	S36 16.8				
	300 07.8	116 13.4	1 00.1	185 19.2	20.3		110 44.1	48.2		112 18.5	55.7		Miaplacidus	221 45.7	S69 38.4				
315 10.3	131 13.2	01.4	200 19.9	20.0		125 46.2	48.3		127 20.8	55.8									
22 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	330 12.7	146 12.9	S 1 02.7	215 20.6	N22 19.8		140 48.2	S 2 48.5		142 23.0	S 0 55.9		Mirfak	309 15.1	N49 47.5				
	345 15.2	161 12.7	04.0	230 21.4	19.5		155 50.3	48.7		157 25.2	56.0		Nunki	76 28.1	S26 19.2				
	0 17.7	176 12.5	05.3	245 22.1	19.3		170 52.3	48.9		172 27.4	56.1		Peacock	53 56.8	S56 47.7				
	15 20.1	191 12.3	06.6	260 22.8	19.0		185 54.3	49.1		187 29.7	56.2		Pollux	243 57.7	N28 04.3				
	30 22.6	206 12.1	07.9	275 23.6	18.8		200 56.4	49.3		202 31.9	56.3		Procyon	245 25.4	N 5 16.4				
	45 25.1	221 11.9	09.2	290 24.3	18.5		215 58.4	49.5		217 34.1	56.4								
	60 27.5	236 11.6	S 1 10.5	305 25.1	N22 18.3		231 00.4	S 2 49.7		232 36.3	S 0 56.5		Rasalhague	96 28.8	N12 34.6				
	75 30.0	251 11.4	11.7	320 25.8	18.1		246 02.5	49.8		247 38.6	56.6		Regulus	208 09.7	N12 03.6				
	90 32.5	266 11.2	13.0	335 26.5	17.8		261 04.5	50.0		262 40.8	56.7		Rigel	281 35.5	S 8 13.3				
	105 34.9	281 11.0	14.3	350 27.3	17.6		276 06.5	50.2		277 43.0	56.8		Rigel Kent.	140 25.2	S60 45.6				
	120 37.4	296 10.8	15.6	5 28.0	17.3		291 08.6	50.4		292 45.2	56.9		Sabik	102 40.3	S15 42.1				
	135 39.8	311 10.5	16.9	20 28.8	17.1		306 10.6	50.6		307 47.5	57.1								
	150 42.3	326 10.3	S 1 18.2	35 29.5	N22 16.8		321 12.6	S 2 50.8		322 49.7	S 0 57.2		Schedar	350 07.9	N56 26.0				
	165 44.8	341 10.1	19.5	50 30.2	16.6		336 14.7	51.0		337 51.9	57.3		Shaula	96 54.7	S37 05.5				
	180 47.2	356 09.9	20.8	65 31.0	16.3		351 16.7	51.2		352 54.1	57.4		Sirius	258 55.4	S16 41.3				
	195 49.7	11 09.7	22.1	80 31.7	16.1		6 18.8	51.3		7 56.4	57.5		Spica	158 57.1	S11 03.8				
	210 52.2	26 09.5	23.4	95 32.5	15.8														

G.M.T.	SUN				MOON				Lat.	Twilight		Sunrise	Moonrise			
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.	Naut.		Civil	20		21	22	23	
								h m		h m	h m		h m	h m	h m	h m	h m
20 00	179 08.4	N12 33.1	305 32.8	10.3 N	3 56.8	12.6	59.2	N 72	////	////	03 01	20 38	20 19	19 50	□	
01	194 08.6	32.3	320 02.1	10.3	4 09.4	12.5	59.2	N 70	////	01 43	03 25	20 49	20 41	20 31	20 12	
02	209 08.7	31.5	334 31.4	10.3	4 21.9	12.5	59.2	68	////	02 23	03 43	20 59	20 58	20 59	21 03	
03	224 08.9	30.7	349 00.7	10.2	4 34.4	12.5	59.2	66	////	02 50	03 58	21 07	21 12	21 20	21 35	
04	239 09.0	29.8	3 29.9	10.2	4 46.9	12.5	59.2	64	01 30	03 10	04 09	21 14	21 24	21 38	21 59	
05	254 09.2	29.0	17 59.1	10.2	4 59.4	12.4	59.2	62	02 06	03 26	04 20	21 19	21 33	21 52	22 18	
06	269 09.3	N12 28.2	32 28.3	10.2 N	5 11.8	12.4	59.2	60	02 31	03 39	04 28	21 25	21 42	22 04	22 34	
07	284 09.5	27.4	46 57.5	10.1	5 24.2	12.4	59.2	N 58	02 50	03 51	04 36	21 29	21 49	22 14	22 47	
08	299 09.6	26.5	61 26.6	10.1	5 36.6	12.3	59.2	56	03 05	04 00	04 42	21 33	21 56	22 24	22 59	
T 09	314 09.8	25.7	75 55.7	10.1	5 48.9	12.4	59.2	54	03 18	04 09	04 48	21 37	22 02	22 32	23 09	
H 10	329 09.9	24.9	90 24.8	10.1	6 01.3	12.2	59.2	52	03 29	04 16	04 53	21 40	22 07	22 39	23 18	
U 11	344 10.1	24.1	104 53.9	10.0	6 13.5	12.3	59.2	50	03 39	04 23	04 58	21 43	22 12	22 46	23 26	
S 12	359 10.2	N12 23.2	119 22.9	10.0 N	6 25.8	12.2	59.2	45	03 59	04 37	05 08	21 50	22 23	23 00	23 43	
D 13	14 10.4	22.4	133 51.9	9.9	6 38.0	12.2	59.2	N 40	04 14	04 48	05 17	21 55	22 32	23 12	23 57	
A 14	29 10.5	21.6	148 20.8	10.0	6 50.2	12.1	59.2	35	04 26	04 58	05 24	22 00	22 39	23 22	24 10	
Y 15	44 10.7	20.8	162 49.8	9.9	7 02.3	12.2	59.3	30	04 36	05 06	05 31	22 04	22 46	23 31	24 20	
16	59 10.8	19.9	177 18.7	9.8	7 14.5	12.0	59.3	20	04 52	05 19	05 42	22 12	22 58	23 46	24 38	
17	74 11.0	19.1	191 47.5	9.9	7 26.5	12.0	59.3	N 10	05 04	05 29	05 51	22 18	23 08	24 00	00 00	
18	89 11.1	N12 18.3	206 16.4	9.8 N	7 38.5	12.0	59.3	0	05 14	05 39	06 00	22 25	23 18	24 12	00 12	
19	104 11.3	17.4	220 45.2	9.7	7 50.5	12.0	59.3	S 10	05 22	05 47	06 08	22 31	23 27	24 25	00 25	
20	119 11.4	16.6	235 13.9	9.7	8 02.5	11.9	59.3	20	05 29	05 55	06 17	22 38	23 38	24 39	00 39	
21	134 11.6	15.8	249 42.6	9.7	8 14.4	11.8	59.3	30	05 35	06 03	06 28	22 46	23 50	24 55	00 55	
22	149 11.7	15.0	264 11.3	9.7	8 26.2	11.8	59.3	35	05 38	06 08	06 34	22 50	23 57	25 04	01 04	
23	164 11.9	14.1	278 40.0	9.6	8 38.0	11.8	59.3	40	05 41	06 13	06 40	22 55	24 05	00 05	01 15	
21 00	179 12.0	N12 13.3	293 08.6	9.6 N	8 49.8	11.7	59.3	45	05 44	06 18	06 48	23 01	24 14	00 14	01 27	
01	194 12.2	12.5	307 37.2	9.5	9 01.5	11.6	59.3	S 50	05 46	06 24	06 57	23 08	24 26	00 26	01 42	
02	209 12.3	11.6	322 05.7	9.5	9 13.1	11.6	59.3	52	05 47	06 26	07 01	23 12	24 31	00 31	01 49	
03	224 12.5	10.8	336 34.2	9.5	9 24.7	11.6	59.3	54	05 48	06 29	07 06	23 15	24 37	00 37	01 57	
04	239 12.6	10.0	351 02.7	9.4	9 36.3	11.4	59.3	56	05 49	06 32	07 11	23 20	24 44	00 44	02 06	
05	254 12.8	09.2	5 31.1	9.4	9 47.7	11.5	59.3	58	05 50	06 36	07 17	23 24	24 51	00 51	02 16	
06	269 12.9	N12 08.3	19 59.5	9.3 N	9 59.2	11.4	59.3	S 60	05 51	06 40	07 23	23 29	24 59	00 59	02 28	
07	284 13.1	07.5	34 27.8	9.3	10 10.6	11.3	59.3									
08	299 13.3	06.7	48 56.1	9.3	10 21.9	11.2	59.3	Lat.	Sunset	Twilight		Moonset				
09	314 13.4	05.8	63 24.4	9.2	10 33.1	11.2	59.3			Civil	Naut.	20	21	22	23	
F 10	329 13.6	05.0	77 52.6	9.1	10 44.3	11.2	59.3									
R 11	344 13.7	04.2	92 20.7	9.2	10 55.5	11.0	59.3	N 72	21 00	23 38	////	11 18	13 26	15 50	□	
D 12	359 13.9	N12 03.3	106 48.9	9.0 N11	10.6	11.0	59.3	N 70	20 37	22 15	////	11 09	13 06	15 10	17 26	
A 13	14 14.0	02.5	121 16.9	9.1	11 17.5	11.0	59.3	68	20 20	21 38	////	11 01	12 51	14 43	16 36	
Y 14	29 14.2	01.7	135 45.0	9.0	11 28.5	10.9	59.3	66	20 06	21 13	23 41	10 55	12 38	14 22	16 04	
15	44 14.3	00.8	150 13.0	8.9	11 39.4	10.8	59.3	64	19 55	20 53	22 29	10 50	12 28	14 06	15 41	
16	59 14.5	12 00.0	164 40.9	8.9	11 50.2	10.7	59.3	62	19 45	20 38	21 56	10 46	12 19	13 52	15 22	
17	74 14.6	11 59.2	179 08.8	8.9	12 00.9	10.7	59.3	60	19 36	20 25	21 32	10 42	12 12	13 41	15 07	
18	89 14.8	N11 58.3	193 36.7	8.8 N12	11.6	10.6	59.3	N 58	19 29	20 14	21 14	10 38	12 05	13 31	14 54	
19	104 15.0	57.5	208 04.5	8.8	12 22.2	10.5	59.3	56	19 23	20 04	20 59	10 35	11 59	13 23	14 43	
20	119 15.1	56.6	222 32.3	8.7	12 32.7	10.4	59.3	54	19 17	19 56	20 46	10 32	11 54	13 15	14 33	
21	134 15.3	55.8	237 00.0	8.7	12 43.1	10.4	59.3	52	19 12	19 49	20 35	10 30	11 49	13 08	14 25	
22	149 15.4	55.0	251 27.7	8.6	12 53.5	10.3	59.3	50	19 07	19 42	20 26	10 28	11 45	13 02	14 17	
23	164 15.6	54.1	265 55.3	8.6	13 03.8	10.2	59.3	45	18 57	19 28	20 06	10 23	11 36	12 49	14 00	
22 00	179 15.7	N11 53.3	280 22.9	8.5 N13	14.0	10.1	59.3	N 40	18 48	19 17	19 51	10 19	11 28	12 38	13 47	
01	194 15.9	52.5	294 50.4	8.5	13 24.1	10.1	59.3	35	18 41	19 08	19 39	10 15	11 22	12 29	13 35	
02	209 16.0	51.6	309 17.9	8.4	13 34.2	10.0	59.3	30	18 35	19 00	19 29	10 12	11 16	12 21	13 25	
03	224 16.2	50.8	323 45.3	8.4	13 44.2	9.9	59.3	20	18 24	18 47	19 14	10 07	11 06	12 07	13 08	
04	239 16.4	49.9	338 12.7	8.4	13 54.1	9.8	59.3	N 10	18 15	18 37	19 02	10 02	10 58	11 55	12 53	
05	254 16.5	49.1	352 40.1	8.3	14 03.9	9.7	59.3	0	18 06	18 28	18 52	09 58	10 50	11 43	12 39	
06	269 16.7	N11 48.3	7 07.4	8.2 N14	13.6	9.6	59.3	S 10	17 58	18 19	18 44	09 53	10 42	11 32	12 25	
07	284 16.8	47.4	21 34.6	8.2	14 23.2	9.6	59.3	20	17 49	18 11	18 37	09 49	10 33	11 20	12 10	
08	299 17.0	46.6	36 01.8	8.1	14 32.8	9.4	59.3	30	17 39	18 03	18 31	09 43	10 23	11 06	11 53	
A 09	314 17.2	45.7	50 28.9	8.1	14 42.2	9.4	59.3	35	17 33	17 59	18 29	09 40	10 18	10 58	11 43	
T 10	329 17.3	44.9	64 56.0	8.1	14 51.6	9.3	59.3	40	17 27	17 54	18 26	09 37	10 11	10 49	11 32	
U 11	344 17.5	44.1	79 23.1	8.0	15 00.9	9.1	59.3	45	17 19	17 49	18 23	09 33	10 04	10 39	11 19	
R 12	359 17.6	N11 43.2	93 50.1	8.0 N15	10.0	9.1	59.3	S 50	17 10	17 43	18 21	09 28	09 55	10 26	11 03	
D 13	14 17.8	42.4	108 17.1	7.9	15 19.1	9.0	59.3	52	17 06	17 41	18 20	09 26	09 51	10 20	10 55	
A 14	29 17.9	41.5	122 44.0	7.8	15 28.1	8.9	59.3	54	17 01	17 38	18 19	09 23	09 47	10 14	10 47	
Y 15	44 18.1	40.7	137 10.8	7.8	15 37.0	8.8	59.3	56	16 56	17 35	18 18	09 21	09 42	10 07	10 37	
16	59 18.3	39.9	151 37.6	7.8	15 45.8	8.8	59.3	58	16 50	17 31	18 17	09 18	09 36	09 58	10 27	
17	74 18.4	39.0	166 04.4	7.7	15 54.6	8.6	59.3	S 60	16 44	17 28	18 16	09 15	09 30	09 49	10 15	
18	89 18.6	N11 38.2	180 31.1	7.7 N16	10.3	8.5	59.3									
19	104 18.7	37.3	194 57.8	7.6	16 11.7	8.4	59.3	Day	SUN			MOON				

G.M.T.	ARIES			VENUS -3.4			MARS +1.8			JUPITER -1.3			SATURN +1.2			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
23 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	331 11.9	146 07.7	S 1 33.7	215 38.4	N22 13.8		141 37.1	S 2 53.0		143 16.4	S 0 58.5		Acamar	315 36.6	S40 22.5			
	346 14.3	161 07.5	35.0	230 39.1	13.6		156 39.1	53.2		158 18.6	58.6		Achernar	335 44.4	S57 19.6			
	1 16.8	176 07.3	36.3	245 39.9	13.3		171 41.1	53.4		173 20.8	58.7		Acrux	173 37.1	S62 59.9			
	16 19.3	191 07.1	37.6	260 40.6	13.1		186 43.2	53.6		188 23.0	58.8		Adhara	255 31.9	S28 56.6			
	31 21.7	206 06.8	38.9	275 41.4	12.8		201 45.2	53.8		203 25.3	58.9		Aldebaran	291 17.3	N16 28.3			
	46 24.2	221 06.6	40.2	290 42.1	12.6		216 47.2	54.0		218 27.5	59.0							
	61 26.7	236 06.4	S 1 41.4	305 42.9	N22 12.3		231 49.3	S 2 54.2		233 29.7	S 0 59.1		Alioth	166 42.3	N56 03.9			
	76 29.1	251 06.2	42.7	320 43.6	12.1		246 51.3	54.4		248 31.9	59.2		Alkaid	153 18.2	N49 24.7			
	91 31.6	266 06.0	44.0	335 44.3	11.8		261 53.3	54.6		263 34.2	59.3		Al Na'ir	28 13.6	S47 03.0			
	106 34.1	281 05.8	45.3	350 45.1	11.5		276 55.4	54.7		278 36.4	59.4		Alnilam	276 11.1	S 1 12.7			
	121 36.5	296 05.5	46.6	5 45.8	11.3		291 57.4	54.9		293 38.6	59.5		Alphard	218 20.3	S 8 34.6			
	136 39.0	311 05.3	47.9	20 46.6	11.0		306 59.4	55.1		308 40.8	59.7							
	151 41.5	326 05.1	S 1 49.2	35 47.3	N22 10.8		322 01.5	S 2 55.3		323 43.1	S 0 59.8		Alphecca	126 31.6	N26 46.9			
	166 43.9	341 04.9	50.5	50 48.1	10.5		337 03.5	55.5		338 45.3	0 59.9		Alpheratz	358 08.3	N28 59.3			
	181 46.4	356 04.7	51.8	65 48.8	10.3		352 05.5	55.7		353 47.5	1 00.0		Altair	62 31.6	N 8 49.3			
	196 48.8	11 04.4	53.1	80 49.6	10.0		7 07.6	55.9		8 49.7	00.1		Ankaa	353 39.2	S47 24.1			
	211 51.3	26 04.2	54.4	95 50.3	09.8		22 09.6	56.1		23 51.9	00.2		Antares	112 56.0	S26 23.5			
	226 53.8	41 04.0	55.6	110 51.0	09.5		37 11.6	56.3		38 54.2	00.3							
	241 56.2	56 03.8	S 1 56.9	125 51.8	N22 09.2		52 13.7	S 2 56.5		53 56.4	S 1 00.4		Arcturus	146 18.0	N19 17.0			
	256 58.7	71 03.6	58.2	140 52.5	09.0		67 15.7	56.6		68 58.6	00.5		Atria	108 19.5	S68 59.9			
	272 01.2	86 03.4	1 59.5	155 53.3	08.7		82 17.7	56.8		84 00.8	00.6		Avior	234 28.5	S59 26.8			
	287 03.6	101 03.1	2 00.8	170 54.0	08.5		97 19.7	57.0		99 03.1	00.7		Bellatrix	278 58.2	N 6 20.0			
	302 06.1	116 02.9	02.1	185 54.8	08.2		112 21.8	57.2		114 05.3	00.8		Betelgeuse	271 27.7	N 7 24.3			
317 08.6	131 02.7	03.4	200 55.5	08.0		127 23.8	57.4		129 07.5	01.0								
24 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	332 11.0	146 02.5	S 2 04.7	215 56.3	N22 07.7		142 25.8	S 2 57.6		144 09.7	S 1 01.1		Canopus	264 07.2	S52 40.9			
	347 13.5	161 02.3	06.0	230 57.0	07.4		157 27.9	57.8		159 11.9	01.2		Capella	281 10.5	N45 58.6			
	2 15.9	176 02.1	07.3	245 57.8	07.2		172 29.9	58.0		174 14.2	01.3		Deneb	49 47.6	N45 13.0			
	17 18.4	191 01.8	08.6	260 58.5	06.9		187 31.9	58.2		189 16.4	01.4		Denebola	182 58.7	N14 40.7			
	32 20.9	206 01.6	09.8	275 59.3	06.7		202 34.0	58.3		204 18.6	01.5		Diphda	349 20.0	S18 05.2			
	47 23.3	221 01.4	11.1	291 00.0	06.4		217 36.0	58.5		219 20.8	01.6							
	62 25.8	236 01.2	S 2 12.4	306 00.8	N22 06.2		232 38.0	S 2 58.7		234 23.1	S 1 01.7		Dubhe	194 22.0	N61 51.2			
	77 28.3	251 01.0	13.7	321 01.5	05.9		247 40.1	58.9		249 25.3	01.8		Elnath	278 43.5	N28 35.5			
	92 30.7	266 00.8	15.0	336 02.3	05.6		262 42.1	59.1		264 27.5	01.9		Eltanin	90 57.2	N51 29.8			
	107 33.2	281 00.5	16.3	351 03.0	05.4		277 44.1	59.3		279 29.7	02.0		Enif	34 10.6	N 9 47.5			
	122 35.7	296 00.3	17.6	6 03.8	05.1		292 46.1	59.5		294 31.9	02.2		Fomalhaut	15 50.3	S29 43.1			
	137 38.1	311 00.1	18.9	21 04.5	04.9		307 48.2	59.7		309 34.2	02.3							
	152 40.6	325 59.9	S 2 20.2	36 05.2	N22 04.6		322 50.2	S 2 59.9		324 36.4	S 1 02.4		Gacrux	172 28.5	S57 00.6			
	167 43.1	340 59.7	21.5	51 06.0	04.3		337 52.2	3 00.1		339 38.6	02.5		Gienah	176 17.6	S17 26.2			
	182 45.5	355 59.5	22.7	66 06.7	04.1		352 54.3	00.2		354 40.8	02.6		Hadar	149 22.7	S60 17.2			
	197 48.0	10 59.2	24.0	81 07.5	03.8		7 56.3	00.4		9 43.0	02.7		Hamal	328 28.0	N23 22.5			
	212 50.4	25 59.0	25.3	96 08.3	03.5		22 58.3	00.6		24 45.3	02.8		Kaus Aust.	84 15.8	S34 23.7			
	227 52.9	40 58.8	26.6	111 09.0	03.3		38 00.4	00.8		39 47.5	02.9							
	242 55.4	55 58.6	S 2 27.9	126 09.8	N22 03.0		53 02.4	S 3 01.0		54 49.7	S 1 03.0		Kochab	137 19.3	N74 14.3			
	257 57.8	70 58.4	29.2	141 10.5	02.8		68 04.4	01.2		69 51.9	03.1		Markab	14 02.2	N15 06.4			
	273 00.3	85 58.2	30.5	156 11.3	02.5		83 06.4	01.4		84 54.1	03.2		Menkar	314 40.4	N 4 01.1			
	288 02.8	100 57.9	31.8	171 12.0	02.2		98 08.5	01.6		99 56.4	03.4		Menkent	148 36.4	S36 16.8			
	303 05.2	115 57.7	33.1	186 12.8	02.0		113 10.5	01.8		114 58.6	03.5		Miaplacidus	221 45.7	S69 38.4			
318 07.7	130 57.5	34.3	201 13.5	01.7		128 12.5	02.0		130 00.8	03.6								
25 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	333 10.2	145 57.3	S 2 35.6	216 14.3	N22 01.4		143 14.6	S 3 02.2		145 03.0	S 1 03.7		Mirfak	309 15.1	N49 47.5			
	348 12.6	160 57.1	36.9	231 15.0	01.2		158 16.6	02.3		160 05.2	03.8		Nunki	76 28.1	S26 19.2			
	3 15.1	175 56.9	38.2	246 15.8	00.9		173 18.6	02.5		175 07.5	03.9		Peacock	53 56.8	S56 47.7			
	18 17.6	190 56.6	39.5	261 16.5	00.6		188 20.6	02.7		190 09.7	04.0		Pollux	243 57.7	N28 04.3			
	33 20.0	205 56.4	40.8	276 17.3	00.4		203 22.7	02.9		205 11.9	04.1		Procyon	245 25.4	N 5 16.5			
	48 22.5	220 56.2	42.1	291 18.0	00.1		218 24.7	03.1		220 14.1	04.2							
	63 24.9	235 56.0	S 2 43.4	306 18.8	N21 59.8		233 26.7	S 3 03.3		235 16.3	S 1 04.3		Rasalhague	96 28.9	N12 34.6			
	78 27.4	250 55.8	44.7	321 19.5	59.6		248 28.8	03.5		250 18.6	04.4		Regulus	208 09.6	N12 03.6			
	93 29.9	265 55.6	46.0	336 20.3	59.3		263 30.8	03.7		265 20.8	04.6		Rigel	281 35.5	S 8 13.2			
	108 32.3	280 55.4	47.2	351 21.0	59.0		278 32.8	03.9		280 23.0	04.7		Rigel Kent.	140 25.2	S60 45.6			
	123 34.8	295 55.1	48.5	6 21.8	58.8		293 34.8	04.1		295 25.2	04.8		Sabik	102 40.3	S15 42.1			
	138 37.3	310 54.9	49.8	21 22.5	58.5		308 36.9	04.2		310 27.4	04.9							
	153 39.7	325 54.7	S 2 51.1	36 23.3	N21 58.2		323 38.9	S 3 04.4		325 29.7	S 1 05.0		Schedar	350 07.8	N56 26.0			
	168 42.2	340 54.5	52.4	51 24.1	58.0		338 40.9	04.6		340 31.9	05.1		Shoula	96 54.7	S37 05.5			
	183 44.7	355 54.3	53.7	66 24.8	57.7		353 42.9	04.8		355 34.1	05.2		Sirius	258 55.4	S16 41.3			
	198 47.1	10 54.1	55.0	81 25.6	57.4		8 45.0	05.0		10 36.3	05.3		Spica	158 57.1	S11 03.8			
	213 49.6	25 53.8	56.3	96 26.3	57.2		23 47.0	05.2		25 38.5	05.4		Suhail	223 10.7	S43 21.3			
	228 52.0	40 53.6	57.5	111 27.1	56.9		38 49.0	05.4		40 40.8	05.5							
	243 54.5	55 53.4	S 2 58.8	126 27.8	N21 56.6		53 51.1	S 3 05.6		55 43.0	S 1 05.7		Vega	80 55.1	N38 46.3			

G.M.T.	ARIES			VENUS -3.5			MARS +1.8			JUPITER -1.3			SATURN +1.2			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
26 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	334 09.3	145 52.1 S	3 06.6	216 32.4 N21	55.0		144 03.2 S	3 06.7		145 56.3 S	1 06.3		Acamar	315 36.6	S40 22.5			
	349 11.8	160 51.9	07.9	231 33.1	54.7		159 05.2	06.9		160 58.5	06.4		Achernar	335 44.4	S57 19.6			
	4 14.2	175 51.7	09.1	246 33.9	54.5		174 07.3	07.1		176 00.7	06.5		Acrux	173 37.1	S62 59.9			
	19 16.7	190 51.5	10.4	261 34.6	54.2		189 09.3	07.3		191 02.9	06.6		Adhara	255 31.8	S28 56.6			
	34 19.2	205 51.2	11.7	276 35.4	53.9		204 11.3	07.5		206 05.2	06.8		Aldebaran	291 17.3	N16 28.3			
	49 21.6	220 51.0	13.0	291 36.2	53.7		219 13.3	07.7		221 07.4	06.9							
	64 24.1	235 50.8 S	3 14.3	306 36.9 N21	53.4		234 15.4 S	3 07.9		236 09.6 S	1 07.0		Alioth	166 42.3	N56 03.9			
	79 26.5	250 50.6	15.6	321 37.7	53.1		249 17.4	08.1		251 11.8	07.1		Alkaid	153 18.3	N49 24.7			
	94 29.0	265 50.4	16.9	336 38.4	52.8		264 19.4	08.3		266 14.0	07.2		Al Na'ir	28 13.6	S47 03.0			
	109 31.5	280 50.2	18.2	351 39.2	52.6		279 21.4	08.5		281 16.3	07.3		Alnilam	276 11.1	S 1 12.7			
	124 33.9	295 49.9	19.4	6 39.9	52.3		294 23.5	08.7		296 18.5	07.4		Alphard	218 20.2	S 8 34.6			
	139 36.4	310 49.7	20.7	21 40.7	52.0		309 25.5	08.8		311 20.7	07.5							
	154 38.9	325 49.5 S	3 22.0	36 41.5 N21	51.7		324 27.5 S	3 09.0		326 22.9 S	1 07.6		Alphecca	126 31.6	N26 46.9			
	169 41.3	340 49.3	23.3	51 42.2	51.5		339 29.5	09.2		341 25.1	07.7		Alpheratz	358 08.3	N28 59.3			
	184 43.8	355 49.1	24.6	66 43.0	51.2		354 31.6	09.4		356 27.3	07.9		Altair	62 31.6	N 8 49.3			
	199 46.3	10 48.9	25.9	81 43.7	50.9		9 33.6	09.6		11 29.6	08.0		Ankaa	353 32.2	S42 24.2			
	214 48.7	25 48.6	27.2	96 44.5	50.6		24 35.6	09.8		26 31.8	08.1		Antares	112 56.0	S26 21.5			
	229 51.2	40 48.4	28.4	111 45.3	50.4		39 37.6	10.0		41 34.0	08.2							
	244 53.7	55 48.2 S	3 29.7	126 46.0 N21	50.1		54 39.7 S	3 10.2		56 36.2 S	1 08.3		Arcturus	146 18.0	N19 17.0			
	259 56.1	70 48.0	31.0	141 46.8	49.8		69 41.7	10.4		71 38.4	08.4		Atria	108 19.6	S68 59.9			
	274 58.6	85 47.8	32.3	156 47.5	49.5		84 43.7	10.6		86 40.6	08.5		Avior	234 28.5	S59 26.8			
	290 01.0	100 47.6	33.6	171 48.3	49.3		99 45.7	10.8		101 42.9	08.6		Bellatrix	278 58.1	N 6 20.0			
	305 03.5	115 47.3	34.9	186 49.1	49.0		114 47.8	11.0		116 45.1	08.7		Betelgeuse	271 27.7	N 7 24.3			
320 06.0	130 47.1	36.2	201 49.8	48.7		129 49.8	11.1		131 47.3	08.9								
27 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	335 08.4	145 46.9 S	3 37.4	216 50.6 N21	48.4		144 51.8 S	3 11.3		146 49.5 S	1 09.0		Canopus	264 07.2	S52 40.9			
	350 10.9	160 46.7	38.7	231 51.4	48.2		159 53.8	11.5		161 51.7	09.1		Capella	281 10.5	N45 58.6			
	5 13.4	175 46.5	40.0	246 52.1	47.9		174 55.9	11.7		176 53.9	09.2		Deneb	49 47.6	N45 13.0			
	20 15.8	190 46.3	41.3	261 52.9	47.6		189 57.9	11.9		191 56.2	09.3		Denebola	182 58.7	N14 40.7			
	35 18.3	205 46.0	42.6	276 53.6	47.3		204 59.9	12.1		206 58.4	09.4		Diphda	349 19.9	S18 05.2			
	50 20.8	220 45.8	43.9	291 54.4	47.0		220 01.9	12.3		222 00.6	09.5							
	65 23.2	235 45.6 S	3 45.2	306 55.2 N21	46.8		235 03.9 S	3 12.5		237 02.8 S	1 09.6		Dubhe	194 22.0	N61 51.2			
	80 25.7	250 45.4	46.4	321 55.9	46.5		250 06.0	12.7		252 05.0	09.7		Elnath	278 43.4	N28 35.5			
	95 28.1	265 45.2	47.7	336 56.7	46.2		265 08.0	12.9		267 07.2	09.8		Eltanin	90 57.2	N51 29.8			
	110 30.6	280 45.0	49.0	351 57.5	45.9		280 10.0	13.1		282 09.5	10.0		Enif	34 10.6	N 9 47.5			
	125 33.1	295 44.7	50.3	6 58.2	45.6		295 12.0	13.3		297 11.7	10.1		Fomalhaut	15 50.3	S29 43.1			
	140 35.5	310 44.5	51.6	21 59.0	45.4		310 14.1	13.5		312 13.9	10.2							
	155 38.0	325 44.3 S	3 52.9	36 59.7 N21	45.1		325 16.1 S	3 13.6		327 16.1 S	1 10.3		Gacrux	172 28.5	S57 00.6			
	170 40.5	340 44.1	54.1	52 00.5	44.8		340 18.1	13.8		342 18.3	10.4		Gienah	176 17.6	S17 26.2			
	185 42.9	355 43.9	55.4	67 01.3	44.5		355 20.1	14.0		357 20.5	10.5		Hadar	149 22.8	S60 17.2			
	200 45.4	10 43.7	56.7	82 02.0	44.2		10 22.1	14.2		12 22.8	10.6		Hamal	328 28.0	N23 22.5			
	215 47.9	25 43.4	58.0	97 02.8	44.0		25 24.2	14.4		27 25.0	10.7		Kaus Aust.	84 15.8	S34 23.7			
	230 50.3	40 43.2	59.3	112 03.6	43.7		40 26.2	14.6		42 27.2	10.8							
	245 52.8	55 43.0 S	4 00.6	127 04.3 N21	43.4		55 28.2 S	3 14.8		57 29.4 S	1 11.0		Kochab	137 19.4	N74 14.3			
	260 55.3	70 42.8	01.9	142 05.1	43.1		70 30.2	15.0		72 31.6	11.1		Markab	14 02.2	N15 06.4			
	275 57.7	85 42.6	03.1	157 05.9	42.8		85 32.3	15.2		87 33.8	11.2		Menkar	314 40.4	N 4 01.1			
	291 00.2	100 42.4	04.4	172 06.6	42.6		100 34.3	15.4		102 36.0	11.3		Menkent	148 36.5	S36 16.8			
	306 02.6	115 42.1	05.7	187 07.4	42.3		115 36.3	15.6		117 38.3	11.4		Miaplacidus	221 45.7	S69 38.4			
321 05.1	130 41.9	07.0	202 08.2	42.0		130 38.3	15.8		132 40.5	11.5								
28 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	336 07.6	145 41.7 S	4 08.3	217 08.9 N21	41.7		145 40.3 S	3 16.0		147 42.7 S	1 11.6		Mirfak	309 15.1	N49 47.5			
	351 10.0	160 41.5	09.6	232 09.7	41.4		160 42.4	16.2		162 44.9	11.7		Nunki	76 28.1	S26 19.2			
	6 12.5	175 41.3	10.8	247 10.5	41.1		175 44.4	16.3		177 47.1	11.8		Peacock	53 56.8	S56 47.8			
	21 15.0	190 41.0	12.1	262 11.2	40.9		190 46.4	16.5		192 49.3	12.0		Pollux	243 57.7	N28 04.3			
	36 17.4	205 40.8	13.4	277 12.0	40.6		205 48.4	16.7		207 51.6	12.1		Procyon	245 25.4	N 5 16.5			
	51 19.9	220 40.6	14.7	292 12.8	40.3		220 50.4	16.9		222 53.8	12.2							
	66 22.4	235 40.4 S	4 16.0	307 13.5 N21	40.0		235 52.5 S	3 17.1		237 56.0 S	1 12.3		Rasalhague	96 28.9	N12 34.6			
	81 24.8	250 40.2	17.2	322 14.3	39.7		250 54.5	17.3		252 58.2	12.4		Regulus	208 09.6	N12 03.6			
	96 27.3	265 40.0	18.5	337 15.1	39.4		265 56.5	17.5		268 00.4	12.5		Rigel	281 35.5	S 8 13.2			
	111 29.8	280 39.7	19.8	352 15.8	39.1		280 58.5	17.7		283 02.6	12.6		Rigel Kent.	140 25.2	S60 45.6			
	126 32.2	295 39.5	21.1	7 16.6	38.9		296 00.5	17.9		298 04.8	12.7		Sabik	102 40.3	S15 42.1			
	141 34.7	310 39.3	22.4	22 17.4	38.6		311 02.6	18.1		313 07.1	12.8							
	156 37.1	325 39.1 S	4 23.7	37 18.1 N21	38.3		326 04.6 S	3 18.3		328 09.3 S	1 13.0		Schedar	350 07.8	N56 26.0			
	171 39.6	340 38.9	24.9	52 18.9	38.0		341 06.6	18.5		343 11.5	13.1		Shaula	96 54.7	S37 05.5			
	186 42.1	355 38.6	26.2	67 19.7	37.7		356 08.6	18.7		358 13.7	13.2		Sirius	258 55.3	S16 41.3			
	201 44.5	10 38.4	27.5	82 20.5	37.4		11 10.6	18.9		13 15.9	13.3		Spica	158 57.1	S11 03.8			
	216 47.0	25 38.2	28.8	97 21.2	37.1		26 12.7	19.1		28 18.1	13.4		Suhail	223 10.7	S43 21.3			
	231 49.5	40 38.0	30.1	112 22.0	36.8		41 14.7	19.2		43 20.3	13.5							
	246 51.9	55 37.8 S	4 31.3	127 22.8 N21	36.6		56 16.7 S	3 19.4		58 22.6 S	1 13.6		Vega	80 55.1	N38 46.3			

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise								
	G.H.A.		Dec.		G.H.A.		v Dec.			Naut.		Civil		Sunrise		26	27	28	29		
	°	'	°	'	°	'	°	'		h	m	h	m	h	m	h	m	h	m		
WEDNESDAY	26 00	179	31.6	N10	31.4	225	36.8	6.2	N21	03.2	1.4	58.6	N 72	////	01 48	03 35	□	23 42	26 23	02 52	02 52
	01	194	31.8		30.6	240	02.0	6.3	21	01.8	1.6	58.6	68	////	02 55	04 07	23 40	25 27	01 27	03 14	03 14
	02	209	32.0		29.7	254	27.3	6.3	21	00.2	1.6	58.6	66	01 33	03 16	04 18	24 19	00 19	01 53	03 30	03 30
	03	224	32.1	..	28.8	268	52.6	6.4	20	58.6	1.9	58.6	64	02 09	03 32	04 27	24 45	00 45	02 13	03 44	03 44
	04	239	32.3		28.0	283	18.0	6.3	20	56.7	1.9	58.6	62	02 34	03 45	04 35	25 06	01 06	02 29	03 55	03 55
	05	254	32.5		27.1	297	43.3	6.4	20	54.8	2.1	58.6	60	02 53	03 56	04 42	00 12	01 23	02 42	04 05	04 05
	06	269	32.7	N10	26.2	312	08.7	6.4	N20	52.7	2.2	58.5	N 58	03 09	04 05	04 49	00 28	01 37	02 54	04 14	04 14
	07	284	32.8		25.4	326	34.1	6.5	20	50.5	2.3	58.5	56	03 22	04 13	04 54	00 41	01 49	03 04	04 21	04 21
	08	299	33.0		24.5	340	59.6	6.5	20	48.2	2.5	58.5	54	03 33	04 21	04 59	00 53	02 00	03 13	04 28	04 28
	09	314	33.2	..	23.6	355	25.1	6.6	20	45.7	2.6	58.5	52	03 42	04 27	05 03	01 03	02 09	03 20	04 34	04 34
	10	329	33.4		22.7	9	50.7	6.5	20	43.1	2.7	58.5	50	03 50	04 33	05 07	01 12	02 18	03 27	04 39	04 39
	11	344	33.5		21.9	24	16.2	6.6	20	40.4	2.9	58.5	45	04 08	04 45	05 16	01 32	02 35	03 42	04 50	04 50
	12	359	33.7	N10	21.0	38	41.8	6.7	N20	37.5	3.0	58.4	N 40	04 21	04 55	05 23	01 47	02 50	03 55	05 00	05 00
	13	14	33.9		20.1	53	07.5	6.7	20	34.5	3.1	58.4	35	04 32	05 03	05 29	02 01	03 02	04 05	05 08	05 08
	14	29	34.1		19.3	67	33.2	6.8	20	31.4	3.3	58.4	30	04 40	05 09	05 34	02 12	03 13	04 14	05 15	05 15
	15	44	34.2	..	18.4	81	59.0	6.7	20	28.1	3.3	58.4	20	04 54	05 21	05 43	02 32	03 31	04 30	05 27	05 27
	16	59	34.4		17.5	96	24.7	6.9	20	24.8	3.5	58.4	N 10	05 05	05 30	05 51	02 49	03 47	04 44	05 38	05 38
	17	74	34.6		16.6	110	50.6	6.9	20	21.3	3.7	58.4	0	05 13	05 37	05 58	03 05	04 02	04 57	05 48	05 48
	18	89	34.8	N10	15.8	125	16.5	6.9	N20	17.6	3.7	58.3	S 10	05 19	05 44	06 05	03 21	04 17	05 09	05 58	05 58
	19	104	34.9		14.9	139	42.4	7.0	20	13.9	3.9	58.3	20	05 25	05 50	06 13	03 39	04 33	05 23	06 09	06 09
	20	119	35.1		14.0	154	08.4	7.0	20	10.0	4.0	58.3	30	05 29	05 57	06 21	03 59	04 51	05 39	06 21	06 21
	21	134	35.3	..	13.2	168	34.4	7.1	20	06.0	4.1	58.3	35	05 31	06 00	06 26	04 10	05 02	05 48	06 28	06 28
	22	149	35.5		12.3	183	00.5	7.1	20	01.9	4.3	58.3	40	05 33	06 04	06 31	04 23	05 14	05 58	06 36	06 36
23	164	35.7		11.4	197	26.6	7.2	19	57.6	4.3	58.3	45	05 34	06 08	06 38	04 39	05 28	06 10	06 45	06 45	
THURSDAY	27 00	179	35.8	N10	10.5	211	52.8	7.2	N19	53.3	4.5	58.2	S 50	05 35	06 12	06 45	04 58	05 46	06 24	06 56	06 56
	01	194	36.0		09.7	226	19.0	7.3	19	48.8	4.6	58.2	52	05 35	06 14	06 48	05 08	05 54	06 31	07 01	07 01
	02	209	36.2		08.8	240	45.3	7.3	19	44.2	4.7	58.2	54	05 35	06 16	06 52	05 18	06 03	06 39	07 07	07 07
	03	224	36.4	..	07.9	255	11.6	7.4	19	39.5	4.9	58.2	56	05 35	06 18	06 56	05 29	06 13	06 47	07 13	07 13
	04	239	36.5		07.0	269	38.0	7.5	19	34.6	4.9	58.2	58	05 35	06 21	07 01	05 43	06 25	06 56	07 20	07 20
	05	254	36.7		06.2	284	04.5	7.5	19	29.7	5.1	58.2	S 60	05 35	06 23	07 06	05 58	06 39	07 07	07 28	07 28
	06	269	36.9	N10	05.3	298	31.0	7.5	N19	24.6	5.2	58.1									
	07	284	37.1		04.4	312	57.5	7.7	19	19.4	5.3	58.1									
	08	299	37.3		03.5	327	24.2	7.7	19	14.1	5.4	58.1									
	09	314	37.4	..	02.7	341	50.9	7.7	19	08.7	5.5	58.1									
	10	329	37.6		01.8	356	17.6	7.8	19	03.2	5.7	58.1									
	11	344	37.8		00.9	10	44.4	7.9	18	57.5	5.7	58.0	N 72	20 24	22 07	////	□	21 56	21 04	20 42	20 42
	12	359	38.0	N10	00.0	25	11.3	7.9	N18	51.8	5.9	58.0	N 70	20 07	21 29	////	21 27	20 46	20 33	20 25	20 25
	13	14	38.2	9	59.1	39	38.2	8.0	18	45.9	5.9	58.0	68	19 54	21 04	23 33	20 01	20 09	20 11	20 11	20 11
	14	29	38.3		58.3	54	05.2	8.1	18	40.0	6.1	58.0	66	19 43	20 44	22 23	19 22	19 42	19 53	19 59	19 59
	15	44	38.5	..	57.4	68	32.3	8.1	18	33.9	6.2	58.0	64	19 33	20 29	21 49	18 55	19 22	19 39	19 49	19 49
	16	59	38.7		56.5	82	59.4	8.2	18	27.7	6.3	57.9	62	19 26	20 16	21 25	18 34	19 05	19 26	19 41	19 41
	17	74	38.9		55.6	97	26.6	8.2	18	21.4	6.4	57.9	60	19 19	20 05	21 07	18 17	18 51	19 16	19 34	19 34
	18	89	39.1	N 9	54.8	111	53.8	8.4	N18	15.0	6.5	57.9	N 58	19 13	19 56	20 52	18 03	18 39	19 07	19 28	19 28
	19	104	39.2		53.9	126	21.2	8.4	18	08.5	6.6	57.9	56	19 08	19 48	20 39	17 50	18 29	18 59	19 22	19 22
	20	119	39.4		53.0	140	48.6	8.4	18	01.9	6.7	57.9	54	19 03	19 41	20 28	17 39	18 20	18 51	19 17	19 17
	21	134	39.6	..	52.1	155	16.0	8.5	17	55.2	6.8	57.8	52	18 59	19 35	20 19	17 30	18 12	18 45	19 12	19 12
	22	149	39.8		51.2	169	43.5	8.6	17	48.4	6.8	57.8	50	18 55	19 29	20 11	17 21	18 04	18 39	19 08	19 08
23	164	40.0		50.4	184	11.1	8.7	17	41.6	7.0	57.8	45	18 46	19 17	19 54	17 03	17 48	18 26	18 59	18 59	
FRIDAY	28 00	179	40.1	N 9	49.5	198	38.8	8.7	N17	34.6	7.1	57.8	N 40	18 40	19 08	19 41	16 48	17 35	18 16	18 51	18 51
	01	194	40.3		48.6	213	06.5	8.8	17	27.5	7.2	57.8	35	18 34	19 00	19 31	16 35	17 24	18 07	18 45	18 45
	02	209	40.5		47.7	227	34.3	8.8	17	20.3	7.3	57.7	30	18 28	18 53	19 22	16 24	17 14	17 59	18 39	18 39
	03	224	40.7	..	46.8	242	02.1	9.0	17	13.0	7.4	57.7	20	18 20	18 42	19 08	16 05	16 57	17 45	18 29	18 29
	04	239	40.9		46.0	256	30.1	9.0	17	05.6	7.4	57.7	N 10	18 12	18 33	18 58	15 48	16 42	17 33	18 20	18 20
	05	254	41.1		45.1	270	58.1	9.0	16	58.2	7.6	57.7	0	18 05	18 26	18 50	15 33	16 29	17 22	18 12	18 12
	06	269	41.2	N 9	44.2	285	26.1	9.2	N16	50.6	7.6	57.7	S 10	17 58	18 19	18 44	15 17	16 15	17 10	18 03	18 03
	07	284	41.4		43.3	299	54.3	9.2	16	43.0	7.8	57.6	20	17 50	18 13	18 38	15 00	15 59	16 58	17 54	17 54
	08	299	41.6		42.4	314	22.5	9.3	16	35.2	7.8	57.6	30	17 42	18 06	18 34	14 41	15 42	16 44	17 44	17 44
	09	314	41.8	..	41.5	328	50.8	9.3	16	27.4	7.9	57.6	35	17 37	18 03	18					

G.M.T.	ARIES		VENUS -3.5		MARS +1.8		JUPITER -1.3		SATURN +1.2		STARS		
	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
29 00	337 06.7	145 36.5 S 4 39.0	217 27.4 N21 34.8	146 28.8 S 3 20.6	148 35.8 S 1 14.3	Acamar	315 36.6	S40 22.5					
01	352 09.2	160 36.2 40.3	232 28.2 34.5	161 30.8 20.8	163 38.0 14.4	Achernar	335 44.4	S57 19.6					
02	7 11.6	175 36.0 41.6	247 28.9 34.2	176 32.9 21.0	178 40.3 14.5	Acruz	173 37.1	S62 59.8					
03	22 14.1	190 35.8 42.9	262 29.7 34.0	191 34.9 21.2	193 42.5 14.6	Adhara	255 31.8	S28 56.6					
04	37 16.6	205 35.6 44.1	277 30.5 33.7	206 36.9 21.4	208 44.7 14.7	Aldebaran	291 17.3	N16 28.3					
05	52 19.0	220 35.4 45.4	292 31.3 33.4	221 38.9 21.6	223 46.9 14.9								
06	67 21.5	235 35.2 S 4 46.7	307 32.0 N21 33.1	236 40.9 S 3 21.8	238 49.1 S 1 15.0	Alioth	166 42.4	N56 03.9					
07	82 24.0	250 34.9 48.0	322 32.8 32.8	251 42.9 22.0	253 51.3 15.1	Alkaid	153 18.3	N49 24.7					
S 08	97 26.4	265 34.7 49.3	337 33.6 32.5	266 45.0 22.2	268 53.5 15.2	Al No'ir	28 13.6	S47 03.0					
A 09	112 28.9	280 34.5 50.5	352 34.3 32.2	281 47.0 22.4	283 55.8 15.3	Alnilam	276 11.1	S 1 12.7					
T 10	127 31.4	295 34.3 51.8	7 35.1 31.9	296 49.0 22.5	298 58.0 15.4	Alphard	218 20.2	S 8 34.6					
U 11	142 33.8	310 34.1 53.1	22 35.9 31.6	311 51.0 22.7	314 00.2 15.5								
R 12	157 36.3	325 33.8 S 4 54.4	37 36.7 N21 31.3	326 53.0 S 3 22.9	329 02.4 S 1 15.6	Alphecca	126 31.6	N26 46.9					
D 13	172 38.7	340 33.6 55.7	52 37.4 31.0	341 55.1 23.1	344 04.6 15.8	Alpheratz	358 08.3	N28 59.3					
A 14	187 41.2	355 33.4 56.9	67 38.2 30.7	356 57.1 23.3	359 06.8 15.9	Altair	62 31.6	N 8 49.3					
Y 15	202 43.7	10 33.2 58.2	82 39.0 30.4	11 59.1 23.5	14 09.0 16.0	Ankaa	353 39.2	S42 24.1					
16	217 46.1	25 33.0 59.5	97 39.8 30.2	27 01.1 23.7	29 11.2 16.1	Antares	112 56.0	S26 23.5					
17	232 48.6	40 32.7 50.8	112 40.5 29.9	42 03.1 23.9	44 13.5 16.2								
18	247 51.1	55 32.5 S 5 02.0	127 41.3 N21 29.6	57 05.1 S 3 24.1	59 15.7 S 1 16.3	Arcturus	146 18.0	N19 17.0					
19	262 53.5	70 32.3 03.3	142 42.1 29.3	72 07.2 24.3	74 17.9 16.4	Atria	108 19.6	S68 59.9					
20	277 56.0	85 32.1 04.6	157 42.9 29.0	87 09.2 24.5	89 20.1 16.5	Avior	234 28.5	S59 26.8					
21	292 58.5	100 31.9 05.9	172 43.6 28.7	102 11.2 24.7	104 22.3 16.6	Bellatrix	278 58.1	N 6 20.1					
22	308 00.9	115 31.6 07.2	187 44.4 28.4	117 13.2 24.9	119 24.5 16.8	Betelgeuse	271 27.7	N 7 24.3					
23	323 03.4	130 31.4 08.4	202 45.2 28.1	132 15.2 25.1	134 26.7 16.9								
30 00	338 05.9	145 31.2 S 5 09.7	217 46.0 N21 27.8	147 17.2 S 3 25.3	149 28.9 S 1 17.0	Canopus	264 07.2	S52 40.9					
01	353 08.3	160 31.0 11.0	232 46.7 27.5	162 19.3 25.5	164 31.1 17.1	Capella	281 10.4	N45 58.6					
02	8 10.8	175 30.8 12.3	247 47.5 27.2	177 21.3 25.7	179 33.4 17.2	Deneb	49 47.6	N45 13.0					
03	23 13.2	190 30.5 13.5	262 48.3 26.9	192 23.3 25.9	194 35.6 17.3	Denebola	182 58.7	N14 40.7					
04	38 15.7	205 30.3 14.8	277 49.1 26.6	207 25.3 26.0	209 37.8 17.4	Diphda	349 19.9	S18 05.2					
05	53 18.2	220 30.1 16.1	292 49.9 26.3	222 27.3 26.2	224 40.0 17.5								
06	68 20.6	235 29.9 S 5 17.4	307 50.6 N21 26.0	237 29.3 S 3 26.4	239 42.2 S 1 17.7	Dubhe	194 22.0	N61 51.2					
07	83 23.1	250 29.7 18.6	322 51.4 25.7	252 31.3 26.6	254 44.4 17.8	Elnath	278 43.4	N28 35.5					
08	98 25.6	265 29.4 19.9	337 52.2 25.4	267 33.4 26.8	269 46.6 17.9	Eltanin	90 57.2	N51 29.8					
S 09	113 28.0	280 29.2 21.2	352 53.0 25.1	282 35.4 27.0	284 48.8 18.0	Enif	34 10.6	N 9 47.5					
U 10	128 30.5	295 29.0 22.5	7 53.7 24.8	297 37.4 27.2	299 51.0 18.1	Fomalhaut	15 50.3	S29 43.1					
N 11	143 33.0	310 28.8 23.7	22 54.5 24.5	312 39.4 27.4	314 53.3 18.2								
D 12	158 35.4	325 28.6 S 5 25.0	37 55.3 N21 24.2	327 41.4 S 3 27.6	329 55.5 S 1 18.3	Gacrux	172 28.5	S57 00.6					
A 13	173 37.9	340 28.3 26.3	52 56.1 23.9	342 43.4 27.8	344 57.7 18.4	Gienah	176 17.6	S17 26.2					
Y 14	188 40.3	355 28.1 27.6	67 56.9 23.6	357 45.5 28.0	359 59.9 18.6	Hadar	149 22.8	S60 17.2					
15	203 42.8	10 27.9 28.8	82 57.6 23.3	12 47.5 28.2	15 02.1 18.7	Hamal	328 28.0	N23 22.5					
16	218 45.3	25 27.7 30.1	97 58.4 23.0	27 49.5 28.4	30 04.3 18.8	Kaus Aust.	84 15.8	S34 23.7					
17	233 47.7	40 27.4 31.4	112 59.2 22.7	42 51.5 28.6	45 06.5 18.9								
18	248 50.2	55 27.2 S 5 32.7	128 00.0 N21 22.4	57 53.5 S 3 28.8	60 08.7 S 1 19.0	Kochab	137 19.4	N74 14.3					
19	263 52.7	70 27.0 33.9	143 00.8 22.1	72 55.5 29.0	75 10.9 19.1	Markab	14 02.2	N15 06.4					
20	278 55.1	85 26.8 35.2	158 01.5 21.8	87 57.5 29.2	90 13.2 19.2	Menkar	314 40.3	N 4 01.1					
21	293 57.6	100 26.6 36.5	173 02.3 21.5	102 59.6 29.4	105 15.4 19.3	Menkent	148 36.5	S36 16.8					
22	309 00.1	115 26.3 37.7	188 03.1 21.2	118 01.6 29.6	120 17.6 19.5	Miaplacidus	221 45.7	S69 38.3					
23	324 02.5	130 26.1 39.0	203 03.9 20.9	133 03.6 29.8	135 19.8 19.6								
31 00	339 05.0	145 25.9 S 5 40.3	218 04.7 N21 20.6	148 05.6 S 3 29.9	150 22.0 S 1 19.7	Mirfak	309 15.0	N49 47.6					
01	354 07.5	160 25.7 41.6	233 05.5 20.3	163 07.6 30.1	165 24.2 19.8	Nunki	76 28.1	S26 19.2					
02	9 09.9	175 25.4 42.8	248 06.2 20.0	178 09.6 30.3	180 26.4 19.9	Peacock	53 56.8	S56 47.8					
03	24 12.4	190 25.2 44.1	263 07.0 19.7	193 11.6 30.5	195 28.6 20.0	Pollux	243 57.6	N28 04.3					
04	39 14.8	205 25.0 45.4	278 07.8 19.4	208 13.7 30.7	210 30.8 20.1	Procyon	245 25.3	N 5 16.5					
05	54 17.3	220 24.8 46.7	293 08.6 19.1	223 15.7 30.9	225 33.0 20.2								
06	69 19.8	235 24.6 S 5 47.9	308 09.4 N21 18.8	238 17.7 S 3 31.1	240 35.3 S 1 20.4	Rasalhague	96 28.9	N12 34.6					
07	84 22.2	250 24.3 49.2	323 10.2 18.5	253 19.7 31.3	255 37.5 20.5	Regulus	208 09.6	N12 03.6					
08	99 24.7	265 24.1 50.5	338 10.9 18.2	268 21.7 31.5	270 39.7 20.6	Rigel	281 35.5	S 8 13.2					
M 09	114 27.2	280 23.9 51.7	353 11.7 17.9	283 23.7 31.7	285 41.9 20.7	Rigel Kent.	140 25.2	S60 45.6					
O 10	129 29.6	295 23.7 53.0	8 12.5 17.6	298 25.7 31.9	300 44.1 20.8	Sabik	102 40.3	S15 42.1					
N 11	144 32.1	310 23.4 54.3	23 13.3 17.3	313 27.7 32.1	315 46.3 20.9								
D 12	159 34.6	325 23.2 S 5 55.6	38 14.1 N21 17.0	328 29.8 S 3 32.3	330 48.5 S 1 21.0	Schedar	350 07.8	N56 26.0					
A 13	174 37.0	340 23.0 56.8	53 14.9 16.7	343 31.8 32.5	345 50.7 21.2	Shaula	96 54.7	S37 05.5					
Y 14	189 39.5	355 22.8 58.1	68 15.6 16.4	358 33.8 32.7	0 52.9 21.3	Sirius	258 55.3	S16 41.3					
15	204 42.0	10 22.6 59.4	83 16.4 16.1	13 35.8 32.9	15 55.1 21.4	Spica	158 57.1	S11 03.8					
16	219 44.4	25 22.3 60.6	98 17.2 15.8	28 37.8 33.1	30 57.4 21.5	Suhail	223 10.7	S43 21.3					
17	234 46.9	40 22.1 01.9	113 18.0 15.5	43 39.8 33.3	45 59.6 21.6								
18	249 49.3	55 21.9 S 6 03.2	128 18.8 N21 15.2	58 41.8 S 3 33.5	61 01.8 S 1 21.7	Vega	80 55.2	N38 46.3					
19	264 51.8	70 21.7 04.4	143 19.6 14.8	73 43.8 33.7	76 04.0 21.8	Zuben'ubi	137 32.4	S15 57.8					
20	279 54.3	85 21.4 05.7	158 20.4 14.5	88 45.9 33.9	91 06.2 21.9								
21	294 56.7	100 21.2 07.0	173 21.1 14.2	103 47.9 34.1	106 08.4 22.1								
22	309 59.2	115 21.0 08.2	188 21.9 13.9	118 49.9 34.3	121 10.6 22.2	Venus	167 25.3	14 18					
23	325 01.7	130 20.8 09.5	203 22.7 13.6	133 51.9 34.4	136 12.8 22.3	Mars	239 40.1	9 28					
						Jupiter	169 11.4	14 09					
						Saturn	171 23.1	14 00					

Mer. Pass. 1 27.4 v -0.2 d 1.3 v 0.8 d 0.3 v 2.0 d 0.2 v 2.2 d 0.1

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	D	Dec.	d		H.P.	Naut.		Civil	29	30	31	1
									h m		h m	h m	h m	h m	h m
29 00	179 44.5	N 9 28.3	186 03.5	10.4	N14 20.3	9.1	57.3	N 72	////	02 14	03 50	02 23	04 28	06 20	08 07
01	194 44.7	27.4	200 32.9	10.5	14 11.2	9.1	57.2	68	01 07	03 10	04 18	03 14	04 56	06 33	08 07
02	209 44.9	26.5	215 02.4	10.6	14 02.1	9.3	57.2	66	01 56	03 28	04 28	03 30	05 06	06 38	08 07
03	224 45.1	25.6	229 32.0	10.6	13 52.8	9.2	57.2	64	02 25	03 42	04 36	03 44	05 14	06 42	08 07
04	239 45.3	24.7	244 01.6	10.7	13 43.6	9.4	57.2	62	02 47	03 54	04 43	03 55	05 21	06 45	08 07
05	254 45.5	23.8	258 31.3	10.8	13 34.2	9.4	57.1	60	03 04	04 04	04 50	04 05	05 28	06 48	08 07
06	269 45.7	N 9 22.9	273 01.1	10.8	N13 24.8	9.4	57.1	N 58	03 18	04 13	04 55	04 14	05 33	06 51	08 07
07	284 45.8	22.0	287 30.9	10.9	13 15.4	9.6	57.1	56	03 29	04 20	05 00	04 21	05 38	06 53	08 07
S 08	299 46.0	21.2	302 00.8	11.0	13 05.8	9.6	57.1	54	03 40	04 27	05 04	04 28	05 42	06 55	08 07
A 09	314 46.2	20.3	316 30.8	11.0	12 56.2	9.6	57.0	52	03 48	04 32	05 08	04 34	05 46	06 57	08 07
T 10	329 46.4	19.4	331 00.8	11.1	12 46.6	9.7	57.0	50	03 56	04 38	05 12	04 39	05 50	06 59	08 07
U 11	344 46.6	18.5	345 30.9	11.2	12 36.9	9.8	57.0	45	04 12	04 49	05 19	04 50	05 58	07 03	08 07
R 12	359 46.8	N 9 17.6	0 01.1	11.3	N12 27.1	9.8	57.0	N 40	04 24	04 58	05 26	05 00	06 04	07 06	08 07
D 13	14 47.0	16.7	14 31.4	11.3	12 17.3	9.9	57.0	35	04 34	05 05	05 31	05 08	06 09	07 09	08 07
A 14	29 47.2	15.8	29 01.7	11.4	12 07.4	9.9	56.9	30	04 42	05 11	05 36	05 15	06 14	07 11	08 07
Y 15	44 47.3	14.9	43 32.1	11.4	11 57.5	10.0	56.9	20	04 55	05 21	05 44	05 27	06 23	07 16	08 07
16	59 47.5	14.0	58 02.5	11.5	11 47.5	10.0	56.9	N 10	05 05	05 30	05 51	05 38	06 30	07 19	08 07
17	74 47.7	13.1	72 33.0	11.6	11 37.5	10.1	56.9	0	05 12	05 36	05 57	05 48	06 37	07 23	08 07
18	89 47.9	N 9 12.2	87 03.6	11.6	N11 27.4	10.1	56.8	S 10	05 18	05 42	06 04	05 58	06 43	07 26	08 07
19	104 48.1	11.4	101 34.2	11.8	11 17.3	10.2	56.8	20	05 22	05 48	06 10	06 09	06 51	07 30	08 07
20	119 48.3	10.5	116 05.0	11.7	11 07.1	10.2	56.8	30	05 26	05 54	06 18	06 21	06 59	07 34	08 07
21	134 48.5	09.6	130 35.7	11.9	10 56.9	10.3	56.8	35	05 27	05 57	06 22	06 28	07 04	07 36	08 07
22	149 48.7	08.7	145 06.6	11.9	10 46.6	10.3	56.7	40	05 28	06 00	06 27	06 36	07 09	07 39	08 07
23	164 48.8	07.8	159 37.5	11.9	10 36.3	10.4	56.7	45	05 29	06 03	06 32	06 45	07 15	07 42	08 08
30 00	179 49.0	N 9 06.9	174 08.4	12.1	N10 25.9	10.4	56.7	S 50	05 29	06 06	06 39	06 56	07 23	07 46	08 08
01	194 49.2	06.0	188 39.5	12.0	10 15.5	10.4	56.7	52	05 29	06 08	06 42	07 01	07 26	07 48	08 08
02	209 49.4	05.1	203 10.5	12.2	10 05.1	10.5	56.6	54	05 29	06 09	06 45	07 07	07 30	07 50	08 08
03	224 49.6	04.2	217 41.7	12.2	9 54.6	10.5	56.6	56	05 28	06 11	06 49	07 13	07 34	07 52	08 08
04	239 49.8	03.3	232 12.9	12.3	9 44.1	10.6	56.6	58	05 28	06 13	06 53	07 20	07 38	07 54	08 08
05	254 50.0	02.4	246 44.2	12.3	9 33.5	10.6	56.6	S 60	05 27	06 15	06 57	07 28	07 43	07 56	08 08
06	269 50.2	N 9 01.5	261 15.5	12.4	N 9 22.9	10.6	56.5								
07	284 50.4	9 00.6	275 46.9	12.5	9 12.3	10.7	56.5								
08	299 50.5	8 59.7	290 18.4	12.5	9 01.6	10.7	56.5								
S 09	314 50.7	8 58.8	304 49.9	12.5	8 50.9	10.7	56.5								
U 10	329 50.9	57.9	319 21.4	12.7	8 40.2	10.8	56.4								
N 11	344 51.1	57.1	333 53.1	12.6	8 29.4	10.8	56.4	N 72	20 07	21 40	////	20 42	20 26	20 13	20 00
D 12	359 51.3	N 8 56.2	348 24.7	12.8	N 8 18.6	10.8	56.4	N 70	19 52	21 10	////	20 25	20 17	20 10	20 03
A 13	14 51.5	55.3	2 56.5	12.8	8 07.8	10.9	56.4	68	19 41	20 47	22 43	20 11	20 09	20 07	20 05
Y 14	29 51.7	54.4	17 28.3	12.8	7 56.9	10.9	56.3	66	19 31	20 30	22 00	19 59	20 03	20 05	20 07
15	44 51.9	53.5	32 00.1	12.9	7 46.0	10.9	56.3	64	19 23	20 16	21 32	19 49	19 57	20 04	20 09
16	59 52.1	52.6	46 32.0	13.0	7 35.1	10.9	56.3	62	19 16	20 05	21 11	19 41	19 53	20 02	20 11
17	74 52.3	51.7	61 04.0	13.0	7 24.2	11.0	56.3	60	19 10	19 55	20 55	19 34	19 48	20 01	20 12
18	89 52.5	N 8 50.8	75 36.0	13.0	N 7 13.2	11.0	56.2	N 58	19 05	19 47	20 41	19 28	19 45	19 59	20 13
19	104 52.6	49.9	90 08.0	13.1	7 02.2	11.0	56.2	56	19 00	19 40	20 30	19 22	19 41	19 58	20 14
20	119 52.8	49.0	104 40.1	13.2	6 51.2	11.0	56.2	54	18 56	19 33	20 20	19 17	19 38	19 57	20 15
21	134 53.0	48.1	119 12.3	13.2	6 40.2	11.1	56.2	52	18 52	19 27	20 11	19 12	19 36	19 56	20 16
22	149 53.2	47.2	133 44.5	13.3	6 29.1	11.0	56.1	50	18 49	19 22	20 04	19 08	19 33	19 56	20 17
23	164 53.4	46.3	148 16.8	13.3	6 18.1	11.1	56.1	45	18 41	19 12	19 48	18 59	19 28	19 54	20 19
31 00	179 53.6	N 8 45.4	162 49.1	13.3	N 6 07.0	11.1	56.1	N 40	18 35	19 03	19 36	18 51	19 23	19 52	20 20
01	194 53.8	44.5	177 21.4	13.4	5 55.9	11.2	56.1	35	18 30	18 56	19 26	18 45	19 19	19 51	20 21
02	209 54.0	43.6	191 53.8	13.5	5 44.7	11.1	56.1	30	18 25	18 49	19 18	18 39	19 16	19 50	20 23
03	224 54.2	42.7	206 26.3	13.5	5 33.6	11.2	56.0	20	18 17	18 39	19 06	18 29	19 10	19 48	20 25
04	239 54.4	41.8	220 58.8	13.5	5 22.4	11.1	56.0	N 10	18 10	18 31	18 56	18 20	19 04	19 46	20 26
05	254 54.6	40.9	235 31.3	13.6	5 11.3	11.2	56.0	0	18 04	18 25	18 49	18 12	18 59	19 44	20 28
06	269 54.8	N 8 40.0	250 03.9	13.7	N 5 00.1	11.2	56.0	S 10	17 58	18 19	18 43	18 03	18 54	19 42	20 29
07	284 55.0	39.1	264 36.6	13.6	4 48.9	11.2	55.9	20	17 51	18 13	18 39	17 54	18 48	19 40	20 31
08	299 55.1	38.2	279 09.2	13.8	4 37.7	11.3	55.9	30	17 44	18 08	18 36	17 44	18 42	19 38	20 33
M 09	314 55.3	37.3	293 42.0	13.7	4 26.4	11.2	55.9	35	17 40	18 05	18 35	17 38	18 38	19 37	20 34
N 10	329 55.5	36.4	308 14.7	13.8	4 15.2	11.2	55.9	40	17 35	18 02	18 34	17 31	18 34	19 36	20 35
O 11	344 55.7	35.5	322 47.5	13.9	4 04.0	11.3	55.8	45	17 29	17 59	18 33	17 23	18 29	19 34	20 37
D 12	359 55.9	N 8 34.6	337 20.4	13.8	N 3 52.7	11.2	55.8	S 50	17 23	17 56	18 33	17 13	18 23	19 32	20 39
A 13	14 56.1	33.7	351 53.2	14.0	3 41.5	11.3	55.8	52	17 20	17 54	18 33	17 08	18 20	19 31	20 39
Y 14	29 56.3	32.8	6 26.2	13.9	3 30.2	11.3	55.8	54	17 17	17 53	18 34	17 03	18 17	19 30	20 40
15	44 56.5	31.9	20 59.1	14.0	3 18.9	11.3	55.7	56	17 13	17 51	18 34	16 58	18 14	19 29	20 41
16	59 56.7	31.0	35 32.1	14.1	3 07.6	11.2	55.7	58	17 09	17 49	18 35	16 51	18 10	19 27	20 42
17	74 56.9	30.1	50 05.2	14.0	2 56.4	11.3	55.7	S 60	17 05	17 47	18 35	16 44	18 06	19 26	20 43
18	89 57.1	N 8 29.2	64 38.2	14.1	N 2 45.1	11.3	55.7								
19	104 57.3	28.2	79 11.3	14.2	2 33.8	11.3	55.6								

G.M.T.	ARIES			VENUS -3.5			MARS +1.8			JUPITER -1.3			SATURN +1.2			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
TUESDAY	00	340 04.1	145 20.5 S 6 10.8	218 23.5 N21 13.3	148 53.9 S 3 34.6	151 15.0 S 1 22.4	Acomar	315 36.6	S40 22.5									
	01	355 06.6	160 20.3 12.0	233 24.3 13.0	163 55.9 34.8	166 17.2 22.5	Achernar	335 44.3	S57 19.6									
	02	10 09.1	175 20.1 13.3	248 25.1 12.7	178 57.9 35.0	181 19.4 22.6	Acruz	173 37.1	S62 59.8									
	03	25 11.5	190 19.9 .. 14.6	263 25.9 .. 12.4	193 59.9 .. 35.2	196 21.7 .. 22.7	Adhara	255 31.8	S28 56.6									
	04	40 14.0	205 19.6 15.9	278 26.6 12.1	209 02.0 35.4	211 23.9 22.8	Aldebaran	291 17.2	N16 28.3									
	05	55 16.4	220 19.4 17.1	293 27.4 11.8	224 04.0 35.6	226 26.1 23.0												
	06	70 18.9	235 19.2 S 6 18.4	308 28.2 N21 11.5	239 06.0 S 3 35.8	241 28.3 S 1 23.1	Alioth	166 42.4	N56 03.9									
	07	85 21.4	250 19.0 19.7	323 29.0 11.2	254 08.0 36.0	256 30.5 23.2	Alkaid	153 18.3	N49 24.6									
	08	100 23.8	265 18.7 20.9	338 29.8 10.8	269 10.0 36.2	271 32.7 23.3	Al Na'ir	28 13.6	N 8 49.3									
	09	115 26.3	280 18.5 .. 22.2	353 30.6 .. 10.5	284 12.0 .. 36.4	286 34.9 .. 23.4	Alnilam	276 11.1	S 1 12.7									
	10	130 28.8	295 18.3 23.5	8 31.4 10.2	299 14.0 36.6	301 37.1 23.5	Alphard	218 20.2	S 8 34.5									
	11	145 31.2	310 18.1 24.7	23 32.2 09.9	314 16.0 36.8	316 39.3 23.6												
	12	160 33.7	325 17.8 S 6 26.0	38 33.0 N21 09.6	329 18.0 S 3 37.0	331 41.5 S 1 23.8	Alphecca	126 31.6	N26 46.9									
	13	175 36.2	340 17.6 27.2	53 33.7 09.3	344 20.1 37.2	346 43.7 23.9	Alpheratz	358 08.3	N28 59.3									
	14	190 38.6	355 17.4 28.5	68 34.5 09.0	359 22.1 37.4	1 45.9 24.0	Altair	62 31.6	N 8 49.3									
	15	205 41.1	10 17.2 .. 29.8	83 35.3 .. 08.7	14 24.1 .. 37.6	16 48.2 .. 24.1	Ankaa	353 39.2	S42 24.2									
	16	220 43.6	25 16.9 31.0	98 36.1 08.4	29 26.1 37.8	31 50.4 24.2	Antares	112 56.1	S26 23.5									
	17	235 46.0	40 16.7 32.3	113 36.9 08.0	44 28.1 38.0	46 52.6 24.3												
	18	250 48.5	55 16.5 S 6 33.6	128 37.7 N21 07.7	59 30.1 S 3 38.2	61 54.8 S 1 24.4	Arcturus	146 18.1	N19 17.0									
	19	265 50.9	70 16.3 34.8	143 38.5 07.4	74 32.1 38.4	76 57.0 24.5	Atria	108 19.7	S68 59.9									
	20	280 53.4	85 16.0 36.1	158 39.3 07.1	89 34.1 38.6	91 59.2 24.7	Avior	234 28.5	S59 26.8									
	21	295 55.9	100 15.8 .. 37.4	173 40.1 .. 06.8	104 36.1 .. 38.8	107 01.4 .. 24.8	Bellatrix	278 58.1	N 6 20.1									
	22	310 58.3	115 15.6 38.6	188 40.9 06.5	119 38.1 39.0	122 03.6 24.9	Betelgeuse	271 27.7	N 7 24.3									
23	326 00.8	130 15.3 39.9	203 41.7 06.2	134 40.2 39.2	137 05.8 25.0													
WEDNESDAY	00	341 03.3	145 15.1 S 6 41.2	218 42.4 N21 05.9	149 42.2 S 3 39.4	152 08.0 S 1 25.1	Canopus	264 07.2	S52 40.9									
	01	356 05.7	160 14.9 42.4	233 43.2 05.5	164 44.2 39.6	167 10.2 25.2	Capella	281 10.4	N45 58.6									
	02	11 08.2	175 14.7 43.7	248 44.0 05.2	179 46.2 39.7	182 12.4 25.3	Deneb	49 47.6	N45 13.0									
	03	26 10.7	190 14.4 .. 44.9	263 44.8 .. 04.9	194 48.2 .. 39.9	197 14.6 .. 25.5	Denebola	182 58.7	N14 40.7									
	04	41 13.1	205 14.2 46.2	278 45.6 04.6	209 50.2 40.1	212 16.8 25.6	Diphda	349 19.9	S18 05.2									
	05	56 15.6	220 14.0 47.5	293 46.4 04.3	224 52.2 40.3	227 19.1 25.7												
	06	71 18.1	235 13.8 S 6 48.7	308 47.2 N21 04.0	239 54.2 S 3 40.5	242 21.3 S 1 25.8	Dubhe	194 22.0	N61 51.2									
	07	86 20.5	250 13.5 50.0	323 48.0 03.7	254 56.2 40.7	257 23.5 25.9	Elnath	278 43.4	N28 35.5									
	08	101 23.0	265 13.3 51.3	338 48.8 03.3	269 58.2 40.9	272 25.7 26.0	Eltanin	90 57.2	N51 29.8									
	09	116 25.4	280 13.1 .. 52.5	353 49.6 .. 03.0	285 00.2 .. 41.1	287 27.9 .. 26.1	Enif	34 10.6	N 9 47.5									
	10	131 27.9	295 12.8 53.8	8 50.4 02.7	300 02.3 41.3	302 30.1 26.3	Fomalhaut	15 50.3	S29 43.1									
	11	146 30.4	310 12.6 55.0	23 51.2 02.4	315 04.3 41.5	317 32.3 26.4												
	12	161 32.8	325 12.4 S 6 56.3	38 52.0 N21 02.1	330 06.3 S 3 41.7	332 34.5 S 1 26.5	Gacrux	172 28.5	S57 00.6									
	13	176 35.3	340 12.2 57.6	53 52.8 01.8	345 08.3 41.9	347 36.7 26.6	Gienah	176 17.6	S17 26.2									
	14	191 37.8	355 11.9 6 58.8	68 53.6 01.4	0 10.3 42.1	2 38.9 26.7	Hadar	149 22.8	S60 17.1									
	15	206 40.2	10 11.7 7 00.1	83 54.4 .. 01.1	15 12.3 .. 42.3	17 41.1 .. 26.8	Hamal	328 28.0	N23 22.5									
	16	221 42.7	25 11.5 01.3	98 55.1 00.8	30 14.3 42.5	32 43.3 26.9	Kaus Aust.	84 15.8	S34 23.7									
	17	236 45.2	40 11.2 02.6	113 55.9 00.5	45 16.3 42.7	47 45.5 27.1												
	18	251 47.6	55 11.0 S 7 03.9	128 56.7 N21 00.2	60 18.3 S 3 42.9	62 47.7 S 1 27.2	Kochab	137 19.5	N74 14.2									
	19	266 50.1	70 10.8 05.1	143 57.5 20 59.9	75 20.3 43.1	77 49.9 27.3	Markab	14 02.2	N15 06.4									
	20	281 52.5	85 10.6 06.4	158 58.3 59.5	90 22.3 43.3	92 52.2 27.4	Menkar	314 40.3	N 4 01.1									
	21	296 55.0	100 10.3 .. 07.6	173 59.1 .. 59.2	105 24.3 .. 43.5	107 54.4 .. 27.5	Menkent	148 36.5	S36 16.8									
	22	311 57.5	115 10.1 08.9	188 59.9 58.9	120 26.3 43.7	122 56.6 27.6	Miaplacidus	221 45.7	S69 38.3									
23	326 59.9	130 09.9 10.1	204 00.7 58.6	135 28.4 43.9	137 58.8 27.7													
THURSDAY	00	342 02.4	145 09.6 S 7 11.4	219 01.5 N20 58.3	150 30.4 S 3 44.1	153 01.0 S 1 27.9	Mirfak	309 15.0	N49 47.6									
	01	357 04.9	160 09.4 12.7	234 02.3 57.9	165 32.4 44.3	168 03.2 28.0	Nunki	76 28.2	S26 19.2									
	02	12 07.3	175 09.2 13.9	249 03.1 57.6	180 34.4 44.5	183 05.4 28.1	Peacock	53 56.8	S56 47.8									
	03	27 09.8	190 08.9 .. 15.2	264 03.9 .. 57.3	195 36.4 .. 44.7	198 07.6 .. 28.2	Pollux	243 57.6	N28 04.3									
	04	42 12.3	205 08.7 16.4	279 04.7 57.0	210 38.4 44.9	213 09.8 28.3	Procyon	245 25.3	N 5 16.5									
	05	57 14.7	220 08.5 17.7	294 05.5 56.7	225 40.4 45.1	228 12.0 28.4												
	06	72 17.2	235 08.3 S 7 18.9	309 06.3 N20 56.3	240 42.4 S 3 45.3	243 14.2 S 1 28.5	Rasalhague	96 28.9	N12 34.6									
	07	87 19.7	250 08.0 20.2	324 07.1 56.0	255 44.4 45.5	258 16.4 28.7	Regulus	208 09.6	N12 03.6									
	08	102 22.1	265 07.8 21.5	339 07.9 55.7	270 46.4 45.7	273 18.6 28.8	Rigel	281 35.4	S 8 13.2									
	09	117 24.6	280 07.6 .. 22.7	354 08.7 .. 55.4	285 48.4 .. 45.9	288 20.8 .. 28.9	Rigel Kent.	140 25.3	S60 45.6									
	10	132 27.0	295 07.3 24.0	9 09.5 55.1	300 50.4 46.1	303 23.0 29.0	Sabik	102 40.3	S15 42.1									
	11	147 29.5	310 07.1 25.2	24 10.3 54.7	315 52.4 46.3	318 25.2 29.1												
	12	162 32.0	325 06.9 S 7 26.5	39 11.1 N20 54.4	330 54.4 S 3 46.5	333 27.4 S 1 29.2	Schedar	350 07.8	N56 26.1									
	13	177 34.4	340 06.6 27.7	54 11.9 54.1	345 56.5 46.7	348 29.6 29.3	Shoula	96 54.8	S37 05.5									
	14	192 36.9	355 06.4 29.0	69 12.7 53.8	0 58.5 46.9	3 31.9 29.5	Sirius	258 55.3	S16 41.3									
	15	207 39.4	10 06.2 .. 30.2	84 13.5 .. 53.4	16 00.5 .. 47.0	18 34.1 .. 29.6	Spica	158 57.1	S11 03.8									
	16	222 41.8	25 05.9 31.5	99 14.3 53.1	31 02.5 47.2	33 36.3 29.7	Suhail	223 10.7	S43 21.3									
	17	237 44.3	40 05.7 32.8	114 15.1 52.8	46 04.5 47.4	48 38.5 29.8												
	18	252 46.8	55 05.5 S 7 34.0	129 15.9 N20 52.5	61 06.5 S 3 47.6	63 40.7 S 1 29.9	Vega	80 55.2	N38 46.3									
	19	267 49.2	70 05.2 35.3	144 16.7 52.2	76 08.5 47.8	78 42.9 30.0	Zuben'ubi	137 32.5	S15 57.8									
	20	282 51.7	85 05.0 36.5	159 17.5 51.8	91 10.5 48.0	93 45.1 30.1												
	21	297 54.2	100 04.8 .. 37.8	174 18.3 .. 51.5	106 12.5 .. 48.2	108 47.3 .. 30.3												
	22	312 56.6	115 04.5 39.0	189 19.1 51.2	121 14.5 48.4	123 49.5 30.4	Venus	164 11.9	14 19									
23	327 59.1	130 04.3 40.3	204 19.9 50.9	136 16.5 48.6	138 51.7 30.5	Mars	237 39.2	9 25										
						Jupiter	168 38.9	13 59										
						Saturn	171 04.8	13 49										
Mer. Pass.	1 15.6	v -0.2 d 1.3	v 0.8 d 0.3	v 2.0 d 0.2	v 2.2 d 0.1													

GMT	ARIES			VENUS -3.5			MARS +1.8			JUPITER -1.2			SATURN +1.1			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Mer. Pass.	Dec.		
4	00	343 01.5	145 04.1 S 7 41.5	219 20.7 N20 50.5	151 18.5 S 3 48.8	153 53.9 S 1 30.6	Acomar	315 36.5	S40 22.5									
	01	358 04.0	160 03.8 42.8	234 21.5 50.2	166 20.5 49.0	168 56.1 30.7	Achernar	335 44.3	S57 19.6									
	02	13 06.5	175 03.6 44.0	249 22.3 49.9	181 22.5 49.2	183 58.3 30.8	Acrux	173 37.1	S62 59.8									
	03	28 08.9	190 03.4 .. 45.3	264 23.1 .. 49.6	196 24.5 .. 49.4	199 00.5 .. 30.9	Adhara	255 31.8	S28 56.6									
	04	43 11.4	205 03.1 46.5	279 23.9 49.2	211 26.5 49.6	214 02.7 31.1	Aldebaran	091 17.7	N16 28.1									
	05	58 13.9	220 02.9 47.8	294 24.7 48.9	226 28.5 49.8	229 04.9 31.2												
	06	73 16.3	235 02.7 S 7 49.0	309 25.5 N20 48.6	241 30.5 S 3 50.0	244 07.1 S 1 31.3	Alioth	166 42.4	N56 03.9									
	07	88 18.8	250 02.4 50.3	324 26.3 48.3	256 32.5 50.2	259 09.3 31.4	Alkaid	153 18.3	N49 24.6									
	08	103 21.3	265 02.2 51.5	339 27.1 47.9	271 34.6 50.4	274 11.5 31.5	Al Na'ir	28 13.6	S47 03.0									
	F 09	118 23.7	280 02.0 .. 52.8	354 28.0 .. 47.6	286 36.6 .. 50.6	289 13.7 .. 31.6	Alnilam	276 11.1	S 1 12.7									
	R 10	133 26.2	295 01.7 54.0	9 28.8 47.3	301 38.6 50.8	304 15.9 31.7	Alphard	218 20.2	S 8 34.5									
	I 11	148 28.6	310 01.5 55.3	24 29.6 46.9	316 40.6 51.0	319 18.1 31.9												
	D 12	163 31.1	325 01.3 S 7 56.5	39 30.4 N20 46.6	331 42.6 S 3 51.2	334 20.3 S 1 32.0	Alphecca	126 31.7	N26 46.9									
	A 13	178 33.6	340 01.0 57.8	54 31.2 46.3	346 44.6 51.4	349 22.6 32.1	Alpheratz	358 08.3	N28 59.3									
	Y 14	193 36.0	355 00.8 7 59.0	69 32.0 46.0	1 46.6 51.6	4 24.8 32.2	Altair	62 31.7	N 8 49.3									
	15	208 38.5	10 00.6 8 00.3	84 32.8 .. 45.6	16 48.6 .. 51.8	19 27.0 .. 32.3	Ankaa	353 39.2	S42 24.2									
	16	223 41.0	25 00.3 01.5	99 33.6 45.3	31 50.6 52.0	34 29.2 32.4	Antares	112 56.1	S26 23.5									
	17	238 43.4	40 00.1 02.8	114 34.4 45.0	46 52.6 52.2	49 31.4 32.5												
	18	253 45.9	54 59.9 S 8 04.0	129 35.2 N20 44.6	61 54.6 S 3 52.4	64 33.6 S 1 32.7	Arcturus	146 18.1	N19 17.0									
	19	268 48.4	69 59.6 05.3	144 36.0 44.3	76 56.6 52.6	79 35.8 32.8	Atria	108 19.7	S68 59.9									
	20	283 50.8	84 59.4 06.5	159 36.8 44.0	91 58.6 52.8	94 38.0 32.9	Avior	234 28.4	S59 26.8									
	21	298 53.3	99 59.1 .. 07.8	174 37.6 .. 43.7	107 00.6 .. 53.0	109 40.2 .. 33.0	Bellatrix	278 58.1	N 6 20.1									
	22	313 55.8	114 58.9 09.0	189 38.4 43.3	122 02.6 53.2	124 42.4 33.1	Betelgeuse	271 27.7	N 7 24.3									
23	328 58.2	129 58.7 10.2	204 39.2 43.0	137 04.6 53.4	139 44.6 33.2													
5	00	344 00.7	144 58.4 S 8 11.5	219 40.0 N20 42.7	152 06.6 S 3 53.6	154 46.8 S 1 33.3	Canopus	264 07.1	S52 40.9									
	01	359 03.1	159 58.2 12.7	234 40.9 42.3	167 08.6 53.8	169 49.0 33.5	Capella	281 10.4	N45 58.6									
	02	14 05.6	174 58.0 14.0	249 41.7 42.0	182 10.6 54.0	184 51.2 33.6	Deneb	49 47.6	N45 13.1									
	03	29 08.1	189 57.7 .. 15.2	264 42.5 .. 41.7	197 12.6 .. 54.2	199 53.4 .. 33.7	Denebola	182 58.7	N14 40.7									
	04	44 10.5	204 57.5 16.5	279 43.3 41.3	212 14.6 54.4	214 55.6 33.8	Diphda	349 19.9	S18 05.2									
	05	59 13.0	219 57.3 17.7	294 44.1 41.0	227 16.6 54.6	229 57.8 33.9												
	06	74 15.5	234 57.0 S 8 19.0	309 44.9 N20 40.7	242 18.6 S 3 54.8	245 00.0 S 1 34.0	Dubhe	194 22.0	N61 51.2									
	07	89 17.9	249 56.8 20.2	324 45.7 40.3	257 20.6 55.0	260 02.2 34.2	Elnath	278 43.4	N28 35.5									
	S 08	104 20.4	264 56.5 21.4	339 46.5 40.0	272 22.6 55.2	275 04.4 34.3	Eltanin	90 57.3	N51 29.8									
	A 09	119 22.9	279 56.3 .. 22.7	354 47.3 .. 39.7	287 24.6 .. 55.4	290 06.6 .. 34.4	Enif	34 10.6	N 9 47.5									
	T 10	134 25.3	294 56.1 23.9	9 48.1 39.3	302 26.6 55.6	305 08.8 34.5	Fomalhaut	15 50.3	S29 43.1									
	U 11	149 27.8	309 55.8 25.2	24 48.9 39.0	317 28.6 55.8	320 11.0 34.6												
	R 12	164 30.3	324 55.6 S 8 26.4	39 49.8 N20 38.7	332 30.6 S 3 56.0	335 13.2 S 1 34.7	Gacrux	172 28.5	S57 00.6									
	D 13	179 32.7	339 55.3 27.7	54 50.6 38.3	347 32.6 56.2	350 15.4 34.8	Gienah	176 17.6	S17 26.2									
	A 14	194 35.2	354 55.1 28.9	69 51.4 38.0	2 34.6 56.4	5 17.6 35.0	Hadar	149 22.8	S60 17.1									
	Y 15	209 37.6	9 54.9 .. 30.1	84 52.2 .. 37.7	17 36.7 .. 56.6	20 19.8 .. 35.1	Hamal	328 28.0	N23 22.5									
	16	224 40.1	24 54.6 31.4	99 53.0 37.3	32 38.7 56.8	35 22.0 35.2	Kaus Aust.	84 15.8	S34 23.7									
	17	239 42.6	39 54.4 32.6	114 53.8 37.0	47 40.7 57.0	50 24.2 35.3												
	18	254 45.0	54 54.1 S 8 33.9	129 54.6 N20 36.7	62 42.7 S 3 57.2	65 26.4 S 1 35.4	Kochab	137 19.6	N74 14.2									
	19	269 47.5	69 53.9 35.1	144 55.4 36.3	77 44.7 57.4	80 28.6 35.5	Markab	14 02.2	N15 06.4									
	20	284 50.0	84 53.7 36.3	159 56.2 36.0	92 46.7 57.6	95 30.8 35.7	Menkar	314 40.3	N 4 01.1									
	21	299 52.4	99 53.4 .. 37.6	174 57.1 .. 35.7	107 48.7 .. 57.8	110 33.0 .. 35.8	Menkent	148 36.5	S36 16.7									
	22	314 54.9	114 53.2 38.8	189 57.9 35.3	122 50.7 58.0	125 35.2 35.9	Miaplacidus	221 45.7	S69 38.3									
23	329 57.4	129 52.9 40.1	204 58.7 35.0	137 52.7 58.2	140 37.4 36.0													
6	00	344 59.8	144 52.7 S 8 41.3	219 59.5 N20 34.7	152 54.7 S 3 58.4	155 39.6 S 1 36.1	Mirfak	309 15.0	N49 47.6									
	01	0 02.3	159 52.5 42.5	235 00.3 34.3	167 56.7 58.6	170 41.8 36.2	Nunki	76 28.2	S26 19.2									
	02	15 04.7	174 52.2 43.8	250 01.1 34.0	182 58.7 58.8	185 44.1 36.3	Peacock	53 56.9	S56 47.8									
	03	30 07.2	189 52.0 .. 45.0	265 01.9 .. 33.7	198 00.7 .. 59.0	200 46.3 .. 36.5	Pollux	243 57.6	N28 04.3									
	04	45 09.7	204 51.7 46.3	280 02.8 33.3	213 02.7 59.2	215 48.5 36.6	Procyon	245 25.3	N 5 16.5									
	05	60 12.1	219 51.5 47.5	295 03.6 33.0	228 04.7 59.4	230 50.7 36.7												
	06	75 14.6	234 51.3 S 8 48.7	310 04.4 N20 32.6	243 06.7 S 3 59.6	245 52.9 S 1 36.8	Rasalhague	96 28.9	N12 34.6									
	07	90 17.1	249 51.0 50.0	325 05.2 32.3	258 08.7 3 59.8	260 55.1 36.9	Regulus	208 09.6	N12 03.6									
	08	105 19.5	264 50.8 51.2	340 06.0 32.0	273 10.7 4 00.0	275 57.3 37.0	Rigel	281 35.4	S 8 13.2									
	S 09	120 22.0	279 50.5 .. 52.4	355 06.8 .. 31.6	288 12.7 .. 00.2	290 59.5 .. 37.2	Rigel Kent.	140 25.3	S60 45.6									
	U 10	135 24.5	294 50.3 53.7	10 07.6 31.3	303 14.7 00.4	306 01.7 37.3	Sabik	102 40.3	S15 42.1									
	N 11	150 26.9	309 50.0 54.9	25 08.5 31.0	318 16.7 00.6	321 03.9 37.4												
	D 12	165 29.4	324 49.8 S 8 56.1	40 09.3 N20 30.6	333 18.7 S 4 00.8	336 06.1 S 1 37.5	Schedar	350 07.8	N56 26.1									
	A 13	180 31.9	339 49.6 57.4	55 10.1 30.3	348 20.7 01.0	351 08.3 37.6	Shaula	96 54.8	S37 05.5									
	Y 14	195 34.3	354 49.3 58.6	70 10.9 29.9	3 22.7 01.2	6 10.5 37.7	Sirius	258 55.3	S16 41.3									
	15	210 36.8	9 49.1 8 59.9	85 11.7 .. 29.6	18 24.7 .. 01.4	21 12.7 .. 37.8	Spica	158 57.1	S11 03.8									
	16	225 39.2	24 48.8 9 01.1	100 12.5 29.3	33 26.7 01.6	36 14.9 38.0	Suhail	223 10.7	S43 21.3									
	17	240 41.7	39 48.6 02.3	115 13.4 28.9	48 28.7 01.8	51 17.1 38.1												
	18	255 44.2	54 48.3 S 9 03.6	130 14.2 N20 28.6	6													

G.M.T.	ARIES		VENUS -3.5		MARS +1.8		JUPITER -1.2		SATURN +1.1		STARS			
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.		
7 M O N D A Y	00	345 59.0	144 46.9 S	9 10.9	220 19.1 N20	26.5	153 42.7 S	4 03.2	156 32.5 S	1 38.9	Acamar	315 36.5 S40	22.5	
	01	1 01.4	159 46.6	12.2	235 19.9	26.2	168 44.7	03.4	171 34.7	39.0	Achernar	335 44.3 S57	19.6	
	02	16 03.9	174 46.4	13.4	250 20.7	25.9	183 46.7	03.6	186 36.9	39.1	Acrux	173 37.1 S62	59.8	
	03	31 06.4	189 46.1	14.6	265 21.5	25.5	198 48.7	03.8	201 39.1	39.2	Adhara	255 31.8 S28	56.6	
	04	46 08.8	204 45.9	15.9	280 22.4	25.2	213 50.7	04.0	216 41.3	39.3	Aldebaran	291 17.2 N16	28.3	
	05	61 11.3	219 45.6	17.1	295 23.2	24.8	228 52.7	04.2	231 43.5	39.5				
	06	76 13.7	234 45.4 S	9 18.3	310 24.0 N20	24.5	243 54.7 S	4 04.4	246 45.7 S	1 39.6	Alioth	166 42.4 N56	03.8	
	07	91 16.2	249 45.2	19.6	325 24.8	24.1	258 56.7	04.6	261 47.9	39.7	Alkaid	153 18.3 N49	24.6	
	08	106 18.7	264 44.9	20.8	340 25.6	23.8	273 58.7	04.8	276 50.1	39.8	Al Na'ir	28 13.6 S47	03.0	
	09	121 21.1	279 44.7	22.0	355 26.5	23.5	289 00.7	05.0	291 52.3	39.9	Alnilam	276 11.0 S 1	12.7	
	10	136 23.6	294 44.4	23.2	10 27.3	23.1	304 02.7	05.2	306 54.5	40.0	Alphard	218 20.2 S 8	34.5	
	11	151 26.1	309 44.2	24.5	25 28.1	22.8	319 04.7	05.4	321 56.7	40.2				
	12	166 28.5	324 43.9 S	9 25.7	40 28.9 N20	22.4	334 06.7 S	4 05.6	336 58.9 S	1 40.3	Alphecca	126 31.7 N26	46.9	
	13	181 31.0	339 43.7	26.9	55 29.7	22.1	349 08.6	05.8	352 01.1	40.4	Alpheratz	358 08.3 N28	59.3	
	14	196 33.5	354 43.4	28.2	70 30.6	21.7	4 10.6	06.0	7 03.3	40.5	Altair	62 31.7 N 8	49.3	
	15	211 35.9	9 43.2	29.4	85 31.4	21.4	19 12.6	06.2	22 05.5	40.6	Ankaa	353 39.2 S42	24.3	
	16	226 38.4	24 42.9	30.6	100 32.2	21.0	34 14.6	06.4	37 07.7	40.7	Antares	112 56.1 S26	23.5	
	17	241 40.9	39 42.7	31.8	115 33.0	20.7	49 16.6	06.6	52 09.9	40.9				
	18	256 43.3	54 42.4 S	9 33.1	130 33.8 N20	20.4	64 18.6 S	4 06.8	67 12.1 S	1 41.0	Arcturus	146 18.1 N19	17.0	
	19	271 45.8	69 42.2	34.3	145 34.7	20.0	79 20.6	07.0	82 14.3	41.1	Atria	108 19.7 S68	59.9	
	20	286 48.2	84 41.9	35.5	160 35.5	19.7	94 22.6	07.2	97 16.5	41.2	Avior	234 28.4 S59	26.8	
	21	301 50.7	99 41.7	36.7	175 36.3	19.3	109 24.6	07.4	112 18.7	41.3	Bellatrix	278 58.1 N 6	20.1	
	22	316 53.2	114 41.4	38.0	190 37.1	19.0	124 26.6	07.6	127 20.9	41.4	Betelgeuse	271 27.6 N 7	24.3	
23	331 55.6	129 41.2	39.2	205 38.0	18.6	139 28.6	07.8	142 23.1	41.6					
8 T U E S D A Y	00	346 58.1	144 40.9 S	9 40.4	220 38.8 N20	18.3	154 30.6 S	4 08.0	157 25.3 S	1 41.7	Canopus	264 07.1 S52	40.9	
	01	2 00.6	159 40.7	41.6	235 39.6	17.9	169 32.6	08.2	172 27.5	41.8	Capella	281 10.3 N45	58.6	
	02	17 03.0	174 40.4	42.9	250 40.4	17.6	184 34.6	08.4	187 29.7	41.9	Deneb	49 47.6 N45	13.1	
	03	32 05.5	189 40.2	44.1	265 41.3	17.2	199 36.6	08.6	202 31.9	42.0	Denebola	182 58.7 N14	40.7	
	04	47 08.0	204 39.9	45.3	280 42.1	16.9	214 38.6	08.8	217 34.1	42.1	Diphda	349 19.9 S18	05.2	
	05	62 10.4	219 39.7	46.5	295 42.9	16.5	229 40.6	09.0	232 36.3	42.2				
	06	77 12.9	234 39.4 S	9 47.7	310 43.7 N20	16.2	244 42.6 S	4 09.2	247 38.5 S	1 42.4	Dubhe	194 22.0 N61	51.1	
	07	92 15.3	249 39.2	49.0	325 44.6	15.8	259 44.6	09.4	262 40.7	42.5	Elnath	278 43.3 N28	35.5	
	08	107 17.8	264 38.9	50.2	340 45.4	15.5	274 46.6	09.6	277 42.9	42.6	Eltanin	90 57.3 N51	29.8	
	09	122 20.3	279 38.7	51.4	355 46.2	15.1	289 48.6	09.8	292 45.1	42.7	Enif	34 10.6 N 9	47.5	
	10	137 22.7	294 38.4	52.6	10 47.0	14.8	304 50.6	10.0	307 47.3	42.8	Fomalhaut	15 50.3 S29	43.1	
	11	152 25.2	309 38.2	53.9	25 47.9	14.4	319 52.6	10.2	322 49.5	42.9				
	12	167 27.7	324 37.9 S	9 55.1	40 48.7 N20	14.1	334 54.6 S	4 10.4	337 51.7 S	1 43.1	Gacrux	172 28.5 S57	00.6	
	13	182 30.1	339 37.7	56.3	55 49.5	13.7	349 56.6	10.6	352 53.9	43.2	Gienah	176 17.6 S17	26.2	
	14	197 32.6	354 37.4	57.5	70 50.3	13.4	4 58.6	10.8	7 56.1	43.3	Hadar	149 22.9 S60	17.1	
	15	212 35.1	9 37.2	58.7	85 51.2	13.0	20 00.6	11.0	22 58.3	43.4	Hamal	328 27.9 N23	22.5	
	16	227 37.5	24 36.9	59.9	100 52.0	12.7	35 02.6	11.2	38 00.5	43.5	Kaus Aust.	84 15.8 S34	23.7	
	17	242 40.0	39 36.7	01.2	115 52.8	12.3	50 04.6	11.4	53 02.7	43.6				
	18	257 42.5	54 36.4 S10	02.4	130 53.7 N20	12.0	65 06.6 S	4 11.6	68 04.9 S	1 43.8	Kochab	137 19.6 N74	14.2	
	19	272 44.9	69 36.2	03.6	145 54.5	11.6	80 08.6	11.8	83 07.0	43.9	Markab	14 02.2 N15	06.4	
	20	287 47.4	84 35.9	04.8	160 55.3	11.3	95 10.6	12.0	98 09.2	44.0	Menkar	314 40.3 N 4	01.1	
	21	302 49.8	99 35.7	06.0	175 56.1	10.9	110 12.5	12.2	113 11.4	44.1	Menkent	148 36.5 S36	16.7	
	22	317 52.3	114 35.4	07.3	190 57.0	10.6	125 14.5	12.4	128 13.6	44.2	Miaplacidus	221 45.6 S69	38.3	
23	332 54.8	129 35.1	08.5	205 57.8	10.2	140 16.5	12.6	143 15.8	44.3					
9 W E D N E S D A Y	00	347 57.2	144 34.9 S10	09.7	220 58.6 N20	09.7	155 18.5 S	4 12.8	158 18.0 S	1 44.5	Mirfak	309 14.9 N49	47.6	
	01	2 59.7	159 34.6	10.9	235 59.5	09.5	170 20.5	13.0	173 20.2	44.6	Nunki	76 28.2 S26	19.2	
	02	18 02.2	174 34.4	12.1	251 00.3	09.2	185 22.5	13.2	188 22.4	44.7	Peacock	53 56.9 S56	47.8	
	03	33 04.6	189 34.1	13.3	266 01.1	08.8	200 24.5	13.4	203 24.6	44.8	Pollux	243 57.6 N28	04.3	
	04	48 07.1	204 33.9	14.5	281 01.9	08.5	215 26.5	13.6	218 26.8	44.9	Procyon	245 25.3 N 5	16.5	
	05	63 09.6	219 33.6	15.8	296 02.8	08.1	230 28.5	13.8	233 29.0	45.0				
	06	78 12.0	234 33.4 S10	17.0	311 03.6 N20	07.8	245 30.5 S	4 14.0	248 31.2 S	1 45.2	Rasalhague	96 28.9 N12	34.6	
	07	93 14.5	249 33.1	18.2	326 04.4	07.4	260 32.5	14.2	263 33.4	45.3	Regulus	208 09.6 N12	03.6	
	08	108 17.0	264 32.8	19.4	341 05.3	07.1	275 34.5	14.4	278 35.6	45.4	Rigel	281 35.4 S 8	13.2	
	09	123 19.4	279 32.6	20.6	356 06.1	06.7	290 36.5	14.6	293 37.8	45.5	Rigel Kent.	140 25.3 S60	45.6	
	10	138 21.9	294 32.3	21.8	11 06.9	06.4	305 38.5	14.8	308 40.0	45.6	Sabik	102 40.4 S15	42.1	
	11	153 24.3	309 32.1	23.0	26 07.8	06.0	320 40.5	15.0	323 42.2	45.7				
	12	168 26.8	324 31.8 S10	24.2	41 08.6 N20	05.7	335 42.5 S	4 15.2	338 44.4 S	1 45.9	Schedar	350 07.7 N56	26.1	
	13	183 29.3	339 31.6	25.5	56 09.4	05.3	350 44.5	15.4	353 46.6	46.0	Shaula	96 54.8 S37	05.5	
	14	198 31.7	354 31.3	26.7	71 10.3	04.9	5 46.5	15.6	8 48.8	46.1	Sirius	258 55.3 S16	41.3	
	15	213 34.2	9 31.1	27.9	86 11.1	04.6	20 48.5	15.8	23 51.0	46.2	Spica	158 57.1 S11	03.8	
	16	228 36.7	24 30.8	29.1	101 11.9	04.2	35 50.4	16.0	38 53.2	46.3	Suhail	223 10.7 S43	21.3	
	17	243 39.1	39 30.5	30.3	116 12.8	03.9	50 52.4	16.2	53 55.4	46.4				
	18	258 41.6	54 30.3 S10	31.5	131 13.6 N20	03.5	65 54.4 S	4 16.4	68 57.6 S	1 46.6	Vega	80 55.2 N38	46.3	
	19	273 44.1	69 30.0	32.7	146 14.4	03.2	80 56.4	16.6	83 59.8	46.7	Zuben'ubi	137 32.5 S15	57.8	
	20	288 46.5	84 29.8	33.9	161 15.3	02.8	95 58.4	16.8	99 02.0	46.8				
	21	303 49.0	99 29.5	35.1	176 16.1	02.5	111 00.4	17.0	114 04.2	46.9				
	22	318 51.4	114 29.2	36.3	191 16.9	02.1	126 02.4	17.2	129 06.4	47.0	Venus	157 42.8	14 22	
23	333 53.9	129 29.0	37.5	206 17.8	01.7	141 04.4	17.4	144 08.6	47.1	Mars	233 40.7	9 17		
										Jupiter	167 32.5	13 40		
										Saturn	170 27.2	13 28		
Mer. Pass	h 0 52.0	v -0.3	d 1.2	v 0.8	d 0.3	v 2.0	d 0.2	v 2.2	d 0.1					

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise							
	G.H.A.		Dec.		G.H.A.		Dec.			Naut.		Civil		Sunrise		7	8	9	10	
	d	h	°	'	d	h	°	'		h	m	h	m	h	m	h	m	h	m	
7 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	180 27.7 N 6 11.2		87 32.2 12.1 S19 33.8 4.4 54.5		N 72		00 32		03 15		04 34		■		■		■		20 12	
	195 27.9 10.2		102 03.3 12.0 19 38.2 4.2 54.5		N 70		01 47		03 35		04 43		■		■		■		20 12	
	210 28.1 09.3		116 34.3 12.1 19 42.4 4.2 54.5		68		02 22		03 50		04 51		17 21		18 35		19 08		19 16	
	225 28.3 08.4		131 05.4 12.0 19 46.6 4.0 54.5		66		02 47		04 02		04 57		16 34		17 38		18 20		18 43	
	240 28.5 07.4		145 36.4 11.9 19 50.6 4.0 54.5		64		03 05		04 12		05 02		16 03		17 04		17 49		18 18	
	255 28.7 06.5		160 07.3 11.9 19 54.6 3.9 54.5		62		03 20		04 20		05 07		15 41		16 39		17 26		17 59	
	270 28.9 N 6 05.6		174 38.2 11.9 S19 58.5 3.8 54.6		60		03 32		04 27		05 11		15 22		16 20		17 07		17 43	
	285 29.1 04.6		189 09.1 11.8 20 02.3 3.7 54.6		N 58		03 43		04 34		05 14		15 07		16 04		16 52		17 30	
	300 29.4 03.7		203 39.9 11.8 20 06.0 3.6 54.6		56		03 52		04 39		05 17		14 54		15 50		16 38		17 18	
	315 29.6 02.8		218 10.7 11.7 20 09.6 3.5 54.6		54		03 59		04 44		05 20		14 43		15 38		16 27		17 08	
	330 29.8 01.8		232 41.4 11.7 20 13.1 3.4 54.6		52		04 06		04 48		05 23		14 33		15 28		16 17		16 59	
	345 30.0 6 00.9		247 12.1 11.6 20 16.5 3.4 54.6		50		04 12		04 52		05 25		14 24		15 19		16 08		16 50	
	0 30.2 N 5 59.9		261 42.7 11.6 S20 19.9 3.2 54.6		45		04 24		05 00		05 30		14 05		14 59		15 48		16 33	
	15 30.4 59.0		276 13.3 11.6 20 23.1 3.1 54.7		N 40		04 34		05 07		05 34		13 50		14 43		15 33		16 19	
	30 30.6 58.1		290 43.9 11.5 20 26.2 3.1 54.7		35		04 42		05 12		05 38		13 37		14 30		15 20		16 07	
	45 30.8 57.1		305 14.4 11.5 20 29.3 2.9 54.7		30		04 48		05 16		05 41		13 26		14 18		15 08		15 56	
	60 31.1 56.2		319 44.9 11.4 20 32.2 2.9 54.7		20		04 58		05 24		05 46		13 07		13 58		14 48		15 38	
	75 31.3 55.3		334 15.3 11.4 20 35.1 2.8 54.7		N 10		05 05		05 29		05 50		12 50		13 40		14 31		15 22	
	90 31.5 N 5 54.3		348 45.7 11.4 S20 37.9 2.6 54.7		0		05 10		05 34		05 54		12 35		13 24		14 15		15 07	
	105 31.7 53.4		3 16.1 11.3 20 40.5 2.6 54.8		S 10		05 13		05 37		05 58		12 19		13 08		13 59		14 52	
	120 31.9 52.5		17 46.4 11.3 20 43.1 2.4 54.8		20		05 15		05 40		06 03		12 03		12 51		13 42		14 36	
	135 32.1 51.5		32 16.7 11.2 20 45.5 2.4 54.8		30		05 15		05 43		06 07		11 44		12 31		13 22		14 18	
	150 32.3 50.6		46 46.9 11.2 20 47.9 2.3 54.8		35		05 15		05 44		06 10		11 33		12 19		13 11		14 07	
	165 32.6 49.6		61 17.1 11.1 20 50.2 2.2 54.8		40		05 14		05 46		06 13		11 20		12 06		12 58		13 55	
180 32.8 N 5 48.7		75 47.2 11.2 S20 52.4 2.0 54.9		45		05 13		05 47		06 16		11 05		11 50		12 42		13 40		
195 33.0 47.8		90 17.4 11.0 20 54.4 2.0 54.9		S 50		05 10		05 48		06 20		10 47		11 31		12 23		13 23		
210 33.2 46.8		104 47.4 11.1 20 56.4 1.9 54.9		52		05 09		05 48		06 22		10 39		11 22		12 14		13 14		
225 33.4 45.9		119 17.5 11.0 20 58.3 1.7 54.9		54		05 08		05 48		06 24		10 29		11 11		12 03		13 05		
240 33.6 44.9		133 47.5 10.9 21 00.0 1.7 54.9		56		05 06		05 49		06 26		10 18		11 00		11 52		12 54		
255 33.8 44.0		148 17.4 11.0 21 01.7 1.6 55.0		58		05 04		05 49		06 28		10 06		10 46		11 39		12 42		
270 34.1 N 5 43.1		162 47.4 10.8 S21 03.3 1.4 55.0		S 60		05 01		05 49		06 31		09 52		10 31		11 23		12 28		
285 34.3 42.1		177 17.2 10.9 21 04.7 1.4 55.0		Lat.		Sunset		Twilight		Moonset		7		8		9		10		
300 34.5 41.2		191 47.1 10.8 21 06.1 1.2 55.0		h m		h m		Civil		Naut.		h m		h m		h m		h m		
315 34.7 40.2		206 16.9 10.8 21 07.3 1.2 55.0		N 72		19 18		20 35		23 01		■		■		■		■		
330 34.9 39.3		220 46.7 10.7 21 08.5 1.0 55.1		N 70		19 09		20 17		22 01		■		■		■		■		
345 35.1 38.4		235 16.4 10.7 21 09.5 1.0 55.1		68		19 02		20 02		21 28		20 08		20 37		21 51		23 31		
0 35.3 N 5 37.4		249 46.1 10.7 S21 10.5 0.8 55.1		66		18 56		19 51		21 05		20 55		21 35		22 39		24 04		
15 35.6 36.5		264 15.8 10.6 21 11.3 0.8 55.1		64		18 51		19 41		20 47		21 26		22 09		23 10		24 28		
30 35.8 35.5		278 45.4 10.6 21 12.1 0.6 55.1		62		18 47		19 33		20 32		21 49		22 33		23 33		24 47		
45 36.0 34.6		293 15.0 10.6 21 12.7 0.5 55.2		N 50		18 43		19 26		20 21		22 07		22 53		23 51		25 03		
60 36.2 33.7		307 44.6 10.5 21 13.2 0.4 55.2		60		18 40		19 20		20 10		22 23		23 09		24 07		00 07		
75 36.4 32.7		322 14.1 10.5 21 13.6 0.4 55.2		56		18 37		19 15		20 02		22 36		23 22		24 20		00 20		
90 36.6 N 5 31.8		336 43.6 10.5 S21 14.0 0.2 55.2		54		18 34		19 10		19 54		22 47		23 34		24 31		00 31		
105 36.9 30.8		351 13.1 10.4 21 14.2 0.1 55.3		52		18 31		19 06		19 48		22 57		23 45		24 41		00 41		
120 37.1 29.9		5 42.5 10.4 21 14.3 0.0 55.3		50		18 29		19 02		19 42		23 06		23 54		24 50		00 50		
135 37.3 28.9		20 11.9 10.4 21 14.3 0.2 55.3		45		18 25		18 54		19 30		23 26		24 14		00 14		01 09		
150 37.5 28.0		34 41.3 10.4 21 14.1 0.2 55.3		N 40		18 21		18 48		19 20		23 41		24 30		00 30		01 24		
165 37.7 27.1		49 10.7 10.3 21 13.9 0.3 55.4		35		18 17		18 43		19 13		23 54		24 43		00 43		01 37		
180 37.9 N 5 26.1		63 40.0 10.3 S21 13.6 0.5 55.4		30		18 14		18 38		19 07		24 06		00 06		00 55		01 48		
195 38.1 25.2		78 09.3 10.2 21 13.1 0.5 55.4		20		18 09		18 31		18 57		24 25		00 25		01 15		02 08		
210 38.4 24.2		92 38.5 10.2 21 12.6 0.7 55.4		N 10		18 05		18 26		18 51		24 42		00 42		01 32		02 24		
225 38.6 23.3		107 07.7 10.2 21 11.9 0.7 55.5		0		18 01		18 22		18 46		00 10		00 58		01 49		02 40		
240 38.8 22.4		121 36.9 10.2 21 11.2 0.9 55.5		S 10		17 57		18 18		18 43		00 25		01 14		02 05		02 56		
255 39.0 21.4		136 06.1 10.2 21 10.3 1.0 55.5		20		17 53		18 15		18 41		00 41		01 31		02 22		03 12		
270 39.2 N 5 20.5		150 35.3 10.1 S21 09.3 1.1 55.5		30		17 49		18 13		18 40		00 59		01 51		02 42		03 31		
285 39.4 19.5		165 04.4 10.1 21 08.2 1.2 55.6		35		17 46		18 11		18 41		01 09		02 03		02 54		03 42		
300 39.7 18.6		179 33.5 10.0 21 07.0 1.3 55.6		40		17 43		18 10		18 42		01 22		02 16		03 07		03 55		
315 39.9 17.6		194 02.5 10.1 21 05.7 1.5 55.6		45		17 40		18 09		18 43		01 36		02 31		03 23		04 10		
330 40.1 16.7		208 31.6 10.0 21 04.2 1.5 55.7		S 50		17 36		18 09		18 46		01 54		02 50		03 42		04 28		
345 40.3 15.7		223 00.6 10.0 21 02.7 1.6 55.7		52		17 35		18 08		18 47		02 02		03 00		03 51		04 37		
0 40.5 N 5 14.8		237 29.6 10.0 S21 01.1 1.8 55.7		54		17 33		18 08		18 49		02 12		03 10		04 02		04 46		
15 40.7 13.9		251 58.6 9.9 20 59.3 1.9 55.7		56		17 31		18 08		18 51		02 22		03 21		04 13		04 57		
30 41.0 12.9		266 27.5 9.9 20 57.4 2.0 55.8		58		17 28		18 07		18 53		02 34		03 34		04 27		05 09		
45 41.2 12.0		280 56.4 9.9 20 55.4 2.1 55.8		S 60		17 26		18 07		18 56		02 48		03 50		04 42		05 24		
60 41.4 11.0		295 25.3 9.9 20 53.3 2.2 55.8		Day		Eqn. of Time		Mer. Pass.		Mer. Pass.		Upper		Lower		Age		Phase		
75 41.6 10.1		309 54.2 9.9 20 51.1 2.3 55.8		m s		m s		h m		h m		h m		h m		d		☉		
90 41.8 N 5 09.1		324 23.1 9.8 S20 48.8 2.4 55.9		7		01 50		02 00		11 58		18 46		06 22		09				
105 42.0 08.2		338 51.9 9.9 20 46.4 2.6 55.9		8		02 11		02 21</												

G.M.T.	ARIES			VENUS -3.5			MARS +1.8			JUPITER -1.2			SATURN +1.1			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
10 00	348 56.4	144 28.7	S10 38.7	221 18.6	N20 01.4		156 06.4	S 4 17.6		159 10.8	S 1 47.3		Acomar	315 36.5	S40 22.5			
01	3 58.8	159 28.5	40.0	236 19.4	01.0		171 08.4	17.8		174 13.0	47.4		Achernar	335 44.3	S57 19.7			
02	19 01.3	174 28.2	41.2	251 20.3	00.7		186 10.4	18.0		189 15.2	47.5		Acruz	173 37.2	S62 59.8			
03	34 03.8	189 27.9	42.4	266 21.1	20 00.3		201 12.4	18.2		204 17.4	47.6		Adhara	255 31.7	S28 56.6			
04	49 06.7	204 27.7	43.6	281 21.9	19 59.9		216 14.4	18.4		219 19.6	47.7		Aldebaran	291 17.2	N16 28.4			
05	64 08.7	219 27.4	44.8	296 22.8	59.6		231 16.4	18.6		234 21.8	47.8							
06	79 11.7	234 27.2	S10 46.0	311 23.6	N19 59.2		246 18.4	S 4 18.8		249 24.0	S 1 48.0		Alioth	166 42.4	N56 03.8			
07	94 13.6	249 26.9	47.2	326 24.4	58.9		261 20.3	19.0		264 26.2	48.1		Alkaid	153 18.3	N49 24.6			
08	109 16.1	264 26.6	48.4	341 25.3	58.5		276 22.3	19.2		279 28.4	48.2		Al Na'ir	28 13.6	S47 03.0			
T 09	124 18.6	279 26.4	49.6	356 26.1	58.2		291 24.3	19.4		294 30.5	48.3		Alnilam	276 11.0	S 1 12.7			
H 10	139 21.0	294 26.1	50.8	11 26.9	57.8		306 26.3	19.6		309 32.7	48.4		Alphard	218 20.2	S 8 34.5			
U 11	154 23.5	309 25.9	52.0	26 27.8	57.4		321 28.3	19.8		324 34.9	48.5							
S 12	169 25.9	324 25.6	S10 53.2	41 28.6	N19 57.1		336 30.3	S 4 20.0		339 37.1	S 1 48.7		Alphecca	126 31.7	N26 46.9			
D 13	184 28.4	339 25.3	54.4	56 29.5	56.7		351 32.3	20.2		354 39.3	48.8		Alpheratz	358 08.3	N28 59.3			
A 14	199 30.9	354 25.1	55.6	71 30.3	56.4		6 34.3	20.4		9 41.5	48.9		Altair	62 31.7	N 8 49.3			
Y 15	214 33.3	9 24.8	56.8	86 31.1	56.0		21 36.3	20.6		24 43.7	49.0		Ankaa	353 39.2	S42 24.3			
16	229 35.8	24 24.5	58.0	101 32.0	55.6		36 38.3	20.8		39 45.9	49.1		Antares	112 56.1	S26 23.5			
17	244 38.3	39 24.3	10 59.2	116 32.8	55.3		51 40.3	21.0		54 48.1	49.2							
18	259 40.7	54 24.0	S11 00.4	131 33.6	N19 54.9		66 42.3	S 4 21.2		69 50.3	S 1 49.4		Arcturus	146 18.1	N19 17.0			
19	274 43.2	69 23.8	01.6	146 34.5	54.6		81 44.3	21.4		84 52.5	49.5		Atria	108 19.8	S68 59.9			
20	289 45.7	84 23.5	02.8	161 35.3	54.2		96 46.3	21.6		99 54.7	49.6		Avior	234 28.4	S59 26.8			
21	304 48.1	99 23.2	04.0	176 36.2	53.8		111 48.2	21.8		114 56.9	49.7		Bellatrix	278 58.0	N 6 20.1			
22	319 50.6	114 23.0	05.2	191 37.0	53.5		126 50.2	22.0		129 59.1	49.8		Betelgeuse	271 27.6	N 7 24.3			
23	334 53.1	129 22.7	06.4	206 37.8	53.1		141 52.2	22.2		145 01.3	49.9							
11 00	349 55.5	144 22.4	S11 07.6	221 38.7	N19 52.7		156 54.2	S 4 22.4		160 03.5	S 1 50.1		Canopus	264 07.1	S52 40.9			
01	4 58.0	159 22.2	08.8	236 39.5	52.4		171 56.2	22.6		175 05.7	50.2		Capella	281 10.3	N45 58.6			
02	20 00.4	174 21.9	10.0	251 40.4	52.0		186 58.2	22.8		190 07.9	50.3		Deneb	49 47.7	N45 13.1			
03	35 02.9	189 21.6	11.2	266 41.2	51.7		202 00.2	23.0		205 10.1	50.4		Denebola	182 58.7	N14 40.7			
04	50 05.4	204 21.4	12.4	281 42.0	51.3		217 02.2	23.2		220 12.3	50.5		Diphda	349 19.9	S18 05.2			
05	65 07.8	219 21.1	13.6	296 42.9	50.9		232 04.2	23.4		235 14.5	50.6							
06	80 10.3	234 20.8	S11 14.8	311 43.7	N19 50.6		247 06.2	S 4 23.6		250 16.7	S 1 50.8		Dubhe	194 21.9	N61 51.1			
07	95 12.8	249 20.6	16.0	326 44.6	50.2		262 08.2	23.8		265 18.9	50.9		Elnath	278 43.3	N28 35.5			
08	110 15.2	264 20.3	17.2	341 45.4	49.8		277 10.1	24.0		280 21.1	51.0		Eltanin	90 57.3	N51 29.8			
F 09	125 17.7	279 20.0	18.4	356 46.2	49.5		292 12.1	24.2		295 23.3	51.1		Enif	34 10.6	N 9 47.5			
R 10	140 20.2	294 19.8	19.6	11 47.1	49.1		307 14.1	24.5		310 25.4	51.2		Fomalhaut	15 50.3	S29 43.1			
I 11	155 22.6	309 19.5	20.7	26 47.9	48.8		322 16.1	24.7		325 27.6	51.3							
D 12	170 25.1	324 19.2	S11 21.9	41 48.8	N19 48.4		337 18.1	S 4 24.9		340 29.8	S 1 51.5		Gacrux	172 28.6	S57 00.6			
A 13	185 27.5	339 19.0	23.1	56 49.6	48.0		352 20.1	25.1		355 32.0	51.6		Gienah	176 17.6	S17 26.2			
Y 14	200 30.0	354 18.7	24.3	71 50.5	47.7		7 22.1	25.3		10 34.2	51.7		Hadar	149 22.9	S60 17.1			
15	215 32.5	9 18.4	25.5	86 51.3	47.3		22 24.1	25.5		25 36.4	51.8		Hamal	328 27.9	N23 22.5			
16	230 34.9	24 18.2	26.7	101 52.1	46.9		37 26.1	25.7		40 38.6	51.9		Kaus Aust.	84 15.8	S34 23.7			
17	245 37.4	39 17.9	27.9	116 53.0	46.6		52 28.1	25.9		55 40.8	52.1							
18	260 39.9	54 17.6	S11 29.1	131 53.8	N19 46.2		67 30.1	S 4 26.1		70 43.0	S 1 52.2		Kochab	137 19.7	N74 14.2			
19	275 42.3	69 17.3	30.3	146 54.7	45.8		82 32.0	26.3		85 45.2	52.3		Markab	14 02.2	N15 06.4			
20	290 44.8	84 17.1	31.5	161 55.5	45.5		97 34.0	26.5		100 47.4	52.4		Menkar	314 40.3	N 4 01.1			
21	305 47.3	99 16.8	32.7	176 56.4	45.1		112 36.0	26.7		115 49.6	52.5		Menkent	148 36.5	S36 16.7			
22	320 49.7	114 16.5	33.8	191 57.2	44.7		127 38.0	26.9		130 51.8	52.6		Miaplacidus	221 45.6	S69 38.3			
23	335 52.2	129 16.3	35.0	206 58.1	44.4		142 40.0	27.1		145 54.0	52.8							
12 00	350 54.7	144 16.0	S11 36.2	221 58.9	N19 44.0		157 42.0	S 4 27.3		160 56.2	S 1 52.9		Mirfak	309 14.9	N49 47.6			
01	5 57.1	159 15.7	37.4	236 59.7	43.6		172 44.0	27.5		175 58.4	53.0		Nunki	76 28.2	S26 19.2			
02	20 59.6	174 15.5	38.6	252 00.6	43.3		187 46.0	27.7		191 00.6	53.1		Peacock	53 56.9	S56 47.8			
03	36 02.0	189 15.2	39.8	267 01.4	42.9		202 48.0	27.9		206 02.8	53.2		Pollux	243 57.6	N28 04.3			
04	51 04.5	204 14.9	41.0	282 02.3	42.5		217 50.0	28.1		221 05.0	53.3		Procyon	245 25.3	N 5 16.5			
05	66 07.0	219 14.6	42.2	297 03.1	42.2		232 51.9	28.3		236 07.1	53.5							
06	81 09.4	234 14.4	S11 43.3	312 04.0	N19 41.8		247 53.9	S 4 28.5		251 09.3	S 1 53.6		Rasalhague	96 28.9	N12 34.6			
07	96 11.9	249 14.1	44.5	327 04.8	41.4		262 55.9	28.7		266 11.5	53.7		Regulus	208 09.6	N12 03.6			
S 08	111 14.4	264 13.8	45.7	342 05.7	41.1		277 57.9	28.9		281 13.7	53.8		Rigel	281 35.4	S 8 13.2			
A 09	126 16.8	279 13.5	46.9	357 06.5	40.7		292 59.9	29.1		296 15.9	53.9		Rigil Kent.	140 25.3	S60 45.6			
T 10	141 19.3	294 13.3	48.1	12 07.4	40.3		308 01.9	29.3		311 18.1	54.0		Sabik	102 40.4	S15 42.1			
U 11	156 21.8	309 13.0	49.3	27 08.2	39.9		323 03.9	29.5		326 20.3	54.2							
D 12	171 24.2	324 12.7	S11 50.4	42 09.1	N19 39.6		338 05.9	S 4 29.7		341 22.5	S 1 54.3		Schedar	350 07.7	N56 26.1			
R 13	186 26.7	339 12.5	51.6	57 09.9	39.2		353 07.9	29.9		356 24.7	54.4		Shoula	96 54.8	S37 05.5			
A 14	201 29.2	354 12.2	52.8	72 10.8	38.8		8 09.8	30.1		11 26.9	54.5		Sirius	258 55.2	S16 41.3			
Y 15	216 31.6	9 11.9	54.0	87 11.6	38.5		23 11.8	30.3		26 29.1	54.6		Spica	15				

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	10	11	12	13
									h m		h m	h m	h m	h m	h m
10 00	180 43.1 N	5 03.5	51 15.9	9.7	S20 32.5	3.1	56.1	N 72	01 26	03 33	04 48	20 12	19 48	19 36	19 27
01	195 43.4	02.5	65 44.6	9.8	20 29.4	3.2	56.1	68	02 40	04 02	05 02	19 16	19 18	19 18	19 16
02	210 43.6	01.6	80 13.4	9.7	20 26.2	3.3	56.1	66	03 01	04 13	05 07	18 43	18 56	19 03	19 07
03	225 43.8	5 00.6	94 42.1	9.7	20 22.9	3.5	56.1	64	03 17	04 21	05 11	18 18	18 38	18 51	19 00
04	240 44.0	4 59.7	109 10.8	9.6	20 19.4	3.5	56.2	62	03 30	04 29	05 15	17 59	18 23	18 40	18 54
05	255 44.2	58.7	123 39.4	9.7	20 15.9	3.7	56.2	60	03 41	04 35	05 18	17 43	18 10	18 31	18 48
06	270 44.4 N	4 57.8	138 08.1	9.7	S20 12.2	3.8	56.2	N 58	03 51	04 40	05 21	17 30	17 59	18 23	18 43
07	285 44.7	56.8	152 36.8	9.6	20 08.4	3.8	56.3	56	03 59	04 45	05 23	17 18	17 50	18 16	18 39
T 08	300 44.9	55.9	167 05.4	9.6	20 04.6	4.1	56.3	54	04 06	04 49	05 26	17 08	17 42	18 10	18 35
H 09	315 45.1	54.9	181 34.0	9.7	20 00.5	4.1	56.3	52	04 12	04 53	05 28	16 59	17 34	18 04	18 31
U 10	330 45.3	54.0	196 02.7	9.6	19 56.4	4.2	56.4	50	04 17	04 57	05 30	16 50	17 27	17 59	18 28
R 11	345 45.5	53.0	210 31.3	9.6	19 52.2	4.3	56.4	45	04 28	05 04	05 34	16 33	17 13	17 48	18 20
S 12	0 45.8 N	4 52.1	224 59.9	9.6	S19 47.9	4.5	56.4	N 40	04 37	05 10	05 37	16 19	17 01	17 39	18 14
D 13	15 46.0	51.1	239 28.5	9.6	19 43.4	4.5	56.4	35	04 44	05 14	05 40	16 07	16 50	17 31	18 09
A 14	30 46.2	50.2	253 57.1	9.5	19 38.9	4.7	56.5	30	04 50	05 18	05 42	15 56	16 41	17 24	18 05
Y 15	45 46.4	49.2	268 25.6	9.6	19 34.2	4.8	56.5	20	04 59	05 24	05 46	15 38	16 26	17 12	17 57
16	60 46.6	48.3	282 54.2	9.6	19 29.4	4.9	56.5	N 10	05 04	05 29	05 50	15 22	16 12	17 01	17 50
17	75 46.8	47.3	297 22.8	9.5	19 24.5	5.0	56.6	0	05 09	05 33	05 53	15 07	15 59	16 51	17 43
18	90 47.1 N	4 46.4	311 51.3	9.6	S19 19.5	5.1	56.6	S 10	05 11	05 36	05 57	14 52	15 46	16 41	17 36
19	105 47.3	45.5	326 19.9	9.5	19 14.4	5.3	56.6	20	05 12	05 38	06 00	14 36	15 33	16 31	17 29
20	120 47.5	44.5	340 48.4	9.6	19 09.1	5.3	56.7	30	05 12	05 40	06 03	14 18	15 17	16 18	17 21
21	135 47.7	43.6	355 17.0	9.5	19 03.8	5.4	56.7	35	05 11	05 40	06 05	14 07	15 08	16 11	17 17
22	150 47.9	42.6	9 45.5	9.5	18 58.4	5.6	56.7	40	05 09	05 41	06 08	13 55	14 57	16 03	17 11
23	165 48.2	41.7	24 14.0	9.6	18 52.8	5.7	56.8	45	05 07	05 41	06 10	13 40	14 45	15 54	17 05
11 00	180 48.4 N	4 40.7	38 42.6	9.5	S18 47.1	5.8	56.8	S 50	05 04	05 41	06 13	13 23	14 30	15 42	16 58
01	195 48.6	39.8	53 11.1	9.5	18 41.3	5.8	56.8	52	05 02	05 41	06 15	13 14	14 23	15 37	16 54
02	210 48.8	38.8	67 39.6	9.6	18 35.5	6.0	56.9	54	05 00	05 41	06 16	13 05	14 15	15 31	16 50
03	225 49.0	37.9	82 08.2	9.5	18 29.5	6.1	56.9	56	04 58	05 41	06 18	12 54	14 06	15 24	16 46
04	240 49.3	36.9	96 36.7	9.5	18 23.4	6.3	56.9	58	04 55	05 41	06 20	12 42	13 56	15 17	16 41
05	255 49.5	36.0	111 05.2	9.5	18 17.1	6.3	57.0	S 60	04 52	05 40	06 22	12 28	13 45	15 08	16 36
06	270 49.7 N	4 35.0	125 33.7	9.5	S18 10.8	6.4	57.0								
07	285 49.9	34.1	140 02.2	9.6	18 04.4	6.5	57.0								
08	300 50.1	33.1	154 30.8	9.5	17 57.9	6.7	57.1	Lat.	Sunset	Twilight		Moonset			
F 09	315 50.4	32.2	168 59.3	9.5	17 51.2	6.7	57.1			Civil	Naut.	10	11	12	13
R 10	330 50.6	31.2	183 27.8	9.5	17 44.5	6.9	57.1								
I 11	345 50.8	30.3	197 56.3	9.6	17 37.6	6.9	57.2	N 72	19 02	20 17	22 17	00 05	00 05	02 28	
D 12	0 51.0 N	4 29.3	212 24.9	9.5	S17 30.7	7.1	57.2	N 70	18 55	20 01	21 36	22 36	24 49	00 49	02 50
A 13	15 51.2	28.3	226 53.4	9.5	17 23.6	7.2	57.2	68	18 49	19 48	21 09	23 31	25 18	01 18	03 07
Y 14	30 51.5	27.4	241 21.9	9.6	17 16.4	7.2	57.3	66	18 45	19 38	20 49	24 04	00 04	01 40	03 21
15	45 51.7	26.4	255 50.5	9.5	17 09.2	7.4	57.3	64	18 40	19 30	20 33	24 28	00 28	01 57	03 32
16	60 51.9	25.5	270 19.0	9.6	17 01.8	7.5	57.3	62	18 37	19 23	20 20	24 47	00 47	02 11	03 41
17	75 52.1	24.5	284 47.6	9.5	16 54.3	7.6	57.4	60	18 34	19 17	20 10	25 03	01 03	02 23	03 49
18	90 52.3 N	4 23.6	299 16.1	9.6	S16 46.7	7.7	57.4	N 58	18 31	19 11	20 01	00 07	01 16	02 33	03 56
19	105 52.6	22.6	313 44.7	9.5	16 39.0	7.7	57.4	56	18 29	19 07	19 53	00 20	01 27	02 42	04 02
20	120 52.8	21.7	328 13.2	9.6	16 31.3	7.9	57.5	54	18 26	19 02	19 46	00 31	01 37	02 50	04 08
21	135 53.0	20.7	342 41.8	9.5	16 23.4	8.0	57.5	52	18 25	18 59	19 40	00 41	01 46	02 57	04 13
22	150 53.2	19.8	357 10.3	9.6	16 15.4	8.1	57.5	50	18 23	18 55	19 35	00 50	01 54	03 03	04 18
23	165 53.4	18.8	11 38.9	9.6	16 07.3	8.2	57.5	45	18 19	18 48	19 24	01 09	02 10	03 17	04 27
12 00	180 53.7 N	4 17.9	26 07.5	9.6	S15 59.1	8.3	57.6	N 40	18 16	18 43	19 15	01 24	02 24	03 28	04 35
01	195 53.9	16.9	40 36.1	9.6	15 50.8	8.4	57.6	35	18 13	18 38	19 08	01 37	02 36	03 38	04 42
02	210 54.1	16.0	55 04.7	9.6	15 42.4	8.4	57.6	30	18 11	18 35	19 03	01 48	02 46	03 46	04 48
03	225 54.3	15.0	69 33.3	9.6	15 34.0	8.6	57.7	20	18 06	18 29	18 54	02 08	03 03	04 00	04 59
04	240 54.5	14.1	84 01.9	9.6	15 25.4	8.7	57.7	N 10	18 03	18 24	18 49	02 24	03 18	04 13	05 08
05	255 54.8	13.1	98 30.5	9.6	15 16.7	8.7	57.7	0	18 00	18 21	18 45	02 40	03 32	04 24	05 16
06	270 55.0 N	4 12.2	112 59.1	9.7	S15 08.0	8.9	57.8	S 10	17 57	18 18	18 42	02 56	03 46	04 36	05 24
07	285 55.2	11.2	127 27.8	9.6	14 59.1	9.0	57.8	20	17 54	18 16	18 41	03 12	04 01	04 48	05 33
S 08	300 55.4	10.2	141 56.4	9.6	14 50.1	9.0	57.8	30	17 50	18 14	18 42	03 31	04 18	05 02	05 43
A 09	315 55.6	9.9	156 25.0	9.7	14 41.1	9.1	57.9	35	17 48	18 14	18 43	03 42	04 28	05 10	05 49
T 10	330 55.9	08.3	170 53.7	9.7	14 32.0	9.3	57.9	40	17 46	18 13	18 45	03 55	04 39	05 19	05 55
U 11	345 56.1	07.4	185 22.4	9.6	14 22.7	9.3	57.9	45	17 44	18 13	18 47	04 10	04 52	05 29	06 03
R 12	0 56.3 N	4 06.4	199 51.0	9.7	S14 13.4	9.4	58.0	S 50	17 41	18 13	18 50	04 28	05 08	05 42	06 12
D 13	15 56.5	05.5	214 19.7	9.7	14 04.0	9.5	58.0	52	17 39	18 13	18 52	04 37	05 15	05 48	06 16
A 14	30 56.8	04.5	228 48.4	9.7	13 54.5	9.6	58.0	54	17 38	18 13	18 54	04 46	05 23	05 54	06 21
Y 15	45 57.0	03.6	243 17.1	9.7	13 44.9	9.7	58.1	56	17 36	18 13	18 57	04 57	05 33	06 02	06 26
16	60 57.2	02.6	257 45.8	9.7	13 35.2	9.7	58.1	58	17 35	18 14	18 59	05 09	05 43	06 10	06 31
17	75 57.4	01.7	272 14.5	9.7	13 25.5	9.9	58.1	S 60	17 33	18 14	19 03	05 24	05 55	06 19	06 37
18	90 57.6 N	4 00.7	286 43.2	9.7	S13 15.6	9.9	58.2								
19	105 57.9	3 59.7	301 11.9	9.8	13 05.7	10.0	58.2								
20	120 58.1	58.8	315												

G.M.T.		ARIES		VENUS -3.6		MARS +1.8		JUPITER -1.2		SATURN +1.1		STARS		
		G.H.A.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		G.H.A. Dec.		Name	S.H.A.	Dec.
13	00	351 53.8	144 09.4 S12 04.6	222 19.2 N19 35.1	158 29.7 S 4 32.1	161 48.8 S 1 55.7	Acamar	315 36.5	S40 22.5					
	01	6 56.3	159 09.1 05.8	237 20.1 34.8	173 31.7 32.3	176 51.0 55.8	Achernar	335 44.2	S57 19.7					
	02	21 58.7	174 08.9 07.0	252 20.9 34.4	188 33.7 32.5	191 53.2 55.9	Acrux	173 37.2	S62 59.8					
	03	37 01.2	189 08.6 .. 08.1	267 21.8 .. 34.0	203 35.7 .. 32.7	206 55.4 .. 56.0	Adhara	255 31.7	S28 56.6					
	04	52 03.6	204 08.3 09.3	282 22.6 33.6	218 37.7 33.0	221 57.6 56.2	Aldebaran	291 17.2	N16 28.4					
	05	67 06.1	219 08.0 10.5	297 23.5 33.3	233 39.7 33.2	236 59.8 56.3								
	06	82 08.6	234 07.8 S12 11.7	312 24.4 N19 32.9	248 41.7 S 4 33.4	252 02.0 S 1 56.4	Alioth	166 42.4	N56 03.8					
	07	97 11.0	249 07.5 12.8	327 25.2 32.5	263 43.6 33.6	267 04.2 56.5	Alkaid	153 18.3	N49 24.6					
	08	112 13.5	264 07.2 14.0	342 26.1 32.1	278 45.6 33.8	282 06.4 56.6	Al Na'ir	28 13.6	S47 03.1					
	S	09	127 16.0	279 06.9 .. 15.2	357 26.9 .. 31.8	293 47.6 .. 34.0	297 08.6 .. 56.7	Alnilam	276 11.0	S 1 12.7				
	U	10	142 18.4	294 06.6 16.4	12 27.8 31.4	308 49.6 34.2	312 10.8 56.9	Alphard	218 20.2	S 8 34.5				
	N	11	157 20.9	309 06.4 17.5	27 28.6 31.0	323 51.6 34.4	327 13.0 57.0							
	D	12	172 23.4	324 06.1 S12 18.7	42 29.5 N19 30.6	338 53.6 S 4 34.6	342 15.2 S 1 57.1	Alphecca	126 31.7	N26 46.9				
	A	13	187 25.8	339 05.8 19.9	57 30.3 30.3	353 55.6 34.8	357 17.4 57.2	Alpheratz	358 08.3	N28 59.4				
	Y	14	202 28.3	354 05.5 21.1	72 31.2 29.9	8 57.6 35.0	12 19.5 57.3	Altair	62 31.7	N 8 49.3				
		15	217 30.8	9 05.2 .. 22.2	87 32.0 .. 29.5	23 59.5 .. 35.2	27 21.7 .. 57.5	Ankaa	353 39.1	S42 24.3				
		16	232 33.2	24 05.0 23.4	102 32.9 29.1	39 01.5 35.4	42 23.9 57.6	Antares	112 56.1	S26 23.5				
		17	247 35.7	39 04.7 24.6	117 33.7 28.8	54 03.5 35.6	57 26.1 57.7							
		18	262 38.1	54 04.4 S12 25.7	132 34.6 N19 28.4	69 05.5 S 4 35.8	72 28.3 S 1 57.8	Arcturus	146 18.1	N19 16.9				
		19	277 40.6	69 04.1 26.9	147 35.4 28.0	84 07.5 36.0	87 30.5 57.9	Atria	108 19.8	S68 59.9				
		20	292 43.1	84 03.8 28.1	162 36.3 27.6	99 09.5 36.2	102 32.7 58.0	Avior	234 28.4	S59 26.8				
		21	307 45.5	99 03.6 .. 29.2	177 37.2 .. 27.3	114 11.5 .. 36.4	117 34.9 .. 58.2	Bellatrix	278 58.0	N 6 20.1				
		22	322 48.0	114 03.3 30.4	192 38.0 26.9	129 13.5 36.6	132 37.1 58.3	Betelgeuse	271 27.6	N 7 24.3				
	23	337 50.5	129 03.0 31.6	207 38.9 26.5	144 15.4 36.8	147 39.3 58.4								
14	00	352 52.9	144 02.7 S12 32.7	222 39.7 N19 26.1	159 17.4 S 4 37.0	162 41.5 S 1 58.5	Canopus	264 07.0	S52 40.8					
	01	7 55.4	159 02.4 33.9	237 40.6 25.8	174 19.4 37.2	177 43.7 58.6	Capella	281 10.3	N45 58.6					
	02	22 57.9	174 02.1 35.1	252 41.4 25.4	189 21.4 37.4	192 45.9 58.8	Deneb	49 47.7	N45 13.1					
	03	38 00.3	189 01.9 .. 36.2	267 42.3 .. 25.0	204 23.4 .. 37.6	207 48.0 .. 58.9	Denebola	182 58.7	N14 40.7					
	04	53 02.8	204 01.6 37.4	282 43.1 24.6	219 25.4 37.8	222 50.2 59.0	Diphda	349 19.9	S18 05.2					
	05	68 05.3	219 01.3 38.6	297 44.0 24.2	234 27.4 38.0	237 52.4 59.1								
	06	83 07.7	234 01.0 S12 39.7	312 44.9 N19 23.9	249 29.3 S 4 38.2	252 54.6 S 1 59.2	Dubhe	194 21.9	N61 51.1					
	07	98 10.2	249 00.7 40.9	327 45.7 23.5	264 31.3 38.4	267 56.8 59.3	Elnath	278 43.3	N28 35.5					
	08	113 12.6	264 00.4 42.1	342 46.6 23.1	279 33.3 38.6	282 59.0 59.5	Eltanin	90 57.3	N51 29.8					
	M	09	128 15.1	279 00.1 .. 43.2	357 47.4 .. 22.7	294 35.3 .. 38.8	298 01.2 .. 59.6	Enif	34 10.6	N 9 47.5				
	O	10	143 17.6	293 59.9 44.4	12 48.3 22.4	309 37.3 39.0	313 03.4 59.7	Fomalhaut	15 50.3	S29 43.2				
	N	11	158 20.0	308 59.6 45.6	27 49.1 22.0	324 39.3 39.2	328 05.6 59.8							
	D	12	173 22.5	323 59.3 S12 46.7	42 50.0 N19 21.6	339 41.3 S 4 39.4	343 07.8 S 1 59.9	Gacrux	172 28.6	S57 00.5				
	A	13	188 25.0	338 59.0 47.9	57 50.9 21.2	354 43.2 39.6	358 10.0 2 00.0	Gienah	176 17.6	S17 26.2				
	Y	14	203 27.4	353 58.7 49.0	72 51.7 20.8	9 45.2 39.9	13 12.2 00.2	Hadar	149 22.9	S60 17.1				
		15	218 29.9	8 58.4 .. 50.2	87 52.6 .. 20.5	24 47.2 .. 40.1	28 14.4 .. 00.3	Hamal	328 27.9	N23 22.5				
		16	233 32.4	23 58.1 51.4	102 53.4 20.1	39 49.2 40.3	43 16.5 00.4	Kaus Aust.	84 15.8	S34 23.7				
		17	248 34.8	38 57.8 52.5	117 54.3 19.7	54 51.2 40.5	58 18.7 00.5							
		18	263 37.3	53 57.6 S12 53.7	132 55.2 N19 19.3	69 53.2 S 4 40.7	73 20.9 S 2 00.6	Kochab	137 19.7	N74 14.2				
		19	278 39.8	68 57.3 54.8	147 56.0 18.9	84 55.2 40.9	88 23.1 00.8	Markab	14 02.2	N15 06.5				
		20	293 42.2	83 57.0 56.0	162 56.9 18.6	99 57.1 41.1	103 25.3 00.9	Menkar	314 40.2	N 4 01.1				
		21	308 44.7	98 56.7 .. 57.2	177 57.7 .. 18.2	114 59.1 .. 41.3	118 27.5 .. 01.0	Menkent	148 36.5	S36 16.7				
		22	323 47.1	113 56.4 58.3	192 58.6 17.8	130 01.1 41.5	133 29.7 01.1	Miaplacidus	221 45.6	S69 38.3				
	23	338 49.6	128 56.1 12 59.5	207 59.5 17.4	145 03.1 41.7	148 31.9 01.2								
15	00	353 52.1	143 55.8 S13 00.6	223 00.3 N19 17.0	160 05.1 S 4 41.9	163 34.1 S 2 01.3	Mirfak	309 14.9	N49 47.6					
	01	8 54.5	158 55.5 01.8	238 01.2 16.7	175 07.1 42.1	178 36.3 01.5	Nunki	76 28.2	S26 19.2					
	02	23 57.0	173 55.2 02.9	253 02.0 16.3	190 09.1 42.3	193 38.5 01.6	Peacock	53 56.9	S56 47.8					
	03	38 59.5	188 55.0 .. 04.1	268 02.9 .. 15.9	205 11.0 .. 42.5	208 40.7 .. 01.7	Pollux	243 57.5	N28 04.3					
	04	54 01.9	203 54.7 05.2	283 03.8 15.5	220 13.0 42.7	223 42.8 01.8	Procyon	245 25.3	N 5 16.5					
	05	69 04.4	218 54.4 06.4	298 04.6 15.1	235 15.0 42.9	238 45.0 01.9								
	06	84 06.9	233 54.1 S13 07.6	313 05.5 N19 14.7	250 17.0 S 4 43.1	253 47.2 S 2 02.1	Rasalhague	96 28.9	N12 34.6					
	07	99 09.3	248 53.8 08.7	328 06.4 14.4	265 19.0 43.3	268 49.4 02.2	Regulus	208 09.6	N12 03.6					
	08	114 11.8	263 53.5 09.9	343 07.2 14.0	280 21.0 43.5	283 51.6 02.3	Rigel	281 35.3	S 8 13.2					
	09	129 14.2	278 53.2 .. 11.0	358 08.1 .. 13.6	295 22.9 .. 43.7	298 53.8 .. 02.4	Rigel Kent.	140 25.4	S60 45.6					
	T	10	144 16.7	293 52.9 12.2	13 08.9 13.2	310 24.9 43.9	313 56.0 02.5	Sabik	102 40.4	S15 42.1				
	U	11	159 19.2	308 52.6 13.3	28 09.8 12.8	325 26.9 44.1	328 58.2 02.6							
	S	12	174 21.6	323 52.3 S13 14.5	43 10.7 N19 12.4	340 28.9 S 4 44.3	344 00.4 S 2 02.8	Schedar	350 07.7	N56 26.1				
	D	13	189 24.1	338 52.0 15.6	58 11.5 12.1	355 30.9 44.5	359 02.6 02.9	Shoula	96 54.8	S37 05.5				
	A	14	204 26.6	353 51.7 16.8	73 12.4 11.7	10 32.9 44.7	14 04.8 03.0	Sirius	258 55.2	S16 41.3				
	Y	15	219 29.0	8 51.5 .. 17.9	88 13.3 .. 11.3	25 34.9 .. 44.9	29 07.0 .. 03.1	Spica	158 57.1	S11 03.8				
		16	234 31.5	23 51.2 19.1	103 14.1 10.9	40 36.8 45.1	44 09.1 03.2	Suhail	223 10.7	S43 21.2				
		17	249 34.0	38 50.9 20.2	118 15.0 10.5	55 38.8 45.3	59 11.3 03.4							
		18	264 36.4	53 50.6 S13 21.4	133 15.9 N19 10.1	70 40.8 S 4 45.6	74 13.5 S 2 03.5	Vega	80 55.3	N38 46.3				
		19	279 38.9	68 50.3 22.5	148 16.7 09.8	85 42.8 45.8	89 15.7 03.6	Zuben'ubi	137 32.5	S15 57.8				
		20	294 41.4	83 50.0 23.6	163 17.6 09.4	100 44.8 46.0	104 17.9 03.7							
		21	309 43.8	98 49.7 .. 24.8	178 18.4 .. 09.0	115 46.8 .. 46.2	119 20.1 .. 03.8							
		22	324 46.3	113 49.4 25.9	193 19.3 08.6	130 48.7 46.4	134 22.3 03.9	Venus	151 09.8	14 24				
	23	339 48.7	128 49.1 27.1	208 20.2 08.2	145 50.7 46.6	149 24.5 04.1	Mars	229 46.8	9 09					
							Jupiter	166 24.5	13 21					
							Saturn	169 48.5	13 07					

Mer Pnss. 0 28.4

v -0.3 d 1.2

v 0.9 d 0.4

v 2.0 d 0.2

v 2.2 d 0.1

	S.H.A.	Mer.	Pnss.
Venus	151 09.8	14	24
Mars	229 46.8	9	09
Jupiter	166 24.5	13	21
Saturn	169 48.5	13	07

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise															
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	13	14	15	16											
	°	'	°	'	°	'	"	h	m	h	m	h	m	h	m	h	m									
13 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	180	59.0	N 3	55.0	13	35.7	9.8	S12	14.8	10.5	58.3	N 72	01	57	03	49	05	02	19	40	19	24	19	09	18	54
	195	59.2		54.0	28	04.5	9.8	12	04.3	10.5	58.4	68	02	56	04	14	05	12	19	16	19	14	19	12	19	10
	210	59.4		53.1	42	33.3	9.8	11	53.8	10.6	58.4	66	03	14	04	23	05	16	19	07	19	11	19	14	19	17
	225	59.6		52.1	57	02.1	9.8	11	43.2	10.6	58.4	64	03	28	04	31	05	20	19	00	19	08	19	15	19	22
	240	59.9		51.1	71	30.9	9.8	11	32.6	10.8	58.5	62	03	40	04	37	05	22	18	54	19	05	19	15	19	27
	256	00.1		50.2	85	59.7	9.8	11	21.8	10.8	58.5	60	03	50	04	42	05	25	18	48	19	02	19	16	19	31
	271	00.3	N 3	49.2	100	28.5	9.9	S11	11.0	10.9	58.5	N 58	03	58	04	47	05	27	18	43	19	00	19	17	19	34
	286	00.5		48.3	114	57.4	9.8	11	00.1	10.9	58.5	56	04	06	04	51	05	29	18	39	18	58	19	18	19	37
	301	00.7		47.3	129	26.2	9.9	10	49.2	11.0	58.6	54	04	12	04	55	05	31	18	35	18	57	19	18	19	40
	316	01.0		46.4	143	55.1	9.8	10	38.2	11.1	58.6	52	04	17	04	58	05	33	18	31	18	55	19	19	19	43
	331	01.2		45.4	158	23.9	9.9	10	27.1	11.2	58.6	50	04	22	05	01	05	34	18	28	18	54	19	19	19	45
	346	01.4		44.4	172	52.8	9.8	10	15.9	11.3	58.7	45	04	32	05	08	05	37	18	20	18	51	19	20	19	51
	1	01.6	N 3	43.5	187	21.6	9.9	S10	04.6	11.3	58.7	N 40	04	40	05	12	05	40	18	14	18	48	19	21	19	55
16	01.8		42.5	201	50.5	9.9	9	53.3	11.3	58.7	35	04	47	05	16	05	42	18	09	18	46	19	22	19	59	
31	02.1		41.6	216	19.4	9.9	9	42.0	11.5	58.7	30	04	52	05	20	05	44	18	05	18	44	19	23	20	02	
46	02.3		40.6	230	48.3	9.9	9	30.5	11.5	58.8	20	04	59	05	25	05	47	17	57	18	40	19	24	20	08	
61	02.5		39.7	245	17.2	9.9	9	19.0	11.6	58.8	N 10	05	04	05	29	05	50	17	50	18	37	19	25	20	14	
76	02.7		38.7	259	46.1	9.9	9	07.4	11.6	58.8	0	05	08	05	32	05	52	17	43	18	35	19	26	20	19	
91	03.0	N 3	37.7	274	15.0	9.9	S 8	55.8	11.7	58.8	S 10	05	09	05	34	05	55	17	36	18	32	19	27	20	24	
106	03.2		36.8	288	43.9	9.9	8	44.1	11.7	58.9	20	05	10	05	35	05	57	17	29	18	29	19	29	20	29	
121	03.4		35.8	303	12.8	9.9	8	32.4	11.8	58.9	30	05	08	05	36	06	00	17	21	18	25	19	30	20	35	
136	03.6		34.9	317	41.7	10.0	8	20.6	11.9	58.9	35	05	07	05	36	06	01	17	17	18	23	19	31	20	39	
151	03.8		33.9	332	10.7	9.9	8	08.7	11.9	58.9	40	05	05	05	36	06	03	17	11	18	21	19	32	20	43	
166	04.1		33.0	346	39.6	9.9	7	56.8	12.0	59.0	45	05	01	05	35	06	05	17	05	18	18	19	33	20	48	
14 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	181	04.3	N 3	32.0	1	08.5	10.0	S 7	44.8	12.0	59.0	S 50	04	57	05	35	06	07	16	58	18	15	19	34	20	54
	196	04.5		31.0	15	37.5	9.9	7	32.8	12.1	59.0	52	04	55	05	34	06	08	16	54	18	14	19	35	20	57
	211	04.7		30.1	30	06.4	10.0	7	20.7	12.2	59.0	54	04	53	05	34	06	09	16	50	18	12	19	35	20	59
	226	05.0		29.1	44	35.4	9.9	7	08.5	12.2	59.1	56	04	50	05	33	06	10	16	46	18	10	19	36	21	03
	241	05.2		28.2	59	04.3	9.9	6	56.3	12.2	59.1	58	04	47	05	32	06	11	16	41	18	09	19	37	21	06
	256	05.4		27.2	73	33.2	10.0	6	44.1	12.3	59.1	S 60	04	43	05	31	06	13	16	36	18	06	19	38	21	11
	271	05.6	N 3	26.2	88	02.2	10.0	S 6	31.8	12.3	59.1															
	286	05.9		25.3	102	31.2	9.9	6	19.5	12.4	59.2															
	301	06.1		24.3	117	00.1	10.0	6	07.1	12.4	59.2	Lat.	Sunset	Twilight		Moonset										
	316	06.3		23.4	131	29.1	9.9	5	54.7	12.5	59.2			Civil	Naut.	13	14	15	16							
	331	06.5		22.4	145	58.0	10.0	5	42.2	12.5	59.2															
	346	06.7		21.4	160	27.0	9.9	5	29.7	12.6	59.3	N 72	18	47	19	59	21	46	02	28	04	37	06	41	08	46
	1	07.0	N 3	20.5	174	55.9	10.0	S 5	17.1	12.5	59.3	N 70	18	41	19	45	21	14	02	50	04	47	06	43	08	40
16	07.2		19.5	189	24.9	9.9	5	04.6	12.7	59.3	68	18	37	19	34	20	51	03	07	04	56	06	45	08	35	
31	07.4		18.6	203	53.8	10.0	4	51.9	12.6	59.3	66	18	33	19	26	20	34	03	21	05	03	06	46	08	31	
46	07.6		17.6	218	22.8	9.9	4	39.3	12.7	59.3	64	18	30	19	18	20	20	03	32	05	09	06	47	08	27	
61	07.9		16.6	232	51.7	10.0	4	26.6	12.8	59.4	62	18	27	19	12	20	09	03	41	05	14	06	48	08	24	
76	08.1		15.7	247	20.7	9.9	4	13.8	12.7	59.4	60	18	25	19	07	19	59	03	49	05	18	06	49	08	21	
91	08.3	N 3	14.7	261	49.6	9.9	S 4	01.1	12.8	59.4	N 58	18	23	19	02	19	51	03	56	05	22	06	50	08	19	
106	08.5		13.8	276	18.5	10.0	3	48.3	12.8	59.4	56	18	21	18	58	19	44	04	02	05	26	06	51	08	17	
121	08.7		12.8	290	47.5	9.9	3	35.5	12.9	59.4	54	18	19	18	55	19	38	04	08	05	29	06	51	08	15	
136	09.0		11.8	305	16.4	9.9	3	22.6	12.9	59.5	52	18	18	18	52	19	32	04	13	05	32	06	52	08	13	
151	09.2		10.9	319	45.3	9.9	3	09.7	12.9	59.5	50	18	16	18	49	19	28	04	18	05	34	06	53	08	12	
166	09.4		09.9	334	14.2	9.9	2	56.8	12.9	59.5	45	18	13	18	43	19	18	04	27	05	40	06	54	08	08	
15 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	181	09.6	N 3	09.0	348	43.1	10.0	S 2	43.9	13.0	59.5	N 40	18	11	18	38	19	10	04	35	05	44	06	55	08	06
	196	09.9		08.0	3	12.1	9.8	2	30.9	13.0	59.5	35	18	09	18	34	19	04	04	42	05	48	06	55	08	03
	211	10.1		07.0	17	40.9	9.9	2	17.9	13.0	59.5	30	18	07	18	31	18	59	04	48	05	52	06	56	08	01
	226	10.3		06.1	32	09.8	9.9	2	04.9	13.0	59.6	20	18	04	18	26	18	51	04	59	05	58	06	57	07	57
	241	10.5		05.1	46	38.7	9.9																			

G.M.T.	ARIES			VENUS -3.6			MARS +1.8			JUPITER -1.2			SATURN +1.1			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
16 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	354	51.2	143 48.8 S13 28.2	223	21.0 N19 07.8		160	52.7 S 4 46.8		164	26.7 S 2 04.2		Acomar	315	36.4 S40 22.5			
	9	53.7	158 48.5 29.4	238	21.9 07.4		175	54.7 47.0		179	28.9 04.3		Achernar	335	44.2 S57 19.7			
	24	56.1	173 48.2 30.5	253	22.8 07.0		190	56.7 47.2		194	31.1 04.4		Acruz	173	37.2 S62 59.8			
	39	58.6	188 47.9 .. 31.7	268	23.6 .. 06.7		205	58.7 .. 47.4		209	33.2 .. 04.5		Adhara	255	31.7 S28 56.6			
	55	01.1	203 47.6 32.8	283	24.5 06.3		221	00.6 47.6		224	35.4 04.7		Aldebaran	291	17.1 N16 28.4			
	70	03.5	218 47.3 33.9	298	25.4 05.9		236	02.6 47.8		239	37.6 04.8							
	85	06.0	233 47.0 S13 35.1	313	26.2 N19 05.5		251	04.6 S 4 48.0		254	39.8 S 2 04.9		Alioth	166	42.4 N56 03.8			
	100	08.5	248 46.7 36.2	328	27.1 05.1		266	06.6 48.2		269	42.0 05.0		Alkaid	153	18.4 N49 24.6			
	115	10.9	263 46.4 37.4	343	28.0 04.7		281	08.6 48.4		284	44.2 05.1		Al Na'ir	28	13.6 S47 03.1			
	130	13.4	278 46.1 .. 38.5	358	28.8 .. 04.3		296	10.6 .. 48.6		299	46.4 .. 05.2		Alnilam	276	11.0 S 1 12.7			
	145	15.9	293 45.8 39.6	13	29.7 04.0		311	12.5 48.8		314	48.6 05.4		Alphard	218	20.2 S 8 34.5			
	160	18.3	308 45.5 40.8	28	30.6 03.6		326	14.5 49.0		329	50.8 05.5							
	175	20.8	323 45.2 S13 41.9	43	31.5 N19 03.2		341	16.5 S 4 49.2		344	53.0 S 2 05.6		Alphecca	126	31.7 N26 46.9			
	190	23.2	338 44.9 43.1	58	32.3 02.8		356	18.5 49.4		359	55.1 05.7		Alpheratz	358	08.3 N28 59.4			
	205	25.7	353 44.6 44.2	73	33.2 02.4		11	20.5 49.6		14	57.3 05.8		Altair	62	31.7 N 8 49.3			
	220	28.2	8 44.3 .. 45.3	88	34.1 .. 02.0		26	22.4 .. 49.8		29	59.5 .. 06.0		Ankaa	353	39.1 S42 24.3			
	235	30.6	23 44.0 46.5	103	34.9 01.6		41	24.4 50.0		45	01.7 06.1		Antares	112	56.1 S26 23.5			
	250	33.1	38 43.7 47.6	118	35.8 01.2		56	26.4 50.2		60	03.9 06.2							
	265	35.6	53 43.4 S13 48.7	133	36.7 N19 00.8		71	28.4 S 4 50.4		75	06.1 S 2 06.3		Arcturus	146	18.1 N19 16.9			
	280	38.0	68 43.1 49.9	148	37.5 00.5		86	30.4 50.6		90	08.3 06.4		Atria	108	19.9 S68 59.9			
	295	40.5	83 42.8 51.0	163	38.4 19 00.1		101	32.4 50.9		105	10.5 06.5		Avior	234	28.3 S59 26.7			
	310	43.0	98 42.5 .. 52.2	178	39.3 18 59.7		116	34.3 .. 51.1		120	12.7 .. 06.7		Bellatrix	278	58.0 N 6 20.1			
	325	45.4	113 42.2 53.3	193	40.2 59.3		131	36.3 51.3		135	14.9 06.8		Betelgeuse	271	27.6 N 7 24.3			
340	47.9	128 41.9 54.4	208	41.0 58.9		146	38.3 51.5		150	17.0 06.9								
17 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	355	50.3	143 41.6 S13 55.6	223	41.9 N18 58.5		161	40.3 S 4 51.7		165	19.2 S 2 07.0		Canopus	264	07.0 S52 40.8			
	10	52.8	158 41.3 56.7	238	42.8 58.1		176	42.3 51.9		180	21.4 07.1		Capella	281	10.3 N45 58.6			
	25	55.3	173 41.0 57.8	253	43.6 57.7		191	44.2 52.1		195	23.6 07.3		Deneb	49	47.7 N45 13.1			
	40	57.7	188 40.7 13 58.9	268	44.5 .. 57.3		206	46.2 .. 52.3		210	25.8 .. 07.4		Denebola	182	58.8 N14 40.7			
	56	00.2	203 40.4 14 00.1	283	45.4 56.9		221	48.2 52.5		225	28.0 07.5		Diphda	349	19.9 S18 05.2			
	71	02.7	218 40.1 01.2	298	46.3 56.5		236	50.2 52.7		240	30.2 07.6							
	86	05.1	233 39.8 S14 02.3	313	47.1 N18 56.2		251	52.2 S 4 52.9		255	32.4 S 2 07.7		Dubhe	194	21.9 N61 51.1			
	101	07.6	248 39.5 03.5	328	48.0 55.8		266	54.2 53.1		270	34.6 07.9		Elnath	278	43.3 N28 35.5			
	116	10.1	263 39.1 04.6	343	48.9 55.4		281	56.1 53.3		285	36.8 08.0		Eltanin	90	57.4 N51 29.8			
	131	12.5	278 38.8 .. 05.7	358	49.7 .. 55.0		296	58.1 .. 53.5		300	38.9 .. 08.1		Enif	34	10.6 N 9 47.5			
	146	15.0	293 38.5 06.8	13	50.6 54.6		312	00.1 53.7		315	41.1 08.2		Fomalhaut	15	50.3 S29 43.2			
	161	17.5	308 38.2 08.0	28	51.5 54.2		327	02.1 53.9		330	43.3 08.3							
	176	19.9	323 37.9 S14 09.1	43	52.4 N18 53.8		342	04.1 S 4 54.1		345	45.5 S 2 08.4		Gacrux	172	28.6 S57 00.5			
	191	22.4	338 37.6 10.2	58	53.2 53.4		357	06.0 54.3		0	47.7 08.6		Gienah	176	17.6 S17 26.2			
	206	24.8	353 37.3 11.4	73	54.1 53.0		12	08.0 54.5		15	49.9 08.7		Hadar	149	22.9 S60 17.1			
	221	27.3	8 37.0 .. 12.5	88	55.0 .. 52.6		27	10.0 .. 54.7		30	52.1 .. 08.8		Hamal	328	27.9 N23 22.5			
	236	29.8	23 36.7 13.6	103	55.9 52.2		42	12.0 54.9		45	54.3 08.9		Kaus Aust.	84	15.9 S34 23.7			
	251	32.2	38 36.4 14.7	118	56.7 51.8		57	14.0 55.1		60	56.5 09.0							
	266	34.7	53 36.1 S14 15.8	133	57.6 N18 51.4		72	15.9 S 4 55.3		75	58.7 S 2 09.2		Kochab	137	19.8 N74 14.2			
	281	37.2	68 35.8 17.0	148	58.5 51.0		87	17.9 55.5		91	00.8 09.3		Markab	14	02.2 N15 06.5			
	296	39.6	83 35.5 18.1	163	59.4 50.6		102	19.9 55.8		106	03.0 09.4		Menkar	314	40.2 N 4 01.1			
	311	42.1	98 35.1 .. 19.2	179	00.2 .. 50.3		117	21.9 .. 56.0		121	05.2 .. 09.5		Menkent	148	36.5 S36 16.7			
	326	44.6	113 34.8 20.3	194	01.1 49.9		132	23.9 56.2		136	07.4 09.6		Miaplacidus	221	45.6 S69 38.3			
341	47.0	128 34.5 21.5	209	02.0 49.5		147	25.8 56.4		151	09.6 09.7								
18 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	356	49.5	143 34.2 S14 22.6	224	02.9 N18 49.1		162	27.8 S 4 56.6		166	11.8 S 2 09.9		Mirfak	309	14.9 N49 47.6			
	11	52.0	158 33.9 23.7	239	03.7 48.7		177	29.8 56.8		181	14.0 10.0		Nunki	76	28.2 S26 19.2			
	26	54.4	173 33.6 24.8	254	04.6 48.3		192	31.8 57.0		196	16.2 10.1		Peacock	53	56.9 S56 47.8			
	41	56.9	188 33.3 .. 25.9	269	05.5 .. 47.9		207	33.8 .. 57.2		211	18.4 .. 10.2		Pollux	243	57.5 N28 04.3			
	56	59.3	203 33.0 27.0	284	06.4 47.5		222	35.7 57.4		226	20.5 10.3		Procyon	245	25.2 N 5 16.5			
	72	01.8	218 32.7 28.2	299	07.3 47.1		237	37.7 57.6		241	22.7 10.5							
	87	04.3	233 32.3 S14 29.3	314	08.1 N18 46.7		252	39.7 S 4 57.8		256	24.9 S 2 10.6		Rasalhague	96	29.0 N12 34.6			
	102	06.7	248 32.0 30.4	329	09.0 46.3		267	41.7 58.0		271	27.1 10.7		Regulus	208	09.6 N12 03.6			
	117	09.2	263 31.7 31.5	344	09.9 45.9		282	43.7 58.2		286	29.3 10.8		Rigel	281	35.3 S 8 13.2			
	132	11.7	278 31.4 .. 32.6	359	10.8 .. 45.5		297	45.6 .. 58.4		301	31.5 .. 10.9		Rigel Kent.	140	25.4 S60 45.6			
	147	14.1	293 31.1 33.7	14	11.6 45.1		312	47.6 58.6		316	33.7 11.1		Sabik	102	40.4 S15 42.1			
	162	16.6	308 30.8 34.9	29	12.5 44.7		327	49.6 58.8		331	35.9 11.2							
	177	19.1	323 30.5 S14 36.0	44	13.4 N18 44.3		342	51.6 S 4 59.0		346	38.1 S 2 11.3		Schedar	350	07.7 N56 26.1			
	192	21.5	338 30.1 37.1	59	14.3 43.9		357	53.6 59.2		1	40.2 11.4		Shoula	96	54.8 S37 05.5			
	207	24.0	353 29.8 38.2	74	15.2 43.5		12	55.5 59.4		16	42.4 11.5		Sirius	258	55.2 S16 41.3			
	222	26.4	8 29.5 .. 39.3	89	16.0 .. 43.1		27	57.5 .. 59.6		31	44.6 .. 11.6		Spica	158	57.1 S11 03.7			
	237	28.9	23 29.2 40.4	104	16.9 42.7		42	59.5 4 59.8		46	46.8 11.8		Shuil	223	10.6 S43 21.2			
	252	31.4	38 28.9 41.5	119	17.8 42.3		58	01.5 5 00.0		61	49.0 11.9							
	267	33.8	53 28.6 S14 42.6	134	18.7 N18 41.9		73	03.5 S 5 00.3		76	51.2 S 2 12.0		Vega	80	55.3 N38 46.3			

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise						
	C.H.A.		Dec.		G.H.A.		D			Naut.	Civil	Sunrise	16		17		18		19
	h	m	h	m	h	m	h	m		h	m	h	m	h	m	h	m	h	m
16 WEDNESDAY	181	15.0	N 2	45.9	336	13.7	9.6	N 2	30.3	13.1	59.8	N 72	02 22	04 04	05 15	18 54	18 36	18 10	□
	196	15.2		44.9	350	42.3	9.5	2	43.4	13.1	59.8	N 70	02 50	04 16	05 19	19 03	18 55	18 44	18 27
	211	15.4		43.9	5	10.8	9.5	2	56.5	13.0	59.9	68	03 11	04 26	05 23	19 10	19 09	19 09	19 11
	226	15.7		43.0	19	39.3	9.6	3	09.5	13.1	59.9	66	03 26	04 33	05 26	19 17	19 21	19 28	19 40
	241	15.9		42.0	34	07.9	9.4	3	22.6	13.0	59.9	64	03 39	04 40	05 28	19 22	19 31	19 43	20 02
	256	16.1		41.0	48	36.3	9.5	3	35.6	13.0	59.9	62	03 49	04 45	05 30	19 27	19 40	19 56	20 20
	271	16.3	N 2	40.1	63	04.8	9.5	N 3	48.6	13.0	59.9	60	03 58	04 50	05 32	19 31	19 47	20 07	20 35
	286	16.6		39.1	77	33.3	9.4	4	01.6	13.0	59.9	N 58	04 06	04 54	05 34	19 34	19 54	20 17	20 47
	301	16.8		38.2	92	01.7	9.4	4	14.6	13.0	59.9	56	04 12	04 57	05 35	19 37	19 59	20 26	20 59
	316	17.0		37.2	106	30.1	9.3	4	27.6	12.9	59.9	54	04 18	05 01	05 36	19 40	20 05	20 33	21 08
	331	17.2		36.2	120	58.4	9.4	4	40.5	12.9	59.9	52	04 23	05 03	05 37	19 43	20 09	20 40	21 17
	346	17.4		35.3	135	26.8	9.3	4	53.4	12.9	59.9	50	04 27	05 06	05 38	19 45	20 14	20 46	21 25
	1	17.7	N 2	34.3	149	55.1	9.3	N 5	06.3	12.8	59.9	45	04 36	05 11	05 41	19 51	20 23	21 00	21 41
	16	17.9		33.3	164	23.4	9.3	5	19.1	12.8	59.9	N 40	04 43	05 15	05 43	19 55	20 31	21 11	21 55
	31	18.1		32.4	178	51.7	9.2	5	31.9	12.8	59.9	35	04 49	05 19	05 44	19 59	20 38	21 20	22 07
	46	18.3		31.4	193	19.9	9.2	5	44.7	12.8	59.9	30	04 53	05 21	05 45	20 02	20 44	21 28	22 17
	61	18.6		30.4	207	48.1	9.2	5	57.5	12.7	59.9	20	05 00	05 26	05 48	20 08	20 54	21 43	22 35
	76	18.8		29.5	222	16.3	9.1	6	10.2	12.7	60.0	N 10	05 04	05 29	05 50	20 14	21 04	21 56	22 50
	91	19.0	N 2	28.5	236	44.4	9.1	N 6	22.9	12.6	60.0	0	05 07	05 31	05 51	20 19	21 12	22 08	23 05
	106	19.2		27.5	251	12.5	9.1	6	35.5	12.6	60.0	S 10	05 07	05 32	05 53	20 24	21 21	22 20	23 19
	121	19.5		26.6	265	40.6	9.1	6	48.1	12.6	60.0	20	05 07	05 32	05 54	20 29	21 31	22 33	23 35
	136	19.7		25.6	280	08.7	9.0	7	00.7	12.5	60.0	30	05 04	05 32	05 56	20 35	21 41	22 48	23 53
	151	19.9		24.6	294	36.7	9.0	7	13.2	12.5	60.0	35	05 02	05 32	05 57	20 39	21 48	22 56	24 03
166	20.1		23.7	309	04.7	9.0	7	25.7	12.5	60.0	40	05 00	05 31	05 58	20 43	21 55	23 06	24 16	
181	20.3	N 2	22.7	323	32.7	8.9	N 7	38.2	12.4	60.0	45	04 56	05 30	05 59	20 48	22 03	23 18	24 30	
196	20.6		21.7	338	00.6	8.9	7	50.6	12.3	60.0	S 50	04 51	05 28	06 00	20 54	22 14	23 32	24 47	
211	20.8		20.8	352	28.5	8.9	8	02.9	12.3	60.0	52	04 48	05 27	06 01	20 57	22 18	23 39	24 56	
226	21.0		19.8	6	56.4	8.8	8	15.2	12.3	60.0	54	04 45	05 26	06 01	20 59	22 24	23 46	25 05	
241	21.2		18.9	21	24.2	8.8	8	27.5	12.2	60.0	56	04 42	05 25	06 02	21 03	22 30	23 55	25 16	
256	21.5		17.9	35	52.0	8.8	8	39.7	12.1	60.0	58	04 38	05 24	06 03	21 06	22 36	24 04	00 04	
271	21.7	N 2	16.9	50	19.8	8.7	N 8	51.8	12.1	60.0	S 60	04 34	05 22	06 04	21 11	22 44	24 15	00 15	
286	21.9		16.0	64	47.5	8.7	9	03.9	12.0	60.0									
301	22.1		15.0	79	15.2	8.7	9	15.9	12.0	60.0	Lat.	Sunset	Twilight		Moonset				
316	22.4		14.0	93	42.9	8.6	9	27.9	11.9	60.0			Civil	Naut.	16	17	18	19	
331	22.6		13.1	108	10.5	8.6	9	39.8	11.9	60.0									
346	22.8		12.1	122	38.1	8.5	9	51.7	11.8	60.0									
1	23.0	N 2	11.1	137	05.6	8.5	N10	03.5	11.7	60.0	N 72	18 31	19 41	21 20	08 46	10 56	13 17	□	
16	23.2		10.2	151	33.1	8.5	10	15.2	11.7	60.0	N 70	18 27	19 30	20 54	08 40	10 40	12 45	15 00	
31	23.5		09.2	166	00.6	8.4	10	26.9	11.6	60.0	68	18 24	19 21	20 35	08 35	10 27	12 22	14 18	
46	23.7		08.2	180	28.0	8.4	10	38.5	11.6	60.0	66	18 21	19 13	20 20	08 31	10 17	12 04	13 49	
61	23.9		07.3	194	55.4	8.4	10	50.1	11.4	59.9	64	18 19	19 07	20 07	08 27	10 08	11 49	13 28	
76	24.1		06.3	209	22.8	8.3	11	01.5	11.4	59.9	62	18 17	19 02	19 57	08 24	10 01	11 37	13 10	
91	24.4	N 2	05.3	223	50.1	8.3	N11	12.9	11.4	59.9	60	18 16	18 57	19 49	08 21	09 54	11 27	12 56	
106	24.6		04.4	238	17.4	8.3	11	24.3	11.2	59.9	N 58	18 14	18 54	19 41	08 19	09 49	11 18	12 44	
121	24.8		03.4	252	44.7	8.2	11	35.5	11.2	59.9	56	18 13	18 50	19 35	08 17	09 44	11 10	12 33	
136	25.0		02.4	267	11.9	8.1	11	46.7	11.1	59.9	54	18 12	18 47	19 30	08 15	09 39	11 03	12 24	
151	25.3		01.5	281	39.0	8.2	11	57.8	11.1	59.9	52	18 10	18 44	19 25	08 13	09 35	10 57	12 16	
166	25.5	2	00.5	296	06.2	8.1	12	08.9	10.9	59.9	50	18 10	18 42	19 20	08 12	09 32	10 51	12 08	
181	25.7	N 1	59.5	310	33.3	8.0	N12	19.8	10.9	59.9	45	18 07	18 37	19 12	08 08	09 24	10 39	11 52	
196	25.9		58.5	325	00.3	8.0	12	30.7	10.8	59.9	N 40	18 06	18 33	19 05	08 06	09 17	10 29	11 39	
211	26.1		57.6	339	27.3	8.0	12	41.5	10.7	59.9	35	18 04	18 30	18 59	08 03	09 12	10 20	11 28	
226	26.4		56.6	353	54.3	7.9	12	52.2	10.7	59.9	30	18 03	18 27	18 55	08 01	09 07	10 13	11 19	
241	26.6		55.6	8	21.2	7.9	13	02.9	10.5	59.9	20	18 01	18 23	18 49	07 57	08 58	10 00	11 02	
256	26.8		54.7	22	48.1	7.9	13	13.4	10.5	59.9	N 10	17 59	18 20	18 45	07 54	08 51	09 49	10 48	
271	27.0	N 1	53.7	37	15.0	7.8	N13	23.9	10.4	59.9	0	17 58	18 18	18 42	07 51	08 44	09 38	10 35	
286	27.3		52.7	51	41.8	7.8	13	34.3	10.3	59.9	S 10	17 56	18 17	18 42	07 48	08 37	09 28	10 21	
301	27.5		51.8	66	08.6	7.7	13	44.6	10.2	59.9	20	17 55	18 17	18 42	07 45	08 30	09 17	10 07	
316	27.7		50.8	80	35.3	7.7	13	54.8	10.1	59.9	30	17 53	18 17	18 45	07 41	08 21	09 04	09 51	
331	27.9		49.8	95	02.0	7.6	14	04.9	10.0	59.9	35	17 53	18 18	18 47	07 39	08 16	08 57	09 41	
346	28.2		48.9	109	28.6	7.7	14	14.9	9.9	59.9	40	17 52	18 19	18 50	07 36	08 11	08 48	09 30	
1	28.4	N 1	47.9	123	55.3	7.5	N14	24.8	9.9	59.9	45	17 51	18 20	18 54	07 33	08 05	08 39	09 18	
16	28.6		46.9	138	21.8	7.6	14	34.7	9.7	59.9	S 50	17 50	18 22	19 00	07 30	07 57	08 27	09 02	
31	28.8		46.0	152	48.4	7.5	14	44.4	9.6	59.9	52	17 49	18 23	19 02	07 29	07 54	08 22	08 55	
46	29.0		45.0	167	14.9	7.4	14	54.0	9.6	59.9	54	17 49	18 24	19 05	07 27	07 50	08 16	08 47	
61	29.3		44.0	181	41.3	7.4	15	03.6	9.4	59.9	56	17 48	18 25	19 09	07 25	07 46	08 09	08 38	
76	29.5		43.1	196	07.7	7.4	15	13.0	9.4	59.9	58	17 47	18 26	19 13	07 23	07 41	08 02	08 28	
91	29.7	N 1	42.1	210	34.1	7.3	N15	22.4	9.2										

G.M.T.	ARIES			VENUS -3.6			MARS +1.8			JUPITER -1.2			SATURN +1.1			STARS																																													
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.																																											
19	00	357 48.6	143 26.7 S14 49.3	224 24.0 N18 39.5	163 15.3 S 5 01.5	167 04.3 S 2 12.7	Acomar	315 36.4	S40 22.5																																																				
	01	12 51.1	158 26.3 50.4	239 24.9 39.1	178 17.3 01.7	182 06.5 12.8	Achernar	335 44.2	S57 19.7																																																				
	02	27 53.6	173 26.0 51.5	254 25.7 38.7	193 19.3 01.9	197 08.7 13.0	Acruz	173 37.2	S62 59.8																																																				
	03	42 56.0	188 25.7 .. 52.6	269 26.6 .. 38.3	208 21.3 .. 02.1	212 10.9 .. 13.1	Adhara	255 31.7	S28 56.6																																																				
	04	57 58.5	203 25.4 53.7	284 27.5 37.9	223 23.3 02.3	227 13.1 13.2	Aldebaran	291 17.1	N16 28.4																																																				
	05	73 00.9	218 25.1 54.8	299 28.4 37.5	238 25.2 02.5	242 15.3 13.3																																																							
	06	88 03.4	233 24.7 S14 55.9	314 29.3 N18 37.1	253 27.2 S 5 02.7	257 17.4 S 2 13.4	Alioth	166 42.4	N56 03.8																																																				
	07	103 05.9	248 24.4 57.0	329 30.2 36.7	268 29.2 02.9	272 19.6 13.5	Alkaid	153 18.4	N49 24.6																																																				
	S 08	118 08.3	263 24.1 58.1	344 31.0 36.3	283 31.2 03.1	287 21.8 13.7	Al Na'ir	28 13.6	S47 03.1																																																				
	A 09	133 10.8	278 23.8 14 59.2	359 31.9 .. 35.9	298 33.1 .. 03.3	302 24.0 .. 13.8	Alnilam	276 10.9	S 1 12.7																																																				
	T 10	148 13.3	293 23.5 15 00.3	14 32.8 35.5	313 35.1 03.5	317 26.2 13.9	Alphard	218 20.2	S 8 34.5																																																				
	U 11	163 15.7	308 23.1 01.4	29 33.7 35.1	328 37.1 03.7	332 28.4 14.0																																																							
	R 12	178 18.2	323 22.8 S15 02.5	44 34.6 N18 34.7	343 39.1 S 5 03.9	347 30.6 S 2 14.1	Alphecca	126 31.7	N26 46.9																																																				
	D 13	193 20.7	338 22.5 03.6	59 35.5 34.3	358 41.1 04.1	2 32.8 14.3	Alpheratz	358 08.3	N28 59.4																																																				
	A 14	208 23.1	353 22.2 04.7	74 36.3 33.9	13 43.0 04.3	17 34.9 14.4	Altair	62 31.7	N 8 49.3																																																				
	Y 15	223 25.6	8 21.8 .. 05.8	89 37.2 .. 33.5	28 45.0 .. 04.5	32 37.1 .. 14.5	Ankaa	353 39.1	S42 24.3																																																				
	16	238 28.1	23 21.5 06.9	104 38.1 33.1	43 47.0 04.8	47 39.3 14.6	Antares	112 56.1	S26 23.5																																																				
	17	253 30.5	38 21.2 08.0	119 39.0 32.7	58 49.0 05.0	62 41.5 14.7																																																							
	18	268 33.0	53 20.9 S15 09.1	134 39.9 N18 32.3	73 50.9 S 5 05.2	77 43.7 S 2 14.9	Arcturus	146 18.1	N19 16.9																																																				
	19	283 35.4	68 20.5 10.2	149 40.8 31.9	88 52.9 05.4	92 45.9 15.0	Atria	108 19.9	S68 59.9																																																				
	20	298 37.9	83 20.2 11.3	164 41.7 31.5	103 54.9 05.6	107 48.1 15.1	Avior	234 28.3	S59 26.7																																																				
	21	313 40.4	98 19.9 .. 12.4	179 42.5 .. 31.1	118 56.9 .. 05.8	122 50.3 .. 15.2	Bellatrix	278 58.0	N 6 20.1																																																				
	22	328 42.8	113 19.6 13.5	194 43.4 30.7	133 58.9 06.0	137 52.4 15.3	Betelgeuse	271 27.5	N 7 24.3																																																				
23	343 45.3	128 19.2 14.6	209 44.3 30.3	149 00.8 06.2	152 54.6 15.4																																																								
20	00	358 47.8	143 18.9 S15 15.7	224 45.2 N18 29.9	164 02.8 S 5 06.4	167 56.8 S 2 15.6	Canopus	264 07.0	S52 40.8																																																				
	01	13 50.2	158 18.6 16.8	239 46.1 29.5	179 04.8 06.6	182 59.0 15.7	Capella	281 10.2	N45 58.6																																																				
	02	28 52.7	173 18.3 17.9	254 47.0 29.1	194 06.8 06.8	198 01.2 15.8	Deneb	49 47.7	N45 13.1																																																				
	03	43 55.2	188 17.9 .. 19.0	269 47.9 .. 28.7	209 08.7 .. 07.0	213 03.4 .. 15.9	Denebola	182 58.7	N14 40.7																																																				
	04	58 57.6	203 17.6 20.1	284 48.7 28.3	224 10.7 07.2	228 05.6 16.0	Diphda	349 19.9	S18 05.2																																																				
	05	74 00.1	218 17.3 21.2	299 49.6 27.9	239 12.7 07.4	243 07.8 16.2																																																							
	06	89 02.5	233 16.9 S15 22.2	314 50.5 N18 27.5	254 14.7 S 5 07.6	258 09.9 S 2 16.3	Dubhe	194 21.9	N61 51.1																																																				
	07	104 05.0	248 16.6 23.3	329 51.4 27.1	269 16.7 07.8	273 12.1 16.4	Elnath	278 43.2	N28 35.5																																																				
	08	119 07.5	263 16.3 24.4	344 52.3 26.7	284 18.6 08.0	288 14.3 16.5	Eltanin	90 57.4	N51 29.8																																																				
	S 09	134 09.9	278 16.0 .. 25.5	359 53.2 .. 26.3	299 20.6 .. 08.2	303 16.5 .. 16.6	Enif	34 10.6	N 9 47.6																																																				
	U 10	149 12.4	293 15.6 26.6	14 54.1 25.8	314 22.6 08.4	318 18.7 16.8	Fomalhaut	15 50.3	S29 43.2																																																				
	N 11	164 14.9	308 15.3 27.7	29 55.0 25.4	329 24.6 08.6	333 20.9 16.9																																																							
	D 12	179 17.3	323 15.0 S15 28.8	44 55.9 N18 25.0	344 26.5 S 5 08.9	348 23.1 S 2 17.0	Gacrux	172 28.6	S57 00.5																																																				
	A 13	194 19.8	338 14.6 29.9	59 56.7 24.6	359 28.5 09.1	3 25.3 17.1	Gienah	176 17.6	S17 26.2																																																				
	Y 14	209 22.3	353 14.3 30.9	74 57.6 24.2	14 30.5 09.3	18 27.4 17.2	Hadar	149 22.9	S60 17.1																																																				
	15	224 24.7	8 14.0 .. 32.0	89 58.5 .. 23.8	29 32.5 .. 09.5	33 29.6 .. 17.3	Hamal	328 27.9	N23 22.5																																																				
	16	239 27.2	23 13.6 33.1	104 59.4 23.4	44 34.4 09.7	48 31.8 17.5	Kaus Aust.	84 15.9	S34 23.7																																																				
	17	254 29.7	38 13.3 34.2	120 00.3 23.0	59 36.4 09.9	63 34.0 17.6																																																							
	18	269 32.1	53 13.0 S15 35.3	135 01.2 N18 22.6	74 38.4 S 5 10.1	78 36.2 S 2 17.7	Kochab	137 19.8	N74 14.2																																																				
	19	284 34.6	68 12.6 36.4	150 02.1 22.2	89 40.4 10.3	93 38.4 17.8	Markab	14 02.2	N15 06.5																																																				
	20	299 37.0	83 12.3 37.4	165 03.0 21.8	104 42.3 10.5	108 40.6 17.9	Menkar	314 40.2	N 4 01.1																																																				
	21	314 39.5	98 12.0 .. 38.5	180 03.9 .. 21.4	119 44.3 .. 10.7	123 42.7 .. 18.1	Menkent	148 36.5	S36 16.7																																																				
	22	329 42.0	113 11.6 39.6	195 04.8 21.0	134 46.3 10.9	138 44.9 18.2	Miaplacidus	221 45.5	S69 38.2																																																				
23	344 44.4	128 11.3 40.7	210 05.7 20.6	149 48.3 11.1	153 47.1 18.3																																																								
21	00	359 46.9	143 11.0 S15 41.8	225 06.6 N18 20.2	164 50.3 S 5 11.3	168 49.3 S 2 18.4	Mirfak	309 14.8	N49 47.6																																																				
	01	14 49.4	158 10.6 42.8	240 07.4 19.7	179 52.2 11.5	183 51.5 18.5	Nunki	76 28.2	S26 19.2																																																				
	02	29 51.8	173 10.3 43.9	255 08.3 19.3	194 54.2 11.7	198 53.7 18.7	Peacock	53 56.9	S56 47.8																																																				
	03	44 54.3	188 10.0 .. 45.0	270 09.2 .. 18.9	209 56.2 .. 11.9	213 55.9 .. 18.8	Pollux	243 57.5	N28 04.3																																																				
	04	59 56.8	203 09.6 46.1	285 10.1 18.5	224 58.2 12.1	228 58.1 18.9	Procyon	245 25.2	N 5 16.5																																																				
	05	74 59.2	218 09.3 47.2	300 11.0 18.1	240 00.1 12.3	244 00.2 19.0																																																							
	06	90 01.7	233 09.0 S15 48.2	315 11.9 N18 17.7	255 02.1 S 5 12.5	259 02.4 S 2 19.1	Rasalhague	96 29.0	N12 34.6																																																				
	07	105 04.2	248 08.6 49.3	330 12.8 17.3	270 04.1 12.8	274 04.6 19.3	Regulus	208 09.6	N12 03.6																																																				
	08	120 06.6	263 08.3 50.4	345 13.7 16.9	285 06.1 13.0	289 06.8 19.4	Rigel	281 35.3	S 8 13.2																																																				
	M 09	135 09.1	278 08.0 .. 51.5	0 14.6 .. 16.5	300 08.0 .. 13.2	304 09.0 .. 19.5	Rigel Kent.	140 25.4	S60 45.6																																																				
	O 10	150 11.5	293 07.6 52.5	15 15.5 16.1	315 10.0 13.4	319 11.2 19.6	Sabik	102 40.4	S15 42.1																																																				
	N 11	165 14.0	308 07.3 53.6	30 16.4 15.7	330 12.0 13.6	334 13.4 19.7																																																							
	D 12	180 16.5	323 06.9 S15 54.7	45 17.3 N18 15.2	345 14.0 S 5 13.8	349 15.5 S 2 19.8	Schedar	350 07.7	N56 26.1																																																				
	A 13	195 18.9	338 06.6 55.7	60 18.2 14.8	0 15.9 14.0	4 17.7 20.0	Shoula	96 54.9	S37 05.5																																																				
	Y 14	210 21.4	353 06.3 56.8	75 19.1 14.4	15 17.9 14.2	19 19.9 20.1	Sirius	258 55.2	S16 41.3																																																				
	15	225 23.9	8 05.9 .. 57.9	90 20.0 .. 14.0	30 19.9 .. 14.4	34 22.1 .. 20.2	Spica	158 57.1	S11 03.7																																																				
	16	240 26.3	23 05.6 15 59.0	105 20.9 13.6	45 21.9 14.6	49 24.3 20.3	Shail	223 10.6	S43 21.2																																																				
	17	255 28.8	38 05.2 16 00.0	120 21.8 13.2	60 23.8 14.8	64 26.5 20.4																																																							
	18	270 31.3	53 04.9 S16 01.1	135 22.6 N18 12.8	75 25.8 S 5 15.0	79 28.7 S 2 20.6	Vega	80 55.3	N38 46.3																																																				
	19	285 33.7	68 04.6 02.2	150 23.5 12.4	90 27.8 15.2	94 30.9 20.7	Zuben'ubi	137 32.5	S15 57.8																																																				
	20	300 36.2	83 04.2 03.2	165 24.4 12.0	105 29.8 15.4	109 33.0 20.8																																																							
	21	315 38.6	98 03.9 .. 04.3	180 25.3 .. 11.5	120 31.7 .. 15.6	124 35.2 .. 20.9																																																							
	22	330 41.1	113 03.5 05.4	195 26.2 11.1	135 33.7 15.8	139 37.4 21.0	Venus	144 31.1	14 27																																																				
23	345 43.6	128 03.2 06.4	210 27.1 10.7	150 35.7 16.0	154 39.6 21.2	Mars	225 57.4	9 00																																																					
Mer. Pass. 0 04.8																																																													
<table border="0" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">v -0.3</td> <td style="width:15%; text-align: center;">d 1.1</td> <td style="width:15%; text-align: center;">v 0.9</td> <td style="width:15%; text-align: center;">d 0.4</td> <td style="width:15%; text-align: center;">v 2.0</td> <td style="width:15%; text-align: center;">d 0.2</td> <td style="width:15%; text-align: center;">v 2.2</td> <td style="width:15%; text-align: center;">d 0.1</td> </tr> </table>																		v -0.3	d 1.1	v 0.9	d 0.4	v 2.0	d 0.2	v 2.2	d 0.1																																				
	v -0.3	d 1.1	v 0.9	d 0.4	v 2.0	d 0.2	v 2.2	d 0.1																																																					
<table border="0" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">S.H.A.</td> <td style="width:15%; text-align: center;">Mer</td> <td style="width:15%; text-align: center;">Pass</td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> </tr> <tr> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">h</td> <td style="width:15%; text-align: center;">m</td> <td style="width:15%; text-align: center;">h</td> <td style="width:15%; text-align: center;">m</td> <td style="width:15%; text-align: center;">h</td> <td style="width:15%; text-align: center;">m</td> <td style="width:15%; text-align: center;">h</td> <td style="width:15%; text-align: center;">m</td> </tr> <tr> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">Venus</td> <td style="width:15%; text-align: center;">144</td> <td style="width:15%; text-align: center;">31.1</td> <td style="width:15%; text-align: center;">14</td> <td style="width:15%; text-align: center;">27</td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> </tr> <tr> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">Jupiter</td> <td style="width:15%; text-align: center;">165</td> <td style="width:15%; text-align: center;">15.0</td> <td style="width:15%; text-align: center;">13</td> <td style="width:15%; text-align: center;">02</td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> </tr> <tr> <td style="width:15%;"></td> <td style="width:15%; text-align: center;">Saturn</td> <td style="width:15%; text-align: center;">169</td> <td style="width:15%; text-align: center;">09.1</td> <td style="width:15%; text-align: center;">12</td> <td style="width:15%; text-align: center;">46</td> <td style="width:15%;"></td> <td style="width:15%;"></td> <td style="width:15%;"></td> </tr> </table>																		S.H.A.	Mer	Pass							h	m	h	m	h	m	h	m		Venus	144	31.1	14	27					Jupiter	165	15.0	13	02					Saturn	169	09.1	12	46			
	S.H.A.	Mer	Pass																																																										
	h	m	h	m	h	m	h	m																																																					
	Venus	144	31.1	14	27																																																								
	Jupiter	165	15.0	13	02																																																								
	Saturn	169	09.1	12	46																																																								

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	v	Dec.	d		H.P.	Naut.		Civil	19	20	21	22
									h m		h m	h m	h m	h m	h m
19 00	181 31.0	N 1 36.3	297 11.6	7.1	N16 16.3	8.7	59.7	N 72	02 44	04 19	05 29	18 27	19 19	19 54	21 16
01	196 31.3	35.3	311 37.7	7.1	16 25.0	8.5	59.7	68	03 25	04 37	05 33	19 11	19 19	19 54	21 16
02	211 31.5	34.3	326 03.8	7.0	16 33.5	8.4	59.7	66	03 38	04 43	05 35	19 40	20 03	20 48	22 01
03	226 31.7	33.4	340 29.8	7.0	16 41.9	8.3	59.7	64	03 49	04 49	05 37	20 02	20 32	21 21	22 30
04	241 31.9	32.4	354 55.8	7.0	16 50.2	8.2	59.6	62	03 59	04 53	05 38	20 20	20 55	21 45	22 52
05	256 32.2	31.4	9 21.8	6.9	16 58.4	8.0	59.6	60	04 06	04 57	05 39	20 35	21 13	22 04	23 10
06	271 32.4	N 1 30.5	23 47.7	6.9	N17 06.4	8.0	59.6	N 58	04 13	05 01	05 40	20 47	21 28	22 20	23 25
07	286 32.6	29.5	38 13.6	6.9	17 14.4	7.8	59.6	56	04 19	05 04	05 41	20 59	21 41	22 34	23 38
S 08	301 32.8	28.5	52 39.5	6.8	17 22.2	7.8	59.6	54	04 24	05 06	05 42	21 08	21 52	22 46	23 49
A 09	316 33.0	27.6	67 05.3	6.8	17 30.0	7.6	59.6	52	04 28	05 08	05 42	21 17	22 02	22 56	23 59
T 10	331 33.3	26.6	81 31.1	6.8	17 37.6	7.5	59.6	50	04 32	05 11	05 43	21 25	22 11	23 06	24 08
U 11	346 33.5	25.6	95 56.9	6.7	17 45.1	7.4	59.5	45	04 40	05 15	05 44	21 41	22 30	23 25	24 26
R 12	1 33.7	N 1 24.6	110 22.6	6.7	N17 52.5	7.2	59.5	N 40	04 47	05 18	05 45	21 55	22 45	23 41	24 42
D 13	16 33.9	23.7	124 48.3	6.7	17 59.7	7.2	59.5	35	04 51	05 21	05 46	22 07	22 58	23 55	24 54
A 14	31 34.2	22.7	139 14.0	6.6	18 06.9	7.0	59.5	30	04 55	05 23	05 47	22 17	23 10	24 06	00 06
Y 15	46 34.4	21.7	153 39.6	6.6	18 13.9	6.9	59.5	20	05 01	05 26	05 48	22 35	23 29	24 26	00 26
16	61 34.6	20.8	168 05.2	6.6	18 20.8	6.8	59.5	N 10	05 04	05 28	05 49	22 50	23 46	24 44	00 44
17	76 34.8	19.8	182 30.8	6.6	18 27.6	6.6	59.5	0	05 05	05 29	05 50	23 05	24 02	00 02	01 00
18	91 35.0	N 1 18.8	196 56.4	6.5	N18 34.2	6.6	59.4	S 10	05 06	05 30	05 51	23 19	24 19	00 19	01 17
19	106 35.3	17.9	211 21.9	6.5	18 40.8	6.4	59.4	20	05 04	05 30	05 52	23 35	24 36	00 36	01 34
20	121 35.5	16.9	225 47.4	6.5	18 47.2	6.3	59.4	30	05 01	05 28	05 52	23 53	24 56	00 56	01 54
21	136 35.7	15.9	240 12.9	6.4	18 53.5	6.1	59.4	35	04 58	05 27	05 53	24 03	00 03	01 07	02 06
22	151 35.9	14.9	254 38.3	6.5	18 59.6	6.1	59.4	40	04 54	05 26	05 53	24 16	00 16	01 21	02 20
23	166 36.2	14.0	269 03.8	6.4	19 05.7	5.9	59.4	45	04 50	05 24	05 53	24 30	00 30	01 37	02 36
20 00	181 36.4	N 1 13.0	283 29.2	6.3	N19 11.6	5.7	59.3	S 50	04 44	05 22	05 54	24 47	00 47	01 56	02 56
01	196 36.6	12.0	297 54.5	6.4	19 17.3	5.7	59.3	52	04 41	05 20	05 54	24 56	00 56	02 05	03 05
02	211 36.8	11.1	312 19.9	6.3	19 23.0	5.5	59.3	54	04 37	05 19	05 54	25 05	01 05	02 16	03 16
03	226 37.0	10.1	326 45.2	6.3	19 28.5	5.4	59.3	56	04 33	05 17	05 54	25 16	01 16	02 28	03 27
04	241 37.3	09.1	341 10.5	6.3	19 33.9	5.3	59.3	58	04 29	05 15	05 54	00 04	01 28	02 41	03 41
05	256 37.5	08.1	355 35.8	6.3	19 39.2	5.1	59.3	S 60	04 24	05 13	05 55	00 15	01 41	02 57	03 57
06	271 37.7	N 1 07.2	10 01.1	6.3	N19 44.3	5.0	59.3								
07	286 37.9	06.2	24 26.4	6.2	19 49.3	4.9	59.2	Lat.	Sunset	Twilight		Moonset			
08	301 38.2	05.2	38 51.6	6.3	19 54.2	4.7	59.2			Civil	Naut.	19	20	21	22
S 09	316 38.4	04.3	53 16.9	6.2	19 58.9	4.6	59.2								
U 10	331 38.6	03.3	67 42.1	6.2	20 03.5	4.5	59.2								
N 11	346 38.8	02.3	82 07.3	6.2	20 08.0	4.4	59.2	N 72	18 15	19 24	20 58	15 00	16 10	17 37	18 13
D 12	1 39.0	N 1 01.4	96 32.5	6.1	N20 12.4	4.2	59.1	N 70	18 13	19 15	20 36	15 00	16 10	17 37	18 13
A 13	16 39.3	1 00.4	110 57.6	6.2	20 16.6	4.0	59.1	68	18 11	19 08	20 19	14 18	15 26	16 42	17 28
Y 14	31 39.5	0 59.4	125 22.8	6.2	20 20.6	4.0	59.1	66	18 10	19 01	20 06	13 49	14 57	16 09	16 59
15	46 39.7	0 58.4	139 48.0	6.1	20 24.6	3.8	59.1	64	18 09	18 56	19 55	13 28	14 37	15 45	16 36
16	61 39.9	57.5	154 13.1	6.1	20 28.4	3.6	59.1	62	18 07	18 52	19 46	13 10	14 18	15 26	16 18
17	76 40.1	56.5	168 38.2	6.2	20 32.0	3.6	59.1	60	18 06	18 48	19 38	12 56	14 03	15 10	16 03
18	91 40.4	N 0 55.5	183 03.4	6.1	N20 35.6	3.4	59.0	N 58	18 06	18 45	19 32	12 44	14 03	15 10	16 03
19	106 40.6	54.6	197 28.5	6.1	20 39.0	3.2	59.0	56	18 05	18 42	19 26	12 33	13 50	14 56	15 50
20	121 40.8	53.6	211 53.6	6.2	20 42.2	3.2	59.0	54	18 04	18 39	19 22	12 24	13 39	14 45	15 38
21	136 41.0	52.6	226 18.8	6.1	20 45.4	3.0	59.0	52	18 03	18 37	19 17	12 16	13 29	14 34	15 28
22	151 41.2	51.6	240 43.9	6.1	20 48.4	2.8	59.0	50	18 03	18 35	19 13	12 08	13 20	14 25	15 19
23	166 41.5	50.7	255 09.0	6.1	20 51.2	2.7	58.9	45	18 02	18 31	19 06	11 52	13 02	14 05	15 00
21 00	181 41.7	N 0 49.7	269 34.1	6.1	N20 53.9	2.6	58.9	N 40	18 01	18 28	18 59	11 39	12 47	13 49	14 45
01	196 41.9	48.7	283 59.2	6.2	20 56.5	2.5	58.9	35	18 00	18 25	18 55	11 28	12 34	13 36	14 32
02	211 42.1	47.8	298 24.4	6.1	20 59.0	2.3	58.9	30	17 59	18 23	18 51	11 19	12 23	13 24	14 20
03	226 42.4	46.8	312 49.5	6.1	21 01.3	2.1	58.9	20	17 58	18 20	18 46	11 02	12 04	13 04	14 01
04	241 42.6	45.8	327 14.6	6.2	21 03.4	2.1	58.9	N 10	17 57	18 18	18 43	10 48	11 48	12 47	13 44
05	256 42.8	44.8	341 39.8	6.1	21 05.5	1.9	58.8	0	17 57	18 17	18 41	10 35	11 32	12 30	13 27
06	271 43.0	N 0 43.9	356 04.9	6.2	N21 07.4	1.7	58.8	S 10	17 56	18 17	18 41	10 21	11 17	12 14	13 11
07	286 43.2	42.9	10 30.1	6.1	21 09.1	1.6	58.8	20	17 56	18 18	18 43	10 07	11 00	11 56	12 54
08	301 43.5	41.9	24 55.2	6.2	21 10.7	1.5	58.8	30	17 55	18 19	18 47	09 51	10 41	11 36	12 34
M 09	316 43.7	40.9	39 20.4	6.2	21 12.2	1.4	58.8	35	17 55	18 20	18 49	09 41	10 30	11 24	12 22
O 10	331 43.9	40.0	53 45.6	6.2	21 13.6	1.2	58.7	40	17 55	18 22	18 53	09 30	10 18	11 11	12 09
N 11	346 44.1	39.0	68 10.8	6.2	21 14.8	1.0	58.7	45	17 54	18 24	18 58	09 18	10 03	10 55	11 53
D 12	1 44.3	N 0 38.0	82 36.0	6.2	N21 15.8	1.0	58.7	S 50	17 54	18 26	19 04	09 02	09 44	10 35	11 34
A 13	16 44.6	37.1	97 01.2	6.3	21 16.8	0.8	58.7	52	17 54	18 28	19 07	08 55	09 36	10 25	11 24
Y 14	31 44.8	36.1	111 26.5	6.2	21 17.6	0.6	58.7	54	17 54	18 29	19 11	08 47	09 26	10 15	11 14
15	46 45.0	35.1	125 51.7	6.3	21 18.2	0.6	58.6	56	17 54	18 31	19 15	08 38	09 15	10 03	11 02
16	61 45.2	34.1	140 17.0	6.3	21 18.8	0.3	58.6	58	17 54	18 33	19 19	08 28	09 03	09 49	10 48
17	76 45.4	33.2	154 42.3	6.3	21 19.1	0.3	58.6	S 60	17 54	18 35	19 25	08 17	08 49	09 33	10 32
18	91 45.7	N 0 32.2	169 07.6	6.4	N21 19.4	0.1	58.6								
19	106 45.9	31.2	183 33.0	6.4	21 19.5	0.0	58.6								
20	121 46.1	30.3	197 5												

G.M.T.	SUN		MOON				Lat.	Twilight			Moonrise								
	G.H.A.	Dec.	G.H.A.	P	Dec.	d		H.P.	Naut.	Civil	Sunrise	22	23	24	25				
									h m	h m	h m	h m	h m	h m	h m	h m			
TUESDAY	181	47.0 N 0	26.4	255	40.1	6.5	N21	18.1	0.7	58.5	N 72	03 03	04 34	05 42	□	22 15	24 22	00 22	
	01	196	47.2	25.4	270	05.6	6.5	21 17.4	0.9	58.4	68	03 38	04 48	05 44	21 16	23 01	24 48	00 48	
	02	211	47.4	24.4	284	31.1	6.6	21 16.5	0.9	58.4	66	03 50	04 53	05 45	22 01	23 31	25 07	01 07	
	03	226	47.6	23.4	298	56.7	6.6	21 15.6	1.1	58.4	64	03 59	04 58	05 45	22 30	23 54	25 23	01 23	
	04	241	47.9	22.5	313	22.3	6.6	21 14.5	1.3	58.4	62	04 07	05 01	05 46	22 52	24 12	00 12	01 36	
	05	256	48.1	21.5	327	47.9	6.7	21 13.2	1.3	58.4	60	04 14	05 04	05 46	23 10	24 26	00 26	01 47	
	06	271	48.3 N 0	20.5	342	13.6	6.7	N21	11.9	1.5	58.3	N 58	04 20	05 07	05 46	23 25	24 39	00 39	01 57
	07	286	48.5	19.6	356	39.3	6.8	21 10.4	1.6	58.3	56	04 25	05 10	05 47	23 38	24 50	00 50	02 05	
	08	301	48.7	18.6	11	05.1	6.7	21 08.8	1.8	58.3	54	04 30	05 12	05 47	23 49	24 59	00 59	02 13	
	09	316	49.0	17.6	25	30.8	6.9	21 07.0	1.9	58.3	52	04 34	05 14	05 47	23 59	25 08	01 08	02 19	
	10	331	49.2	16.6	39	56.7	6.8	21 05.1	2.0	58.3	50	04 37	05 15	05 47	24 08	00 08	01 15	02 25	
	11	346	49.4	15.7	54	22.5	6.9	21 03.1	2.1	58.2	45	04 44	05 19	05 48	24 26	00 26	01 32	02 38	
	12	1	49.6 N 0	14.7	68	48.4	7.0	N21	01.0	2.3	58.2	N 40	04 50	05 21	05 48	24 42	00 42	01 45	02 49
	13	16	49.8	13.7	83	14.4	6.9	20 58.7	2.4	58.2	35	04 54	05 23	05 48	24 54	00 54	01 56	02 58	
	14	31	50.0	12.7	97	40.3	7.1	20 56.3	2.5	58.2	30	04 57	05 25	05 49	00 06	01 05	02 06	03 06	
	15	46	50.3	11.8	112	06.4	7.0	20 53.8	2.7	58.2	20	05 01	05 27	05 49	00 26	01 25	02 23	03 19	
	16	61	50.5	10.8	126	32.4	7.2	20 51.1	2.8	58.1	N 10	05 04	05 28	05 49	00 44	01 41	02 37	03 31	
	17	76	50.7	09.8	140	58.6	7.1	20 48.3	2.9	58.1	0	05 04	05 28	05 49	01 00	01 57	02 51	03 42	
	18	91	50.9 N 0	08.8	155	24.7	7.2	N20	45.4	3.0	58.1	S 10	05 04	05 28	05 49	01 17	02 12	03 05	03 53
	19	106	51.1	07.9	169	50.9	7.3	20 42.4	3.2	58.1	20	05 01	05 27	05 49	01 34	02 29	03 19	04 05	
	20	121	51.4	06.9	184	17.2	7.3	20 39.2	3.3	58.1	30	04 57	05 25	05 48	01 54	02 48	03 36	04 19	
	21	136	51.6	05.9	198	43.5	7.4	20 35.9	3.4	58.0	35	04 54	05 23	05 48	02 06	02 59	03 46	04 27	
	22	151	51.8	05.0	213	09.9	7.4	20 32.5	3.5	58.0	40	04 49	05 21	05 48	02 20	03 12	03 57	04 35	
23	166	52.0	04.0	227	36.3	7.4	20 29.0	3.6	58.0	45	04 44	05 18	05 48	02 36	03 27	04 10	04 46		
WEDNESDAY	181	52.2 N 0	03.0	242	02.7	7.5	N20	25.4	3.8	58.0	S 50	04 37	05 15	05 47	02 56	03 45	04 25	04 58	
	01	196	52.5	02.0	256	29.2	7.6	20 21.6	3.9	57.9	52	04 33	05 13	05 47	03 05	03 54	04 33	05 04	
	02	211	52.7	01.1	270	55.8	7.6	20 17.7	4.0	57.9	54	04 29	05 11	05 47	03 16	04 03	04 41	05 10	
	03	226	52.9 N 0	00.1	285	22.4	7.7	20 13.7	4.1	57.9	56	04 25	05 09	05 46	03 27	04 14	04 50	05 17	
	04	241	53.1 S 0	00.9	299	49.1	7.7	20 09.6	4.3	57.9	58	04 20	05 07	05 46	03 41	04 27	05 00	05 25	
	05	256	53.3	01.9	314	15.8	7.8	20 05.3	4.3	57.9	S 60	04 14	05 04	05 45	03 57	04 41	05 12	05 34	
	06	271	53.5 S 0	02.8	328	42.6	7.9	N20	01.0	4.5	57.8								
	07	286	53.8	03.8	343	09.5	7.9	19 56.5	4.6	57.8									
	08	301	54.0	04.8	357	36.4	7.9	19 51.9	4.7	57.8	Lat.	Sunset	Twilight		Moonset				
	09	316	54.2	05.8	12	03.3	8.0	19 47.2	4.9	57.8			Civil	Naut.	22	23	24	25	
	10	331	54.4	06.7	26	30.3	8.1	19 42.3	4.9	57.8			h m	h m	h m	h m	h m	h m	h m
	11	346	54.6	07.7	40	57.4	8.2	19 37.4	5.0	57.7	N 72	18 00	19 08	20 37	□	□	19 30	19 02	19 02
	12	1	54.8 S 0	08.7	55	24.6	8.2	N19	32.4	5.2	57.7	N 70	17 59	19 00	20 18	□	19 09	18 51	18 41
	13	16	55.1	09.7	69	51.8	8.2	19 27.2	5.3	57.7	68	17 59	18 54	20 04	18 13	18 22	18 24	18 24	18 24
	14	31	55.3	10.6	84	19.0	8.3	19 21.9	5.3	57.7	66	17 58	18 49	19 52	17 28	17 52	18 04	18 10	18 10
	15	46	55.5	11.6	98	46.3	8.4	19 16.6	5.5	57.7	64	17 58	18 45	19 43	16 59	17 29	17 47	17 59	17 59
	16	61	55.7	12.6	113	13.7	8.5	19 11.1	5.6	57.6	62	17 58	18 42	19 35	16 36	17 10	17 33	17 49	17 49
	17	76	55.9	13.5	127	41.2	8.5	19 05.5	5.7	57.6	60	17 57	18 39	19 29	16 18	16 55	17 21	17 41	17 41
	18	91	56.2 S 0	14.5	142	08.7	8.5	N18	59.8	5.8	57.6	N 58	17 57	18 36	19 23	16 03	16 42	17 11	17 33
	19	106	56.4	15.5	156	36.2	8.7	18 54.0	5.9	57.6	56	17 57	18 34	19 18	15 50	16 31	17 02	17 27	17 27
	20	121	56.6	16.5	171	03.9	8.7	18 48.1	6.1	57.6	54	17 57	18 32	19 14	15 38	16 21	16 54	17 21	17 21
	21	136	56.8	17.4	185	31.6	8.7	18 42.0	6.1	57.5	52	17 56	18 30	19 10	15 28	16 12	16 47	17 16	17 16
	22	151	57.0	18.4	199	59.3	8.8	18 35.9	6.2	57.5	50	17 56	18 28	19 06	15 19	16 04	16 41	17 11	17 11
23	166	57.2	19.4	214	27.1	8.9	18 29.7	6.3	57.5	45	17 56	18 25	19 00	15 00	15 47	16 27	17 00	17 00	
THURSDAY	181	57.5 S 0	20.4	228	55.0	9.0	N18	23.4	6.4	57.5	N 40	17 56	18 23	18 54	14 45	15 33	16 15	16 52	
	01	196	57.7	21.3	243	23.0	9.0	18 17.0	6.6	57.4	35	17 56	18 21	18 50	14 32	15 22	16 05	16 44	
	02	211	57.9	22.3	257	51.0	9.1	18 10.4	6.6	57.4	30	17 56	18 19	18 47	14 20	15 11	15 57	16 37	
	03	226	58.1	23.3	272	19.1	9.1	18 03.8	6.7	57.4	20	17 55	18 17	18 43	14 01	14 53	15 42	16 26	
	04	241	58.3	24.3	286	47.2	9.3	17 57.1	6.8	57.4	N 10	17 55	18 16	18 41	13 44	14 38	15 28	16 16	
	05	256	58.5	25.2	301	15.5	9.3	17 50.3	6.9	57.4	0	17 56	18 16	18 40	13 27	14 23	15 16	16 06	
	06	271	58.8 S 0	26.2	315	43.8	9.3	N17	43.4	7.0	57.3	S 10	17 56	18 17	18 41	13 11	14 08	15 03	15 56
	07	286	59.0	27.2	330	12.1	9.4	17 36.4	7.1	57.3	20	17 56	18 18	18 44	12 54	13 52	14 50	15 46	
	08	301	59.2	28.2	344	40.5	9.5	17 29.3	7.2	57.3	30	17 57	18 21	18 48	12 34	13 34	14 35	15 34	
	09	316	59.4	29.1	359	09.0	9.6	17 22.1	7.3	57.3	35	17 57	18 22	18 52	12 22	13 24	14 26	15 27	
	10	331	59.6	30.1	373	6.6	9.6	17 14.8	7.3	57.3	40	17 57	18 24	18 56	12 09	13 11	14 15	15 19	
	11	346	59.8	31.1	387	06.2	9.7	17 07.5	7.5	57.2	45	17 58	18 27	19 02	11 53	12 57	14 03	15 10	
	12	2	00.1 S 0	32.1	42	34.9	9.7	N17	00.0	7.5	57.2	S 50	17 59	18 31	19 09	11 34	12 39	13 48	14 59
	13	17	00.3	33.0	57	03.6	9.8	16 52.5	7.7	57.2	52	17 59	18 33	19 13	11 24	12 31	13 41	14 54	
	14	32	00.5	34.0	71	32.4	9.9	16 44.8	7.7	57.2	54	17 59	18 35	19 17	11 14	12 21	13 34	14 48	
	15	47	00.7	35.0	86	01.3	10.0	16 37.1	7.8	57.2	56	18 00	18 37	19 21	11 02	12 11	13 25	14 41	
	16	62	00.9	36.0	100	30.3	10.0	16 29.3	7.9	57.1	58	18 00	18 39	19 26	10 48	11 59	13 15	14 34	
	17	77	01.1	36.9	114	59.3	10.1	16 21.4	7.9	57.1	S 60	18 01	18 42	19 33	10 32	11 44	13 04	14 26	
	18	92	01.3 S 0	37.9	129	28.4	10.1	N16	13.5	8.1	57.1								
	19	107	01.6	38.9	143	57.5	10.3	16 05.4	8.1	57.1									
	20	122	01.8	39.8	158	26.8	10.3	15 57.3	8.2	57.0									
	21	137	02.0	40.8	172	56.1	10.3	15 49.1	8.3	57.0									
	22	152	02.2	41.8	187	25.4	10.4	15 40.8	8.4										

G.M.T.	ARIES			VENUS -3.6			MARS +1.8			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
25	00	3 43.5	142 37.3	S17 22.5	226 33.2	N17 40.2	167 59.7	S 5 31.0		172 19.1	S 2 29.9		Acomar	315 36.4	S40 22.5			
	01	18 45.9	157 36.9	23.6	241 34.1	39.8	183 01.7	31.3		187 21.3	30.0		Achernar	335 44.2	S57 19.7			
	02	33 48.4	172 36.5	24.6	256 35.1	39.4	198 03.6	31.5		202 23.5	30.1		Acrux	173 37.2	S62 59.7			
	03	48 50.8	187 36.2	25.6	271 36.0	39.0	213 05.6	31.7		217 25.7	30.2		Adhara	255 31.6	S28 56.6			
	04	63 53.3	202 35.8	26.6	286 36.9	38.5	228 07.6	31.9		232 27.8	30.3		Aldebaran	291 17.1	N16 28.4			
	05	78 55.8	217 35.4	27.6	301 37.8	38.1	243 09.6	32.1		247 30.0	30.5							
	06	93 58.2	232 35.0	S17 28.6	316 38.7	N17 37.7	258 11.5	S 5 32.3		262 32.2	S 2 30.6		Alioth	166 42.4	N56 03.8			
	07	109 00.7	247 34.7	29.6	331 39.6	37.3	273 13.5	32.5		277 34.4	30.7		Alkaid	153 18.4	N49 24.5			
	08	124 03.2	262 34.3	30.7	346 40.5	36.8	288 15.5	32.7		292 36.6	30.8		Al Na'ir	28 13.7	S47 03.1			
	F 09	139 05.6	277 33.9	31.7	1 41.5	36.4	303 17.4	32.9		307 38.8	30.9		Alnilam	276 10.9	S 1 12.7			
	R 10	154 08.1	292 33.6	32.7	16 42.4	36.0	318 19.4	33.1		322 40.9	31.1		Alphard	218 20.1	S 8 34.5			
	i 11	169 10.6	307 33.2	33.7	31 43.3	35.6	333 21.4	33.3		337 43.1	31.2							
	D 12	184 13.0	322 32.8	S17 34.7	46 44.2	N17 35.1	348 23.4	S 5 33.5		352 45.3	S 2 31.3		Alphecca	126 31.7	N26 46.9			
	A 13	199 15.5	337 32.4	35.7	61 45.1	34.7	3 25.3	33.7		7 47.5	31.4		Alpheratz	358 08.2	N28 59.4			
	Y 14	214 18.0	352 32.1	36.7	76 46.0	34.3	18 27.3	33.9		22 49.7	31.5		Altair	62 31.7	N 8 49.3			
	15	229 20.4	7 31.7	37.7	91 47.0	33.8	33 29.3	34.1		37 51.9	31.6		Ankaa	353 39.1	S42 24.3			
	16	244 22.9	22 31.3	38.7	106 47.9	33.4	48 31.2	34.3		52 54.0	31.8		Antares	112 56.2	S26 23.5			
	17	259 25.3	37 30.9	39.8	121 48.8	33.0	63 33.2	34.5		67 56.2	31.9							
	18	274 27.8	52 30.6	S17 40.8	136 49.7	N17 32.6	78 35.2	S 5 34.8		82 58.4	S 2 32.0		Arcturus	146 18.1	N19 16.9			
	19	289 30.3	67 30.2	41.8	151 50.6	32.1	93 37.1	35.0		98 00.6	32.1		Atria	108 20.0	S68 59.9			
	20	304 32.7	82 29.8	42.8	166 51.5	31.7	108 39.1	35.2		113 02.8	32.2		Avior	234 28.3	S59 26.7			
	21	319 35.2	97 29.4	43.8	181 52.5	31.3	123 41.1	35.4		128 05.0	32.4		Bellatrix	278 57.9	N 6 20.1			
	22	334 37.7	112 29.1	44.8	196 53.4	30.9	138 43.1	35.6		143 07.2	32.5		Betelgeuse	271 27.5	N 7 24.3			
23	349 40.1	127 28.7	45.8	211 54.3	30.4	153 45.0	35.8		158 09.3	32.6								
26	00	4 42.6	142 28.3	S17 46.8	226 55.2	N17 30.0	168 47.0	S 5 36.0		173 11.5	S 2 32.7		Canopus	264 06.9	S52 40.8			
	01	19 45.1	157 27.9	47.8	241 56.1	29.6	183 49.0	36.2		188 13.7	32.8		Capella	281 10.2	N45 58.6			
	02	34 47.5	172 27.6	48.8	256 57.1	29.2	198 50.9	36.4		203 15.9	33.0		Deneb	49 47.7	N45 13.1			
	03	49 50.0	187 27.2	49.8	271 58.0	29.7	213 52.9	36.6		218 18.1	33.1		Denebola	182 58.7	N14 40.7			
	04	64 52.5	202 26.8	50.8	286 58.9	28.3	228 54.9	36.8		233 20.3	33.2		Diphda	349 19.8	S18 05.2			
	05	79 54.9	217 26.4	51.8	301 59.8	27.9	243 56.8	37.0		248 22.4	33.3							
	06	94 57.4	232 26.0	S17 52.8	317 00.7	N17 27.4	258 58.8	S 5 37.2		263 24.6	S 2 33.4		Dubhe	194 21.9	N61 51.0			
	07	109 59.8	247 25.7	53.8	332 01.7	27.0	274 00.8	37.4		278 26.8	33.6		Elnath	278 43.2	N28 35.5			
	S 08	125 02.3	262 25.3	54.8	347 02.6	26.6	289 02.8	37.6		293 29.0	33.7		Eltanin	90 57.5	N51 29.8			
	A 09	140 04.8	277 24.9	55.8	2 03.5	26.2	304 04.7	37.8		308 31.2	33.8		Enif	34 10.7	N 9 47.6			
	T 10	155 07.2	292 24.5	56.8	17 04.4	25.7	319 06.7	38.0		323 33.4	33.9		Fomalhaut	15 50.3	S29 43.2			
	U 11	170 09.7	307 24.1	57.8	32 05.3	25.3	334 08.7	38.3		338 35.5	34.0							
	D 12	185 12.2	322 23.8	S17 58.8	47 06.3	N17 24.9	349 10.6	S 5 38.5		353 37.7	S 2 34.2		Gacrux	172 28.6	S57 00.5			
	R 13	200 14.6	337 23.4	17 59.8	62 07.2	24.4	4 12.6	38.7		8 39.9	34.3		Gienah	176 17.6	S17 26.2			
	A 14	215 17.1	352 23.0	18 00.8	77 08.1	24.0	19 14.6	38.9		23 42.1	34.4		Hadar	149 23.0	S60 17.1			
	Y 15	230 19.6	7 22.6	01.8	92 09.0	23.6	34 16.5	39.1		38 44.3	34.5		Hamal	328 27.8	N23 22.5			
	16	245 22.0	22 22.2	02.7	107 10.0	23.1	49 18.5	39.3		53 46.5	34.6		Kaus Aust.	84 15.9	S34 23.7			
	17	260 24.5	37 21.9	03.7	122 10.9	22.7	64 20.5	39.5		68 48.6	34.7							
	18	275 27.0	52 21.5	S18 04.7	137 11.8	N17 22.3	79 22.4	S 5 39.7		83 50.8	S 2 34.9		Kochab	137 19.9	N74 14.2			
	19	290 29.4	67 21.1	05.7	152 12.7	21.9	94 24.4	39.9		98 53.0	35.0		Markab	14 02.2	N15 06.5			
	20	305 31.9	82 20.7	06.7	167 13.6	21.4	109 26.4	40.1		113 55.2	35.1		Menkar	314 40.2	N 4 01.1			
	21	320 34.3	97 20.3	07.7	182 14.6	21.0	124 28.4	40.3		128 57.4	35.2		Menkent	148 36.6	S36 16.7			
	22	335 36.8	112 19.9	08.7	197 15.5	20.6	139 30.3	40.5		143 59.6	35.3		Miaplacidus	221 45.5	S69 38.2			
23	350 39.3	127 19.5	09.7	212 16.4	20.1	154 32.3	40.7		159 01.7	35.5								
27	00	5 41.7	142 19.2	S18 10.7	227 17.3	N17 19.7	169 34.3	S 5 40.9		174 03.9	S 2 35.6		Mirfak	309 14.8	N49 47.6			
	01	20 44.2	157 18.8	11.6	242 18.3	19.3	184 36.2	41.1		189 06.1	35.7		Nunki	76 28.2	S26 19.2			
	02	35 46.7	172 18.4	12.6	257 19.2	18.8	199 38.2	41.3		204 08.3	35.8		Peacock	53 57.0	S56 47.8			
	03	50 49.1	187 18.0	13.6	272 20.1	18.4	214 40.2	41.6		219 10.5	35.9		Pollux	243 57.4	N28 04.2			
	04	65 51.6	202 17.6	14.6	287 21.0	18.0	229 42.1	41.8		234 12.7	36.1		Procyon	245 25.2	N 5 16.5			
	05	80 54.1	217 17.2	15.6	302 22.0	17.5	244 44.1	42.0		249 14.8	36.2							
	06	95 56.5	232 16.8	S18 16.6	317 22.9	N17 17.1	259 46.1	S 5 42.2		264 17.0	S 2 36.3		Rasalhague	96 29.0	N12 34.6			
	07	110 59.0	247 16.5	17.5	332 23.8	16.7	274 48.0	42.4		279 19.2	36.4		Regulus	208 09.5	N12 03.6			
	08	126 01.4	262 16.1	18.5	347 24.7	16.3	289 50.0	42.6		294 21.4	36.5		Rigel	281 35.3	S 8 13.2			
	S 09	141 03.9	277 15.7	19.5	2 25.7	15.8	304 52.0	42.8		309 23.6	36.7		Rigel Kent.	140 25.4	S60 45.5			
	U 10	156 06.4	292 15.3	20.5	17 26.6	15.4	319 53.9	43.0		324 25.8	36.8		Sabik	102 40.4	S15 42.1			
	N 11	171 08.8	307 14.9	21.5	32 27.5	15.0	334 55.9	43.2		339 27.9	36.9							
	D 12	186 11.3	322 14.5	S18 22.4	47 28.4	N17 14.5	349 57.9	S 5 43.4		354 30.1	S 2 37.0		Schedar	350 07.7	N56 26.2			
	A 13	201 13.8	337 14.1	23.4	62 29.4	14.1	4 59.8	43.6		9 32.3	37.1		Shaula	96 54.9	S37 05.5			
	Y 14	216 16.2	352 13.7	24.4	77 30.3	13.7	20 01.8	43.8		24 34.5	37.3		Sirius	258 55.1	S16 41.3			
	15	231 18.7	7 13.3	25.4	92 31.2	13.2	35 03.8	44.0		39 36.7	37.4		Spica	158 57.1	S11 03.7			
	16	246 21.2	22 12.9	26.3	107 32.2	12.8	50 05.8	44.2		54 38.8	37.5		Suhail	223 10.6	S43 21.2			
	17	261 23.6	37 12.5	27.3	122 33.1	12.4	65 07.7											

SEPTEMBER 25, 26, 27 (FRI., SAT., SUN.)

G.M.T.	SUN		MOON				Lat.	Twilight			Moonrise								
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.	Civil	Sunrise	25	26	27	28				
	^d ^h	^m	^s	[°]	[']	["]	[°]	^h	^m	^s	^h	^m	^s	^h	^m	^s	^h	^m	^s
25 00	182	02.6	S 0	43.7	216	24.3	10.6	N15	24.0	8.5	57.0	N 70	03 21	04 48	05 56	25 55	01 55	03 50	05 38
01	197	02.9		44.7	230	53.9	10.6		15 15.5	8.6	56.9	68	03 50	04 59	05 55	00 48	02 30	04 08	05 43
02	212	03.1		45.7	245	23.5	10.7		15 06.9	8.7	56.9	66	04 01	05 03	05 54	01 07	02 42	04 15	05 45
03	227	03.3	..	46.7	259	53.2	10.8		14 58.2	8.7	56.9	64	04 09	05 06	05 54	01 23	02 53	04 21	05 46
04	242	03.5		47.6	274	23.0	10.8		14 49.5	8.8	56.9	62	04 16	05 09	05 53	01 36	03 02	04 25	05 47
05	257	03.7		48.6	288	52.8	10.9		14 40.7	8.9	56.9	60	04 22	05 12	05 53	01 47	03 09	04 30	05 49
06	272	03.9	S 0	49.6	303	22.7	10.9	N14	31.8	9.0	56.8	N 58	04 27	05 14	05 53	01 57	03 16	04 33	05 50
07	287	04.1		50.6	317	52.6	11.0		14 22.8	9.0	56.8	56	04 32	05 16	05 53	02 05	03 21	04 37	05 50
08	302	04.4		51.5	332	22.6	11.1		14 13.8	9.1	56.8	54	04 36	05 17	05 52	02 13	03 27	04 40	05 51
F 09	317	04.6	..	52.5	346	52.7	11.2		14 04.7	9.1	56.8	52	04 39	05 19	05 52	02 19	03 31	04 42	05 52
R 10	332	04.8		53.5	1	22.9	11.2		13 55.6	9.2	56.8	50	04 42	05 20	05 52	02 25	03 36	04 45	05 53
I 11	347	05.0		54.5	15	53.1	11.3		13 46.4	9.3	56.7	45	04 48	05 22	05 52	02 38	03 45	04 50	05 54
D 12	2	05.2	S 0	55.4	30	23.4	11.3	N13	37.1	9.4	56.7	N 40	04 53	05 24	05 51	02 49	03 52	04 55	05 55
A 13	17	05.4		56.4	44	53.7	11.4		13 27.7	9.4	56.7	35	04 56	05 25	05 51	02 58	03 59	04 58	05 56
Y 14	32	05.6		57.4	59	24.1	11.5		13 18.3	9.4	56.7	30	04 59	05 26	05 50	03 06	04 05	05 02	05 57
15	47	05.9	..	58.4	73	54.6	11.5		13 08.9	9.6	56.7	20	05 02	05 28	05 50	03 19	04 14	05 07	05 59
16	62	06.1	0	59.3	88	25.1	11.6		12 59.3	9.5	56.6	N 10	05 04	05 28	05 49	03 31	04 23	05 13	06 00
17	77	06.3	1	00.3	102	55.7	11.6		12 49.8	9.7	56.6	0	05 03	05 27	05 48	03 42	04 31	05 17	06 02
18	92	06.5	S 1	01.3	117	26.3	11.7	N12	40.1	9.7	56.6	S 10	05 02	05 26	05 47	03 53	04 39	05 22	06 03
19	107	06.7		02.3	131	57.0	11.8		12 30.4	9.7	56.6	20	04 58	05 24	05 46	04 05	04 48	05 27	06 05
20	122	06.9		03.2	146	27.8	11.9		12 20.7	9.8	56.5	30	04 53	05 21	05 45	04 19	04 57	05 33	06 06
21	137	07.1	..	04.2	160	58.7	11.9		12 10.9	9.9	56.5	35	04 49	05 19	05 44	04 27	05 03	05 36	06 07
22	152	07.4		05.2	175	29.6	11.9		12 01.0	9.9	56.5	40	04 44	05 16	05 43	04 35	05 09	05 40	06 08
23	167	07.6		06.2	190	00.5	12.0		11 51.1	10.0	56.5	45	04 38	05 13	05 42	04 46	05 17	05 44	06 10
26 00	182	07.8	S 1	07.1	204	31.5	12.1	N11	41.1	10.0	56.5	S 50	04 30	05 08	05 40	04 58	05 25	05 49	06 11
01	197	08.0		08.1	219	02.6	12.1		11 31.1	10.1	56.4	52	04 26	05 06	05 40	05 04	05 30	05 52	06 12
02	212	08.2		09.1	233	33.7	12.2		11 21.0	10.1	56.4	54	04 22	05 04	05 39	05 10	05 34	05 54	06 13
03	227	08.4	..	10.1	248	04.9	12.3		11 10.9	10.2	56.4	56	04 16	05 01	05 38	05 17	05 39	05 57	06 13
04	242	08.6		11.0	262	36.2	12.3		11 00.7	10.2	56.4	58	04 11	04 58	05 37	05 25	05 44	06 00	06 14
05	257	08.8		12.0	277	07.5	12.3		10 50.5	10.2	56.4	S 60	04 04	04 55	05 36	05 34	05 51	06 04	06 15
06	272	09.1	S 1	13.0	291	38.8	12.5	N10	40.3	10.3	56.3								
07	287	09.3		14.0	306	10.3	12.4		10 30.0	10.4	56.3	Lat.	Sunset	Twilight		Moonset			
S 08	302	09.5		14.9	320	41.7	12.6		10 19.6	10.4	56.3			Civil	Naut.	25	26	27	28
A 09	317	09.7	..	15.9	335	13.3	12.6		10 09.2	10.4	56.3								
T 10	332	09.9		16.9	349	44.9	12.6		9 58.8	10.5	56.3								
U 11	347	10.1		17.8	4	16.5	12.7		9 48.3	10.5	56.2	N 72	17 45	18 52	20 17	19 02	18 44	18 30	18 16
R 12	2	10.3	S 1	18.8	18	48.2	12.7	N 9	37.8	10.5	56.2	N 70	17 46	18 46	20 02	18 41	18 32	18 25	18 17
D 13	17	10.5		19.8	33	19.9	12.8		9 27.3	10.6	56.2	68	17 46	18 42	19 49	18 24	18 22	18 20	18 18
A 14	32	10.8		20.8	47	51.7	12.9		9 16.7	10.6	56.2	66	17 47	18 38	19 39	18 10	18 14	18 16	18 18
Y 15	47	11.0	..	21.7	62	23.6	12.9		9 06.1	10.7	56.2	64	17 47	18 34	19 31	17 59	18 07	18 13	18 19
16	62	11.2		22.7	76	55.5	12.9		8 55.4	10.7	56.1	62	17 48	18 32	19 25	17 49	18 01	18 10	18 19
17	77	11.4		23.7	91	27.4	13.0		8 44.7	10.7	56.1	60	17 48	18 29	19 19	17 41	17 56	18 08	18 19
18	92	11.6	S 1	24.7	105	59.4	13.1	N 8	34.0	10.7	56.1	N 58	17 49	18 28	19 14	17 33	17 51	18 06	18 20
19	107	11.8		25.6	120	31.5	13.1		8 23.3	10.8	56.1	56	17 49	18 26	19 09	17 27	17 47	18 04	18 20
20	122	12.0		26.6	135	03.6	13.1		8 12.5	10.9	56.1	54	17 49	18 24	19 06	17 21	17 43	18 02	18 20
21	137	12.2	..	27.6	149	35.7	13.2		8 01.6	10.8	56.0	52	17 49	18 23	19 02	17 16	17 39	18 01	18 20
22	152	12.5		28.6	164	07.9	13.3		7 50.8	10.9	56.0	50	17 50	18 22	19 00	17 11	17 36	17 59	18 20
23	167	12.7		29.5	178	40.2	13.2		7 39.9	10.9	56.0	45	17 50	18 20	18 54	17 00	17 29	17 56	18 21
27 00	182	12.9	S 1	30.5	193	12.4	13.4	N 7	29.0	10.9	56.0	N 40	17 51	18 18	18 49	16 52	17 24	17 53	18 21
01	197	13.1		31.5	207	44.8	13.4		7 18.1	11.0	56.0	35	17 51	18 17	18 46	16 44	17 19	17 51	18 21
02	212	13.3		32.5	222	17.2	13.4		7 07.1	11.0	55.9	30	17 52	18 16	18 43	16 37	17 14	17 49	18 22
03	227	13.5	..	33.4	236	49.6	13.5		6 56.1	11.0	55.9	20	17 53	18 15	18 40	16 26	17 07	17 45	18 22
04	242	13.7		34.4	251	22.1	13.5		6 45.1	11.0	55.9	N 10	17 54	18 15	18 39	16 16	17 00	17 42	18 22
05	257	13.9		35.4	265	54.6	13.5		6 34.1	11.1	55.9	0	17 55	18 15	18 39	16 06	16 54	17 39	18 23
06	272	14.1	S 1	36.4	280	27.1	13.6	N 6	23.0	11.0	55.9	S 10	17 56	18 17	18 41	15 56	16 47	17 36	18 23
07	287	14.4		37.3	294	59.7	13.7		6 12.0	11.1	55.8	20	17 57	18 19	18 44	15 46	16 40	17 32	18 23
08	302	14.6		38.3	309	32.4	13.6		6 00.9	11.2	55.8	30	17 58	18 22	18 50	15 34	16 32	17 29	18 24
S 09	317	14.8	..	39.3	324	05.0	13.8		5 49.7	11.1	55.8	35	17 59	18 25	18 54	15 27	16 28	17 26	18 24
U 10	332	15.0		40.3	338	37.8	13.7		5 38.6	11.2	55.8	40	18 00	18 27	18 59	15 19	16 22	17 24	18 24
N 11	347	15.2		41.2	353	10.5	13.8		5 27.4	11.1	55.8	45	18 02	18 31	19 06	15 10	16 1		

G.M.T.	ARIES			VENUS -3.7			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.				
28 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	6 40.9	142 09.8	S18 34.1	227 39.6	N17 09.3	170 21.5	S 5 45.9	174 56.3	S 2 38.4	Acomar	315 36.4	S40 22.5						
	21 43.3	157 09.4	35.1	242 40.5	08.9	185 23.5	46.1	189 58.5	38.6	Achernar	335 44.2	S57 19.7						
	36 45.8	172 09.0	36.0	257 41.5	08.4	200 25.4	46.3	205 00.7	38.7	Acrux	173 37.2	S62 59.7						
	51 48.3	187 08.6	37.0	272 42.4	08.0	215 27.4	46.5	220 02.9	38.8	Adhara	255 31.6	S28 56.6						
	66 50.7	202 08.2	38.0	287 43.3	07.6	230 29.4	46.7	235 05.0	38.9	Aldebaran	291 17.0	N16 28.4						
	81 53.2	217 07.8	38.9	302 44.2	07.1	245 31.3	46.9	250 07.2	39.0									
	96 55.7	232 07.4	S18 39.9	317 45.2	N17 06.7	260 33.3	S 5 47.1	265 09.4	S 2 39.2	Alioth	166 42.4	N56 03.7						
	111 58.1	247 07.0	40.9	332 46.1	06.3	275 35.3	47.3	280 11.6	39.3	Alkaid	153 18.4	N49 24.5						
	127 00.6	262 06.6	41.8	347 47.0	05.8	290 37.2	47.5	295 13.8	39.4	Al Na'ir	28 13.7	S47 03.1						
	142 03.1	277 06.2	42.8	2 48.0	05.4	305 39.2	47.7	310 16.0	39.5	Alnilam	276 10.9	S 1 12.7						
	157 05.5	292 05.8	43.8	17 48.9	05.0	320 41.2	47.9	325 18.1	39.6	Alphard	218 20.1	S 8 34.5						
	172 08.0	307 05.4	44.7	32 49.8	04.5	335 43.1	48.1	340 20.3	39.8									
	187 10.4	322 05.0	S18 45.7	47 50.8	N17 04.1	350 45.1	S 5 48.4	355 22.5	S 2 39.9	Alphecca	126 31.8	N26 46.9						
	202 12.9	337 04.6	46.6	62 51.7	03.7	5 47.1	48.6	10 24.7	40.0	Alpheratz	358 08.2	N28 59.4						
	217 15.4	352 04.2	47.6	77 52.6	03.2	20 49.0	48.8	25 26.9	40.1	Altair	62 31.7	N 8 49.3						
	232 17.8	7 03.8	48.6	92 53.6	02.8	35 51.0	49.0	40 29.0	40.2	Ankaa	353 39.1	S42 24.3						
	247 20.3	22 03.4	49.5	107 54.5	02.3	50 53.0	49.2	55 31.2	40.4	Antares	112 56.2	S26 23.5						
	262 22.8	37 03.0	50.5	122 55.4	01.9	65 54.9	49.4	70 33.4	40.5									
	277 25.2	52 02.6	S18 51.4	137 56.4	N17 01.5	80 56.9	S 5 49.6	85 35.6	S 2 40.6	Arcturus	146 18.1	N19 16.9						
	292 27.7	67 02.2	52.4	152 57.3	01.0	95 58.9	49.8	100 37.8	40.7	Atria	108 20.0	S68 59.9						
	307 30.2	82 01.8	53.3	167 58.2	00.6	111 00.8	50.0	115 40.0	40.8	Avior	234 28.2	S59 26.7						
	322 32.6	97 01.4	54.3	182 59.2	17 00.2	126 02.8	50.2	130 42.1	41.0	Bellatrix	278 57.9	N 6 20.1						
	337 35.1	112 01.0	55.2	198 00.1	16 59.7	141 04.8	50.4	145 44.3	41.1	Betelgeuse	271 27.5	N 7 24.3						
352 37.5	127 00.6	56.2	213 01.0	59.3	156 06.7	50.6	160 46.5	41.2										
29 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	7 40.0	142 00.2	S18 57.1	228 02.0	N16 58.8	171 08.7	S 5 50.8	175 48.7	S 2 41.3	Canopus	264 06.9	S52 40.8						
	22 42.5	156 59.8	58.1	243 02.9	58.4	186 10.7	51.0	190 50.9	41.4	Capella	281 10.1	N45 58.6						
	37 44.9	171 59.4	18 59.0	258 03.9	58.0	201 12.6	51.2	205 53.1	41.5	Deneb	49 47.8	N45 13.1						
	52 47.4	186 59.0	19 00.0	273 04.8	57.5	216 14.6	51.4	220 55.2	41.7	Denebola	182 58.2	N14 40.7						
	67 49.9	201 58.6	00.9	288 05.7	57.1	231 16.6	51.7	235 57.4	41.8	Diphda	349 19.8	S18 05.2						
	82 52.3	216 58.2	01.9	303 06.7	56.6	246 18.5	51.9	250 59.6	41.9									
	97 54.8	231 57.8	S19 02.8	318 07.6	N16 56.2	261 20.5	S 5 52.1	266 01.8	S 2 42.0	Dubhe	194 21.9	N61 51.0						
	112 57.3	246 57.4	03.8	333 08.5	55.8	276 22.5	52.3	281 04.0	42.1	Elnath	278 43.2	N28 35.5						
	127 59.7	261 57.0	04.7	348 09.5	55.3	291 24.4	52.5	296 06.1	42.3	Eltanin	90 57.5	N51 29.8						
	143 02.2	276 56.6	05.7	3 10.4	54.9	306 26.4	52.7	311 08.3	42.4	Enif	34 10.7	N 9 47.6						
	158 04.7	291 56.2	06.6	18 11.3	54.5	321 28.4	52.9	326 10.5	42.5	Fomalhaut	15 50.3	S29 43.2						
	173 07.1	306 55.8	07.6	33 12.3	54.0	336 30.3	53.1	341 12.7	42.6									
	188 09.6	321 55.4	S19 08.5	48 13.2	N16 53.6	351 32.3	S 5 53.3	356 14.9	S 2 42.7	Gacrux	172 28.6	S57 00.5						
	203 12.0	336 55.0	09.4	63 14.2	53.1	6 34.3	53.5	11 17.1	42.9	Gienah	176 17.6	S17 26.2						
	218 14.5	351 54.5	10.4	78 15.1	52.7	21 36.2	53.7	26 19.2	43.0	Hadar	149 23.0	S60 17.1						
	233 17.0	6 54.1	11.3	93 16.0	52.3	36 38.2	53.9	41 21.4	43.1	Hamal	328 27.8	N23 22.6						
	248 19.4	21 53.7	12.3	108 17.0	51.8	51 40.2	54.1	56 23.6	43.2	Kaus Aust.	84 15.9	S34 23.7						
	263 21.9	36 53.3	13.2	123 17.9	51.4	66 42.1	54.3	71 25.8	43.3									
	278 24.4	51 52.9	S19 14.1	138 18.9	N16 50.9	81 44.1	S 5 54.5	86 28.0	S 2 43.5	Kochab	137 19.9	N74 14.1						
	293 26.8	66 52.5	15.1	153 19.8	50.5	96 46.1	54.7	101 30.1	43.6	Markab	14 02.2	N15 06.5						
	308 29.3	81 52.1	16.0	168 20.7	50.0	111 48.0	54.9	116 32.3	43.7	Menkar	314 40.2	N 4 01.1						
	323 31.8	96 51.7	17.0	183 21.7	49.6	126 50.0	55.2	131 34.5	43.8	Menkent	148 36.6	S36 16.7						
	338 34.2	111 51.3	17.9	198 22.6	49.2	141 52.0	55.4	146 36.7	43.9	Miaplacidus	221 45.4	S69 38.2						
353 36.7	126 50.9	18.8	213 23.6	48.7	156 53.9	55.6	161 38.9	44.0										
30 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	8 39.2	141 50.4	S19 19.8	228 24.5	N16 48.3	171 55.9	S 5 55.8	176 41.1	S 2 44.2	Mirfak	309 14.8	N49 47.6						
	23 41.6	156 50.0	20.7	243 25.4	47.8	186 57.9	56.0	191 43.2	44.3	Nunki	76 28.3	S26 19.2						
	38 44.1	171 49.6	21.6	258 26.4	47.4	201 59.8	56.2	206 45.4	44.4	Peacock	53 57.0	S56 47.9						
	53 46.5	186 49.2	22.6	273 27.3	47.0	217 01.8	56.4	221 47.6	44.5	Pollux	243 57.4	N28 04.2						
	68 49.0	201 48.8	23.5	288 28.3	46.5	232 03.8	56.6	236 49.8	44.6	Procyon	245 25.2	N 5 16.5						
	83 51.5	216 48.4	24.4	303 29.2	46.1	247 05.7	56.8	251 52.0	44.8									
	98 53.9	231 48.0	S19 25.3	318 30.1	N16 45.6	262 07.7	S 5 57.0	266 54.1	S 2 44.9	Rasalhague	96 29.0	N12 34.6						
	113 56.4	246 47.6	26.3	333 31.1	45.2	277 09.7	57.2	281 56.3	45.0	Regulus	208 09.5	N12 03.6						
	128 58.9	261 47.1	27.2	348 32.0	44.7	292 11.6	57.4	296 58.5	45.1	Rigel	281 35.2	S 8 13.2						
	144 01.3	276 46.7	28.1	3 33.0	44.3	307 13.6	57.6	312 00.7	45.2	Rigel Kent.	140 25.5	S60 45.5						
	159 03.8	291 46.3	29.0	18 33.9	43.9	322 15.6	57.8	327 02.9	45.4	Sabik	102 40.4	S15 42.1						
	174 06.3	306 45.9	30.0	33 34.9	43.4	337 17.5	58.0	342 05.1	45.5									
	189 08.7	321 45.5	S19 30.9	48 35.8	N16 43.0	352 19.5	S 5 58.2	357 07.2	S 2 45.6	Schedar	350 07.7	N56 26.2						
	204 11.2	336 45.1	31.8	63 36.8	42.5	7 21.4	58.5	12 09.4	45.7	Shaula	96 54.9	S37 05.5						
	219 13.6	351 44.7	32.7	78 37.7	42.1	22 23.4	58.7	27 11.6	45.8	Sirius	258 55.1	S16 41.3						
	234 16.1	6 44.2	33.7	93 38.6	41.6	37 25.4	58.9	42 13.8	46.0	Spica	158 57.1	S11 03.7						
	249 18.6	21 43.8	34.6	108 39.6	41.2	52 27.3	59.1	57 16.0	46.1	Suhail	223 10.6	S43 21.2						
	264 21.0	36 43.4	35.5	123 40.5	40.8	67 29.3	59.3	72 18.1	46.2									
	279 23.5	51 43.0	S19 36.4	138 41.5	N16 40.3	82 31.3	S 5 59.5	87 20.3	S 2 46.3	Vega	80 55.4	N38 46.3						
	294 26.0	66 42.6	37.3	153 42.4	39.9	97 33.2	59.7	102 22.5	46.4	Zuben'ubi	137 32.5	S15 57.8						
	309 28.4	81 42.1	38.3	168 43.4	39.4	112 35.2	59.9	117 24.7	46.6									
	324 30.9	96 41.7	39.2	183 44.3	39.0	127 37.2	6 00.1	132 26.9	46.7									
	339 33.4	111 41.3	40.1	198 45.3	38.5	142 39.1	00.3	147 29.1	46.8	Venus	134 20.2	14 32						
354 35.8	126 40.9	41.0	213 46.2	38.1	157 41.1	00.5	162 31.2	46.9	Mars	220 22.0	8 47							
									Jupiter	163 28.7	12 34							
									Saturn	168 08.7	12 15							

Mer. Pass. 23 25.5

v -0.4 d 0.9

v 0.9 d 0.4

v 2.0 d 0.2

v 2.2 d 0.1

S.H.A. Mer. Pass. h m

G.M.T.	SUN		MOON					Lat.	Twilight			Moonrise																
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil	Sunrise	28		29		30		1										
												h	m	h	m	h	m	h	m	h	m	h	m					
28 00 01 02 03 04 05 06 07 08 09 10	182	17.9	S	1	53.9	182	19.7	14.2	N	3	01.2	11.3	55.5	N 72	03	38	05	02	06	09	05	38	07	23	09	08	10	57
	197	18.1			54.9	196	52.9	14.3		2	49.9	11.3	55.5	N 70	03	52	05	06	06	07	05	41	07	19	08	56	10	35
	212	18.3			55.8	211	26.2	14.3		2	38.6	11.3	55.5	68	04	02	05	10	06	05	05	43	07	15	08	47	10	19
	227	18.6			56.8	225	59.5	14.3		2	27.3	11.4	55.4	66	04	11	05	13	06	04	05	45	07	12	08	39	10	05
	242	18.8			57.8	240	32.8	14.4		2	15.9	11.3	55.4	64	04	19	05	15	06	02	05	46	07	10	08	32	09	54
	257	19.0			58.8	255	06.2	14.4		2	04.6	11.3	55.4	62	04	25	05	17	06	01	05	47	07	08	08	27	09	45
	272	19.2	S	1	59.7	269	39.6	14.4	N	1	53.3	11.4	55.4	60	04	30	05	19	06	00	05	49	07	06	08	22	09	37
	287	19.4			00.7	284	13.0	14.4		1	41.9	11.3	55.4	N 58	04	34	05	20	05	59	05	50	07	04	08	18	09	30
	302	19.6			01.7	298	46.4	14.5		1	30.6	11.3	55.3	56	04	38	05	22	05	59	05	50	07	03	08	14	09	24
	317	19.8			02.7	313	19.9	14.5		1	19.3	11.3	55.3	54	04	41	05	23	05	58	05	51	07	01	08	11	09	19
	332	20.0			03.6	327	53.4	14.5		1	08.0	11.4	55.3	52	04	44	05	24	05	57	05	52	07	00	08	08	09	14
M O N D A Y	347	20.2		04.6	342	26.9	14.5		0	56.6	11.3	55.3	50	04	47	05	24	05	57	05	53	06	59	08	05	09	09	
	2	20.4	S	2	05.6	357	00.4	14.6	N	0	45.3	11.3	55.3	45	04	52	05	26	05	55	05	54	06	57	07	59	09	00
	17	20.6			06.5	11	34.0	14.5		0	34.0	11.3	55.3	N 40	04	56	05	27	05	54	05	55	06	55	07	54	08	52
	32	20.8			07.5	26	07.5	14.6		0	22.7	11.3	55.2	35	04	58	05	28	05	53	05	56	06	53	07	49	08	45
	47	21.1			08.5	40	41.1	14.7		0	11.4	11.3	55.2	30	05	00	05	28	05	50	05	57	06	52	07	46	08	39
	62	21.3			09.5	55	14.8	14.6	N	0	00.1	11.3	55.2	20	05	03	05	28	05	50	05	59	06	49	07	39	08	29
	77	21.5			10.4	69	48.4	14.6	S	0	11.2	11.3	55.2	N 10	05	03	05	28	05	49	06	00	06	47	07	34	08	20
	92	21.7	S	2	11.4	84	22.0	14.7	S	0	22.5	11.3	55.2	0	05	02	05	26	05	47	06	02	06	45	07	28	08	11
	107	21.9			12.4	98	55.7	14.7		0	33.8	11.3	55.1	S 10	05	00	05	24	05	45	06	03	06	43	07	23	08	03
	122	22.1			13.4	113	29.4	14.7		0	45.1	11.2	55.1	20	04	56	05	21	05	43	06	05	06	41	07	17	07	54
	137	22.3			14.3	128	03.1	14.7		0	56.3	11.3	55.1	30	04	49	05	17	05	41	06	06	06	39	07	11	07	44
152	22.5			15.3	142	36.8	14.8		1	07.6	11.2	55.1	35	04	45	05	14	05	40	06	07	06	37	07	08	07	39	
167	22.7			16.3	157	10.6	14.7		1	18.8	11.2	55.1	40	04	39	05	11	05	38	06	08	06	36	07	04	07	32	
T U E S D A Y	182	22.9	S	2	17.3	171	44.3	14.8	S	1	30.0	11.2	55.1	45	04	32	05	07	05	36	06	10	06	34	06	59	07	25
	197	23.1			18.2	186	18.1	14.8		1	41.2	11.2	55.0	S 50	04	23	05	01	05	34	06	11	06	32	06	53	07	16
	212	23.3			19.2	200	51.9	14.8		1	52.4	11.2	55.0	52	04	18	04	59	05	33	06	12	06	31	06	51	07	12
	227	23.5			20.2	215	25.7	14.8		2	03.6	11.2	55.0	54	04	13	04	56	05	32	06	13	06	30	06	48	07	07
	242	23.7			21.1	229	59.5	14.8		2	14.8	11.1	55.0	56	04	08	04	53	05	30	06	13	06	29	06	45	07	02
	257	24.0			22.1	244	33.3	14.8		2	25.9	11.1	55.0	58	04	01	04	49	05	29	06	14	06	28	06	41	06	56
	272	24.2	S	2	23.1	259	07.1	14.8	S	2	37.0	11.2	55.0	S 60	03	54	04	45	05	27	06	15	06	26	06	38	06	50
	287	24.4			24.1	273	40.9	14.9		2	48.2	11.1	54.9															
	302	24.6			25.0	288	14.8	14.9		2	59.3	11.0	54.9	Lat.	Sunset	Twilight		Moonset										
	317	24.8			26.0	302	48.7	14.8		3	10.3	11.1	54.9			Civil	Naut.	28	29	30	1							
	332	25.0			27.0	317	22.5	14.9		3	21.4	11.0	54.9															
347	25.2			28.0	331	56.4	14.9		3	32.4	11.0	54.9	N 72	17	29	18	36	19	59	18	16	18	03	17	48	17	30	
2	25.4	S	2	28.9	346	30.3	14.8	S	3	43.4	11.0	54.9	N 70	17	32	18	32	19	46	18	17	18	10	18	02	17	53	
17	25.6			29.9	1	04.1	14.9		3	54.4	11.0	54.8	68	17	34	18	29	19	35	18	18	18	15	18	13	18	10	
32	25.8			30.9	15	38.0	14.9		4	05.4	11.0	54.8	66	17	35	18	26	19	27	18	18	18	20	18	22	18	25	
47	26.0			31.8	30	11.9	14.9		4	16.4	10.9	54.8	64	17	37	18	24	19	20	18	19	18	24	18	30	18	37	
62	26.2			32.8	44	45.8	14.9		4	27.3	10.9	54.8	62	17	38	18	22	19	14	18	19	18	27	18	36	18	47	
77	26.4			33.8	59	19.7	14.9		4	38.2	10.9	54.8	60	17	39	18	20	19	09	18	19	18	30	18	42	18	55	
92	26.6	S	2	34.8	73	53.6	14.9	S	4	49.1	10.8	54.8	N 58	17	40	18	19	19	05	18	20	18	33	18	47	19	03	
107	26.8			35.7	88	27.5	14.9		4	59.9	10.8	54.8	56	17	41	18	18	19	01	18	20	18	35	18	52	19	10	
122	27.0			36.7	103	01.4	15.0		5	10.7	10.8	54.7	54	17	42	18	17	18	58	18	20	18	38	18	56	19	16	
137	27.2			37.7	117	35.4	14.9		5	21.5	10.8	54.7	52	17	42	18	16	18	55	18	20	18	40	19	00	19	21	
152	27.4			38.6	132	09.3	14.9		5	32.3	10.7	54.7	50	17	43	18	15	18	53	18	20	18	41	19	03	19	26	
167	27.7			39.6	146	43.2	14.9		5	43.0	10.7	54.7	45	17	45	18	14	18	48	18	21	18	45	19	10	19	37	
30 00 01 02 03 04 05 06 07 08 09 10 11	182	27.9	S	2	40.6	161	17.1	14.9	S	5	53.7	10.7	54.7	N 40	17	46	18	13	18	44	18	21	18	49	19	17	19	46
	197	28.1			41.6	175	51.0	14.9		6	04.4	10.6	54.7	35	17	47	18	12	18	42	18	21	18	51	19	22	19	54
	212	28.3			42.5	190	24.9	14.9		6	15.0	10.7	54.7	30	17	48	18	12	18	40	18	22	18	54	19	27	20	01
	227	28.5			43.5	204	58.8	14.9		6	25.7	10.5	54.6	20	17	50	18	12	18	38	18	27	18	58	19	35	20	13
	242	28.7			44.5	219	32.7	14.9		6	36.2	10.6	54.6	N 10	17	52	18	13	18	37	18	22	19	02	19	42	20	23
	257	28.9			45.5	234	06.6	14.9		6	46.8	10.5	54.6	0	17	54	18	14	18	38	18	23	19	06	19	49	20	33
	272	29.1	S	2	46.4	248	40.5	14.9	S	6	57.3	10.5	54.6	S 10	17	55</												

G.M.T.	ARIES			VENUS -3.7			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
1 00	9 38.3	141 40.5	S19 41.9	228 47.1	N16 37.6		172 43.1	S 6 00.7		177 33.4	S 2 47.0					Acamar	315 36.4	S40 22.5
01	24 40.8	156 40.0	42.8	243 48.1	37.2		187 45.0	00.9		192 35.6	47.1					Achernar	335 44.2	S57 19.7
02	39 43.2	171 39.6	43.8	258 49.0	36.8		202 47.0	01.1		207 37.8	47.3					Acrux	173 37.2	S62 59.7
03	54 45.7	186 39.2	44.7	273 50.0	36.3		217 49.0	01.3		222 40.0	47.4					Adhara	255 31.6	S28 56.6
04	69 48.1	201 38.8	45.6	288 50.9	35.9		232 50.9	01.5		237 42.1	47.5					Aldebaran	291 17.0	N16 28.4
05	84 50.6	216 38.4	46.5	303 51.9	35.4		247 52.9	01.8		252 44.3	47.6							
06	99 53.1	231 37.9	S19 47.4	318 52.8	N16 35.0		262 54.8	S 6 02.0		267 46.5	S 2 47.7					Alioth	166 42.4	N56 03.7
07	114 55.5	246 37.5	48.3	333 53.8	34.5		277 56.8	02.2		282 48.7	47.9					Alkaid	153 18.4	N49 24.5
08	129 58.0	261 37.1	49.2	348 54.7	34.1		292 58.8	02.4		297 50.9	48.0					Al Na'ir	28 13.7	S47 03.1
H 09	145 00.5	276 36.7	50.1	3 55.7	33.6		308 00.7	02.6		312 53.0	48.1					Alnilam	276 10.9	S 1 12.7
U 10	160 02.9	291 36.3	51.0	18 56.6	33.2		323 02.7	02.8		327 55.2	48.2					Alphard	218 20.1	S 8 34.5
R 11	175 05.4	306 35.8	51.9	33 57.6	32.7		338 04.7	03.0		342 57.4	48.3							
S 12	190 07.9	321 35.4	S19 52.8	48 58.5	N16 32.3		353 06.6	S 6 03.2		357 59.6	S 2 48.5					Alphecca	126 31.8	N26 46.9
D 13	205 10.3	336 35.0	53.8	63 59.5	31.9		8 08.6	03.4		13 01.8	48.6					Alpheratz	358 08.2	N28 59.4
A 14	220 12.8	351 34.6	54.7	79 00.4	31.4		23 10.6	03.6		28 04.0	48.7					Altair	62 31.8	N 8 49.3
Y 15	235 15.3	6 34.1	55.6	94 01.4	31.0		38 12.6	03.8		43 06.1	48.8					Ankaa	353 39.1	S42 24.3
16	250 17.7	21 33.7	56.5	109 02.3	30.5		53 14.5	04.0		58 08.3	48.9					Antares	112 56.2	S26 23.4
17	265 20.2	36 33.3	57.4	124 03.3	30.1		68 16.5	04.2		73 10.5	49.1							
18	280 22.6	51 32.9	S19 58.3	139 04.2	N16 29.6		83 18.4	S 6 04.4		88 12.7	S 2 49.2					Arcturus	146 18.1	N19 16.9
19	295 25.1	66 32.4	19 59.2	154 05.2	29.2		98 20.4	04.6		103 14.9	49.3					Atria	108 20.1	S68 59.9
20	310 27.6	81 32.0	20 00.1	169 06.1	28.7		113 22.3	04.8		118 17.0	49.4					Avior	234 28.2	S59 26.7
21	325 30.0	96 31.6	01.0	184 07.1	28.3		128 24.3	05.1		133 19.2	49.5					Bellatrix	278 57.8	N 6 20.1
22	340 32.5	111 31.1	01.9	199 08.0	27.8		143 26.3	05.3		148 21.4	49.6					Betelgeuse	271 27.5	N 7 24.3
23	355 35.0	126 30.7	02.8	214 09.0	27.4		158 28.2	05.5		163 23.6	49.8							
2 00	10 37.4	141 30.3	S20 03.7	229 09.9	N16 26.9		173 30.2	S 6 05.7		178 25.8	S 2 49.9					Canopus	264 06.9	S52 40.8
01	25 39.9	156 29.9	04.5	244 10.9	26.5		188 32.2	05.9		193 28.0	50.0					Capella	281 10.1	N45 58.7
02	40 42.4	171 29.4	05.4	259 11.8	26.0		203 34.1	06.1		208 30.1	50.1					Deneb	49 47.8	N45 13.1
03	55 44.8	186 29.0	06.3	274 12.8	25.6		218 36.1	06.3		223 32.3	50.2					Denebola	182 58.6	N14 40.7
04	70 47.3	201 28.6	07.2	289 13.7	25.1		233 38.1	06.5		238 34.5	50.4					Diphda	349 19.8	S18 05.2
05	85 49.7	216 28.1	08.1	304 14.7	24.7		248 40.0	06.7		253 36.7	50.5							
06	100 52.2	231 27.7	S20 09.0	319 15.6	N16 24.2		263 42.0	S 6 06.9		268 38.9	S 2 50.6					Dubhe	194 21.8	N61 51.0
07	115 54.7	246 27.3	09.9	334 16.6	23.8		278 43.9	07.1		283 41.0	50.7					Elnath	278 43.1	N28 35.5
08	130 57.1	261 26.9	10.8	349 17.5	23.3		293 45.9	07.3		298 43.2	50.8					Eltanin	90 57.5	N51 29.8
F 09	145 59.6	276 26.4	11.7	4 18.5	22.9		308 47.9	07.5		313 45.4	51.0					Enif	34 10.7	N 9 47.6
R 10	161 02.1	291 26.0	12.6	19 19.4	22.4		323 49.8	07.7		328 47.6	51.1					Fomalhaut	15 50.3	S29 43.2
I 11	176 04.5	306 25.6	13.5	34 20.4	22.0		338 51.8	07.9		343 49.8	51.2							
D 12	191 07.0	321 25.1	S20 14.3	49 21.4	N16 21.5		353 53.8	S 6 08.1		358 51.9	S 2 51.3					Gacrux	172 28.6	S57 00.5
A 13	206 09.5	336 24.7	15.2	64 22.3	21.1		8 55.7	08.4		13 54.1	51.4					Gienah	176 17.6	S17 26.2
Y 14	221 11.9	351 24.3	16.1	79 23.3	20.6		23 57.7	08.6		28 56.3	51.5					Hadar	149 23.0	S60 17.0
15	236 14.4	6 23.8	17.0	94 24.2	20.2		38 59.7	08.8		43 58.5	51.7					Hamal	328 27.8	N23 22.6
16	251 16.9	21 23.4	17.9	109 25.2	19.7		54 01.6	09.0		59 00.7	51.8					Kaus Aust.	84 15.9	S34 23.7
17	266 19.3	36 23.0	18.8	124 26.1	19.3		69 03.6	09.2		74 02.8	51.9							
18	281 21.8	51 22.5	S20 19.6	139 27.1	N16 18.8		84 05.5	S 6 09.4		89 05.0	S 2 52.0					Kochab	137 20.0	N74 14.1
19	296 24.2	66 22.1	20.5	154 28.0	18.4		99 07.5	09.6		104 07.2	52.1					Markab	14 02.2	N15 06.5
20	311 26.7	81 21.7	21.4	169 29.0	17.9		114 09.5	09.8		119 09.4	52.3					Menkar	314 40.1	N 4 01.1
21	326 29.2	96 21.2	22.3	184 29.9	17.5		129 11.4	10.0		134 11.6	52.4					Menkent	148 36.6	S36 16.7
22	341 31.6	111 20.8	23.2	199 30.9	17.0		144 13.4	10.2		149 13.8	52.5					Miaplacidus	221 45.4	S69 38.2
23	356 34.1	126 20.4	24.0	214 31.9	16.6		159 15.4	10.4		164 15.9	52.6							
3 00	11 36.6	141 19.9	S20 24.9	229 32.8	N16 16.1		174 17.3	S 6 10.6		179 18.1	S 2 52.8					Mirfak	309 14.7	N49 47.7
01	26 39.0	156 19.5	25.8	244 33.8	15.7		189 19.3	10.8		194 20.3	52.9					Nunki	76 28.3	S26 19.2
02	41 41.5	171 19.0	26.7	259 34.7	15.2		204 21.2	11.0		209 22.5	53.0					Peacock	53 57.0	S56 47.9
03	56 44.0	186 18.6	27.5	274 35.7	14.8		219 23.2	11.2		224 24.7	53.1					Pollux	243 57.4	N28 04.2
04	71 46.4	201 18.2	28.4	289 36.6	14.3		234 25.2	11.5		239 26.8	53.2					Procyon	245 25.1	N 5 16.5
05	86 48.9	216 17.7	29.3	304 37.6	13.9		249 27.1	11.7		254 29.0	53.4							
06	101 51.4	231 17.3	S20 30.1	319 38.6	N16 13.4		264 29.1	S 6 11.9		269 31.2	S 2 53.5					Rasalhague	96 29.0	N12 34.6
07	116 53.8	246 16.9	31.0	334 39.5	13.0		279 31.1	12.1		284 33.4	53.6					Regulus	208 09.5	N12 03.6
S 08	131 56.3	261 16.4	31.9	349 40.5	12.5		294 33.0	12.3		299 35.6	53.7					Rigel	281 35.2	S 8 13.2
A 09	146 58.7	276 16.0	32.8	4 41.4	12.1		309 35.0	12.5		314 37.7	53.8					Rigel Kent.	140 25.5	S60 45.5
T 10	162 01.2	291 15.5	33.6	19 42.4	11.6		324 37.0	12.7		329 39.9	53.9					Sabik	102 40.5	S15 42.1
U 11	177 03.7	306 15.1	34.5	34 43.4	11.2		339 38.9	12.9		344 42.1	54.1							
R 12	192 06.1	321 14.7	S20 35.4	49 44.3	N16 10.7		354 40.9	S 6 13.1		359 44.3	S 2 54.2					Schedar	350 07.7	N56 26.2
D 13	207 08.6	336 14.2	36.2	64 45.3	10.3		9 42.8	13.3		14 46.5	54.3					Shaula	96 54.9	S37 05.5
A 14	222 11.1	351 13.8	37.1	79 46.2	09.8		24 44.8	13.5		29 48.7	54.4					Sirius	258 55.1	S16 41.3
Y 15	237 13.5	6 13.3	38.0	94 47.2	09.4		39 46.8	13.7		44 50.8	54.5					Spica	158 5	

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	v	Dec.	d		H.P.	Naut.		Civil	1	2	3	4
									h m		h m	h m	h m	h m	h m
1 00	182 32.7	S 3 03.9	150 49.1	14.7	S10 00.1	9.8	54.4	N 72	03 53	05 15	06 23	10 57	12 57	■	■
01	197 32.9	04.9	165 22.8	14.7	10 09.9	9.7	54.4	N 70	04 05	05 18	06 19	10 35	12 19	14 13	■
02	212 33.1	05.8	179 56.5	14.7	10 19.6	9.7	54.4	68	04 14	05 20	06 16	10 19	11 52	13 27	15 03
03	227 33.3	06.8	194 30.2	14.6	10 29.3	9.6	54.3	66	04 22	05 22	06 13	10 05	11 32	12 58	14 20
04	242 33.5	07.8	209 03.8	14.7	10 38.9	9.6	54.3	64	04 28	05 24	06 11	09 54	11 16	12 36	13 51
05	257 33.7	08.8	223 37.5	14.6	10 48.5	9.5	54.3	62	04 33	05 25	06 09	09 45	11 03	12 18	13 29
06	272 33.9	S 3 09.7	238 11.1	14.6	S10 58.0	9.5	54.3	60	04 37	05 26	06 07	09 37	10 51	12 04	13 11
07	287 34.1	10.7	252 44.7	14.5	11 07.5	9.4	54.3	N 58	04 41	05 27	06 06	09 30	10 42	11 51	12 57
08	302 34.3	11.7	267 18.2	14.6	11 16.9	9.4	54.3	56	04 44	05 28	06 05	09 24	10 33	11 40	12 44
T 09	317 34.5	12.6	281 51.8	14.5	11 26.3	9.3	54.3	54	04 47	05 28	06 03	09 19	10 26	11 31	12 33
H 10	332 34.7	13.6	296 25.3	14.6	11 35.6	9.3	54.3	52	04 49	05 29	06 02	09 14	10 19	11 23	12 23
U 11	347 34.9	14.6	310 58.9	14.5	11 44.9	9.2	54.3	50	04 51	05 29	06 01	09 09	10 13	11 15	12 15
S 12	2 35.1	S 3 15.6	325 32.4	14.4	S11 54.1	9.2	54.3	45	04 56	05 30	05 59	09 00	10 00	10 59	11 56
D 13	17 35.3	16.5	340 05.8	14.5	12 03.3	9.1	54.3	N 40	04 59	05 30	05 57	08 52	09 49	10 46	11 41
A 14	32 35.5	17.5	354 39.3	14.4	12 12.4	9.0	54.2	35	05 01	05 30	05 55	08 45	09 40	10 35	11 29
Y 15	47 35.7	18.5	9 12.7	14.4	12 21.4	9.0	54.2	30	05 02	05 30	05 54	08 39	09 32	10 25	11 18
16	62 35.9	19.4	23 46.1	14.4	12 30.4	9.0	54.2	20	05 03	05 29	05 51	08 29	09 19	10 09	10 59
17	77 36.1	20.4	38 19.5	14.4	12 39.4	8.9	54.2	N 10	05 03	05 28	05 49	08 20	09 07	09 54	10 43
18	92 36.3	S 3 21.4	52 52.9	14.3	S12 48.3	8.8	54.2	0	05 01	05 25	05 46	08 11	08 56	09 41	10 28
19	107 36.5	22.3	67 26.2	14.4	12 57.1	8.8	54.2	S 10	04 58	05 22	05 44	08 03	08 44	09 27	10 12
20	122 36.7	23.3	81 59.6	14.3	13 05.9	8.7	54.2	20	04 53	05 19	05 41	07 54	08 33	09 13	09 56
21	137 36.9	24.3	96 32.9	14.2	13 14.6	8.7	54.2	30	04 45	05 13	05 37	07 44	08 19	08 57	09 38
22	152 37.1	25.2	111 06.1	14.3	13 23.3	8.6	54.2	35	04 40	05 10	05 35	07 39	08 12	08 47	09 27
23	167 37.3	26.2	125 39.4	14.2	13 31.9	8.5	54.2	40	04 34	05 06	05 33	07 32	08 03	08 37	09 15
2 00	182 37.5	S 3 27.2	140 12.6	14.2	S13 40.4	8.5	54.2	45	04 26	05 01	05 31	07 25	07 53	08 24	09 00
01	197 37.7	28.2	154 45.8	14.1	13 48.9	8.5	54.2	S 50	04 16	04 55	05 27	07 16	07 40	08 09	08 43
02	212 37.9	29.1	169 18.9	14.2	13 57.4	8.3	54.2	52	04 11	04 52	05 26	07 12	07 35	08 02	08 34
03	227 38.1	30.1	183 52.1	14.1	14 05.7	8.3	54.2	54	04 05	04 48	05 24	07 07	07 29	07 54	08 25
04	242 38.3	31.1	198 25.2	14.1	14 14.0	8.3	54.1	56	03 59	04 45	05 22	07 02	07 22	07 45	08 15
05	257 38.5	32.0	212 58.3	14.0	14 22.3	8.2	54.1	58	03 52	04 40	05 20	06 56	07 14	07 35	08 03
06	272 38.7	S 3 33.0	227 31.3	14.1	S14 30.5	8.1	54.1	S 60	03 43	04 36	05 18	06 50	07 05	07 24	07 49
07	287 38.9	34.0	242 04.4	14.0	14 38.6	8.1	54.1								
08	302 39.1	34.9	256 37.4	13.9	14 46.7	8.0	54.1	Lat.	Sunset	Twilight		Moonset			
09	317 39.3	35.9	271 10.3	14.0	14 54.7	7.9	54.1			Civil	Naut.	1	2	3	4
F 10	332 39.5	36.9	285 43.3	13.9	15 02.6	7.8	54.1								
R 11	347 39.7	37.8	300 16.2	13.9	15 10.4	7.8	54.1								
D 12	2 39.9	S 3 38.8	314 49.1	13.8	S15 18.2	7.8	54.1	N 72	17 14	18 21	19 42	17 30	17 01	■	■
A 13	17 40.1	39.8	329 21.9	13.8	15 26.0	7.6	54.1	N 70	17 18	18 18	19 31	17 53	17 41	17 22	■
Y 14	32 40.3	40.7	343 54.7	13.8	15 33.6	7.6	54.1	68	17 21	18 16	19 22	18 10	18 08	18 08	18 09
15	47 40.5	41.7	358 27.5	13.8	15 41.2	7.6	54.1	66	17 24	18 15	19 15	18 25	18 29	18 38	18 53
16	62 40.7	42.7	373 00.3	13.7	15 48.8	7.4	54.1	64	17 26	18 13	19 09	18 37	18 46	19 00	19 22
17	77 40.9	43.7	388 23.0	13.7	15 56.2	7.4	54.1	62	17 28	18 12	19 04	18 47	19 00	19 18	19 45
18	92 41.1	S 3 44.6	403 46.1	13.7	S16 03.6	7.3	54.1	60	17 30	18 11	19 00	18 55	19 12	19 34	20 02
19	107 41.3	45.6	418 69.4	13.6	16 10.9	7.3	54.1	N 58	17 32	18 11	18 56	19 03	19 22	19 46	20 17
20	122 41.5	46.6	433 92.7	13.6	16 18.2	7.2	54.1	56	17 33	18 10	18 53	19 10	19 31	19 57	20 30
21	137 41.7	47.5	448 15.9	13.6	16 25.4	7.1	54.1	54	17 34	18 09	18 51	19 16	19 39	20 07	20 42
22	152 41.9	48.5	463 39.2	13.5	16 32.5	7.0	54.1	52	17 36	18 09	18 48	19 21	19 46	20 16	20 51
23	167 42.0	49.5	478 62.5	13.5	16 39.5	7.0	54.1	50	17 37	18 09	18 46	19 26	19 53	20 24	21 00
3 00	182 42.2	S 3 50.4	493 85.8	13.4	S16 46.5	6.9	54.1	45	17 39	18 08	18 42	19 37	20 07	20 40	21 19
01	197 42.4	51.4	508 109.1	13.5	16 53.4	6.8	54.1	N 40	17 41	18 08	18 39	19 46	20 18	20 54	21 34
02	212 42.6	52.3	523 132.4	13.4	17 00.2	6.8	54.1	35	17 43	18 08	18 37	19 54	20 28	21 06	21 47
03	227 42.8	53.3	538 155.7	13.3	17 07.0	6.6	54.1	30	17 44	18 08	18 36	20 01	20 37	21 16	21 59
04	242 43.0	54.3	553 179.0	13.3	17 13.6	6.6	54.1	20	17 47	18 09	18 35	20 13	20 52	21 34	22 18
05	257 43.2	55.3	568 202.3	13.3	17 20.2	6.6	54.1	N 10	17 50	18 11	18 35	20 23	21 05	21 49	22 35
06	272 43.4	S 3 56.2	583 225.6	13.2	S17 26.8	6.4	54.1	0	17 53	18 13	18 37	20 33	21 17	22 03	22 51
07	287 43.6	57.2	598 248.9	13.2	17 33.2	6.4	54.1	S 10	17 55	18 16	18 41	20 42	21 30	22 18	23 07
08	302 43.8	58.2	613 272.2	13.2	17 39.6	6.3	54.1	20	17 58	18 20	18 46	20 53	21 43	22 33	23 23
S 09	317 44.0	S 3 59.1	628 295.5	13.2	17 45.9	6.2	54.1	30	18 02	18 26	18 54	21 05	21 58	22 51	23 43
A 10	332 44.2	4 00.1	643 318.8	13.1	17 52.1	6.1	54.1	35	18 04	18 29	18 59	21 12	22 07	23 01	23 54
T 11	347 44.4	01.1	658 342.1	13.1	17 58.2	6.1	54.1	40	18 06	18 33	19 06	21 20	22 17	23 13	24 07
U 12	2 44.6	S 4 02.0	673 365.4	13.0	S18 04.3	6.0	54.1	45	18 09	18 39	19 14	21 29	22 29	23 27	24 23
D 13	17 44.8	03.0	688 388.7	13.1	18 10.3	5.9	54.1	S 50	18 12	18 45	19 24	21 40	22 43	23 44	24 42
A 14	32 45.0	04.0	703 412.0	12.9	18 16.2	5.8	54.1	52	18 14	18 48	19 29	21 45	22 50	23 52	24 51
Y 15	47 45.2	04.9	718 435.3	12.9	18 22.0	5.8	54.1	54	18 16	18 52	19 35	21 51	22 57	24 01	00 01
16	62 45.4	05.9	733 458.6	12.9	18 27.8	5.6	54.1	56	18 18	18 55	19 41	21 57	23 06	24 11	00 11
17	77 45.6	06.9	748 481.9	12.8	18 33.4	5.6	54.1	58	18 20	19 00	19 49	22 05	23 15	24 23	00 23
18	92 45.8	S 4 07.8	763 505.2	12.9	S18 39.0	5.5	54.1	S 60	18 22	19 05	19 58	22 13	23 26	24 36	00 36
19	107 46.0	08.8	778 528.5	12.8	18 44.5										

G.M.T.	ARIES			VENUS -3.7			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS										
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.								
4 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	12	35.7	141	09.3	S20	45.7	229	55.9	N16	05.3	175	04.4	S	6	15.6	180	10.5	S	2	55.6	Acamar	315	36.3	S40	22.6	
	27	38.2	156	08.9		46.5	244	56.8		04.8	190	06.4			15.8	195	12.6			55.7	Achernar	335	44.1	S57	19.7	
	42	40.6	171	08.5		47.4	259	57.8		04.4	205	08.4			16.0	210	14.8			55.8	Acrux	173	37.2	S62	59.7	
	57	43.1	186	08.0	..	48.3	274	58.7	..	03.9	220	10.3	..		16.2	225	17.0	..		56.0	Adhara	255	31.6	S28	56.6	
	72	45.6	201	07.6		49.1	289	59.7		03.5	235	12.3			16.4	240	19.2			56.1	Aldebaran	291	17.0	N16	28.4	
	87	48.0	216	07.1		50.0	305	00.7		03.0	250	14.2			16.6	255	21.4			56.2						
	102	50.5	231	06.7	S20	50.8	320	01.6	N16	02.6	265	16.2	S	6	16.8	270	23.5	S	2	56.3	Alioth	166	42.4	N56	03.7	
	117	53.0	246	06.2		51.7	335	02.6		02.1	280	18.2			17.0	285	25.7			56.4	Alkaid	153	18.4	N49	24.5	
	132	55.4	261	05.8		52.5	350	03.6		01.6	295	20.1			17.2	300	27.9			56.6	Al Na'ir	28	13.7	S47	03.1	
	147	57.9	276	05.3	..	53.4	5	04.5	..	01.2	310	22.1	..		17.4	315	30.1	..		56.7	Alnilam	276	10.8	S	1	12.7
	163	00.3	291	04.9		54.2	20	05.5		00.7	325	24.1			17.6	330	32.3			56.8	Alphard	218	20.1	S	8	34.5
	178	02.8	306	04.4		55.1	35	06.5	16	00.3	340	26.0			17.8	345	34.4			56.9						
	193	05.3	321	04.0	S20	55.9	50	07.4	N15	59.8	355	28.0	S	6	18.0	0	36.6	S	2	57.0	Alphecca	126	31.8	N26	46.9	
	208	07.7	336	03.5		56.7	65	08.4		59.4	10	29.9			18.2	15	38.8			57.1	Alpheratz	358	08.2	N28	59.4	
	223	10.2	351	03.1		57.6	80	09.3		58.9	25	31.9			18.5	30	41.0			57.3	Altair	62	31.8	N	8	49.3
	238	12.7	6	02.6	..	58.4	95	10.3	..	58.5	40	33.9	..		18.7	45	43.2	..		57.4	Ankaa	353	39.1	S42	24.3	
	253	15.1	21	02.2	20	59.3	110	11.3		58.0	55	35.8			18.9	60	45.4			57.5	Antares	112	56.2	S26	23.4	
	268	17.6	36	01.7	21	00.1	125	12.2		57.6	70	37.8			19.1	75	47.5			57.6						
	283	20.1	51	01.3	S21	01.0	140	13.2	N15	57.1	85	39.7	S	6	19.3	90	49.7	S	2	57.7	Arcturus	146	18.1	N19	16.9	
	298	22.5	66	00.8		01.8	155	14.2		56.6	100	41.7			19.5	105	51.9			57.9	Atria	108	20.1	S68	59.9	
	313	25.0	81	00.4		02.6	170	15.1		56.2	115	43.7			19.7	120	54.1			58.0	Avior	234	28.2	S59	26.7	
	328	27.5	95	59.9	..	03.5	185	16.1	..	55.7	130	45.6	..		19.9	135	56.3	..		58.1	Bellatrix	278	57.9	N	6	20.1
	343	29.9	110	59.5		04.3	200	17.1		55.3	145	47.6			20.1	150	58.4			58.2	Betelgeuse	271	27.4	N	7	24.3
358	32.4	125	59.0		05.1	215	18.0		54.8	160	49.6			20.3	166	00.6			58.3							
5 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	13	34.8	140	58.6	S21	06.0	230	19.0	N15	54.4	175	51.5	S	6	20.5	181	02.8	S	2	58.5	Canopus	264	06.8	S52	40.8	
	28	37.3	155	58.1		06.8	245	20.0		53.9	190	53.5			20.7	196	05.0			58.6	Capella	281	10.1	N45	58.7	
	43	39.8	170	57.7		07.7	260	20.9		53.4	205	55.4			20.9	211	07.2			58.7	Deneb	49	47.8	N45	13.2	
	58	42.2	185	57.2	..	08.5	275	21.9	..	53.0	220	57.4	..		21.1	226	09.3	..		58.8	Denebola	182	58.6	N14	40.7	
	73	44.7	200	56.8		09.3	290	22.9		52.5	235	59.4			21.3	241	11.5			58.9	Diphda	349	19.8	S18	05.2	
	88	47.2	215	56.3		10.2	305	23.9		52.1	251	01.3			21.5	256	13.7			59.0						
	103	49.6	230	55.9	S21	11.0	320	24.8	N15	51.6	266	03.3	S	6	21.7	271	15.9	S	2	59.2	Dubhe	194	21.8	N61	51.0	
	118	52.1	245	55.4		11.8	335	25.8		51.2	281	05.3			22.0	286	18.1			59.3	Elnath	278	43.1	N28	35.5	
	133	54.6	260	54.9		12.6	350	26.8		50.7	296	07.2			22.2	301	20.2			59.4	Eltanin	90	57.5	N51	29.8	
	148	57.0	275	54.5	..	13.5	5	27.7	..	50.2	311	09.2	..		22.4	316	22.4	..		59.5	Enif	34	10.7	N	9	47.6
	163	59.5	290	54.0		14.3	20	28.7		49.8	326	11.1			22.6	331	24.6			59.6	Fomalhaut	15	50.3	S29	43.2	
	179	01.9	305	53.6		15.1	35	29.7		49.3	341	13.1			22.8	346	26.8			59.8						
	194	04.4	320	53.1	S21	16.0	50	30.6	N15	48.9	356	15.1	S	6	23.0	1	29.0	S	2	59.9	Gacrux	172	28.6	S57	00.5	
	209	06.9	335	52.7		16.8	65	31.6		48.4	11	17.0			23.2	16	31.1			00.0	Gienah	176	17.6	S17	26.2	
	224	09.3	350	52.2		17.6	80	32.6		47.9	26	19.0			23.4	31	33.3			00.1	Hadar	149	23.0	S60	17.0	
	239	11.8	5	51.7	..	18.4	95	33.6	..	47.5	41	20.9	..		23.6	46	35.5	..		00.2	Hamal	328	27.8	N23	22.6	
	254	14.3	20	51.3		19.2	110	34.5		47.0	56	22.9			23.8	61	37.7			00.3	Kaus Aust.	84	16.0	S34	23.7	
	269	16.7	35	50.8		20.1	125	35.5		46.6	71	24.9			24.0	76	39.9			00.5						
	284	19.2	50	50.4	S21	20.9	140	36.5	N15	46.1	86	26.8	S	6	24.2	91	42.0	S	3	00.6	Kochab	137	20.0	N74	14.1	
	299	21.7	65	49.9		21.7	155	37.4		45.7	101	28.8			24.4	106	44.2			00.7	Markab	14	02.2	N15	06.5	
	314	24.1	80	49.5		22.5	170	38.4		45.2	116	30.7			24.6	121	46.4			00.8	Menkar	314	40.1	N	4	01.1
	329	26.6	95	49.0	..	23.3	185	39.4	..	44.7	131	32.7	..		24.8	136	48.6	..		00.9	Menkent	148	36.6	S36	16.7	
	344	29.1	110	48.5		24.2	200	40.4		44.3	146	34.7			25.0	151	50.8			01.1	Miaplacidus	221	45.3	S69	38.2	
359	31.5	125	48.1		25.0	215	41.3		43.8	161	36.6			25.2	166	53.0			01.2							
6 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	14	34.0	140	47.6	S21	25.8	230	42.3	N15	43.4	176	38.6	S	6	25.5	181	55.1	S	3	01.3	Mirfak	309	14.7	N49	47.7	
	29	36.4	155	47.2		26.6	245	43.3		42.9	191	40.6			25.7	196	57.3			01.4	Nunki	76	28.3	S26	19.2	
	44	38.9	170	46.7		27.4	260	44.2		42.4	206	42.5			25.9	211	59.5			01.5	Peacock	53	57.0	S56	47.9	
	59	41.4	185	46.2	..	28.2	275	45.2	..	42.0	221	44.5	..		26.1	227	01.7	..		01.6	Pollux	243	57.4	N28	04.2	
	74	43.8	200	45.8		29.0	290	46.2		41.5	236	46.4			26.3	242	03.9			01.8	Procyon	245	25.1	N	5	16.4
	89	46.3	215	45.3		29.9	305	47.2		41.1	251	48.4			26.5	257	06.0			01.9						
	104	48.8	230	44.9	S21	30.7	320	48.1	N15	40.6	266	50.4	S	6	26.7	272	08.2	S	3	02.0	Rasalhague	96	29.0	N12	34.6	
	119	51.2	245	44.4		31.5	335	49.1		40.1	281	52.3			26.9	287	10.4			02.1	Regulus	208	09.5	N12	03.6	
	134	53.7	260	43.9		32.3	350	50.1		39.7	296	54.3			27.1	302	12.6			02.2	Rigel	281	35.2	S	8	13.2
	149	56.2	275	43.5	..	33.1	5	51.1	..	39.2	311	56.2	..		27.3	317	14.8	..		02.4	Rigel Kent.	140	25.5	S60	45.5	
	164	58.6	290	43.0		33.9	20	52.0		38.8	326	58.2			27.5	332	16.9			02.5	Sabik	102	40.5	S15	42.1	
	180	01.1																								

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise																		
	G.H.A.	Dec.	G.H.A.	D	Dec.	d	H.P.	Naut.		Civil	Sunrise	4	5	6	7																
								h m		h m	h m	h m	h m	h m	h m	h m															
4 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	182	46.9	S	4	13.6	118	10.7	12.6	S	19	10.7	5.0	54.2	N 72	04	08	05	29	06	36	15	03	16	31	17	20	17	32			
	197	47.1	14.6	132	42.3	12.6	19	15.7	5.0	54.2	68	04	26	05	31	06	27	15	03	16	31	17	20	17	32	16	50	16	22		
	212	47.3	15.6	147	13.9	12.5	19	20.7	4.8	54.2	66	04	32	05	32	06	23	14	20	15	31	16	21	16	21	16	50	16	22		
	227	47.5	16.5	161	45.4	12.6	19	25.5	4.7	54.2	64	04	37	05	32	06	20	13	51	14	57	15	47	16	50	16	22	16	22		
	242	47.7	17.5	176	17.0	12.4	19	30.2	4.7	54.2	62	04	41	05	33	06	17	13	29	14	32	15	22	16	00	16	00	16	00		
	257	47.9	18.5	190	48.4	12.5	19	34.9	4.5	54.2	60	04	45	05	33	06	15	13	11	14	12	15	03	15	03	15	42	15	42		
	272	48.1	S	4	19.4	205	19.9	12.4	S	19	39.4	4.5	54.2	N 58	04	48	05	33	06	12	12	57	13	56	14	47	15	28	15	28	
	287	48.3	20.4	219	51.3	12.3	19	43.9	4.4	54.2	56	04	50	05	33	06	11	12	44	13	42	14	33	15	15	15	15	15	15		
	302	48.5	21.4	234	22.6	12.4	19	48.3	4.3	54.2	54	04	53	05	34	06	09	12	33	13	30	14	21	15	04	15	04	15	04		
	317	48.6	22.3	248	54.0	12.2	19	52.6	4.2	54.2	52	04	54	05	34	06	07	12	23	13	20	14	10	14	10	14	54	14	54		
	332	48.8	23.3	263	25.2	12.3	19	56.8	4.1	54.2	50	04	56	05	34	06	06	12	15	13	10	14	01	14	01	14	45	14	45		
	347	49.0	24.2	277	56.5	12.2	20	00.9	4.1	54.2	45	04	59	05	33	06	03	11	56	12	51	13	41	14	27	14	27	14	27		
	2	49.2	S	4	25.2	292	27.7	12.2	S	20	05.0	3.9	54.3	N 40	05	02	05	33	06	00	11	41	12	35	13	25	14	12	14	12	
	17	49.4	26.2	306	58.9	12.1	20	08.9	3.9	54.3	35	05	03	05	32	05	58	11	29	12	21	13	11	13	59	13	59	13	59		
	32	49.6	27.1	321	30.0	12.2	20	12.8	3.7	54.3	30	05	04	05	32	05	56	11	18	12	10	13	00	13	00	13	48	13	48		
	47	49.8	28.1	336	01.2	12.0	20	16.5	3.7	54.3	20	05	04	05	30	05	52	10	59	11	49	12	39	13	28	13	28	13	28		
	62	50.0	29.1	350	32.2	12.1	20	20.2	3.6	54.3	N 10	05	03	05	27	05	48	10	43	11	32	12	22	13	12	13	12	13	12		
	77	50.2	30.0	5	03.3	12.0	20	23.8	3.5	54.3	0	05	00	05	24	05	45	10	28	11	16	12	05	12	05	12	56	12	56		
	92	50.4	S	4	31.0	19	34.3	12.0	S	20	27.3	3.4	54.3	S 10	04	56	05	21	05	42	10	12	11	00	11	49	12	40	12	40	
	107	50.5	32.0	34	05.3	11.9	20	30.7	3.3	54.3	20	04	50	05	16	05	38	09	56	10	42	11	31	12	23	12	23	12	23		
	122	50.7	32.9	48	36.2	11.9	20	34.0	3.2	54.3	30	04	42	05	10	05	34	09	38	10	22	11	11	12	04	12	04	12	04		
	137	50.9	33.9	63	07.1	11.9	20	37.2	3.1	54.4	35	04	36	05	06	05	31	09	27	10	11	11	00	11	00	11	53	11	53		
	152	51.1	34.9	77	38.0	11.8	20	40.3	3.0	54.4	40	04	29	05	01	05	28	09	15	09	58	10	46	11	40	11	40	11	40		
167	51.3	35.8	92	08.8	11.8	20	43.3	2.9	54.4	45	04	20	04	55	05	25	09	00	09	42	10	30	11	25	11	25	11	25			
5 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	182	51.5	S	4	36.8	106	39.6	11.8	S	20	46.2	2.8	54.4	S 50	04	09	04	48	05	21	08	43	09	23	10	10	11	06	11	06	
	197	51.7	37.7	121	10.4	11.7	20	49.0	2.8	54.4	52	04	03	04	45	05	19	08	34	09	14	10	01	10	57	10	57	10	57		
	212	51.9	38.7	135	41.1	11.7	20	51.8	2.6	54.4	54	03	57	04	41	05	17	08	25	09	03	09	50	10	47	10	47	10	47		
	227	52.1	39.7	150	11.8	11.7	20	54.4	2.5	54.4	56	03	50	04	36	05	14	08	15	08	52	09	39	10	36	10	36	10	36		
	242	52.2	40.6	164	42.5	11.6	20	56.9	2.5	54.4	58	03	42	04	32	05	12	08	03	08	38	09	25	10	23	10	23	10	23		
	257	52.4	41.6	179	13.1	11.6	20	59.4	2.3	54.5	S 60	03	33	04	26	05	09	07	49	08	23	09	09	10	08	10	08	10	08		
	272	52.6	S	4	42.6	193	43.7	11.6	S	21	01.7	2.3	54.5																		
	287	52.8	43.5	208	14.3	11.5	21	04.0	2.1	54.5																					
	302	53.0	44.5	222	44.8	11.5	21	06.1	2.1	54.5																					
	317	53.2	45.4	237	15.3	11.5	21	08.2	1.9	54.5																					
	332	53.4	46.4	251	45.8	11.4	21	10.1	1.8	54.5																					
	347	53.5	47.4	266	16.2	11.4	21	11.9	1.8	54.6																					
	2	53.7	S	4	48.3	280	46.6	11.4	S	21	13.7	1.6	54.6	N 72	16	59	18	06	19	25	19	09	18	09	18	22	19	17	20	51	
	17	53.9	49.3	295	17.0	11.3	21	15.3	1.6	54.6	68	17	09	18	04	19	09	18	09	18	22	19	17	20	51	20	51	20	51		
	32	54.1	50.3	309	47.3	11.3	21	16.9	1.4	54.6	66	17	12	18	03	19	03	18	53	19	23	20	16	21	32	21	32	21	32		
	47	54.3	51.2	324	17.6	11.3	21	18.3	1.4	54.6	64	17	16	18	03	18	58	19	22	19	57	20	50	22	00	22	00	22	00		
	62	54.5	52.2	338	47.9	11.3	21	19.7	1.2	54.6	62	17	19	18	03	18	54	19	45	20	22	21	14	22	22	22	22	22	22		
	77	54.7	53.1	353	18.2	11.2	21	20.9	1.2	54.7	60	17	21	18	02	18	51	20	02	20	42	21	34	22	39	22	39	22	39		
	92	54.9	S	4	54.1	7	48.4	11.2	S	21	22.1	1.0	54.7	N 58	17	23	18	02	18	48	20	17	20	58	21	50	22	53	22	53	
	107	55.0	55.1	22	18.6	11.2	21	23.1	1.0	54.7	56	17	25	18	02	18	45	20	30	21	12	22	04	23	06	23	06	23	06		
	122	55.2	56.0	36	48.8	11.1	21	24.1	0.8	54.7	54	17	27	18	02	18	43	20	42	21	24	22	16	23	17	23	17	23	17	23	
	137	55.4	57.0	51	18.9	11.1	21	24.9	0.7	54.7	52	17	29	18	02	18	41	20	51	21	35	22	26	23	26	23	26	23	26		
	152	55.6	57.9	65	49.0	11.1	21	25.6	0.7	54.8	50	17	30	18	02	18	40	21	00	21	44	22	35	23	35	23	35	23	35		
167	55.8	58.9	80	19.1	11.1	21	26.3	0.5	54.8	45	17	33	18	03	18	37	21	19	22	04	22	55	23	53	23	53	23	53			
6 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	182	56.0	S	4	59.9	94	49.2	11.0	S	21	26.8	0.4	54.8	N 40	17	36	18	03	18	35	21	34	22	20	23	11	24	08	24	08	
	197	56.1	50.8	109	19.2	11.0	21	27.2	0.4	54.8	35	17	39	18	04	18	33	21	47	22	33	23	24	24	20	24	20	24	20		
	212	56.3	01.8	123	49.2	11.0	21	27.6	0.2	54.8	30	17	41	18	05	18	32	21	59	22	45	23	36	24	31	24	31	24	31		
	227	56.5	02.7	138	19.2	10.9	21	27.8	0.1	54.9	20	17	45	18	07	18	32	22	18	23	06	23	56	24	49	24	49	24	49		
	242	56.7	03.7	152	49.1	11.0	21	27.9	0.0	54.9	N 10	17	48	18	09	18	34	22	35	23	23	24	13	00	13	0					

G.M.T.	ARIES		VENUS -3.7		MARS +1.7		JUPITER -1.2		SATURN +1.0		STARS		
	G.H.A.	G.H.A. Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.
WEDNESDAY	7 00	15 33.1	140 36.5 S21 45.1	231 05.7 N15 32.3	177 25.7 S 6 30.4	182 47.5 S 3 04.1	Acamar	315 36.3	S40 22.6				
	01	30 35.6	155 36.0 45.9	246 06.7 31.8	192 27.6 30.6	197 49.6 04.3	Achernar	335 44.1	S57 19.8				
	02	45 38.0	170 35.5 46.7	261 07.7 31.4	207 29.6 30.8	212 51.8 04.4	Acruz	173 37.1	S62 59.7				
	03	60 40.5	185 35.1 47.5	276 08.7 30.9	222 31.5 31.0	227 54.0 04.5	Adhara	255 31.5	S28 56.6				
	04	75 43.0	200 34.6 48.3	291 09.6 30.4	237 33.5 31.2	242 56.2 04.6	Aldebaran	291 17.0	N16 28.4				
	05	90 45.4	215 34.1 49.0	306 10.6 30.0	252 35.5 31.4	257 58.4 04.7							
	06	105 47.9	230 33.7 S21 49.8	321 11.6 N15 29.5	267 37.4 S 6 31.6	273 00.5 S 3 04.8	Alioth	166 42.4	N56 03.7				
	07	120 50.4	245 33.2 50.6	336 12.6 29.1	282 39.4 31.8	288 02.7 05.0	Alkaid	153 18.4	N49 24.5				
	08	135 52.8	260 32.7 51.4	351 13.6 28.6	297 41.3 32.0	303 04.9 05.1	Al Na'ir	28 13.7	S47 03.1				
	09	150 55.3	275 32.3 52.2	6 14.5 28.1	312 43.3 32.2	318 07.1 05.2	Alnilam	276 10.8	S 1 12.7				
	10	165 57.8	290 31.8 53.0	21 15.5 27.7	327 45.3 32.4	333 09.3 05.3	Alphard	218 20.1	S 8 34.5				
	11	181 00.2	305 31.3 53.8	36 16.5 27.2	342 47.2 32.7	348 11.5 05.4							
	12	196 02.7	320 30.9 S21 54.6	51 17.5 N15 26.7	357 49.2 S 6 32.9	3 13.6 S 3 05.6	Alphecca	126 31.8	N26 46.8				
	13	211 05.2	335 30.4 55.3	66 18.5 26.3	12 51.1 33.1	18 15.8 05.7	Alpheratz	358 08.2	N28 59.4				
	14	226 07.6	350 29.9 56.1	81 19.4 25.8	27 53.1 33.3	33 18.0 05.8	Altrair	62 31.8	N 8 49.3				
	15	241 10.1	5 29.4 56.9	96 20.4 25.3	42 55.1 33.5	48 20.2 05.9	Ankaa	353 39.1	S42 24.4				
	16	256 12.5	20 29.0 57.7	111 21.4 24.9	57 57.0 33.7	63 22.4 06.0	Antares	112 56.2	S26 23.4				
	17	271 15.0	35 28.5 58.5	126 22.4 24.4	72 59.0 33.9	78 24.5 06.1							
	18	286 17.5	50 28.0 S21 59.2	141 23.4 N15 24.0	88 00.9 S 6 34.1	93 26.7 S 3 06.3	Arcturus	146 18.1	N19 16.9				
	19	301 19.9	65 27.6 22 00.0	156 24.3 23.5	103 02.9 34.3	108 28.9 06.4	Atria	108 20.1	S68 59.9				
	20	316 22.4	80 27.1 00.8	171 25.3 23.0	118 04.9 34.5	123 31.1 06.5	Avior	234 28.1	S59 26.7				
	21	331 24.9	95 26.6 01.6	186 26.3 22.6	133 06.8 34.7	138 33.3 06.6	Bellatrix	278 57.8	N 6 20.1				
	22	346 27.3	110 26.1 02.3	201 27.3 22.1	148 08.8 34.9	153 35.4 06.7	Betelgeuse	271 27.4	N 7 24.3				
23	1 29.8	125 25.7 03.1	216 28.3 21.6	163 10.7 35.1	168 37.6 06.9								
THURSDAY	8 00	16 32.3	140 25.2 S22 03.9	231 29.3 N15 21.2	178 12.7 S 6 35.3	183 39.8 S 3 07.0	Canopus	264 06.8	S52 40.8				
	01	31 34.7	155 24.7 04.7	246 30.2 20.7	193 14.7 35.5	198 42.0 07.1	Capella	281 10.0	N45 58.7				
	02	46 37.2	170 24.2 05.4	261 31.2 20.2	208 16.6 35.7	213 44.2 07.2	Deneb	49 47.8	N45 13.2				
	03	61 39.7	185 23.8 06.2	276 32.2 19.8	223 18.6 35.9	228 46.3 07.3	Denebola	182 58.6	N14 40.6				
	04	76 42.1	200 23.3 07.0	291 33.2 19.3	238 20.5 36.1	243 48.5 07.4	Diphda	349 19.8	S18 05.2				
	05	91 44.6	215 22.8 07.7	306 34.2 18.8	253 22.5 36.3	258 50.7 07.6							
	06	106 47.0	230 22.3 S22 08.5	321 35.2 N15 18.4	268 24.5 S 6 36.6	273 52.9 S 3 07.7	Dubhe	194 21.8	N61 51.0				
	07	121 49.5	245 21.9 09.3	336 36.2 17.9	283 26.4 36.8	288 55.1 07.8	Elnath	278 43.1	N28 35.5				
	08	136 52.0	260 21.4 10.0	351 37.1 17.4	298 28.4 37.0	303 57.2 07.9	Eltanin	90 57.6	N51 29.8				
	09	151 54.4	275 20.9 10.8	6 38.1 17.0	313 30.3 37.2	318 59.4 08.0	Enif	34 10.7	N 9 47.6				
	10	166 56.9	290 20.4 11.6	21 39.1 16.5	328 32.3 37.4	334 01.6 08.1	Fomalhaut	15 50.3	S29 43.2				
	11	181 59.4	305 19.9 12.3	36 40.1 16.0	343 34.2 37.6	349 03.8 08.3							
	12	197 01.8	320 19.5 S22 13.1	51 41.1 N15 15.6	358 36.2 S 6 37.8	4 06.0 S 3 08.4	Gacrux	172 28.5	S57 00.4				
	13	212 04.3	335 19.0 13.8	66 42.1 15.1	13 38.2 38.0	19 08.1 08.5	Gienah	176 17.6	S17 26.2				
	14	227 06.8	350 18.5 14.6	81 43.1 14.6	28 40.1 38.2	34 10.3 08.6	Hadar	149 23.0	S60 17.0				
	15	242 09.2	5 18.0 15.4	96 44.0 14.2	43 42.1 38.4	49 12.5 08.7	Hamal	328 27.8	N23 22.6				
	16	257 11.7	20 17.6 16.1	111 45.0 13.7	58 44.0 38.6	64 14.7 08.9	Kaus Aust.	84 16.0	S34 23.7				
	17	272 14.2	35 17.1 16.9	126 46.0 13.2	73 46.0 38.8	79 16.9 09.0							
	18	287 16.6	50 16.6 S22 17.6	141 47.0 N15 12.8	88 48.0 S 6 39.0	94 19.0 S 3 09.1	Kochab	137 20.0	N74 14.1				
	19	302 19.1	65 16.1 18.4	156 48.0 12.3	103 49.9 39.2	109 21.2 09.2	Markab	14 02.2	N15 06.5				
	20	317 21.5	80 15.6 19.1	171 49.0 11.8	118 51.9 39.4	124 23.4 09.3	Menkar	314 40.1	N 4 01.1				
	21	332 24.0	95 15.2 19.9	186 50.0 11.4	133 53.8 39.6	139 25.6 09.4	Menkent	148 36.6	S36 16.7				
	22	347 26.5	110 14.7 20.6	201 51.0 10.9	148 55.8 39.8	154 27.8 09.6	Miaplacidus	221 45.3	S69 38.2				
23	2 28.9	125 14.2 21.4	216 52.0 10.4	163 57.8 40.0	169 29.9 09.7								
FRIDAY	9 00	17 31.4	140 13.7 S22 22.1	231 52.9 N15 10.0	178 59.7 S 6 40.3	184 32.1 S 3 09.8	Mirfak	309 14.7	N49 47.7				
	01	32 33.9	155 13.2 22.9	246 53.9 09.5	194 01.7 40.5	199 34.3 09.9	Nunki	76 28.3	S26 19.2				
	02	47 36.3	170 12.7 23.6	261 54.9 09.0	209 03.6 40.7	214 36.5 10.0	Peacock	53 57.1	S56 47.9				
	03	62 38.8	185 12.3 24.4	276 55.9 08.6	224 05.6 40.9	229 38.7 10.2	Pollux	243 57.4	N28 04.2				
	04	77 41.3	200 11.8 25.1	291 56.9 08.1	239 07.6 41.1	244 40.9 10.3	Procyon	245 25.1	N 5 16.4				
	05	92 43.7	215 11.3 25.9	306 57.9 07.6	254 09.5 41.3	259 43.0 10.4							
	06	107 46.2	230 10.8 S22 26.6	321 58.9 N15 07.2	269 11.5 S 6 41.5	274 45.2 S 3 10.5	Rasalhague	96 29.1	N12 34.6				
	07	122 48.6	245 10.3 27.4	336 59.9 06.7	284 13.4 41.7	289 47.4 10.6	Regulus	208 09.5	N12 03.6				
	08	137 51.1	260 09.9 28.1	352 00.9 06.2	299 15.4 41.9	304 49.6 10.7	Rigel	281 35.2	S 8 13.2				
	09	152 53.6	275 09.4 28.9	7 01.9 05.8	314 17.4 42.1	319 51.8 10.9	Rigil Kent.	140 25.5	S60 45.5				
	10	167 56.0	290 08.9 29.6	22 02.8 05.3	329 19.3 42.3	334 53.9 11.0	Sabik	102 40.5	S15 42.1				
	11	182 58.5	305 08.4 30.3	37 03.8 04.8	344 21.3 42.5	349 56.1 11.1							
	12	198 01.0	320 07.9 S22 31.1	52 04.8 N15 04.4	359 23.2 S 6 42.7	4 58.3 S 3 11.2	Schedar	350 07.7	N56 26.2				
	13	213 03.4	335 07.4 31.8	67 05.8 03.9	14 25.2 42.9	20 00.5 11.3	Shaula	96 55.0	S37 05.5				
	14	228 05.9	350 06.9 32.5	82 06.8 03.4	29 27.1 43.1	35 02.7 11.5	Sirius	258 55.0	S16 41.3				
	15	243 08.4	5 06.5 33.3	97 07.8 02.9	44 29.1 43.3	50 04.8 11.6	Spica	158 57.1	S11 03.7				
	16	258 10.8	20 06.0 34.0	112 08.8 02.5	59 31.1 43.5	65 07.0 11.7	Suhail	223 10.5	S43 21.2				
	17	273 13.3	35 05.5 34.8	127 09.8 02.0	74 33.0 43.7	80 09.2 11.8							
	18	288 15.8	50 05.0 S22 35.5	142 10.8 N15 01.5	89 35.0 S 6 43.9	95 11.4 S 3 11.9	Vega	80 55.4	N38 46.3				
	19	303 18.2	65 04.5 36.2	157 11.8 01.1	104 36.9 44.2	110 13.6 12.0	Zuben'ubi	137 32.6	S15 57.8				
	20	318 20.7	80 04.0 37.0	172 12.8 00.6	119 38.9 44.4	125 15.7 12.2							
	21	333 23.1	95 03.5 37.7	187 13.8 00.1	134 40.9 44.6	140 17.9 12.3							
	22	348 25.6	110 03.1 38.4	202 14.8 00.1	149 42.8 44.8	155 20.1 12.4	Venus	123 52.9	14 39				
23	3 28.1	125 02.6 39.1	217 15.7 59.2	164 44.8 45.0	170 22.3 12.5	Mars	214 57.0	8 33					
						Jupiter	161 40.4	12 06					
						Saturn	167 07.5	11 44					
Mer. Pass.	22 50.1	v -0.5 d 0.8	v 1.0 d 0.5	v 2.0 d 0.2	v 2.2 d 0.1								

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise			
	G.H.A.	Dec.	G.H.A.	P.	Dec.	d	H.P.	Naut.		Civil	Sunrise	7	8	9	10	
								h m		h m	h m	h m	h m	h m	h m	h m
WEDNESDAY	183 00.3 S 5	22.9	82 43.4 10.5	S21 07.9	2.2	55.4	N 72	04 23	05 42	06 50	17 32	18 13	18 28	18 02		
	198 00.5	23.8	97 12.9 10.5	21 05.7	2.2	55.4	N 70	04 31	05 42	06 43	17 32	18 13	17 56	17 44		
	213 00.7	24.8	111 42.4 10.4	21 03.5	2.3	55.4	68	04 37	05 42	06 37	17 32	17 33	17 32	17 30		
	228 00.9	25.8	126 11.8 10.5	21 01.2	2.5	55.4	66	04 42	05 41	06 33	16 50	17 05	17 14	17 18		
	243 01.1	26.7	140 41.3 10.4	20 58.7	2.6	55.5	64	04 46	05 41	06 28	16 22	16 44	16 58	17 09		
	258 01.2	27.7	155 10.7 10.4	20 56.1	2.6	55.5	62	04 49	05 41	06 25	16 00	16 27	16 46	17 00		
	273 01.4 S 5	28.6	169 40.1 10.4	S20 53.5	2.8	55.5	60	04 52	05 40	06 22	15 42	16 12	16 35	16 53		
	288 01.6	29.6	184 09.5 10.4	20 50.7	2.9	55.5	N 58	04 54	05 40	06 19	15 28	16 00	16 25	16 46		
	303 01.8	30.5	198 38.9 10.4	20 47.8	3.0	55.6	56	04 56	05 39	06 17	15 15	15 49	16 17	16 41		
	318 02.0	31.5	213 08.3 10.4	20 44.8	3.1	55.6	54	04 58	05 39	06 14	15 04	15 40	16 10	16 35		
	333 02.1	32.5	227 37.7 10.3	20 41.7	3.2	55.6	52	05 00	05 39	06 12	14 54	15 31	16 03	16 31		
	348 02.3	33.4	242 07.0 10.4	20 38.5	3.4	55.7	50	05 01	05 38	06 10	14 45	15 24	15 57	16 26		
	3 02.5 S 5	34.4	256 36.4 10.3	S20 35.1	3.4	55.7	45	05 03	05 37	06 06	14 27	15 08	15 44	16 17		
	18 02.7	35.3	271 05.7 10.3	20 31.7	3.5	55.7	N 40	05 05	05 36	06 03	14 12	14 54	15 33	16 10		
	33 02.8	36.3	285 35.0 10.3	20 28.2	3.7	55.8	35	05 05	05 35	06 00	13 59	14 43	15 24	16 03		
	48 03.0	37.2	300 04.3 10.3	20 24.5	3.8	55.8	30	05 06	05 33	05 57	13 48	14 33	15 16	15 57		
	63 03.2	38.2	314 33.6 10.3	20 20.7	3.8	55.8	20	05 05	05 31	05 53	13 28	14 16	15 02	15 47		
	78 03.4	39.1	329 02.9 10.3	20 16.9	4.0	55.8	N 10	05 03	05 27	05 48	13 12	14 01	14 50	15 38		
	93 03.6 S 5	40.1	343 32.2 10.2	S20 12.9	4.1	55.9	0	04 59	05 24	05 44	12 56	13 47	14 38	15 29		
	108 03.7	41.1	358 01.4 10.3	20 08.8	4.2	55.9	S 10	04 54	05 19	05 40	12 40	13 33	14 27	15 21		
	123 03.9	42.0	12 30.7 10.2	20 04.6	4.3	55.9	20	04 47	05 13	05 36	12 23	13 18	14 14	15 12		
	138 04.1	43.0	26 59.9 10.3	20 00.3	4.4	56.0	30	04 38	05 06	05 30	12 04	13 01	14 00	15 02		
	153 04.3	43.9	41 29.2 10.2	19 55.9	4.5	56.0	35	04 31	05 02	05 27	11 53	12 51	13 52	14 56		
168 04.4	44.9	55 58.4 10.2	19 51.4	4.7	56.0	40	04 24	04 56	05 24	11 40	12 39	13 42	14 49			
183 04.6 S 5	45.8	70 27.6 10.2	S19 46.7	4.7	56.1	45	04 14	04 50	05 19	11 25	12 25	13 31	14 41			
198 04.8	46.8	84 56.8 10.2	19 42.0	4.8	56.1	S 50	04 02	04 41	05 14	11 06	12 09	13 18	14 31			
213 05.0	47.7	99 26.0 10.2	19 37.2	5.0	56.1	52	03 55	04 37	05 12	10 57	12 01	13 12	14 27			
228 05.1	48.7	113 55.2 10.2	19 32.2	5.1	56.2	54	03 49	04 33	05 09	10 47	11 52	13 05	14 22			
243 05.3	49.7	128 24.4 10.2	19 27.1	5.1	56.2	56	03 41	04 28	05 07	10 36	11 42	12 57	14 16			
258 05.5	50.6	142 53.6 10.2	19 22.0	5.3	56.2	58	03 32	04 23	05 04	10 23	11 31	12 48	14 10			
273 05.7 S 5	51.6	157 22.8 10.1	S19 16.7	5.4	56.3	S 60	03 22	04 17	05 00	10 08	11 18	12 38	14 03			
288 05.9	52.5	171 51.9 10.2	19 11.3	5.5	56.3											
303 06.0	53.5	186 21.1 10.2	19 05.8	5.6	56.3	Lat.	Sunset	Twilight		Moonset						
318 06.2	54.4	200 50.3 10.1	19 00.2	5.7	56.4			Civil	Naut.	7	8	9	10			
333 06.4	55.4	215 19.4 10.2	18 54.5	5.8	56.4											
348 06.6	56.3	229 48.6 10.1	18 48.7	5.9	56.4											
3 06.7 S 5	57.3	244 17.7 10.2	S18 42.8	6.0	56.5	N 72	16 43	17 51	19 09	20 18	23 30	25 44				
18 06.9	58.2	258 46.9 10.1	18 36.8	6.2	56.5	N 70	16 50	17 51	19 02	20 51	21 57	24 01	00 01			
33 07.1	59.2	273 16.0 10.1	18 30.6	6.2	56.5	68	16 56	17 52	18 56	20 51	22 36	24 24	00 24			
48 07.2	60.1	287 45.1 10.2	18 24.4	6.4	56.6	66	17 01	17 52	18 51	21 32	23 03	24 41	00 41			
63 07.4	61.1	302 14.3 10.1	18 18.0	6.4	56.6	64	17 05	17 53	18 48	22 00	23 24	24 56	00 56			
78 07.6	62.0	316 43.4 10.1	18 11.6	6.5	56.6	62	17 09	17 53	18 44	22 22	23 41	25 07	01 07			
93 07.8 S 6	63.0	331 12.5 10.1	S18 05.1	6.7	56.7	60	17 12	17 54	18 42	22 39	23 55	25 17	01 17			
108 07.9	63.9	345 41.6 10.2	17 58.4	6.8	56.7	N 58	17 15	17 54	18 39	22 53	24 06	00 06	01 26			
123 08.1	64.9	359 10.8 10.1	17 51.6	6.8	56.8	56	17 17	17 55	18 37	23 06	24 17	00 17	01 34			
138 08.3	65.9	0 10.8 10.1	17 44.8	7.0	56.8	54	17 20	17 55	18 36	23 17	24 26	00 26	01 41			
153 08.5	66.8	14 39.9 10.1	17 37.8	7.1	56.8	52	17 22	17 56	18 35	23 26	24 34	00 34	01 47			
168 08.6	67.8	29 09.0 10.1	17 30.7	7.1	56.9	50	17 24	17 56	18 33	23 35	24 41	00 41	01 52			
183 08.8 S 6	68.7	43 38.1 10.1	17 23.6	7.3	56.9	45	17 28	17 57	18 31	23 53	24 56	00 56	02 04			
198 09.0	69.7	58 07.2 10.2	S17 23.6	7.3	56.9	N 40	17 31	17 59	18 30	24 08	00 08	01 09	02 14			
213 09.1	70.6	72 36.4 10.1	17 16.3	7.4	56.9	35	17 35	18 00	18 29	24 20	00 20	01 19	02 22			
228 09.3	71.6	87 05.5 10.1	17 08.9	7.5	57.0	30	17 37	18 01	18 29	24 31	00 31	01 29	02 29			
243 09.5	72.5	101 34.6 10.1	17 01.4	7.5	57.0	20	17 42	18 04	18 30	24 49	00 49	01 45	02 42			
258 09.7	73.5	116 03.7 10.1	16 53.9	7.7	57.1	N 10	17 47	18 08	18 32	00 13	01 05	01 59	02 53			
273 09.8 S 6	74.4	130 32.8 10.1	16 46.2	7.8	57.1	0	17 51	18 12	18 36	00 30	01 20	02 12	03 03			
288 10.0	75.4	145 01.9 10.1	S16 38.4	7.9	57.1	S 10	17 55	18 16	18 41	00 46	01 35	02 24	03 13			
303 10.2	76.3	159 31.0 10.1	16 30.5	8.0	57.2	20	18 00	18 22	18 48	01 03	01 51	02 38	03 23			
318 10.3	77.3	174 00.1 10.1	16 22.5	8.0	57.2	30	18 05	18 30	18 58	01 23	02 09	02 54	03 35			
333 10.5	78.2	188 29.2 10.1	16 14.5	8.2	57.2	35	18 09	18 34	19 04	01 34	02 20	03 03	03 42			
348 10.7	79.2	202 58.3 10.1	16 06.3	8.3	57.3	40	18 12	18 40	19 12	01 48	02 32	03 13	03 50			
3 10.9 S 6	20.1	217 27.4 10.2	15 58.0	8.4	57.3	45	18 17	18 47	19 22	02 03	02 46	03 25	03 59			
18 11.0	21.1	231 56.6 10.1	S15 49.6	8.4	57.4	S 50	18 22	18 55	19 35	02 22	03 04	03 39	04 10			
33 11.2	22.0	246 25.7 10.1	15 41.2	8.6	57.4	52	18 24	18 59	19 41	02 31	03 12	03 46	04 15			
48 11.4	23.0	260 54.8 10.1	15 32.6	8.7	57.4	54	18 27	19 03	19 48	02 41	03 21	03 54	04 21			
63 11.5	23.9	275 23.9 10.1	15 23.9	8.7	57.5	56	18 30	19 08	19 56	02 53	03 31	04 02	04 27			
78 11.7	24.9	289 53.0 10.1	15 15.2	8.9	57.5	58	18 33	19 14	20 05	03 06	03 43	04 11	04 34			
93 11.9 S 6	25.8	304 22.1 10.1	15 06.3	8.9	57.5	S 60	18 37	19 20	20 16	03 21	03 56	04 22	04 42			
108 12.0	26.8	318 51.2 10.1	S14 57.4	9.1	57.6											
123 12.2	27.7	333 20.3 10.1	14 48.3	9.1	57.6											
138 12.4	28.6	347 49.4 10.1	14 39.2	9.2	57.7	Day	SUN		MOON							
153 12.6	29.6	2 18.5 10.1	14 30.0	9.3	57.7		Eqn. of Time	Mer. Pass.	Mer. Pass.	Upper	Lower	Age	Phase			
168 12.7	30.5	16 47.6 10.1	14 20.7	9.4	57.7		00 ^h	12 ^h	Pass.	h m	h m	h m	d			
		31 16.7 10.1	14 11.3	9.5	57.8	7	12 01	12 10	11 48	19 08	06 43	09				
						8	12 18	12 27	11 48	19 59	07 34	10				
						9	12 35	12 43								

G.M.T.	ARIFS			VENUS -3.8			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
10	00	18 30.5	140 02.1 S22	39.9	232 16.7 N14	58.7	179 46.7 S	6 45.2		185 24.5 S	3 12.6		Acomar	315 36.3 S40	22.6			
	01	33 33.0	155 01.6	40.6	247 17.7	58.2	194 48.7	45.4		200 26.6	12.7		Achernar	335 44.1 S57	19.8			
	02	48 35.5	170 01.1	41.3	262 18.7	57.8	209 50.7	45.6		215 28.8	12.9		Acruz	173 37.1 S62	59.7			
	03	63 37.9	185 00.6	42.0	277 19.7	57.3	224 52.6	45.8		230 31.0	13.0		Adhara	255 31.5 S28	56.6			
	04	78 40.4	200 00.1	42.8	292 20.7	56.8	239 54.6	46.0		245 33.2	13.1		Aldebaran	291 17.0 N16	28.4			
	05	93 42.9	214 59.6	43.5	307 21.7	56.4	254 56.5	46.2		260 35.4	13.2							
	06	108 45.3	229 59.2 S22	44.2	322 22.7 N14	55.9	269 58.5 S	6 46.4		275 37.5 S	3 13.3		Alioth	166 42.4 N56	03.7			
	07	123 47.8	244 58.7	44.9	337 23.7	55.4	285 00.5	46.6		290 39.7	13.5		Alkaid	153 18.4 N49	24.5			
	S	08	138 50.3	259 58.2	45.7	352 24.7	55.0	300 02.4	46.8		305 41.9	13.6		Al Na'ir	28 13.7 S47	03.1		
	A	09	153 52.7	274 57.7	46.4	7 25.7	54.5	315 04.4	47.0		320 44.1	13.7		Alnilam	276 10.8 S	1 12.7		
	T	10	168 55.2	289 57.2	47.1	22 26.7	54.0	330 06.3	47.2		335 46.3	13.8		Alphard	218 20.0 S	8 34.5		
	U	11	183 57.6	304 56.7	47.8	37 27.7	53.5	345 08.3	47.4		350 48.5	13.9						
	R	12	199 00.1	319 56.2 S22	48.5	52 28.7 N14	53.1	0 10.2 S	6 47.6		5 50.6 S	3 14.0		Alphecca	126 31.8 N26	46.8		
	D	13	214 02.6	334 55.7	49.2	67 29.7	52.6	15 12.2	47.8		20 52.8	14.2		Alpheratz	358 08.2 N28	59.4		
	A	14	229 05.0	349 55.2	50.0	82 30.7	52.1	30 14.2	48.0		35 55.0	14.3		Altair	62 31.8 N	8 49.3		
	Y	15	244 07.5	4 54.7	50.7	97 31.7	51.7	45 16.1	48.3		50 57.2	14.4		Ankaa	353 39.1 S42	24.4		
		16	259 10.0	19 54.3	51.4	112 32.7	51.2	60 18.1	48.5		65 59.4	14.5		Antares	112 56.2 S26	23.4		
		17	274 12.4	34 53.8	52.1	127 33.7	50.7	75 20.0	48.7		81 01.5	14.6						
		18	289 14.9	49 53.3 S22	52.8	142 34.7 N14	50.2	90 22.0 S	6 48.9		96 03.7 S	3 14.7		Arcturus	146 18.1 N19	16.9		
		19	304 17.4	64 52.8	53.5	157 35.7	49.8	105 24.0	49.1		111 05.9	14.9		Atria	108 20.1 S68	59.9		
		20	319 19.8	79 52.3	54.2	172 36.7	49.3	120 25.9	49.3		126 08.1	15.0		Avior	234 28.1 S59	26.7		
		21	334 22.3	94 51.8	54.9	187 37.7	48.8	135 27.9	49.5		141 10.3	15.1		Bellatrix	278 57.8 N	6 20.1		
		22	349 24.7	109 51.3	55.6	202 38.7	48.4	150 29.8	49.7		156 12.4	15.2		Betelgeuse	271 27.4 N	7 24.3		
	23	4 27.2	124 50.8	56.3	217 39.7	47.9	165 31.8	49.9		171 14.6	15.3							
11	00	19 29.7	139 50.3 S22	57.1	232 40.7 N14	47.4	180 33.7 S	6 50.1		186 16.8 S	3 15.4		Canopus	264 06.8 S52	40.8			
	01	34 32.1	154 49.8	57.8	247 41.7	46.9	195 35.7	50.3		201 19.0	15.6		Capella	281 10.0 N45	58.7			
	02	49 34.6	169 49.3	58.5	262 42.7	46.5	210 37.7	50.5		216 21.2	15.7		Deneb	49 47.8 N45	13.2			
	03	64 37.1	184 48.8	59.2	277 43.7	46.0	225 39.6	50.7		231 23.3	15.8		Denebola	182 58.6 N14	40.6			
	04	79 39.5	199 48.3	59.9	292 44.7	45.5	240 41.6	50.9		246 25.5	15.9		Diphida	349 19.8 S18	05.2			
	05	94 42.0	214 47.8	60.6	307 45.7	45.0	255 43.5	51.1		261 27.7	16.0							
	06	109 44.5	229 47.3 S23	61.3	322 46.7 N14	44.6	270 45.5 S	6 51.3		276 29.9 S	3 16.2		Dubhe	194 21.8 N61	51.0			
	07	124 46.9	244 46.9	62.0	337 47.7	44.1	285 47.5	51.5		291 32.1	16.3		Elnath	278 43.1 N28	35.5			
	08	139 49.4	259 46.4	62.7	352 48.7	43.6	300 49.4	51.7		306 34.2	16.4		Eltanin	90 57.6 N51	29.8			
	S	09	154 51.9	274 45.9	63.4	7 49.7	43.1	315 51.4	51.9		321 36.4	16.5		Enif	34 10.7 N	9 47.6		
	U	10	169 54.3	289 45.4	64.0	22 50.7	42.7	330 53.3	52.1		336 38.6	16.6		Fomalhaut	15 50.3 S29	43.2		
	N	11	184 56.8	304 44.9	64.7	37 51.7	42.2	345 55.3	52.3		351 40.8	16.7						
	D	12	199 59.2	319 44.4 S23	65.4	52 52.7 N14	41.7	0 57.2 S	6 52.6		6 43.0 S	3 16.9		Gacrux	172 28.5 S57	00.4		
	A	13	215 01.7	334 43.9	66.1	67 53.7	41.3	15 59.2	52.8		21 45.1	17.0		Gienah	176 17.6 S17	26.2		
	Y	14	230 04.2	349 43.4	66.8	82 54.7	40.8	31 01.2	53.0		36 47.3	17.1		Hadar	149 23.0 S60	17.0		
		15	245 06.6	4 42.9	67.5	97 55.7	40.3	46 03.1	53.2		51 49.5	17.2		Hamal	328 27.8 N23	22.6		
		16	260 09.1	19 42.4	68.2	112 56.7	39.8	61 05.1	53.4		66 51.7	17.3		Kaus Aust.	84 16.0 S34	23.7		
		17	275 11.6	34 41.9	68.9	127 57.7	39.4	76 07.0	53.6		81 53.9	17.4						
		18	290 14.0	49 41.4 S23	69.6	142 58.7 N14	38.9	91 09.0 S	6 53.8		96 56.1 S	3 17.6		Kochab	137 20.1 N74	14.1		
		19	305 16.5	64 40.9	70.3	157 59.7	38.4	106 11.0	54.0		111 58.2	17.7		Markab	14 02.2 N15	06.5		
		20	320 19.0	79 40.4	70.9	173 00.7	37.9	121 12.9	54.2		127 00.4	17.8		Menkar	314 40.1 N	4 01.1		
		21	335 21.4	94 39.9	71.6	188 01.7	37.5	136 14.9	54.4		142 02.6	17.9		Menkent	148 36.6 S36	16.7		
		22	350 23.9	109 39.4	72.3	203 02.7	37.0	151 16.8	54.6		157 04.8	18.0		Miaplacidus	221 45.3 S69	38.2		
	23	5 26.4	124 38.9	73.0	218 03.7	36.5	166 18.8	54.8		172 07.0	18.1							
12	00	20 28.8	139 38.4 S23	73.7	233 04.7 N14	36.0	181 20.7 S	6 55.0		187 09.1 S	3 18.3		Mirfak	309 14.7 N49	47.7			
	01	35 31.3	154 37.9	74.4	248 05.7	35.6	196 22.7	55.2		202 11.3	18.4		Nunki	76 28.3 S26	19.2			
	02	50 33.7	169 37.4	75.0	263 06.7	35.1	211 24.7	55.4		217 13.5	18.5		Peacock	53 57.1 S56	47.9			
	03	65 36.2	184 36.9	75.7	278 07.7	34.6	226 26.6	55.6		232 15.7	18.6		Pollux	243 57.3 N28	04.2			
	04	80 38.7	199 36.4	76.4	293 08.8	34.1	241 28.6	55.8		247 17.9	18.7		Procyon	245 25.1 N	5 16.4			
	05	95 41.1	214 35.9	77.1	308 09.8	33.7	256 30.5	56.0		262 20.0	18.9							
	06	110 43.6	229 35.4 S23	77.8	323 10.8 N14	33.2	271 32.5 S	6 56.2		277 22.2 S	3 19.0		Rasalhague	96 29.1 N12	34.6			
	07	125 46.1	244 34.9	78.4	338 11.8	32.7	286 34.4	56.4		292 24.4	19.1		Regulus	208 09.5 N12	03.5			
	08	140 48.5	259 34.4	79.1	353 12.8	32.2	301 36.4	56.6		307 26.6	19.2		Rigel	281 35.2 S	8 13.2			
	M	09	155 51.0	274 33.9	79.8	8 13.8	31.8	316 38.4	56.9		322 28.8	19.3		Rigel Kent.	140 25.5 S60	45.5		
	O	10	170 53.5	289 33.4	80.4	23 14.8	31.3	331 40.3	57.1		337 30.9	19.4		Sabik	102 40.5 S15	42.1		
	N	11	185 55.9	304 32.9	81.0	38 15.8	30.8	346 42.3	57.3		352 33.1	19.6						
	D	12	200 58.4	319 32.4 S23	81.7	53 16.8 N14	30.3	1 44.2 S	6 57.5		7 35.3 S	3 19.7		Schedar	350 07.7 N56	26.3		
	A	13	216 00.8	334 31.9	82.4	68 17.8	29.9	16 46.2	57.7		22 37.5	19.8		Shaula	96 55.0 S37	05.5		
	Y	14	231 03.3	349 31.4	83.1	83 18.8	29.4	31 48.1	57.9		37 39.7	19.9		Sirius	258 55.0 S16	41.3		
		15	246 05.8	4 30.9	83.8	98 19.8	28.9	46 50.1	58.1		52 41.9	20.0		Spica	158 57.1 S11	03.7		
		16	261 08.2	19 30.4	84.5	113 20.8	28.4	61 52.1	58.3		67 44.0	20.1		Suhail	223 10.5 S43	21.2		
		17	276 10.7	34 29.9	85.2	128 21.8	28.0	76 54.0	58.5		82 46.2	20.3						
		18	291 13.2	49 29.4 S23	85.9	143												

G.M.T.	ARIES			VENUS -3.8			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
13 T U E S D A Y	00	21 28.0	139 26.3	S23 29.8	233 28.9	N14 24.6	182 07.7	S 6 59.9		188 01.5	S 3 21.1		Acamar	315 36.3	S40 22.6			
	01	36 30.4	154 25.8	30.4	248 29.9	24.1	197 09.7	7 00.1		203 03.7	21.2		Achernar	335 44.1	S57 19.8			
	02	51 32.9	169 25.3	31.1	263 30.9	23.7	212 11.6	00.3		218 05.8	21.3		Acrux	173 37.1	S62 59.6			
	03	66 35.3	184 24.8	31.7	278 31.9	23.2	227 13.6	00.5		233 08.0	21.4		Adhara	255 31.5	S28 56.6			
	04	81 37.8	199 24.3	32.4	293 33.0	22.7	242 15.6	00.7		248 10.2	21.5		Aldebaran	291 17.0	N16 28.4			
	05	96 40.3	214 23.8	33.0	308 34.0	22.2	257 17.5	00.9		263 12.4	21.7							
	06	111 42.7	229 23.3	S23 33.7	323 35.0	N14 21.7	272 19.5	S 7 01.1		278 14.6	S 3 21.8		Alioth	166 42.4	N56 03.7			
	07	126 45.2	244 22.8	34.3	338 36.0	21.3	287 21.4	01.3		293 16.7	21.9		Alkaid	153 18.4	N49 24.5			
	08	141 47.7	259 22.3	35.0	353 37.0	20.8	302 23.4	01.6		308 18.9	22.0		Al Na'ir	28 13.7	S47 03.2			
	09	156 50.1	274 21.8	35.6	8 38.0	20.3	317 25.3	01.8		323 21.1	22.1		Alnilam	276 10.8	S 1 12.7			
	10	171 52.6	289 21.3	36.3	23 39.0	19.8	332 27.3	02.0		338 23.3	22.2		Alphard	218 20.0	S 8 34.5			
	11	186 55.1	304 20.8	36.9	38 40.0	19.4	347 29.3	02.2		353 25.5	22.4							
	12	201 57.5	319 20.3	S23 37.6	53 41.0	N14 18.9	2 31.2	S 7 02.4		8 27.7	S 3 22.5		Alphecca	126 31.8	N26 46.8			
	13	217 00.0	334 19.8	38.2	68 42.1	18.4	17 33.2	02.6		23 29.8	22.6		Alpheratz	358 08.2	N28 59.5			
	14	232 02.5	349 19.3	38.9	83 43.1	17.9	32 35.1	02.8		38 32.0	22.7		Altair	62 31.8	N 8 49.3			
	15	247 04.9	4 18.8	39.5	98 44.1	17.4	47 37.1	03.0		53 34.2	22.8		Ankaa	353 39.1	S42 24.4			
	16	262 07.4	19 18.3	40.1	113 45.1	17.0	62 39.0	03.2		68 36.4	22.9		Antares	112 56.2	S26 23.4			
	17	277 09.8	34 17.7	40.8	128 46.1	16.5	77 41.0	03.4		83 38.6	23.1							
	18	292 12.3	49 17.2	S23 41.4	143 47.1	N14 16.0	92 43.0	S 7 03.6		98 40.7	S 3 23.2		Arcturus	146 18.1	N19 16.9			
	19	307 14.8	64 16.7	42.1	158 48.1	15.5	107 44.9	03.8		113 42.9	23.3		Atria	108 20.2	S68 59.8			
	20	322 17.2	79 16.2	42.7	173 49.2	15.1	122 46.9	04.0		128 45.1	23.4		Avior	234 28.1	S59 26.7			
	21	337 19.7	94 15.7	43.3	188 50.2	14.6	137 48.8	04.2		143 47.3	23.5		Bellatrix	278 57.8	N 6 20.1			
	22	352 22.2	109 15.2	44.0	203 51.2	14.1	152 50.8	04.4		158 49.5	23.6		Betelgeuse	271 27.4	N 7 24.3			
23	7 24.6	124 14.7	44.6	218 52.2	13.6	167 52.7	04.6		173 51.6	23.8								
14 W E D N E S D A Y	00	22 27.1	139 14.2	S23 45.3	233 53.2	N14 13.1	182 54.7	S 7 04.8		188 53.8	S 3 23.9		Canopus	264 06.7	S52 40.9			
	01	37 29.6	154 13.7	45.9	248 54.2	12.7	197 56.7	05.0		203 56.0	24.0		Capella	281 10.0	N45 58.7			
	02	52 32.0	169 13.2	46.5	263 55.2	12.2	212 58.6	05.2		218 58.2	24.1		Deneb	49 47.9	N45 13.2			
	03	67 34.5	184 12.7	47.1	278 56.3	11.7	228 00.6	05.4		234 00.4	24.2		Denebola	182 58.6	N14 40.6			
	04	82 37.0	199 12.1	47.8	293 57.3	11.2	243 02.5	05.6		249 02.6	24.3		Diphda	349 19.8	S18 05.2			
	05	97 39.4	214 11.6	48.4	308 58.3	10.7	258 04.5	05.8		264 04.7	24.5							
	06	112 41.9	229 11.1	S23 49.0	323 59.3	N14 10.3	273 06.4	S 7 06.0		279 06.9	S 3 24.6		Dubhe	194 21.8	N61 51.0			
	07	127 44.3	244 10.6	49.7	339 00.3	09.8	288 08.4	06.2		294 09.1	24.7		Elnath	278 43.0	N28 35.5			
	08	142 46.8	259 10.1	50.3	354 01.3	09.3	303 10.4	06.5		309 11.3	24.8		Eltanin	90 57.6	N51 29.8			
	09	157 49.3	274 09.6	50.9	9 02.4	08.8	318 12.3	06.7		324 13.5	24.9		Enif	34 10.7	N 9 47.6			
	10	172 51.7	289 09.1	51.5	24 03.4	08.3	333 14.3	06.9		339 15.6	25.0		Fomalhaut	15 50.3	S29 43.2			
	11	187 54.2	304 08.6	52.2	39 04.4	07.9	348 16.2	07.1		354 17.8	25.2							
	12	202 56.7	319 08.1	S23 52.8	54 05.4	N14 07.4	3 18.2	S 7 07.3		9 20.0	S 3 25.3		Gacrux	172 28.5	S57 00.4			
	13	217 59.1	334 07.5	53.4	69 06.4	06.9	18 20.1	07.5		24 22.2	25.4		Gienah	176 17.6	S17 26.2			
	14	233 01.6	349 07.0	54.0	84 07.4	06.4	33 22.1	07.7		39 24.4	25.5		Hadar	149 23.0	S60 17.0			
	15	248 04.1	4 06.5	54.6	99 08.5	05.9	48 24.1	07.9		54 26.5	25.6		Hamal	328 27.8	N23 22.6			
	16	263 06.5	19 06.0	55.3	114 09.5	05.5	63 26.0	08.1		69 28.7	25.7		Kaus Aust.	84 16.0	S34 23.7			
	17	278 09.0	34 05.5	55.9	129 10.5	05.0	78 28.0	08.3		84 30.9	25.9							
	18	293 11.4	49 05.0	S23 56.5	144 11.5	N14 04.5	93 29.9	S 7 08.5		99 33.1	S 3 26.0		Kochab	137 20.1	N74 14.1			
	19	308 13.9	64 04.5	57.1	159 12.5	04.0	108 31.9	08.7		114 35.3	26.1		Markab	14 02.2	N15 06.5			
	20	323 16.4	79 04.0	57.7	174 13.6	03.5	123 33.8	08.9		129 37.5	26.2		Menkar	314 40.1	N 4 01.1			
	21	338 18.8	94 03.4	58.3	189 14.6	03.1	138 35.8	09.1		144 39.6	26.3		Menkent	148 36.6	S36 16.7			
	22	353 21.3	109 02.9	59.0	204 15.6	02.6	153 37.8	09.3		159 41.8	26.4		Miaplacidus	221 45.2	S69 38.2			
23	8 23.8	124 02.4	59.6	219 16.6	02.1	168 39.7	09.5		174 44.0	26.6								
15 T H U R S D A Y	00	23 26.2	139 01.9	S24 00.2	234 17.6	N14 01.6	183 41.7	S 7 09.7		189 46.2	S 3 26.7		Mirfak	309 14.7	N49 47.7			
	01	38 28.7	154 01.4	00.8	249 18.7	01.1	198 43.6	09.9		204 48.4	26.8		Nunki	76 28.3	S26 19.2			
	02	53 31.2	169 00.9	01.4	264 19.7	00.7	213 45.6	10.1		219 50.5	26.9		Peacock	53 57.1	S56 47.9			
	03	68 33.6	184 00.4	02.0	279 20.7	14 00.2	228 47.5	10.3		234 52.7	27.0		Pollux	243 57.3	N28 04.2			
	04	83 36.1	198 59.8	02.6	294 21.7	13 59.7	243 49.5	10.5		249 54.9	27.1		Procyon	245 25.1	N 5 16.4			
	05	98 38.6	213 59.3	03.2	309 22.7	59.2	258 51.5	10.7		264 57.1	27.3							
	06	113 41.0	228 58.8	S24 03.8	324 23.8	N13 58.7	273 53.4	S 7 10.9		279 59.3	S 3 27.4		Rasalhague	96 29.1	N12 34.6			
	07	128 43.5	243 58.3	04.4	339 24.8	58.2	288 55.4	11.1		295 01.5	27.5		Regulus	208 09.4	N12 03.5			
	08	143 45.9	258 57.8	05.0	354 25.8	57.8	303 57.3	11.3		310 03.6	27.6		Rigel	281 35.1	S 8 13.2			
	09	158 48.4	273 57.3	05.6	9 26.8	57.3	318 59.3	11.5		325 05.8	27.7		Rigel Kent.	140 25.5	S60 45.5			
	10	173 50.9	288 56.8	06.2	24 27.9	56.8	334 01.2	11.8		340 08.0	27.8		Sabik	102 40.5	S15 42.1			
	11	188 53.3	303 56.2	06.8	39 28.9	56.3	349 03.2	12.0		355 10.2	28.0							
	12	203 55.8	318 55.7	S24 07.4	54 29.9	N13 55.8	4 05.2	S 7 12.2		10 12.4	S 3 28.1		Schedar	350 07.7	N56 26.3			
	13	218 58.3	333 55.2	08.0	69 30.9	55.4	19 07.1	12.4		25 14.5	28.2		Shaula	96 55.0	S37 05.5			
	14	234 00.7	348 54.7	08.6	84 31.9	54.9	34 09.1	12.6		40 16.7	28.3		Sirius	258 55.0	S16 41.3			
	15	249 03.2	3 54.2	09.2	99 33.0	54.4	49 11.0	12.8		55 18.9	28.4		Spica	158 57.1	S11 03.7			
	16	264 05.7	18 53.7	09.8	114 34.0	53.9	64 13.0	13.0		70 21.1	28.5		Suhail	223 10.4	S43 21.2			
	17	279 08.1	33 53.1															

G.M.T.	ARIES			VENUS -3.8			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
16 00	24 25.4	138 49.5	S24 14.5	234 42.2	N13 50.0		184 28.6	S 7 14.6		190 38.5	S 3 29.5		Acomar	315 36.3	S40 22.6			
01	39 27.8	153 49.0	15.1	249 43.2	49.6		199 30.6	14.8		205 40.7	29.6		Achernar	335 44.1	S57 19.8			
02	54 30.3	168 48.5	15.7	264 44.2	49.1		214 32.6	15.0		220 42.9	29.7		Acruz	173 37.1	S62 59.6			
03	69 32.8	183 48.0	16.3	279 45.3	48.6		229 34.5	15.2		235 45.1	29.8		Adhara	255 31.5	S28 56.6			
04	84 35.2	198 47.5	16.8	294 46.3	48.1		244 36.5	15.4		250 47.3	29.9		Aldebaran	291 16.9	N16 28.4			
05	99 37.7	213 46.9	17.4	309 47.3	47.6		259 38.4	15.6		265 49.4	30.0							
06	114 40.2	228 46.4	S24 18.0	324 48.3	N13 47.1		274 40.4	S 7 15.8		280 51.6	S 3 30.2		Alioth	166 42.4	N56 03.6			
07	129 42.6	243 45.9	18.6	339 49.4	46.7		289 42.3	16.0		295 53.8	30.3		Alkaid	153 18.4	N49 24.4			
08	144 45.1	258 45.4	19.2	354 50.4	46.2		304 44.3	16.2		310 56.0	30.4		Al Na'ir	28 13.7	S47 03.2			
F 09	159 47.5	273 44.9	19.7	369 51.4	45.7		319 46.2	16.4		325 58.2	30.5		Alnilam	276 10.8	S 1 12.7			
R 10	174 50.0	288 44.3	20.3	384 52.5	45.2		334 48.2	16.6		341 00.4	30.6		Alphard	218 20.0	S 8 34.5			
I 11	189 52.5	303 43.8	20.9	399 53.5	44.7		349 50.2	16.8		356 02.5	30.7							
D 12	204 54.9	318 43.3	S24 21.5	414 54.5	N13 44.2		4 52.1	S 7 17.0		11 04.7	S 3 30.9		Alphecca	126 31.8	N26 46.8			
A 13	219 57.4	333 42.8	22.0	429 55.5	43.8		19 54.1	17.2		26 06.9	31.0		Alpheratz	358 08.2	N28 59.5			
Y 14	234 59.9	348 42.3	22.6	444 56.6	43.3		34 56.0	17.4		41 09.1	31.1		Altair	62 31.8	N 8 49.3			
15	250 02.3	3 41.7	23.2	459 57.6	42.8		49 58.0	17.6		56 11.3	31.2		Ankaa	353 39.1	S42 24.4			
16	265 04.8	18 41.2	23.7	474 58.6	42.3		64 59.9	17.9		71 13.4	31.3		Antares	112 56.2	S26 23.4			
17	280 07.3	33 40.7	24.3	489 59.7	41.8		80 01.9	18.1		86 15.6	31.4							
18	295 09.7	48 40.2	S24 24.9	504 00.7	N13 41.3		95 03.9	S 7 18.3		101 17.8	S 3 31.5		Arcturus	146 18.1	N19 16.9			
19	310 12.2	63 39.7	25.4	519 01.7	40.8		110 05.8	18.5		116 20.0	31.7		Atria	108 20.2	S68 59.8			
20	325 14.7	78 39.1	26.0	534 02.7	40.4		125 07.8	18.7		131 22.2	31.8		Avior	234 28.0	S59 26.7			
21	340 17.1	93 38.6	26.6	549 03.8	39.9		140 09.7	18.9		146 24.4	31.9		Bellatrix	278 57.8	N 6 20.1			
22	355 19.6	108 38.1	27.1	564 04.8	39.4		155 11.7	19.1		161 26.5	32.0		Betelgeuse	271 27.3	N 7 24.3			
23	10 22.0	123 37.6	27.7	579 05.8	38.9		170 13.6	19.3		176 28.7	32.1							
17 00	25 24.5	138 37.1	S24 28.3	235 06.9	N13 38.4		185 15.6	S 7 19.5		191 30.9	S 3 32.2		Canopus	264 06.7	S52 40.9			
01	40 27.0	153 36.5	28.8	250 07.9	37.9		200 17.6	19.7		206 33.1	32.4		Capella	281 10.0	N45 58.7			
02	55 29.4	168 36.0	29.4	265 08.9	37.5		215 19.5	19.9		221 35.3	32.5		Deneb	49 47.9	N45 13.2			
03	70 31.9	183 35.5	29.9	280 10.0	37.0		230 21.5	20.1		236 37.5	32.6		Denebola	182 58.6	N14 40.6			
04	85 34.4	198 35.0	30.5	295 11.0	36.5		245 23.4	20.3		251 39.6	32.7		Diphda	349 19.8	S18 05.2			
05	100 36.8	213 34.4	31.0	310 12.0	36.0		260 25.4	20.5		266 41.8	32.8							
06	115 39.3	228 33.9	S24 31.6	325 13.0	N13 35.5		275 27.3	S 7 20.7		281 44.0	S 3 32.9		Dubhe	194 21.7	N61 50.9			
07	130 41.8	243 33.4	32.2	340 14.1	35.0		290 29.3	20.9		296 46.2	33.0		Elnath	278 43.0	N28 35.5			
S 08	145 44.2	258 32.9	32.7	355 15.1	34.5		305 31.3	21.1		311 48.4	33.2		Eltanin	90 57.6	N51 29.8			
A 09	160 46.7	273 32.4	33.3	370 16.1	34.1		320 33.2	21.3		326 50.5	33.3		Enif	34 10.7	N 9 47.6			
T 10	175 49.2	288 31.8	33.8	385 17.2	33.6		335 35.2	21.5		341 52.7	33.4		Fomalhaut	15 50.3	S29 43.2			
U 11	190 51.6	303 31.3	34.4	400 18.2	33.1		350 37.1	21.7		356 54.9	33.5							
R 12	205 54.1	318 30.8	S24 34.9	415 19.2	N13 32.6		5 39.1	S 7 21.9		11 57.1	S 3 33.6		Gacrux	172 28.5	S57 00.4			
D 13	220 56.5	333 30.3	35.5	430 20.3	32.1		20 41.0	22.1		26 59.3	33.7		Gienah	176 17.5	S17 26.2			
A 14	235 59.0	348 29.7	36.0	445 21.3	31.6		35 43.0	22.3		42 01.5	33.9		Hadar	149 23.0	S60 17.0			
Y 15	251 01.5	3 29.2	36.5	460 22.3	31.1		50 44.9	22.5		57 03.6	34.0		Hamal	328 27.8	N23 22.6			
16	266 03.9	18 28.7	37.1	475 23.4	30.7		65 46.9	22.7		72 05.8	34.1		Kaus Aust.	84 16.0	S34 23.7			
17	281 06.4	33 28.2	37.6	490 24.4	30.2		80 48.9	22.9		87 08.0	34.2							
18	296 08.9	48 27.7	S24 38.2	505 25.4	N13 29.7		95 50.8	S 7 23.1		102 10.2	S 3 34.3		Kochab	137 20.1	N74 14.0			
19	311 11.3	63 27.1	38.7	520 26.5	29.2		110 52.8	23.3		117 12.4	34.4		Markab	14 02.2	N15 06.5			
20	326 13.8	78 26.6	39.3	535 27.5	28.7		125 54.7	23.5		132 14.6	34.5		Menkar	314 40.1	N 4 01.1			
21	341 16.3	93 26.1	39.8	550 28.5	28.2		140 56.7	23.7		147 16.7	34.7		Menkent	148 36.6	S36 16.6			
22	356 18.7	108 25.6	40.3	565 29.6	27.7		155 58.6	23.9		162 18.9	34.8		Miaplacidus	221 45.2	S69 38.2			
23	11 21.2	123 25.0	40.9	580 30.6	27.2		171 00.6	24.1		177 21.1	34.9							
18 00	26 23.6	138 24.5	S24 41.4	235 31.7	N13 26.8		186 02.6	S 7 24.3		192 23.3	S 3 35.0		Mirfak	309 14.6	N49 47.7			
01	41 26.1	153 24.0	41.9	250 32.7	26.3		201 04.5	24.5		207 25.5	35.1		Nunki	76 28.4	S26 19.2			
02	56 28.6	168 23.5	42.5	265 33.7	25.8		216 06.5	24.8		222 27.6	35.2		Peacock	53 57.1	S56 47.9			
03	71 31.0	183 22.9	43.0	280 34.8	25.3		231 08.4	25.0		237 29.8	35.4		Pollux	243 57.3	N28 04.2			
04	86 33.5	198 22.4	43.5	295 35.8	24.8		246 10.4	25.2		252 32.0	35.5		Procyon	245 25.0	N 5 16.4			
05	101 36.0	213 21.9	44.1	310 36.8	24.3		261 12.3	25.4		267 34.2	35.6							
06	116 38.4	228 21.4	S24 44.6	325 37.9	N13 23.8		276 14.3	S 7 25.6		282 36.4	S 3 35.7		Rasalhague	96 29.1	N12 34.6			
07	131 40.9	243 20.8	45.1	340 38.9	23.3		291 16.3	25.8		297 38.6	35.8		Regulus	208 09.4	N12 03.5			
08	146 43.4	258 20.3	45.7	355 39.9	22.9		306 18.2	26.0		312 40.7	35.9		Rigel	281 35.1	S 8 13.2			
S 09	161 45.8	273 19.8	46.2	370 41.0	22.4		321 20.2	26.2		327 42.9	36.0		Rigel Kent.	140 25.5	S60 45.5			
U 10	176 48.3	288 19.3	46.7	385 42.0	21.9		336 22.1	26.4		342 45.1	36.2		Sabik	102 40.5	S15 42.1			
N 11	191 50.8	303 18.7	47.2	400 43.1	21.4		351 24.1	26.6		357 47.3	36.3							
D 12	206 53.2	318 18.2	S24 47.8	415 44.1	N13 20.9		6 26.0	S 7 26.8		12 49.5	S 3 36.4		Schedar	350 07.7	N56 26.3			
A 13	221 55.7	333 17.7	48.3	430 45.1	20.4		21 28.0	27.0		27 51.7	36.5		Shaula	96 55.0	S37 05.5			
Y 14	236 58.1	348 17.2	48.8	445 46.2	19.9		36 29.9	27.2		42 53.8	36.6		Sirius	258 55.0	S16 41.3			
15	252 00.6	3 16.6	49.3	460 47.2	19.4		51 31.9	27.4		57 56.0	36.7							

G.M.T.	SUN		MOON					Lat.	Twilight		Sunrise	Moonrise							
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.		Naut.	Civil		16		17		18		19	
												h	m	h	m	h	m	h	m
16 00	183 34.9	S 8 46.2	328 35.4	6.2	N15 15.6	9.9	60.7	N 72	05 03	06 22	07 33	15 41	16 42	17 40	18 51	19 44	20 16		
01	198 35.0	47.1	343 00.6	6.1	15 25.5	9.7	60.7	N 70	05 06	06 17	07 21	16 42	17 21	17 40	18 51	19 44	20 16		
02	213 35.2	48.0	357 25.7	6.1	15 35.2	9.7	60.7	N 68	05 08	06 13	07 11	17 18	17 21	17 40	18 51	19 44	20 16		
03	228 35.3	49.0	11 50.8	6.0	15 44.9	9.5	60.7	N 66	05 10	06 09	07 02	17 44	18 01	18 38	19 44	20 16	21 59		
04	243 35.4	49.9	26 15.8	6.1	15 54.4	9.4	60.7	N 64	05 11	06 06	06 55	18 04	18 29	19 12	20 16	21 59	23 07		
05	258 35.6	50.8	40 40.9	5.9	16 03.8	9.3	60.7	N 62	05 12	06 04	06 49	18 20	18 51	19 37	20 40	21 59	23 07		
06	273 35.7	S 8 51.7	55 05.8	6.0	N16 13.1	9.2	60.6	N 60	05 13	06 01	06 44	18 34	19 08	19 56	20 59	21 59	23 07		
07	288 35.8	52.6	69 30.8	5.8	16 22.3	9.1	60.6	N 58	05 14	05 59	06 39	18 46	19 23	20 12	21 15	22 08	22 59		
08	303 36.0	53.6	83 55.6	5.9	16 31.4	9.0	60.6	N 56	05 14	05 57	06 35	18 56	19 35	20 26	21 28	22 08	22 59		
09	318 36.1	54.5	98 20.5	5.8	16 40.4	8.8	60.6	N 54	05 14	05 55	06 31	19 05	19 47	20 38	21 40	22 08	22 59		
F 10	333 36.2	55.4	112 45.3	5.8	16 49.2	8.8	60.6	N 52	05 15	05 54	06 28	19 13	19 56	20 49	21 50	22 08	22 59		
R 11	348 36.4	56.3	127 10.1	5.7	16 58.0	8.6	60.6	N 50	05 15	05 52	06 25	19 20	20 05	20 58	21 59	22 08	22 59		
D 12	3 36.5	S 8 57.2	141 34.8	5.7	N17 06.6	8.5	60.6	N 45	05 14	05 48	06 18	19 36	20 24	21 18	22 19	22 08	22 59		
A 13	18 36.6	58.2	155 59.5	5.7	17 15.1	8.3	60.5	N 40	05 14	05 45	06 12	19 49	20 39	21 34	22 35	22 08	22 59		
Y 14	33 36.8	S 8 59.1	170 24.2	5.6	17 23.4	8.3	60.5	N 35	05 12	05 42	06 07	20 00	20 52	21 48	22 48	22 08	22 59		
15	48 36.9	9 00.0	184 48.8	5.6	17 31.7	8.1	60.5	N 30	05 11	05 39	06 03	20 10	21 03	22 00	22 59	22 08	22 59		
16	63 37.0	00.9	199 13.4	5.6	17 39.8	8.0	60.5	N 20	05 07	05 33	05 55	20 27	21 22	22 20	23 19	22 08	22 59		
17	78 37.2	01.8	213 38.0	5.5	17 47.8	7.9	60.5	N 10	05 03	05 27	05 49	20 42	21 39	22 38	23 37	22 08	22 59		
18	93 37.3	S 9 02.8	228 02.5	5.5	N17 55.7	7.7	60.5	N 0	04 57	05 21	05 42	20 55	21 55	22 55	23 53	22 08	22 59		
19	108 37.4	03.7	242 27.0	5.5	18 03.4	7.6	60.4	S 10	04 49	05 14	05 35	21 09	22 11	23 11	24 09	22 08	22 59		
20	123 37.5	04.6	256 51.5	5.4	18 11.0	7.5	60.4	N 20	04 40	05 06	05 28	21 24	22 28	23 29	24 26	22 08	22 59		
21	138 37.7	05.5	271 15.9	5.5	18 18.5	7.3	60.4	N 30	04 27	04 56	05 20	21 42	22 48	23 50	24 46	22 08	22 59		
22	153 37.8	06.4	285 40.4	5.4	18 25.8	7.3	60.4	N 40	04 18	04 49	05 15	21 52	22 59	24 02	00 02	22 08	22 59		
23	168 37.9	07.3	300 04.8	5.3	18 33.1	7.1	60.4	N 50	04 08	04 42	05 10	22 03	23 13	24 16	00 16	22 08	22 59		
17 00	183 38.1	S 9 08.3	314 29.1	5.4	N18 40.2	6.9	60.4	S 50	03 40	04 22	04 55	22 34	23 48	24 52	00 52	22 08	22 59		
01	198 38.2	09.2	328 53.5	5.3	18 47.1	6.8	60.3	N 52	03 32	04 16	04 52	22 47	23 57	25 02	01 02	22 08	22 59		
02	213 38.3	10.1	343 17.8	5.3	18 53.9	6.7	60.3	N 54	03 23	04 10	04 48	22 51	24 07	00 07	01 13	22 08	22 59		
03	228 38.5	11.0	357 42.1	5.2	19 00.6	6.6	60.3	N 56	03 13	04 04	04 44	23 00	24 19	00 19	01 25	22 08	22 59		
04	243 38.6	11.9	12 06.3	5.3	19 07.2	6.4	60.3	N 58	03 01	03 56	04 39	23 12	24 33	00 33	01 39	22 08	22 59		
05	258 38.7	12.8	26 30.6	5.2	19 13.6	6.3	60.2	S 60	02 47	03 48	04 33	23 25	24 48	00 48	01 56	22 08	22 59		
06	273 38.8	S 9 13.7	40 54.8	5.2	N19 19.9	6.1	60.2												
07	288 39.0	14.7	55 19.0	5.2	19 26.0	6.0	60.2	Lat.	Sunset	Twilight		Moonset							
S 08	303 39.1	15.6	69 43.2	5.2	19 32.0	5.9	60.2			Civil	Naut.	16	17	18	19				
A 09	318 39.2	16.5	84 07.4	5.1	19 37.9	5.7	60.2												
T 10	333 39.3	17.4	98 31.5	5.2	19 43.6	5.6	60.1												
U 11	348 39.5	18.3	112 55.7	5.1	19 49.2	5.4	60.1	N 72	15 56	17 07	18 25	13 23	14 23	15 23	16 23	17 23			
R 12	3 39.6	S 9 19.2	127 19.8	5.1	N19 54.6	5.3	60.1	N 70	16 08	17 12	18 22	12 23	13 23	14 23	15 23	16 23			
D 13	18 39.7	20.1	141 43.9	5.1	19 59.9	5.2	60.1	N 68	16 19	17 16	18 20	11 48	13 50	15 36	16 28	17 28			
A 14	33 39.9	21.1	156 08.0	5.2	20 05.1	5.0	60.0	N 66	16 27	17 20	18 19	11 24	13 10	14 39	15 35	16 35			
Y 15	48 40.0	22.0	170 32.2	5.0	20 10.1	4.9	60.0	N 64	16 34	17 23	18 18	11 04	12 43	14 05	15 02	16 02			
16	63 40.1	22.9	184 56.2	5.1	20 15.0	4.7	60.0	N 62	16 40	17 26	18 17	10 49	12 22	13 40	14 38	15 38			
17	78 40.2	23.8	199 20.3	5.1	20 19.7	4.6	60.0	N 60	16 46	17 28	18 16	10 36	12 05	13 21	14 19	15 19			
18	93 40.4	S 9 24.7	213 44.4	5.1	N20 24.3	4.5	60.0	N 58	16 50	17 30	18 16	10 25	11 50	13 04	14 03	15 03			
19	108 40.5	25.6	228 08.5	5.1	20 28.8	4.3	59.9	N 56	16 55	17 32	18 15	10 15	11 38	12 51	13 50	14 50			
20	123 40.6	26.5	242 32.6	5.1	20 33.1	4.1	59.9	N 54	16 59	17 34	18 15	10 06	11 27	12 39	13 38	14 38			
21	138 40.7	27.4	256 56.7	5.0	20 37.2	4.1	59.9	N 52	17 02	17 36	18 15	09 59	11 18	12 28	13 27	14 27			
22	153 40.9	28.4	271 20.7	5.1	20 41.3	3.8	59.9	N 50	17 05	17 38	18 15	09 52	11 09	12 19	13 18	14 18			
23	168 41.0	29.3	285 44.8	5.1	20 45.1	3.8	59.8	N 45	17 12	17 42	18 16	09 37	10 51	11 59	12 58	13 58			
18 00	183 41.1	S 9 30.2	300 08.9	5.1	N20 48.9	3.5	59.8	N 40	17 18	17 45	18 17	09 25	10 37	11 43	12 42	13 42			
01	198 41.2	31.1	314 33.0	5.1	20 52.4	3.5	59.8	N 35	17 23	17 48	18 18	09 15	10 24	11 30	12 29	13 29			
02	213 41.3	32.0	328 57.1	5.1	20 55.9	3.3	59.7	N 30	17 27	17 51	18 19	09 06	10 13	11 18	12 17	13 17			
03	228 41.5	32.9	343 21.2	5.1	20 59.2	3.1	59.7	N 20	17 35	17 57	18 23	08 51	09 55	10 58	11 57	12 57			
04	243 41.6	33.8	357 45.3	5.1	21 02.3	3.0	59.7	N 10	17 42	18 03	18 28	08 37	09 39	10 40	11 39	12 39			
05	258 41.7	34.7	12 09.4	5.2	21 05.3	2.8	59.7	0	17 49	18 10	18 34	08 25	09 24	10 24	11 23	12 23			
06	273 41.8	S 9 35.6	26 33.6	5.1	N21 08.1	2.7	59.6	S 10	17 55	18 17	18 42	08 12	09 09	10 07	11 06	12 06			
07	288 42.0	36.6	40 57.7	5.2	21 10.8	2.6	59.6	N 20	18 03	18 25	18 51	07 59	08 53	09 50	10 48	11 48			
08	303 42.1	37.5	55 21.9	5.1	21 13.4	2.4	59.6	N 30	18 11	18 36	19 05	07 43	08 34	09 29	10 28	11 28			
09	318 42.2	38.4	69 46.0	5.2	21 15.8	2.3	59.6	N 35	18 16	18 42	19 13	07 35	08 24	09 17	10 16	11 16			
S 10	333 42.3	39.3	84 10.2	5.2	21 18.1	2.1	59.5	N 40	18 22	18 50	19 23	07 25	08 11	09 04	10 02	11 02			
U 11	348 42.4	40.2	98 34.4	5.3	21 20.2	2.0	59.5	N 45	18 28	18 59	19 36	07 13	07 57	08 48	09 46	10 46			
D 12	3 42.6	S 9 41.1	112 58.7	5.2	N21 22.2	1.8	59.5	S 50	18 36	19 10	19 52	06 59	07 39	08 28	09 26	10 26			
A 13	18 42.7	42.0	127 22.9	5.3	21 24.0	1.7	59.4	N 52	18 40	19 16	20 00	06 52	07 31	08 19					

G.M.T.	ARIES			VENUS -3.8			MARS +1.7			JUPITER -1.2			SATURN +1.0			STARS										
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.								
19 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	27	22.8	138	11.9	S24	53.9	235	56.6	N13	15.1	186	49.5	S	7	29.2	193	15.7	S	3	37.8	Acamar	315	36.3	S40	22.6	
	42	25.3	153	11.4		54.5	250	57.6		14.6	201	51.5			29.4	208	17.9			37.9	Achernar	335	44.1	S57	19.8	
	57	27.7	168	10.9		55.0	265	58.6		14.1	216	53.4			29.6	223	20.0			38.0	Acruz	173	37.1	S62	59.6	
	72	30.2	183	10.3	..	55.5	280	59.7	..	13.6	231	55.4	..	..	29.8	238	22.2	..	..	38.1	Adhara	255	31.4	S28	56.6
	87	32.6	198	09.8		56.0	296	00.7		13.1	246	57.3			30.0	253	24.4			38.2	Aldebaran	291	16.9	N16	28.4	
	102	35.1	213	09.3		56.5	311	01.8		12.6	261	59.3			30.2	268	26.6			38.3						
	117	37.6	228	08.7	S24	57.0	326	02.8	N13	12.1	277	01.2	S	7	30.4	283	28.8	S	3	38.5	Alioth	166	42.4	N56	03.6	
	132	40.0	243	08.2		57.5	341	03.9		11.6	292	03.2			30.6	298	31.0			38.6	Alkaid	153	18.4	N49	24.4	
	147	42.5	258	07.7		58.0	356	04.9		11.1	307	05.2			30.8	313	33.1			38.7	Al Na'ir	28	13.7	S47	03.2	
	162	45.0	273	07.2	..	58.5	11	05.9	..	10.7	322	07.1	31.0	328	35.3	38.8	Alnilam	276	10.7	S	1	12.7
	177	47.4	288	06.6		59.0	26	07.0		10.2	337	09.1			31.2	343	37.5			38.9	Alphard	218	20.0	S	8	34.5
	192	49.9	303	06.1	24	59.5	41	08.0		09.7	352	11.0			31.4	358	39.7			39.0						
	207	52.4	318	05.6	S25	00.0	56	09.1	N13	09.2	7	13.0	S	7	31.6	13	41.9	S	3	39.1	Alphecca	126	31.8	N26	46.8	
	222	54.8	333	05.1		00.5	71	10.1		08.7	22	14.9			31.8	28	44.0			39.3	Alpheratz	358	08.2	N28	59.5	
	237	57.3	348	04.5		01.0	86	11.2		08.2	37	16.9			32.0	43	46.2			39.4	Altair	62	31.8	N	8	49.3
	252	59.7	3	04.0	..	01.5	101	12.2	..	07.7	52	18.9	..	..	32.2	58	48.4	..	..	39.5	Ankaa	353	39.1	S42	24.4
	268	02.2	18	03.5		02.0	116	13.2		07.2	67	20.8			32.4	73	50.6			39.6	Antares	112	56.2	S26	23.4	
	283	04.7	33	02.9		02.5	131	14.3		06.7	82	22.8			32.6	88	52.8			39.7						
	298	07.1	48	02.4	S25	03.0	146	15.3	N13	06.2	97	24.7	S	7	32.8	103	55.0	S	3	39.8	Arcturus	146	18.1	N19	16.9	
	313	09.6	63	01.9		03.4	161	16.4		05.8	112	26.7			33.0	118	57.1			40.0	Atria	108	20.2	S68	59.8	
	328	12.1	78	01.4		03.9	176	17.4		05.3	127	28.6			33.2	133	59.3			40.1	Avior	234	28.0	S59	26.7	
	343	14.5	93	00.8	..	04.4	191	18.5	..	04.8	142	30.6	33.4	149	01.5	40.2	Bellatrix	278	57.8	N	6	20.1
	358	17.0	108	00.3		04.9	206	19.5		04.3	157	32.6			33.7	164	03.7			40.3	Betelgeuse	271	27.3	N	7	24.3
13	19.5	122	59.8		05.4	221	20.6		03.8	172	34.5			33.9	179	05.9			40.4							
20 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	28	21.9	137	59.3	S25	05.9	236	21.6	N13	03.3	187	36.5	S	7	34.1	194	08.1	S	3	40.5	Canopus	264	06.7	S52	40.9	
	43	24.4	152	58.7		06.4	251	22.6		02.8	202	38.4			34.3	209	10.2			40.6	Capella	281	09.9	N45	58.7	
	58	26.9	167	58.2		06.8	266	23.7		02.3	217	40.4			34.5	224	12.4			40.8	Deneb	49	47.9	N45	13.2	
	73	29.3	182	57.7	..	07.3	281	24.7	..	01.8	232	42.3	..	..	34.7	239	14.6	..	..	40.9	Denebola	182	58.6	N14	40.6
	88	31.8	197	57.1		07.8	296	25.8		01.3	247	44.3			34.9	254	16.8			41.0	Diphda	349	19.8	S18	05.2	
	103	34.2	212	56.6		08.3	311	26.8		00.9	262	46.2			35.1	269	19.0			41.1						
	118	36.7	227	56.1	S25	08.8	326	27.9	N13	00.4	277	48.2	S	7	35.3	284	21.2	S	3	41.2	Dubhe	194	21.7	N61	50.9	
	133	39.2	242	55.6		09.2	341	28.9	12	59.9	292	50.2			35.5	299	23.4			41.3	Elnath	278	43.0	N28	35.5	
	148	41.6	257	55.0		09.7	356	30.0		59.4	307	52.1			35.7	314	25.5			41.4	Eltanin	90	57.7	N51	29.8	
	163	44.1	272	54.5	..	10.2	11	31.0	..	58.9	322	54.1	35.9	329	27.7	41.6	Enif	34	10.7	N	9	47.6
	178	46.6	287	54.0		10.7	26	32.1		58.4	337	56.0			36.1	344	29.9			41.7	Fomalhaut	15	50.3	S29	43.2	
	193	49.0	302	53.4		11.1	41	33.1		57.9	352	58.0			36.3	359	32.1			41.8						
	208	51.5	317	52.9	S25	11.6	56	34.2	N12	57.4	7	59.9	S	7	36.5	14	34.3	S	3	41.9	Gacrux	172	28.5	S57	00.4	
	223	54.0	332	52.4		12.1	71	35.2		56.9	23	01.9			36.7	29	36.5			42.0	Gienah	176	17.5	S17	26.2	
	238	56.4	347	51.9		12.6	86	36.3		56.4	38	03.9			36.9	44	38.6			42.1	Hadar	149	23.0	S60	17.0	
	253	58.9	2	51.3	..	13.0	101	37.3	..	56.0	53	05.8	..	..	37.1	59	40.8	..	..	42.2	Hamal	328	27.8	N23	22.6
	269	01.4	17	50.8		13.5	116	38.4		55.5	68	07.8			37.3	74	43.0			42.4	Kaus Aust.	84	16.0	S34	23.7	
	284	03.8	32	50.3		14.0	131	39.4		55.0	83	09.7			37.5	89	45.2			42.5						
	299	06.3	47	49.7	S25	14.4	146	40.5	N12	54.5	98	11.7	S	7	37.7	104	47.4	S	3	42.6	Kochab	137	20.1	N74	14.0	
	314	08.7	62	49.2		14.9	161	41.5		54.0	113	13.6			37.9	119	49.6			42.7	Markab	14	02.2	N15	06.5	
	329	11.2	77	48.7		15.4	176	42.6		53.5	128	15.6			38.1	134	51.7			42.8	Menkar	314	40.1	N	4	01.1
	344	13.7	92	48.2	..	15.8	191	43.6	..	53.0	143	17.5	..	..	38.3	149	53.9	..	..	42.9	Menkent	148	36.6	S36	16.6
	359	16.1	107	47.6		16.3	206	44.7		52.5	158	19.5			38.5	164	56.1			43.0	Miaplacidus	221	45.1	S69	38.2	
14	18.6	122	47.1		16.7	221	45.7		52.0	173	21.5			38.7	179	58.3			43.2							
21 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	29	21.1	137	46.6	S25	17.2	236	46.8	N12	51.5	188	23.4	S	7	38.9	195	00.5	S	3	43.3	Mirfak	309	14.6	N49	47.7	
	44	23.5	152	46.0		17.7	251	47.8		51.0	203	25.4			39.1	210	02.7			43.4	Nunki	76	28.4	S26	19.2	
	59	26.0	167	45.5		18.1	266	48.9		50.5	218	27.3			39.3	225	04.8			43.5	Peacock	53	57.2	S56	47.9	
	74	28.5	182	45.0	..	18.6	281	49.9	..	50.1	233	29.3	..	..	39.5	240	07.0	..	..	43.6	Pollux	243	57.3	N28	04.2
	89	30.9	197	44.5		19.0	296	51.0		49.6	248	31.2			39.7	255	09.2			43.7	Procyon	245	25.0	N	5	16.4
	104	33.4	212	43.9		19.5	311	52.0		49.1	263	33.2			39.9	270	11.4			43.8						
	119	35.8	227	43.4	S25	19.9	326	53.1	N12	48.6	278	35.2	S	7	40.1	285	13.6	S	3	44.0	Rasalhague	96	29.1	N12	34.6	
	134	38.3	242	42.9		20.4	341	54.1		48.1	293	37.1			40.3	300	15.8			44.1	Regulus	208	09.4	N12	03.5	
	149	40.8	257	42.3		20.8	356	55.2		47.6	308	39.1			40.5	315	17.9			44.2	Rigel	281	35.1	S	8	13.2
	164	43.2	272	41.8	..	21.3	11	56.2	..	47.1	323	41.0	..	..	40.7	330	20.1	..	..	44.3	Rigel Kent.	140	25.5	S60	45.5
	179	45.7	287	41.3		21.7	26	57.3		46.6	338	43.0			40.9	345	22.3			44.4	Sabik	102				

G.M.T.	ARIES			VENUS -3.9			MARS +1.6			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
22 00	30 20.2	137 33.9	S25 27.9	237 12.0	N12 39.7		189 10.4	S 7 43.7		195 52.9	S 3 46.0		Acomar	315 36.3	S40 22.6			
01	45 22.7	152 33.3	28.3	252 13.1	39.2		204 12.3	43.9		210 55.1	46.1		Achernar	335 44.1	S57 19.8			
02	60 25.1	167 32.8	28.8	267 14.2	38.7		219 14.3	44.1		225 57.3	46.2		Acrux	173 37.1	S62 59.6			
03	75 27.6	182 32.3	29.2	282 15.2	38.2		234 16.2	44.3		240 59.4	46.3		Adhara	255 31.4	S28 56.6			
04	90 30.1	197 31.7	29.6	297 16.3	37.7		249 18.2	44.5		256 01.6	46.5		Aldebaran	291 16.9	N16 28.4			
05	105 32.5	212 31.2	30.0	312 17.3	37.2		264 20.2	44.7		271 03.8	46.6							
06	120 35.0	227 30.7	S25 30.5	327 18.4	N12 36.8		279 22.1	S 7 44.9		286 06.0	S 3 46.7		Alioth	166 42.4	N56 03.6			
07	135 37.5	242 30.2	30.9	342 19.4	36.3		294 24.1	45.1		301 08.2	46.8		Alkaid	153 18.4	N49 24.4			
08	150 39.9	257 29.6	31.3	357 20.5	35.8		309 26.0	45.3		316 10.4	46.9		Al Na'ir	28 13.8	S47 03.2			
09	165 42.4	272 29.1	31.7	12 21.6	35.3		324 28.0	45.5		331 12.6	47.0		Alnilam	276 10.7	S 1 12.7			
10	180 44.8	287 28.6	32.2	27 22.6	34.8		339 29.9	45.7		346 14.7	47.1		Alphard	218 20.0	S 8 34.5			
11	195 47.3	302 28.0	32.6	42 23.7	34.3		354 31.9	45.9		1 16.9	47.2							
12	210 49.8	317 27.5	S25 33.0	57 24.7	N12 33.8		9 33.8	S 7 46.1		16 19.1	S 3 47.4		Alphecca	126 31.8	N26 46.8			
13	225 52.2	332 27.0	33.4	72 25.8	33.3		24 35.8	46.3		31 21.3	47.5		Alpheratz	358 08.2	N28 59.5			
14	240 54.7	347 26.4	33.8	87 26.8	32.8		39 37.8	46.5		46 23.5	47.6		Altair	62 31.8	N 8 49.3			
15	255 57.2	2 25.9	34.3	102 27.9	32.3		54 39.7	46.7		61 25.7	47.7		Ankaa	353 39.1	S42 24.4			
16	270 59.6	17 25.4	34.7	117 29.0	31.8		69 41.7	46.9		76 27.9	47.8		Antares	112 56.3	S26 23.4			
17	286 02.1	32 24.9	35.1	132 30.0	31.3		84 43.6	47.1		91 30.0	47.9							
18	301 04.6	47 24.3	S25 35.5	147 31.1	N12 30.8		99 45.6	S 7 47.3		106 32.2	S 3 48.0		Arcturus	146 18.1	N19 16.8			
19	316 07.0	62 23.8	35.9	162 32.1	30.3		114 47.5	47.5		121 34.4	48.2		Atria	108 20.2	S68 59.8			
20	331 09.5	77 23.3	36.3	177 33.2	29.8		129 49.5	47.7		136 36.6	48.3		Avior	234 27.9	S59 26.7			
21	346 11.9	92 22.7	36.7	192 34.3	29.3		144 51.5	47.9		151 38.8	48.4		Bellatrix	278 57.7	N 6 20.1			
22	1 14.4	107 22.2	37.1	207 35.3	28.9		159 53.4	48.1		166 41.0	48.5		Betelgeuse	271 27.3	N 7 24.3			
23	16 16.9	122 21.7	37.6	222 36.4	28.4		174 55.4	48.3		181 43.1	48.6							
23 00	31 19.3	137 21.2	S25 38.0	237 37.4	N12 27.9		189 57.3	S 7 48.5		196 45.3	S 3 48.7		Canopus	264 06.6	S52 40.9			
01	46 21.8	152 20.6	38.4	252 38.5	27.4		204 59.3	48.7		211 47.5	48.8		Capella	281 09.9	N45 58.7			
02	61 24.3	167 20.1	38.8	267 39.6	26.9		220 01.2	48.9		226 49.7	48.9		Deneb	49 47.9	N45 13.2			
03	76 26.7	182 19.6	39.2	282 40.6	26.4		235 03.2	49.1		241 51.9	49.1		Denebola	182 58.6	N14 40.6			
04	91 29.2	197 19.0	39.6	297 41.7	25.9		250 05.2	49.3		256 54.1	49.2		Diphda	349 19.8	S18 05.2			
05	106 31.7	212 18.5	40.0	312 42.8	25.4		265 07.1	49.5		271 56.3	49.3							
06	121 34.1	227 18.0	S25 40.4	327 43.8	N12 24.9		280 09.1	S 7 49.7		286 58.4	S 3 49.4		Dubhe	194 21.7	N61 50.9			
07	136 36.6	242 17.4	40.8	342 44.9	24.4		295 11.0	49.9		302 00.6	49.5		Elnath	278 43.0	N28 35.5			
08	151 39.1	257 16.9	41.2	357 45.9	23.9		310 13.0	50.1		317 02.8	49.6		Eltanin	90 57.7	N51 29.8			
09	166 41.5	272 16.4	41.6	12 47.0	23.4		325 14.9	50.3		332 05.0	49.7		Enif	34 10.7	N 9 47.6			
10	181 44.0	287 15.9	42.0	27 48.1	22.9		340 16.9	50.5		347 07.2	49.8		Fomalhaut	15 50.3	S29 43.2			
11	196 46.4	302 15.3	42.4	42 49.1	22.4		355 18.8	50.7		2 09.4	50.0							
12	211 48.9	317 14.8	S25 42.8	57 50.2	N12 21.9		10 20.8	S 7 50.9		17 11.6	S 3 50.1		Gacrux	172 28.5	S57 00.4			
13	226 51.4	332 14.3	43.2	72 51.3	21.4		25 22.8	51.1		32 13.7	50.2		Gienah	176 17.5	S17 26.2			
14	241 53.8	347 13.7	43.5	87 52.3	20.9		40 24.7	51.3		47 15.9	50.3		Hadar	149 23.0	S60 17.0			
15	256 56.3	2 13.2	43.9	102 53.4	20.4		55 26.7	51.5		62 18.1	50.4		Hamal	328 27.7	N23 22.6			
16	271 58.8	17 12.7	44.3	117 54.5	19.9		70 28.6	51.7		77 20.3	50.5		Kaus Aust.	84 16.0	S34 23.7			
17	287 01.2	32 12.2	44.7	132 55.5	19.5		85 30.6	51.9		92 22.5	50.6							
18	302 03.7	47 11.6	S25 45.1	147 56.6	N12 19.0		100 32.5	S 7 52.1		107 24.7	S 3 50.8		Kochab	137 20.2	N74 14.0			
19	317 06.2	62 11.1	45.5	162 57.7	18.5		115 34.5	52.3		122 26.9	50.9		Markab	14 02.2	N15 06.5			
20	332 08.6	77 10.6	45.9	177 58.7	18.0		130 36.5	52.5		137 29.0	51.0		Menkar	314 40.1	N 4 01.1			
21	347 11.1	92 10.0	46.3	192 59.8	17.5		145 38.4	52.7		152 31.2	51.1		Menkent	148 36.6	S36 16.6			
22	2 13.6	107 09.5	46.6	208 00.8	17.0		160 40.4	52.9		167 33.4	51.2		Miaplacidus	221 45.1	S69 38.2			
23	17 16.0	122 09.0	47.0	223 01.9	16.5		175 42.3	53.1		182 35.6	51.3							
24 00	32 18.5	137 08.5	S25 47.4	238 03.0	N12 16.0		190 44.3	S 7 53.3		197 37.8	S 3 51.4		Mirfak	309 14.6	N49 47.7			
01	47 20.9	152 07.9	47.8	253 04.0	15.5		205 46.2	53.5		212 40.0	51.5		Nunki	76 28.4	S26 19.2			
02	62 23.4	167 07.4	48.2	268 05.1	15.0		220 48.2	53.7		227 42.2	51.7		Peacock	53 57.2	S56 47.9			
03	77 25.9	182 06.9	48.5	283 06.2	14.5		235 50.2	53.9		242 44.3	51.8		Pollux	243 57.2	N28 04.2			
04	92 28.3	197 06.3	48.9	298 07.2	14.0		250 52.1	54.1		257 46.5	51.9		Procyon	245 25.0	N 5 16.4			
05	107 30.8	212 05.8	49.3	313 08.3	13.5		265 54.1	54.3		272 48.7	52.0							
06	122 33.3	227 05.3	S25 49.7	328 09.4	N12 13.0		280 56.0	S 7 54.5		287 50.9	S 3 52.1		Rasalhague	96 29.1	N12 34.6			
07	137 35.7	242 04.8	50.0	343 10.4	12.5		295 58.0	54.7		302 53.1	52.2		Regulus	208 09.4	N12 03.5			
08	152 38.2	257 04.2	50.4	358 11.5	12.0		310 59.9	54.9		317 55.3	52.3		Rigel	281 35.1	S 8 13.2			
09	167 40.7	272 03.7	50.8	13 12.6	11.5		326 01.9	55.1		332 57.5	52.4		Rigel Kent.	140 25.5	S60 45.4			
A 10	182 43.1	287 03.2	51.2	28 13.7	11.0		341 03.9	55.3		347 59.6	52.6		Sabik	102 40.5	S15 42.1			
U 11	197 45.6	302 02.6	51.5	43 14.7	10.5		356 05.8	55.5		3 01.8	52.7							
R 12	212 48.1	317 02.1	S25 51.9	58 15.8	N12 10.0		11 07.8	S 7 55.7		18 04.0	S 3 52.8		Schedar	350 07.7	N56 26.3			
D 13	227 50.5	332 01.6	52.3	73 16.9	09.5		26 09.7	55.9		33 06.2	52.9		Shaula	96 55.0	S37 05.5			
A 14	242 53.0	347 01.1	52.6	88 17.9	09.0		41 11.7	56.1		48 08.4	53.0		Sirius	258 54.9	S16 41.3			
Y 15	257 55.4	2 00.5	53.0	103 19.0	08.5		56 13.6	56.3		63 10.6	53.1		Spica	158 57.1	S11 03.8			

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise													
	G.H.A.		Dec.		G.H.A.		Dec.			Naut.		Civil		Sunrise		22	23	24	25							
	h	m	°	'	h	m	°	'		h	m	h	m	h	m	h	m	h	m							
22 00	183	51.6	S10	56.5	245	58.1	10.4	N16	20.9	8.1	57.0	N 72	05	29	06	48	08	04	23	26	25	25	01	25	03	14
01	198	51.7		57.4	260	27.5	10.5	16	12.8	8.2	57.0	N 70	05	29	06	40	07	47	23	51	25	38	01	38	03	19
02	213	51.8		58.2	274	57.0	10.5	16	04.6	8.3	57.0	68	05	28	06	28	07	23	24	24	00	09	01	48	03	23
03	228	51.9	10	59.1	289	26.5	10.7	15	56.3	8.4	56.9	66	05	28	06	23	07	14	24	36	00	36	02	04	03	29
04	243	52.0	11	00.0	303	56.2	10.7	15	47.9	8.4	56.9	64	05	28	06	19	07	06	24	46	00	46	02	10	03	32
05	258	52.1		00.9	318	25.9	10.7	15	39.5	8.5	56.9	62	05	27	06	16	06	59	24	55	00	55	02	16	03	34
06	273	52.2	S11	01.8	332	55.6	10.9	N15	31.0	8.6	56.9	60	05	26	06	12	06	53	25	03	01	03	02	20	03	36
07	288	52.3		02.7	347	25.5	10.9	15	22.4	8.6	56.8	N 58	05	26	06	09	06	48	25	10	01	10	02	24	03	38
08	303	52.4		03.5	1	55.4	11.0	15	13.8	8.7	56.8	56	05	25	06	06	06	43	00	02	01	16	02	28	03	40
T 09	318	52.5		04.4	16	25.4	11.1	15	05.1	8.8	56.8	54	05	25	06	04	06	38	00	09	01	21	02	32	03	41
H 10	333	52.5		05.3	30	55.5	11.2	14	56.3	8.9	56.7	52	05	24	06	01	06	35	00	16	01	26	02	35	03	42
U 11	348	52.6		06.2	45	25.7	11.2	14	47.4	8.9	56.7	50	05	24	05	56	06	26	00	30	01	36	02	41	03	45
S 12	3	52.7	S11	07.1	59	55.9	11.3	N14	38.5	9.0	56.7	45	05	20	05	51	06	19	00	42	01	45	02	47	03	47
D 13	18	52.8		08.0	74	26.2	11.3	14	29.5	9.1	56.7	N 40	05	17	05	47	06	13	00	51	01	52	02	52	03	49
A 14	33	52.9		08.8	88	56.5	11.5	14	20.4	9.1	56.6	35	05	15	05	43	06	07	01	00	01	59	02	56	03	51
Y 15	48	53.0		09.7	103	27.0	11.5	14	11.3	9.2	56.6	20	05	09	05	35	05	58	01	15	02	10	03	03	03	54
16	63	53.1		10.6	117	57.5	11.5	14	02.1	9.2	56.6	N 10	05	03	05	28	05	49	01	28	02	20	03	09	03	57
17	78	53.2		11.5	132	28.0	11.7	13	52.9	9.3	56.6	0	04	55	05	20	05	41	01	40	02	29	03	15	04	00
18	93	53.3	S11	12.4	146	58.7	11.7	N13	43.6	9.4	56.5	S 10	04	46	05	11	05	33	01	52	02	38	03	21	04	02
19	108	53.4		13.3	161	29.4	11.7	13	34.2	9.4	56.5	20	04	35	05	01	05	24	02	05	02	48	03	27	04	05
20	123	53.5		14.1	176	00.1	11.9	13	24.8	9.5	56.5	30	04	20	04	49	05	14	02	20	02	59	03	35	04	08
21	138	53.5		15.0	190	31.0	11.9	13	15.3	9.5	56.5	35	04	10	04	42	05	08	02	28	03	05	03	39	04	10
22	153	53.6		15.9	205	01.9	12.0	13	05.8	9.6	56.4	40	03	59	04	33	05	01	02	38	03	13	03	43	04	12
23	168	53.7		16.8	219	32.9	12.0	12	56.2	9.7	56.4	45	03	44	04	22	04	53	02	49	03	21	03	49	04	14
23 00	183	53.8	S11	17.7	234	03.9	12.1	N12	46.5	9.7	56.4	S 50	03	26	04	09	04	43	03	03	03	31	03	55	04	17
01	198	53.9		18.5	248	35.0	12.2	12	36.8	9.8	56.4	52	03	17	04	02	04	39	03	09	03	36	03	58	04	18
02	213	54.0		19.4	263	06.2	12.2	12	27.0	9.8	56.3	54	03	06	03	55	04	34	03	16	03	41	04	01	04	20
03	228	54.1		20.3	277	37.4	12.3	12	17.2	9.8	56.3	56	02	54	03	47	04	29	03	24	03	46	04	05	04	21
04	243	54.2		21.2	292	08.7	12.4	12	07.4	10.0	56.3	58	02	40	03	38	04	23	03	33	03	53	04	09	04	23
05	258	54.3		22.0	306	40.1	12.4	11	57.4	9.9	56.3	S 60	02	23	03	28	04	16	03	43	04	00	04	13	04	25
06	273	54.3	S11	22.9	321	11.5	12.5	N11	47.5	10.0	56.3															
07	288	54.4		23.8	335	43.0	12.5	11	37.5	10.1	56.2	Lat.	Sunset	Twilight		Moonset										
08	303	54.5		24.7	350	14.5	12.6	11	27.4	10.1	56.2			Civil	Naut.	22	23	24	25							
F 09	318	54.6		25.6	4	46.1	12.7	11	17.3	10.2	56.2															
R 10	333	54.7		26.4	19	17.8	12.7	11	07.1	10.2	56.2															
I 11	348	54.8		27.3	33	49.5	12.8	10	56.9	10.2	56.1	N 72	15	23	16	39	17	57	17	25	17	04	16	48	16	34
D 12	3	54.9	S11	28.2	48	21.3	12.8	N10	46.7	10.3	56.1	N 70	15	40	16	47	17	58	16	59	16	49	16	41	16	33
A 13	18	54.9		29.1	62	53.1	12.9	10	36.4	10.3	56.1	68	15	53	16	53	17	58	16	39	16	37	16	34	16	32
Y 14	33	55.0		29.9	77	25.0	12.9	10	26.1	10.4	56.1	66	16	05	16	59	17	59	16	23	16	27	16	29	16	31
15	48	55.1		30.8	91	56.9	13.0	10	15.7	10.4	56.0	64	16	14	17	04	17	59	16	10	16	19	16	25	16	30
16	63	55.2		31.7	106	28.9	13.1	10	05.3	10.5	56.0	62	16	22	17	08	18	00	15	59	16	11	16	21	16	29
17	78	55.3		32.6	121	01.0	13.1	9	54.8	10.4	56.0	60	16	29	17	12	18	00	15	50	16	05	16	17	16	28
18	93	55.4	S11	33.4	135	33.1	13.2	N 9	44.4	10.6	56.0	N 58	16	35	17	15	18	01	15	41	15	59	16	14	16	28
19	108	55.4		34.3	150	05.3	13.2	9	33.8	10.5	56.0	56	16	40	17	19	18	02	15	34	15	54	16	12	16	27
20	123	55.5		35.2	164	37.5	13.3	9	23.3	10.6	55.9	54	16	45	17	21	18	03	15	27	15	50	16	09	16	27
21	138	55.6		36.0	179	09.8	13.3	9	12.7	10.7	55.9	52	16	49	17	24	18	03	15	21	15	46	16	07	16	26
22	153	55.7		36.9	193	42.1	13.4	9	02.0	10.6	55.9	50	16	53	17	27	18	04	15	16	15	42	16	05	16	26
23	168	55.8		37.8	208	14.5	13.4	8	51.4	10.7	55.9	45	17	02	17	32	18	06	15	04	15	34	16	00	16	25
24 00	183	55.8	S11	38.7	222	46.9	13.5	N 8	40.7	10.7	55.8	N 40	17	09	17	37	18	09	14	54	15	27	15	57	16	24
01	198	55.9		39.5	237	19.4	13.5	8	30.0	10.8	55.8	35	17	16	17	41	18	11	14	46	15	21	15	53	16	24
02	213	56.0		40.4	251	51.9	13.6	8	19.2	10.8	55.8	30	17	21	17	45	18	13	14	39	15	16	15	51	16	23
03	228	56.1		41.3	266	24.5	13.6	8	08.4	10.8	55.8	20	17	31	17	53	18	19	1							

G.M.T.	ARIES			VENUS -3.9			MARS +1.6			JUPITER -1.2			SATURN +1.0			STARS			
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.	
25 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	33	17.6		136	55.8	S25 56.2	238	28.6	N12 04.1	191	31.2	S 7 58.1	198	30.2	S 3 54.1	Acomar	315	36.2	S40 22.6
	48	20.1		151	55.3	56.6	253	29.7	03.6	206	33.2	58.3	213	32.4	54.2	Achernar	335	44.1	S57 19.8
	63	22.5		166	54.7	56.9	268	30.8	03.1	221	35.2	58.5	228	34.6	54.4	Acrux	173	37.1	S62 59.6
	78	25.0		181	54.2	57.3	283	31.9	02.6	236	37.1	58.7	243	36.8	54.5	Adhara	255	31.4	S28 56.6
	93	27.5		196	53.7	57.6	298	32.9	02.1	251	39.1	58.9	258	39.0	54.6	Aldebaran	291	16.9	N16 28.4
	108	29.9		211	53.2	58.0	313	34.0	01.6	266	41.0	59.1	273	41.2	54.7				
	123	32.4		226	52.6	S25 58.3	328	35.1	N12 01.1	281	43.0	S 7 59.3	288	43.4	S 3 54.8	Alioth	166	42.4	N56 03.6
	138	34.9		241	52.1	58.7	343	36.1	00.6	296	44.9	59.5	303	45.6	54.9	Alkaid	153	18.4	N49 24.4
	153	37.3		256	51.6	59.0	358	37.2	12 00.1	311	46.9	59.7	318	47.7	55.0	Al Na'ir	28	13.8	S47 03.2
	168	39.8		271	51.1	59.3	13	38.3	11 59.6	326	48.9	7 59.9	333	49.9	55.1	Alnilam	276	10.7	S 1 12.7
	183	42.3		286	50.5	25 59.7	28	39.4	59.1	341	50.8	8 00.1	348	52.1	55.2	Alphard	218	19.9	S 8 34.6
	198	44.7		301	50.0	26 00.0	43	40.4	58.6	356	52.8	00.3	3	54.3	55.4				
	213	47.2		316	49.5	S26 00.4	58	41.5	N11 58.1	11	54.7	S 8 00.5	18	56.5	S 3 55.5	Alphecca	126	31.8	N26 46.8
	228	49.7		331	49.0	00.7	73	42.6	57.6	26	56.7	00.7	33	58.7	55.6	Alpheratz	358	08.3	N28 59.5
	243	52.1		346	48.4	01.1	88	43.7	57.1	41	58.6	00.9	49	00.9	55.7	Altair	62	31.9	N 8 49.3
	258	54.6		1	47.9	01.4	103	44.7	56.6	57	00.6	01.1	64	03.0	55.8	Ankaa	353	39.1	S42 24.4
	273	57.0		16	47.4	01.7	118	45.8	56.1	72	02.6	01.3	79	05.2	55.9	Antares	112	56.3	S26 23.4
	288	59.5		31	46.9	02.1	133	46.9	55.6	87	04.5	01.5	94	07.4	56.0				
	304	02.0		46	46.3	S26 02.4	148	48.0	N11 55.1	102	06.5	S 8 01.7	109	09.6	S 3 56.1	Arcturus	146	18.1	N19 16.8
	319	04.4		61	45.8	02.7	163	49.0	54.6	117	08.4	01.9	124	11.8	56.3	Atria	108	20.3	S68 59.8
	334	06.9		76	45.3	03.1	178	50.1	54.1	132	10.4	02.1	139	14.0	56.4	Avior	234	27.9	S59 26.7
	349	09.4		91	44.8	03.4	193	51.2	53.6	147	12.3	02.3	154	16.2	56.5	Bellatrix	278	57.7	N 6 20.1
	4	11.8		106	44.2	03.7	208	52.3	53.1	162	14.3	02.5	169	18.4	56.6	Betelgeuse	271	27.3	N 7 24.3
19	14.3		121	43.7	04.1	223	53.3	52.6	177	16.3	02.7	184	20.5	56.7					
26 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	34	16.8		136	43.2	S26 04.4	238	54.4	N11 52.1	192	18.2	S 8 02.9	199	22.7	S 3 56.8	Canopus	264	06.6	S52 40.9
	49	19.2		151	42.7	04.7	253	55.5	51.6	207	20.2	03.1	214	24.9	56.9	Capella	281	09.9	N45 58.7
	64	21.7		166	42.1	05.0	268	56.6	51.1	222	22.1	03.3	229	27.1	57.0	Deneb	49	47.9	N45 13.2
	79	24.2		181	41.6	05.4	283	57.6	50.6	237	24.1	03.5	244	29.3	57.1	Denebola	182	58.6	N14 40.6
	94	26.6		196	41.1	05.7	298	58.7	50.1	252	26.0	03.7	259	31.5	57.3	Diphda	349	19.8	S18 05.2
	109	29.1		211	40.6	06.0	313	59.8	49.6	267	28.0	03.9	274	33.7	57.4				
	124	31.5		226	40.0	S26 06.3	329	00.9	N11 49.1	282	30.0	S 8 04.1	289	35.9	S 3 57.5	Dubhe	194	21.6	N61 50.9
	139	34.0		241	39.5	06.6	344	02.0	48.7	297	31.9	04.3	304	38.0	57.6	Elnath	278	42.9	N28 35.5
	154	36.5		256	39.0	07.0	359	03.0	48.2	312	33.9	04.5	319	40.2	57.7	Eltanin	90	57.7	N51 29.8
	169	38.9		271	38.5	07.3	14	04.1	47.7	327	35.8	04.7	334	42.4	57.8	Enif	34	10.7	N 9 47.6
	184	41.4		286	38.0	07.6	29	05.2	47.2	342	37.8	04.9	349	44.6	57.9	Fomalhaut	15	50.4	S29 43.3
	199	43.9		301	37.4	07.9	44	06.3	46.7	357	39.7	05.1	4	46.8	58.0				
	214	46.3		316	36.9	S26 08.2	59	07.4	N11 46.2	12	41.7	S 8 05.3	19	49.0	S 3 58.1	Gacrux	172	28.5	S57 00.4
	229	48.8		331	36.4	08.5	74	08.4	45.7	27	43.7	05.5	34	51.2	58.3	Gienah	176	17.5	S17 26.2
	244	51.3		346	35.9	08.8	89	09.5	45.2	42	45.6	05.7	49	53.4	58.4	Hadar	149	23.0	S60 16.9
	259	53.7		1	35.3	09.2	104	10.6	44.7	57	47.6	05.9	64	55.5	58.5	Hamal	328	27.7	N23 22.6
	274	56.2		16	34.8	09.5	119	11.7	44.2	72	49.5	06.1	79	57.7	58.6	Kaus Aust.	84	16.1	S34 23.7
	289	58.6		31	34.3	09.8	134	12.8	43.7	87	51.5	06.3	94	59.9	58.7				
	305	01.1		46	33.8	S26 10.1	149	13.8	N11 43.2	102	53.4	S 8 06.5	110	02.1	S 3 58.8	Kochab	137	20.2	N74 14.0
	320	03.6		61	33.3	10.4	164	14.9	42.7	117	55.4	06.7	125	04.3	58.9	Markab	14	02.2	N15 06.5
	335	06.0		76	32.7	10.7	179	16.0	42.2	132	57.4	06.9	140	06.5	59.0	Menkar	314	40.0	N 4 01.1
	350	08.5		91	32.2	11.0	194	17.1	41.7	147	59.3	07.1	155	08.7	59.1	Menkent	148	36.6	S36 16.6
	5	11.0		106	31.7	11.3	209	18.2	41.2	163	01.3	07.3	170	10.9	59.3	Mioplacidus	221	45.0	S69 38.2
20	13.4		121	31.2	11.6	224	19.2	40.7	178	03.2	07.5	185	13.0	59.4					
27 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	35	15.9		136	30.7	S26 11.9	239	20.3	N11 40.2	193	05.2	S 8 07.7	200	15.2	S 3 59.5	Mirfak	309	14.6	N49 47.7
	50	18.4		151	30.1	12.2	254	21.4	39.7	208	07.2	07.9	215	17.4	59.6	Nunki	76	28.4	S26 19.2
	65	20.8		166	29.6	12.5	269	22.5	39.2	223	09.1	08.1	230	19.6	59.7	Peacock	53	57.2	S56 47.9
	80	23.3		181	29.1	12.8	284	23.6	38.7	238	11.1	08.3	245	21.8	59.8	Pollux	243	57.2	N28 04.2
	95	25.8		196	28.6	13.1	299	24.7	38.2	253	13.0	08.5	260	24.0	3 59.9	Procyon	245	25.0	N 5 16.4
	110	28.2		211	28.1	13.4	314	25.7	37.7	268	15.0	08.7	275	26.2	4 00.0				
	125	30.7		226	27.5	S26 13.7	329	26.8	N11 37.2	283	16.9	S 8 08.9	290	28.4	S 4 00.1	Rasalhague	96	29.1	N12 34.6
	140	33.1		241	27.0	14.0	344	27.9	36.7	298	18.9	09.1	305	30.6	00.3	Regulus	208	09.4	N12 03.5
	155	35.6		256	26.5	14.3	359	29.0	36.2	313	20.9	09.3	320	32.7	00.4	Rigel	281	35.1	S 8 13.2
	170	38.1		271	26.0	14.6	14	30.1	35.7	328	22.8	09.5	335	34.9	00.5	Rigel Kent.	140	25.5	S60 45.4
	185	40.5		286	25.5	14.9	29	31.2	35.2	343	24.8	09.7	350	37.1	00.6	Sabik	102	40.5	S15 42.1
	200	43.0		301	24.9	15.1	44	32.2	34.7	358	26.7	09.8	5	39.3	00.7				
	215	45.5		316	24.4	S26 15.4	59	33.3	N11 34.2	13	28.7	S 8 10.0	20	41.5	S 4 00.8	Schedar	350	07.7	N56 26.3
	230	47.9		331	23.9	15.7	74	34.4	33.7	28	30.6	10.2	35	43.7	00.9	Shaula	96	55.0	S37 05.5
	245	50.4		346	23.4	16.0	89	35.5	33.2	43	32.6	10.4	50	45.9	01.0	Sirius	258	54.9	S16 41.3
	260	52.9		1	22.9	16.3	104	36.6	32.7	58	34.6	10.6	65	48.1	01.1	Spica	158	57.1	S11 03.8
	275	55.3		16	22.3	16.6	119	37.7	32.2	73	36.5	10.8	80	50.2	01.3	Shail	223	10.3	S43 21.2
	290	57.8		31	21.8	16.9	134	38.8	31.7	88	38.5	11.0	95	52.4	01.4				
	306	00.3		46	21.3	S26 17.1	149	39.8	N11 31.2	103	40.4	S 8 11.2	110	54.6	S 4 01.5	Vega	80	55.5	N38 46.3
	321	02.7		61	20.8	17.4	164	40.9	30.7	118	42.4	11.4	125						

G.M.T.	SUN			MOON				Lat.	Twilight			Moonrise				
	G.H.A.	Dec.	H.P.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		Naut.	Civil	Sunrise	25	26	27	28	
									h m	h m	h m	h m	h m	h m	h m	h m
25 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	183 57.7	S11 59.5	211 58.2	14.4	N 4	16.3	11.3	55.4	N 72	05 41	07 02	08 21	03 14	04 59	06 43	08 30
	198 57.8	12 00.4	226 31.6	14.5	4	05.0	11.2	55.3	68	05 39	06 44	07 46	03 23	04 55	06 27	07 59
	213 57.8	01.2	241 05.1	14.5	3	53.8	11.3	55.3	66	05 37	06 38	07 33	03 27	04 54	06 21	07 48
	228 57.9	02.1	255 38.6	14.5	3	42.5	11.2	55.3	64	05 36	06 32	07 23	03 29	04 53	06 16	07 38
	243 58.0	03.0	270 12.1	14.6	3	31.3	11.3	55.3	62	05 35	06 27	07 14	03 32	04 52	06 11	07 30
	258 58.1	03.8	284 45.7	14.6	3	20.0	11.3	55.3	60	05 34	06 23	07 07	03 34	04 51	06 08	07 23
	273 58.1	S12 04.7	299 19.3	14.6	N 3	08.7	11.3	55.2	N 58	05 33	06 19	07 00	03 36	04 51	06 04	07 17
	288 58.2	05.5	313 52.9	14.6	2	57.4	11.3	55.2	56	05 32	06 15	06 54	03 38	04 50	06 01	07 12
	303 58.3	06.4	328 26.5	14.7	2	46.1	11.3	55.2	54	05 30	06 12	06 49	03 40	04 50	05 59	07 07
	318 58.3	07.3	343 00.2	14.7	2	34.8	11.4	55.2	52	05 29	06 09	06 44	03 41	04 49	05 56	07 03
	333 58.4	08.1	357 33.9	14.7	2	23.4	11.3	55.2	50	05 28	06 06	06 39	03 42	04 49	05 54	06 59
	348 58.5	09.0	12 07.6	14.7	2	12.1	11.3	55.2	45	05 25	06 00	06 30	03 45	04 48	05 49	06 51
	3 58.6	S12 09.8	26 41.3	14.8	N 2	00.8	11.3	55.1	N 40	05 23	05 54	06 22	03 47	04 47	05 45	06 44
	18 58.6	10.7	41 15.1	14.8	1	49.5	11.3	55.1	35	05 20	05 49	06 15	03 49	04 46	05 42	06 38
	33 58.7	11.6	55 48.9	14.8	1	38.2	11.4	55.1	30	05 17	05 45	06 09	03 51	04 45	05 39	06 32
	48 58.8	12.4	70 22.7	14.8	1	26.8	11.3	55.1	20	05 10	05 36	05 59	03 54	04 44	05 34	06 23
	63 58.8	13.3	84 56.5	14.9	1	15.5	11.3	55.1	N 10	05 03	05 28	05 49	03 57	04 44	05 30	06 16
	78 58.9	14.1	99 30.4	14.8	1	04.2	11.3	55.1	0	04 55	05 19	05 41	04 00	04 43	05 25	06 08
	93 59.0	S12 15.0	114 04.2	14.9	N 0	52.9	11.4	55.0	S 10	04 45	05 10	05 32	04 02	04 42	05 21	06 01
	108 59.0	15.9	128 38.1	14.9	0	41.5	11.3	55.0	20	04 33	04 59	05 22	04 05	04 41	05 17	05 53
	123 59.1	16.7	143 12.0	14.9	0	30.2	11.3	55.0	30	04 16	04 46	05 11	04 08	04 40	05 12	05 44
	138 59.2	17.6	157 45.9	15.0	0	18.9	11.3	55.0	35	04 06	04 38	05 04	04 10	04 40	05 09	05 39
	153 59.2	18.4	172 19.9	14.9	N 0	07.6	11.3	55.0	40	03 54	04 28	04 57	04 12	04 39	05 06	05 34
168 59.3	19.3	186 53.8	15.0	S 0	03.7	11.3	55.0	45	03 39	04 17	04 48	04 14	04 38	05 02	05 27	
26 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	183 59.4	S12 20.2	201 27.8	15.0	S 0	15.0	11.3	54.9	S 50	03 19	04 03	04 38	04 17	04 37	04 58	05 19
	198 59.4	21.0	216 01.8	14.9	0	26.3	11.3	54.9	52	03 09	03 56	04 33	04 18	04 37	04 56	05 16
	213 59.5	21.9	230 35.7	15.0	0	37.6	11.3	54.9	54	02 58	03 48	04 27	04 20	04 37	04 54	05 12
	228 59.6	22.7	245 09.7	15.1	0	48.9	11.3	54.9	56	02 44	03 39	04 21	04 21	04 36	04 51	05 07
	243 59.6	23.6	259 43.8	15.0	1	00.2	11.2	54.9	58	02 29	03 30	04 15	04 23	04 36	04 49	05 03
	258 59.7	24.4	274 17.8	15.0	1	11.4	11.3	54.9	S 60	02 09	03 18	04 07	04 25	04 35	04 46	04 57
	273 59.8	S12 25.3	288 51.8	15.1	S 1	22.7	11.2	54.9								
	288 59.8	26.1	303 25.9	15.0	1	33.9	11.3	54.8								
	303 59.9	27.0	317 59.9	15.1	1	45.2	11.2	54.8	Lat.	Sunset	Twilight		Moonset			
	319 00.0	27.8	332 34.0	15.1	1	56.4	11.2	54.8			Civil	Naut.	25	26	27	28
	334 00.0	28.7	347 08.1	15.1	2	07.6	11.2	54.8								
	349 00.1	29.6	1 42.2	15.1	2	18.8	11.1	54.8	N 72	15 06	16 25	17 44	16 34	16 20	16 05	15 48
	4 00.1	S12 30.4	16 16.3	15.0	S 2	29.9	11.2	54.8	N 70	15 25	16 34	17 46	16 33	16 25	16 16	16 07
	19 00.2	31.3	30 50.3	15.1	2	41.1	11.1	54.7	68	15 41	16 42	17 48	16 32	16 28	16 25	16 22
	34 00.3	32.1	45 24.4	15.1	2	52.2	11.2	54.7	66	15 53	16 49	17 49	16 31	16 32	16 33	16 35
	49 00.3	33.0	59 58.5	15.2	3	03.4	11.1	54.7	64	16 04	16 55	17 50	16 30	16 34	16 39	16 45
	64 00.4	33.8	74 32.7	15.1	3	14.5	11.1	54.7	62	16 13	17 00	17 52	16 29	16 37	16 45	16 54
	79 00.4	34.7	89 06.8	15.1	3	25.6	11.0	54.7	60	16 20	17 04	17 53	16 28	16 39	16 50	17 02
	94 00.5	S12 35.5	103 40.9	15.1	S 3	36.6	11.1	54.7	N 58	16 27	17 08	17 54	16 28	16 41	16 54	17 09
	109 00.6	36.4	118 15.0	15.1	3	47.7	11.0	54.7	56	16 33	17 12	17 55	16 27	16 42	16 58	17 15
	124 00.6	37.2	132 49.1	15.1	3	58.7	11.1	54.6	54	16 39	17 15	17 57	16 27	16 44	17 01	17 20
	139 00.7	38.1	147 23.2	15.2	4	09.8	10.9	54.6	52	16 43	17 18	17 58	16 26	16 45	17 04	17 25
	154 00.7	38.9	161 57.4	15.1	4	20.7	11.0	54.6	50	16 48	17 21	17 59	16 26	16 46	17 07	17 30
169 00.8	39.8	176 31.5	15.1	4	31.7	11.0	54.6	45	16 57	17 28	18 02	16 25	16 49	17 13	17 39	
27 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	184 00.9	S12 40.6	191 05.6	15.1	S 4	42.7	10.9	54.6	N 40	17 05	17 33	18 05	16 24	16 51	17 19	17 47
	199 00.9	41.5	205 39.7	15.1	4	53.6	10.9	54.6	35	17 12	17 38	18 08	16 24	16 53	17 23	17 54
	214 01.0	42.3	220 13.8	15.1	5	04.5	10.9	54.6	30	17 18	17 43	18 11	16 23	16 55	17 27	18 00
	229 01.0	43.2	234 47.9	15.1	5	15.4	10.8	54.6	20	17 29	17 51	18 17	16 22	16 58	17 34	18 11
	244 01.1	44.0	249 22.0	15.1	5	26.2	10.8	54.5	N 10	17 38	18 00	18 25	16 21	17 01	17 40	18 20
	259 01.1	44.9	263 56.1	15.1	5	37.0	10.8	54.5	0	17 47	18 09	18 33	16 20	17 03	17 46	18 29
	274 01.2	S12 45.7	278 30.2	15.1	S 5	47.8	10.8	54.5	S 10	17 56	18 18	18 43	16 20	17 06	17 52	18 38
	289 01.3	46.5	293 04.3	15.1	5	58.6	10.7	54.5	20	18 06	18 29	18 56	16 19	17 08	17 58	18 47
	304 01.3	47.4	307 38.4	15.1	6	09.3	10.7	54.5	30	18 18	18 43	19 12	16 17	17 11	18 05	18 58
	319 01.4	48.2	322 12.5	15.0	6	20.0	10.7	54.5	35	18 24	18 51	19 22	16 17	17 13	18 09	19 05
	334 01.4	49.1	336 46.5	15.1	6	30.7	10.7	54.5	40	18 32	19 00	19 35	16 16	17 15	18 14	19 12
	349 01.5	49.9	351 20.6	15.1	6	41.4	10.6	54.5	45	18 41	19 12	19 51	16 15	17 17	18 19	19 20
	4 01.5	S12 50.8	5 54.7	15.0	S 6	52.0	10.6	54.4	S 50	18 51	19 27	20 11	16 14	17 20	18 25	19 30
	19 01.6	51.6	20 28.7	15.0	7	02.6	10.5	54.4	52	18 56	19 34	20 21	16 14	17 21	18 28	19 35
	34 01.6	52.5	35 02.7	15.1	7	13.1	10.5	54.4	54	19 02	19 41	20 32	16 13	17 23	18 32	19 40
	49 01.7	53.3	49 36.8	15.0	7	23.6	10.5	54.4	56	19 08	19 50	20 46	16 13	17 24	18 35	19 46
	64 01.8	54.1	64 10.8	15.0	7	34.1	10.5	54.4	58	19 15	20 00	21 02	16 12	17 26	18 39	19 52
	79 01.8	55.0	78 44.8	15.0	7	44.6	10.4	54.4	S 60	19 23	20 12	21 22	16 11	17 28	18 44	19 59
	94 01.9	S12 55.8	93 18.8	14.9	S 7	55.0	10.4	54.4								

G.M.T.	ARIES			VENUS -3.9			MARS +1.6			JUPITER -1.2			SATURN +1.0			STARS			
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.	
28 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	W F R I D A Y	36 15.0	136 18.2	S26 18.8	239 46.4	N11 28.2	193 52.2	S 8 12.4		201 07.8	S 4 02.1		Acamar	315 36.2	S40 22.6				
		51 17.5	151 17.7	19.1	254 47.4	27.7	208 54.1	12.6	216 09.9	02.3	Achernar	335 44.1	S57 19.9						
		66 20.0	166 17.2	19.3	269 48.5	27.2	223 56.1	12.8	231 12.1	02.4	Acruz	173 37.0	S62 59.6						
		81 22.4	181 16.7	19.6	284 49.6	26.7	238 58.1	13.0	246 14.3	02.5	Adhara	255 31.4	S28 56.6						
		96 24.9	196 16.2	19.9	299 50.7	26.2	254 00.0	13.2	261 16.5	02.6	Aldebaran	291 16.9	N16 28.4						
		111 27.4	211 15.6	20.1	314 51.8	25.7	269 02.0	13.4	276 18.7	02.7									
		126 29.8	226 15.1	S26 20.4	329 52.9	N11 25.2	284 03.9	S 8 13.6	291 20.9	S 4 02.8	Alioth	166 42.4	N56 03.6						
		141 32.3	241 14.6	20.7	344 54.0	24.7	299 05.9	13.8	306 23.1	02.9	Alkaid	153 18.4	N49 24.4						
		156 34.7	256 14.1	20.9	359 55.1	24.2	314 07.8	14.0	321 25.3	03.0	Al Na'ir	28 13.8	S47 03.2						
		171 37.2	271 13.6	21.2	14 56.2	23.7	329 09.8	14.2	336 27.5	03.1	Alnilam	276 10.7	S 1 12.7						
		186 39.7	286 13.1	21.5	29 57.2	23.2	344 11.8	14.4	351 29.6	03.2	Alphard	218 19.9	S 8 34.6						
		201 42.1	301 12.5	21.7	44 58.3	22.7	359 13.7	14.6	6 31.8	03.4									
		216 44.6	316 12.0	S26 22.0	59 59.4	N11 22.2	14 15.7	S 8 14.8	21 34.0	S 4 03.5	Alphecca	126 31.8	N26 46.8						
		231 47.1	331 11.5	22.3	75 00.5	21.7	29 17.6	15.0	36 36.2	03.6	Alpheratz	358 08.3	N28 59.5						
		246 49.5	346 11.0	22.5	90 01.6	21.2	44 19.6	15.2	51 38.4	03.7	Altair	62 31.9	N 8 49.3						
		261 52.0	1 10.5	22.8	105 02.7	20.7	59 21.5	15.4	66 40.6	03.8	Ankaa	353 39.1	S42 24.4						
		276 54.5	16 10.0	23.0	120 03.8	20.2	74 23.5	15.6	81 42.8	03.9	Antares	112 56.3	S26 23.4						
		291 56.9	31 09.5	23.3	135 04.9	19.7	89 25.5	15.8	96 45.0	04.0									
		306 59.4	46 09.0	S26 23.5	150 06.0	N11 19.2	104 27.4	S 8 16.0	111 47.2	S 4 04.1	Arcturus	146 18.1	N19 16.8						
		322 01.9	61 08.4	23.8	165 07.1	18.7	119 29.4	16.2	126 49.4	04.2	Atria	108 20.3	S68 59.8						
		337 04.3	76 07.9	24.0	180 08.1	18.2	134 31.3	16.4	141 51.5	04.3	Avior	234 27.9	S59 26.7						
		352 06.8	91 07.4	24.3	195 09.2	17.7	149 33.3	16.6	156 53.7	04.5	Bellatrix	278 57.7	N 6 20.1						
		7 09.2	106 06.9	24.5	210 10.3	17.2	164 35.3	16.8	171 55.9	04.6	Betelgeuse	271 27.3	N 7 24.3						
22 11.7	121 06.4	24.8	225 11.4	16.7	179 37.2	17.0	186 58.1	04.7											
29 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	T H U R S D A Y	37 14.2	136 05.9	S26 25.0	240 12.5	N11 16.2	194 39.2	S 8 17.2	202 00.3	S 4 04.8		Canopus	264 06.6	S52 40.9					
		52 16.6	151 05.4	25.3	255 13.6	15.7	209 41.1	17.4	217 02.5	04.9	Capella	281 09.9	N45 58.7						
		67 19.1	166 04.9	25.5	270 14.7	15.2	224 43.1	17.5	232 04.7	05.0	Deneb	49 48.0	N45 13.2						
		82 21.6	181 04.4	25.8	285 15.8	14.7	239 45.0	17.7	247 06.9	05.1	Denebola	182 58.5	N14 40.6						
		97 24.0	196 03.8	26.0	300 16.9	14.2	254 47.0	17.9	262 09.1	05.2	Diphda	349 19.8	S18 05.2						
		112 26.5	211 03.3	26.3	315 18.0	13.7	269 49.0	18.1	277 11.2	05.3									
		127 29.0	226 02.8	S26 26.5	330 19.1	N11 13.2	284 50.9	S 8 18.3	292 13.4	S 4 05.4	Dubhe	194 21.6	N61 50.9						
		142 31.4	241 02.3	26.7	345 20.2	12.7	299 52.9	18.5	307 15.6	05.6	Elnath	278 42.9	N28 35.5						
		157 33.9	256 01.8	27.0	0 21.3	12.2	314 54.8	18.7	322 17.8	05.7	Eltanin	90 57.7	N51 29.8						
		172 36.4	271 01.3	27.2	15 22.4	11.7	329 56.8	18.9	337 20.0	05.8	Enif	34 10.8	N 9 47.6						
		187 38.8	286 00.8	27.4	30 23.5	11.2	344 58.8	19.1	352 22.2	05.9	Fomalhaut	15 50.4	S29 43.3						
		202 41.3	301 00.3	27.7	45 24.6	10.7	0 00.7	19.3	7 24.4	06.0									
		217 43.7	315 59.8	S26 27.9	60 25.6	N11 10.2	15 02.7	S 8 19.5	22 26.6	S 4 06.1	Gacrux	172 28.5	S57 00.4						
		232 46.2	330 59.3	28.1	75 26.7	09.7	30 04.6	19.7	37 28.8	06.2	Gienah	176 17.5	S17 26.2						
		247 48.7	345 58.8	28.4	90 27.8	09.2	45 06.6	19.9	52 31.0	06.3	Hadar	149 23.0	S60 16.9						
		262 51.1	0 58.3	28.6	105 28.9	08.7	60 08.5	20.1	67 33.1	06.4	Hamal	328 27.7	N23 22.6						
		277 53.6	15 57.8	28.8	120 30.0	08.2	75 10.5	20.3	82 35.3	06.5	Kaus Aust.	84 16.1	S34 23.7						
		292 56.1	30 57.2	29.1	135 31.1	07.7	90 12.5	20.5	97 37.5	06.7									
		307 58.5	45 56.7	S26 29.3	150 32.2	N11 07.2	105 14.4	S 8 20.7	112 39.7	S 4 06.8	Kochab	137 20.2	N74 14.0						
		323 01.0	60 56.2	29.5	165 33.3	06.7	120 16.4	20.9	127 41.9	06.9	Markab	14 02.2	N15 06.5						
		338 03.5	75 55.7	29.7	180 34.4	06.2	135 18.3	21.1	142 44.1	07.0	Menkar	314 40.0	N 4 01.1						
		353 05.9	90 55.2	30.0	195 35.5	05.7	150 20.3	21.3	157 46.3	07.1	Menkent	148 36.6	S36 16.6						
		8 08.4	105 54.7	30.2	210 36.6	05.2	165 22.3	21.5	172 48.5	07.2	Miaplacidus	221 45.0	S69 38.2						
23 10.8	120 54.2	30.4	225 37.7	04.7	180 24.2	21.7	187 50.7	07.3											
30 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	F R I D A Y	38 13.3	135 53.7	S26 30.6	240 38.8	N11 04.2	195 26.2	S 8 21.9	202 52.9	S 4 07.4		Mirfak	309 14.6	N49 47.8					
		53 15.8	150 53.2	30.9	255 39.9	03.7	210 28.1	22.1	217 55.1	07.5	Nunki	76 28.4	S26 19.2						
		68 18.2	165 52.7	31.1	270 41.0	03.2	225 30.1	22.3	232 57.2	07.6	Peacock	53 57.2	S56 47.9						
		83 20.7	180 52.2	31.3	285 42.1	02.7	240 32.1	22.5	247 59.4	07.7	Pollux	243 57.2	N28 04.2						
		98 23.2	195 51.7	31.5	300 43.2	02.2	255 34.0	22.7	263 01.6	07.9	Procyon	245 24.9	N 5 16.4						
		113 25.6	210 51.2	31.7	315 44.3	01.7	270 36.0	22.9	278 03.8	08.0									
		128 28.1	225 50.7	S26 31.9	330 45.4	N11 01.2	285 37.9	S 8 23.0	293 06.0	S 4 08.1	Rasalhague	96 29.1	N12 34.6						
		143 30.6	240 50.2	32.1	345 46.5	00.7	300 39.9	23.2	308 08.2	08.2	Regulus	208 09.3	N12 03.5						
		158 33.0	255 49.7	32.4	0 47.6	11 00.2	315 41.8	23.4	323 10.4	08.3	Rigel	281 35.1	S 8 13.3						
		173 35.5	270 49.2	32.6	15 48.7	10 59.7	330 43.8	23.6	338 12.6	08.4	Rigil Kent.	140 25.5	S60 45.4						
		188 38.0	285 48.7	32.8	30 49.8	59.2	345 45.8	23.8	353 14.8	08.5	Sabik	102 40.5	S15 42.1						
		203 40.4	300 48.2	33.0	45 50.9	58.7	0 47.7	24.0	8 17.0	08.6									
		218 42.9	315 47.7	S26 33.2	60 52.0	N10 58.1	15 49.7	S 8 24.2	23 19.2	S 4 08.7	Schedar	350 07.7	N56 26.3						
		233 45.3	330 47.2	33.4	75 53.1	57.6	30 51.6	24.4	38 21.3	08.8	Shaula	96 55.0	S37 05.5						
		248 47.8	345 46.7	33.6	90 54.2	57.1	45 53.6	24.6	53 23.5	08.9	Sirius	258 54.9	S16 41.3						
		263 50.3	0 46.2	33.8	105 55.3	56.6	60 55.6	24.8	68 25.7	09.1	Spica	158 57.1	S11 03.8						
		278 52.7	15 45.7	34.0	120 56.4	56.1	75 57.5	25.0	83 27.9	09.2	Shuail	223 10.3	S43 21.2						
		293 55.2	30 45.2	34.2	135 57.5	55.6	90 59.5	25.2	98 30.1	09.3									
		308 57.7	45 44.7	S26 34.4	150 58.6														

G.M.T.	SUN			MOON				Lat.	Twilight		Sunrise	Moonrise			
	G.H.A.	Dec.	G.H.A.	ν	Dec.	d	H.P.		Naut.	Civil		28	29	30	31
									h m	h m		h m	h m	h m	h m
28 WEDNESDAY	184 02.2 S13	00.9	180 42.4 14.9 S	8 56.7	10.2	54.3	N 72	05 54	07 15	08 38	08 30	10 27	13 07	■	
	199 02.2	01.7	195 16.3 14.9	9 06.9	10.1	54.3	N 70	05 51	07 04	08 15	08 13	09 55	11 47	■	
	214 02.3	02.6	209 50.2 14.8	9 17.0	10.0	54.3	N 68	05 48	06 55	07 58	07 59	09 33	11 09	12 47	
	229 02.3	03.4	224 24.0 14.9	9 27.0	10.1	54.3	N 66	05 46	06 47	07 44	07 48	09 15	10 42	12 07	
	244 02.4	04.2	238 57.9 14.8	9 37.1	10.0	54.3	N 64	05 44	06 40	07 32	07 38	09 00	10 22	11 40	
	259 02.4	05.1	253 31.7 14.8	9 47.1	9.9	54.3	N 62	05 42	06 35	07 23	07 30	08 49	10 06	11 19	
	274 02.5 S13	05.9	268 05.5 14.8 S	9 57.0	9.9	54.3	N 60	05 41	06 30	07 14	07 23	08 38	09 52	11 02	
	289 02.5	06.8	282 39.3 14.8	10 06.9	9.8	54.2	N 58	05 39	06 25	07 07	07 17	08 30	09 40	10 48	
	304 02.6	07.6	297 13.1 14.7	10 16.7	9.9	54.2	N 56	05 37	06 21	07 00	07 12	08 22	09 30	10 36	
	319 02.6	08.4	311 46.8 14.7	10 26.6	9.7	54.2	N 54	05 36	06 17	06 54	07 07	08 15	09 21	10 25	
	334 02.7	09.3	326 20.5 14.8	10 36.3	9.7	54.2	N 52	05 34	06 14	06 49	07 03	08 09	09 13	10 16	
	349 02.7	10.1	340 54.3 14.6	10 46.0	9.7	54.2	N 50	05 33	06 11	06 44	06 59	08 03	09 06	10 07	
	4 02.8 S13	10.9	355 27.9 14.7 S10	55.7	9.6	54.2	N 45	05 29	06 04	06 34	06 51	07 51	08 51	09 49	
	19 02.8	11.8	10 01.6 14.7	11 05.3	9.6	54.2	N 40	05 26	05 58	06 25	06 44	07 42	08 39	09 35	
	34 02.8	12.6	24 35.3 14.6	11 14.9	9.5	54.2	N 35	05 22	05 52	06 18	06 38	07 33	08 28	09 23	
	49 02.9	13.4	39 08.9 14.6	11 24.4	9.5	54.2	N 30	05 19	05 47	06 11	06 32	07 26	08 19	09 12	
	64 02.9	14.3	53 42.5 14.6	11 33.9	9.4	54.2	N 20	05 11	05 37	06 00	06 23	07 13	08 03	08 54	
	79 03.0	15.1	68 16.1 14.5	11 43.3	9.4	54.2	N 10	05 03	05 28	05 50	06 16	07 02	07 50	08 38	
	94 03.0 S13	15.9	82 49.6 14.5 S11	52.7	9.3	54.2	N 0	04 54	05 19	05 40	06 08	06 52	07 37	08 23	
	109 03.1	16.8	97 23.1 14.5	12 02.0	9.3	54.1	S 10	04 44	05 09	05 31	06 01	06 42	07 24	08 08	
	124 03.1	17.6	111 56.6 14.5	12 11.3	9.2	54.1	S 20	04 31	04 57	05 20	05 53	06 31	07 10	07 52	
	139 03.2	18.4	126 30.1 14.5	12 20.5	9.2	54.1	S 30	04 13	04 43	05 08	05 44	06 19	06 55	07 34	
	154 03.2	19.3	141 03.6 14.4	12 29.7	9.1	54.1	S 35	04 02	04 34	05 01	05 39	06 11	06 46	07 24	
169 03.2	20.1	155 37.0 14.4	12 38.8	9.0	54.1	S 40	03 49	04 24	04 53	05 34	06 03	06 36	07 12		
184 03.3 S13	20.9	170 10.4 14.4 S12	47.8	9.0	54.1	S 45	03 33	04 12	04 44	05 27	05 54	06 24	06 58		
199 03.3	21.8	184 43.8 14.3	12 56.8	9.0	54.1	S 50	03 12	03 56	04 32	05 19	05 43	06 10	06 41		
214 03.4	22.6	199 17.1 14.4	13 05.8	8.9	54.1	S 52	03 01	03 49	04 27	05 16	05 38	06 03	06 33		
229 03.4	23.4	213 50.5 14.3	13 14.7	8.8	54.1	S 54	02 49	03 41	04 21	05 12	05 32	05 55	06 24		
244 03.5	24.3	228 23.8 14.2	13 23.5	8.8	54.1	S 56	02 35	03 32	04 14	05 07	05 26	05 47	06 14		
259 03.5	25.1	242 57.0 14.3	13 32.3	8.7	54.1	S 58	02 17	03 21	04 07	05 03	05 19	05 38	06 07		
274 03.5 S13	25.9	257 30.3 14.2 S13	41.0	8.6	54.1	S 60	01 56	03 08	03 59	04 57	05 11	05 27	05 49		
289 03.6	26.8	272 03.5 14.2	13 49.6	8.6	54.1										
304 03.6	27.6	286 36.7 14.1	13 58.2	8.6	54.1	Lat.	Sunset	Twilight		Moonset					
319 03.7	28.4	301 09.8 14.2	14 06.8	8.4	54.1			Civil	Naut.	28	29	30	31		
334 03.7	29.2	315 43.0 14.1	14 15.2	8.5	54.1										
349 03.7	30.1	330 16.1 14.0	14 23.7	8.3	54.0	N 72	14 48	16 11	17 32	15 48	15 23	14 17	■		
4 03.8 S13	30.9	344 49.1 14.1 S14	32.0	8.3	54.0	N 70	15 11	16 22	17 35	16 07	15 55	15 38	■		
19 03.8	31.7	359 22.2 14.0	14 40.3	8.2	54.0	N 68	15 28	16 31	17 37	16 22	16 19	16 17	16 15		
34 03.9	32.6	13 55.2 14.0	14 48.5	8.2	54.0	N 66	15 42	16 39	17 40	16 35	16 38	16 44	16 55		
49 03.9	33.4	28 28.2 13.9	14 56.7	8.1	54.0	N 64	15 54	16 46	17 42	16 45	16 53	17 05	17 22		
64 03.9	34.2	43 01.1 13.9	15 04.8	8.0	54.0	N 62	16 04	16 52	17 44	16 54	17 06	17 22	17 44		
79 04.0	35.0	57 34.0 13.9	15 12.8	8.0	54.0	N 60	16 12	16 57	17 46	17 02	17 17	17 36	18 01		
94 04.0 S13	35.9	72 06.9 13.9 S15	20.8	7.9	54.0	N 58	16 20	17 01	17 48	17 09	17 26	17 48	18 16		
109 04.0	36.7	86 39.8 13.8	15 28.7	7.8	54.0	N 56	16 26	17 06	17 49	17 15	17 34	17 58	18 28		
124 04.1	37.5	101 12.6 13.8	15 36.5	7.8	54.0	N 54	16 32	17 09	17 51	17 20	17 42	18 08	18 39		
139 04.1	38.3	115 45.4 13.7	15 44.3	7.7	54.0	N 52	16 38	17 13	17 52	17 25	17 48	18 16	18 49		
154 04.1	39.2	130 18.1 13.8	15 52.0	7.6	54.0	N 50	16 42	17 16	17 54	17 30	17 54	18 23	18 57		
169 04.2	40.0	144 50.9 13.7	15 59.6	7.6	54.0	N 45	16 53	17 23	17 58	17 39	18 07	18 39	19 16		
184 04.2 S13	40.8	159 23.6 13.6 S16	07.2	7.4	54.0	N 40	17 02	17 29	18 01	17 47	18 18	18 52	19 31		
199 04.3	41.6	173 56.2 13.7	16 14.6	7.5	54.0	N 35	17 09	17 35	18 05	17 54	18 27	19 04	19 43		
214 04.3	42.4	188 28.9 13.6	16 22.1	7.3	54.0	N 30	17 16	17 40	18 08	18 00	18 36	19 13	19 55		
229 04.3	43.3	203 01.5 13.5	16 29.4	7.3	54.0	N 20	17 27	17 50	18 18	18 11	18 50	19 30	20 14		
244 04.4	44.1	217 34.0 13.6	16 36.7	7.2	54.0	N 10	17 37	17 59	18 24	18 20	19 02	19 45	20 30		
259 04.4	44.9	232 06.6 13.5	16 43.9	7.1	54.0	N 0	17 47	18 08	18 33	18 29	19 13	19 59	20 46		
274 04.4 S13	45.7	246 39.1 13.4 S16	51.0	7.1	54.0	S 10	17 57	18 19	18 44	18 38	19 25	20 13	21 01		
289 04.5	46.5	261 11.5 13.5	16 58.1	7.0	54.0	S 20	18 08	18 30	18 57	18 47	19 37	20 28	21 18		
304 04.5	47.4	275 44.0 13.4	17 05.1	6.9	54.0	S 30	18 20	18 45	19 15	18 58	19 52	20 45	21 37		
319 04.5	48.2	290 16.4 13.3	17 12.0	6.8	54.0	S 35	18 27	18 54	19 26	19 05	20 00	20 55	21 48		
334 04.6	49.0	304 48.7 13.4	17 18.8	6.8	54.0	S 40	18 35	19 04	19 39	19 12	20 09	21 06	22 01		
349 04.6	49.8	319 21.1 13.3	17 25.6	6.7	54.0	S 45	18 45	19 17	19 56	19 20	20 20	21 19	22 16		
4 04.6 S13	50.6	333 53.4 13.2 S17	32.3	6.6	54.0	S 50	18 56	19 32	20 18	19 30	20 34	21 36	22 35		
19 04.6	51.5	348 25.6 13.3	17 38.9	6.5	54.0	S 52	19 02	19 40	20 28	19 35	20 40	21 44	22 44		
34 04.7	52.3	2 57.9 13.2	17 45.4	6.5	54.0	S 54	19 08	19 48	20 41	19 40	20 47	21 52	22 54		
49 04.7	53.1	17 30.1 13.1	17 51.9	6.3	54.0	S 56	19 15	19 58	20 55	19 46	20 55	22 02	23 05		
64 04.7	53.9	32 02.2 13.2	17 58.2	6.3	54.0	S 58	19 22	20 09	21 13	19 52	21 04	22 13	23 18		
79 04.8	54.7	46 34.4 13.1	18 04.5	6.3	54.0	S 60	19 31	20 21	21 36	19 59	21 14	22 26	23 33		
94 04.8 S13	55.5	61 06.5 13.0 S18	10.8	6.1	54.0										
109 04.8	56.4	75 38.5 13.1	18 16.9	6.1	54.0										
124 04.9	57.2	90 10.6 13.0	18 23.0	5.9	54.0										
139 04.9	58.0	104 42.6 12.9	18 28.9	5.9	54.0										
154 04.9	58.8	119 14.5 13.0	18 34.8	5.8	54.0										
169 04.9	59.6	133 46.5 12.9	18 40.6	5.8	54.0										
	S.D. 16.1	d 0.8	S.D. 14.8	14.7	14.7										
						Day	SUN			MOON					
							Eqn. of Time	Mer. Pass.	Mer. Pass.	Upper	Lower	Age	Phase		

G.M.T.	SUN		MOON				Lat.	Twilight			Sunrise	Moonrise					
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.			Civil	31		1	2	3
									h	m		h	m	h	m	h	m
31 00	184 05.0	S14 00.4	148 18.4	12.8	S18 46.4	5.6	54.0	N 72	06 06	07 29	08 56	12 47	14 25	15 38	15 52		
01	199 05.0	01.2	162 50.2	12.9	18 52.0	5.6	54.0	N 70	06 02	07 16	08 30	12 07	13 25	14 24	14 59		
02	214 05.0	02.1	177 22.1	12.7	18 57.6	5.5	54.0	68	05 58	07 05	08 10	11 40	12 51	13 47	14 27		
03	229 05.0	02.9	191 53.8	12.8	19 03.1	5.4	54.0	66	05 55	06 56	07 55	11 19	12 26	13 21	14 03		
04	244 05.1	03.7	206 25.6	12.7	19 08.5	5.3	54.0	64	05 52	06 49	07 42	11 02	12 06	13 01	13 44		
05	259 05.1	04.5	220 57.3	12.7	19 13.8	5.2	54.0	62	05 50	06 42	07 31	10 48	11 50	12 44	13 28		
06	274 05.1	S14 05.3	235 29.0	12.7	S19 19.0	5.2	54.0	60	05 47	06 37	07 22	10 36	11 36	12 30	13 14		
07	289 05.1	06.1	250 00.7	12.6	19 24.2	5.0	54.0	N 58	05 45	06 32	07 14	10 25	11 24	12 17	13 03		
S 08	304 05.2	06.9	264 32.3	12.6	19 29.2	5.0	54.0	56	05 43	06 27	07 07	10 16	11 14	12 06	12 52		
A 09	319 05.2	07.7	279 03.9	12.6	19 34.2	4.9	54.0	54	05 41	06 23	07 00	10 07	11 05	11 57	12 43		
U 10	334 05.2	08.5	293 35.5	12.5	19 39.1	4.8	54.0	52	05 39	06 19	06 55	09 49	10 45	11 37	12 23		
U 11	349 05.2	09.4	308 07.0	12.5	19 43.9	4.7	54.0	50	05 37	06 15	06 49	09 35	10 29	11 20	12 08		
R 12	4 05.3	S14 10.2	322 38.5	12.5	S19 48.6	4.6	54.0	N 40	05 29	06 01	06 29	09 23	10 16	11 06	11 54		
D 13	19 05.3	11.0	337 10.0	12.4	19 53.2	4.5	54.0	35	05 25	05 55	06 21	09 12	10 04	10 54	11 42		
A 14	34 05.3	11.8	351 41.4	12.4	19 57.7	4.5	54.0	30	05 21	05 49	06 14	09 04	09 44	10 34	11 22		
Y 15	49 05.3	12.6	6 12.8	12.4	20 02.2	4.3	54.0	20	05 13	05 39	06 01	08 54	09 27	10 16	11 05		
16	64 05.3	13.4	20 44.2	12.4	20 06.5	4.3	54.0	N 10	05 04	05 29	05 51	08 38	09 11	09 59	10 49		
17	79 05.4	14.2	35 15.6	12.3	20 10.8	4.2	54.0	0	04 54	05 19	05 40	08 23	09 11	09 59	10 49		
18	94 05.4	S14 15.0	49 46.9	12.2	S20 15.0	4.1	54.0	S 10	04 43	05 08	05 30	08 08	08 54	09 43	10 32		
19	109 05.4	15.8	64 18.1	12.3	20 19.1	3.9	54.0	20	04 29	04 56	05 18	07 52	08 37	09 25	10 15		
20	124 05.4	16.6	78 49.4	12.2	20 23.0	3.9	54.0	30	04 10	04 40	05 06	07 34	08 17	09 04	09 55		
21	139 05.5	17.4	93 20.6	12.2	20 26.9	3.8	54.1	35	03 59	04 31	04 58	07 24	08 06	08 52	09 43		
22	154 05.5	18.2	107 51.8	12.2	20 30.7	3.8	54.1	40	03 45	04 20	04 49	07 12	07 53	08 39	09 30		
23	169 05.5	19.0	122 23.0	12.1	20 34.5	3.6	54.1	45	03 27	04 07	04 39	06 58	07 37	08 22	09 14		
1 00	184 05.5	S14 19.8	136 54.1	12.1	S20 38.1	3.5	54.1	S 50	03 05	03 51	04 27	06 41	07 18	08 02	08 54		
01	199 05.5	20.6	151 25.2	12.1	20 41.6	3.4	54.1	52	02 53	03 43	04 21	06 33	07 09	07 53	08 45		
02	214 05.5	21.5	165 56.3	12.0	20 45.0	3.4	54.1	54	02 40	03 34	04 15	06 24	06 59	07 42	08 34		
03	229 05.6	22.3	180 27.3	12.0	20 48.4	3.2	54.1	56	02 25	03 24	04 08	06 14	06 48	07 30	08 23		
04	244 05.6	23.1	194 58.3	12.0	20 51.6	3.2	54.1	58	02 05	03 12	04 00	06 02	06 34	07 16	08 09		
05	259 05.6	23.9	209 29.3	11.9	20 54.8	3.0	54.1	S 60	01 41	02 59	03 50	05 49	06 19	07 00	07 53		
06	274 05.6	S14 24.7	224 00.2	12.0	S20 57.8	3.0	54.1										
07	289 05.6	25.5	238 31.2	11.9	21 00.8	2.8	54.1	Lat.	Sunset	Twilight		Moonset					
08	304 05.7	26.3	253 02.1	11.8	21 03.6	2.8	54.1			Civil	Naut.	31	1	2	3		
S 09	319 05.7	27.1	267 32.9	11.9	21 06.4	2.7	54.1										
U 10	334 05.7	27.9	282 03.8	11.8	21 09.1	2.6	54.2										
U 11	349 05.7	28.7	296 34.6	11.8	21 11.7	2.4	54.2	N 72	14 30	15 57	17 20	16 15	16 16	16 45	18 15		
D 12	4 05.7	S14 29.5	311 05.4	11.8	S21 14.1	2.4	54.2	N 70	14 56	16 10	17 24	16 55	17 17	17 59	19 07		
A 13	19 05.7	30.3	325 36.2	11.7	21 16.5	2.3	54.2	68	15 16	16 21	17 28	17 22	17 51	18 36	19 39		
Y 14	34 05.7	31.1	340 06.9	11.7	21 18.8	2.2	54.2	66	15 31	16 30	17 31	17 44	18 16	19 02	20 03		
15	49 05.8	31.9	354 37.6	11.7	21 21.0	2.1	54.2	64	15 44	16 37	17 34	18 01	18 36	19 22	20 21		
16	64 05.8	32.7	9 08.3	11.7	21 23.1	1.9	54.2	62	15 55	16 44	17 36	18 16	19 02	19 50	20 49		
17	79 05.8	33.5	23 39.0	11.6	21 25.0	1.9	54.2	60	16 04	16 50	17 39	18 16	18 52	19 39	20 37		
18	94 05.8	S14 34.3	38 09.6	11.7	S21 26.9	1.8	54.2	N 58	16 13	16 55	17 41	18 28	19 06	19 53	20 50		
19	109 05.8	35.0	52 40.3	11.6	21 28.7	1.7	54.2	56	16 20	16 59	17 43	18 39	19 18	20 05	21 02		
20	124 05.8	35.8	67 10.9	11.5	21 30.4	1.6	54.3	54	16 26	17 04	17 45	18 49	19 28	20 16	21 12		
21	139 05.8	36.6	81 41.4	11.6	21 32.0	1.5	54.3	52	16 32	17 07	17 47	18 57	19 38	20 26	21 21		
22	154 05.8	37.4	96 12.0	11.5	21 33.5	1.4	54.3	50	16 37	17 11	17 49	19 16	19 58	20 46	21 40		
23	169 05.9	38.2	110 42.5	11.5	21 34.9	1.2	54.3	45	16 48	17 19	17 54	19 31	20 14	21 02	21 56		
2 00	184 05.9	S14 39.0	125 13.0	11.5	S21 36.1	1.2	54.3	N 40	16 58	17 26	17 58	19 43	20 28	21 16	22 09		
01	199 05.9	39.8	139 43.5	11.5	21 37.3	1.1	54.3	35	17 06	17 32	18 02	19 55	20 39	21 28	22 20		
02	214 05.9	40.6	154 14.0	11.4	21 38.4	1.0	54.3	30	17 13	17 38	18 06	20 14	21 00	21 49	22 40		
03	229 05.9	41.4	168 44.4	11.4	21 39.4	0.9	54.3	20	17 26	17 48	18 14	20 30	21 17	22 06	22 57		
04	244 05.9	42.2	183 14.8	11.4	21 40.3	0.7	54.4	N 10	17 37	17 58	18 23	20 46	21 34	22 23	23 13		
05	259 05.9	43.0	197 45.2	11.4	21 41.0	0.7	54.4	0	17 47	18 08	18 33	21 01	21 50	22 40	23 28		
06	274 05.9	S14 43.8	212 15.6	11.4	S21 41.7	0.6	54.4	S 10	17 58	18 19	18 45	21 18	22 08	22 57	23 45		
07	289 05.9	44.6	226 46.0	11.3	21 42.3	0.5	54.4	20	18 09	18 32	18 59	21 37	22 28	23 18	24 04		
08	304 05.9	45.4	241 16.3	11.4	21 42.8	0.3	54.4	30	18 22	18 47	19 18	21 48	22 40	23 30	24 16		
M 09	319 05.9	46.2	255 46.7	11.3	21 43.1	0.3	54.4	35	18 30	18 57	19 29	22 01	22 54	23 43	24 28		
O 10	334 06.0	46.9	270 17.0	11.3	21 43.4	0.1	54.4	40	18 39	19 08	19 43	22 16	23 10	23 59	24 44		
N 11	349 06.0	47.7	284 47.3	11.3	21 43.5	0.1	54.5	45	18 49	19 21	20 01	22 35	23 30	24 19	00 19		
D 12	4 06.0	S14 48.5	299 17.6	11.2	S21 43.6	0.0	54.5	S 50	19 02	19 38	20 24	22 44	23 39	24 29	00 29		
A 13	19 06.0	49.3	313 47.8	11.3	21 43.6	0.2	54.5	52	19 07	19 46	20 36	22 54	23 50	24 39	00 39		
Y 14	34 06.0	50.1	328 18.1	11.2	21 43.4	0.2	54.5	54	19 14	19 55	20 49	23 05	24 02	00 51	01 05		
15	49 06.0	50.9	342 48.3	11.2	21 43.2	0.4	54.5	56	19 21	20 05	21 05	23 18	24 16	01 06	01 21		
16	64 06.0	51.7	357 18.5	11.2	21 42.8	0.5	54.5	58	19 29	20 17	21 25	23 33	24 32	01 32	01 47		
17	79 06.0	52.5	11 48.7	11.2	21 42.3	0.5	54.6	S 60	19 39	20 31	21 51	23 54	24 52	01 59	02 14		
18	94 06.0	S14 53.3	26 18.9	11.2	S21 41.8	0.7	54.6										
19	109 06.0	54.0	40 49.1	11.1	21 41.1	0.8	54.6										

GMT	ARIES			VENUS -4.0			MARS +1.6			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.
TUESDAY	3 00	42 09.9	135 06.9	S26 46.6	242 25.2	N10 15.9	198 34.3	S 8 40.6	206 23.3	S 4 17.8	Acomar	315 36.2	S40 22.7					
	01	57 12.3	150 06.4	46.7	257 26.3	15.4	213 36.3	40.8	221 25.5	17.9	Achernar	335 44.1	S57 19.9					
	02	72 14.8	165 05.9	46.8	272 27.5	14.9	228 38.2	41.0	236 27.7	18.0	Acruz	173 37.0	S62 59.6					
	03	87 17.3	180 05.5	46.9	287 28.6	14.4	243 40.2	41.2	251 29.9	18.1	Adhara	255 31.3	S28 56.6					
	04	102 19.7	195 05.0	47.0	302 29.7	13.9	258 42.2	41.4	266 32.1	18.2	Aldebaran	291 16.8	N16 28.4					
	05	117 22.2	210 04.5	47.1	317 30.8	13.4	273 44.1	41.5	281 34.3	18.3								
	06	132 24.7	225 04.1	S26 47.2	332 31.9	N10 12.9	288 46.1	S 8 41.7	296 36.5	S 4 18.4	Alioth	166 42.3	N56 03.5					
	07	147 27.1	240 03.6	47.3	347 33.1	12.4	303 48.1	41.9	311 38.7	18.5	Alkaid	153 18.4	N49 24.3					
	08	162 29.6	255 03.1	47.4	2 34.2	11.9	318 50.0	42.1	326 40.9	18.6	Al Na'ir	28 13.8	S47 03.2					
	09	177 32.0	270 02.7	47.5	17 35.3	11.4	333 52.0	42.3	341 43.1	18.7	Alnilam	276 10.6	S 1 12.7					
	10	192 34.5	285 02.2	47.6	32 36.4	10.9	348 53.9	42.5	356 45.3	18.9	Alphard	218 19.9	S 8 34.6					
	11	207 37.0	300 01.7	47.7	47 37.5	10.4	3 55.9	42.7	11 47.5	19.0								
	12	222 39.4	315 01.3	S26 47.8	62 38.7	N10 09.9	18 57.9	S 8 42.9	26 49.7	S 4 19.1	Alphecca	126 31.8	N26 46.7					
	13	237 41.9	330 00.8	47.9	77 39.8	09.4	33 59.8	43.1	41 51.9	19.2	Alpheratz	358 08.3	N28 59.5					
	14	252 44.4	345 00.3	48.0	92 40.9	08.9	49 01.8	43.3	56 54.1	19.3	Altair	62 31.9	N 8 49.3					
	15	267 46.8	359 59.9	48.1	107 42.0	08.4	64 03.7	43.5	71 56.3	19.4	Ankaa	353 39.1	S42 24.5					
	16	282 49.3	14 59.4	48.2	122 43.1	07.9	79 05.7	43.7	86 58.5	19.5	Antares	112 56.3	S26 23.4					
	17	297 51.8	29 59.0	48.3	137 44.3	07.4	94 07.7	43.9	102 00.7	19.6								
	18	312 54.2	44 58.5	S26 48.4	152 45.4	N10 06.9	109 09.6	S 8 44.1	117 02.9	S 4 19.7	Arcturus	146 18.1	N19 16.8					
	19	327 56.7	59 58.0	48.5	167 46.5	06.4	124 11.6	44.3	132 05.1	19.8	Atria	108 20.3	S68 39.8					
	20	342 59.2	74 57.6	48.6	182 47.6	05.9	139 13.6	44.4	147 07.3	19.9	Avior	234 27.8	S59 26.7					
	21	358 01.6	89 57.1	48.7	197 48.8	05.4	154 15.5	44.6	162 09.4	20.0	Bellatrix	278 57.7	N 6 20.0					
	22	13 04.1	104 56.7	48.8	212 49.9	04.9	169 17.5	44.8	177 11.6	20.1	Betelgeuse	271 27.2	N 7 24.3					
23	28 06.5	119 56.2	48.8	227 51.0	04.4	184 19.4	45.0	192 13.8	20.2									
WEDNESDAY	4 00	43 09.0	134 55.7	S26 48.9	242 52.1	N10 03.9	199 21.4	S 8 45.2	207 16.0	S 4 20.3	Canopus	264 06.5	S52 40.9					
	01	58 11.5	149 55.3	49.0	257 53.3	03.4	214 23.4	45.4	222 18.2	20.4	Capella	281 09.8	N45 58.7					
	02	73 13.9	164 54.8	49.1	272 54.4	02.8	229 25.3	45.6	237 20.4	20.6	Deneb	49 48.0	N45 13.2					
	03	88 16.4	179 54.4	49.2	287 55.5	02.3	244 27.3	45.8	252 22.6	20.7	Denebola	182 58.5	N14 40.6					
	04	103 18.9	194 53.9	49.3	302 56.6	01.8	259 29.2	46.0	267 24.8	20.8	Diphda	349 19.8	S18 05.3					
	05	118 21.3	209 53.5	49.3	317 57.8	01.3	274 31.2	46.2	282 27.0	20.9								
	06	133 23.8	224 53.0	S26 49.4	332 58.9	N10 00.8	289 33.2	S 8 46.4	297 29.2	S 4 21.0	Dubhe	194 21.5	N61 50.8					
	07	148 26.3	239 52.6	49.5	348 00.0	10 00.3	304 35.1	46.6	312 31.4	21.1	Elnath	278 42.9	N28 35.5					
	08	163 28.7	254 52.1	49.6	3 01.1	9 59.8	319 37.1	46.8	327 33.6	21.2	Eltanin	90 57.8	N51 29.7					
	09	178 31.2	269 51.7	49.7	18 02.3	9 59.3	334 39.1	46.9	342 35.8	21.3	Enif	34 10.8	N 9 47.6					
	10	193 33.6	284 51.2	49.7	33 03.4	58.8	349 41.0	47.1	357 38.0	21.4	Fomalhaut	15 50.4	S29 43.3					
	11	208 36.1	299 50.7	49.8	48 04.5	58.3	4 43.0	47.3	12 40.2	21.5								
	12	223 38.6	314 50.3	S26 49.9	63 05.6	N 9 57.8	19 44.9	S 8 47.5	27 42.4	S 4 21.6	Gacrux	172 28.4	S57 00.4					
	13	238 41.0	329 49.8	49.9	78 06.8	57.3	34 46.9	47.7	42 44.6	21.7	Gienah	176 17.5	S17 26.2					
	14	253 43.5	344 49.4	50.0	93 07.9	56.8	49 48.9	47.9	57 46.8	21.8	Hadar	149 22.9	S60 16.9					
	15	268 46.0	359 48.9	50.1	108 09.0	56.3	64 50.8	48.1	72 49.0	21.9	Hamal	328 27.7	N23 22.6					
	16	283 48.4	14 48.5	50.2	123 10.1	55.8	79 52.8	48.3	87 51.2	22.0	Kaus Aust.	84 16.1	S34 23.7					
	17	298 50.9	29 48.0	50.2	138 11.3	55.3	94 54.8	48.5	102 53.4	22.1								
	18	313 53.4	44 47.6	S26 50.3	153 12.4	N 9 54.8	109 56.7	S 8 48.7	117 55.6	S 4 22.2	Kochab	137 20.2	N74 13.9					
	19	328 55.8	59 47.2	50.4	168 13.5	54.3	124 58.7	48.9	132 57.8	22.4	Markab	14 02.2	N15 06.5					
	20	343 58.3	74 46.7	50.4	183 14.7	53.8	140 00.6	49.1	148 00.0	22.5	Menkar	314 40.0	N 4 01.1					
	21	359 00.8	89 46.3	50.5	198 15.8	53.3	155 02.6	49.3	163 02.2	22.6	Menkent	148 36.5	S36 16.6					
	22	14 03.2	104 45.8	50.5	213 16.9	52.8	170 04.6	49.4	178 04.4	22.7	Miaplacidus	221 44.9	S69 38.2					
23	29 05.7	119 45.4	50.6	228 18.0	52.3	185 06.5	49.6	193 06.6	22.8									
THURSDAY	5 00	44 08.1	134 44.9	S26 50.7	243 19.2	N 9 51.8	200 08.5	S 8 49.8	208 08.7	S 4 22.9	Mirfak	309 14.5	N49 47.8					
	01	59 10.6	149 44.5	50.7	258 20.3	51.3	215 10.5	50.0	223 10.9	23.0	Nunki	76 28.4	S26 19.2					
	02	74 13.1	164 44.0	50.8	273 21.4	50.8	230 12.4	50.2	238 13.1	23.1	Peacock	53 57.3	S56 47.9					
	03	89 15.5	179 43.6	50.8	288 22.6	50.3	245 14.4	50.4	253 15.3	23.2	Pollux	243 57.1	N28 04.2					
	04	104 18.0	194 43.2	50.9	303 23.7	49.8	260 16.3	50.6	268 17.5	23.3	Procyon	245 24.9	N 5 16.4					
	05	119 20.5	209 42.7	50.9	318 24.8	49.2	275 18.3	50.8	283 19.7	23.4								
	06	134 22.9	224 42.3	S26 51.0	333 26.0	N 9 48.7	290 20.3	S 8 51.0	298 21.9	S 4 23.5	Rasalhague	96 29.1	N12 34.6					
	07	149 25.4	239 41.8	51.0	348 27.1	48.2	305 22.2	51.2	313 24.1	23.6	Regulus	208 09.3	N12 03.5					
	08	164 27.9	254 41.4	51.1	3 28.2	47.7	320 24.2	51.4	328 26.3	23.7	Rigel	281 35.0	S 8 13.3					
	09	179 30.3	269 40.9	51.1	18 29.3	47.2	335 26.2	51.6	343 28.5	23.8	Rigel Kent.	140 25.5	S60 45.4					
	10	194 32.8	284 40.5	51.2	33 30.5	46.7	350 28.1	51.7	358 30.7	23.9	Sabik	102 40.6	S15 42.1					
	11	209 35.3	299 40.1	51.2	48 31.6	46.2	5 30.1	51.9	13 32.9	24.0								
	12	224 37.7	314 39.6	S26 51.3	63 32.7	N 9 45.7	20 32.0	S 8 52.1	28 35.1	S 4 24.1	Schedar	350 07.7	N56 26.4					
	13	239 40.2	329 39.2	51.3	78 33.9	45.2	35 34.0	52.3	43 37.3	24.2	Shaula	96 55.1	S37 05.5					
	14	254 42.6	344 38.8	51.4	93 35.0	44.7	50 36.0	52.5	58 39.5	24.4	Sirius	258 54.9	S16 41.3					
	15	269 45.1	359 38.3	51.4	108 36.1	44.2	65 37.9	52.7	73 41.7	24.5	Spica	158 57.1	S11 03.8					
	16	284 47.6	14 37.9	51.5	123 37.3	43.7	80 39.9	52.9	88 43.9	24.6	Suhail	223 10.3	S43 21.2					
	17	299 50.0	29 37.5	51.5	138 38.4	43.2	95 41.9	53.1	103 46.1	24.7								
	18	314 52.5	44 37.0	S26 51.5	153 39.5	N 9 42.7	110 43.8	S 8 53.3	118 48.3	S 4 24.8	Vega	80 55.6	N38 46.3					
	19	329 55.0	59 36.6	51.6	168 40.7	42.2	125 45.8	53.5	133 50.5	24.9	Zuben'ubi	137 32.5	S15 57.8					
	20	344 57.4	74 36.1	51.6	183 41.8	41.7	140 47.8	53.7	148 52.7	25.0								
	21	359 59.9	89 35.7	51.7	198 42.9	41.2	155 49.7	53.9	163 54.9	25.1								
	22	15 02.4	104 35.3	51.7	213 44.1	40.7	170 51.7	54.0	178 57.1	25.2								
23	30 04.8	119 34.9	51.7	228 45.2	40.2	185 53.6	54.2	193 59.3	25.3									
Mer Poss.		v -0.5 d 0.1			v 1.1 d 0.5			v 2.0 d 0.2			v 2.2 d 0.1			S.H.A. Mer. Poss				
		h m			h m			h m			h m			h m				
		21 03.9			15 01			15 01			15 01			15 01				
		7 48			10 41			10 41			10 41			10 41				
		10 09			10 09			10 09			10 09			10 09				

G.M.T.	SUN				MOON				Lat.	Twilight			Moonrise														
	G.H.A.		Dec.		G.H.A.		v			Dec.		d		H.P.		Naut.		Civil		Sunrise		3	4	5	6		
	h	m	h	m	h	m	h	m		h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m		
TUESDAY	3 00	184	06.0	S14	58.0	113	19.8	11.1	S21	36.2	1.3	54.7	N 72	06	18	07	42	09	16	15	52	15	51	15	49	15	46
	01	199	06.0		58.8	127	49.9	11.1	21	34.9	1.4	54.7	68	06	08	07	16	08	23	15	52	15	51	15	49	15	46
	02	214	06.0	14	59.5	142	20.0	11.0	21	33.5	1.5	54.7	66	06	03	07	06	08	06	14	59	15	17	15	26	15	31
	03	229	06.0	15	00.3	156	50.0	11.1	21	32.0	1.6	54.7	64	06	00	06	57	07	51	14	27	14	52	15	08	15	19
	04	244	06.0		01.1	171	20.1	11.1	21	30.4	1.7	54.8	62	05	57	06	50	07	40	14	03	14	32	14	53	15	08
	05	259	06.0		01.9	185	50.2	11.0	21	28.7	1.9	54.8	60	05	54	06	44	07	30	13	44	14	16	14	40	14	59
	06	274	06.0	S15	02.7	200	20.2	11.1	S21	26.8	1.9	54.8	N 58	05	51	06	38	07	21	13	28	14	02	14	29	14	51
	07	289	06.0		03.4	214	50.3	11.0	21	24.9	2.0	54.8	56	05	49	06	33	07	13	13	14	13	51	14	20	14	44
	08	304	06.0		04.2	229	20.3	11.0	21	22.9	2.2	54.8	54	05	46	06	28	07	06	13	03	13	40	14	11	14	37
	09	319	06.0		05.0	243	50.3	11.1	21	20.7	2.2	54.9	52	05	44	06	24	07	00	12	52	13	31	14	04	14	32
	10	334	06.0		05.8	258	20.4	11.0	21	18.5	2.4	54.9	50	05	42	06	20	06	54	12	43	13	23	13	57	14	27
	11	349	06.0		06.6	272	50.4	11.0	21	16.1	2.4	54.9	45	05	37	06	11	06	42	12	23	13	05	13	42	14	15
	12	4	06.0	S15	07.3	287	20.4	11.0	S21	13.7	2.6	54.9	N 40	05	32	06	04	06	32	12	08	12	51	13	30	14	06
	13	19	06.0		08.1	301	50.4	11.0	21	11.1	2.6	55.0	35	05	27	05	57	06	24	11	54	12	39	13	20	13	58
	14	34	06.0		08.9	316	20.4	11.0	21	08.5	2.8	55.0	30	05	23	05	51	06	16	11	42	12	28	13	11	13	51
	15	49	06.0		09.7	330	50.4	10.9	21	05.7	2.9	55.0	20	05	14	05	40	06	03	11	22	12	09	12	55	13	39
	16	64	06.0		10.5	345	20.3	11.0	21	02.8	3.0	55.0	N 10	05	04	05	29	05	51	11	05	11	53	12	41	13	28
	17	79	06.0		11.2	359	50.3	11.0	20	59.8	3.0	55.0	0	04	54	05	19	05	40	10	49	11	38	12	28	13	18
	18	94	06.0	S15	12.0	14	20.3	11.0	S20	56.8	3.2	55.1	S 10	04	42	05	07	05	29	10	32	11	23	12	15	13	08
	19	109	06.0		12.8	28	50.3	10.9	20	53.6	3.3	55.1	20	04	27	04	54	05	17	10	15	11	07	12	01	12	57
	20	124	06.0		13.6	43	20.2	11.0	20	50.3	3.4	55.1	30	04	07	04	38	05	03	09	55	10	49	11	45	12	44
	21	139	06.0		14.3	57	50.2	10.9	20	46.9	3.5	55.1	35	03	55	04	28	04	55	09	43	10	38	11	36	12	37
	22	154	06.0		15.1	72	20.1	11.0	20	43.4	3.6	55.2	40	03	41	04	16	04	46	09	30	10	26	11	26	12	29
23	169	06.0		15.9	86	50.1	11.0	20	39.8	3.8	55.2	45	03	22	04	02	04	35	09	14	10	11	11	13	12	19	
WEDNESDAY	4 00	184	06.0	S15	16.7	101	20.1	10.9	S20	36.0	3.8	55.2	S 50	02	58	03	45	04	22	08	54	09	53	10	58	12	08
	01	199	06.0		17.4	115	50.0	11.0	20	32.2	3.9	55.2	52	02	46	03	36	04	15	08	45	09	45	10	51	12	02
	02	214	06.0		18.2	130	20.0	10.9	20	28.3	4.0	55.3	54	02	31	03	27	04	09	08	34	09	35	10	43	11	56
	03	229	06.0		19.0	144	49.9	11.0	20	24.3	4.2	55.3	56	02	14	03	16	04	01	08	23	09	24	10	34	11	50
	04	244	06.0		19.8	159	19.9	10.9	20	20.1	4.2	55.3	58	01	53	03	04	03	52	08	09	09	12	10	24	11	42
	05	259	05.9		20.5	173	49.8	11.0	20	15.9	4.3	55.4	S 60	01	24	02	49	03	42	07	53	08	58	10	12	11	33
	06	274	05.9	S15	21.3	188	19.8	10.9	S20	11.6	4.5	55.4															
	07	289	05.9		22.1	202	49.7	10.9	20	07.1	4.5	55.4															
	08	304	05.9		22.8	217	19.6	11.0	20	02.6	4.7	55.4															
	09	319	05.9		23.6	231	49.6	10.9	19	57.9	4.7	55.5															
	10	334	05.9		24.4	246	19.5	11.0	19	53.2	4.9	55.5															
	11	349	05.9		25.2	260	49.5	10.9	19	48.3	4.9	55.5															
	12	4	05.9	S15	25.9	275	19.4	11.0	S19	43.4	5.1	55.5	N 70	14	10	15	43	17	13	18	15	19	00	20	18	22	50
	13	19	05.9		26.7	289	49.4	10.9	19	38.3	5.2	55.6	68	15	03	16	10	17	18	18	15	19	58	21	44	23	30
	14	34	05.9		27.5	304	19.3	11.0	19	33.1	5.2	55.6	66	15	20	16	20	17	22	19	07	20	32	22	06	23	44
	15	49	05.9		28.2	318	49.3	10.9	19	27.9	5.4	55.6	64	15	35	16	29	17	26	19	39	20	57	22	24	23	55
	16	64	05.8		29.0	333	19.2	11.0	19	22.5	5.5	55.7	62	15	47	16	36	17	29	20	03	21	16	22	38	24	05
	17	79	05.8		29.8	347	49.2	11.0	19	17.0	5.5	55.7	60	15	57	16	43	17	32	20	21	21	32	22	50	24	13
	18	94	05.8	S15	30.5	2	19.2	10.9	S19	11.5	5.7	55.7	N 58	16	06	16	48	17	35	20	37	21	45	23	00	24	20
	19	109	05.8		31.3	16	49.1	11.0	19	05.8	5.8	55.8	56	16	13	16	53	17	38	20	50	21	56	23	09	24	27
	20	124	05.8		32.1	31	19.1	10.9	19	00.0	5.9	55.8	54	16	20	16	58	17	40	21	02	22	06	23	17	24	32
	21	139	05.8		32.8	45	49.0	11.0	18	54.1	5.9	55.8	52	16	26	17	02	17	43	21	12	22	15	23	24	24	37
	22	154	05.8		33.6	60	19.0	11.0	18	48.2	6.1	55.8	50	16	32	17	06	17	45	21	21	22	23	23	31	24	42
23	169	05.8		34.4	74	49.0	10.9	18	42.1	6.2	55.9	45	16	44	17	15	17	50	21	40	22	40	23	44	24	52	
THURSDAY	5 00	184	05.7	S15	35.1	89	18.9	11.0	S18	35.9	6.3	55.9	N 40	16	54	17	23	17	55	21	56	22	54	23	56	25	00
	01	199	05.7		35.9	103	48.9	11.0	18	29.6	6.3	55.9	35	17	03	17	29	17	59	22	09	23	06	24	05	00	05
	02	214	05.7		36.6	118	18.9	11.0	18	23.3	6.5	56.0	30	17	11	17	36	18	04	22	20	23	16	24	13	00	13
	03	229	05.7		37.4	132	48.9	11.0	18	1																	

G.M.T.	ARIES		VENUS -4.0		MARS +1.5		JUPITER -1.2		SATURN +1.0		STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.	
6 00	45 07.3	134 34.4	S26 51.8	243 46.3	N 9 39.7	200 55.6	S 8 54.4	209 01.5	S 4 25.4	Acamar	315 36.2	S40 22.7	
01	60 09.7	149 34.0	51.8	258 47.5	39.2	215 57.6	54.6	224 03.7	25.5	Achernar	335 44.1	S57 19.9	
02	75 12.2	164 33.6	51.8	273 48.6	38.7	230 59.5	54.8	239 05.9	25.6	Acrux	173 36.9	S62 59.6	
03	90 14.7	179 33.1	51.8	288 49.7	38.2	246 01.5	55.0	254 08.1	25.7	Adhara	255 31.3	S28 56.6	
04	105 17.1	194 32.7	51.9	303 50.9	37.7	261 03.5	55.2	269 10.3	25.8	Aldebaran	291 16.8	N16 28.4	
05	120 19.6	209 32.3	51.9	318 52.0	37.2	276 05.4	55.4	284 12.5	25.9				
06	135 22.1	224 31.8	S26 51.9	333 53.2	N 9 36.6	291 07.4	S 8 55.6	299 14.7	S 4 26.0	Alioth	166 42.3	N56 03.5	
07	150 24.5	239 31.4	52.0	348 54.3	36.1	306 09.4	55.8	314 16.9	26.1	Alkaid	153 18.4	N49 24.3	
08	165 27.0	254 31.0	52.0	3 55.4	35.6	321 11.3	56.0	329 19.1	26.2	Al Na'ir	28 13.8	S47 03.2	
09	180 29.5	269 30.6	52.0	18 56.6	35.1	336 13.3	56.1	344 21.3	26.3	Alnilam	276 10.6	S 1 12.7	
10	195 31.9	284 30.1	52.0	33 57.7	34.6	351 15.2	56.3	359 23.5	26.4	Alphard	218 19.8	S 8 34.6	
11	210 34.4	299 29.7	52.0	48 58.8	34.1	6 17.2	56.5	14 25.7	26.5				
D 12	225 36.9	314 29.3	S26 52.1	64 00.0	N 9 33.6	21 19.2	S 8 56.7	29 27.9	S 4 26.7	Alphecca	126 31.8	N26 46.7	
A 13	240 39.3	329 28.9	52.1	79 01.1	33.1	36 21.1	56.9	44 30.1	26.8	Alpheratz	358 08.3	N28 59.5	
Y 14	255 41.8	344 28.5	52.1	94 02.2	32.6	51 23.1	57.1	59 32.3	26.9	Altair	62 31.9	N 8 49.3	
15	270 44.2	359 28.0	52.1	109 03.4	32.1	66 25.1	57.3	74 34.5	27.0	Ankaa	353 39.1	S42 24.5	
16	285 46.7	14 27.6	52.1	124 04.5	31.6	81 27.0	57.5	89 36.7	27.1	Antares	112 56.3	S26 23.4	
17	300 49.2	29 27.2	52.1	139 05.7	31.1	96 29.0	57.7	104 38.9	27.2				
18	315 51.6	44 26.8	S26 52.2	154 06.8	N 9 30.6	111 31.0	S 8 57.9	119 41.1	S 4 27.3	Arcturus	146 18.1	N19 16.8	
19	330 54.1	59 26.4	52.2	169 07.9	30.1	126 32.9	58.1	134 43.3	27.4	Atria	108 20.3	S68 59.8	
20	345 56.6	74 25.9	52.2	184 09.1	29.6	141 34.9	58.2	149 45.5	27.5	Avior	234 27.8	S59 26.7	
21	0 59.0	89 25.5	52.2	199 10.2	29.1	156 36.8	58.4	164 47.7	27.6	Bellatrix	278 57.7	N 6 20.0	
22	16 01.5	104 25.1	52.2	214 11.4	28.6	171 38.8	58.6	179 49.9	27.7	Betelgeuse	271 27.2	N 7 24.3	
23	31 04.0	119 24.7	52.2	229 12.5	28.1	186 40.8	58.8	194 52.1	27.8				
7 00	46 06.4	134 24.3	S26 52.2	244 13.6	N 9 27.6	201 42.7	S 8 59.0	209 54.3	S 4 27.9	Canopus	264 06.5	S52 40.9	
01	61 08.9	149 23.8	52.2	259 14.8	27.1	216 44.7	59.2	224 56.5	28.0	Capella	281 09.8	N45 58.7	
02	76 11.4	164 23.4	52.2	274 15.9	26.6	231 46.7	59.4	239 58.7	28.1	Deneb	49 48.0	N45 13.2	
03	91 13.8	179 23.0	52.2	289 17.1	26.1	246 48.6	59.6	255 00.9	28.2	Denebola	182 58.5	N14 40.5	
04	106 16.3	194 22.6	52.2	304 18.2	25.6	261 50.6	59.8	270 03.1	28.3	Diphda	349 19.8	S18 05.3	
05	121 18.7	209 22.2	52.2	319 19.3	25.1	276 52.6	60.0	285 05.3	28.4				
06	136 21.2	224 21.8	S26 52.2	334 20.5	N 9 24.6	291 54.5	S 9 00.1	300 07.5	S 4 28.5	Dubhe	194 21.5	N61 50.8	
07	151 23.7	239 21.4	52.2	349 21.6	24.1	306 56.5	60.3	315 09.7	28.6	Elnath	278 42.9	N28 35.5	
S 08	166 26.1	254 21.0	52.2	4 22.8	23.5	321 58.5	60.5	330 11.9	28.7	Eltanin	90 57.8	N51 29.7	
A 09	181 28.6	269 20.5	52.2	19 23.9	23.0	337 00.4	60.7	345 14.1	28.8	Enif	34 10.8	N 9 47.6	
T 10	196 31.1	284 20.1	52.2	34 25.0	22.5	352 02.4	60.9	0 16.3	28.9	Fomalhaut	15 50.4	S29 43.3	
U 11	211 33.5	299 19.7	52.2	49 26.2	22.0	7 04.4	61.1	15 18.5	29.0				
R 12	226 36.0	314 19.3	S26 52.2	64 27.3	N 9 21.5	22 06.3	S 9 01.3	30 20.7	S 4 29.1	Gacrux	172 28.4	S57 00.4	
D 13	241 38.5	329 18.9	52.2	79 28.5	21.0	37 08.3	61.5	45 22.9	29.2	Gienah	176 17.4	S17 26.2	
A 14	256 40.9	344 18.5	52.2	94 29.6	20.5	52 10.2	61.7	60 25.1	29.4	Hadar	149 22.9	S60 16.9	
Y 15	271 43.4	359 18.1	52.2	109 30.8	20.0	67 12.2	61.9	75 27.3	29.5	Hamal	328 27.7	N23 22.6	
16	286 45.9	14 17.7	52.2	124 31.9	19.5	82 14.2	62.0	90 29.5	29.6	Kaus Aust.	84 16.1	S34 23.7	
17	301 48.3	29 17.3	52.2	139 33.0	19.0	97 16.1	62.2	105 31.7	29.7				
18	316 50.8	44 16.9	S26 52.1	154 34.2	N 9 18.5	112 18.1	S 9 02.4	120 33.9	S 4 29.8	Kochab	137 20.2	N74 13.9	
19	331 53.2	59 16.5	52.1	169 35.3	18.0	127 20.1	62.6	135 36.1	29.9	Markab	14 02.3	N15 06.5	
20	346 55.7	74 16.1	52.1	184 36.5	17.5	142 22.0	62.8	150 38.3	30.0	Menkar	314 40.0	N 4 01.1	
21	1 58.2	89 15.7	52.1	199 37.6	17.0	157 24.0	63.0	165 40.5	30.1	Menkent	148 36.5	S36 16.6	
22	17 00.6	104 15.3	52.1	214 38.8	16.5	172 26.0	63.2	180 42.7	30.2	Miaplacidus	221 44.8	S69 38.2	
23	32 03.1	119 14.9	52.1	229 39.9	16.0	187 27.9	63.4	195 44.9	30.3				
8 00	47 05.6	134 14.5	S26 52.0	244 41.0	N 9 15.5	202 29.9	S 9 03.6	210 47.1	S 4 30.4	Mirfak	309 14.5	N49 47.8	
01	62 08.0	149 14.1	52.0	259 42.2	15.0	217 31.9	63.7	225 49.3	30.5	Nunki	76 28.4	S26 19.2	
02	77 10.5	164 13.7	52.0	274 43.3	14.5	232 33.8	63.9	240 51.5	30.6	Peacock	53 57.3	S56 47.9	
03	92 13.0	179 13.3	52.0	289 44.5	14.0	247 35.8	64.1	255 53.7	30.7	Pollux	243 57.1	N28 04.2	
04	107 15.4	194 12.9	51.9	304 45.6	13.5	262 37.8	64.3	270 55.9	30.8	Procyon	245 24.9	N 5 16.4	
05	122 17.9	209 12.5	51.9	319 46.8	13.0	277 39.7	64.5	285 58.1	30.9				
06	137 20.3	224 12.1	S26 51.9	334 47.9	N 9 12.5	292 41.7	S 9 04.7	301 00.3	S 4 31.0	Rasalhague	96 29.2	N12 34.6	
07	152 22.8	239 11.7	51.9	349 49.1	12.0	307 43.7	64.9	316 02.5	31.1	Regulus	208 09.3	N12 03.5	
08	167 25.3	254 11.3	51.8	4 50.2	11.5	322 45.6	65.1	331 04.7	31.2	Rigel	281 35.0	S 8 13.3	
S 09	182 27.7	269 10.9	51.8	19 51.4	11.0	337 47.6	65.3	346 06.9	31.3	Rigel Kent.	140 25.5	S60 45.4	
U 10	197 30.2	284 10.5	51.8	34 52.5	10.4	352 49.6	65.5	1 09.1	31.4	Sabik	102 40.6	S15 42.1	
N 11	212 32.7	299 10.1	51.7	49 53.7	9.9	7 51.5	65.6	16 11.3	31.5				
D 12	227 35.1	314 09.7	S26 51.7	64 54.8	N 9 09.4	22 53.5	S 9 05.8	31 13.5	S 4 31.6	Schedar	350 07.7	N56 26.4	
A 13	242 37.6	329 09.3	51.7	79 55.9	8.9	37 55.5	66.0	46 15.7	31.7	Shaula	96 55.1	S37 05.5	
Y 14	257 40.1	344 09.0	51.6	94 57.1	8.4	52 57.4	66.2	61 17.9	31.8	Sirius	258 54.8	S16 41.3	
15	272 42.5	359 08.6	51.6	109 58.2	7.9	67 59.4	66.4	76 20.1	31.9	Spica	158 57.0	S11 03.8	
16	287 45.0	14 08.2	51.6	124 59.4	7.4	83 01.3	66.6	91 22.3	32.0	Suhail	223 10.2	S43 21.2	
17	302 47.5	29 07.8	51.5	140 00.5	6.9	98 03.3	66.8	106 24.5	32.1				
18	317 49.9	44 07.4	S26 51.5	155 01.7	N 9 06.4	113 05.3	S 9 07.0	121 26.7	S 4 32.2	Vega	80 55.6	N38 46.2	
19	332 52.4	59 07.0	51.5	170 02.8	5.9	128 07.2	67.2	136 28.9	32.3	Zuben'ubi	137 32.5	S15 57.8	
20	347 54.8	74 06.6	51.4	185 04.0	5.4	143 09.2	67.3	151 31.1	32.4				
21	2 57.3	89 06.2	51.4	200 05.1	4.9	158 11.2	67.5	166 33.3	32.5				
22	17 59.8	104 05.9	51.3	215 06.3	4.4	173 13.1	67.7	181 35.5	32.6	Venus	88 17.8	15 03	
23	33 02.2	119 05.5	51.3	230 07.4	3.9	188 15.1	67.9	196 37.7	32.7	Mars	198 07.2	7 43	
										Jupiter	155 36.3	10 32	
										Saturn	163 47.8	9 59	
Mer. Pass.	20 52.1	v -0.4	d 0.0	v 1.1	d 0.5	v 2.0	d 0.2	v 2.2	d 0.1				

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise				
	G.H.A.	Dec.	G.H.A.	v	Dec.	d		H.P.	Naut.		Civil	6	7	8	9
									h m		h m	h m	h m	h m	h m
6 00	184 05.3	S15 53.3	77 19.2	11.0	S15 38.5	8.6	56.7	N 72	06 29	07 56	09 37	16 29	16 07	15 50	15 34
01	199 05.3	54.1	91 49.2	11.1	15 29.9	8.7	56.8	68	06 17	07 26	08 36	15 46	15 43	15 40	15 37
02	214 05.2	54.8	106 19.3	11.0	15 21.2	8.7	56.8	66	06 12	07 15	08 17	15 31	15 34	15 36	15 38
03	229 05.2	55.6	120 49.3	11.1	15 12.5	8.9	56.8	64	06 08	07 06	08 01	15 19	15 26	15 33	15 39
04	244 05.2	56.3	135 19.4	11.0	15 03.6	8.9	56.9	62	06 04	06 58	07 48	15 08	15 20	15 30	15 40
05	259 05.2	57.1	149 49.4	11.1	14 54.7	9.0	56.9	60	06 00	06 51	07 37	14 59	15 14	15 27	15 40
06	274 05.2	S15 57.8	164 19.5	11.0	S14 45.7	9.1	57.0	N 58	05 57	06 44	07 28	14 51	15 09	15 25	15 41
07	289 05.1	58.6	178 49.5	11.1	14 36.6	9.2	57.0	56	05 54	06 39	07 19	14 44	15 04	15 23	15 41
08	304 05.1	15 59.3	193 19.6	11.0	14 27.4	9.3	57.0	54	05 51	06 34	07 12	14 37	15 00	15 21	15 42
F 09	319 05.1	16 00.1	207 49.6	11.1	14 18.1	9.3	57.1	52	05 49	06 29	07 05	14 32	14 57	15 20	15 42
R 10	334 05.1	00.8	222 19.7	11.0	14 08.8	9.5	57.1	50	05 46	06 25	06 59	14 27	14 53	15 18	15 43
I 11	349 05.0	01.6	236 49.7	11.1	13 59.3	9.5	57.1	45	05 40	06 15	06 46	14 15	14 46	15 15	15 44
D 12	4 05.0	S16 02.3	251 19.8	11.0	S13 49.8	9.6	57.2	N 40	05 35	06 07	06 36	14 06	14 40	15 12	15 45
A 13	19 05.0	03.0	265 49.8	11.1	13 40.2	9.7	57.2	35	05 30	06 00	06 27	13 58	14 34	15 10	15 45
Y 14	34 04.9	03.8	280 19.9	11.0	13 30.5	9.8	57.3	30	05 25	05 53	06 18	13 51	14 30	15 08	15 46
15	49 04.9	04.5	294 49.9	11.1	13 20.7	9.9	57.3	20	05 15	05 41	06 04	13 39	14 21	15 04	15 47
16	64 04.9	05.3	309 20.0	11.0	13 10.8	10.0	57.3	N 10	05 05	05 30	05 52	13 28	14 14	15 01	15 48
17	79 04.9	06.0	323 50.0	11.1	13 00.8	10.0	57.4	0	04 54	05 19	05 40	13 18	14 08	14 58	15 49
18	94 04.8	S16 06.8	338 20.1	11.0	S12 50.8	10.1	57.4	S 10	04 41	05 06	05 28	13 08	14 01	14 55	15 50
19	109 04.8	07.5	352 50.1	11.0	12 40.7	10.2	57.5	20	04 25	04 52	05 16	12 57	13 53	14 52	15 51
20	124 04.8	08.3	7 20.1	11.1	12 30.5	10.3	57.5	30	04 05	04 35	05 01	12 44	13 45	14 48	15 53
21	139 04.7	09.0	21 50.2	11.0	12 20.2	10.3	57.5	35	03 52	04 25	04 52	12 37	13 40	14 46	15 53
22	154 04.7	09.7	36 20.2	11.0	12 09.9	10.4	57.6	40	03 36	04 13	04 42	12 29	13 35	14 43	15 54
23	169 04.7	10.5	50 50.2	11.0	11 59.5	10.6	57.6	45	03 17	03 58	04 31	12 19	13 29	14 41	15 55
7 00	184 04.6	S16 11.2	65 20.2	11.0	S11 48.9	10.5	57.7	S 50	02 51	03 39	04 17	12 08	13 21	14 37	15 57
01	199 04.6	12.0	79 50.2	11.0	11 38.4	10.7	57.7	52	02 38	03 30	04 10	12 02	13 17	14 36	15 57
02	214 04.6	12.7	94 20.2	11.0	11 27.7	10.7	57.7	54	02 23	03 20	04 03	11 56	13 14	14 34	15 58
03	229 04.6	13.5	108 50.2	11.0	11 17.0	10.9	57.8	56	02 04	03 09	03 54	11 50	13 09	14 32	15 59
04	244 04.5	14.2	123 20.2	11.0	11 06.1	10.8	57.8	58	01 40	02 55	03 45	11 42	13 04	14 30	15 59
05	259 04.5	14.9	137 50.2	11.0	10 55.3	11.0	57.9	S 60	01 06	02 39	03 34	11 33	12 59	14 28	16 00
06	274 04.5	S16 15.7	152 20.2	10.9	S10 44.3	11.0	57.9								
07	289 04.4	16.4	166 50.1	11.0	10 33.3	11.1	57.9								
S 08	304 04.4	17.1	181 20.1	10.9	10 22.2	11.2	58.0	Lat.	Sunset	Twilight		Moonset			
A 09	319 04.3	17.9	195 50.0	11.0	10 11.0	11.3	58.0			Civil	Naut.	6	7	8	9
T 10	334 04.3	18.6	210 20.0	10.9	9 59.7	11.3	58.1								
U 11	349 04.3	19.4	224 49.9	10.9	9 48.4	11.4	58.1	N 72	13 49	15 30	16 57	22 50	24 57	00 57	03 02
R 12	4 04.2	S16 20.1	239 19.8	10.9	S 9 37.0	11.4	58.1	N 70	14 25	15 47	17 03	23 13	25 08	01 08	03 04
D 13	19 04.2	20.8	253 49.7	10.9	9 25.6	11.5	58.2	68	14 50	16 00	17 09	23 30	25 17	01 17	03 06
A 14	34 04.2	21.6	268 19.6	10.9	9 14.1	11.6	58.2	66	15 10	16 11	17 14	23 44	25 24	01 24	03 07
Y 15	49 04.1	22.3	282 49.5	10.9	9 02.5	11.7	58.3	64	15 25	16 21	17 19	23 55	25 31	01 31	03 09
16	64 04.1	23.0	297 19.4	10.8	8 50.8	11.7	58.3	62	15 38	16 29	17 23	24 05	00 05	01 36	03 10
17	79 04.1	23.8	311 49.2	10.9	8 39.1	11.7	58.4	60	15 49	16 36	17 26	24 13	00 13	01 40	03 11
18	94 04.0	S16 24.5	326 19.1	10.8	S 8 27.4	11.9	58.4	N 58	15 59	16 42	17 29	24 20	00 20	01 45	03 12
19	109 04.0	25.2	340 48.9	10.8	8 15.5	11.9	58.4	56	16 07	16 48	17 33	24 27	00 27	01 48	03 13
20	124 03.9	26.0	355 18.7	10.8	8 03.6	12.0	58.5	54	16 15	16 53	17 35	24 32	00 32	01 51	03 13
21	139 03.9	26.7	9 48.5	10.8	7 51.6	12.0	58.5	52	16 21	16 58	17 38	24 37	00 37	01 54	03 14
22	154 03.9	27.4	24 18.3	10.8	7 39.6	12.1	58.6	50	16 27	17 02	17 41	24 42	00 42	01 57	03 15
23	169 03.8	28.2	38 48.1	10.7	7 27.5	12.1	58.6	45	16 40	17 11	17 47	24 52	00 52	02 03	03 16
8 00	184 03.8	S16 28.9	53 17.8	10.7	S 7 15.4	12.2	58.6	N 40	16 51	17 20	17 52	25 00	01 00	02 07	03 17
01	199 03.7	29.6	67 47.5	10.7	7 03.2	12.2	58.7	35	17 00	17 27	17 57	00 05	01 07	02 11	03 18
02	214 03.7	30.3	82 17.2	10.7	6 51.0	12.4	58.7	30	17 09	17 34	18 02	00 13	01 13	02 15	03 19
03	229 03.7	31.1	96 46.9	10.7	6 38.6	12.3	58.8	20	17 23	17 46	18 12	00 28	01 24	02 21	03 20
04	244 03.6	31.8	111 16.6	10.6	6 26.3	12.4	58.8	N 10	17 35	17 57	18 22	00 40	01 33	02 26	03 21
05	259 03.6	32.5	125 46.2	10.7	6 13.9	12.5	58.8	0	17 47	18 09	18 34	00 52	01 41	02 31	03 22
06	274 03.5	S16 33.3	140 15.9	10.6	S 6 01.4	12.5	58.9	S 10	17 59	18 21	18 47	01 04	01 50	02 36	03 23
07	289 03.5	34.0	154 45.5	10.6	5 48.9	12.6	58.9	20	18 12	18 35	19 03	01 16	01 59	02 41	03 24
08	304 03.5	34.7	169 15.1	10.5	5 36.3	12.6	59.0	30	18 27	18 53	19 23	01 30	02 09	02 47	03 25
S 09	319 03.4	35.4	183 44.6	10.5	5 23.7	12.7	59.0	35	18 36	19 03	19 36	01 38	02 15	02 51	03 26
U 10	334 03.4	36.2	198 14.1	10.5	5 11.0	12.7	59.0	40	18 46	19 15	19 52	01 47	02 22	02 54	03 27
N 11	349 03.3	36.9	212 43.6	10.5	4 58.3	12.7	59.1	45	18 57	19 30	20 12	01 58	02 29	02 59	03 27
D 12	4 03.3	S16 37.6	227 13.1	10.5	S 4 45.6	12.8	59.1	S 50	19 12	19 49	20 38	02 10	02 38	03 04	03 28
A 13	19 03.2	38.3	241 42.6	10.4	4 32.8	12.9	59.2	52	19 19	19 58	20 51	02 16	02 43	03 06	03 29
Y 14	34 03.2	39.1	256 12.0	10.4	4 19.9	12.9	59.2	54	19 26	20 09	21 07	02 23	02 47	03 09	03 29
15	49 03.1	39.8	270 41.4	10.4	4 07.0	12.9	59.2	56	19 34	20 21	21 26	02 30	02 52	03 12	03 30
16	64 03.1	40.5	285 10.8	10.3	3 54.1	13.0	59.3	58	19 44	20 34	21 51	02 38	02 58	03 15	03 31
17	79 03.1	41.2	299 40.1	10.3	3 41.1	13.0	59.3	S 60	19 55	20 51	22 28	02 48	03 04	03 18	03 31
18	94 03.0	S16 41.9	314 09.4	10.3	S 3 28.1	13.0	59.4								
19	109 03.0	42.7	328 38.7	10.3	3 15.1	13.1	59.4								

G.M.T.	ARIES			VENUS -4.1			MARS +1.5			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.			
MONDAY	9 00	48 04.7	134 05.1 S26	51.2	245 08.6 N	9 03.4	203 17.1 S	9 08.1	211 39.9 S	4 32.8	Acomar	315 36.2 S40	22.7					
	01	63 07.2	149 04.7	51.2	260 09.7	02.9	218 19.0	08.3	226 42.1	33.0	Achernar	335 44.1 S57	19.9					
	02	78 09.6	164 04.3	51.1	275 10.9	02.4	233 21.0	08.5	241 44.3	33.1	Acrux	173 36.9 S62	59.6					
	03	93 12.1	179 03.9	51.1	290 12.0	01.9	248 23.0	08.7	256 46.5	33.2	Adhara	255 31.3 S28	56.6					
	04	108 14.6	194 03.6	51.0	305 13.2	01.4	263 24.9	08.9	271 48.7	33.3	Aldebaran	291 16.8 N16	28.4					
	05	123 17.0	209 03.2	51.0	320 14.3	00.9	278 26.9	09.0	286 50.9	33.4								
	06	138 19.5	224 02.8 S26	50.9	335 15.5 N	9 00.4	293 28.9 S	9 09.2	301 53.1 S	4 33.5	Alioth	166 42.3 N56	03.5					
	07	153 22.0	239 02.4	50.9	350 16.6	8 59.9	308 30.8	09.4	316 55.3	33.6	Alkaid	153 18.3 N49	24.3					
	08	168 24.4	254 02.1	50.8	5 17.8	59.4	323 32.8	09.6	331 57.5	33.7	Al Na'ir	28 13.9 S47	03.2					
	09	183 26.9	269 01.7	50.8	20 18.9	58.9	338 34.8	09.8	346 59.7	33.8	Alnilam	276 10.6 S 1	12.7					
	10	198 29.3	284 01.3	50.7	35 20.1	58.4	353 36.7	10.0	2 01.9	33.9	Alphard	218 19.8 S 8	34.6					
	11	213 31.8	299 00.9	50.7	50 21.3	57.9	8 38.7	10.2	17 04.1	34.0								
	12	228 34.3	314 00.6 S26	50.6	65 22.4 N	8 57.4	23 40.7 S	9 10.4	32 06.3 S	4 34.1	Alphecca	126 31.8 N26	46.7					
	13	243 36.7	329 00.2	50.5	80 23.6	56.8	38 42.6	10.5	47 08.5	34.2	Alpheratz	358 08.3 N78	59.5					
	14	258 39.2	343 59.8	50.5	95 24.7	56.3	53 44.6	10.7	62 10.7	34.3	Altair	62 31.9 N 8	49.3					
	15	273 41.7	358 59.4	50.4	110 25.9	55.8	68 46.6	10.9	77 12.9	34.4	Ankaa	353 39.2 S42	24.5					
	16	288 44.1	13 59.1	50.4	125 27.0	55.3	83 48.5	11.1	92 15.2	34.5	Antares	112 56.3 S26	23.4					
	17	303 46.6	28 58.7	50.3	140 28.2	54.8	98 50.5	11.3	107 17.4	34.6								
	18	318 49.1	43 58.3 S26	50.2	155 29.3 N	8 54.3	113 52.5 S	9 11.5	122 19.6 S	4 34.7	Arcturus	146 18.1 N19	16.8					
	19	333 51.5	58 58.0	50.2	170 30.5	53.8	128 54.4	11.7	137 21.8	34.8	Atria	108 20.4 S68	59.7					
	20	348 54.0	73 57.6	50.1	185 31.6	53.3	143 56.4	11.9	152 24.0	34.9	Avior	234 27.7 S59	26.7					
	21	3 56.4	88 57.2	50.0	200 32.8	52.8	158 58.4	12.0	167 26.2	35.0	Bellatrix	278 10.6 S 6	20.0					
	22	18 58.9	103 56.9	50.0	215 33.9	52.3	174 00.3	12.2	182 28.4	35.1	Betelgeuse	271 27.2 N 7	24.3					
	23	34 01.4	118 56.5	49.9	230 35.1	51.8	189 02.3	12.4	197 30.6	35.2								
TUESDAY	10 00	49 03.8	133 56.1 S26	49.8	245 36.3 N	8 51.3	204 04.3 S	9 12.6	212 32.8 S	4 35.3	Canopus	264 06.5 S52	40.9					
	01	64 06.3	148 55.8	49.7	260 37.4	50.8	219 06.3	12.8	227 35.0	35.4	Capella	281 09.8 N45	58.7					
	02	79 08.8	163 55.4	49.7	275 38.6	50.3	234 08.2	13.0	242 37.2	35.5	Deneb	49 48.0 N45	13.2					
	03	94 11.2	178 55.0	49.6	290 39.7	49.8	249 10.2	13.2	257 39.4	35.6	Denebola	182 58.5 N14	40.5					
	04	109 13.7	193 54.7	49.5	305 40.9	49.3	264 12.2	13.4	272 41.6	35.7	Diphda	349 19.8 S18	05.3					
	05	124 16.2	208 54.3	49.4	320 42.0	48.8	279 14.1	13.5	287 43.8	35.8								
	06	139 18.6	223 54.0 S26	49.4	335 43.2 N	8 48.3	294 16.1 S	9 13.7	302 46.0 S	4 35.9	Dubhe	194 21.5 N61	50.8					
	07	154 21.1	238 53.6	49.3	350 44.3	47.8	309 18.1	13.9	317 48.2	36.0	Elnath	278 42.8 N28	35.5					
	08	169 23.6	253 53.2	49.2	5 45.5	47.3	324 20.0	14.1	332 50.4	36.1	Eltanin	90 57.8 N51	29.7					
	09	184 26.0	268 52.9	49.1	20 46.7	46.8	339 22.0	14.3	347 52.6	36.2	Enif	34 10.8 N 9	47.6					
	10	199 28.5	283 52.5	49.0	35 47.8	46.3	354 24.0	14.5	2 54.8	36.3	Fomalhaut	15 50.4 S29	43.3					
	11	214 30.9	298 52.2	49.0	50 49.0	45.8	9 25.9	14.7	17 57.0	36.4								
	12	229 33.4	313 51.8 S26	48.9	65 50.1 N	8 45.3	24 27.9 S	9 14.9	32 59.2 S	4 36.5	Gacrux	172 28.4 S57	00.3					
	13	244 35.9	328 51.5	48.8	80 51.3	44.8	39 29.9	15.0	48 01.4	36.6	Gienah	176 17.4 S17	26.2					
	14	259 38.3	343 51.1	48.7	95 52.4	44.3	54 31.8	15.2	63 03.6	36.7	Hadar	149 22.9 S60	16.9					
	15	274 40.8	358 50.8	48.6	110 53.6	43.8	69 33.8	15.4	78 05.8	36.8	Hamal	328 27.7 N23	22.6					
	16	289 43.3	13 50.4	48.5	125 54.8	43.3	84 35.8	15.6	93 08.0	36.9	Kaus Aust.	84 16.1 S34	23.7					
	17	304 45.7	28 50.1	48.4	140 55.9	42.8	99 37.7	15.8	108 10.2	37.0								
	18	319 48.2	43 49.7 S26	48.3	155 57.1 N	8 42.2	114 39.7 S	9 16.0	123 12.5 S	4 37.1	Kochab	137 20.2 N74	13.9					
	19	334 50.7	58 49.4	48.3	170 58.2	41.7	129 41.7	16.2	138 14.7	37.2	Markab	14 02.3 N15	06.5					
	20	349 53.1	73 49.0	48.2	185 59.4	41.2	144 43.6	16.4	153 16.9	37.3	Menkar	314 40.0 N 4	01.1					
	21	4 55.6	88 48.7	48.1	201 00.6	40.7	159 45.6	16.5	168 19.1	37.4	Menkent	148 36.5 S36	16.6					
	22	19 58.1	103 48.3	48.0	216 01.7	40.2	174 47.6	16.7	183 21.3	37.5	Miaplacidus	221 44.8 S69	38.2					
	23	35 00.5	118 48.0	47.9	231 02.9	39.7	189 49.5	16.9	198 23.5	37.6								
WEDNESDAY	11 00	50 03.0	133 47.6 S26	47.8	246 04.0 N	8 39.2	204 51.5 S	9 17.1	213 25.7 S	4 37.7	Mirfak	309 14.5 N49	47.8					
	01	65 05.4	148 47.3	47.7	261 05.2	38.7	219 53.5	17.3	228 27.9	37.8	Nunki	76 28.4 S26	19.2					
	02	80 07.9	163 46.9	47.6	276 06.4	38.2	234 55.5	17.5	243 30.1	37.9	Peacock	53 57.3 S56	47.9					
	03	95 10.4	178 46.6	47.5	291 07.5	37.7	249 57.4	17.7	258 32.3	38.0	Pollux	243 57.1 N28	04.2					
	04	110 12.8	193 46.3	47.4	306 08.7	37.2	264 59.4	17.9	273 34.5	38.1	Procyon	245 24.8 N 5	16.4					
	05	125 15.3	208 45.9	47.3	321 09.8	36.7	280 01.4	18.0	288 36.7	38.2								
	06	140 17.8	223 45.6 S26	47.2	336 11.0 N	8 36.2	295 03.3 S	9 18.2	303 38.9 S	4 38.3	Rasalhague	96 29.2 N12	34.6					
	07	155 20.2	238 45.2	47.1	351 12.2	35.7	310 05.3	18.4	318 41.1	38.4	Regulus	208 09.3 N12	03.5					
	08	170 22.7	253 44.9	47.0	6 13.3	35.2	325 07.3	18.6	333 43.3	38.5	Rigel	281 35.0 S 8	13.3					
	09	185 25.2	268 44.6	46.9	21 14.5	34.7	340 09.2	18.8	348 45.5	38.6	Rigel Kent.	140 25.5 S60	45.4					
	10	200 27.6	283 44.2	46.8	36 15.7	34.2	355 11.2	19.0	3 47.7	38.7	Sabik	102 40.6 S15	42.1					
	11	215 30.1	298 43.9	46.6	51 16.8	33.7	10 13.2	19.2	18 49.9	38.8								
	12	230 32.5	313 43.6 S26	46.5	66 18.0 N	8 33.2	25 15.1 S	9 19.3	33 52.1 S	4 38.9	Schedar	350 07.7 N56	26.4					
	13	245 35.0	328 43.2	46.4	81 19.1	32.7	40 17.1	19.5	48 54.4	39.0	Shaula	96 55.1 S37	05.5					
	14	260 37.5	343 42.9	46.3	96 20.3	32.2	55 19.1	19.7	63 56.6	39.1	Sirius	258 54.8 S16	41.3					
	15	275 39.9	358 42.6	46.2	111 21.5	31.7	70 21.0	19.9	78 58.8	39.2	Spica	158 57.0 S11	03.8					
	16	290 42.4	13 42.2	46.1	126 22.6	31.2	85 23.0	20.1	94 01.0	39.3	Suhail	223 10.2 S43	21.2					
	17	305 44.9	28 41.9	46.0	141 23.8	30.7	100 25.0	20.3	109 03.2	39.4								
	18	320 47.3	43 41.6 S26	45.9	156 25.0 N	8 30.2	115 27.0 S	9 20.5	124 05.4 S	4 39.5	Vega	80 55.6 N38	46.2					
	19	335 49.8	58 41.2	45.7	171 26.1	29.7	130 28.9	20.6	139 07.6	39.6	Zuben'ubi	137 32.5 S15	57.8					
	20	350 52.3	73 40.9	45.6	186 27.3	29.2	145 30.9	20.8	154 09.8	39.7								
	21	5 54.7	88 40.6	45.5	201 28.5	28.7	160 32.9	21.0	169 12.0	39.8								
	22	20 57.2	103 40.3	45.4	216 29.6	28.2	175 34.8	21.2	184 14.2	39.9	Venus	84 52.3 15	05					
	23	35 59.7	118 39.9	45.3	231 30.8	27.7	190 36.8	21.4	199 16.4	40.0	Mars	196 32.4 7	37					
										Jupiter	155 00.4 10	22						
										Saturn	163 28.9 9	48						

Mer Pass.	h m	v -0.4	d 0.1	v 1.2	d 0.5	v 2.0	d 0.2	v 2.2	d 0.1
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G.M.T.	SUN				MOON				Lat.	Twilight		Sunrise	Moonrise															
	G.H.A.		Dec.		G.H.A.		Dec.			Naut. Civil			9 10		11 12													
	d	h	m	s	d	m	s	d		m	s		h	m	h	m	h	m										
9 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	184	02.7	S16	46.3	41	04.6	10.1	S	2	09.3	13.3	59.6	N 72	06	41	08	10	10	02	15	34	15	17	14	57	14	24	
	199	02.7		47.0	55	33.7	10.0		1	56.0	13.2	59.6	68	06	33	07	51	09	18	15	35	15	26	15	16	15	02	
	214	02.6		47.7	70	02.7	10.1		1	42.8	13.3	59.7	66	06	20	07	24	08	28	15	38	15	40	15	43	15	49	
	229	02.6	..	48.4	84	31.8	9.9		1	29.5	13.4	59.7	64	06	15	07	14	08	11	15	39	15	45	15	54	16	06	
	244	02.5		49.1	99	00.7	10.0		1	16.1	13.3	59.7	62	06	11	07	05	07	57	15	40	15	50	16	03	16	20	
	259	02.5		49.9	113	29.7	9.8		1	02.8	13.4	59.8	60	06	07	06	57	07	45	15	40	15	54	16	10	16	31	
	274	02.4	S16	50.6	127	58.5	9.9	S	0	49.4	13.4	59.8	N 58	06	03	06	51	07	35	15	41	15	58	16	17	16	42	
	289	02.4		51.3	142	27.4	9.8		0	36.0	13.4	59.9	56	05	59	06	45	07	26	15	41	16	01	16	23	16	51	
	304	02.3		52.0	156	56.2	9.8		0	22.6	13.5	59.9	54	05	56	06	39	07	18	15	42	16	04	16	29	16	59	
	319	02.3	..	52.7	171	25.0	9.7	S	0	09.1	13.4	59.9	52	05	53	06	34	07	11	15	42	16	07	16	34	17	06	
	334	02.2		53.4	185	53.7	9.7	N	0	04.3	13.5	60.0	50	05	51	06	29	07	04	15	43	16	09	16	38	17	12	
	349	02.2		54.1	200	22.4	9.7		0	17.8	13.5	60.0	45	05	44	06	19	06	51	15	44	16	14	16	48	17	26	
	4	02.1	S16	54.8	214	51.1	9.6	N	0	31.3	13.5	60.0	N 40	05	38	06	11	06	39	15	45	16	19	16	56	17	38	
	19	02.1		55.6	229	19.7	9.5		0	44.8	13.5	60.1	35	05	32	06	03	06	29	15	45	16	23	17	03	17	48	
	34	02.0		56.3	243	48.2	9.5		0	58.3	13.6	60.1	30	05	27	05	56	06	21	15	46	16	26	17	09	17	57	
	49	02.0	..	57.0	258	16.7	9.5		1	11.9	13.5	60.1	20	05	16	05	43	06	06	15	47	16	32	17	20	18	12	
	64	01.9		57.7	272	45.2	9.4		1	25.4	13.6	60.2	N 10	05	06	05	31	05	53	15	48	16	38	17	30	18	25	
	79	01.8		58.4	287	13.6	9.4		1	39.0	13.5	60.2	0	04	54	05	19	05	40	15	49	16	43	17	39	18	38	
	94	01.8	S16	59.1	301	42.0	9.3	N	1	52.5	13.6	60.2	S 10	04	40	05	06	05	28	15	50	16	48	17	48	18	50	
	109	01.7	16	59.8	316	10.3	9.3		2	06.1	13.5	60.3	20	04	24	04	51	05	14	15	51	16	53	17	58	19	04	
	124	01.7	17	00.5	330	38.6	9.2		2	19.6	13.6	60.3	30	04	02	04	33	04	59	15	53	17	00	18	09	19	20	
	139	01.6	..	01.2	345	06.8	9.2		2	33.2	13.6	60.3	35	03	49	04	22	04	50	15	53	17	04	18	16	19	29	
	154	01.6		01.9	359	35.0	9.1		2	46.8	13.5	60.4	40	03	33	04	09	04	39	15	54	17	08	18	23	19	39	
169	01.5		02.7	14	03.1	9.1		3	00.3	13.6	60.4	45	03	12	03	54	04	27	15	55	17	13	18	32	19	52		
10 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	184	01.4	S17	03.4	28	31.2	9.0	N	3	13.9	13.5	60.4	S 50	02	45	03	34	04	12	15	57	17	19	18	43	20	07	
	199	01.4		04.1	42	59.2	8.9		3	27.4	13.6	60.5	52	02	31	03	25	04	05	15	57	17	21	18	48	20	14	
	214	01.3		04.8	57	27.1	9.0		3	41.0	13.5	60.5	54	02	14	03	14	03	57	15	58	17	24	18	53	20	22	
	229	01.3	..	05.5	71	55.1	8.8		3	54.5	13.6	60.5	56	01	53	03	01	03	48	15	59	17	28	18	59	20	31	
	244	01.2		06.2	86	22.9	8.8		4	08.1	13.5	60.5	58	01	26	02	47	03	38	15	59	17	32	19	06	20	41	
	259	01.2		06.9	100	50.7	8.8		4	21.6	13.5	60.6	S 60	00	43	02	29	03	27	16	00	17	36	19	14	20	53	
	274	01.1	S17	07.6	115	18.5	8.7	N	4	35.1	13.5	60.6																
	289	01.0		08.3	129	46.2	8.6		4	48.6	13.5	60.6																
	304	01.0		09.0	144	13.8	8.6		5	02.1	13.4	60.7																
	319	00.9	..	09.7	158	41.4	8.5		5	15.5	13.5	60.7																
	334	00.9		10.4	173	08.9	8.4		5	29.0	13.4	60.7																
	349	00.8		11.1	187	36.3	8.4		5	42.4	13.4	60.7																
	4	00.7	S17	11.8	202	03.7	8.4	N	5	55.8	13.4	60.8	N 72	13	25	15	16	16	46	03	02	05	09	07	26	10	01	
	19	00.7		12.5	216	31.1	8.3		6	09.2	13.3	60.8	N 70	14	09	15	35	16	54	03	04	05	03	07	09	09	25	
	34	00.6		13.2	230	58.4	8.2		6	22.5	13.4	60.8	68	14	37	15	50	17	01	03	06	04	58	06	56	08	59	
	49	00.5	..	13.9	245	25.6	8.1		6	35.9	13.3	60.8	66	15	19	16	03	17	07	03	07	04	54	06	45	08	40	
	64	00.5		14.6	259	52.7	8.1		6	49.2	13.2	60.9	64	15	16	16	13	17	12	03	09	04	50	06	36	08	24	
	79	00.4		15.3	274	19.8	8.1		7	02.4	13.2	60.9	62	15	30	16	22	17	16	03	10	04	47	06	28	08	11	
	94	00.4	S17	16.0	288	46.9	7.9	N	7	15.6	13.2	60.9	60	15	42	16	30	17	20	03	11	04	45	06	21	08	00	
	109	00.3		16.7	303	13.8	7.9		7	28.8	13.2	60.9	N 58	15	52	16	36	17	24	03	12	04	42	06	16	07	51	
	124	00.2		17.4	317	40.7	7.9		7	42.0	13.1	61.0	56	16	01	16	43	17	28	03	13	04	40	06	11	07	42	
	139	00.2	..	18.1	332	07.6	7.8		7	55.1	13.1	61.0	54	16	09	16	48	17	31	03	13	04	38	06	06	07	35	
	154	00.1		18.8	346	34.4	7.7		8	08.2	13.0	61.0	52	16	16	16	53	17	34	03	14	04	37	06	02	07	28	
169	00.0		19.5	1	01.1	7.6		8	21.2	13.0	61.0	50	16	23	16	58	17	37	03	15	04	35	05	58	07	22		
												45	16	37	17	08	17	43	03	16	04	32	05	50	07	10		
11 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	184	00.0	S17	20.2	15	27.7	7.6	N	8	34.2	13.0	61.0	N 40	16	48	17	17	17	49	03	17	04	29	05	43	06	59	
	198	59.9		20.9	29	54.3	7.5		8	47.2	12.9	61.1	35	16	58	17	25	17	55	03	18	04	26	05	38	06	50	
	213	59.8		21.5	44	20.8	7.5		9	00.1	12.8	61.1	30	17	07	17	32	18	00	03	19	04	24	05	33	06	43	
	228	59.8	..	22.2	58	47.3	7.4		9	12.9	12.8	61.1	20	17	22	17	45	18	11	03	20	04	21	05	24	06	29	
	243	59.7		22.9	73	13.7	7.3		9	25.7	12.8	61.1	N 10	17	35	17	57	18	22	03	21	04	17	05	16	06	17	
	258	59.6		23.6	87	40.0	7.3		9	38.5	12.6	61.1	0	17	47	18	09	18	34	03	22	04	14	05	09	06	06	
	273	59.6	S17	24.3	102	06.3	7.1	N	9	51.1	12.7	61.2	S 10	18	00	18	22	18</										

G.M.T.	ARIES			VENUS -4.1			MARS +1.5			JUPITER -1.2			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.	G.H.A.	Dec.	G.H.A.	Dec.	Name	S.H.A.	Dec.			
12 00	51 02.1	133 39.6	S26 45.1	246 32.0	N 8 27.2		205 38.8	S 9 21.6	214 18.6	S 4 40.1	Acomar	315 36.2	S40 22.7					
01	66 04.6	148 39.3	45.0	261 33.1	26.7		220 40.7	21.8	229 20.8	40.2	Achernar	335 44.1	S57 19.9					
02	81 07.0	163 39.0	44.9	276 34.3	26.2		235 42.7	21.9	244 23.0	40.3	Acruz	173 36.9	S62 59.6					
03	96 09.5	178 38.6	44.8	291 35.5	25.6		250 44.7	22.1	259 25.2	40.4	Adhura	255 31.3	S28 56.6					
04	111 12.0	193 38.3	44.6	306 36.6	25.1		265 46.7	22.3	274 27.4	40.5	Aldebaran	291 16.8	N16 28.4					
05	126 14.4	208 38.0	44.5	321 37.8	24.6		280 48.6	22.5	289 29.7	40.6								
06	141 16.9	223 37.7	S26 44.4	336 39.0	N 8 24.1		295 50.6	S 9 22.7	304 31.9	S 4 40.7	Alioth	166 42.3	N56 03.5					
07	156 19.4	238 37.4	44.2	351 40.1	23.6		310 52.6	22.9	319 34.1	40.8	Alkaid	153 18.3	N49 24.3					
08	171 21.8	253 37.0	44.1	6 41.3	23.1		325 54.5	23.1	334 36.3	40.9	Al Na'ir	28 13.9	S47 03.2					
09	186 24.3	268 36.7	44.0	21 42.5	22.6		340 56.5	23.2	349 38.5	41.0	Alnilam	276 10.6	S 1 12.7					
10	201 26.8	283 36.4	43.9	36 43.6	22.1		355 58.5	23.4	4 40.7	41.1	Alphard	218 19.8	S 8 34.6					
11	216 29.2	298 36.1	43.7	51 44.8	21.6		11 00.4	23.6	19 42.9	41.2								
12	231 31.7	313 35.8	S26 43.6	66 46.0	N 8 21.1		26 02.4	S 9 23.8	34 45.1	S 4 41.3	Alphecca	126 31.8	N26 46.7					
13	246 34.2	328 35.5	43.4	81 47.1	20.6		41 04.4	24.0	49 47.3	41.4	Alpheratz	358 08.3	N28 59.5					
14	261 36.6	343 35.2	43.3	96 48.3	20.1		56 06.4	24.2	64 49.5	41.5	Altair	62 31.9	N 8 49.3					
15	276 39.1	358 34.8	43.2	111 49.5	19.6		71 08.3	24.4	79 51.7	41.6	Ankaa	353 39.2	S42 24.5					
16	291 41.5	13 34.5	43.0	126 50.6	19.1		86 10.3	24.5	94 53.9	41.7	Antares	112 56.3	S26 23.4					
17	306 44.0	28 34.2	42.9	141 51.8	18.6		101 12.3	24.7	109 56.1	41.8								
18	321 46.5	43 33.9	S26 42.8	156 53.0	N 8 18.1		116 14.2	S 9 24.9	124 58.4	S 4 41.9	Arcturus	146 18.1	N19 16.8					
19	336 48.9	58 33.6	42.6	171 54.1	17.6		131 16.2	25.1	140 00.6	42.0	Atria	108 20.4	S68 59.7					
20	351 51.4	73 33.3	42.5	186 55.3	17.1		146 18.2	25.3	155 02.8	42.1	Avior	234 27.7	S59 26.7					
21	6 53.9	88 33.0	42.3	201 56.5	16.6		161 20.1	25.5	170 05.0	42.2	Bellatrix	278 57.6	N 6 20.0					
22	21 56.3	103 32.7	42.2	216 57.6	16.1		176 22.1	25.7	185 07.2	42.3	Betelgeuse	271 27.2	N 7 24.3					
23	36 58.8	118 32.4	42.0	231 58.8	15.6		191 24.1	25.8	200 09.4	42.4								
13 00	52 01.3	133 32.1	S26 41.9	247 00.0	N 8 15.1		206 26.1	S 9 26.0	215 11.6	S 4 42.5	Canopus	264 06.5	S52 40.9					
01	67 03.7	148 31.8	41.7	262 01.2	14.6		221 28.0	26.2	230 13.8	42.6	Capella	281 09.7	N45 58.7					
02	82 06.2	163 31.5	41.6	277 02.3	14.1		236 30.0	26.4	245 16.0	42.7	Deneb	49 48.1	N45 13.2					
03	97 08.6	178 31.2	41.4	292 03.5	13.6		251 32.0	26.6	260 18.2	42.8	Denebola	182 58.5	N14 40.5					
04	112 11.1	193 30.9	41.3	307 04.7	13.1		266 33.9	26.8	275 20.4	42.9	Diphda	349 19.8	S18 05.3					
05	127 13.6	208 30.6	41.1	322 05.8	12.6		281 35.9	26.9	290 22.6	43.0								
06	142 16.0	223 30.3	S26 41.0	337 07.0	N 8 12.1		296 37.9	S 9 27.1	305 24.8	S 4 43.1	Dubhe	194 21.4	N61 50.8					
07	157 18.5	238 30.0	40.8	352 08.2	11.6		311 39.9	27.3	320 27.1	43.2	Elnath	278 42.8	N28 35.5					
08	172 21.0	253 29.7	40.7	7 09.4	11.1		326 41.8	27.5	335 29.3	43.3	Eltanin	90 57.8	N51 29.7					
09	187 23.4	268 29.4	40.5	22 10.5	10.6		341 43.8	27.7	350 31.5	43.4	Enif	34 10.8	N 9 47.6					
10	202 25.9	283 29.1	40.4	37 11.7	10.1		356 45.8	27.9	5 33.7	43.5	Fomalhaut	15 50.4	S29 43.3					
11	217 28.4	298 28.8	40.2	52 12.9	9.6		11 47.7	28.1	20 35.9	43.6								
12	232 30.8	313 28.5	S26 40.0	67 14.1	N 8 09.1		26 49.7	S 9 28.2	35 38.1	S 4 43.7	Gacrux	172 28.3	S57 00.3					
13	247 33.3	328 28.2	39.9	82 15.2	08.6		41 51.7	28.4	50 40.3	43.8	Gienah	176 17.4	S17 26.2					
14	262 35.8	343 27.9	39.7	97 16.4	08.1		56 53.7	28.6	65 42.5	43.9	Hadar	149 22.9	S60 16.9					
15	277 38.2	358 27.7	39.6	112 17.6	07.6		71 55.6	28.8	80 44.7	44.0	Hamal	328 27.7	N23 22.6					
16	292 40.7	13 27.4	39.4	127 18.8	07.1		86 57.6	29.0	95 46.9	44.1	Kaus Aust.	84 16.1	S34 23.7					
17	307 43.1	28 27.1	39.2	142 19.9	06.6		101 59.6	29.2	110 49.1	44.2								
18	322 45.6	43 26.8	S26 39.1	157 21.1	N 8 06.1		117 01.5	S 9 29.3	125 51.4	S 4 44.3	Kochab	137 20.2	N74 13.9					
19	337 48.1	58 26.5	38.9	172 22.3	05.6		132 03.5	29.5	140 53.6	44.4	Markab	14 02.3	N15 06.5					
20	352 50.5	73 26.2	38.7	187 23.5	05.1		147 05.5	29.7	155 55.8	44.5	Menkar	314 40.0	N 4 01.1					
21	7 53.0	88 25.9	38.6	202 24.6	04.6		162 07.5	29.9	170 58.0	44.6	Menkent	148 36.5	S36 16.6					
22	22 55.5	103 25.7	38.4	217 25.8	04.1		177 09.4	30.1	186 00.2	44.7	Miaplacidus	221 44.7	S69 38.2					
23	37 57.9	118 25.4	38.2	232 27.0	03.6		192 11.4	30.3	201 02.4	44.8								
14 00	53 00.4	133 25.1	S26 38.0	247 28.2	N 8 03.0		207 13.4	S 9 30.4	216 04.6	S 4 44.9	Mirfak	309 14.5	N49 47.8					
01	68 02.9	148 24.8	37.9	262 29.3	02.5		222 15.4	30.6	231 06.8	45.0	Nunki	76 28.5	S26 19.2					
02	83 05.3	163 24.5	37.7	277 30.5	02.0		237 17.3	30.8	246 09.0	45.1	Peacock	53 57.3	S56 47.9					
03	98 07.8	178 24.3	37.5	292 31.7	01.5		252 19.3	31.0	261 11.2	45.2	Pollux	243 57.1	N28 04.2					
04	113 10.3	193 24.0	37.4	307 32.9	01.0		267 21.3	31.2	276 13.5	45.3	Procyon	245 24.8	N 5 16.4					
05	128 12.7	208 23.7	37.2	322 34.0	00.5		282 23.2	31.4	291 15.7	45.4								
06	143 15.2	223 23.4	S26 37.0	337 35.2	N 8 00.0		297 25.2	S 9 31.6	306 17.9	S 4 45.5	Rasalhague	96 29.2	N12 34.5					
07	158 17.6	238 23.2	36.8	352 36.4	7 59.5		312 27.2	31.7	321 20.1	45.6	Regulus	208 09.2	N12 03.5					
08	173 20.1	253 22.9	36.6	7 37.6	59.0		327 29.2	31.9	336 22.3	45.7	Rigel	281 35.0	S 8 13.3					
09	188 22.6	268 22.6	36.5	22 38.7	58.5		342 31.1	32.1	351 24.5	45.8	Rigel Kent.	140 25.5	S60 45.4					
10	203 25.0	283 22.4	36.3	37 39.9	58.0		357 33.1	32.3	6 26.7	45.9	Sabik	102 40.6	S15 42.1					
11	218 27.5	298 22.1	36.1	52 41.1	57.5		12 35.1	32.5	21 28.9	46.0								
12	233 30.0	313 21.8	S26 35.9	67 42.3	N 7 57.0		27 37.0	S 9 32.7	36 31.1	S 4 46.1	Schedar	350 07.7	N56 26.4					
13	248 32.4	328 21.6	35.7	82 43.5	56.5		42 39.0	32.8	51 33.3	46.2	Shaula	96 55.1	S37 05.5					
14	263 34.9	343 21.3	35.5	97 44.6	56.0		57 41.0	33.0	66 35.6	46.3	Sirius	258 54.8	S16 41.4					
15	278 37.4	358 21.0	35.3	112 45.8	55.5		72 43.0	33.2	81 37.8	46.3	Spica	158 57.0	S11 03.8					
16	293 39.8	13 20.8	35.2	127 47.0	55.0		87 44.9	33.4	96 40.0	46.4	Shuil	223 10.2	S43 21.2					
17	308 42.3	28 20.5	35.0	142 48.2	54.5		102 46.9	33.6	111 42.2	46.5				</				

G.M.T.	SUN				MOON				Lat.	Twilight		Sunrise	Moonrise											
	G.H.A.	Dec.	G.H.A.	v	Dec.	d	H.P.	Naut.		Civil			15		16		17		18					
								h		m	h		m	h	m	h	m	h	m	h	m	h	m	h	m
15 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	183	51.9	S18	24.3	317	46.4	3.8	N21	41.4	1.5	60.4	N 72	07	03	08	39	11	26	□	□	□	□	20	53
	198	51.8		25.0	332	09.2	3.9	21	42.9	1.2	60.4	N 70	06	52	08	15	09	55	□	□	□	□	19	17
	213	51.7		25.6	346	32.1	3.9	21	44.1	1.2	60.3	68	06	43	07	57	09	17	16	15	18	03	19	58
	228	51.6		26.3	0	55.0	3.9	21	45.3	0.9	60.3	66	06	36	07	42	08	51	17	21	18	47	20	25
	243	51.5		26.9	15	17.9	4.0	21	46.2	0.8	60.3	64	06	30	07	30	08	30	17	57	19	16	20	46
	258	51.4		27.5	29	40.9	4.0	21	47.0	0.7	60.3	62	06	24	07	20	08	14	18	22	19	38	21	03
	273	51.3	S18	28.2	44	03.9	4.1	N21	47.7	0.4	60.2	60	06	19	07	11	08	00	18	42	19	56	21	17
	288	51.1		28.8	58	27.0	4.1	21	48.1	0.4	60.2	N 58	06	14	07	03	07	48	18	59	20	11	21	29
	303	51.0		29.4	72	50.1	4.2	21	48.5	0.1	60.2	56	06	10	06	56	07	38	19	13	20	23	21	40
	318	50.9		30.1	87	13.3	4.1	21	48.6	0.1	60.1	54	06	06	06	50	07	29	19	25	20	34	21	49
	333	50.8		30.7	101	36.4	4.3	21	48.7	0.2	60.1	52	06	02	06	44	07	21	19	36	20	44	21	57
	348	50.7		31.4	115	59.7	4.3	21	48.5	0.3	60.1	50	05	59	06	38	07	14	19	45	20	53	22	04
	3	50.6	S18	32.0	130	23.0	4.3	N21	48.2	0.4	60.0	45	05	51	06	27	06	59	20	06	21	11	22	20
	18	50.5		32.6	144	46.3	4.4	21	47.8	0.6	60.0	N 40	05	44	06	17	06	46	20	22	21	27	22	32
	33	50.4		33.3	159	09.7	4.4	21	47.2	0.7	60.0	35	05	38	06	08	06	35	20	36	21	39	22	43
	48	50.3		33.9	173	33.1	4.5	21	46.5	0.9	59.9	30	05	31	06	00	06	26	20	48	21	50	22	53
	63	50.2		34.5	187	56.6	4.6	21	45.6	1.1	59.9	20	05	19	05	46	06	09	21	08	22	09	23	09
	78	50.1		35.2	202	20.2	4.6	21	44.5	1.2	59.9	N 10	05	07	05	33	05	55	21	26	22	26	23	23
	93	50.0	S18	35.8	216	43.8	4.6	N21	43.3	1.3	59.8	0	04	54	05	19	05	41	21	43	22	41	23	36
	108	49.9		36.4	231	07.4	4.7	21	42.0	1.5	59.8	S 10	04	39	05	05	05	27	21	59	22	57	23	49
	123	49.8		37.1	245	31.1	4.8	21	40.5	1.6	59.8	20	04	21	04	49	05	13	22	17	23	13	24	03
	138	49.6		37.7	259	54.9	4.9	21	38.9	1.8	59.7	30	03	58	04	29	04	55	22	38	23	32	24	19
	153	49.5		38.3	274	18.8	4.9	21	37.1	2.0	59.7	35	03	43	04	17	04	45	22	50	23	43	24	29
168	49.4		38.9	288	42.7	5.0	21	35.1	2.0	59.6	40	03	26	04	03	04	34	23	04	23	56	24	39	
183	49.3	S18	39.6	303	06.7	5.0	N21	33.1	2.3	59.6	45	03	03	03	46	04	20	23	20	24	10	00	10	
198	49.2		40.2	317	30.7	5.2	21	30.8	2.3	59.6	S 50	02	32	03	24	04	04	23	40	24	29	00	29	
213	49.1		40.8	331	54.9	5.2	21	28.5	2.5	59.5	52	02	16	03	14	03	56	23	50	24	37	00	37	
228	49.0		41.5	346	19.1	5.2	21	26.0	2.7	59.5	54	01	57	02	02	03	47	24	01	00	01	00	47	
243	48.9		42.1	0	43.3	5.4	21	23.3	2.8	59.5	56	01	31	02	47	03	37	24	13	00	13	00	57	
258	48.8		42.7	15	07.7	5.4	21	20.5	2.9	59.4	58	00	54	02	31	03	26	24	27	00	27	01	10	
273	48.6	S18	43.3	29	32.1	5.5	N21	17.6	3.1	59.4	S 60	///	///	///	///	///	///	24	43	00	43	01	24	
288	48.5		44.0	43	56.6	5.5	21	14.5	3.2	59.4														
303	48.4		44.6	58	21.1	5.7	21	11.3	3.3	59.3	Lat.	Sunset	Twilight		Moonset									
318	48.3		45.2	72	45.8	5.7	21	08.0	3.5	59.3			Civil	Naut.	15	16	17	18						
333	48.2		45.8	87	10.5	5.8	21	04.5	3.6	59.2					h m	h m	h m	h m						
348	48.1		46.5	101	35.3	5.8	21	00.9	3.7	59.2	N 72	12	02	14	50	16	26	□	□	□	□	15	53	
3	48.0	S18	47.1	116	00.1	6.0	N20	57.2	3.9	59.2	N 70	13	33	15	13	16	36	□	□	□	□	15	39	
18	47.8		47.7	130	25.1	6.1	20	53.3	4.0	59.1	68	14	12	15	32	16	45	14	40	14	57	14	58	
33	47.7		48.3	144	50.2	6.1	20	49.3	4.1	59.1	66	14	38	15	46	16	53	13	34	14	13	14	30	
48	47.6		48.9	159	15.3	6.2	20	45.2	4.3	59.1	64	14	59	15	59	16	59	12	58	13	43	14	08	
63	47.5		49.6	173	40.5	6.3	20	40.9	4.4	59.0	62	15	15	16	09	17	05	12	33	13	20	13	50	
78	47.4		50.2	188	05.8	6.4	20	36.5	4.5	59.0	60	15	29	16	18	17	10	12	12	13	02	13	36	
93	47.3	S18	50.8	202	31.2	6.4	N20	32.0	4.6	58.9	N 58	15	40	16	26	17	15	11	56	12	47	13	23	
108	47.1		51.4	216	56.6	6.6	20	27.4	4.8	58.9	56	15	51	16	33	17	19	11	42	12	34	13	12	
123	47.0		52.0	231	22.2	6.6	20	22.6	4.9	58.9	54	16	00	16	39	17	23	11	29	12	23	13	03	
138	46.9		52.7	245	47.8	6.8	20	17.7	5.0	58.8	52	16	08	16	45	17	27	11	19	12	13	12	54	
153	46.8		53.3	260	13.6	6.8	20	12.7	5.1	58.8	50	16	15	16	51	17	30	11	09	12	04	12	47	
168	46.7		53.9	274	39.4	6.9	20	07.6	5.2	58.8	45	16	30	17	02	17	38	10	49	11	45	12	30	
183	46.5	S18	54.5	289	05.3	7.0	N20	02.4	5.4	58.7	N 40	16	43	17	12	17	45	10	32	11	29	12	17	
198	46.4		55.1	303	31.3	7.1	19	57.0	5.5	58.7	35	16	54	17	21	17	52	10	19	11	16	12	05	
213	46.3		55.7	317	57.4	7.2	19	51.5	5.6	58.6	30	17	04	17	29	17	58	10	06	11	04	11	55	
228	46.2		56.3	332	23.6	7.2	19	45.9	5.7	58.6	20	17	20	17	43	18	10	09	46	10	45	11	38	
243	46.1		57.0	346	49.8	7.4	19	40.2	5.8	58.6	N 10	17	35	17	57	18	22	09	28	10	27	11	22	
258	45.9		57.6	1	16.2	7.5	19	34.4	5.9	58.5	0	17	48	18	10	18	36	09	11	10	11	11	08	
273	45.8	S18	58.2	15	42.7	7.5	N19	28.5	6.1	58.5	S 10	18	02	18	25	18	51	08	54	09	55	10	54	
288	45.7		58.8	30	09.2	7.7	19	22.4	6.1	58.5	20	18	17	18	41	19	09	08	36	09	37	10	38	
303	45.6		59.4	44	35.9	7.7	19	16.3	6.3	58.4	30	18	34	19	01	19	32	08	15	09	17	10	20	
318	45.5		60.0	59	02.6	7.8	19	10.0	6.3	58.4	35	18	45	19	13	19	47	08	03	09	06	10	10	
333	45.3		60.6	73	29.4	7.9	19	03.7	6.5	58.3	40	18	56	19	27	20	05	07	49	08	52	09	58	
348	45.2		61.2	87	56.3	8.1	18	57.2	6.6	58.3	45	19	10	19	44	20	28	07	32	08	36	09	44	
3	45.1	S19	61.8	102	23.4	8.1	N18	50.6	6.7	58.3	S 50	19	27	20	06	20	59	07	12	08	16	09	26	
18	45.0		62.4	116																				

G.M.T.	ARIES			VENUS -4.2			MARS +1.4			JUPITER -1.3			SATURN +1.0			STARS							
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.					
18 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	56	57.0	133	03.1	S26	16.9	249	22.1	N 7	15.0	210	23.0	S 9	47.9	219	37.1	S 4	54.1	Acamar	315	36.2	S40	22.7
	71	59.4	148	02.9		16.7	264	23.3		14.5	225	25.0		48.1	234	39.3		54.2	Achernar	335	44.2	S57	20.0
	87	01.9	163	02.7		16.4	279	24.5		14.0	240	26.9		48.3	249	41.5		54.3	Acrux	173	36.8	S62	59.5
	102	04.3	178	02.5	..	16.1	294	25.7	..	13.5	255	28.9	..	48.4	264	43.7	..	54.4	Adhara	255	31.2	S28	56.7
	117	06.8	193	02.4		15.9	309	26.9		13.0	270	30.9		48.6	279	45.9		54.5	Aldebaran	291	16.8	N16	28.4
	132	09.3	208	02.2		15.6	324	28.1		12.5	285	32.9		48.8	294	48.2		54.6					
	147	11.7	223	02.0	S26	15.3	339	29.3	N 7	12.0	300	34.8	S 9	49.0	309	50.4	S 4	54.7	Alioth	166	42.2	N56	03.4
	162	14.2	238	01.8		15.0	354	30.5		11.5	315	36.8		49.2	324	52.6		54.8	Alkaid	153	18.3	N49	24.2
	177	16.7	253	01.7		14.8	9	31.7		11.0	330	38.8		49.3	339	54.8		54.9	Al Na'ir	28	13.9	S47	03.2
	192	19.1	268	01.5	..	14.5	24	32.9	..	10.5	345	40.8	..	49.5	354	57.0	..	55.0	Alnilam	276	10.6	S 1	12.8
	207	21.6	283	01.3		14.2	39	34.1		10.0	0	42.8		49.7	9	59.2		55.1	Alphard	218	19.7	S 8	34.6
	222	24.1	298	01.2		13.9	54	35.3		09.5	15	44.7		49.9	25	01.5		55.2					
	237	26.5	313	01.0	S26	13.7	69	36.5	N 7	09.0	30	46.7	S 9	50.1	40	03.7	S 4	55.3	Alphecca	126	31.8	N26	46.7
	252	29.0	328	00.9		13.4	84	37.7		08.5	45	48.7		50.2	55	05.9		55.4	Alpheratz	358	08.3	N28	59.5
	267	31.4	343	00.7		13.1	99	38.9		08.1	60	50.7		50.4	70	08.1		55.4	Altair	62	31.9	N 8	49.3
	282	33.9	358	00.5	..	12.8	114	40.1	..	07.6	75	52.7	..	50.6	85	10.3	..	55.5	Ankaa	353	39.2	S42	24.5
	297	36.4	13	00.4		12.5	129	41.3		07.1	90	54.6		50.8	100	12.5		55.6	Antares	112	56.3	S26	23.4
	312	38.8	28	00.2		12.3	144	42.5		06.6	105	56.6		51.0	115	14.8		55.7					
	327	41.3	43	00.1	S26	12.0	159	43.7	N 7	06.1	120	58.6	S 9	51.1	130	17.0	S 4	55.8	Arcturus	146	18.1	N19	16.7
	342	43.8	57	59.9		11.7	174	44.9		05.6	136	00.6		51.3	145	19.2		55.9	Atria	108	20.3	S68	59.7
	357	46.2	72	59.7		11.4	189	46.1		05.1	151	02.6		51.5	160	21.4		56.0	Avior	234	27.6	S59	26.7
	12	48.7	87	59.6	..	11.1	204	47.3	..	04.6	166	04.5	..	51.7	175	23.6	..	56.1	Bellatrix	278	10.6	S 6	20.0
	27	51.2	102	59.4		10.8	219	48.5		04.1	181	06.5		51.9	190	25.9		56.2	Betelgeuse	271	27.1	N 7	24.3
42	53.6	117	59.3		10.5	234	49.7		03.6	196	08.5		52.0	205	28.1		56.3						
19 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	57	56.1	132	59.1	S26	10.3	249	50.9	N 7	03.1	211	10.5	S 9	52.2	220	30.3	S 4	56.4	Canopus	264	06.4	S52	41.0
	72	58.6	147	59.0		10.0	264	52.1		02.6	226	12.4		52.4	235	32.5		56.5	Capella	281	09.7	N45	58.7
	88	01.0	162	58.9		09.7	279	53.3		02.1	241	14.4		52.6	250	34.7		56.6	Deneb	49	48.1	N45	13.2
	103	03.5	177	58.7	..	09.4	294	54.5	..	01.6	256	16.4	..	52.7	265	36.9	..	56.7	Denebola	182	58.4	N14	40.5
	118	05.9	192	58.6		09.1	309	55.7		01.1	271	18.4		52.9	280	39.2		56.8	Diphda	349	19.8	S18	05.3
	133	08.4	207	58.4		08.8	324	56.9		00.6	286	20.4		53.1	295	41.4		56.9					
	148	10.9	222	58.3	S26	08.5	339	58.1	N 7	00.1	301	22.3	S 9	53.3	310	43.6	S 4	56.9	Dubhe	194	21.3	N61	50.8
	163	13.3	237	58.1		08.2	354	59.3	6	59.6	316	24.3		53.5	325	45.8		57.0	Elnath	278	42.8	N28	35.5
	178	15.8	252	58.0		07.9	10	00.5		59.1	331	26.3		53.6	340	48.0		57.1	Eltanin	90	57.8	N51	29.7
	193	18.3	267	57.9	..	07.6	25	01.7	..	58.6	346	28.3	..	53.8	355	50.3	..	57.2	Enif	34	10.8	N 9	47.6
	208	20.7	282	57.7		07.3	40	02.9		58.1	1	30.3		54.0	10	52.5		57.3	Fomalhaut	15	50.4	S29	43.3
	223	23.2	297	57.6		07.0	55	04.1		57.6	16	32.2		54.2	25	54.7		57.4					
	238	25.7	312	57.5	S26	06.7	70	05.3	N 6	57.1	31	34.2	S 9	54.4	40	56.9	S 4	57.5	Gacrux	172	28.3	S57	00.3
	253	28.1	327	57.3		06.4	85	06.5		56.6	46	36.2		54.5	55	59.1		57.6	Gienah	176	17.4	S17	26.2
	268	30.6	342	57.2		06.1	100	07.7		56.1	61	38.2		54.7	71	01.4		57.7	Hadar	149	22.8	S60	16.9
	283	33.1	357	57.1	..	05.8	115	08.9	..	55.6	76	40.2	..	54.9	86	03.6	..	57.8	Hamal	328	27.7	N23	22.6
	298	35.5	12	56.9		05.5	130	10.1		55.1	91	42.2		55.1	101	05.8		57.9	Kaus Aust.	84	16.1	S34	23.7
	313	38.0	27	56.8		05.2	145	11.4		54.6	106	44.1		55.2	116	08.0		58.0					
	328	40.4	42	56.7	S26	04.9	160	12.6	N 6	54.1	121	46.1	S 9	55.4	131	10.2	S 4	58.1	Kochab	137	20.2	N74	13.8
	343	42.9	57	56.5		04.6	175	13.8		53.6	136	48.1		55.6	146	12.5		58.2	Markab	14	02.3	N15	06.5
	358	45.4	72	56.4		04.3	190	15.0		53.1	151	50.1		55.8	161	14.7		58.2	Menkar	314	40.0	N 4	01.1
	13	47.8	87	56.3	..	04.0	205	16.2	..	52.6	166	52.1	..	56.0	176	16.9	..	58.3	Menkent	148	36.5	S36	16.6
	12	50.3	102	56.2		03.7	220	17.4		52.1	181	54.0		56.1	191	19.1		58.4	Miaplacidus	221	44.6	S69	38.2
43	52.8	117	56.1		03.4	235	18.6		51.6	196	56.0		56.3	206	21.3		58.5						
20 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	58	55.2	132	55.9	S26	03.0	250	19.8	N 6	51.1	211	58.0	S 9	56.5	221	23.6	S 4	58.6	Mirfak	309	14.5	N49	47.8
	73	57.7	147	55.8		02.7	265	21.0		50.6	227	00.0		56.7	236	25.8		58.7	Nunki	76	28.5	S26	19.2
	89	00.2	162	55.7		02.4	280	22.2		50.2	242	02.0		56.8	251	28.0		58.8	Peacock	53	57.4	S56	47.9
	104	02.6	177	55.6	..	02.1	295	23.4	..	49.7	257	03.9	..	57.0	266	30.2	..	58.9	Pollux	243	57.0	N28	04.2
	119	05.1	192	55.5		01.8	310	24.6		49.2	272	05.9		57.2	281	32.4		59.0	Procyon	245	24.8	N 5	16.4
	134	07.5	207	55.4		01.5	325	25.8		48.7	287	07.9		57.4	296	34.7		59.1					
	149	10.0	222	55.3	S26	01.2	340	27.1	N 6	48.2	302	09.9	S 9	57.5	311	36.9	S 4	59.2	Rasalhague	96	29.2	N12	34.5
	164	12.5	237	55.1		00.8	355	28.3		47.7	317	11.9		57.7	326	39.1		59.3	Regulus	208	09.2	N12	03.4
	179	14.9	252	55.0		00.5	10	29.5		47.2	332	13.8		57.9	341	41.3		59.4	Rigel	281	34.9	S 8	13.3
	194	17.4	267	54.9	26	00.2	25	30.7	..	46.7	347	15.8	..	58.1	356	43.5	..	59.4	Rigel Kent.	140	25.4	S60	45.3
	209	19.9	282	54.8	25	59.9	40	31.9		46.2	2	17.8		58.3	11	45.8		59.5	Sabik	102	40.6	S15	42.1
	224	22.3	297	54.7		59.6	55	33.1		45.7	17	19.8		58.4	26	48.0		59.6					
	239	24.8	312	54.6	S25	59.2	70	34.3	N 6	45.2	32	21.8	S 9	58.6	41	50.2	S 4	59.7	Schedar	350	07.7	N56	26.4
	254	27.3	327	54.5		58.9	85	35.5		44.7	47	23.8		58.8	56	52.4		59.8	Shaula	96</			

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise								
	G.H.A.	Dec.	G.H.A.	<i>v</i>	Dec.	<i>d</i>		H.P.	Naut.		Civil	18		19		20		21	
									h m		h m	h m	h m	h m	h m	h m	h m	h m	h m
18 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	183	43.6	S19	09.1	275	54.9	9.2	N17	24.1	7.8	57.8	N 72	07 13	08 53	h m	20 53	22 59	24 51	00 51
	198	43.4		09.7	290	23.1	9.4	17	16.3	7.9	57.8	68	06 52	08 07	09 32	21 47	23 29	25 05	01 05
	213	43.3		10.3	304	51.5	9.4	17	08.4	8.0	57.7	66	06 44	07 51	09 02	22 04	23 39	25 10	01 10
	228	43.2		10.9	319	19.9	9.5	17	00.4	8.0	57.7	64	06 36	07 38	08 40	22 19	23 48	25 15	01 15
	243	43.0		11.5	333	48.4	9.6	16	52.4	8.2	57.7	62	06 30	07 27	08 22	22 30	23 56	25 19	01 19
	258	42.9		12.1	348	17.0	9.7	16	44.2	8.2	57.6	60	06 25	07 17	08 08	22 41	24 02	00 02	01 22
	273	42.8	S19	12.7	2	45.7	9.8	N16	36.0	8.3	57.6	N 58	06 20	07 09	07 55	22 49	24 08	00 08	01 25
	288	42.7		13.3	17	14.5	9.9	16	27.7	8.4	57.6	56	06 15	07 01	07 44	22 57	24 13	00 13	01 27
	303	42.5		13.9	31	43.4	10.0	16	19.3	8.4	57.5	54	06 11	06 55	07 35	23 04	24 18	00 18	01 30
	318	42.4		14.5	46	12.4	10.0	16	10.9	8.6	57.5	52	06 07	06 49	07 27	23 10	24 22	00 22	01 32
	333	42.3		15.1	60	41.4	10.2	16	02.3	8.6	57.4	50	06 03	06 43	07 19	23 15	24 26	00 26	01 34
	348	42.1		15.7	75	10.6	10.2	15	53.7	8.7	57.4	45	05 55	06 31	07 03	23 27	24 34	00 34	01 38
	3	42.0	S19	16.2	89	39.8	10.3	N15	45.0	8.7	57.4	N 40	05 47	06 20	06 50	23 37	24 40	00 40	01 41
	18	41.9		16.8	104	09.1	10.5	15	36.3	8.8	57.3	35	05 40	06 11	06 38	23 46	24 46	00 46	01 44
	33	41.7		17.4	118	38.6	10.5	15	27.5	8.9	57.3	30	05 34	06 03	06 28	23 53	24 51	00 51	01 47
	48	41.6		18.0	133	08.1	10.6	15	18.6	9.0	57.3	20	05 21	05 48	06 11	24 06	00 06	01 00	01 51
	63	41.5		18.6	147	37.7	10.6	15	09.6	9.0	57.2	N 10	05 08	05 34	05 56	24 17	00 17	01 07	01 55
	78	41.3		19.2	162	07.3	10.8	15	00.6	9.1	57.2	0	04 54	05 20	05 42	24 27	00 27	01 14	01 59
	93	41.2	S19	19.8	176	37.1	10.9	N14	51.5	9.2	57.2	S 10	04 39	05 05	05 27	24 37	00 37	01 21	02 03
	108	41.1		20.4	191	07.0	10.9	14	42.3	9.3	57.1	20	04 20	04 48	05 12	00 03	00 48	01 29	02 07
	123	40.9		21.0	205	36.9	11.0	14	33.0	9.2	57.1	30	03 56	04 28	04 54	00 19	01 01	01 37	02 11
	138	40.8		21.6	220	06.9	11.1	14	23.8	9.4	57.1	35	03 41	04 15	04 44	00 29	01 08	01 42	02 14
	153	40.6		22.1	234	37.0	11.2	14	14.4	9.4	57.0	40	03 23	04 01	04 32	00 39	01 16	01 48	02 17
168	40.5		22.7	249	07.2	11.3	14	05.0	9.5	57.0	45	02 59	03 43	04 17	00 52	01 25	01 54	02 20	
19 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	183	40.4	S19	23.3	263	37.5	11.4	N13	55.5	9.6	57.0	S 50	02 26	03 20	04 00	01 07	01 37	02 02	02 24
	198	40.2		23.9	278	07.9	11.4	13	45.9	9.5	56.9	52	02 09	03 09	03 52	01 14	01 42	02 06	02 26
	213	40.1		24.5	292	38.3	11.5	13	36.4	9.7	56.9	54	01 48	02 56	03 42	01 21	01 48	02 10	02 28
	228	40.0		25.1	307	08.8	11.6	13	26.7	9.7	56.9	56	01 20	02 41	03 32	01 30	01 54	02 14	02 30
	243	39.8		25.7	321	39.4	11.7	13	17.0	9.8	56.8	58	00 32	02 23	03 20	01 40	02 02	02 19	02 33
	258	39.7		26.2	336	10.1	11.8	13	07.2	9.8	56.8	S 60	///	02 00	03 06	01 51	02 10	02 24	02 36
	273	39.5	S19	26.8	350	40.9	11.8	N12	57.4	9.9	56.8								
	288	39.4		27.4	5	11.7	11.9	12	47.5	9.9	56.7								
	303	39.3		28.0	19	42.6	12.0	12	37.6	10.0	56.7	Lat.	Sunset	Twilight		Moonset			
	318	39.1		28.6	34	13.6	12.1	12	27.6	10.0	56.7			Civil	Naut.	18	19	20	21
	333	39.0		29.2	48	44.7	12.1	12	17.6	10.1	56.6					h m	h m	h m	h m
	348	38.8		29.7	63	15.8	12.2	12	07.5	10.1	56.6	N 72	h m	h m	h m	h m	h m	h m	h m
	3	38.7	S19	30.3	77	47.0	12.3	N11	57.4	10.1	56.6	N 70	13 12	15 03	16 28	15 20	15 08	14 58	14 50
	18	38.6		30.9	92	18.3	12.4	11	47.3	10.3	56.5	68	13 58	15 23	16 38	14 56	14 53	14 50	14 47
	33	38.4		31.5	106	49.7	12.4	11	37.0	10.2	56.5	66	14 28	15 39	16 46	14 37	14 41	14 43	14 45
	48	38.3		32.0	121	21.1	12.5	11	26.8	10.3	56.5	64	14 50	15 52	16 53	14 22	14 31	14 38	14 42
	63	38.1		32.6	135	52.6	12.6	11	16.5	10.4	56.4	62	15 08	16 03	17 00	14 10	14 23	14 33	14 41
	78	38.0		33.2	150	24.2	12.6	11	06.1	10.3	56.4	60	15 23	16 13	17 05	13 59	14 15	14 28	14 39
	93	37.8	S19	33.8	164	55.8	12.7	N10	55.8	10.5	56.4	N 58	15 35	16 21	17 10	13 49	14 09	14 24	14 38
	108	37.7		34.3	179	27.5	12.8	10	45.3	10.4	56.3	56	15 46	16 29	17 15	13 41	14 03	14 21	14 36
	123	37.5		34.9	193	59.3	12.8	10	34.9	10.5	56.3	54	15 55	16 36	17 19	13 33	13 58	14 18	14 35
	138	37.4		35.5	208	31.1	12.9	10	24.4	10.6	56.3	52	16 04	16 42	17 23	13 27	13 53	14 15	14 34
	153	37.3		36.1	223	03.0	13.0	10	13.8	10.5	56.2	50	16 11	16 47	17 27	13 21	13 48	14 12	14 33
168	37.1		36.6	237	35.0	13.0	10	03.3	10.6	56.2	45	16 28	17 00	17 36	13 08	13 39	14 06	14 31	
20 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23	183	37.0	S19	37.2	252	07.0	13.2	N 9	52.7	10.7	56.2	N 40	16 41	17 10	17 43	12 57	13 31	14 02	14 29
	198	36.8		37.8	266	39.2	13.1	9	42.0	10.7	56.2	35	16 52	17 19	17 50	12 48	13 24	13 57	14 28
	213	36.7		38.4	281	11.3	13.2	9	31.3	10.7	56.1	30	17 02	17 28	17 57	12 39	13 18	13 54	14 26
	228	36.5		38.9	295	43.5	13.3	9	20.6	10.7	56.1	20	17 20	17 43	18 10	12 25	13 08	13 47	14 24
	243	36.4		39.5	310	15.8	13.4	9	09.9	10.8	56.1	N 10	17 35	17 57	18 23	12 13	12 59	13 41	14 22
	258	36.2		40.1	324	48.2	13.4	8	59.1	10.8	56.0	0	17 49	18 11	18 36	12 01	12 50	13 36	14 20
	273	36.1	S19	40.6	339	20.6	13.5	N 8	48.3	10.8	56.0	S 10	18 03	18 26	18 52	11 49	12 41	13 31	14 18
	288	35.9		41.2	353	53.1	13.5	8	37.5	10.9	56.0	3	18 19	18 43	19 11	11 36	12 32	13 25	14 16
	303	35.8		41.8	8	25.6	13.6	8	26.6	10.9	56.0	30	18 37	19 03	19 35	11 22	12 21	13 18	14 13
	318	35.6		42.3	22	58.2	13.6	8	15.7	10.9	55.9	35	18 48	19 16	19 50	11 13	12 15	13 14	14 12
	333	35.5		42.9	37	30.8	13.7	8	04.8	11.0	55.9	40	19 00	19 31	20 09	11 03	12 08	13 10	14 10
	348	35.3		43.5	52	03.5	13.7	7	53.8	10.9	55.9	45	19 14	19 49	20 33	10 52	11 59	13 05	14 08
	3	35.2	S19	44.0	66	36.2	13.8	N 7	42.9	11.0	55.8	S 50	19 32	20 12	21 06	10 38	11 49	12 58	14 06
	18	35.0		44.6	81	09.0	13.9	7	31.9	11.0	55.8	52	19 40	20 23	21 24	10 31	11 44	12 55	14 05
	33	34.9		45.2	95	41.9	13.9	7	20.9	11.1	55.8	54	19 50	20 36	21 45	10 24	11 39	12 52	14 03
	48	34.7		45.7	110	14.8	13.9	7	09.8	11.0	55.8	56	20 00	20 52	22 15	10 16	11 33	12 49	14 02
	63	34.6		46.3	124	47.7	14.0	6	58.8	11.1									

GMT	ARIES			VENUS			4.2			MARS +1.4			JUPITER -1.3			SATURN +1.0			STARS		
	G.H.A.	G.H.A.	Dec.	G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		G.H.A.	Dec.		Name	S.H.A.	Dec.			
21	00	59 54.4	132 53.5	S25 55.3	250 48.9	N 6 39.2	212 45.6	S10 00.7		222 16.9	S 5 00.8		Acamar	315 36.2	S40 22.8						
	01	74 56.8	147 53.4	55.0	265 50.1	38.7	227 47.5	00.9		237 19.1	00.9		Achernar	335 44.2	S57 20.0						
	02	89 59.3	162 53.3	54.6	280 51.3	38.3	242 49.5	01.1		252 21.3	01.0		Acrux	173 36.8	S62 59.5						
	03	105 01.8	177 53.2	54.3	295 52.5	37.8	257 51.5	01.3		267 23.5	01.1		Adhara	255 31.2	S28 56.7						
	04	120 04.2	192 53.1	54.0	310 53.7	37.3	272 53.5	01.4		282 25.8	01.2		Aldebaran	291 16.7	N16 28.4						
	05	135 06.7	207 53.0	53.6	325 54.9	36.8	287 55.5	01.6		297 28.0	01.3										
	06	150 09.2	222 53.0	S25 53.3	340 56.2	N 6 36.3	302 57.5	S10 01.8		312 30.2	S 5 01.4		Alioth	166 42.2	N56 03.4						
	07	165 11.6	237 52.9	53.0	355 57.4	35.8	317 59.4	02.0		327 32.4	01.5		Alkaid	153 18.3	N49 24.2						
	S 08	180 14.1	252 52.8	52.6	10 58.6	35.3	333 01.4	02.1		342 34.6	01.6		Al Na'ir	28 13.9	S47 03.2						
	A 09	195 16.5	267 52.7	52.3	25 59.8	34.8	348 03.4	02.3		357 36.9	01.7		Alnilam	276 10.5	S 1 12.8						
	T 10	210 19.0	282 52.7	51.9	41 01.0	34.3	3 05.4	02.5		12 39.1	01.7		Alphard	218 19.7	S 8 34.6						
	U 11	225 21.5	297 52.6	51.6	56 02.2	33.8	18 07.4	02.7		27 41.3	01.8										
	R 12	240 23.9	312 52.5	S25 51.3	71 03.5	N 6 33.3	33 09.4	S10 02.8		42 43.5	S 5 01.9		Alphecca	126 31.8	N26 46.7						
	D 13	255 26.4	327 52.4	50.9	86 04.7	32.8	48 11.3	03.0		57 45.8	02.0		Alpheratz	358 08.3	N28 59.5						
	A 14	270 28.9	342 52.4	50.6	101 05.9	32.3	63 13.3	03.2		72 48.0	02.1		Altair	62 32.0	N 8 49.3						
	Y 15	285 31.3	357 52.3	50.2	116 07.1	31.8	78 15.3	03.4		87 50.2	02.2		Ankaa	353 39.2	S42 24.5						
	16	300 33.8	12 52.2	49.9	131 08.3	31.3	93 17.3	03.6		102 52.4	02.3		Antares	112 56.3	S26 23.4						
	17	315 36.3	27 52.2	49.5	146 09.5	30.8	108 19.3	03.7		117 54.7	02.4										
	18	330 38.7	42 52.1	S25 49.2	161 10.8	N 6 30.3	123 21.3	S10 03.9		132 56.9	S 5 02.5		Arcturus	146 18.1	N19 16.7						
	19	345 41.2	57 52.0	48.8	176 12.0	29.8	138 23.3	04.1		147 59.1	02.6		Atria	108 20.4	S68 59.7						
	20	0 43.6	72 52.0	48.5	191 13.2	29.3	153 25.2	04.3		163 01.3	02.7		Avior	234 27.6	S59 26.8						
	21	15 46.1	87 51.9	48.1	206 14.4	28.9	168 27.2	04.4		178 03.6	02.7		Bellatrix	278 57.6	N 6 20.0						
	22	30 48.6	102 51.9	47.8	221 15.6	28.4	183 29.2	04.6		193 05.8	02.8		Betelgeuse	271 27.1	N 7 24.3						
23	45 51.0	117 51.8	47.4	236 16.8	27.9	198 31.2	04.8		208 08.0	02.9											
22	00	60 53.5	132 51.7	S25 47.1	251 18.1	N 6 27.4	213 33.2	S10 05.0	223 10.2	S 5 03.0		Canopus	264 06.4	S52 41.0							
	01	75 56.0	147 51.7	46.7	266 19.3	26.9	228 35.2	05.1	238 12.5	03.1		Capella	281 09.7	N45 58.7							
	02	90 58.4	162 51.6	46.4	281 20.5	26.4	243 37.1	05.3	253 14.7	03.2		Deneb	49 48.1	N45 13.2							
	03	106 00.9	177 51.6	46.0	296 21.7	25.9	258 39.1	05.5	268 16.9	03.3		Denebola	182 58.4	N14 40.5							
	04	121 03.4	192 51.5	45.6	311 22.9	25.4	273 41.1	05.7	283 19.1	03.4		Diphda	349 19.9	S18 05.3							
	05	136 05.8	207 51.5	45.3	326 24.2	24.9	288 43.1	05.8	298 21.3	03.5											
	06	151 08.3	222 51.4	S25 44.9	341 25.4	N 6 24.4	303 45.1	S10 06.0		313 23.6	S 5 03.6		Dubhe	194 21.3	N61 50.8						
	07	166 10.8	237 51.4	44.6	356 26.6	23.9	318 47.1	06.2	328 25.8	03.6		Elnath	278 42.8	N28 35.5							
	08	181 13.2	252 51.3	44.2	11 27.8	23.4	333 49.1	06.4	343 28.0	03.7		Eltanin	90 57.8	N51 29.7							
	S 09	196 15.7	267 51.3	43.9	26 29.0	22.9	348 51.0	06.5	358 30.2	03.8		Enif	34 10.8	N 9 47.6							
	U 10	211 18.1	282 51.3	43.5	41 30.3	22.4	3 53.0	06.7	13 32.5	03.9		Fomalhaut	15 50.5	S29 43.3							
	N 11	226 20.6	297 51.2	43.1	56 31.5	21.9	18 55.0	06.9	28 34.7	04.0											
	D 12	241 23.1	312 51.2	S25 42.8	71 32.7	N 6 21.4	33 57.0	S10 07.1	43 36.9	S 5 04.1		Gacrux	172 28.2	S57 00.3							
	A 13	256 25.5	327 51.1	42.4	86 33.9	21.0	48 59.0	07.2	58 39.1	04.2		Gienah	176 17.3	S17 26.2							
	Y 14	271 28.0	342 51.1	42.0	101 35.2	20.5	64 01.0	07.4	73 41.4	04.3		Hadar	149 22.8	S60 16.9							
	15	286 30.5	357 51.1	41.7	116 36.4	20.0	79 03.0	07.6	88 43.6	04.4		Hamal	328 27.7	N23 22.6							
	16	301 32.9	12 51.0	41.3	131 37.6	19.5	94 04.9	07.8	103 45.8	04.5		Kaus Aust.	84 16.1	S34 23.7							
	17	316 35.4	27 51.0	40.9	146 38.8	19.0	109 06.9	07.9	118 48.0	04.5											
	18	331 37.9	42 51.0	S25 40.6	161 40.1	N 6 18.5	124 08.9	S10 08.1	133 50.3	S 5 04.6		Kochab	137 20.2	N74 13.8							
	19	346 40.3	57 50.9	40.2	176 41.3	18.0	139 10.9	08.3	148 52.5	04.7		Markab	14 02.3	N15 06.5							
	20	1 42.8	72 50.9	39.8	191 42.5	17.5	154 12.9	08.5	163 54.7	04.8		Menkar	314 40.0	N 4 01.1							
	21	16 45.3	87 50.9	39.4	206 43.7	17.0	169 14.9	08.6	178 57.0	04.9		Menkent	148 36.4	S36 16.6							
	22	31 47.7	102 50.9	39.1	221 44.9	16.5	184 16.9	08.8	193 59.2	05.0		Miaplacidus	221 44.6	S69 38.2							
23	46 50.2	117 50.8	38.7	236 46.2	16.0	199 18.8	09.0	209 01.4	05.1												
23	00	61 52.6	132 50.8	S25 38.3	251 47.4	N 6 15.5	214 20.8	S10 09.2	224 03.6	S 5 05.2		Mirfak	309 14.5	N49 47.8							
	01	76 55.1	147 50.8	38.0	266 48.6	15.0	229 22.8	09.3	239 05.9	05.3		Nunki	76 28.5	S26 19.2							
	02	91 57.6	162 50.8	37.6	281 49.8	14.5	244 24.8	09.5	254 08.1	05.4		Pearcock	53 57.4	S56 47.9							
	03	107 00.0	177 50.7	37.2	296 51.1	14.1	259 26.8	09.7	269 10.3	05.4		Pollux	243 57.0	N28 04.2							
	04	122 02.5	192 50.7	36.8	311 52.3	13.6	274 28.8	09.8	284 12.5	05.5		Procyon	245 24.8	N 5 16.4							
	05	137 05.0	207 50.7	36.4	326 53.5	13.1	289 30.8	10.0	299 14.8	05.6											
	06	152 07.4	222 50.7	S25 36.1	341 54.8	N 6 12.6	304 32.7	S10 10.2	314 17.0	S 5 05.7		Rasalhague	96 29.2	N12 34.5							
	07	167 09.9	237 50.7	35.7	356 56.0	12.1	319 34.7	10.4	329 19.2	05.8		Regulus	208 09.2	N12 03.4							
	08	182 12.4	252 50.7	35.3	11 57.2	11.6	334 36.7	10.5	344 21.4	05.9		Rigel	281 34.9	S 8 13.3							
	M 09	197 14.8	267 50.7	34.9	26 58.4	11.1	349 38.7	10.7	359 23.7	06.0		Rigel Kent.	140 25.4	S60 45.3							
	O 10	212 17.3	282 50.7	34.5	41 59.7	10.6	4 40.7	10.9	14 25.9	06.1		Sabik	102 40.6	S15 42.1							
	N 11	227 19.8	297 50.7	34.2	57 00.9	10.1	19 42.7	11.1	29 28.1	06.2											
	D 12	242 22.2	312 50.6	S25 33.8	72 02.1	N 6 09.6	34 44.7	S10 11.2	44 30.4	S 5 06.2		Schedar	350 07.8	N56 26.4							
	A 13	257 24.7	327 50.6	33.4	87 03.3	09.1	49 46.7	11.4	59 32.6	06.3		Shaula	96 55.1	S37 05.4							
	Y 14	272 27.1	342 50.6	33.0	102 04.6	08.6	64 48.6	11.6	74 34.8	06.4		Sirius	258 54.7	S16 41.4							
	15	287 29.6	357 50.6	32.6	117 05.8	08.2	79 50.6	11.8	89 37.0	06.5		Spica	158 57.0	S11 03.8							
	16	302 32.1	12 50.6	32.2	132 07.0	07.7	94 52.6	11.9	104 39.3	06.6		Suhail	223 10.1	S43 21.2							
	17	317 34.5	27 50.6	31.8	147 08.3	07.2	109 54.6	12.1	119 41.5	06.7											
	18	332 37.0	42 50.6	S25 31.5	162 09.5	N 6 06.7	124 56.6	S10 12.3	134												

G.M.T.	SUN		MOON				Lat.	Twilight		Sunrise	Moonrise					
	G.H.A.	Dec.	G.H.A.	"	Dec.	d		H.P.	Naut.		Civil	21	22	23	24	
	h m	°	h m	°	h m	°	°	h m	h m	h m	h m	h m	h m	h m		
21 00	183 33.4	S19 50.7	241 13.0	14.4 N	5 29.6	11.2	55.5	N 72	07 23	09 07	10 44	00 51	02 37	04 21	06 07	
01	198 33.2	51.3	255 46.4	14.4	5 18.4	11.3	55.5	N 70	07 10	08 38	10 44	00 59	02 38	04 15	05 52	
02	213 33.0	51.9	270 19.8	14.4	5 07.1	11.2	55.5	68	07 00	08 17	09 47	01 05	02 38	04 09	05 41	
03	228 32.9	52.4	284 53.2	14.5	4 55.9	11.3	55.5	66	06 51	08 00	09 13	01 10	02 38	04 05	05 31	
04	243 32.7	53.0	299 26.7	14.5	4 44.6	11.2	55.4	64	06 43	07 46	08 49	01 15	02 39	04 01	05 23	
05	258 32.6	53.5	314 00.2	14.6	4 33.4	11.3	55.4	62	06 36	07 34	08 30	01 19	02 39	03 58	05 17	
06	273 32.4	S19 54.1	328 33.8	14.6 N	4 22.1	11.3	55.4	60	06 30	07 23	08 15	01 22	02 39	03 55	05 11	
07	288 32.3	54.6	343 07.4	14.6	4 10.8	11.3	55.4	N 58	06 25	07 15	08 02	01 25	02 39	03 53	05 06	
S 08	303 32.1	55.2	357 41.0	14.6	3 59.5	11.3	55.3	56	06 20	07 07	07 50	01 27	02 40	03 51	05 01	
A 09	318 32.0	55.7	372 14.6	14.7	3 48.2	11.3	55.3	54	06 15	07 00	07 40	01 30	02 40	03 49	04 57	
U 10	333 31.8	56.3	386 48.3	14.8	3 36.9	11.4	55.3	52	06 11	06 53	07 32	01 32	02 40	03 47	04 54	
R 11	348 31.6	56.8	401 22.1	14.7	3 25.5	11.3	55.3	50	06 07	06 47	07 24	01 34	02 40	03 45	04 50	
D 12	3 31.5	S19 57.4	415 55.8	14.8 N	3 14.2	11.3	55.3	45	05 58	06 34	07 07	01 38	02 40	03 42	04 43	
A 13	18 31.3	57.9	429 70	14.9	3 02.9	11.4	55.2	N 40	05 50	06 23	06 53	01 41	02 41	03 39	04 37	
Y 14	33 31.2	58.5	443 85	14.8	2 51.5	11.3	55.2	35	05 43	06 14	06 41	01 44	02 41	03 37	04 32	
15	48 31.0	59.0	457 99	14.9	2 40.2	11.4	55.2	30	05 36	06 05	06 31	01 47	02 41	03 35	04 28	
16	63 30.8	19 59.6	471 114	11.2	14.9	2 28.8	11.3	55.2	20	05 23	05 49	06 13	01 51	02 42	03 31	04 20
17	78 30.7	20 00.1	485 128	45.1	15.0	2 17.5	11.4	55.1	N 10	05 09	05 35	05 57	01 55	02 42	03 28	04 13
18	93 30.5	S20 00.7	499 143	19.1	14.9	2 06.1	11.3	55.1	0	04 55	05 21	05 43	01 59	02 42	03 24	04 07
19	108 30.4	01.2	513 157	53.0	15.0	1 54.8	11.4	55.1	S 10	04 39	05 05	05 28	02 03	02 43	03 21	04 01
20	123 30.2	01.8	527 172	27.0	15.0	1 43.4	11.3	55.1	20	04 19	04 48	05 12	02 07	02 43	03 18	03 54
21	138 30.0	02.3	541 187	01.0	15.1	1 32.1	11.4	55.1	30	03 55	04 27	04 53	02 11	02 43	03 15	03 46
22	153 29.9	02.8	555 201	35.1	15.0	1 20.7	11.3	55.0	35	03 39	04 14	04 42	02 14	02 44	03 13	03 42
23	168 29.7	03.4	569 216	09.1	15.1	1 09.4	11.4	55.0	40	03 20	03 58	04 30	02 17	02 44	03 10	03 37
22 00	183 29.5	S20 03.9	583 230	43.2	15.1	0 58.0	11.3	55.0	45	02 55	03 40	04 15	02 20	02 44	03 08	03 32
01	198 29.4	04.5	597 245	17.3	15.2	0 46.7	11.4	55.0	S 50	02 21	03 16	03 56	02 24	02 45	03 05	03 25
02	213 29.2	05.0	611 259	51.5	15.1	0 35.3	11.3	55.0	52	02 03	03 04	03 48	02 26	02 45	03 03	03 22
03	228 29.1	05.5	625 274	25.6	15.2	0 24.0	11.3	54.9	54	01 40	02 51	03 38	02 28	02 45	03 02	03 19
04	243 28.9	06.1	639 288	59.8	15.2	0 12.7	11.4	54.9	56	01 07	02 35	03 27	02 30	02 45	03 00	03 15
05	258 28.7	06.6	653 303	34.0	15.1	0 01.3	11.3	54.9	58	////	02 15	03 14	02 33	02 45	02 58	03 11
06	273 28.6	S20 07.2	667 318	08.1	15.3	0 10.0	11.3	54.9	S 60	////	01 51	02 59	02 36	02 46	02 56	03 06
07	288 28.4	07.7	681 332	42.4	15.2	0 21.3	11.3	54.9								
08	303 28.2	08.2	695 347	16.6	15.2	0 32.6	11.3	54.9	Lat.	Sunset	Twilight		Moonset			
S 09	318 28.1	08.8	709 361	50.8	15.3	0 43.9	11.3	54.8			Civil	Naut.	21	22	23	24
U 10	333 27.9	09.3	723 375	25.1	15.3	0 55.2	11.3	54.8								
N 11	348 27.7	09.8	737 389	59.4	15.3	1 06.5	11.2	54.8	N 72	12 47	14 24	16 08	14 53	14 39	14 24	14 07
D 12	3 27.6	S20 10.4	751 403	33.7	15.2	1 17.7	11.3	54.8	N 70	12 47	14 53	16 21	14 50	14 41	14 33	14 23
A 13	18 27.4	10.9	765 417	07.9	15.4	1 29.0	11.2	54.8	68	13 45	15 15	16 32	14 47	14 43	14 40	14 36
Y 14	33 27.2	11.4	779 431	42.3	15.3	1 40.2	11.3	54.7	66	14 18	15 32	16 41	14 45	14 45	14 46	14 47
15	48 27.1	12.0	793 445	16.6	15.3	1 51.5	11.2	54.7	64	14 42	15 46	16 48	14 42	14 47	14 51	14 56
16	63 26.9	12.5	807 459	50.9	15.3	2 02.7	11.2	54.7	62	15 01	15 58	16 55	14 41	14 48	14 55	15 04
17	78 26.7	13.0	821 473	25.2	15.4	2 13.9	11.2	54.7	60	15 17	16 08	17 01	14 39	14 49	14 59	15 11
18	93 26.5	S20 13.6	835 487	59.6	15.3	2 25.1	11.2	54.7	N 58	15 30	16 17	17 07	14 38	14 50	15 03	15 16
19	108 26.4	14.1	849 501	33.9	15.4	2 36.3	11.1	54.7	56	15 41	16 25	17 12	14 36	14 51	15 06	15 22
20	123 26.2	14.6	863 515	08.3	15.3	2 47.4	11.2	54.6	54	15 51	16 32	17 16	14 35	14 52	15 09	15 27
21	138 26.0	15.2	877 529	42.6	15.4	2 58.6	11.1	54.6	52	16 00	16 39	17 21	14 34	14 53	15 11	15 31
22	153 25.9	15.7	891 543	17.0	15.3	3 09.7	11.1	54.6	50	16 08	16 45	17 25	14 33	14 53	15 13	15 35
23	168 25.7	16.2	905 557	51.3	15.4	3 20.8	11.1	54.6	45	16 25	16 58	17 34	14 31	14 55	15 19	15 43
23 00	183 25.5	S20 16.7	919 571	25.7	15.4	3 31.9	11.1	54.6	N 40	16 39	17 09	17 42	14 29	14 56	15 23	15 50
01	198 25.4	17.3	933 585	00.1	15.3	3 43.0	11.0	54.6	35	16 51	17 18	17 49	14 28	14 57	15 26	15 57
02	213 25.2	17.8	947 599	34.4	15.4	3 54.0	11.1	54.6	30	17 01	17 27	17 56	14 26	14 58	15 30	16 02
03	228 25.0	18.3	961 613	68.8	15.4	4 05.1	11.0	54.5	20	17 19	17 43	18 10	14 24	15 00	15 35	16 11
04	243 24.8	18.8	975 627	43.2	15.3	4 16.1	11.0	54.5	N 10	17 35	17 57	18 23	14 22	15 01	15 40	16 20
05	258 24.7	19.4	989 641	17.5	15.4	4 27.1	11.0	54.5	0	17 50	18 12	18 37	14 20	15 03	15 45	16 27
06	273 24.5	S20 19.9	1003 655	51.9	15.4	4 38.1	10.9	54.5	S 10	18 05	18 27	18 54	14 18	15 04	15 50	16 35
07	288 24.3	20.4	1017 669	26.3	15.3	4 49.0	10.9	54.5	20	18 21	18 45	19 13	14 16	15 05	15 54	16 44
08	303 24.1	20.9	1031 683	00.6	15.4	4 59.9	10.9	54.5	30	18 40	19 06	19 38	14 13	15 07	16 00	16 53
M 09	318 24.0	21.4	1045 697	35.0	15.3	5 10.8	10.9	54.5	35	18 51	19 19	19 54	14 12	15 08	16 03	16 59
O 10	333 23.8	22.0	1059 711	69.3	15.4	5 21.7	10.8	54.4	40	19 03	19 34	20 13	14 10	15 09	16 07	17 05
N 11	348 23.6	22.5	1073 725	43.7	15.3	5 32.5	10.9	54.4	45	19 18	19 53	20 38	14 08	15 10	16 12	17 17
D 12	3 23.4	S20 23.0	1087 739	18.0	15.3	5 43.4	10.8	54.4	S 50	19 37	20 17	21 13	14 06	15 12	16 17	17 21
A 13	18 23.3	23.5	1101 753	52.3	15.4	5 54.2	10.7	54.4	52	19 45	20 29	21 32	14 05	15 12	16 19	17 25
Y 14	33 23.1	24.0	1115 767	26.7	15.3	6 04.9	10.8	54.4	54	19 55	20 43	21 55	14 03	15 13	16 22	17 30
15	48 22.9	24.5	1129 781	01.0	15.3	6 15.7	10.7	54.4	56	20 07	20 59	22 29	14 02	15 14	16 25	17 35
16	63 22.7	25.1	1143 795	35.3	15.3	6 26.4	10.7									