2012 Moon

h m	1 Jan GHA	1 Jan Dec	d	2 Jan GHA	2 Jan Dec	d	3 Jan GHA	3 Jan Dec	d	4 Jan GHA	4 Jan Dec	d	5 Jan GHA	5 Jan Dec	d	6 Jan GHA	6 Jan Dec	d
0 0	95 27.2	7 15.2		85 9.6	11 25.3		74 36.3	15 7.9		63 38.9	18 14.8		52 12.2	20 36.9		40 15.8	22 5.4	
20	100 18.7	7 18.8	291.5 3.6	90 0.9	11 28.6	291.3 3.3	79 27.4	15 10.8	291.0 2.9	68 29.6	18 17.1	290.7 2.3	57 2.5	20 38.5	290.2 1.6	45 5.6	22 6.2	289.9 0.8
40	105 10.2	7 22.5		94 52.2	11 31.9		84 18.4	15 13.7		73 20.2	18 19.4		61 52.7	20 40.1		49 55.5	22 7.0	
1 0	110 1.7	7 26.1		99 43.6	11 35.2		89 9.5	15 16.5		78 10.9	18 21.6		66 42.9	20 41.7		54 45.3	22 7.8	
20	114 53.1	7 29.7	291.5 3.6	104 34.9	11 38.5	291.3 3.3	94 0.5	15 19.3	291.0 2.8	83 1.6	18 23.9	290.6 2.3	71 33.2	20 43.3	290.2 1.6	59 35.2	22 8.5	289.8 0.7
40	119 44.6	7 33.3		109 26.2	11 41.8		98 51.5	15 22.2		87 52.2	18 26.2		76 23.4	20 44.9		64 25.0	22 9.3	
2 0	124 36.1	7 36.9		114 17.5	11 45.0		103 42.6	15 25.0		92 42.8	18 28.4		81 13.6	20 46.5		69 14.9	22 10.0	
20	129 27.6	7 40.5	291.5 3.6	119 8.9	11 48.3	291.3 3.3	108 33.6	15 27.8	291.0 2.8	97 33.5	18 30.7	290.6 2.3	86 3.8	20 48.0	290.2 1.5	74 4.7	22 10.8	289.8 0.7
40	134 19.0	7 44.1		124 0.2	11 51.6		113 24.6	15 30.6		102 24.1	18 32.9		90 54.0	20 49.6		78 54.5	22 11.5	
3 0	139 10.5	7 47.7		128 51.5	11 54.8		118 15.6	15 33.4		107 14.7	18 35.2		95 44.2	20 51.1		83 44.3	22 12.2	
20	144 2.0	7 51.3	291.5 3.6	133 42.8	11 58.1	291.3 3.3	123 6.6	15 36.2	291.0 2.8	112 5.3	18 37.4	290.6 2.2	100 34.4	20 52.6	290.2 1.5	88 34.1	22 12.9	289.8 0.7
40	148 53.5	7 54.9		138 34.1	12 1.3		127 57.6	15 39.0		116 56.0	18 39.6		105 24.6	20 54.1		93 24.0	22 13.6	
4 0	153 44.9	7 58.5		143 25.4	12 4.6		132 48.6	15 41.8		121 46.6	18 41.8		110 14.8	20 55.6		98 13.8	22 14.3	
20	158 36.4	8 2.1	291.5 3.6	148 16.7	12 7.8	291.3 3.2	137 39.6	15 44.6	291.0 2.8	126 37.2	18 44.0	290.6 2.2	115 5.0	20 57.1	290.2 1.5	103 3.6	22 15.0	289.8 0.7
40	163 27.9	8 5.6		153 8.0	12 11.0		142 30.6	15 47.3		131 27.8	18 46.2		119 55.2	20 58.6		107 53.4	22 15.6	
5 0	168 19.3	8 9.2		157 59.3	12 14.2		147 21.6	15 50.1		136 18.4	18 48.4		124 45.3	21 0.1		112 43.2	22 16.3	
20	173 10.8	8 12.8	291.5 3.6	162 50.5	12 17.5	291.3 3.2	152 12.6	15 52.9	291.0 2.7	141 8.9	18 50.5	290.6 2.1	129 35.5	21 1.5	290.2 1.4	117 32.9	22 16.9	289.8 0.6
40	178 2.2	8 16.3		167 41.8	12 20.7		157 3.5	15 55.6		145 59.5	18 52.7		134 25.6	21 3.0		122 22.7	22 17.5	
6 0	182 53.7	8 19.9		172 33.1	12 23.9		161 54.5	15 58.3		150 50.1	18 54.8		139 15.8	21 4.4		127 12.5	22 18.1	
20	187 45.2	8 23.4	291.5 3.5	177 24.4	12 27.1	291.3 3.2	166 45.5	16 1.1	291.0 2.7	155 40.7	18 57.0	290.6 2.1	144 5.9	21 5.8	290.1 1.4	132 2.3	22 18.7	289.8 0.6
40	192 36.6	8 27.0		182 15.7	12 30.3		171 36.4	16 3.8		160 31.2	18 59.1		148 56.1	21 7.2		136 52.0	22 19.3	
7 0	197 28.1	8 30.5		187 6.9	12 33.5		176 27.4	16 6.5		165 21.8	19 1.2		153 46.2	21 8.7		141 41.8	22 19.8	
20	202 19.5	8 34.1	291.5 3.6	191 58.2	12 36.6	291.3 3.2	181 18.3	16 9.2	290.9 2.7	170 12.3	19 3.4	290.5 2.1	158 36.3	21 10.0	290.1 1.4	146 31.6	22 20.4	289.8 0.6
40	207 11.0	8 37.6		196 49.4	12 39.8		186 9.3	16 11.9		175 2.9	19 5.5		163 26.5	21 11.4		151 21.3	22 20.9	
8 0	212 2.4	8 41.2		201 40.7	12 43.0		191 0.2	16 14.6		179 53.4	19 7.6		168 16.6	21 12.8		156 11.1	22 21.5	
20	216 53.9	8 44.7	291.4 3.5	206 32.0	12 46.2	291.3 3.2	195 51.1	16 17.3	290.9 2.7	184 43.9	19 9.7	290.5 2.1	173 6.7	21 14.2	290.1 1.3	161 0.8	22 22.0	289.7 0.5
40	221 45.3	8 48.2		211 23.2	12 49.3		200 42.1	16 20.0		189 34.4	19 11.7		177 56.8	21 15.5		165 50.6	22 22.5	
9 0	226 36.8	8 51.7		216 14.5	12 52.5		205 33.0	16 22.7		194 25.0	19 13.8		182 46.9	21 16.8		170 40.3	22 23.0	
20	231 28.2	8 55.2	291.4 3.5	221 5.7	12 55.6	291.2 3.1	210 23.9	16 25.3	290.9 2.6	199 15.5	19 15.9	290.5 2.0	187 37.0	21 18.2	290.1 1.3	175 30.0	22 23.5	289.7 0.5
40	236 19.7	8 58.8		225 56.9	12 58.8		215 14.8	16 28.0		204 6.0	19 17.9		192 27.1	21 19.5		180 19.8	22 23.9	
10 0	241 11.1	9 2.3		230 48.2	13 1.9		220 5.7	16 30.6		208 56.5	19 19.9		197 17.2	21 20.8		185 9.5	22 24.4	
20	246 2.5	9 5.8	291.4 3.5	235 39.4	13 5.0	291.2 3.1	224 56.6	16 33.3	290.9 2.6	213 47.0	19 22.0	290.5 2.0	202 7.2	21 22.1	290.1 1.3	189 59.2	22 24.8	289.7 0.4
40	250 54.0	9 9.3		240 30.6	13 8.1		229 47.5	16 35.9		218 37.5	19 24.0		206 57.3	21 23.4		194 48.9	22 25.3	
11 0	255 45.4	9 12.8		245 21.9	13 11.3		234 38.4	16 38.5		223 28.0	19 26.0		211 47.4	21 24.6		199 38.7	22 25.7	
20	260 36.9	9 16.3	291.4 3.5	250 13.1	13 14.4	291.2 3.1	239 29.3	16 41.2	290.9 2.6	228 18.4	19 28.0	290.5 2.0	216 37.4	21 25.9	290.1 1.3	204 28.4	22 26.1	289.7 0.4
40	265 28.3	9 19.7		255 4.3	13 17.5		244 20.2	16 43.8		233 8.9	19 30.0		221 27.5	21 27.2		209 18.1	22 26.5	
12 0	270 19.7	9 23.2		259 55.5	13 20.6		249 11.1	16 46.4		237 59.4	19 32.0		226 17.5	21 28.4		214 7.8	22 26.9	
20	275 11.1	9 26.7	291.4 3.5	264 46.7	13 23.7	291.2 3.1	254 1.9	16 49.0	290.9 2.6	242 49.8	19 34.0	290.5 2.0	231 7.6	21 29.6	290.0 1.2	218 57.5	22 27.2	289.7 0.3
40	280 2.6	9 30.2		269 37.9	13 26.8		258 52.8	16 51.6		247 40.3	19 35.9		235 57.6	21 30.8		223 47.2	22 27.6	
13 0	284 54.0	9 33.6		274 29.1	13 29.8		263 43.6	16 54.1		252 30.7	19 37.9		240 47.6	21 32.0		228 36.9	22 27.9	
20	289 45.4	9 37.1	291.4 3.5	279 20.3	13 32.9	291.2 3.1	268 34.5	16 56.7	290.8 2.6	257 21.2	19 39.8	290.4 1.9	245 37.7	21 33.2	290.0 1.2	233 26.5	22 28.3	289.7 0.3
40	294 36.8	9 40.5		284 11.5	13 36.0		273 25.3	16 59.3		262 11.6	19 41.8		250 27.7	21 34.4		238 16.2	22 28.6	
14 0	299 28.2	9 44.0		289 2.7	13 39.0		278 16.2	17 1.8		267 2.0	19 43.7		255 17.7	21 35.6		243 5.9	22 28.9	
20	304 19.7	9 47.5	291.4 3.4	293 53.9	13 42.1	291.2 3.1	283 7.0	17 4.4	290.8 2.6	271 52.5	19 45.6	290.4 1.9	260 7.7	21 36.8	290.0 1.1	247 55.6	22 29.2	289.7 0.3
40	309 11.1	9 50.9		298 45.1	13 45.2		287 57.9	17 6.9		276 42.9	19 47.5		264 57.7	21 37.9		252 45.3	22 29.4	
15 0	314 2.5	9 54.3		303 36.2	13 48.2		292 48.7	17 9.5		281 33.3	19 49.4		269 47.7	21 39.0		257 34.9	22 29.7	
20	318 53.9	9 57.8	291.4 3.4	308 27.4	13 51.2	291.2 3.0	297 39.5	17 12.0	290.8 2.5	286 23.7	19 51.3	290.4 1.9	274 37.7	21 40.2	290.0 1.1	262 24.6	22 30.0	289.7 0.2
40	323 45.3	10 1.2		313 18.6	13 54.3		302 30.3	17 14.5		291 14.1	19 53.2		279 27.7	21 41.3		267 14.2	22 30.2	
16 0	328 36.7	10 4.6		318 9.7	13 57.3		307 21.1	17 17.0		296 4.5	19 55.1		284 17.7	21 42.4		272 3.9	22 30.4	
20	333 28.1	10 8.0	291.4 3.4	323 0.9	14 0.3	291.2 3.0	312 11.9	17 19.5	290.8 2.5	300 54.9	19 56.9	290.4 1.8	289 7.7	21 43.5	290.0 1.1	276 53.6	22 30.7	289.6 0.2
40	338 19.5	10 11.5		327 52.0	14 3.3		317 2.7	17 22.0		305 45.3	19 58.8		293 57.7	21 44.6		281 43.2	22 30.9	
17 0	343 10.9	10 14.9		332 43.2	14 6.3		321 53.5	17 24.5		310 35.6	20 0.6		298 47.6	21 45.6		286 32.8	22 31.0	
20	348 2.3	10 18.3	291.4 3.4	337 34.3	14 9.3	291.1 3.0	326 44.3	17 27.0	290.8 2.5	315 26.0	20 2.4	290.4 1.8	303 37.6	21 46.7	290.0 1.1	291 22.5	22 31.2	289.6 0.2
40	352 53.7	10 21.7		342 25.5	14 12.3		331 35.1	17 29.4		320 16.4	20 4.3		308 27.5	21 47.7		296 12.1	22 31.4	
18 0	357 45.1	10 25.1		347 16.6	14 15.3		336 25.9	17 31.9		325 6.7	20 6.1		313 17.5	21 48.8		301 1.8	22 31.5	
20	2 36.4	10 28.5	291.4 3.4	352 7.7	14 18.3	291.1 3.0	341 16.7	17 34.3	290.8 2.4	329 57.1	20 7.9	290.3 1.8	318 7.4	21 49.8	289.9 1.0	305 51.4	22 31.7	289.6 0.1
40	7 27.8	10 31.8		356 58.9	14 21.3		346 7.4	17 36.8		334 47.4	20 9.7		322 57.4	21 50.8		310 41.0	22 31.8	
19 0	12 19.2	10 35.2		1 50.0	14 24.2		350 58.2	17 39.2		339 37.8	20 11.4		327 47.3	21 51.8		315 30.6	22 31.9	
20	17 10.6	10 38.6	291.4 3.4	6 41.1	14 27.2	291.1 3.0	355 48.9	17 41.7	290.7 2.4	344 28.1	20 13.2	290.3 1.8	332 37.3	21 52.8	289.9 1.0	320 20.3	22 32.0	289.6 0.1
40	22 2.0	10 42.0		11 32.2	14 30.1		0 39.7	17 44.1		349 18.5	20 15.0		337 27.2	21 53.8		325 9.9	22 32.1	
20 0	26 53.3	10 45.3		16 23.3	14 33.1		5 30.4	17 46.5		354 8.8	20 16.7		342 17.1	21 54.7		329 59.5	22 32.2	
20	31 44.7	10 48.7	291.4 3.4	21 14.5	14 36.0	291.1 2.9	10 21.2	17 48.9	290.7 2.4	358 59.1	20 18.5	290.3 1.7	347 7.0	21 55.7	289.9 0.9	334 49.1	22 32.2	289.6 0.0
40	36 36.1	10 52.1		26 5.6	14 39.0		15 11.9	17 51.3		3 49.4	20 20.2		351 56.9	21 56.6		339 38.7	22 32.3	
21 0	41 27.4	10 55.4		30 56.7	14 41.9		20 2.6	17 53.7		8 39.7	20 21.9		356 46.8	21 57.5		344 28.3	22 32.3	
20	46 18.8	10 58.8	291.4 3.3	35 47.7	14 44.8	291.1 2.9	24 53.3	17 56.0	290.7 2.4	13 30.0	20 23.6	290.3 1.7	1 36.8	21 58.5	289.9 0.9	349 17.9	22 32.4	289.6 0.0
40	51 10.2	11 2.1		40 38.8	14 47.7		29 44.1	17 58.4		18 20.3	20 25.3		6 26.6	21 59.4		354 7.5	22 32.4	
22 0	56 1.5	11 5.4		45 29.9	14 50.6		34 34.8	18 0.8		23 10.6	20 27.0		11 16.5	22 0.3		358 57.1	22 32.4	
20	60 52.9	11 8.8	291.3 3.3	50 21.0	14 53.5	291.1 2.9	39 25.5	18 3.1	290.7 2.3	28 0.9	20 28.7	290.3 1.7	16 6.4	22 1.1	289.9 0.9	3 46.7	22 32.3	289.6 0.0
40	65 44.2	11 12.1		55 12.1	14 56.4		44 16.2	18 5.5		32 51.2	20 30.3		20 56.3	22 2.0		8 36.3	22 32.3	
23 0	70 35.6	11 15.4		60 3.1	14 59.3		49 6.9	18 7.8		37 41.4	20 32.0		25 46.2	22 2.9		13 25.9	22 32.3	
20	75 26.9	11 18.7	291.3 3.3	64 54.2	15 2.2	291.1 2.9	53 57.6	18 10.1	290.7 2.3	42 31.7	20 33.7	290.3 1.6	30 36.1	22 3.7	289.9 0.8	18 15.5	22 32.2	289.6 -0.1
40	80 18.2	11 22.0		69 45.3	15 5.1		58 48.2	18 12.5		47 22.0	20 35.3		35 25.9	22 4.5		23 5.0	22 32.2	

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h m	7 Jan GHA	7 Jan Dec	d	8 Jan GHA	8 Jan Dec	d	9 Jan GHA	9 Jan Dec	d	10 Jan GHA	10 Jan Dec	d	11 Jan GHA	11 Jan Dec	d	12 Jan GHA	12 Jan Dec	d
0 0	27 54.6	22 32.1		15 18.5	21 51.6		2 39.4	20 2.8		350 8.1	17 9.4		337 51.2	13 19.8		325 49.3	8 46.0	
20	32 44.2	22 32.0	289.6 -0.1	20 7.9	21 50.6	289.4 -1.0	7 28.9	20 0.8	289.5 -2.0	354 57.8	17 6.6	289.7 -2.8	342 41.1	13 16.2	289.9 -3.6	330 39.3	8 42.0	290.1 -4.0
40	37 33.8	22 31.9		24 57.4	21 49.5		12 18.4	19 58.9		359 47.5	17 3.7		347 31.0	13 12.7		335 29.4	8 37.9	
1 0	42 23.3	22 31.8		29 46.8	21 48.5		17 7.8	19 56.8		4 37.1	17 0.9		352 20.9	13 9.1		340 19.4	8 33.9	
20	47 12.9	22 31.6	289.6 -0.2	34 36.3	21 47.4	289.4 -1.1	21 57.3	19 54.8	289.5 -2.0	9 26.8	16 58.0	289.7 -2.9	357 10.7	13 5.6	289.9 -3.6	345 9.5	8 29.8	290.1 -4.1
40	52 2.5	22 31.5		39 25.7	21 46.3		26 46.8	19 52.8		14 16.5	16 55.1		2 0.6	13 2.0		349 59.6	8 25.7	
2 0	56 52.0	22 31.3		44 15.1	21 45.2		31 36.3	19 50.8		19 6.1	16 52.2		6 50.5	12 58.4		354 49.6	8 21.7	
20	61 41.6	22 31.1	289.6 -0.2	49 4.6	21 44.0	289.4 -1.2	36 25.8	19 48.7	289.5 -2.1	23 55.8	16 49.4	289.7 -2.9	11 40.4	12 54.9	289.9 -3.6	359 39.7	8 17.6	290.1 -4.1
40	66 31.1	22 31.0		53 54.0	21 42.9		41 15.3	19 46.6		28 45.5	16 46.4		16 30.3	12 51.3		4 29.8	8 13.5	
3 0	71 20.7	22 30.8		58 43.5	21 41.7		46 4.8	19 44.5		33 35.2	16 43.5		21 20.2	12 47.7		9 19.9	8 9.4	
20	76 10.2	22 30.6	289.5 -0.2	63 32.9	21 40.6	289.4 -1.2	50 54.4	19 42.5	289.5 -2.1	38 24.9	16 40.6	289.7 -2.9	26 10.1	12 44.1	289.9 -3.6	14 10.0	8 5.3	290.1 -4.1
40	80 59.8	22 30.3		68 22.4	21 39.4		55 43.9	19 40.4		43 14.5	16 37.7		31 0.0	12 40.5		19 0.0	8 1.2	
4 0	85 49.3	22 30.1		73 11.8	21 38.2		60 33.4	19 38.2		48 4.2	16 34.7		35 49.9	12 36.8		23 50.1	7 57.1	
20	90 38.9	22 29.8	289.5 -0.3	78 1.3	21 37.0	289.4 -1.2	65 22.9	19 36.1	289.5 -2.1	52 53.9	16 31.8	289.7 -3.0	40 39.8	12 33.2	289.9 -3.6	28 40.2	7 53.0	290.1 -4.1
40	95 28.4	22 29.6		82 50.7	21 35.8		70 12.4	19 34.0		57 43.6	16 28.8		45 29.7	12 29.6		33 30.3	7 48.9	
5 0	100 17.9	22 29.3		87 40.2	21 34.6		75 1.9	19 31.8		62 33.3	16 25.8		50 19.7	12 25.9		38 20.4	7 44.8	
20	105 7.5	22 29.0	289.5 -0.3	92 29.6	21 33.3	289.4 -1.3	79 51.4	19 29.6	289.5 -2.2	67 23.0	16 22.8	289.7 -3.0	55 9.6	12 22.3	289.9 -3.7	43 10.5	7 40.6	290.1 -4.1
40	109 57.0	22 28.7		97 19.0	21 32.1		84 41.0	19 27.5		72 12.7	16 19.8		59 59.5	12 18.6		48 0.5	7 36.5	
6 0	114 46.5	22 28.4		102 8.5	21 30.8		89 30.5	19 25.3		77 2.4	16 16.8		64 49.4	12 14.9		52 50.6	7 32.4	
20	119 36.1	22 28.1	289.5 -0.3	106 57.9	21 29.5	289.4 -1.3	94 20.0	19 23.1	289.5 -2.2	81 52.1	16 13.8	289.7 -3.0	69 39.4	12 11.3	289.9 -3.7	57 40.7	7 28.2	290.1 -4.2
40	124 25.6	22 27.7		111 47.4	21 28.2		99 9.5	19 20.8		86 41.9	16 10.8		74 29.3	12 7.6		62 30.8	7 24.1	
7 0	129 15.1	22 27.4		116 36.8	21 26.9		103 59.1	19 18.6		91 31.6	16 7.7		79 19.2	12 3.9		67 20.9	7 19.9	
20	134 4.6	22 27.0	289.5 -0.4	121 26.3	21 25.6	289.4 -1.3	108 48.6	19 16.4	289.5 -2.2	96 21.3	16 4.7	289.7 -3.1	84 9.2	12 0.2	289.9 -3.7	72 11.0	7 15.8	290.1 -4.2
40	138 54.1	22 26.6		126 15.7	21 24.2		113 38.1	19 14.1		101 11.0	16 1.6		88 59.1	11 56.5		77 1.1	7 11.6	
8 0	143 43.7	22 26.2		131 5.2	21 22.9		118 27.7	19 11.9		106 0.8	15 58.5		93 49.0	11 52.7		81 51.2	7 7.4	
20	148 33.2	22 25.8	289.5 -0.4	135 54.6	21 21.5	289.4 -1.4	123 17.2	19 9.6	289.5 -2.3	110 50.5	15 55.5	289.7 -3.1	98 39.0	11 49.0	289.9 -3.7	86 41.3	7 3.3	290.1 -4.2
40	153 22.7	22 25.4		140 44.1	21 20.1		128 6.7	19 7.3		115 40.2	15 52.4		103 28.9	11 45.3		91 31.4	6 59.1	
9 0	158 12.2	22 25.0		145 33.5	21 18.8		132 56.3	19 5.0		120 29.9	15 49.3		108 18.9	11 41.5		96 21.5	6 54.9	
20	163 1.7	22 24.5	289.5 -0.5	150 22.9	21 17.4	289.4 -1.4	137 45.8	19 2.7	289.5 -2.3	125 19.7	15 46.2	289.7 -3.1	113 8.8	11 37.8	290.0 -3.7	101 11.7	6 50.7	290.1 -4.2
40	167 51.2	22 24.0		155 12.4	21 15.9		142 35.4	19 0.4		130 9.4	15 43.0		117 58.8	11 34.0		106 1.8	6 46.5	
10 0	172 40.7	22 23.6		160 1.8	21 14.5		147 24.9	18 58.0		134 59.2	15 39.9		122 48.7	11 30.3		110 51.9	6 42.3	
20	177 30.2	22 23.1	289.5 -0.5	164 51.3	21 13.1	289.4 -1.5	152 14.5	18 55.7	289.6 -2.4	139 48.9	15 36.8	289.8 -3.1	127 38.7	11 26.5	290.0 -3.8	115 42.0	6 38.1	290.1 -4.2
40	182 19.7	22 22.6		169 40.7	21 11.6		157 4.0	18 53.3		144 38.7	15 33.6		132 28.7	11 22.7		120 32.1	6 33.9	
11 0	187 9.2	22 22.1		174 30.2	21 10.1		161 53.6	18 50.9		149 28.4	15 30.5		137 18.6	11 18.9		125 22.2	6 29.7	
20	191 58.7	22 21.5	289.5 -0.6	179 19.6	21 8.7	289.4 -1.5	166 43.1	18 48.6	289.6 -2.4	154 18.2	15 27.3	289.8 -3.2	142 8.6	11 15.2	290.0 -3.8	130 12.3	6 25.5	290.1 -4.2
40	196 48.2	22 21.0		184 9.1	21 7.2		171 32.7	18 46.2		159 7.9	15 24.1		146 58.6	11 11.4		135 2.4	6 21.3	
12 0	201 37.7	22 20.4		188 58.5	21 5.7		176 22.2	18 43.8		163 57.7	15 20.9		151 48.5	11 7.6		139 52.6	6 17.1	
20	206 27.2	22 19.9	289.5 -0.6	193 48.0	21 4.1	289.5 -1.5	181 11.8	18 41.3	289.6 -2.4	168 47.5	15 17.7	289.8 -3.2	156 38.5	11 3.7	290.0 -3.8	144 42.7	6 12.8	290.1 -4.2
40	211 16.7	22 19.3		198 37.4	21 2.6		186 1.4	18 38.9		173 37.2	15 14.5		161 28.5	10 59.9		149 32.8	6 8.6	
13 0	216 6.1	22 18.7		203 26.9	21 1.1		190 50.9	18 36.5		178 27.0	15 11.3		166 18.5	10 56.1		154 22.9	6 4.4	
20	220 55.6	22 18.1	289.5 -0.6	208 16.3	20 59.5	289.5 -1.6	195 40.5	18 34.0	289.6 -2.5	183 16.8	15 8.0	289.8 -3.2	171 8.5	10 52.3	290.0 -3.8	159 13.0	6 0.1	290.1 -4.2
40	225 45.1	22 17.5		213 5.8	20 57.9		200 30.1	18 31.5		188 6.6	15 4.8		175 58.5	10 48.4		164 3.2	5 55.9	
14 0	230 34.6	22 16.8		217 55.2	20 56.3		205 19.7	18 29.1		192 56.4	15 1.6		180 48.4	10 44.6		168 53.3	5 51.7	
20	235 24.1	22 16.2	289.5 -0.6	222 44.7	20 54.8	289.5 -1.6	210 9.2	18 26.6	289.6 -2.5	197 46.1	14 58.3	289.8 -3.3	185 38.4	10 40.7	290.0 -3.9	173 43.4	5 47.4	290.1 -4.3
40	240 13.5	22 15.5		227 34.2	20 53.1		214 58.8	18 24.1		202 35.9	14 55.0		190 28.4	10 36.8		178 33.6	5 43.2	
15 0	245 3.0	22 14.9		232 23.6	20 51.5		219 48.4	18 21.6		207 25.7	14 51.7		195 18.4	10 33.0		183 23.7	5 38.9	
20	249 52.5	22 14.2	289.5 -0.7	237 13.1	20 49.9	289.5 -1.6	224 38.0	18 19.0	289.6 -2.6	212 15.5	14 48.5	289.8 -3.3	200 8.4	10 29.1	290.0 -3.9	188 13.8	5 34.6	290.1 -4.3
40	254 42.0	22 13.5		242 2.5	20 48.2		229 27.6	18 16.5		217 5.3	14 45.2		204 58.4	10 25.2		193 3.9	5 30.4	
16 0	259 31.4	22 12.8		246 52.0	20 46.6		234 17.2	18 13.9		221 55.1	14 41.9		209 48.4	10 21.3		197 54.1	5 26.1	
20	264 20.9	22 12.0	289.5 -0.8	251 41.5	20 44.9	289.5 -1.7	239 6.8	18 11.4	289.6 -2.6	226 44.9	14 38.5	289.8 -3.3	214 38.4	10 17.4	290.0 -3.9	202 44.2	5 21.8	290.1 -4.3
40	269 10.4	22 11.3		256 30.9	20 43.2		243 56.3	18 8.8		231 34.7	14 35.2		219 28.5	10 13.5		207 34.3	5 17.5	
17 0	273 59.9	22 10.5		261 20.4	20 41.5		248 45.9	18 6.2		236 24.5	14 31.9		224 18.5	10 9.6		212 24.5	5 13.3	
20	278 49.3	22 9.8	289.5 -0.8	266 9.8	20 39.8	289.5 -1.7	253 35.5	18 3.6	289.6 -2.6	241 14.3	14 28.5	289.8 -3.4	229 8.5	10 5.7	290.0 -3.9	217 14.6	5 9.0	290.1 -4.3
40	283 38.8	22 9.0		270 59.3	20 38.1		258 25.2	18 1.0		246 4.1	14 25.2		233 58.5	10 1.8		222 4.7	5 4.7	
18 0	288 28.3	22 8.2		275 48.8	20 36.3		263 14.8	17 58.4		250 54.0	14 21.8		238 48.5	9 57.8		226 54.9	5 0.4	
20	293 17.7	22 7.4	289.5 -0.8	280 38.2	20 34.6	289.5 -1.8	268 4.4	17 55.8	289.6 -2.6	255 43.8	14 18.4	289.8 -3.4	243 38.5	9 53.9	290.0 -3.9	231 45.0	4 56.1	290.1 -4.3
40	298 7.2	22 6.6		285 27.7	20 32.8		272 54.0	17 53.1		260 33.6	14 15.1		248 28.6	9 50.0		236 35.2	4 51.8	
19 0	302 56.6	22 5.7		290 17.2	20 31.0		277 43.6	17 50.5		265 23.4	14 11.7		253 18.6	9 46.0		241 25.3	4 47.5	
20	307 46.1	22 4.9	289.5 -0.8	295 6.6	20 29.2	289.5 -1.8	282 33.2	17 47.8	289.6 -2.7	270 13.3	14 8.3	289.8 -3.4	258 8.6	9 42.1	290.0 -4.0	246 15.4	4 43.2	290.1 -4.3
40	312 35.6	22 4.0		299 56.1	20 27.4		287 22.8	17 45.2		275 3.1	14 4.9		262 58.7	9 38.1		251 5.6	4 38.9	
20 0	317 25.0	22 3.2		304 45.6	20 25.6		292 12.5	17 42.5		279 52.9	14 1.5		267 48.7	9 34.1		255 55.7	4 34.6	
20	322 14.5	22 2.3	289.5 -0.9	309 35.1	20 23.8	289.5 -1.8	297 2.1	17 39.8	289.6 -2.7	284 42.8	13 58.0	289.8 -3.5	272 38.7	9 30.2	290.0 -4.0	260 45.9	4 30.3	290.1 -4.3
40	327 3.9	22 1.4		314 24.5	20 21.9		301 51.7	17 37.1		289 32.6	13 54.6		277 28.8	9 26.2		265 36.0	4 26.0	
21 0	331 53.4	22 0.5		319 14.0	20 20.1		306 41.3	17 34.3		294 22.5	13 51.1		282 18.8	9 22.2		270 26.1	4 21.6	
20	336 42.8	21 59.5	289.5 -1.0	324 3.5	20 18.2	289.5 -1.9	311 31.0	17 31.6	289.6 -2.7	299 12.3	13 47.7	289.9 -3.4	287 8.8	9 18.2	290.0 -4.0	275 16.3	4 17.3	290.1 -4.3
40	341 32.3	21 58.6		328 53.0	20 16.3		316 20.6	17 28.9		304 2.2	13 44.2		291 58.9	9 14.2		280 6.4	4 13.0	
22 0	346 21.8	21 57.6		333 42.5	20 14.4		321 10.2	17 26.1		308 52.0	13 40.8		296 48.9	9 10.2		284 56.6	4 8.6	
20	351 11.2	21 56.7	289.5 -1.0	338 31.9	20 12.5	289.5 -1.9	325 59.9	17 23.4	289.6 -2.8	313 41.9	13 37.3	289.9 -3.5	301 39.0	9 6.2	290.1 -4.0	289 46.7	4 4.3	290.1 -4.3
40	356 0.7	21 55.7		343 21.4	20 10.6		330 49.5	17 20.6		318 31.7	13 33.8		306 29.0	9 2.2		294 36.9	4 0.0	
23 0	0 50.1	21 54.7		348 10.9	20 8.7		335 39.2	17 17.8		323 21.6	13 30.3		311 19.1	8 58.1		299 27.0	3 55.6	
20	5 39.6	21 53.7	289.4 -1.0	353 0.4	20 6.8	289.5 -2.0	340 28.8	17 15.0	289.7 -2.8	328 11.5	13 26.8	289.9 -3.5	316 9.1	8 54.1	290.1 -4.0	304 17.2	3 51.3	290.1 -4.3
40	10 29.0	21 52.7		357 49.9	20 4.8		345 18.5	17 12.2		333 1.3	13 23.3		320 59.2	8 50.1		309 7.3	3 47.0	

2012 Moon

h m	13 Jan GHA	13 Jan Dec	d	14 Jan GHA	14 Jan Dec	d	15 Jan GHA	15 Jan Dec	d	16 Jan GHA	16 Jan Dec	d	17 Jan GHA	17 Jan Dec	d	18 Jan GHA	18 Jan Dec	d
0 0	313 57.4	3 42.6		302 6.9	-1 34.8		290 6.4	-6 49.8		277 44.4	-11 45.1		264 51.5	-16 3.2		251 23.5	-19 26.3	
20	318 47.6	3 38.3	290.1 -4.4	306 57.0	-1 39.3	290.1 -4.4	294 56.3	-6 54.1	289.9 -4.3	282 33.9	-11 49.0	289.5 -3.9	269 40.5	-16 6.4	289.0 -3.2	256 12.1	-19 28.6	288.5 -2.3
40	323 37.7	3 33.9		311 47.1	-1 43.7		299 46.1	-6 58.4		287 23.3	-11 52.9		274 29.5	-16 9.6		261 0.6	-19 31.0	
1 0	328 27.9	3 29.5		316 37.2	-1 48.1		304 36.0	-7 2.6		292 12.8	-11 56.8		279 18.5	-16 12.9		265 49.1	-19 33.3	
20	333 18.0	3 25.2	290.1 -4.3	321 27.2	-1 52.6	290.1 -4.4	309 25.8	-7 6.9	289.9 -4.3	297 2.3	-12 0.6	289.5 -3.8	284 7.5	-16 16.1	289.0 -3.2	270 37.7	-19 35.6	288.5 -2.3
40	338 8.2	3 20.8		326 17.3	-1 57.0		314 15.7	-7 11.1		301 51.8	-12 4.5		288 56.5	-16 19.3		275 26.2	-19 37.9	
2 0	342 58.3	3 16.5		331 7.4	-2 1.4		319 5.5	-7 15.4		306 41.2	-12 8.3		293 45.5	-16 22.4		280 14.7	-19 40.2	
20	347 48.5	3 12.1	290.1 -4.4	335 57.5	-2 5.8	290.1 -4.4	323 55.4	-7 19.7	289.8 -4.3	311 30.7	-12 12.2	289.5 -3.8	298 34.5	-16 25.6	289.0 -3.2	285 3.2	-19 42.5	288.5 -2.3
40	352 38.6	3 7.7		340 47.6	-2 10.3		328 45.2	-7 23.9		316 20.1	-12 16.0		303 23.4	-16 28.8		289 51.7	-19 44.7	
3 0	357 28.8	3 3.4		345 37.6	-2 14.7		333 35.0	-7 28.2		321 9.6	-12 19.8		308 12.4	-16 31.9		294 40.2	-19 47.0	
20	2 18.9	2 59.0	290.1 -4.4	350 27.7	-2 19.1	290.1 -4.4	338 24.9	-7 32.4	289.8 -4.2	325 59.0	-12 23.6	289.4 -3.8	313 1.4	-16 35.1	288.9 -3.1	299 28.7	-19 49.2	288.5 -2.2
40	7 9.1	2 54.6		355 17.8	-2 23.5		343 14.7	-7 36.6		330 48.5	-12 27.4		317 50.3	-16 38.2		304 17.2	-19 51.4	
4 0	11 59.2	2 50.2		0 7.8	-2 28.0		348 4.5	-7 40.9		335 37.9	-12 31.2		322 39.2	-16 41.3		309 5.6	-19 53.6	
20	16 49.4	2 45.9	290.1 -4.4	4 57.9	-2 32.4	290.1 -4.4	352 54.3	-7 45.1	289.8 -4.2	340 27.3	-12 35.0	289.4 -3.8	327 28.2	-16 44.4	288.9 -3.1	313 54.1	-19 55.8	288.5 -2.2
40	21 39.5	2 41.5		9 47.9	-2 36.8		357 44.1	-7 49.3		345 16.7	-12 38.8		332 17.1	-16 47.5		318 42.6	-19 58.0	
5 0	26 29.7	2 37.1		14 38.0	-2 41.2		2 33.9	-7 53.5		350 6.1	-12 42.6		337 6.0	-16 50.6		323 31.0	-20 0.2	
20	31 19.8	2 32.7	290.1 -4.4	19 28.1	-2 45.6	290.1 -4.4	7 23.7	-7 57.7	289.8 -4.2	354 55.5	-12 46.3	289.4 -3.7	341 55.0	-16 53.7	288.9 -3.1	328 19.5	-20 2.3	288.4 -2.1
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6 0	41 0.1	2 23.9		29 8.2	-2 54.5		17 3.3	-8 6.2		4 34.3	-12 53.8		351 32.8	-16 59.8		337 56.4	-20 6.6	
20	45 50.3	2 19.5	290.1 -4.4	33 58.2	-2 58.9	290.0 -4.4	21 53.1	-8 10.4	289.8 -4.2	9 23.7	-12 57.6	289.4 -3.8	356 21.7	-17 2.8	288.9 -3.0	342 44.8	-20 8.7	288.4 -2.1
40	50 40.4	2 15.1		38 48.3	-3 3.3		26 42.9	-8 14.6		14 13.1	-13 1.3		1 10.6	-17 5.8		347 33.2	-20 10.7	
7 0	55 30.5	2 10.7		43 38.3	-3 7.7		31 32.7	-8 18.7		19 2.4	-13 5.1		5 59.4	-17 8.8		352 21.7	-20 12.8	
20	60 20.7	2 6.3	290.1 -4.4	48 28.3	-3 12.1	290.0 -4.4	36 22.4	-8 22.9	289.8 -4.2	23 51.8	-13 8.8	289.4 -3.7	10 48.3	-17 11.9	288.9 -3.0	357 10.1	-20 14.9	288.4 -2.1
40	65 10.8	2 1.9		53 18.4	-3 16.5		41 12.2	-8 27.1		28 41.2	-13 12.5		15 37.2	-17 14.8		1 58.5	-20 16.9	
8 0	70 1.0	1 57.5		58 8.4	-3 20.9		46 2.0	-8 31.3		33 30.5	-13 16.2		20 26.0	-17 17.8		6 46.9	-20 19.0	
20	74 51.1	1 53.1	290.1 -4.4	62 58.5	-3 25.3	290.0 -4.4	50 51.7	-8 35.5	289.8 -4.2	38 19.9	-13 19.9	289.3 -3.7	25 14.9	-17 20.8	288.8 -3.0	11 35.3	-20 21.0	288.4 -2.0
40	79 41.3	1 48.7		67 48.5	-3 29.7		55 41.5	-8 39.6		43 9.2	-13 23.6		30 3.7	-17 23.7		16 23.7	-20 23.0	
9 0	84 31.4	1 44.3		72 38.5	-3 34.1		60 31.2	-8 43.8		47 58.5	-13 27.2		34 52.6	-17 26.7		21 12.1	-20 25.0	
20	89 21.6	1 39.9	290.1 -4.4	77 28.5	-3 38.5	290.0 -4.4	65 21.0	-8 48.0	289.7 -4.2	52 47.8	-13 30.9	289.3 -3.7	39 41.4	-17 29.6	288.8 -2.9	26 0.5	-20 26.9	288.4 -1.9
40	94 11.7	1 35.5		82 18.6	-3 42.9		70 10.7	-8 52.1		57 37.2	-13 34.6		44 30.2	-17 32.5		30 48.8	-20 28.9	
10 0	99 1.8	1 31.1		87 8.6	-3 47.3		75 0.4	-8 56.3		62 26.5	-13 38.2		49 19.1	-17 35.5		35 37.2	-20 30.8	
20	103 52.0	1 26.7	290.1 -4.4	91 58.6	-3 51.7	290.0 -4.4	79 50.2	-9 0.4	289.7 -4.1	67 15.8	-13 41.9	289.3 -3.6	54 7.9	-17 38.4	288.8 -2.9	40 25.6	-20 32.8	288.4 -1.9
40	108 42.1	1 22.3		96 48.6	-3 56.1		84 39.9	-9 4.5		72 5.1	-13 45.5		58 56.7	-17 41.2		45 14.0	-20 34.7	
11 0	113 32.3	1 17.9		101 38.6	-4 0.5		89 29.6	-9 8.7		76 54.4	-13 49.1		63 45.5	-17 44.1		50 2.3	-20 36.6	
20	118 22.4	1 13.5	290.1 -4.4	106 28.6	-4 4.9	290.0 -4.4	94 19.3	-9 12.8	289.7 -4.1	81 43.6	-13 52.7	289.3 -3.6	68 34.3	-17 47.0	288.8 -2.9	54 50.7	-20 38.4	288.3 -1.9
40	123 12.5	1 9.0		111 18.6	-4 9.3		99 9.0	-9 16.9		86 32.9	-13 56.3		73 23.1	-17 49.8		59 39.0	-20 40.3	
12 0	128 2.7	1 4.6		116 8.6	-4 13.7		103 58.7	-9 21.0		91 22.2	-13 59.9		78 11.8	-17 52.7		64 27.4	-20 42.2	
20	132 52.8	1 0.2	290.1 -4.4	120 58.6	-4 18.1	290.0 -4.4	108 48.4	-9 25.1	289.7 -4.1	96 11.5	-14 3.5	289.3 -3.6	83 0.6	-17 55.5	288.8 -2.8	69 15.7	-20 44.0	288.3 -1.8
40	137 43.0	0 55.8		125 48.6	-4 22.4		113 38.1	-9 29.2		101 0.7	-14 7.1		87 49.4	-17 58.3		74 4.0	-20 45.8	
13 0	142 33.1	0 51.4		130 38.6	-4 26.8		118 27.8	-9 33.3		105 50.0	-14 10.7		92 38.1	-18 1.1		78 52.4	-20 47.6	
20	147 23.2	0 46.9	290.1 -4.4	135 28.6	-4 31.2	290.0 -4.4	123 17.5	-9 37.4	289.7 -4.1	110 39.2	-14 14.2	289.2 -3.5	97 26.9	-18 3.9	288.7 -2.8	83 40.7	-20 49.4	288.3 -1.8
40	152 13.4	0 42.5		140 18.6	-4 35.6		128 7.2	-9 41.5		115 28.5	-14 17.8		102 15.6	-18 6.7		88 29.0	-20 51.2	
14 0	157 3.5	0 38.1		145 8.6	-4 40.0		132 56.8	-9 45.6		120 17.7	-14 21.3		107 4.4	-18 9.4		93 17.3	-20 53.0	
20	161 53.6	0 33.7	290.1 -4.4	149 58.5	-4 44.3	290.0 -4.4	137 46.5	-9 49.7	289.7 -4.1	125 6.9	-14 24.9	289.2 -3.5	111 53.1	-18 12.2	288.7 -2.7	98 5.6	-20 54.7	288.3 -1.7
40	166 43.8	0 29.2		154 48.5	-4 48.7		142 36.2	-9 53.7		129 56.1	-14 28.4		116 41.8	-18 14.9		102 53.9	-20 56.5	
15 0	171 33.9	0 24.8		159 38.5	-4 53.1		147 25.8	-9 57.8		134 45.3	-14 31.9		121 30.6	-18 17.6		107 42.3	-20 58.2	
20	176 24.0	0 20.4	290.1 -4.4	164 28.5	-4 57.4	290.0 -4.3	152 15.5	-10 1.9	289.6 -4.1	139 34.5	-14 35.4	289.2 -3.5	126 19.3	-18 20.3	288.7 -2.7	112 30.5	-20 59.9	288.3 -1.7
40	181 14.1	0 16.0		169 18.4	-5 1.8		157 5.1	-10 5.9		144 23.7	-14 38.9		131 8.0	-18 23.0		117 18.8	-21 1.6	
16 0	186 4.3	0 11.5		174 8.4	-5 6.1		161 54.8	-10 10.0		149 12.9	-14 42.4		135 56.7	-18 25.7		122 7.1	-21 3.2	
20	190 54.4	0 7.1	290.1 -4.4	178 58.4	-5 10.5	290.0 -4.4	166 44.4	-10 14.0	289.6 -4.0	154 2.1	-14 45.9	289.2 -3.5	140 45.4	-18 28.4	288.7 -2.7	126 55.4	-21 4.9	288.3 -1.6
40	195 44.5	0 2.7		183 48.3	-5 14.8		171 34.0	-10 18.0		158 51.3	-14 49.4		145 34.1	-18 31.1		131 43.7	-21 6.5	
17 0	200 34.6	-0 1.8		188 38.3	-5 19.2		176 23.6	-10 22.1		163 40.5	-14 52.8		150 22.7	-18 33.7		136 32.0	-21 8.1	
20	205 24.8	-0 6.2	290.1 -4.4	193 28.2	-5 23.5	289.9 -4.3	181 13.2	-10 26.1	289.6 -4.0	168 29.6	-14 56.3	289.2 -3.4	155 11.4	-18 36.3	288.7 -2.6	141 20.2	-21 9.8	288.3 -1.6
40	210 14.9	-0 10.6		198 18.2	-5 27.9		186 2.9	-10 30.1		173 18.8	-14 59.7		160 0.1	-18 39.0		146 8.5	-21 11.4	
18 0	215 5.0	-0 15.1		203 8.1	-5 32.2		190 52.5	-10 34.1		178 7.9	-15 3.1		164 48.7	-18 41.6		150 56.8	-21 12.9	
20	219 55.1	-0 19.5	290.1 -4.4	207 58.0	-5 36.6	289.9 -4.3	195 42.1	-10 38.1	289.6 -4.0	182 57.1	-15 6.6	289.1 -3.4	169 37.4	-18 44.2	288.6 -2.6	155 45.0	-21 14.5	288.3 -1.6
40	224 45.2	-0 23.9		212 48.0	-5 40.9		200 31.7	-10 42.1		187 46.2	-15 10.0		174 26.0	-18 46.8		160 33.3	-21 16.0	
19 0	229 35.4	-0 28.4		217 37.9	-5 45.2		205 21.2	-10 46.1		192 35.3	-15 13.4		179 14.7	-18 49.3		165 21.5	-21 17.6	
20	234 25.5	-0 32.8	290.1 -4.4	222 27.8	-5 49.6	289.9 -4.3	210 10.8	-10 50.1	289.6 -4.0	197 24.5	-15 16.8	289.1 -3.4	184 3.3	-18 51.9	288.6 -2.6	170 9.8	-21 19.1	288.2 -1.5
40	239 15.6	-0 37.2		227 17.7	-5 53.9		215 0.4	-10 54.1		202 13.6	-15 20.1		188 51.9	-18 54.4		174 58.0	-21 20.6	
20 0	244 5.7	-0 41.7		232 7.7	-5 58.2		219 50.0	-10 58.0		207 2.7	-15 23.5		193 40.6	-18 57.0		179 46.2	-21 22.1	
20	248 55.8	-0 46.1	290.1 -4.4	236 57.6	-6 2.5	289.9 -4.3	224 39.5	-11 2.0	289.6 -4.0	211 51.8	-15 26.9	289.1 -3.4	198 29.2	-18 59.5	288.6 -2.5	184 34.5	-21 23.5	288.2 -1.4
40	253 45.9	-0 50.5		241 47.5	-6 6.8		229 29.1	-11 5.9		216 40.9	-15 30.2		203 17.8	-19 2.0		189 22.7	-21 25.0	
21 0	258 36.0	-0 54.9		246 37.4	-6 11.1		234 18.7	-11 9.9		221 30.0	-15 33.6		208 6.4	-19 4.5		194 10.9	-21 26.4	
20	263 26.1	-0 59.4	290.1 -4.4	251 27.3	-6 15.5	289.9 -4.3	239 8.2	-11 13.8	289.5 -3.9	226 19.1	-15 36.9	289.1 -3.3	212 55.0	-19 7.0	288.6 -2.5	198 59.1	-21 27.9	288.2 -1.4
40	268 16.2	-1 3.8		256 17.2	-6 19.8		243 57.7	-11 17.8		231 8.1	-15 40.2		217 43.6	-19 9.4		203 47.4	-21 29.3	
22 0	273 6.3	-1 8.2		261 7.1	-6 24.1		248 47.3	-11 21.7		235 57.2	-15 43.5		222 32.2	-19 11.9		208 35.6	-21 30.7	
20	277 56.4	-1 12.7	290.1 -4.4	265 57.0	-6 28.4	289.9 -4.3	253 36.8	-11 25.6	289.5 -3.9	240 46.3	-15 46.8	289.1 -3.3	227 20.7	-19 14.3	288.6 -2.4	213 23.8	-21 32.0	288.2 -1.3
40	282 46.5	-1 17.1		270 46.9	-6 32.7		258 26.3	-11 29.5		245 35.3	-15 50.1		232 9.3	-19 16.7		218 12.0	-21 33.4	
23 0	287 36.6	-1 21.5		275 36.8	-6 36.9		263 15.8	-11 33.5		250 24.4	-15 53.4		236 57.9	-19 19.1		223 0.2	-21 34.7	
20	292 26.7	-1 26.0	290.1 -4.4	280 26.6	-6 41.2	289.9 -4.3	268 5.4	-11 37.4	289.5 -3.9	255 13.4	-15 56.7	289.0 -3.3	241 46.4	-19 21.5	288.6 -2.4	227 48.4	-21 36.1	288.2 -1.3
40	297 16.8	-1 30.4		285 16.5	-6 45.5		272 54.9	-11 41.3		260 2.4	-15 59.9		246 35.0	-19 23.9		232 36.6	-21 37.4	

2012 Moon

	19 Jan						20 Jan						21 Jan						22 Jan						23 Jan						24 Jan					
	GHA			Dec			GHA			Dec			GHA			Dec			GHA			Dec			GHA			Dec			GHA			Dec		
h m	o	'	d	o	'	d '	o	'	d	o	'	d '	o	'	d	o	'	d '	o	'	d	o	'	d '	o	'	d	o	'	d '	o	'	d	o	'	d '
0 0	237	24.8		-21	38.7		223	8.9		-22	29.2		208	56.8		-21	54.1		195	9.4		-19	58.7		182	2.1		-16	55.8		169	40.8		-13	2.2	
20	242	13.0	288.2	-21	40.0	-1.3	227	57.0	288.1	-22	29.3	-0.1	213	45.0	288.3	-21	53.0	1.1	199	58.2	288.8	-19	56.6	2.1	186	51.5	289.4	-16	52.9	3.0	174	30.8	290.0	-12	58.7	3.5
40	247	1.1		-21	41.2		232	45.1		-22	29.3		218	33.4		-21	51.9		204	47.0		-19	54.5		191	40.9		-16	49.9		179	20.9		-12	55.2	
1 0	251	49.3		-21	42.5		237	33.2		-22	29.4		223	21.7		-21	50.8		209	35.8		-19	52.4		196	30.3		-16	46.9		184	10.9		-12	51.6	
20	256	37.5	288.2	-21	43.7	-1.2	242	21.3	288.1	-22	29.4	0.0	228	10.0	288.3	-21	49.7	1.1	214	24.6	288.8	-19	50.2	2.2	201	19.7	289.4	-16	44.0	3.0	189	1.0	290.1	-12	48.1	3.5
40	261	25.7		-21	44.9		247	9.4		-22	29.5		232	58.3		-21	48.6		219	13.3		-19	48.0		206	9.2		-16	41.0		193	51.0		-12	44.6	
2 0	266	13.9		-21	46.1		251	57.5		-22	29.5		237	46.6		-21	47.4		224	2.2		-19	45.9		210	58.6		-16	38.0		198	41.1		-12	41.0	
20	271	2.0	288.2	-21	47.3	-1.2	256	45.6	288.1	-22	29.5	0.0	242	34.9	288.3	-21	46.3	1.2	228	51.0	288.8	-19	43.7	2.2	215	48.0	289.4	-16	35.0	3.0	203	31.2	290.1	-12	37.5	3.6
40	275	50.2		-21	48.5		261	33.7		-22	29.5		247	23.3		-21	45.1		233	39.8		-19	41.5		220	37.5		-16	32.0		208	21.3		-12	33.9	
3 0	280	38.4		-21	49.6		266	21.8		-22	29.4		252	11.6		-21	43.9		238	28.6		-19	39.2		225	26.9		-16	29.0		213	11.3		-12	30.3	
20	285	26.5	288.2	-21	50.8	-1.1	271	9.9	288.1	-22	29.4	0.1	256	59.9	288.3	-21	42.7	1.2	243	17.5	288.8	-19	37.0	2.2	230	16.4	289.5	-16	26.0	3.0	218	1.4	290.1	-12	26.8	3.6
40	290	14.7		-21	51.9		275	58.0		-22	29.3		261	48.3		-21	41.4		248	6.3		-19	34.8		235	5.9		-16	22.9		222	51.6		-12	23.2	
4 0	295	2.8		-21	53.0		280	46.1		-22	29.2		266	36.6		-21	40.2		252	55.2		-19	32.5		239	55.4		-16	19.9		227	41.7		-12	19.6	
20	299	51.0	288.1	-21	54.1	-1.1	285	34.2	288.1	-22	29.1	0.1	271	25.0	288.4	-21	38.9	1.3	257	44.0	288.9	-19	30.2	2.3	244	44.9	289.5	-16	16.8	3.1	232	31.8	290.1	-12	16.0	3.6
40	304	39.1		-21	55.1		290	22.3		-22	29.0		276	13.3		-21	37.7		262	32.9		-19	28.0		249	34.4		-16	13.8		237	21.9		-12	12.4	
5 0	309	27.3		-21	56.2		295	10.4		-22	28.9		281	1.7		-21	36.4		267	21.8		-19	25.7		254	23.9		-16	10.7		242	12.1		-12	8.8	
20	314	15.4	288.1	-21	57.2	-1.0	299	58.5	288.1	-22	28.7	0.2	285	50.1	288.4	-21	35.1	1.3	272	10.7	288.9	-19	23.4	2.3	259	13.4	289.5	-16	7.6	3.1	247	2.2	290.2	-12	5.2	3.6
40	319	3.5		-21	58.3		304	46.6		-22	28.5		290	38.5		-21	33.7		276	59.6		-19	21.1		264	2.9		-16	4.5		251	52.4		-12	1.6	
6 0	323	51.7		-21	59.3		309	34.7		-22	28.4		295	26.9		-21	32.4		281	48.5		-19	18.7		268	52.5		-16	1.4		256	42.5		-11	58.0	
20	328	39.8	288.1	-22	0.3	-1.0	314	22.8	288.1	-22	28.2	0.2	300	15.2	288.4	-21	31.1	1.4	286	37.4	288.9	-19	16.4	2.3	273	42.0	289.6	-15	58.3	3.1	261	32.7	290.2	-11	54.4	3.6
40	333	28.0		-22	1.2		319	10.9		-22	27.9		305	3.6		-21	29.7		291	26.3		-19	14.0		278	31.6		-15	55.2		266	22.9		-11	50.8	
7 0	338	16.1		-22	2.2		323	59.0		-22	27.7		309	52.1		-21	28.3		296	15.2		-19	11.7		283	21.1		-15	52.1		271	13.1		-11	47.1	
20	343	4.2	288.1	-22	3.1	-0.9	328	47.1	288.1	-22	27.5	0.3	314	40.5	288.4	-21	26.9	1.4	301	4.2	288.9	-19	9.3	2.4	288	10.7	289.6	-15	49.0	3.1	276	3.3	290.2	-11	43.5	3.6
40	347	52.3		-22	4.1		333	35.2		-22	27.2		319	28.9		-21	25.5		305	53.1		-19	6.9		293	0.3		-15	45.8		280	53.5		-11	39.8	
8 0	352	40.5		-22	5.0		338	23.4		-22	26.9		324	17.3		-21	24.1		310	42.1		-19	4.5		297	49.9		-15	42.7		285	43.7		-11	36.2	
20	357	28.6	288.1	-22	5.9	-0.9	343	11.5	288.1	-22	26.6	0.3	329	5.7	288.4	-21	22.6	1.5	315	31.0	289.0	-19	2.1	2.4	302	39.5	289.6	-15	39.5	3.2	290	33.9	290.2	-11	32.5	3.7
40	2	16.7		-22	6.7		347	59.6		-22	26.3		333	54.2		-21	21.2		320	20.0		-18	59.6		307	29.1		-15	36.3		295	24.2		-11	28.9	
9 0	7	4.8		-22	7.6		352	47.7		-22	26.0		338	42.6		-21	19.7		325	9.0		-18	57.2		312	18.7		-15	33.2		300	14.4		-11	25.2	
20	11	52.9	288.1	-22	8.4	-0.8	357	35.9	288.1	-22	25.6	0.4	343	31.0	288.5	-21	18.2	1.5	329	58.0	289.0	-18	54.7	2.5	317	8.4	289.6	-15	30.0	3.2	305	4.6	290.3	-11	21.6	3.7
40	16	41.1		-22	9.3		2	24.0		-22	25.2		348	19.5		-21	16.7		334	47.0		-18	52.3		321	58.0		-15	26.8		309	54.9		-11	17.9	
10 0	21	29.2		-22	10.1		7	12.1		-22	24.8		353	8.0		-21	15.2		339	36.0		-18	49.8		326	47.6		-15	23.6		314	45.2		-11	14.2	
20	26	17.3	288.1	-22	10.9	-0.8	12	0.3	288.1	-22	24.4	0.4	357	56.4	288.5	-21	13.7	1.5	344	25.0	289.0	-18	47.3	2.5	331	37.3	289.7	-15	20.4	3.2	319	35.4	290.3	-11	10.5	3.7
40	31	5.4		-22	11.6		16	48.4		-22	24.0		2	44.9		-21	12.1		349	14.0		-18	44.8		336	27.0		-15	17.2		324	25.7		-11	6.8	
11 0	35	53.5		-22	12.4		21	36.6		-22	23.6		7	33.4		-21	10.6		354	3.0		-18	42.3		341	16.6		-15	13.9		329	16.0		-11	3.1	
20	40	41.6	288.1	-22	13.1	-0.7	26	24.7	288.1	-22	23.2	0.5	12	21.9	288.5	-21	9.0	1.6	358	52.1	289.0	-18	39.8	2.5	346	6.3	289.7	-15	10.7	3.2	334	6.3	290.3	-10	59.4	3.7
40	45	29.7		-22	13.9		31	12.8		-22	22.7		17	10.3		-21	7.4		3	41.1		-18	37.3		350	56.0		-15	7.5		338	56.6		-10	55.7	
12 0	50	17.8		-22	14.6		36	1.0		-22	22.2		21	58.8		-21	5.8		8	30.2		-18	34.7		355	45.7		-15	4.2		343	46.9		-10	52.0	
20	55	5.9	288.1	-22	15.3	-0.7	40	49.1	288.2	-22	21.7	0.5	26	47.3	288.5	-21	4.2	1.6	13	19.3	289.1	-18	32.2	2.6	0	35.4	289.7	-15	0.9	3.3	348	37.2	290.3	-10	48.3	3.7
40	59	54.0		-22	16.0		45	37.3		-22	21.2		31	35.9		-21	2.6		18	8.3		-18	29.6		5	25.1		-14	57.7		353	27.6		-10	44.6	
13 0	64	42.1		-22	16.6		50	25.5		-22	20.7		36	24.4		-21	0.9		22	57.4		-18	27.0		10	14.9		-14	54.4		358	17.9		-10	40.9	
20	69	30.2	288.1	-22	17.3	-0.6	55	13.6	288.2	-22	20.1	0.6	41	12.9	288.5	-20	59.3	1.7	27	46.5	289.1	-18	24.4	2.6	15	4.6	289.7	-14	51.1	3.3	3	8.2	290.3	-10	37.1	3.7
40	74	18.3		-22	17.9		60	1.8		-22	19.6		46	1.4		-20	57.6		32	35.6		-18	21.8		19	54.4		-14	47.8		7	58.6		-10	33.4	
14 0	79	6.4		-22	18.5		64	50.0		-22	19.0		50	50.0		-20	55.9		37	24.7		-18	19.2		24	44.1		-14	44.5		12	48.9		-10	29.7	
20	83	54.5	288.1	-22	19.1	-0.6	69	38.1	288.2	-22	18.4	0.6	55	38.5	288.6	-20	54.2	1.7	42	13.8	289.1	-18	16.6	2.6	29	33.9	289.8	-14	41.2	3.3	17	39.3	290.4	-10	25.9	3.7
40	88	42.6		-22	19.7		74	26.3		-22	17.8		60	27.1		-20	52.5		47	3.0		-18	13.9		34	23.6		-14	37.9		22	29.7		-10	22.2	
15 0	93	30.7		-22	20.3		79	14.5		-22	17.1		65	15.6		-20	50.7		51	52.1		-18	11.3		39	13.4		-14	34.6		27	20.0		-10	18.5	
20	98	18.7	288.1	-22	20.8	-0.5	84	2.7	288.2	-22	16.5	0.6	70	4.2	288.6	-20	49.0	1.7	56	41.3	289.2	-18	8.6	2.7	44	3.2	289.8	-14	31.3	3.3	32	10.4	290.4	-10	14.7	3.8
40	103	6.8		-22	21.3		88	50.8		-22	15.8		74	52.8		-20	47.2		61	30.4		-18	6.0		48	53.0		-14	27.9		37	0.8		-10	10.9	
16 0	107	54.9		-22	21.8		93	39.0		-22	15.2		79	41.3		-20	45.5		66	19.6		-18	3.3		53	42.8		-14	24.6		41	51.2		-10	7.2	
20	112	43.0	288.1	-22	22.3	-0.5	98	27.2	288.2	-22	14.5	0.7	84	29.9	288.6	-20	43.7	1.8	71	8.7	289.2	-18	0.6	2.7	58	32.6	289.8	-14	21.2	3.4	46	41.6	290.4	-10	3.4	3.8
40	117	31.1		-22	22.8		103	15.4		-22	13.7		89	18.5		-20	41.9		75	57.9		-17	57.9		63	22.5		-14	17.9		51	32.1		-9	59.6	
17 0	122	19.2		-22	23.3		108	3.6		-22	13.0		94	7.1		-20	40.1		80	47.1		-17	55.2		68	12.3		-14	14.5		56	22.5		-9	55.9	
20	127	7.3	288.1	-22	23.7	-0.4	112	51.8	288.2	-22	12.3	0.7	98	55.7	288.6	-20	38.2	1.9	85	36.3	289.2	-17	52.5	2.7	73	2.1	289.9	-14	11.1	3.4	61	12.9	290.4	-9	52.1	3.8
40	131	55.4		-22	24.2		117	40.0		-22	11.5		103	44.3		-20	36.4		90	25.5		-17	49.7		77	52.0		-14	7.8		66	3.4		-9	48.3	
18 0	136	43.4		-22	24.6		122	28.2		-22	10.8		108	33.0		-20	34.5		95	14.7		-17	47.0		82	41.9		-14	4.4		70	53.8		-9	44.5	
20	141	31.5	288.1	-22	25.0	-0.4	127	16.5	288.2	-22	10.0	0.8	113	21.6	288.6	-20	32.6	1.9	100	4.0	289.2	-17	44.2	2.8	87	31.7	289.9	-14	1.0	3.4	75	44.3	290.5	-9	40.7	3.8
40	146	19.6		-22	25.3		132	4.7		-22	9.2		118	10.2		-20	30.8		104	53.2		-17	41.5		92	21.6		-13	57.6		80	34.7		-9	36.9	
19 0	151	7.7		-22	25.7		136	52.9		-22	8.3		122	58.9		-20	28.9		109	42.4		-17	38.7		97	11.5		-13	54.2		85	25.2		-9	33.1	
20	155	55.8	288.1	-22	26.1	-0.3	141	41.1	288.2	-22	7.5	0.8	127	47.5	288.7	-20	26.9	1.9	114	31.7	289.3	-17	35.9	2.8	102	1.4	289.9	-13	50.7	3.4	90	15.7	290.5	-9	29.3	3.8
40	160	43.9		-22	26.4		146	29.4		-22	6.6		132	36.2		-20	25.0		119	20.9		-17	33.1		106	51.3		-13	47.3		95	6.1		-9	25.5	
20 0	165	31.9		-22	26.7		151	17.6		-22	5.8		137	24.8		-20	23.1		124	10.2		-17	30.3		111	41.2		-13	43.9		99	56.6		-9	21.7	
20	170	20.0	288.1	-22	27.0	-0.3	156	5.8	288.2	-22	4.9	0.9	142	13.5	288.7	-20	21.1	2.0	128	59.5	289.3	-17	27.5	2.8	116	31.1	289.9	-13	40.5	3.4	104	47.1	290.5	-9	17.9	3.8
40	175	8.1		-22	27.3		160	54.1		-22	4.0		147	2.2		-20	19.2		133	48.8		-17	24.6		121	21.0		-13	37.0		109	37.6		-9	14.1	
21 0	179	56.2		-22	27.5		165	42.3		-22	3.1		151	50.9		-20	17.2		138	38.1		-17	21.8		126	11.0		-13	33.6		114	28.2		-9	10.3	
20	184	44.3	288.1	-22	27.8	-0.2	170	30.6	288.3	-22	2.1	1.0	156	39.6	288.7	-20	15.2	2.0	143	27.4	289.3	-17	18.9	2.9	131	0.9	290.0	-13	30.1	3.5	119	18.7	290.5	-9	6.5	3.8
40	189	32.4		-22	28.0		175	18.8		-22	1.2		161	28.3		-20	13.2		148	16.7		-17	16.1		135	50.9		-13	26.6		124	9.2		-9	2.6	
22 0	194	20.4		-22	28.2		180	7.1		-22	0.2		166	17.0		-20	11.2		153	6.0		-17	13.2		140	40.9		-13	23.2		128	59.7		-8	58.8	
20	199	8.5	288.1	-22	28.4	-0.2	184	55.4	288.3	-21	59.2	1.0	171	5.7	288.7	-20	9.1	2.1	157	55.3	289.3	-17	10.3	2.9	145	30.8	290.0	-13	19.7	3.5	133	50.3	290.5	-8	55.0	3.8
40	203	56.6		-22	28.6		189	43.6		-21	58.2		175	54.4		-20	7.1		162	44.7		-17	7.4		150	20.8		-13	16.2		138	40.8		-8	51.1	
23 0	208	44.7		-22	28.8		194	31.9		-21	57.2		180	43.2		-20	5.0		167	34.0		-17	4.5		155	10.8		-13	12.7		143	31.4		-8	47.3	
20	213	32.8	288.1	-22	28.9	-0.1	199	20.2	288.3	-21	56.2	1.0	185	31.9	288.8	-20	2.9	2.1	172	23.4	289.4	-17	1.6	2.9	160	0.8	290.0	-13	9.2	3.5	148	21.9	290.6	-8	43.5	3.8
40	218	20.9		-22	29.0		204	8.5		-21	55.2		190	20.7		-20	0.8		177	12.8		-16	58.7		164	50.8		-13	5.7		153	12.5		-8	39.6	

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h m	25 Jan GHA	25 Jan Dec	d	26 Jan GHA	26 Jan Dec	d	27 Jan GHA	27 Jan Dec	d	28 Jan GHA	28 Jan Dec	d	29 Jan GHA	29 Jan Dec	d	30 Jan GHA	30 Jan Dec	d
0 0	158 3.1	-8 35.8		147 1.0	-3 52.7		136 24.0	0 53.3		126 0.3	5 30.9		115 38.5	9 50.8		105 8.2	13 44.6	
20	162 53.7	-8 31.9	290.6 3.9	151 52.0	-3 48.7	291.0 4.0	141 15.2	0 57.2	291.3 3.9	130 51.6	5 34.7	291.4 3.8	120 29.8	9 54.2	291.3 3.4	109 59.3	13 47.6	291.1 3.0
40	167 44.3	-8 28.1		156 43.1	-3 44.7		146 6.5	1 1.2		135 43.0	5 38.4		125 21.1	9 57.6		114 50.5	13 50.6	
1 0	172 34.9	-8 24.2		161 34.1	-3 40.7		150 57.8	1 5.1		140 34.4	5 42.2		130 12.5	10 1.1		119 41.6	13 53.6	
20	177 25.5	-8 20.3	290.6 3.9	166 25.1	-3 36.7	291.0 4.0	155 49.1	1 9.0	291.3 3.9	145 25.8	5 45.9	291.4 3.7	135 3.8	10 4.5	291.3 3.4	124 32.7	13 56.6	291.1 3.0
40	182 16.1	-8 16.5		171 16.1	-3 32.8		160 40.4	1 13.0		150 17.1	5 49.6		139 55.1	10 7.9		129 23.9	13 59.6	
2 0	187 6.7	-8 12.6		176 7.2	-3 28.8		165 31.6	1 16.9		155 8.5	5 53.4		144 46.4	10 11.3		134 15.0	14 2.6	
20	191 57.3	-8 8.7	290.6 3.9	180 58.2	-3 24.8	291.0 4.0	170 22.9	1 20.8	291.3 3.9	159 59.9	5 57.1	291.4 3.7	149 37.8	10 14.8	291.3 3.4	139 6.1	14 5.6	291.1 3.0
40	196 47.9	-8 4.9		185 49.2	-3 20.8		175 14.2	1 24.8		164 51.3	6 0.8		154 29.1	10 18.2		143 57.2	14 8.6	
3 0	201 38.6	-8 1.0		190 40.3	-3 16.8		180 5.5	1 28.7		169 42.7	6 4.5		159 20.4	10 21.6		148 48.3	14 11.6	
20	206 29.2	-7 57.1	290.7 3.9	195 31.3	-3 12.8	291.1 4.0	184 56.8	1 32.6	291.3 3.9	174 34.0	6 8.3	291.4 3.7	164 11.7	10 25.0	291.3 3.4	153 39.4	14 14.5	291.1 2.9
40	211 19.9	-7 53.2		200 22.4	-3 8.9		189 48.1	1 36.5		179 25.4	6 12.0		169 3.0	10 28.4		158 30.6	14 17.5	
4 0	216 10.5	-7 49.3		205 13.4	-3 4.9		194 39.4	1 40.4		184 16.8	6 15.7		173 54.3	10 31.7		163 21.7	14 20.4	
20	221 1.2	-7 45.4	290.7 3.9	210 4.5	-3 0.9	291.1 4.0	199 30.7	1 44.3	291.3 3.9	189 8.2	6 19.4	291.4 3.7	178 45.6	10 35.1	291.3 3.4	168 12.8	14 23.4	291.1 3.0
40	225 51.9	-7 41.6		214 55.6	-2 56.9		204 22.0	1 48.3		193 59.5	6 23.1		183 36.9	10 38.5		173 3.9	14 26.3	
5 0	230 42.6	-7 37.7		219 46.6	-2 52.9		209 13.3	1 52.2		198 50.9	6 26.8		188 28.2	10 41.9		177 54.9	14 29.3	
20	235 33.2	-7 33.8	290.7 3.9	224 37.7	-2 48.9	291.1 4.0	214 4.6	1 56.1	291.3 3.9	203 42.3	6 30.5	291.4 3.7	193 19.5	10 45.2	291.3 3.4	182 46.0	14 32.2	291.1 2.9
40	240 23.9	-7 29.9		229 28.8	-2 45.0		218 55.9	2 0.0		208 33.7	6 34.2		198 10.8	10 48.6		187 37.1	14 35.1	
6 0	245 14.6	-7 26.0		234 19.9	-2 41.0		223 47.2	2 3.9		213 25.1	6 37.9		203 2.1	10 52.0		192 28.2	14 38.0	
20	250 5.3	-7 22.1	290.7 3.9	239 11.0	-2 37.0	291.1 4.0	228 38.6	2 7.8	291.3 3.9	218 16.4	6 41.6	291.4 3.7	207 53.4	10 55.3	291.3 3.3	197 19.3	14 40.9	291.1 2.9
40	254 56.0	-7 18.2		244 2.1	-2 33.0		233 29.9	2 11.7		223 7.8	6 45.2		212 44.7	10 58.6		202 10.3	14 43.8	
7 0	259 46.8	-7 14.3		248 53.2	-2 29.0		238 21.2	2 15.6		227 59.2	6 48.9		217 36.0	11 2.0		207 1.4	14 46.7	
20	264 37.5	-7 10.3	290.7 3.9	253 44.3	-2 25.0	291.1 4.0	243 12.5	2 19.5	291.3 3.9	232 50.6	6 52.6	291.4 3.7	222 27.3	11 5.3	291.3 3.3	211 52.5	14 49.6	291.1 2.9
40	269 28.2	-7 6.4		258 35.4	-2 21.1		248 3.8	2 23.4		237 42.0	6 56.3		227 18.5	11 8.6		216 43.5	14 52.5	
8 0	274 18.9	-7 2.5		263 26.5	-2 17.1		252 55.2	2 27.3		242 33.3	6 59.9		232 9.8	11 12.0		221 34.6	14 55.3	
20	279 9.7	-6 58.6	290.7 3.9	268 17.6	-2 13.1	291.1 4.0	257 46.5	2 31.2	291.3 3.9	247 24.7	7 3.6	291.4 3.7	237 1.1	11 15.3	291.3 3.3	226 25.6	14 58.2	291.1 2.9
40	284 0.4	-6 54.7		273 8.7	-2 9.1		262 37.8	2 35.0		252 16.1	7 7.2		241 52.4	11 18.6		231 16.7	15 1.1	
9 0	288 51.2	-6 50.8		277 59.8	-2 5.1		267 29.1	2 38.9		257 7.5	7 10.9		246 43.7	11 21.9		236 7.7	15 3.9	
20	293 41.9	-6 46.8	290.8 3.9	282 51.0	-2 1.1	291.1 4.0	272 20.5	2 42.8	291.3 3.9	261 58.8	7 14.5	291.4 3.6	251 34.9	11 25.2	291.3 3.3	240 58.8	15 6.8	291.0 2.8
40	298 32.7	-6 42.9		287 42.1	-1 57.2		277 11.8	2 46.7		266 50.2	7 18.2		256 26.2	11 28.5		245 49.8	15 9.6	
10 0	303 23.5	-6 39.0		292 33.2	-1 53.2		282 3.1	2 50.6		271 41.6	7 21.8		261 17.5	11 31.8		250 40.9	15 12.4	
20	308 14.3	-6 35.1	290.8 3.9	297 24.4	-1 49.2	291.1 4.0	286 54.5	2 54.4	291.3 3.9	276 33.0	7 25.5	291.4 3.6	266 8.7	11 35.1	291.3 3.3	255 31.9	15 15.2	291.0 2.8
40	313 5.0	-6 31.1		302 15.5	-1 45.2		291 45.8	2 58.3		281 24.3	7 29.1		270 60.0	11 38.3		260 22.9	15 18.1	
11 0	317 55.8	-6 27.2		307 6.6	-1 41.2		296 37.1	3 2.2		286 15.7	7 32.7		275 51.3	11 41.6		265 13.9	15 20.9	
20	322 46.6	-6 23.3	290.8 3.9	311 57.8	-1 37.2	291.2 4.0	301 28.5	3 6.1	291.3 3.9	291 7.1	7 36.4	291.4 3.6	280 42.5	11 44.9	291.3 3.3	270 4.9	15 23.7	291.0 2.8
40	327 37.4	-6 19.3		316 48.9	-1 33.3		306 19.8	3 9.9		295 58.4	7 40.0		285 33.8	11 48.1		274 56.0	15 26.5	
12 0	332 28.2	-6 15.4		321 40.1	-1 29.3		311 11.2	3 13.8		300 49.8	7 43.6		290 25.0	11 51.4		279 47.0	15 29.2	
20	337 19.1	-6 11.4	290.8 4.0	326 31.3	-1 25.3	291.2 4.0	316 2.5	3 17.6	291.3 3.9	305 41.2	7 47.2	291.4 3.6	295 16.3	11 54.7	291.2 3.2	284 38.0	15 32.0	291.0 2.8
40	342 9.9	-6 7.5		331 22.4	-1 21.3		320 53.9	3 21.5		310 32.6	7 50.8		300 7.5	11 57.9		289 29.0	15 34.8	
13 0	347 0.7	-6 3.5		336 13.6	-1 17.4		325 45.2	3 25.4		315 23.9	7 54.4		304 58.8	12 1.1		294 20.0	15 37.5	
20	351 51.5	-5 59.6	290.8 3.9	341 4.8	-1 13.4	291.2 4.0	330 36.6	3 29.2	291.4 3.8	320 15.3	7 58.0	291.4 3.6	309 50.0	12 4.4	291.2 3.2	299 11.0	15 40.3	291.0 2.8
40	356 42.4	-5 55.7		345 55.9	-1 9.4		335 27.9	3 33.1		325 6.7	8 1.6		314 41.2	12 7.6		304 2.0	15 43.1	
14 0	1 33.2	-5 51.7		350 47.1	-1 5.4		340 19.3	3 36.9		329 58.0	8 5.2		319 32.5	12 10.8		308 52.9	15 45.8	
20	6 24.1	-5 47.8	290.9 3.9	355 38.3	-1 1.5	291.2 4.0	345 10.6	3 40.7	291.4 3.8	334 49.4	8 8.8	291.4 3.6	324 23.7	12 14.0	291.2 3.2	313 43.9	15 48.5	291.0 2.7
40	11 14.9	-5 43.8		0 29.5	-0 57.5		350 2.0	3 44.6		339 40.8	8 12.4		329 14.9	12 17.2		318 34.9	15 51.3	
15 0	16 5.8	-5 39.9		5 20.7	-0 53.5		354 53.3	3 48.4		344 32.1	8 15.9		334 6.2	12 20.4		323 25.9	15 54.0	
20	20 56.6	-5 35.9	290.9 4.0	10 11.9	-0 49.5	291.2 4.0	359 44.7	3 52.3	291.4 3.8	349 23.5	8 19.5	291.4 3.6	338 57.4	12 23.6	291.2 3.2	328 16.8	15 56.7	291.0 2.7
40	25 47.5	-5 31.9		15 3.1	-0 45.6		4 36.0	3 56.1		354 14.8	8 23.1		343 48.6	12 26.8		333 7.8	15 59.4	
16 0	30 38.4	-5 28.0		19 54.3	-0 41.6		9 27.4	3 59.9		359 6.2	8 26.6		348 39.8	12 30.0		337 58.8	16 2.1	
20	35 29.3	-5 24.0	290.9 4.0	24 45.5	-0 37.6	291.2 4.0	14 18.8	4 3.7	291.4 3.8	3 57.6	8 30.2	291.4 3.6	353 31.1	12 33.2	291.2 3.2	342 49.7	16 4.8	290.9 2.7
40	40 20.2	-5 20.1		29 36.7	-0 33.7		19 10.1	4 7.6		8 48.9	8 33.8		358 22.3	12 36.4		347 40.7	16 7.4	
17 0	45 11.1	-5 16.1		34 27.9	-0 29.7		24 1.5	4 11.4		13 40.3	8 37.3		3 13.5	12 39.5		352 31.6	16 10.1	
20	50 2.0	-5 12.1	290.9 4.0	39 19.1	-0 25.7	291.2 4.0	28 52.8	4 15.2	291.4 3.8	18 31.6	8 40.8	291.4 3.5	8 4.7	12 42.7	291.2 3.2	357 22.5	16 12.8	290.9 2.7
40	54 52.9	-5 8.2		44 10.3	-0 21.8		33 44.2	4 19.0		23 23.0	8 44.4		12 55.9	12 45.8		2 13.5	16 15.4	
18 0	59 43.8	-5 4.2		49 1.5	-0 17.8		38 35.6	4 22.8		28 14.3	8 47.9		17 47.1	12 49.0		7 4.4	16 18.1	
20	64 34.7	-5 0.2	290.9 4.0	53 52.7	-0 13.8	291.2 4.0	43 26.9	4 26.6	291.4 3.8	33 5.7	8 51.5	291.4 3.5	22 38.3	12 52.1	291.2 3.1	11 55.3	16 20.7	290.9 2.6
40	69 25.6	-4 56.3		58 44.0	-0 9.9		48 18.3	4 30.5		37 57.1	8 55.0		27 29.5	12 55.3		16 46.3	16 23.4	
19 0	74 16.5	-4 52.3		63 35.2	-0 5.9		53 9.7	4 34.3		42 48.4	8 58.5		32 20.7	12 58.4		21 37.2	16 26.0	
20	79 7.5	-4 48.3	290.9 4.0	68 26.4	-0 2.0	291.2 3.9	58 1.0	4 38.1	291.4 3.8	47 39.8	9 2.0	291.3 3.5	37 11.9	13 1.5	291.2 3.1	26 28.1	16 28.6	290.9 2.6
40	83 58.4	-4 44.4		73 17.7	0 2.0		62 52.4	4 41.8		52 31.1	9 5.5		42 3.1	13 4.6		31 19.0	16 31.2	
20 0	88 49.3	-4 40.4		78 8.9	0 5.9		67 43.8	4 45.6		57 22.4	9 9.0		46 54.2	13 7.7		36 9.9	16 33.8	
20	93 40.3	-4 36.4	291.0 4.0	83 0.1	0 9.9	291.2 4.0	72 35.1	4 49.4	291.4 3.8	62 13.8	9 12.5	291.3 3.5	51 45.4	13 10.8	291.2 3.1	41 0.8	16 36.4	290.9 2.6
40	98 31.2	-4 32.4		87 51.4	0 13.9		77 26.5	4 53.2		67 5.1	9 16.0		56 36.6	13 13.9		45 51.7	16 39.0	
21 0	103 22.2	-4 28.5		92 42.6	0 17.8		82 17.9	4 57.0		71 56.5	9 19.5		61 27.8	13 17.0		50 42.6	16 41.6	
20	108 13.2	-4 24.5	291.0 4.0	97 33.9	0 21.8	291.3 4.0	87 9.3	5 0.8	291.4 3.8	76 47.8	9 23.0	291.3 3.5	66 18.9	13 20.1	291.2 3.1	55 33.5	16 44.2	290.9 2.6
40	113 4.1	-4 20.5		102 25.1	0 25.7		92 0.6	5 4.6		81 39.2	9 26.5		71 10.1	13 23.2		60 24.4	16 46.7	
22 0	117 55.1	-4 16.5		107 16.4	0 29.7		96 52.0	5 8.3		86 30.5	9 30.0		76 1.3	13 26.3		65 15.3	16 49.3	
20	122 46.1	-4 12.6	291.0 4.0	112 7.6	0 33.6	291.3 3.9	101 43.4	5 12.1	291.4 3.8	91 21.8	9 33.5	291.3 3.5	80 52.4	13 29.3	291.2 3.0	70 6.1	16 51.8	290.9 2.5
40	127 37.1	-4 8.6		116 58.9	0 37.5		106 34.8	5 15.9		96 13.2	9 36.9		85 43.6	13 32.4		74 57.0	16 54.4	
23 0	132 28.0	-4 4.6		121 50.2	0 41.5		111 26.1	5 19.6		101 4.5	9 40.4		90 34.8	13 35.4		79 47.9	16 56.9	
20	137 19.0	-4 0.6	291.0 4.0	126 41.4	0 45.4	291.3 3.9	116 17.5	5 23.4	291.4 3.8	105 55.8	9 43.8	291.3 3.5	95 25.9	13 38.5	291.1 3.1	84 38.7	16 59.4	290.9 2.5
40	142 10.0	-3 56.7		131 32.7	0 49.4		121 8.9	5 27.2		110 47.2	9 47.3		100 17.1	13 41.5		89 29.6	17 2.0	

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h m	31 Jan GHA	31 Jan Dec	d	1 Feb GHA	1 Feb Dec	d	2 Feb GHA	2 Feb Dec	d	3 Feb GHA	3 Feb Dec	d	4 Feb GHA	4 Feb Dec	d	5 Feb GHA	5 Feb Dec	d
0 0	94 20.4	17 4.5		83 8.7	19 42.5		71 29.8	21 30.7		59 25.0	22 21.2		46 60.0	22 7.8		34 23.6	20 46.9	
20	99 11.3	17 7.0	290.8 2.5	87 59.1	19 44.4	290.5 1.9	76 19.9	21 31.8	290.1 1.1	64 14.8	22 21.5	289.8 0.3	51 49.5	22 7.2	289.5 -0.7	39 13.0	20 45.3	289.5 -1.6
40	104 2.1	17 9.5		92 49.6	19 46.2		81 10.0	21 32.9		69 4.6	22 21.7		56 39.1	22 6.5		44 2.5	20 43.7	
1 0	108 52.9	17 11.9		97 40.1	19 48.1		86 0.1	21 34.0		73 54.3	22 22.0		61 28.6	22 5.8		48 52.0	20 42.1	
20	113 43.8	17 14.4	290.8 2.5	102 30.6	19 49.9	290.5 1.8	90 50.2	21 35.1	290.1 1.1	78 44.1	22 22.2	289.8 0.2	66 18.2	22 5.1	289.5 -0.7	53 41.4	20 40.4	289.5 -1.7
40	118 34.6	17 16.9		107 21.0	19 51.7		95 40.3	21 36.1		83 33.9	22 22.4		71 7.7	22 4.4		58 30.9	20 38.8	
2 0	123 25.4	17 19.3		112 11.5	19 53.6		100 30.3	21 37.2		88 23.6	22 22.6		75 57.3	22 3.7		63 20.3	20 37.1	
20	128 16.2	17 21.8	290.8 2.5	117 1.9	19 55.4	290.4 1.8	105 20.4	21 38.2	290.1 1.0	93 13.4	22 22.8	289.7 0.2	80 46.8	22 3.0	289.5 -0.8	68 9.8	20 35.4	289.5 -1.7
40	133 7.1	17 24.2		121 52.4	19 57.2		110 10.5	21 39.3		98 3.1	22 23.0		85 36.3	22 2.2		72 59.3	20 33.7	
3 0	137 57.9	17 26.7		126 42.8	19 58.9		115 0.6	21 40.3		102 52.9	22 23.2		90 25.9	22 1.4		77 48.7	20 32.0	
20	142 48.7	17 29.1	290.8 2.4	131 33.2	20 0.7	290.4 1.8	119 50.6	21 41.3	290.1 1.0	107 42.6	22 23.3	289.7 0.1	95 15.4	22 0.7	289.5 -0.8	82 38.2	20 30.3	289.5 -1.7
40	147 39.5	17 31.5		136 23.7	20 2.5		124 40.7	21 42.3		112 32.3	22 23.5		100 4.9	21 59.9		87 27.6	20 28.6	
4 0	152 30.3	17 33.9		141 14.1	20 4.2		129 30.7	21 43.3		117 22.1	22 23.6		104 54.4	21 59.1		92 17.1	20 26.8	
20	157 21.1	17 36.3	290.8 2.4	146 4.5	20 6.0	290.4 1.7	134 20.8	21 44.3	290.0 1.0	122 11.8	22 23.7	289.7 0.1	109 44.0	21 58.3	289.5 -0.8	97 6.6	20 25.1	289.5 -1.8
40	162 11.8	17 38.7		150 54.9	20 7.7		139 10.8	21 45.3		127 1.5	22 23.8		114 33.5	21 57.4		101 56.0	20 23.3	
5 0	167 2.6	17 41.1		155 45.3	20 9.4		144 0.8	21 46.2		131 51.2	22 23.9		119 23.0	21 56.6		106 45.5	20 21.5	
20	171 53.4	17 43.5	290.8 2.4	160 35.7	20 11.2	290.4 1.7	148 50.9	21 47.2	290.0 0.9	136 40.9	22 24.0	289.7 0.1	124 12.5	21 55.7	289.5 -0.9	111 34.9	20 19.7	289.5 -1.8
40	176 44.2	17 45.9		165 26.1	20 12.9		153 40.9	21 48.1		141 30.7	22 24.0		129 2.0	21 54.9		116 24.4	20 17.9	
6 0	181 34.9	17 48.2		170 16.5	20 14.6		158 30.9	21 49.0		146 20.4	22 24.1		133 51.6	21 54.0		121 13.9	20 16.1	
20	186 25.7	17 50.6	290.8 2.3	175 6.9	20 16.2	290.4 1.7	163 20.9	21 49.9	290.0 0.9	151 10.1	22 24.1	289.7 0.0	138 41.1	21 53.1	289.5 -0.9	126 3.3	20 14.2	289.5 -1.9
40	191 16.4	17 52.9		179 57.3	20 17.9		168 10.9	21 50.8		155 59.8	22 24.1		143 30.6	21 52.2		130 52.8	20 12.4	
7 0	196 7.2	17 55.2		184 47.7	20 19.6		173 0.9	21 51.7		160 49.5	22 24.2		148 20.1	21 51.3		135 42.2	20 10.5	
20	200 57.9	17 57.6	290.7 2.3	189 38.0	20 21.2	290.4 1.6	177 50.9	21 52.6	290.0 0.9	165 39.2	22 24.2	289.7 0.0	153 9.6	21 50.3	289.5 -1.0	140 31.7	20 8.7	289.5 -1.9
40	205 48.7	17 59.9		194 28.4	20 22.9		182 40.9	21 53.4		170 28.9	22 24.1		157 59.1	21 49.4		145 21.2	20 6.8	
8 0	210 39.4	18 2.2		199 18.8	20 24.5		187 30.9	21 54.3		175 18.5	22 24.1		162 48.6	21 48.4		150 10.6	20 4.9	
20	215 30.1	18 4.5	290.7 2.3	204 9.1	20 26.1	290.3 1.6	192 20.9	21 55.1	290.0 0.8	180 8.2	22 24.1	289.7 0.0	167 38.1	21 47.5	289.5 -1.0	155 0.1	20 3.0	289.5 -1.9
40	220 20.9	18 6.8		208 59.5	20 27.8		197 10.9	21 56.0		184 57.9	22 24.0		172 27.6	21 46.5		159 49.6	20 1.0	
9 0	225 11.6	18 9.1		213 49.8	20 29.4		202 0.8	21 56.8		189 47.6	22 24.0		177 17.1	21 45.5		164 39.0	19 59.1	
20	230 2.3	18 11.3	290.7 2.3	218 40.1	20 31.0	290.3 1.6	206 50.8	21 57.6	290.0 0.8	194 37.3	22 23.9	289.7 -0.1	182 6.6	21 44.5	289.5 -1.0	169 28.5	19 57.1	289.5 -2.0
40	234 53.0	18 13.6		223 30.5	20 32.5		211 40.8	21 58.4		199 26.9	22 23.8		186 56.1	21 43.4		174 17.9	19 55.2	
10 0	239 43.7	18 15.9		228 20.8	20 34.1		216 30.7	21 59.2		204 16.6	22 23.7		191 45.6	21 42.4		179 7.4	19 53.2	
20	244 34.4	18 18.1	290.7 2.2	233 11.1	20 35.7	290.3 1.6	221 20.7	21 59.9	290.0 0.7	209 6.3	22 23.6	289.7 -0.1	196 35.1	21 41.3	289.5 -1.1	183 56.9	19 51.2	289.5 -2.0
40	249 25.1	18 20.4		238 1.4	20 37.2		226 10.6	22 0.7		213 55.9	22 23.5		201 24.6	21 40.3		188 46.3	19 49.2	
11 0	254 15.8	18 22.6		242 51.8	20 38.8		231 0.6	22 1.4		218 45.6	22 23.3		206 14.1	21 39.2		193 35.8	19 47.2	
20	259 6.5	18 24.8	290.7 2.2	247 42.1	20 40.3	290.3 1.5	235 50.5	22 2.2	289.9 0.7	223 35.2	22 23.2	289.7 -0.2	211 3.6	21 38.1	289.5 -1.1	198 25.3	19 45.2	289.5 -2.0
40	263 57.2	18 27.0		252 32.4	20 41.8		240 40.5	22 2.9		228 24.9	22 23.0		215 53.1	21 37.0		203 14.7	19 43.1	
12 0	268 47.8	18 29.2		257 22.7	20 43.3		245 30.4	22 3.6		233 14.5	22 22.8		220 42.6	21 35.9		208 4.2	19 41.1	
20	273 38.5	18 31.4	290.7 2.2	262 12.9	20 44.8	290.3 1.5	250 20.3	22 4.3	289.9 0.7	238 4.2	22 22.6	289.6 -0.2	225 32.1	21 34.8	289.5 -1.1	212 53.7	19 39.0	289.5 -2.1
40	278 29.2	18 33.6		267 3.2	20 46.3		255 10.3	22 5.0		242 53.8	22 22.4		230 21.6	21 33.6		217 43.1	19 36.9	
13 0	283 19.8	18 35.8		271 53.5	20 47.8		260 0.2	22 5.7		247 43.5	22 22.2		235 11.0	21 32.5		222 32.6	19 34.9	
20	288 10.5	18 38.0	290.6 2.2	276 43.8	20 49.3	290.3 1.5	264 50.1	22 6.3	289.9 0.6	252 33.1	22 22.0	289.6 -0.2	240 0.5	21 31.3	289.5 -1.2	227 22.1	19 32.8	289.5 -2.1
40	293 1.1	18 40.1		281 34.1	20 50.7		269 40.0	22 7.0		257 22.7	22 21.7		244 50.0	21 30.1		232 11.5	19 30.6	
14 0	297 51.8	18 42.3		286 24.3	20 52.2		274 29.9	22 7.6		262 12.4	22 21.5		249 39.5	21 28.9		237 1.0	19 28.5	
20	302 42.4	18 44.4	290.6 2.1	291 14.6	20 53.6	290.3 1.4	279 19.8	22 8.3	289.9 0.6	267 2.0	22 21.2	289.6 -0.3	254 29.0	21 27.7	289.5 -1.2	241 50.5	19 26.4	289.5 -2.1
40	307 33.0	18 46.5		296 4.8	20 55.1		284 9.7	22 8.9		271 51.6	22 20.9		259 18.4	21 26.5		246 40.0	19 24.2	
15 0	312 23.7	18 48.7		300 55.1	20 56.5		288 59.6	22 9.5		276 41.2	22 20.7		264 7.9	21 25.2		251 29.4	19 22.1	
20	317 14.3	18 50.8	290.6 2.1	305 45.3	20 57.9	290.2 1.4	293 49.5	22 10.1	289.9 0.6	281 30.9	22 20.3	289.6 -0.3	268 57.4	21 24.0	289.5 -1.3	256 18.9	19 19.9	289.5 -2.2
40	322 4.9	18 52.9		310 35.6	20 59.3		298 39.4	22 10.7		286 20.5	22 20.0		273 46.9	21 22.7		261 8.4	19 17.7	
16 0	326 55.5	18 55.0		315 25.8	21 0.7		303 29.2	22 11.2		291 10.1	22 19.7		278 36.4	21 21.4		265 57.9	19 15.5	
20	331 46.1	18 57.1	290.6 2.1	320 16.0	21 2.0	290.2 1.4	308 19.1	22 11.8	289.9 0.6	295 59.7	22 19.4	289.6 -0.4	283 25.8	21 20.2	289.5 -1.3	270 47.3	19 13.3	289.5 -2.2
40	336 36.7	18 59.1		325 6.2	21 3.4		313 9.0	22 12.3		300 49.3	22 19.0		288 15.3	21 18.9		275 36.8	19 11.0	
17 0	341 27.3	19 1.2		329 56.5	21 4.8		317 58.9	22 12.9		305 38.9	22 18.6		293 4.8	21 17.5		280 26.3	19 8.8	
20	346 17.9	19 3.3	290.6 2.1	334 46.7	21 6.1	290.2 1.3	322 48.7	22 13.4	289.9 0.5	310 28.5	22 18.2	289.6 -0.4	297 54.3	21 16.2	289.5 -1.3	285 15.8	19 6.5	289.5 -2.3
40	351 8.5	19 5.3		339 36.9	21 7.4		327 38.6	22 13.9		315 18.1	22 17.8		302 43.7	21 14.9		290 5.2	19 4.3	
18 0	355 59.1	19 7.4		344 27.1	21 8.8		332 28.4	22 14.4		320 7.7	22 17.4		307 33.2	21 13.5		294 54.7	19 2.0	
20	0 49.7	19 9.4	290.6 2.0	349 17.3	21 10.1	290.2 1.3	337 18.3	22 14.9	289.8 0.5	324 57.3	22 17.0	289.6 -0.4	312 22.7	21 12.2	289.5 -1.4	299 44.2	19 59.7	289.5 -2.3
40	5 40.2	19 11.4		354 7.5	21 11.4		342 8.1	22 15.3		329 46.9	22 16.6		317 12.1	21 10.8		304 33.7	18 57.4	
19 0	10 30.8	19 13.4		358 57.6	21 12.7		346 58.0	22 15.8		334 36.5	22 16.1		322 1.6	21 9.4		309 23.2	18 55.1	
20	15 21.4	19 15.4	290.6 2.0	3 47.8	21 13.9	290.2 1.3	351 47.8	22 16.2	289.8 0.4	339 26.1	22 15.7	289.6 -0.5	326 51.1	21 8.0	289.5 -1.4	314 12.7	18 52.8	289.5 -2.3
40	20 11.9	19 17.4		8 38.0	21 15.2		356 37.6	22 16.7		344 15.6	22 15.2		331 40.5	21 6.6		319 2.1	18 50.4	
20 0	25 2.5	19 19.4		13 28.2	21 16.5		1 27.4	22 17.1		349 5.2	22 14.7		336 30.0	21 5.1		323 51.6	18 48.1	
20	29 53.0	19 21.4	290.5 2.0	18 18.3	21 17.7	290.2 1.2	6 17.3	22 17.5	289.8 0.4	353 54.8	22 14.2	289.6 -0.5	341 19.5	21 3.7	289.5 -1.5	328 41.1	18 45.7	289.5 -2.4
40	34 43.6	19 23.4		23 8.5	21 18.9		11 7.1	22 17.9		358 44.4	22 13.7		346 8.9	21 2.2		333 30.6	18 43.3	
21 0	39 34.1	19 25.3		27 58.6	21 20.2		15 56.9	22 18.3		3 33.9	22 13.2		350 58.4	21 0.7		338 20.1	18 41.0	
20	44 24.6	19 27.3	290.5 1.9	32 48.8	21 21.4	290.1 1.2	20 46.7	22 18.7	289.8 0.4	8 23.5	22 12.6	289.6 -0.6	355 47.9	20 59.3	289.5 -1.5	343 9.6	18 38.6	289.5 -2.4
40	49 15.1	19 29.2		37 38.9	21 22.6		25 36.5	22 19.0		13 13.1	22 12.1		0 37.3	20 57.8		347 59.1	18 36.1	
22 0	54 5.7	19 31.1		42 29.1	21 23.8		30 26.3	22 19.4		18 2.6	22 11.5		5 26.8	20 56.2		352 48.6	18 33.7	
20	58 56.2	19 33.1	290.5 1.9	47 19.2	21 25.0	290.1 1.2	35 16.1	22 19.7	289.8 0.3	22 52.2	22 10.9	289.6 -0.6	10 16.3	20 54.7	289.5 -1.5	357 38.1	18 31.3	289.5 -2.4
40	63 46.7	19 35.0		52 9.3	21 26.1		40 5.9	22 20.1		27 41.8	22 10.3		15 5.7	20 53.2		2 27.6	18 28.8	
23 0	68 37.2	19 36.9		56 59.5	21 27.3		44 55.7	22 20.4		32 31.3	22 9.7		19 55.2	20 51.6		7 17.0	18 26.4	
20	73 27.7	19 38.8	290.5 1.9	61 49.6	21 28.4	290.1 1.1	49 45.5	22 20.7	289.8 0.3	37 20.9	22 9.1	289.6 -0.6	24 44.7	20 50.1	289.5 -1.6	12 6.5	18 23.9	289.5 -2.5
40	78 18.2	19 40.7		66 39.7	21 29.6		54 35.3	22 21.0		42 10.4	22 8.5		29 34.1	20 48.5		16 56.0	18 21.4	

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h m	6 Feb GHA	6 Feb Dec	d	7 Feb GHA	7 Feb Dec	d	8 Feb GHA	8 Feb Dec	d	9 Feb GHA	9 Feb Dec	d	10 Feb GHA	10 Feb Dec	d	11 Feb GHA	11 Feb Dec	d
0 0	21 45.5	18 18.9		9 13.6	14 49.1		356 51.1	10 27.3		344 36.6	5 27.3		332 24.3	0 6.1		320 5.9	-5 17.7	
20	26 35.0	18 16.4	-2.5	14 3.2	14 45.8	-3.3	1 40.8	10 23.3	-4.0	349 26.4	5 23.0	-4.3	337 14.1	0 1.6	-4.5	324 55.5	-5 22.2	-4.4
40	31 24.5	18 13.9	289.5	18 52.8	14 42.4	289.6	6 30.6	10 19.4	289.8	354 16.2	5 18.6	289.8	342 3.9	-0 2.9	289.8	329 45.2	-5 26.6	289.7
1 0	36 14.1	18 11.4		23 42.4	14 39.1		11 20.3	10 15.4		359 6.1	5 14.3		346 53.8	-0 7.4		334 34.9	-5 31.0	
20	41 3.6	18 8.8	-2.6	28 32.0	14 35.8	-3.3	16 10.1	10 11.5	-4.0	3 55.9	5 9.9	-4.4	351 43.6	-0 12.0	-4.5	339 24.5	-5 35.4	-4.4
40	45 53.1	18 6.3	289.5	33 21.7	14 32.4	289.6	20 59.8	10 7.5	289.8	8 45.7	5 5.5	289.8	356 33.4	-0 16.5	289.8	344 14.1	-5 39.8	289.6
2 0	50 42.6	18 3.7		38 11.3	14 29.1		25 49.6	10 3.5		13 35.6	5 1.1		1 23.2	-0 21.0		349 3.8	-5 44.2	
20	55 32.1	18 1.1	-2.6	43 0.9	14 25.7	-3.4	30 39.4	9 59.5	-4.0	18 25.4	4 56.8	-4.4	6 13.0	-0 25.6	-4.5	353 53.4	-5 48.6	-4.4
40	60 21.6	17 58.5	289.5	47 50.6	14 22.3	289.6	35 29.1	9 55.5	289.8	23 15.2	4 52.4	289.8	11 2.8	-0 30.1	289.8	358 43.1	-5 53.0	289.6
3 0	65 11.1	17 55.9		52 40.2	14 18.9		40 18.9	9 51.5		28 5.1	4 48.0		15 52.6	-0 34.6		3 32.7	-5 57.4	
20	70 0.6	17 53.3	-2.6	57 29.8	14 15.5	-3.4	45 8.7	9 47.5	-4.0	32 54.9	4 43.6	-4.4	20 42.4	-0 39.1	-4.5	8 22.3	-6 1.8	-4.4
40	74 50.1	17 50.7	289.5	62 19.5	14 12.1	289.6	49 58.4	9 43.5	289.8	37 44.7	4 39.2	289.8	25 32.2	-0 43.7	289.8	13 11.9	-6 6.2	289.6
4 0	79 39.6	17 48.0		67 9.1	14 8.7		54 48.2	9 39.5		42 34.6	4 34.8		30 21.9	-0 48.2		18 1.6	-6 10.6	
20	84 29.2	17 45.4	-2.7	71 58.8	14 5.3	-3.4	59 38.0	9 35.5	-4.0	47 24.4	4 30.4	-4.4	35 11.7	-0 52.7	-4.5	22 51.2	-6 15.0	-4.4
40	89 18.7	17 42.7	289.5	76 48.4	14 1.9	289.6	64 27.7	9 31.4	289.8	52 14.2	4 26.0	289.8	40 1.5	-0 57.2	289.8	27 40.8	-6 19.4	289.6
5 0	94 8.2	17 40.0		81 38.1	13 58.4		69 17.5	9 27.4		57 4.1	4 21.6		44 51.3	-1 1.8		32 30.4	-6 23.7	
20	98 57.7	17 37.4	-2.7	86 27.7	13 55.0	-3.5	74 7.3	9 23.3	-4.1	61 53.9	4 17.2	-4.4	49 41.1	-1 6.3	-4.5	37 20.0	-6 28.1	-4.4
40	103 47.2	17 34.7	289.5	91 17.4	13 51.5	289.7	78 57.1	9 19.3	289.8	66 43.8	4 12.7	289.8	54 30.9	-1 10.8	289.8	42 9.6	-6 32.5	289.6
6 0	108 36.8	17 31.9		96 7.0	13 48.0		83 46.8	9 15.2		71 33.6	4 8.3		59 20.7	-1 15.3		46 59.2	-6 36.8	
20	113 26.3	17 29.2	-2.7	100 56.7	13 44.5	-3.5	88 36.6	9 11.2	-4.1	76 23.4	4 3.9	-4.4	64 10.5	-1 19.9	-4.5	51 48.8	-6 41.2	-4.4
40	118 15.8	17 26.5	289.5	105 46.3	13 41.0	289.7	93 26.4	9 7.1	289.8	81 13.3	3 59.5	289.8	69 0.2	-1 24.4	289.8	56 38.4	-6 45.6	289.6
7 0	123 5.3	17 23.8		110 36.0	13 37.5		98 16.2	9 3.0		86 3.1	3 55.0		73 50.0	-1 28.9		61 28.0	-6 49.9	
20	127 54.9	17 21.0	-2.8	115 25.6	13 34.0	-3.5	103 6.0	8 58.9	-4.1	90 52.9	3 50.6	-4.4	78 39.8	-1 33.4	-4.5	66 17.6	-6 54.2	-4.3
40	132 44.4	17 18.2	289.5	120 15.3	13 30.5	289.7	107 55.8	8 54.8	289.8	95 42.8	3 46.2	289.8	83 29.6	-1 38.0	289.8	71 7.2	-6 58.6	289.6
8 0	137 33.9	17 15.4		125 5.0	13 27.0		112 45.5	8 50.7		100 32.6	3 41.7		88 19.3	-1 42.5		75 56.7	-7 2.9	
20	142 23.5	17 12.7	-2.8	129 54.6	13 23.4	-3.6	117 35.3	8 46.6	-4.1	105 22.4	3 37.3	-4.4	93 9.1	-1 47.0	-4.5	80 46.3	-7 7.3	-4.3
40	147 13.0	17 9.9	289.5	134 44.3	13 19.9	289.7	122 25.1	8 42.5	289.8	110 12.3	3 32.9	289.8	97 58.9	-1 51.5	289.8	85 35.9	-7 11.6	289.6
9 0	152 2.5	17 7.0		139 34.0	13 16.3		127 14.9	8 38.4		115 2.1	3 28.4		102 48.7	-1 56.0		90 25.5	-7 15.9	
20	156 52.1	17 4.2	-2.8	144 23.7	13 12.7	-3.6	132 4.7	8 34.3	-4.1	119 52.0	3 24.0	-4.5	107 38.4	-2 0.6	-4.5	95 15.0	-7 20.2	-4.3
40	161 41.6	17 1.4	289.5	149 13.3	13 9.2	289.7	136 54.5	8 30.1	289.8	124 41.8	3 19.5	289.8	112 28.2	-2 5.1	289.8	100 4.6	-7 24.5	289.6
10 0	166 31.2	16 58.5		154 3.0	13 5.6		141 44.3	8 26.0		129 31.6	3 15.0		117 17.9	-2 9.6		104 54.1	-7 28.8	
20	171 20.7	16 55.7	-2.9	158 52.7	13 2.0	-3.6	146 34.1	8 21.9	-4.1	134 21.5	3 10.6	-4.4	122 7.7	-2 14.1	-4.5	109 43.7	-7 33.2	-4.3
40	176 10.3	16 52.8	289.5	163 42.4	12 58.4	289.7	151 23.9	8 17.7	289.8	139 11.3	3 6.1	289.8	126 57.5	-2 18.6	289.8	114 33.3	-7 37.5	289.6
11 0	180 59.8	16 49.9		168 32.0	12 54.8		156 13.7	8 13.6		144 1.1	3 1.7		131 47.2	-2 23.1		119 22.8	-7 41.7	
20	185 49.4	16 47.0	-2.9	173 21.7	12 51.2	-3.6	161 3.5	8 9.4	-4.2	148 51.0	2 57.2	-4.5	136 37.0	-2 27.7	-4.5	124 12.3	-7 46.0	-4.3
40	190 38.9	16 44.1	289.6	178 11.4	12 47.5	289.7	165 53.3	8 5.2	289.8	153 40.8	2 52.7	289.8	141 26.7	-2 32.2	289.8	129 1.9	-7 50.3	289.5
12 0	195 28.5	16 41.2		183 1.1	12 43.9		170 43.1	8 1.1		158 30.6	2 48.3		146 16.5	-2 36.7		133 51.4	-7 54.6	
20	200 18.0	16 38.3	-2.9	187 50.8	12 40.2	-3.7	175 32.9	7 56.9	-4.2	163 20.5	2 43.8	-4.5	151 6.2	-2 41.2	-4.5	138 41.0	-7 58.9	-4.3
40	205 7.6	16 35.4	289.6	192 40.5	12 36.6	289.7	180 22.7	7 52.7	289.8	168 10.3	2 39.3	289.8	155 56.0	-2 45.7	289.7	143 30.5	-8 3.1	289.5
13 0	209 57.1	16 32.4		197 30.2	12 32.9		185 12.5	7 48.5		173 0.2	2 34.8		160 45.7	-2 50.2		148 20.0	-8 7.4	
20	214 46.7	16 29.4	-3.0	202 19.9	12 29.2	-3.7	190 2.3	7 44.3	-4.2	177 50.0	2 30.4	-4.5	165 35.5	-2 54.7	-4.5	153 9.5	-8 11.7	-4.3
40	219 36.3	16 26.5	289.6	207 9.6	12 25.5	289.7	194 52.1	7 40.1	289.8	182 39.8	2 25.9	289.8	170 25.2	-2 59.2	289.7	157 59.0	-8 15.9	289.5
14 0	224 25.8	16 23.5		211 59.3	12 21.9		199 41.9	7 35.9		187 29.7	2 21.4		175 14.9	-3 3.7		162 48.6	-8 20.2	
20	229 15.4	16 20.5	-3.0	216 49.0	12 18.2	-3.7	204 31.7	7 31.7	-4.2	192 19.5	2 16.9	-4.5	180 4.7	-3 8.2	-4.5	167 38.1	-8 24.4	-4.2
40	234 4.9	16 17.5	289.6	221 38.7	12 14.4	289.7	209 21.5	7 27.5	289.8	197 9.3	2 12.4	289.8	184 54.4	-3 12.7	289.7	172 27.6	-8 28.6	289.5
15 0	238 54.5	16 14.5		226 28.4	12 10.7		214 11.3	7 23.3		201 59.2	2 7.9		189 44.1	-3 17.2		177 17.1	-8 32.9	
20	243 44.1	16 11.5	-3.0	231 18.1	12 7.0	-3.7	219 1.2	7 19.0	-4.2	206 49.0	2 3.4	-4.5	194 33.9	-3 21.7	-4.5	182 6.6	-8 37.1	-4.2
40	248 33.7	16 8.4	289.6	236 7.8	12 3.3	289.7	223 51.0	7 14.8	289.8	211 38.8	1 58.9	289.8	199 23.6	-3 26.2	289.7	186 56.1	-8 41.3	289.5
16 0	253 23.2	16 5.4		240 57.5	11 59.5		228 40.8	7 10.6		216 28.6	1 54.4		204 13.3	-3 30.7		191 45.5	-8 45.5	
20	258 12.8	16 2.3	-3.1	245 47.2	11 55.8	-3.8	233 30.6	7 6.3	-4.3	221 18.5	1 49.9	-4.5	209 3.0	-3 35.2	-4.5	196 35.0	-8 49.7	-4.2
40	263 2.4	15 59.3	289.6	250 36.9	11 52.0	289.7	238 20.4	7 2.1	289.8	226 8.3	1 45.4	289.8	213 52.8	-3 39.7	289.7	201 24.5	-8 53.9	289.5
17 0	267 52.0	15 56.2		255 26.6	11 48.2		243 10.2	6 57.8		230 58.1	1 40.9		218 42.5	-3 44.1		206 14.0	-8 58.1	
20	272 41.5	15 53.1	-3.1	260 16.3	11 44.5	-3.8	248 0.0	6 53.5	-4.3	235 48.0	1 36.4	-4.5	223 32.2	-3 48.6	-4.5	211 3.5	-9 2.3	-4.2
40	277 31.1	15 50.0	289.6	265 6.1	11 40.7	289.7	252 49.9	6 49.3	289.8	240 37.8	1 31.9	289.8	228 21.9	-3 53.1	289.7	215 52.9	-9 6.5	289.5
18 0	282 20.7	15 46.9		269 55.8	11 36.9		257 39.7	6 45.0		245 27.6	1 27.4		233 11.6	-3 57.6		220 42.4	-9 10.7	
20	287 10.3	15 43.7	-3.1	274 45.5	11 33.1	-3.8	262 29.5	6 40.7	-4.3	250 17.4	1 22.9	-4.5	238 1.3	-4 2.1	-4.5	225 31.8	-9 14.9	-4.2
40	291 59.9	15 40.6	289.6	279 35.2	11 29.3	289.7	267 19.3	6 36.5	289.8	255 7.3	1 18.4	289.8	242 51.0	-4 6.5	289.7	230 21.3	-9 19.0	289.5
19 0	296 49.5	15 37.5		284 25.0	11 25.5		272 9.1	6 32.2		259 57.1	1 13.9		247 40.7	-4 11.0		235 10.7	-9 23.2	
20	301 39.1	15 34.3	-3.2	289 14.7	11 21.6	-3.8	276 59.0	6 27.9	-4.3	264 46.9	1 9.4	-4.5	252 30.4	-4 15.5	-4.5	240 0.2	-9 27.4	-4.1
40	306 28.7	15 31.2	289.6	294 4.4	11 17.8	289.7	281 48.8	6 23.6	289.8	269 36.7	1 4.9	289.8	257 20.1	-4 19.9	289.7	244 49.6	-9 31.5	289.4
20 0	311 18.3	15 28.0		298 54.2	11 14.0		286 38.6	6 19.3		274 26.6	1 0.4		262 9.8	-4 24.4		249 39.1	-9 35.6	
20	316 7.9	15 24.8	-3.2	303 43.9	11 10.1	-3.9	291 28.4	6 15.0	-4.3	279 16.4	0 55.8	-4.5	266 59.5	-4 28.9	-4.5	254 28.5	-9 39.8	-4.1
40	320 57.5	15 21.6	289.6	308 33.6	11 6.3	289.7	296 18.3	6 10.7	289.8	284 6.2	0 51.3	289.8	271 49.2	-4 33.3	289.7	259 17.9	-9 43.9	289.4
21 0	325 47.1	15 18.4		313 23.4	11 2.4		301 8.1	6 6.4		288 56.0	0 46.8		276 38.9	-4 37.8		264 7.4	-9 48.0	
20	330 36.7	15 15.2	-3.2	318 13.1	10 58.5	-3.9	305 57.9	6 2.0	-4.3	293 45.8	0 42.3	-4.5	281 28.5	-4 42.2	-4.4	268 56.8	-9 52.1	-4.1
40	335 26.3	15 12.0	289.6	323 2.8	10 54.6	289.7	310 47.8	5 57.7	289.8	298 35.6	0 37.8	289.8	286 18.2	-4 46.7	289.7	273 46.2	-9 56.3	289.4
22 0	340 15.9	15 8.7		327 52.6	10 50.7		315 37.6	5 53.4		303 25.5	0 33.3		291 7.9	-4 51.1		278 35.6	-10 0.4	
20	345 5.5	15 5.5	-3.3	332 42.3	10 46.9	-3.9	320 27.4	5 49.1	-4.3	308 15.3	0 28.7	-4.5	295 57.6	-4 55.6	-4.4	283 25.0	-10 4.5	-4.1
40	349 55.1	15 2.2	289.6	337 32.1	10 42.9	289.7	325 17.2	5 44.7	289.8	313 5.1	0 24.2	289.8	300 47.2	-5 0.0	289.7	288 14.4	-10 8.5	289.4
23 0	354 44.7	14 58.9		342 21.8	10 39.0		330 7.1	5 40.4		317 54.9	0 19.7		305 36.9	-5 4.4		293 3.8	-10 12.6	
20	359 34.3	14 55.7	-3.3	347 11.6	10 35.1	-3.9	334 56.9	5 36.0	-4.4	322 44.7	0 15.2	-4.5	310 26.6	-5 8.9	-4.4	297 53.2	-10 16.7	-4.1
40	4 23.9	14 52.4	289.6	352 1.3	10 31.2	289.7	339 46.7	5 31.7	289.8	327 34.5	0 10.7	289.8	315 16.2	-5 13.3	289.7	302 42.6	-10 20.8	289.4

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h m	12 Feb GHA	12 Feb Dec	d	13 Feb GHA	13 Feb Dec	d	14 Feb GHA	14 Feb Dec	d	15 Feb GHA	15 Feb Dec	d	16 Feb GHA	16 Feb Dec	d	17 Feb GHA	17 Feb Dec	d
0 0	307 32.0	-10 24.8		294 34.9	-14 56.0		281 11.3	-18 33.5		267 24.5	-21 2.4		253 25.1	-22 12.7		239 29.7	-22 1.0	
20	312 21.4	-10 28.9	289.4 -4.1	299 24.0	-14 59.4	289.0 -3.4	285 60.0	-18 36.0	288.7 -2.5	272 12.9	-21 3.9	288.4 -1.5	258 13.5	-22 13.1	288.3 -0.4	244 18.2	-22 0.3	288.5 0.7
40	317 10.7	-10 32.9		304 13.0	-15 2.9		290 48.7	-18 38.6		277 1.2	-21 5.4		263 1.8	-22 13.5		249 6.7	-21 59.6	
1 0	322 0.1	-10 37.0		309 2.0	-15 6.3		295 37.3	-18 41.1		281 49.6	-21 6.9		267 50.1	-22 13.9		253 55.2	-21 58.8	
20	326 49.5	-10 41.0	289.4 -4.0	313 51.0	-15 9.7	289.0 -3.4	300 25.9	-18 43.7	288.6 -2.5	286 38.0	-21 8.4	288.4 -1.5	272 38.4	-22 14.2	288.3 -0.3	258 43.7	-21 58.0	288.5 0.8
40	331 38.8	-10 45.0		318 40.0	-15 13.0		305 14.6	-18 46.2		291 26.4	-21 9.9		277 26.8	-22 14.5		263 32.3	-21 57.2	
2 0	336 28.2	-10 49.1		323 29.0	-15 16.4		310 3.2	-18 48.7		296 14.8	-21 11.3		282 15.1	-22 14.9		268 20.8	-21 56.4	
20	341 17.5	-10 53.1	289.3 -4.0	328 18.0	-15 19.8	289.0 -3.4	314 51.8	-18 51.2	288.6 -2.5	301 3.2	-21 12.8	288.4 -1.4	287 3.4	-22 15.2	288.3 -0.3	273 9.3	-21 55.6	288.5 0.8
40	346 6.9	-10 57.1		333 7.0	-15 23.1		319 40.5	-18 53.6		305 51.6	-21 14.2		291 51.8	-22 15.5		277 57.9	-21 54.8	
3 0	350 56.2	-11 1.1		337 55.9	-15 26.5		324 29.1	-18 56.1		310 39.9	-21 15.6		296 40.1	-22 15.7		282 46.4	-21 53.9	
20	355 45.6	-11 5.1	289.3 -4.0	342 44.9	-15 29.8	289.0 -3.3	329 17.7	-18 58.5	288.6 -2.4	315 28.3	-21 17.0	288.4 -1.4	301 28.5	-22 16.0	288.3 -0.2	287 35.0	-21 53.1	288.6 0.9
40	0 34.9	-11 9.1		347 33.9	-15 33.1		334 6.3	-19 1.0		320 16.7	-21 18.4		306 16.8	-22 16.2		292 23.5	-21 52.2	
4 0	5 24.2	-11 13.0		352 22.8	-15 36.4		338 54.9	-19 3.4		325 5.0	-21 19.7		311 5.1	-22 16.4		297 12.1	-21 51.3	
20	10 13.6	-11 17.0	289.3 -4.0	357 11.8	-15 39.7	289.0 -3.3	343 43.5	-19 5.8	288.6 -2.4	329 53.4	-21 21.1	288.4 -1.3	315 53.5	-22 16.7	288.3 -0.2	302 0.6	-21 50.4	288.6 0.9
40	15 2.9	-11 21.0		2 0.8	-15 43.0		348 32.1	-19 8.2		334 41.8	-21 22.4		320 41.8	-22 16.8		306 49.2	-21 49.5	
5 0	19 52.2	-11 24.9		6 49.7	-15 46.3		353 20.7	-19 10.6		339 30.1	-21 23.7		325 30.2	-22 17.0		311 37.8	-21 48.5	
20	24 41.5	-11 28.9	289.3 -3.9	11 38.7	-15 49.6	288.9 -3.3	358 9.3	-19 12.9	288.6 -2.3	344 18.5	-21 25.0	288.4 -1.3	330 18.5	-22 17.2	288.3 -0.2	316 26.3	-21 47.6	288.6 1.0
40	29 30.8	-11 32.8		16 27.6	-15 52.8		2 57.9	-19 15.3		349 6.9	-21 26.3		335 6.9	-22 17.3		321 14.9	-21 46.6	
6 0	34 20.1	-11 36.7		21 16.5	-15 56.1		7 46.5	-19 17.6		353 55.2	-21 27.6		339 55.2	-22 17.5		326 3.5	-21 45.6	
20	39 9.4	-11 40.6	289.3 -3.9	26 5.4	-15 59.3	288.9 -3.2	12 35.1	-19 19.9	288.6 -2.3	358 43.6	-21 28.8	288.4 -1.2	344 43.6	-22 17.6	288.4 -0.1	330 52.1	-21 44.6	288.6 1.0
40	43 58.7	-11 44.6		30 54.4	-16 2.5		17 23.7	-19 22.2		3 31.9	-21 30.1		349 31.9	-22 17.7		335 40.7	-21 43.6	
7 0	48 48.0	-11 48.5		35 43.3	-16 5.7		22 12.2	-19 24.5		8 20.3	-21 31.3		354 20.3	-22 17.7		340 29.3	-21 42.6	
20	53 37.3	-11 52.4	289.3 -3.9	40 32.2	-16 8.9	288.9 -3.2	27 0.8	-19 26.8	288.6 -2.3	13 8.6	-21 32.5	288.4 -1.2	359 8.6	-22 17.8	288.4 -0.1	345 17.9	-21 41.5	288.6 1.1
40	58 26.5	-11 56.3		45 21.1	-16 12.1		31 49.4	-19 29.1		17 57.0	-21 33.7		3 57.0	-22 17.9		350 6.5	-21 40.5	
8 0	63 15.8	-12 0.1		50 10.0	-16 15.3		36 37.9	-19 31.3		22 45.3	-21 34.9		8 45.3	-22 17.9		354 55.1	-21 39.4	
20	68 5.1	-12 4.0	289.3 -3.9	54 58.9	-16 18.4	288.9 -3.1	41 26.5	-19 33.6	288.5 -2.2	27 33.7	-21 36.0	288.3 -1.1	13 33.7	-22 17.9	288.4 0.0	359 43.7	-21 38.3	288.6 1.1
40	72 54.3	-12 7.9		59 47.8	-16 21.6		46 15.0	-19 35.8		32 22.0	-21 37.2		18 22.1	-22 17.9		4 32.4	-21 37.2	
9 0	77 43.6	-12 11.7		64 36.7	-16 24.7		51 3.6	-19 38.0		37 10.4	-21 38.3		23 10.4	-22 17.9		9 21.0	-21 36.1	
20	82 32.9	-12 15.6	289.2 -3.9	69 25.6	-16 27.9	288.9 -3.1	55 52.1	-19 40.2	288.5 -2.2	41 58.7	-21 39.4	288.3 -1.1	27 58.8	-22 17.9	288.4 0.0	14 9.6	-21 35.0	288.6 1.2
40	87 22.1	-12 19.4		74 14.4	-16 31.0		60 40.6	-19 42.4		46 47.1	-21 40.5		32 47.2	-22 17.8		18 58.3	-21 33.8	
10 0	92 11.3	-12 23.3		79 3.3	-16 34.1		65 29.2	-19 44.6		51 35.4	-21 41.6		37 35.5	-22 17.8		23 46.9	-21 32.6	
20	97 0.6	-12 27.1	289.2 -3.8	83 52.2	-16 37.2	288.9 -3.1	70 17.7	-19 46.7	288.5 -2.1	56 23.7	-21 42.7	288.3 -1.0	42 23.9	-22 17.7	288.4 0.1	28 35.6	-21 31.5	288.7 1.2
40	101 49.8	-12 30.9		88 41.0	-16 40.3		75 6.2	-19 48.8		61 12.1	-21 43.7		47 12.3	-22 17.6		33 24.2	-21 30.3	
11 0	106 39.0	-12 34.7		93 29.9	-16 43.3		79 54.8	-19 51.0		66 0.4	-21 44.7		52 0.7	-22 17.5		38 12.9	-21 29.1	
20	111 28.3	-12 38.5	289.2 -3.8	98 18.7	-16 46.4	288.8 -3.1	84 43.3	-19 53.1	288.5 -2.1	70 48.7	-21 45.8	288.3 -1.0	56 49.0	-22 17.4	288.4 0.1	43 1.6	-21 27.9	288.7 1.2
40	116 17.5	-12 42.3		103 7.6	-16 49.4		89 31.8	-19 55.2		75 37.1	-21 46.8		61 37.4	-22 17.2		47 50.2	-21 26.6	
12 0	121 6.7	-12 46.1		107 56.4	-16 52.5		94 20.3	-19 57.3		80 25.4	-21 47.8		66 25.8	-22 17.1		52 38.9	-21 25.4	
20	125 55.9	-12 49.8	289.2 -3.8	112 45.3	-16 55.5	288.8 -3.0	99 8.8	-19 59.3	288.5 -2.0	85 13.7	-21 48.7	288.3 -0.9	71 14.2	-22 16.9	288.4 0.2	57 27.6	-21 24.1	288.7 1.3
40	130 45.1	-12 53.6		117 34.1	-16 58.5		103 57.3	-20 1.4		90 2.1	-21 49.7		76 2.6	-22 16.7		62 16.3	-21 22.8	
13 0	135 34.3	-12 57.4		122 22.9	-17 1.5		108 45.8	-20 3.4		94 50.4	-21 50.6		80 51.0	-22 16.5		67 5.0	-21 21.6	
20	140 23.5	-13 1.1	289.2 -3.7	127 11.7	-17 4.5	288.8 -3.0	113 34.3	-20 5.4	288.5 -2.0	99 38.7	-21 51.5	288.3 -0.9	85 39.4	-22 16.3	288.4 0.2	71 53.7	-21 20.2	288.7 1.3
40	145 12.7	-13 4.8		132 0.6	-17 7.5		118 22.8	-20 7.4		104 27.1	-21 52.4		90 27.8	-22 16.0		76 42.4	-21 18.9	
14 0	150 1.9	-13 8.6		136 49.4	-17 10.4		123 11.3	-20 9.4		109 15.4	-21 53.3		95 16.2	-22 15.8		81 31.1	-21 17.6	
20	154 51.0	-13 12.3	289.2 -3.7	141 38.2	-17 13.4	288.8 -2.9	127 59.8	-20 11.4	288.5 -2.0	114 3.7	-21 54.2	288.3 -0.9	100 4.6	-22 15.5	288.4 0.3	86 19.8	-21 16.3	288.7 1.4
40	159 40.2	-13 16.0		146 27.0	-17 16.3		132 48.3	-20 13.4		118 52.0	-21 55.1		104 53.0	-22 15.2		91 8.6	-21 14.9	
15 0	164 29.4	-13 19.7		151 15.8	-17 19.2		137 36.7	-20 15.3		123 40.4	-21 55.9		109 41.4	-22 14.9		95 57.3	-21 13.5	
20	169 18.5	-13 23.4	289.2 -3.7	156 4.5	-17 22.2	288.8 -2.9	142 25.2	-20 17.3	288.5 -1.9	128 28.7	-21 56.7	288.3 -0.8	114 29.8	-22 14.6	288.4 0.3	100 46.0	-21 12.1	288.7 1.4
40	174 7.7	-13 27.1		160 53.3	-17 25.1		147 13.7	-20 19.2		133 17.0	-21 57.6		119 18.2	-22 14.3		105 34.8	-21 10.7	
16 0	178 56.8	-13 30.8		165 42.1	-17 28.0		152 2.2	-20 21.1		138 5.4	-21 58.4		124 6.6	-22 14.0		110 23.5	-21 9.3	
20	183 46.0	-13 34.4	289.1 -3.6	170 30.9	-17 30.8	288.8 -2.8	156 50.6	-20 23.0	288.5 -1.9	142 53.7	-21 59.1	288.3 -0.8	128 55.1	-22 13.6	288.4 0.4	115 12.3	-21 7.9	288.8 1.4
40	188 35.1	-13 38.1		175 19.6	-17 33.7		161 39.1	-20 24.9		147 42.0	-21 59.9		133 43.5	-22 13.2		120 1.0	-21 6.4	
17 0	193 24.3	-13 41.7		180 8.4	-17 36.5		166 27.5	-20 26.7		152 30.3	-22 0.7		138 31.9	-22 12.8		124 49.8	-21 5.0	
20	198 13.4	-13 45.4	289.1 -3.6	184 57.2	-17 39.4	288.8 -2.8	171 16.0	-20 28.6	288.5 -1.8	157 18.6	-22 1.4	288.3 -0.7	143 20.3	-22 12.4	288.4 0.4	129 38.6	-21 3.5	288.8 1.5
40	203 2.5	-13 49.0		189 45.9	-17 42.2		176 4.4	-20 30.4		162 7.0	-22 2.1		148 8.8	-22 12.0		134 27.3	-21 2.0	
18 0	207 51.6	-13 52.6		194 34.7	-17 45.0		180 52.9	-20 32.2		166 55.3	-22 2.8		152 57.2	-22 11.6		139 16.1	-21 0.5	
20	212 40.8	-13 56.2	289.1 -3.6	199 23.4	-17 47.8	288.7 -2.8	185 41.3	-20 34.0	288.4 -1.8	171 43.6	-22 3.5	288.3 -0.7	157 45.6	-22 11.1	288.4 0.5	144 4.9	-20 59.0	288.8 1.5
40	217 29.9	-13 59.8		204 12.2	-17 50.6		190 29.8	-20 35.8		176 31.9	-22 4.2		162 34.1	-22 10.6		148 53.7	-20 57.5	
19 0	222 19.0	-14 3.4		209 0.9	-17 53.4		195 18.2	-20 37.6		181 20.3	-22 4.8		167 22.5	-22 10.2		153 42.5	-20 55.9	
20	227 8.1	-14 7.0	289.1 -3.6	213 49.6	-17 56.2	288.7 -2.7	200 6.7	-20 39.4	288.4 -1.7	186 8.6	-22 5.5	288.3 -0.6	172 11.0	-22 9.7	288.5 0.5	158 31.3	-20 54.4	288.8 1.6
40	231 57.2	-14 10.5		218 38.3	-17 58.9		204 55.1	-20 41.1		190 56.9	-22 6.1		176 59.4	-22 9.1		163 20.1	-20 52.8	
20 0	236 46.3	-14 14.1		223 27.1	-18 1.6		209 43.5	-20 42.8		195 45.2	-22 6.7		181 47.9	-22 8.6		168 9.0	-20 51.2	
20	241 35.3	-14 17.6	289.1 -3.5	228 15.8	-18 4.4	288.7 -2.7	214 31.9	-20 44.5	288.4 -1.7	200 33.6	-22 7.3	288.3 -0.6	186 36.4	-22 8.1	288.5 0.6	172 57.8	-20 49.6	288.8 1.6
40	246 24.4	-14 21.2		233 4.5	-18 7.1		219 20.4	-20 46.2		205 21.9	-22 7.8		191 24.8	-22 7.5		177 46.6	-20 48.0	
21 0	251 13.5	-14 24.7		237 53.2	-18 9.8		224 8.8	-20 47.9		210 10.2	-22 8.4		196 13.3	-22 6.9		182 35.5	-20 46.4	
20	256 2.6	-14 28.2	289.1 -3.5	242 41.9	-18 12.5	288.7 -2.7	228 57.2	-20 49.6	288.4 -1.7	214 58.5	-22 8.9	288.3 -0.5	201 1.8	-22 6.3	288.5 0.6	187 24.3	-20 44.8	288.9 1.7
40	260 51.6	-14 31.7		247 30.6	-18 15.1		233 45.6	-20 51.2		219 46.8	-22 9.5		205 50.2	-22 5.7		192 13.2	-20 43.1	
22 0	265 40.7	-14 35.2		252 19.3	-18 17.8		238 34.0	-20 52.9		224 35.2	-22 10.0		210 38.7	-22 5.1		197 2.0	-20 41.4	
20	270 29.7	-14 38.7	289.0 -3.5	257 8.0	-18 20.4	288.7 -2.6	243 22.5	-20 54.5	288.4 -1.6	229 23.5	-22 10.5	288.3 -0.5	215 27.2	-22 4.5	288.5 0.7	201 50.9	-20 39.8	288.9 1.7
40	275 18.8	-14 42.2		261 56.7	-18 23.1		248 10.9	-20 56.1		234 11.8	-22 11.0		220 15.7	-22 3.8		206 39.8	-20 38.1	
23 0	280 7.8	-14 45.7		266 45.3	-18 25.7		252 59.3	-20 57.7		239 0.1	-22 11.4		225 4.2	-22 3.1		211 28.6	-20 36.4	
20	284 56.9	-14 49.1	289.0 -3.4	271 34.0	-18 28.3	288.7 -2.6	257 47.7	-20 59.3	288.4 -1.6	243 48.5	-22 11.9	288.3 -0.4	229 52.7	-22 2.5	288.5 0.7	216 17.5	-20 34.6	288.9 1.7
40	289 45.9	-14 52.6		276 22.7	-18 30.9		262 36.1	-21 0.8		248 36.8	-22 12.3		234 41.2	-22 1.8		221 6.4	-20 32.9	

2012 Moon

h m	18 Feb GHA	18 Feb Dec	d	d'	19 Feb GHA	19 Feb Dec	d	d'	20 Feb GHA	20 Feb Dec	d	d'	21 Feb GHA	21 Feb Dec	d	d'	22 Feb GHA	22 Feb Dec	d	d'	23 Feb GHA	23 Feb Dec	d	d'
0 0	225 55.3	-20 31.2	288.9		212 55.0	-17 53.1	289.4		200 34.6	-14 21.0	290.0		188 53.0	-10 10.2	290.5		177 44.4	-5 36.3	290.9		166 60.0	-0 53.1	291.2	
20	230 44.2	-20 29.4		1.8	217 44.4	-17 50.5		2.6	205 24.6	-14 17.7		3.3	193 43.5	-10 6.6		3.7	182 35.3	-5 32.4		3.9	171 51.1	-0 49.1		3.9
40	235 33.1	-20 27.6			222 33.9	-17 47.9			210 14.6	-14 14.5			198 34.1	-10 2.9			187 26.3	-5 28.5			176 42.3	-0 45.2		
1 0	240 22.1	-20 25.9	288.9		227 23.3	-17 45.3	289.5		215 4.6	-14 11.2	290.0		203 24.6	-9 59.2	290.5		192 17.2	-5 24.6	290.9		181 33.5	-0 41.3	291.2	
20	245 11.0	-20 24.1		1.8	232 12.8	-17 42.6		2.7	219 54.6	-14 7.9		3.3	208 15.1	-9 55.5		3.7	197 8.1	-5 20.7		3.9	186 24.7	-0 37.3		4.0
40	249 59.9	-20 22.3			237 2.3	-17 40.0			224 44.6	-14 4.6			213 5.6	-9 51.8			201 59.0	-5 16.8			191 15.9	-0 33.4		
2 0	254 48.9	-20 20.4	289.0		241 51.7	-17 37.3	289.5		229 34.7	-14 1.3	290.1		217 56.2	-9 48.1	290.6		206 49.9	-5 12.8	290.9		196 7.0	-0 29.4	291.2	
20	259 37.8	-20 18.6		1.8	246 41.2	-17 34.6		2.7	234 24.7	-13 58.0		3.3	222 46.7	-9 44.4		3.7	211 40.9	-5 8.9		3.9	200 58.2	-0 25.5		3.9
40	264 26.8	-20 16.8			251 30.7	-17 32.0			239 14.8	-13 54.7			227 37.3	-9 40.7			216 31.8	-5 5.0			205 49.4	-0 21.6		
3 0	269 15.7	-20 14.9	289.0		256 20.2	-17 29.3	289.5		244 4.8	-13 51.4	290.1		232 27.8	-9 37.0	290.6		221 22.8	-5 1.1	291.0		210 40.6	-0 17.6	291.2	
20	274 4.7	-20 13.0		1.9	261 9.7	-17 26.6		2.7	248 54.9	-13 48.1		3.3	237 18.4	-9 33.2		3.7	226 13.7	-4 57.2		3.9	215 31.8	-0 13.7		3.9
40	278 53.7	-20 11.1			265 59.2	-17 23.8			253 45.0	-13 44.8			242 9.0	-9 29.5			231 4.7	-4 53.3			220 23.0	-0 9.8		
4 0	283 42.7	-20 9.2	289.0		270 48.8	-17 21.1	289.5		258 35.1	-13 41.4	290.1		246 59.5	-9 25.8	290.6		235 55.6	-4 49.4	291.0		225 14.2	-0 5.9	291.2	
20	288 31.6	-20 7.3		1.9	275 38.3	-17 18.4		2.7	263 25.1	-13 38.1		3.3	251 50.1	-9 22.1		3.7	240 46.6	-4 45.4		3.9	230 5.4	-0 1.9		3.9
40	293 20.6	-20 5.4			280 27.8	-17 15.6			268 15.2	-13 34.7			256 40.7	-9 18.3			245 37.5	-4 41.5			234 56.6	0 2.0		
5 0	298 9.6	-20 3.4	289.0		285 17.4	-17 12.9	289.6		273 5.3	-13 31.4	290.1		261 31.3	-9 14.6	290.6		250 28.5	-4 37.6	291.0		239 47.8	0 5.9	291.2	
20	302 58.7	-20 1.5		1.9	290 6.9	-17 10.1		2.8	277 55.5	-13 28.0		3.4	266 21.9	-9 10.9		3.7	255 19.5	-4 33.7		3.9	244 39.0	0 9.9		3.9
40	307 47.7	-19 59.5			294 56.5	-17 7.4			282 45.6	-13 24.7			271 12.5	-9 7.1			260 10.5	-4 29.8			249 30.2	0 13.8		
6 0	312 36.7	-19 57.6	289.0		299 46.1	-17 4.6	289.6		287 35.7	-13 21.3	290.1		276 3.1	-9 3.4	290.6		265 1.4	-4 25.8	291.0		254 21.5	0 17.7	291.2	
20	317 25.7	-19 55.6		2.0	304 35.7	-17 1.8		2.8	292 25.8	-13 17.9		3.4	280 53.7	-8 59.6		3.8	269 52.4	-4 21.9		3.9	259 12.7	0 21.6		3.9
40	322 14.8	-19 53.6			309 25.2	-16 59.0			297 16.0	-13 14.5			285 44.4	-8 55.8			274 43.4	-4 18.0			264 3.9	0 25.5		
7 0	327 3.8	-19 51.6	289.1		314 14.8	-16 56.2	289.6		302 6.1	-13 11.1	290.2		290 35.0	-8 52.1	290.6		279 34.4	-4 14.0	291.0		268 55.1	0 29.5	291.2	
20	331 52.9	-19 49.5		2.1	319 4.4	-16 53.3		2.8	306 56.3	-13 7.7		3.4	295 25.6	-8 48.3		3.8	284 25.4	-4 10.1		3.9	273 46.3	0 33.4		3.9
40	336 41.9	-19 47.5			323 54.0	-16 50.5			311 46.4	-13 4.3			300 16.3	-8 44.6			289 16.4	-4 6.2			278 37.6	0 37.3		
8 0	341 31.0	-19 45.4	289.1		328 43.7	-16 47.7	289.6		316 36.6	-13 0.9	290.2		305 6.9	-8 40.8	290.7		294 7.4	-4 2.3	291.0		283 28.8	0 41.2	291.2	
20	346 20.1	-19 43.4		2.1	333 33.3	-16 44.8		2.9	321 26.8	-12 57.5		3.4	309 57.6	-8 37.0		3.8	298 58.4	-3 58.3		3.9	288 20.0	0 45.1		3.9
40	351 9.1	-19 41.3			338 22.9	-16 42.0			326 17.0	-12 54.1			314 48.2	-8 33.2			303 49.4	-3 54.4			293 11.3	0 49.0		
9 0	355 58.2	-19 39.2	289.1		343 12.6	-16 39.1	289.7		331 7.2	-12 50.6	290.2		319 38.9	-8 29.4	290.7		308 40.5	-3 50.5	291.0		298 2.5	0 53.0	291.2	
20	0 47.3	-19 37.1		2.1	348 2.2	-16 36.2		2.9	335 57.4	-12 47.2		3.4	324 29.6	-8 25.7		3.8	313 31.5	-3 46.5		3.9	302 53.7	0 56.9		3.9
40	5 36.4	-19 35.0			352 51.9	-16 33.3			340 47.6	-12 43.7			329 20.2	-8 21.9			318 22.5	-3 42.6			307 45.0	1 0.8		
10 0	10 25.5	-19 32.9	289.1		357 41.5	-16 30.4	289.7		345 37.8	-12 40.3	290.2		334 10.9	-8 18.1	290.7		323 13.5	-3 38.7	291.0		312 36.2	1 4.7	291.2	
20	15 14.7	-19 30.7		2.2	2 31.2	-16 27.5		2.9	350 28.0	-12 36.8		3.5	339 1.6	-8 14.3		3.8	328 4.6	-3 34.7		4.0	317 27.5	1 8.6		3.9
40	20 3.8	-19 28.6			7 20.9	-16 24.6			355 18.2	-12 33.4			343 52.3	-8 10.5			332 55.6	-3 30.8			322 18.7	1 12.5		
11 0	24 52.9	-19 26.4	289.1		12 10.6	-16 21.7	289.7		0 8.5	-12 29.9	290.2		348 43.0	-8 6.7	290.7		337 46.6	-3 26.8	291.0		327 9.9	1 16.4	291.3	
20	29 42.1	-19 24.2		2.2	17 0.3	-16 18.8		2.9	4 58.7	-12 26.4		3.5	353 33.7	-8 2.9		3.8	342 37.7	-3 22.9		3.9	332 1.2	1 20.3		3.9
40	34 31.2	-19 22.1			21 50.0	-16 15.8			9 49.0	-12 22.9			358 24.4	-7 59.1			347 28.7	-3 19.0			336 52.4	1 24.2		
12 0	39 20.4	-19 19.9	289.2		26 39.7	-16 12.9	289.7		14 39.2	-12 19.4	290.3		3 15.1	-7 55.3	290.7		352 19.8	-3 15.0	291.1		341 43.7	1 28.1	291.3	
20	44 9.5	-19 17.7		2.2	31 29.4	-16 9.9		3.0	19 29.5	-12 16.0		3.5	8 5.9	-7 51.4		3.8	357 10.8	-3 11.1		3.9	346 35.0	1 32.0		3.9
40	48 58.7	-19 15.4			36 19.2	-16 6.9			24 19.8	-12 12.5			12 56.6	-7 47.6			2 1.9	-3 7.1			351 26.2	1 35.9		
13 0	53 47.9	-19 13.2	289.2		41 8.9	-16 4.0	289.8		29 10.0	-12 8.9	290.3		17 47.3	-7 43.8	290.7		6 53.0	-3 3.2	291.1		356 17.5	1 39.8	291.3	
20	58 37.1	-19 11.0		2.3	45 58.6	-16 1.0		3.0	34 0.3	-12 5.4		3.5	22 38.1	-7 40.0		3.8	11 44.0	-2 59.3		3.9	1 8.7	1 43.7		3.9
40	63 26.2	-19 8.7			50 48.4	-15 58.0			38 50.6	-12 1.9			27 28.8	-7 36.2			16 35.1	-2 55.3			5 60.0	1 47.6		
14 0	68 15.4	-19 6.4	289.2		55 38.1	-15 55.0	289.8		43 40.9	-11 58.4	290.3		32 19.5	-7 32.3	290.8		21 26.2	-2 51.4	291.1		10 51.2	1 51.4	291.3	
20	73 4.7	-19 4.2		2.3	60 27.9	-15 52.0		3.0	48 31.2	-11 54.9		3.5	37 10.3	-7 28.5		3.8	26 17.3	-2 47.4		4.0	15 42.5	1 55.3		3.9
40	77 53.9	-19 1.9			65 17.7	-15 48.9			53 21.5	-11 51.3			42 1.1	-7 24.7			31 8.3	-2 43.5			20 33.8	1 59.2		
15 0	82 43.1	-18 59.6	289.2		70 7.5	-15 45.9	289.8		58 11.8	-11 47.8	290.3		46 51.8	-7 20.8	290.8		35 59.4	-2 39.5	291.1		25 25.0	2 3.1	291.3	
20	87 32.3	-18 57.2		2.3	74 57.3	-15 42.9		3.0	63 2.2	-11 44.2		3.6	51 42.6	-7 17.0		3.8	40 50.5	-2 35.6		3.9	30 16.3	2 7.0		3.9
40	92 21.6	-18 54.9			79 47.1	-15 39.8			67 52.5	-11 40.7			56 33.4	-7 13.1			45 41.6	-2 31.6			35 7.6	2 10.9		
16 0	97 10.8	-18 52.6	289.3		84 36.9	-15 36.8	289.8		72 42.8	-11 37.1	290.4		61 24.2	-7 9.3	290.8		50 32.7	-2 27.7	291.1		39 58.8	2 14.7	291.3	
20	102 0.1	-18 50.2		2.4	89 26.7	-15 33.7		3.1	77 33.2	-11 33.6		3.6	66 14.9	-7 5.4		3.9	55 23.8	-2 23.8		3.9	44 50.1	2 18.6		3.9
40	106 49.3	-18 47.9			94 16.5	-15 30.6			82 23.6	-11 30.0			71 5.7	-7 1.6			60 14.9	-2 19.8			49 41.4	2 22.5		
17 0	111 38.6	-18 45.5	289.3		99 6.3	-15 27.5	289.8		87 13.9	-11 26.4	290.4		75 56.5	-6 57.7	290.8		65 6.0	-2 15.9	291.1		54 32.7	2 26.3	291.3	
20	116 27.9	-18 43.1		2.4	103 56.2	-15 24.4		3.1	92 4.3	-11 22.9		3.6	80 47.3	-6 53.9		3.8	69 57.1	-2 11.9		4.0	59 23.9	2 30.2		3.9
40	121 17.1	-18 40.7			108 46.0	-15 21.3			96 54.7	-11 19.3			85 38.1	-6 50.0			74 48.2	-2 8.0			64 15.2	2 34.1		
18 0	126 6.4	-18 38.3	289.3		113 35.9	-15 18.2	289.9		101 45.0	-11 15.7	290.4		90 29.0	-6 46.2	290.8		79 39.4	-2 4.0	291.1		69 6.5	2 37.9	291.3	
20	130 55.7	-18 35.9		2.4	118 25.7	-15 15.1		3.1	106 35.4	-11 12.1		3.6	95 19.8	-6 42.3		3.9	84 30.5	-2 0.1		3.9	73 57.8	2 41.8		3.9
40	135 45.0	-18 33.5			123 15.6	-15 12.0			111 25.8	-11 8.5			100 10.6	-6 38.4			89 21.6	-1 56.1			78 49.1	2 45.7		
19 0	140 34.4	-18 31.0	289.3		128 5.5	-15 8.9	289.9		116 16.2	-11 4.9	290.4		105 1.4	-6 34.6	290.8		94 12.7	-1 52.2	291.1		83 40.4	2 49.5	291.3	
20	145 23.7	-18 28.6		2.4	132 55.4	-15 5.7		3.2	121 6.6	-11 1.3		3.6	109 52.3	-6 30.7		3.9	99 3.8	-1 48.3		3.9	88 31.6	2 53.4		3.9
40	150 13.0	-18 26.1			137 45.3	-15 2.6			125 57.0	-10 57.7			114 43.1	-6 26.8			103 55.0	-1 44.3			93 22.9	2 57.2		
20 0	155 2.3	-18 23.7	289.4		142 35.2	-14 59.4	289.9		130 47.5	-10 54.0	290.4		119 33.9	-6 22.9	290.9		108 46.1	-1 40.4	291.1		98 14.2	3 1.1	291.3	
20	159 51.7	-18 21.2		2.5	147 25.1	-14 56.3		3.2	135 37.9	-10 50.4		3.6	124 24.8	-6 19.1		3.9	113 37.3	-1 36.4		4.0	103 5.5	3 4.9		3.8
40	164 41.0	-18 18.7			152 15.0	-14 53.1			140 28.3	-10 46.8			129 15.6	-6 15.2			118 28.4	-1 32.5			107 56.8	3 8.8		
21 0	169 30.4	-18 16.2	289.4		157 4.9	-14 49.9	289.9		145 18.8	-10 43.2	290.5		134 6.5	-6 11.3	290.9		123 19.5	-1 28.5	291.2		112 48.1	3 12.6	291.3	
20	174 19.8	-18 13.7		2.5	161 54.8	-14 46.7		3.2	150 9.2	-10 39.5		3.7	138 57.4	-6 7.4		3.9	128 10.7	-1 24.6		3.9	117 39.4	3 16.4		3.8
40	179 9.1	-18 11.1			166 44.8	-14 43.5			154 59.7	-10 35.9			143 48.2	-6 3.5			133 1.8	-1 20.7			122 30.7	3 20.3		
22 0	183 58.5	-18 8.6	289.4		171 34.7	-14 40.3	290.0		159 50.1	-10 32.2	290.5		148 39.1	-5 59.6	290.9		137 53.0	-1 16.7	291.2		127 22.0	3 24.1	291.3	
20	188 47.9	-18 6.0		2.6	176 24.7	-14 37.1		3.2	164 40.6	-10 28.6		3.6	153 30.0	-5 55.8		3.9	142 44.1	-1 12.8		3.9	132 13.2	3 27.9		3.8
40	193 37.3	-18 3.5			181 14.6	-14 33.9			169 31.1	-10 24.9			158 20.9	-5 51.9			147 35.3	-1 8.8			137 4.5	3 31.8		
23 0	198 26.7	-18 0.9	289.4		186 4.6	-14 30.7	290.0		174 21.6	-10 21.3	290.5		163 11.7	-5 48.0	290.9		152 26.5	-1 4.9	291.2		141 55.8	3 35.6	291.3	
20	203 16.1	-17 58.3		2.6	190 54.6	-14 27.5		3.2	179 12.0	-10 17.6		3.7	168 2.6	-5 44.1		3.9	157 17.6	-1 0.9		3.9	146 47.1	3 39.4		3.8
40	208 5.6	-17 55.7			195 44.6	-14 24.2			184 2.5	-10 13.9			172 53.5	-5 40.2			162 8.8	-0 57.0			151 38.4	3 43.3		

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h m	24 Feb GHA	d	Dec	d'	25 Feb GHA	d	Dec	d'	26 Feb GHA	d	Dec	d'	27 Feb GHA	d	Dec	d'	28 Feb GHA	d	Dec	d'	29 Feb GHA	d	Dec	d'
0 0	156 29.7		3 47.1		146 3.9		8 13.4		135 33.2		12 16.5		124 49.8		15 47.9		113 47.8		18 39.6		102 23.9		20 44.2	
20	161 21.0	291.3	3 50.9	3.8	150 55.2	291.3	8 17.0	3.6	140 24.3	291.2	12 19.7	3.2	129 40.7	290.9	15 50.6	2.7	118 38.5	290.7	18 41.7	2.1	107 14.3	290.3	20 45.6	1.4
40	166 12.3		3 54.7		155 46.4		8 20.5		145 15.5		12 22.9		134 31.7		15 53.3		123 29.1		18 43.8		112 4.6		20 46.9	
1 0	171 3.6		3 58.5		160 37.7		8 24.1		150 6.7		12 26.0		139 22.6		15 55.9		128 19.8		18 45.8		116 54.9		20 48.3	
20	175 54.9	291.3	4 2.3	3.8	165 29.0	291.3	8 27.6	3.5	154 57.8	291.2	12 29.2	3.2	144 13.5	290.9	15 58.6	2.6	133 10.4	290.6	18 47.9	2.0	121 45.3	290.3	20 49.6	1.3
40	180 46.2		4 6.1		170 20.3		8 31.2		159 49.0		12 32.3		149 4.5		16 1.2		138 1.0		18 49.9		126 35.6		20 50.9	
2 0	185 37.5		4 9.9		175 11.6		8 34.7		164 40.1		12 35.5		153 55.4		16 3.8		142 51.7		18 51.9		131 25.9		20 52.3	
20	190 28.8	291.3	4 13.7	3.8	180 2.9	291.3	8 38.2	3.5	169 31.3	291.1	12 38.6	3.1	158 46.3	290.9	16 6.5	2.6	147 42.3	290.6	18 53.9	2.0	136 16.2	290.3	20 53.6	1.3
40	195 20.2		4 17.5		184 54.2		8 41.7		174 22.4		12 41.7		163 37.2		16 9.1		152 32.9		18 55.9		141 6.5		20 54.8	
3 0	200 11.5		4 21.3		189 45.5		8 45.3		179 13.6		12 44.9		168 28.1		16 11.7		157 23.6		18 57.9		145 56.8		20 56.1	
20	205 2.8	291.3	4 25.1	3.8	194 36.7	291.3	8 48.8	3.5	184 4.7	291.1	12 48.0	3.1	173 19.1	290.9	16 14.3	2.6	162 14.2	290.6	18 59.9	2.0	150 47.1	290.3	20 57.4	1.3
40	209 54.1		4 28.9		199 28.0		8 52.3		188 55.9		12 51.1		178 10.0		16 16.9		167 4.8		19 1.9		155 37.4		20 58.7	
4 0	214 45.4		4 32.7		204 19.3		8 55.8		193 47.0		12 54.2		183 0.9		16 19.5		171 55.4		19 3.9		160 27.7		20 59.9	
20	219 36.7	291.3	4 36.5	3.8	209 10.6	291.3	8 59.3	3.5	198 38.1	291.1	12 57.3	3.1	187 51.8	290.9	16 22.1	2.6	176 46.0	290.6	19 5.8	1.9	165 18.0	290.3	21 1.1	1.2
40	224 28.0		4 40.3		214 1.9		9 2.8		203 29.3		13 0.4		192 42.7		16 24.7		181 36.6		19 7.8		170 8.3		21 2.4	
5 0	229 19.3		4 44.0		218 53.1		9 6.3		208 20.4		13 3.5		197 33.6		16 27.2		186 27.2		19 9.7		174 58.6		21 3.6	
20	234 10.6	291.3	4 47.8	3.8	223 44.4	291.3	9 9.8	3.5	213 11.5	291.1	13 6.5	3.1	202 24.4	290.9	16 29.8	2.6	191 17.8	290.6	19 11.6	1.9	179 48.9	290.3	21 4.8	1.2
40	239 1.9		4 51.6		228 35.7		9 13.2		218 2.7		13 9.6		207 15.3		16 32.3		196 8.4		19 13.6		184 39.2		21 6.0	
6 0	243 53.2		4 55.3		233 27.0		9 16.7		222 53.8		13 12.7		212 6.2		16 34.9		200 59.0		19 15.5		189 29.4		21 7.2	
20	248 44.5	291.3	4 59.1	3.8	238 18.2	291.3	9 20.2	3.5	227 44.9	291.1	13 15.7	3.0	216 57.1	290.9	16 37.4	2.5	205 49.5	290.6	19 17.4	1.9	194 19.7	290.3	21 8.3	1.2
40	253 35.9		5 2.9		243 9.5		9 23.7		232 36.0		13 18.8		221 48.0		16 39.9		210 40.1		19 19.3		199 10.0		21 9.5	
7 0	258 27.2		5 6.6		248 0.8		9 27.1		237 27.1		13 21.8		226 38.8		16 42.4		215 30.7		19 21.2		204 0.2		21 10.7	
20	263 18.5	291.3	5 10.4	3.8	252 52.0	291.3	9 30.6	3.5	242 18.2	291.1	13 24.9	3.0	231 29.7	290.9	16 44.9	2.5	220 21.2	290.6	19 23.0	1.9	208 50.5	290.2	21 11.8	1.1
40	268 9.8		5 14.1		257 43.3		9 34.0		247 9.3		13 27.9		236 20.6		16 47.5		225 11.8		19 24.9		213 40.7		21 12.9	
8 0	273 1.1		5 17.9		262 34.6		9 37.5		252 0.4		13 30.9		241 11.4		16 49.9		230 2.4		19 26.8		218 31.0		21 14.1	
20	277 52.4	291.3	5 21.6	3.7	267 25.8	291.3	9 40.9	3.4	256 51.5	291.1	13 33.9	3.0	246 2.3	290.8	16 52.4	2.5	234 52.9	290.5	19 28.6	1.8	223 21.2	290.2	21 15.2	1.1
40	282 43.7		5 25.4		272 17.1		9 44.4		261 42.6		13 37.0		250 53.1		16 54.9		239 43.5		19 30.4		228 11.4		21 16.3	
9 0	287 35.0		5 29.1		277 8.4		9 47.8		266 33.7		13 40.0		255 44.0		16 57.4		244 34.0		19 32.3		233 1.7		21 17.4	
20	292 26.3	291.3	5 32.8	3.7	281 59.6	291.3	9 51.2	3.4	271 24.8	291.1	13 43.0	3.0	260 34.8	290.8	16 59.8	2.4	249 24.5	290.5	19 34.1	1.8	237 51.9	290.2	21 18.4	1.1
40	297 17.7		5 36.6		286 50.9		9 54.6		276 15.9		13 46.0		265 25.6		17 2.3		254 15.1		19 35.9		242 42.1		21 19.5	
10 0	302 9.0		5 40.3		291 42.1		9 58.0		281 7.0		13 48.9		270 16.5		17 4.7		259 5.6		19 37.7		247 32.3		21 20.6	
20	307 0.3	291.3	5 44.0	3.7	296 33.4	291.3	10 1.5	3.4	285 58.1	291.1	13 51.9	3.0	275 7.3	290.8	17 7.2	2.4	263 56.1	290.5	19 39.5	1.8	252 22.6	290.2	21 21.6	1.0
40	311 51.6		5 47.7		301 24.6		10 4.9		290 49.2		13 54.9		279 58.1		17 9.6		268 46.6		19 41.3		257 12.8		21 22.6	
11 0	316 42.9		5 51.5		306 15.9		10 8.3		295 40.3		13 57.8		284 49.0		17 12.0		273 37.2		19 43.0		262 3.0		21 23.7	
20	321 34.2	291.3	5 55.2	3.7	311 7.1	291.2	10 11.7	3.4	300 31.3	291.1	14 0.8	3.0	289 39.8	290.8	17 14.4	2.4	278 27.7	290.5	19 44.8	1.8	266 53.2	290.2	21 24.7	1.0
40	326 25.5		5 58.9		315 58.4		10 15.0		305 22.4		14 3.8		294 30.6		17 16.8		283 18.2		19 46.5		271 43.4		21 25.7	
12 0	331 16.8		6 2.6		320 49.6		10 18.4		310 13.5		14 6.7		299 21.4		17 19.2		288 8.7		19 48.3		276 33.6		21 26.7	
20	336 8.2	291.3	6 6.3	3.7	325 40.9	291.2	10 21.8	3.4	315 4.5	291.1	14 9.6	2.9	304 12.2	290.8	17 21.6	2.4	292 59.2	290.5	19 50.0	1.7	281 23.8	290.2	21 27.6	1.0
40	340 59.5		6 10.0		330 32.1		10 25.2		319 55.6		14 12.6		309 3.0		17 24.0		297 49.7		19 51.7		286 14.0		21 28.6	
13 0	345 50.8		6 13.7		335 23.4		10 28.5		324 46.7		14 15.5		313 53.8		17 26.3		302 40.2		19 53.4		291 4.1		21 29.6	
20	350 42.1	291.3	6 17.4	3.7	340 14.6	291.2	10 31.9	3.4	329 37.7	291.1	14 18.4	2.9	318 44.6	290.8	17 28.7	2.4	307 30.7	290.5	19 55.1	1.7	295 54.3	290.2	21 30.5	0.9
40	355 33.4		6 21.1		345 5.8		10 35.3		334 28.8		14 21.3		323 35.4		17 31.1		312 21.1		19 56.8		300 44.5		21 31.4	
14 0	0 24.7		6 24.7		349 57.1		10 38.6		339 19.8		14 24.2		328 26.2		17 33.4		317 11.6		19 58.5		305 34.7		21 32.4	
20	5 16.0	291.3	6 28.4	3.7	354 48.3	291.2	10 42.0	3.3	344 10.9	291.0	14 27.1	2.9	333 17.0	290.8	17 35.7	2.3	322 2.1	290.5	20 0.2	1.7	310 24.8	290.2	21 33.3	0.9
40	10 7.3		6 32.1		359 39.5		10 45.3		349 1.9		14 30.0		338 7.7		17 38.1		326 52.6		20 1.8		315 15.0		21 34.2	
15 0	14 58.7		6 35.8		4 30.8		10 48.6		353 53.0		14 32.9		342 58.5		17 40.4		331 43.0		20 3.5		320 5.1		21 35.1	
20	19 50.0	291.3	6 39.4	3.7	9 22.0	291.2	10 52.0	3.3	358 44.0	291.0	14 35.8	2.9	347 49.3	290.8	17 42.7	2.3	336 33.5	290.5	20 5.1	1.6	324 55.3	290.2	21 35.9	0.9
40	24 41.3		6 43.1		14 13.2		10 55.3		3 35.0		14 38.6		352 40.0		17 45.0		341 23.9		20 6.7		329 45.5		21 36.8	
16 0	29 32.6		6 46.8		19 4.4		10 58.6		8 26.1		14 41.5		357 30.8		17 47.3		346 14.4		20 8.4		334 35.6		21 37.7	
20	34 23.9	291.3	6 50.4	3.6	23 55.7	291.2	11 1.9	3.3	13 17.1	291.0	14 44.3	2.8	2 21.6	290.8	17 49.6	2.3	351 4.8	290.4	20 10.0	1.6	339 25.7	290.1	21 38.5	0.8
40	39 15.2		6 54.1		28 46.9		11 5.2		18 8.1		14 47.2		7 12.3		17 51.8		355 55.3		20 11.6		344 15.9		21 39.3	
17 0	44 6.5		6 57.7		33 38.1		11 8.5		22 59.1		14 50.0		12 3.1		17 54.1		0 45.7		20 13.2		349 6.0		21 40.2	
20	48 57.8	291.3	7 1.4	3.7	38 29.3	291.2	11 11.8	3.3	27 50.2	291.0	14 52.9	2.8	16 53.8	290.7	17 56.4	2.2	5 36.2	290.4	20 14.7	1.6	353 56.2	290.1	21 41.0	0.8
40	53 49.1		7 5.0		43 20.5		11 15.1		32 41.2		14 55.7		21 44.5		17 58.6		10 26.6		20 16.3		358 46.3		21 41.8	
18 0	58 40.4		7 8.7		48 11.7		11 18.4		37 32.2		14 58.5		26 35.3		18 0.8		15 17.0		20 17.9		3 36.4		21 42.6	
20	63 31.7	291.3	7 12.3	3.6	53 3.0	291.2	11 21.7	3.3	42 23.2	291.0	15 1.3	2.8	31 26.0	290.7	18 3.1	2.2	20 7.4	290.4	20 19.4	1.5	8 26.5	290.1	21 43.3	0.8
40	68 23.0		7 15.9		57 54.2		11 25.0		47 14.2		15 4.1		36 16.7		18 5.3		24 57.8		20 21.0		13 16.6		21 44.1	
19 0	73 14.4		7 19.5		62 45.4		11 28.2		52 5.2		15 6.9		41 7.5		18 7.5		29 48.3		20 22.5		18 6.7		21 44.9	
20	78 5.7	291.3	7 23.2	3.6	67 36.6	291.2	11 31.5	3.3	56 56.2	291.0	15 9.7	2.8	45 58.2	290.7	18 9.7	2.2	34 38.7	290.4	20 24.0	1.5	22 56.9	290.1	21 45.6	0.7
40	82 57.0		7 26.8		72 27.8		11 34.7		61 47.2		15 12.5		50 48.9		18 11.9		39 29.1		20 25.5		27 47.0		21 46.3	
20 0	87 48.3		7 30.4		77 19.0		11 38.0		66 38.2		15 15.2		55 39.6		18 14.1		44 19.5		20 27.0		32 37.1		21 47.1	
20	92 39.6	291.3	7 34.0	3.6	82 10.2	291.2	11 41.2	3.2	71 29.2	291.0	15 18.0	2.8	60 30.3	290.7	18 16.3	2.2	49 9.9	290.4	20 28.5	1.5	37 27.2	290.1	21 47.8	0.7
40	97 30.9		7 37.6		87 1.4		11 44.5		76 20.1		15 20.8		65 21.0		18 18.4		54 0.2		20 30.0		42 17.2		21 48.5	
21 0	102 22.2		7 41.2		91 52.5		11 47.7		81 11.1		15 23.5		70 11.7		18 20.6		58 50.6		20 31.5		47 7.3		21 49.1	
20	107 13.5	291.3	7 44.8	3.6	96 43.7	291.2	11 50.9	3.2	86 2.1	291.0	15 26.2	2.7	75 2.4	290.7	18 22.8	2.1	63 41.0	290.4	20 32.9	1.4	51 57.4	290.1	21 49.8	0.7
40	112 4.8		7 48.4		101 34.9		11 54.2		90 53.1		15 29.0		79 53.1		18 24.9		68 31.4		20 34.4		56 47.5		21 50.5	
22 0	116 56.1		7 52.0		106 26.1		11 57.4		95 44.0		15 31.7		84 43.8		18 27.0		73 21.8		20 35.8		61 37.6		21 51.1	
20	121 47.4	291.3	7 55.6	3.6	111 17.3	291.2	12 0.6	3.2	100 35.0	291.0	15 34.4	2.7	89 34.5	290.7	18 29.2	2.1	78 12.1	290.4	20 37.2	1.4	66 27.7	290.1	21 51.8	0.6
40	126 38.7		7 59.1		116 8.5		12 3.8		105 26.0		15 37.1		94 25.1		18 31.3		83 2.5		20 38.7		71 17.7		21 52.4	
23 0	131 30.0		8 2.7		120 59.6		12 7.0		110 16.9		15 39.8		99 15.8		18 33.4		87 52.9		20 40.1		76 7.8		21 53.0	
20	136 21.3	291.3	8 6.3	3.6	125 50.8	291.2	12 10.2	3.2	115 7.9	291.0	15 42.5	2.7	104 6.5	290.7	18 35.5	2.1	92 43.2	290.4	20 41.5	1.4	80 57.9	290.1	21 53.6	0.6
40	141 12.6		8 9.9		130 42.0		12 13.4		119 58.8		15 45.2		108 57.1		18 37.6		97 33.6		20 42.8		85 47.9		21 54.2	

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h m	1 Mar GHA	1 Mar Dec	d	2 Mar GHA	2 Mar Dec	d	3 Mar GHA	3 Mar Dec	d	4 Mar GHA	4 Mar Dec	d	5 Mar GHA	5 Mar Dec	d	6 Mar GHA	6 Mar Dec	d
0 0	90 38.0	21 54.8		78 33.1	22 5.6		66 15.1	21 12.7		53 50.8	19 14.9		41 25.8	16 14.3		29 3.1	12 17.1	
20	95 28.0	21 55.4	0.6	83 22.9	22 5.3	-0.3	71 4.8	21 11.5	-1.2	58 40.4	19 12.8	-2.1	46 15.5	16 11.4	-2.9	33 52.8	12 13.4	-3.7
40	100 18.1	21 55.9		88 12.8	22 5.0		75 54.5	21 10.3		63 30.1	19 10.7		51 5.1	16 8.4		38 42.5	12 9.8	
1 0	105 8.1	21 56.5		93 2.6	22 4.7		80 44.2	21 9.1		68 19.7	19 8.6		55 54.8	16 5.5		43 32.2	12 6.1	
20	109 58.1	21 57.0	0.5	97 52.4	22 4.4	-0.3	85 33.9	21 7.9	-1.2	73 9.4	19 6.5	-2.1	60 44.5	16 2.5	-3.0	48 21.9	12 2.4	-3.7
40	114 48.2	21 57.5		102 42.2	22 4.0		90 23.6	21 6.6		77 59.0	19 4.3		65 34.1	15 59.6		53 11.6	11 58.7	
2 0	119 38.2	21 58.1		107 32.0	22 3.7		95 13.3	21 5.4		82 48.7	19 2.2		70 23.8	15 56.6		58 1.3	11 55.0	
20	124 28.2	21 58.6	0.5	112 21.8	22 3.3	-0.4	100 2.9	21 4.1	-1.3	87 38.3	19 0.0	-2.2	75 13.5	15 53.6	-3.0	62 51.0	11 51.3	-3.7
40	129 18.3	21 59.0		117 11.7	22 2.9		104 52.6	21 2.8		92 28.0	18 57.8		80 3.1	15 50.6		67 40.7	11 47.6	
3 0	134 8.3	21 59.5		122 1.5	22 2.5		109 42.3	21 1.5		97 17.6	18 55.7		84 52.8	15 47.6		72 30.4	11 43.9	
20	138 58.3	22 0.0	0.5	126 51.3	22 2.1	-0.4	114 32.0	21 0.2	-1.3	102 7.2	18 53.5	-2.2	89 42.5	15 44.5	-3.0	77 20.1	11 40.2	-3.7
40	143 48.3	22 0.4		131 41.1	22 1.7		119 21.7	20 58.9		106 56.9	18 51.3		94 32.2	15 41.5		82 9.8	11 36.4	
4 0	148 38.3	22 0.9		136 30.9	22 1.3		124 11.3	20 57.6		111 46.5	18 49.0		99 21.8	15 38.5		86 59.5	11 32.7	
20	153 28.4	22 1.3	0.4	141 20.7	22 0.9	-0.5	129 1.0	20 56.2	-1.4	116 36.2	18 46.8	-2.2	104 11.5	15 35.4	-3.1	91 49.2	11 28.9	-3.8
40	158 18.4	22 1.7		146 10.4	22 0.4		133 50.7	20 54.9		121 25.8	18 44.6		109 1.2	15 32.3		96 39.0	11 25.2	
5 0	163 8.4	22 2.1		151 0.2	21 59.9		138 40.4	20 53.5		126 15.5	18 42.3		113 50.9	15 29.3		101 28.7	11 21.4	
20	167 58.4	22 2.5	0.4	155 50.0	21 59.5	-0.5	143 30.0	20 52.1	-1.4	131 5.1	18 40.0	-2.3	118 40.5	15 26.2	-3.1	106 18.4	11 17.6	-3.8
40	172 48.3	22 2.9		160 39.8	21 59.0		148 19.7	20 50.7		135 54.8	18 37.7		123 30.2	15 23.1		111 8.1	11 13.8	
6 0	177 38.3	22 3.3		165 29.6	21 58.5		153 9.4	20 49.3		140 44.4	18 35.5		128 19.9	15 20.0		115 57.8	11 10.0	
20	182 28.3	22 3.7	0.3	170 19.4	21 57.9	-0.5	157 59.1	20 47.9	-1.4	145 34.1	18 33.1	-2.3	133 9.6	15 16.8	-3.1	120 47.5	11 6.2	-3.8
40	187 18.3	22 4.0		175 9.2	21 57.4		162 48.7	20 46.5		150 23.7	18 30.8		137 59.2	15 13.7		125 37.2	11 2.4	
7 0	192 8.3	22 4.3		179 58.9	21 56.9		167 38.4	20 45.0		155 13.4	18 28.5		142 48.9	15 10.6		130 26.9	10 58.6	
20	196 58.3	22 4.7	0.3	184 48.7	21 56.3	-0.6	172 28.1	20 43.6	-1.5	160 3.0	18 26.2	-2.4	147 38.6	15 7.4	-3.2	135 16.6	10 54.8	-3.8
40	201 48.2	22 5.0		189 38.5	21 55.8		177 17.7	20 42.1		164 52.7	18 23.8		152 28.3	15 4.3		140 6.3	10 50.9	
8 0	206 38.2	22 5.3		194 28.3	21 55.2		182 7.4	20 40.6		169 42.3	18 21.4		157 17.9	15 1.1		144 56.0	10 47.1	
20	211 28.2	22 5.6	0.3	199 18.0	21 54.6	-0.6	186 57.1	20 39.1	-1.5	174 32.0	18 19.1	-2.4	162 7.6	14 57.9	-3.2	149 45.7	10 43.2	-3.9
40	216 18.1	22 5.9		204 7.8	21 54.0		191 46.7	20 37.6		179 21.6	18 16.7		166 57.3	14 54.7		154 35.4	10 39.3	
9 0	221 8.1	22 6.1		208 57.6	21 53.4		196 36.4	20 36.1		184 11.3	18 14.3		171 47.0	14 51.5		159 25.1	10 35.5	
20	225 58.1	22 6.4	0.2	213 47.3	21 52.8	-0.6	201 26.1	20 34.6	-1.5	189 0.9	18 11.9	-2.4	176 36.7	14 48.3	-3.2	164 14.8	10 31.6	-3.9
40	230 48.0	22 6.6		218 37.1	21 52.1		206 15.7	20 33.0		193 50.6	18 9.4		181 26.3	14 45.1		169 4.5	10 27.7	
10 0	235 38.0	22 6.8		223 26.8	21 51.5		211 5.4	20 31.5		198 40.2	18 7.0		186 16.0	14 41.8		173 54.3	10 23.8	
20	240 27.9	22 7.1	0.2	228 16.6	21 50.8	-0.7	215 55.1	20 29.9	-1.6	203 29.9	18 4.6	-2.5	191 5.7	14 38.6	-3.2	178 44.0	10 19.9	-3.9
40	245 17.9	22 7.3		233 6.4	21 50.1		220 44.7	20 28.3		208 19.5	18 2.1		195 55.4	14 35.3		183 33.7	10 16.0	
11 0	250 7.8	22 7.5		237 56.1	21 49.4		225 34.4	20 26.7		213 9.2	17 59.6		200 45.1	14 32.1		188 23.4	10 12.1	
20	254 57.7	22 7.6	0.2	242 45.9	21 48.7	-0.7	230 24.0	20 25.1	-1.6	217 58.8	17 57.2	-2.5	205 34.8	14 28.8	-3.3	193 13.1	10 8.2	-3.9
40	259 47.7	22 7.8		247 35.6	21 48.0		235 13.7	20 23.5		222 48.5	17 54.7		210 24.4	14 25.5		198 2.8	10 4.2	
12 0	264 37.6	22 8.0		252 25.4	21 47.3		240 3.4	20 21.9		227 38.1	17 52.2		215 14.1	14 22.2		202 52.5	10 0.3	
20	269 27.5	22 8.1	0.1	257 15.1	21 46.5	-0.8	244 53.0	20 20.2	-1.7	232 27.8	17 49.6	-2.5	220 3.8	14 18.9	-3.3	207 42.2	9 56.3	-4.0
40	274 17.4	22 8.3		262 4.8	21 45.8		249 42.7	20 18.6		237 17.4	17 47.1		224 53.5	14 15.6		212 31.9	9 52.4	
13 0	279 7.4	22 8.4		266 54.6	21 45.0		254 32.3	20 16.9		242 7.1	17 44.6		229 43.2	14 12.3		217 21.6	9 48.4	
20	283 57.3	22 8.5	0.1	271 44.3	21 44.2	-0.8	259 22.0	20 15.2	-1.7	246 56.7	17 42.0	-2.6	234 32.9	14 8.9	-3.4	222 11.3	9 44.4	-4.0
40	288 47.2	22 8.6		276 34.1	21 43.5		264 11.6	20 13.5		251 46.4	17 39.4		239 22.6	14 5.6		227 1.0	9 40.4	
14 0	293 37.1	22 8.7		281 23.8	21 42.7		269 1.3	20 11.8		256 36.0	17 36.9		244 12.2	14 2.2		231 50.7	9 36.5	
20	298 27.0	22 8.8	0.1	286 13.5	21 41.8	-0.8	273 50.9	20 10.1	-1.7	261 25.7	17 34.3	-2.6	249 1.9	13 58.9	-3.4	236 40.5	9 32.5	-4.0
40	303 16.9	22 8.8		291 3.3	21 41.0		278 40.6	20 8.4		266 15.3	17 31.7		253 51.6	13 55.5		241 30.2	9 28.5	
15 0	308 6.8	22 8.9		295 53.0	21 40.2		283 30.3	20 6.6		271 5.0	17 29.1		258 41.3	13 52.1		246 19.9	9 24.4	
20	312 56.7	22 8.9	0.0	300 42.7	21 39.3	-0.9	288 19.9	20 4.9	-1.8	275 54.6	17 26.5	-2.6	263 31.0	13 48.7	-3.4	251 9.6	9 20.4	-4.0
40	317 46.6	22 8.9		305 32.4	21 38.5		293 9.6	20 3.1		280 44.3	17 23.8		268 20.7	13 45.3		255 59.3	9 16.4	
16 0	322 36.5	22 8.9		310 22.2	21 37.6		297 59.2	20 1.3		285 33.9	17 21.2		273 10.4	13 41.9		260 49.0	9 12.4	
20	327 26.4	22 8.9	0.0	315 11.9	21 36.7	-0.9	302 48.9	19 59.5	-1.8	290 23.6	17 18.5	-2.7	278 0.1	13 38.5	-3.4	265 38.7	9 8.3	-4.1
40	332 16.3	22 8.9		320 1.6	21 35.8		307 38.5	19 57.7		295 13.3	17 15.8		282 49.8	13 35.0		270 28.4	9 4.3	
17 0	337 6.2	22 8.9		324 51.3	21 34.9		312 28.2	19 55.9		300 2.9	17 13.2		287 39.5	13 31.6		275 18.1	9 0.2	
20	341 56.1	22 8.9	0.0	329 41.1	21 33.9	-1.0	317 17.8	19 54.1	-1.8	304 52.6	17 10.5	-2.7	292 29.2	13 28.1	-3.5	280 7.8	8 56.2	-4.1
40	346 45.9	22 8.8		334 30.8	21 33.0		322 7.5	19 52.2		309 42.2	17 7.8		297 18.8	13 24.7		284 57.5	8 52.1	
18 0	351 35.8	22 8.8		339 20.5	21 32.0		326 57.1	19 50.4		314 31.9	17 5.1		302 8.5	13 21.2		289 47.2	8 48.0	
20	356 25.7	22 8.7	-0.1	344 10.2	21 31.1	-1.0	331 46.8	19 48.5	-1.9	319 21.5	17 2.3	-2.7	306 58.2	13 17.7	-3.5	294 36.9	8 43.9	-4.1
40	1 15.6	22 8.6		348 59.9	21 30.1		336 36.4	19 46.6		324 11.2	16 59.6		311 47.9	13 14.2		299 26.6	8 39.9	
19 0	6 5.4	22 8.5		353 49.6	21 29.1		341 26.1	19 44.7		329 0.9	16 56.9		316 37.6	13 10.7		304 16.3	8 35.8	
20	10 55.3	22 8.4	-0.1	358 39.3	21 28.1	-1.0	346 15.7	19 42.8	-1.9	333 50.5	16 54.1	-2.8	321 27.3	13 7.2	-3.5	309 6.0	8 31.7	-4.1
40	15 45.2	22 8.3		3 29.1	21 27.1		351 5.4	19 40.9		338 40.2	16 51.3		326 17.0	13 3.7		313 55.7	8 27.5	
20 0	20 35.0	22 8.2		8 18.8	21 26.1		355 55.0	19 39.0		343 29.8	16 48.5		331 6.7	13 0.2		318 45.4	8 23.4	
20	25 24.9	22 8.0	-0.2	13 8.5	21 25.0	-1.1	0 44.7	19 37.1	-2.0	348 19.5	16 45.8	-2.8	335 56.4	12 56.6	-3.6	323 35.1	8 19.3	-4.1
40	30 14.7	22 7.9		17 58.2	21 24.0		5 34.3	19 35.1		353 9.2	16 42.9		340 46.1	12 53.1		328 24.8	8 15.2	
21 0	35 4.6	22 7.7		22 47.9	21 22.9		10 24.0	19 33.1		357 58.8	16 40.1		345 35.8	12 49.5		333 14.5	8 11.0	
20	39 54.4	22 7.5	-0.2	27 37.6	21 21.8	-1.1	15 13.6	19 31.2	-2.0	2 48.5	16 37.3	-2.8	350 25.5	12 45.9	-3.6	338 4.3	8 6.9	-4.1
40	44 44.3	22 7.3		32 27.3	21 20.7		20 3.3	19 29.2		7 38.1	16 34.5		355 15.2	12 42.4		342 54.0	8 2.7	
22 0	49 34.1	22 7.1		37 17.0	21 19.6		24 52.9	19 27.2		12 27.8	16 31.6		0 4.9	12 38.8		347 43.7	7 58.6	
20	54 24.0	22 6.9	-0.2	42 6.7	21 18.5	-1.1	29 42.5	19 25.1	-2.0	17 17.5	16 28.8	-2.9	4 54.6	12 35.2	-3.6	352 33.4	7 54.4	-4.2
40	59 13.8	22 6.7		46 56.4	21 17.4		34 32.2	19 23.1		22 7.1	16 25.9		9 44.3	12 31.6		357 23.1	7 50.3	
23 0	64 3.6	22 6.4		51 46.1	21 16.2		39 21.8	19 21.1		26 56.8	16 23.0		14 34.0	12 28.0		2 12.8	7 46.1	
20	68 53.5	22 6.2	-0.3	56 35.8	21 15.1	-1.2	44 11.5	19 19.0	-2.1	31 46.5	16 20.1	-2.9	19 23.7	12 24.3	-3.6	7 2.5	7 41.9	-4.2
40	73 43.3	22 5.9		61 25.4	21 13.9		49 1.1	19 17.0		36 36.1	16 17.2		24 13.4	12 20.7		11 52.1	7 37.7	

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h m	7 Mar GHA	7 Mar Dec	d	8 Mar GHA	8 Mar Dec	d	9 Mar GHA	9 Mar Dec	d	10 Mar GHA	10 Mar Dec	d	11 Mar GHA	11 Mar Dec	d	12 Mar GHA	12 Mar Dec	d
0 0	16 41.8	7 33.5		4 17.5	2 18.1		351 43.1	-3 10.9		338 50.4	-8 32.5		325 33.3	-13 24.3		311 49.7	-17 24.8	
20	21 31.5	7 29.3	289.7 -4.2	9 7.1	2 13.6	289.6 -4.5	356 32.5	-3 15.5	289.4 -4.6	343 39.6	-8 36.8	289.1 -4.3	330 22.0	-13 28.0	288.7 -3.7	316 38.1	-17 27.7	288.4 -2.9
40	26 21.2	7 25.1		13 56.8	2 9.1		1 21.9	-3 20.1		348 28.7	-8 41.1		335 10.8	-13 31.7		321 26.5	-17 30.6	
1 0	31 10.9	7 20.9		18 46.4	2 4.5		6 11.3	-3 24.6		353 17.8	-8 45.4		339 59.5	-13 35.4		326 14.8	-17 33.4	
20	36 0.6	7 16.7	289.7 -4.2	23 36.0	2 0.0	289.6 -4.5	11 0.7	-3 29.2	289.4 -4.6	358 6.8	-8 49.7	289.1 -4.3	344 48.2	-13 39.1	288.7 -3.7	331 3.2	-17 36.3	288.4 -2.8
40	40 50.3	7 12.5		28 25.6	1 55.5		15 50.1	-3 33.8		2 55.9	-8 54.0		349 37.0	-13 42.8		335 51.6	-17 39.1	
2 0	45 40.0	7 8.2		33 15.2	1 50.9		20 39.5	-3 38.3		7 45.0	-8 58.3		354 25.7	-13 46.5		340 40.0	-17 41.9	
20	50 29.7	7 4.0	289.7 -4.2	38 4.8	1 46.4	289.6 -4.5	25 28.9	-3 42.9	289.4 -4.6	12 34.1	-9 2.5	289.1 -4.3	359 14.4	-13 50.2	288.7 -3.7	345 28.3	-17 44.7	288.4 -2.8
40	55 19.4	6 59.7		42 54.4	1 41.9		30 18.2	-3 47.4		17 23.2	-9 6.8		4 3.1	-13 53.9		350 16.7	-17 47.5	
3 0	60 9.1	6 55.5		47 43.9	1 37.3		35 7.6	-3 52.0		22 12.2	-9 11.1		8 51.8	-13 57.5		355 5.0	-17 50.3	
20	64 58.8	6 51.2	289.7 -4.3	52 33.5	1 32.8	289.6 -4.5	39 57.0	-3 56.5	289.4 -4.5	27 1.3	-9 15.3	289.1 -4.2	13 40.5	-14 1.2	288.7 -3.6	359 53.4	-17 53.1	288.3 -2.8
40	69 48.5	6 47.0		57 23.1	1 28.2		44 46.4	-4 1.1		31 50.4	-9 19.6		18 29.2	-14 4.8		4 41.7	-17 55.8	
4 0	74 38.2	6 42.7		62 12.7	1 23.7		49 35.8	-4 5.6		36 39.4	-9 23.8		23 17.8	-14 8.4		9 30.1	-17 58.6	
20	79 27.9	6 38.4	289.7 -4.3	67 2.3	1 19.1	289.6 -4.6	54 25.1	-4 10.2	289.4 -4.6	41 28.5	-9 28.0	289.0 -4.2	28 6.5	-14 12.1	288.7 -3.6	14 18.4	-18 1.3	288.3 -2.7
40	84 17.6	6 34.2		71 51.9	1 14.6		59 14.5	-4 14.7		46 17.5	-9 32.3		32 55.2	-14 15.7		19 6.8	-18 4.0	
5 0	89 7.2	6 29.9		76 41.5	1 10.0		64 3.8	-4 19.3		51 6.5	-9 36.5		37 43.9	-14 19.2		23 55.1	-18 6.7	
20	93 56.9	6 25.6	289.7 -4.3	81 31.0	1 5.5	289.6 -4.6	68 53.2	-4 23.8	289.4 -4.5	55 55.6	-9 40.7	289.0 -4.2	42 32.5	-14 22.8	288.7 -3.6	28 43.4	-18 9.4	288.3 -2.7
40	98 46.6	6 21.3		86 20.6	1 0.9		73 42.6	-4 28.4		60 44.6	-9 44.9		47 21.2	-14 26.4		33 31.7	-18 12.1	
6 0	103 36.3	6 17.0		91 10.2	0 56.3		78 31.9	-4 32.9		65 33.6	-9 49.1		52 9.8	-14 30.0		38 20.1	-18 14.7	
20	108 26.0	6 12.7	289.7 -4.3	95 59.8	0 51.8	289.6 -4.6	83 21.2	-4 37.4	289.3 -4.5	70 22.7	-9 53.3	289.0 -4.2	56 58.5	-14 33.5	288.6 -3.5	43 8.4	-18 17.4	288.3 -2.6
40	113 15.7	6 8.4		100 49.3	0 47.2		88 10.6	-4 42.0		75 11.7	-9 57.5		61 47.1	-14 37.1		47 56.7	-18 20.0	
7 0	118 5.4	6 4.1		105 38.9	0 42.6		92 59.9	-4 46.5		80 0.7	-10 1.7		66 35.7	-14 40.6		52 45.0	-18 22.6	
20	122 55.0	5 59.7	289.7 -4.3	110 28.5	0 38.1	289.6 -4.6	97 49.3	-4 51.0	289.3 -4.5	84 49.7	-10 5.8	289.0 -4.2	71 24.4	-14 44.1	288.6 -3.5	57 33.3	-18 25.2	288.3 -2.6
40	127 44.7	5 55.4		115 18.0	0 33.5		102 38.6	-4 55.5		89 38.7	-10 10.0		76 13.0	-14 47.6		62 21.6	-18 27.8	
8 0	132 34.4	5 51.1		120 7.6	0 28.9		107 27.9	-5 0.0		94 27.7	-10 14.2		81 1.6	-14 51.1		67 9.9	-18 30.4	
20	137 24.1	5 46.8	289.7 -4.3	124 57.1	0 24.4	289.6 -4.6	112 17.2	-5 4.6	289.3 -4.5	99 16.7	-10 18.3	289.0 -4.1	85 50.2	-14 54.6	288.6 -3.5	71 58.2	-18 32.9	288.3 -2.5
40	142 13.8	5 42.4		129 46.7	0 19.8		117 6.5	-5 9.1		104 5.6	-10 22.5		90 38.9	-14 58.1		76 46.5	-18 35.5	
9 0	147 3.4	5 38.1		134 36.2	0 15.2		121 55.9	-5 13.6		108 54.6	-10 26.6		95 27.5	-15 1.5		81 34.8	-18 38.0	
20	151 53.1	5 33.7	289.7 -4.4	139 25.8	0 10.7	289.5 -4.6	126 45.2	-5 18.1	289.3 -4.5	113 43.6	-10 30.7	289.0 -4.1	100 16.1	-15 5.0	288.6 -3.4	86 23.1	-18 40.5	288.3 -2.5
40	156 42.8	5 29.4		144 15.3	0 6.1		131 34.5	-5 22.6		118 32.6	-10 34.9		105 4.7	-15 8.4		91 11.3	-18 43.0	
10 0	161 32.5	5 25.0		149 4.9	0 1.5		136 23.8	-5 27.1		123 21.5	-10 39.0		109 53.2	-15 11.8		95 59.6	-18 45.5	
20	166 22.1	5 20.6	289.7 -4.4	153 54.4	0 3.1	289.5 -4.6	141 13.1	-5 31.6	289.3 -4.5	128 10.5	-10 43.1	289.0 -4.1	114 41.8	-15 15.2	288.6 -3.4	100 47.9	-18 48.0	288.3 -2.5
40	171 11.8	5 16.3		158 43.9	0 7.7		146 2.4	-5 36.1		132 59.4	-10 47.2		119 30.4	-15 18.6		105 36.1	-18 50.4	
11 0	176 1.5	5 11.9		163 33.5	0 12.2		150 51.6	-5 40.6		137 48.4	-10 51.3		124 19.0	-15 22.0		110 24.4	-18 52.9	
20	180 51.1	5 7.5	289.7 -4.4	168 23.0	0 16.8	289.5 -4.6	155 40.9	-5 45.1	289.3 -4.5	142 37.3	-10 55.3	288.9 -4.1	129 7.6	-15 25.4	288.6 -3.4	115 12.7	-18 55.3	288.3 -2.4
40	185 40.8	5 3.1		173 12.5	0 21.4		160 30.2	-5 49.6		147 26.3	-10 59.4		133 56.1	-15 28.8		120 0.9	-18 57.7	
12 0	190 30.5	4 58.7		178 2.1	0 26.0		165 19.5	-5 54.0		152 15.2	-11 3.5		138 44.7	-15 32.1		124 49.2	-19 0.1	
20	195 20.1	4 54.3	289.7 -4.4	182 51.6	0 30.6	289.5 -4.6	170 8.8	-5 58.5	289.3 -4.5	157 4.1	-11 7.6	288.9 -4.1	143 33.2	-15 35.5	288.5 -3.3	129 37.4	-19 2.5	288.3 -2.4
40	200 9.8	4 49.9		187 41.1	0 35.1		174 58.0	-6 3.0		161 53.1	-11 11.6		148 21.8	-15 38.8		134 25.7	-19 4.8	
13 0	204 59.5	4 45.5		192 30.6	0 39.7		179 47.3	-6 7.5		166 42.0	-11 15.7		153 10.3	-15 42.1		139 13.9	-19 7.2	
20	209 49.1	4 41.1	289.7 -4.4	197 20.2	0 44.3	289.5 -4.6	184 36.5	-6 11.9	289.3 -4.4	171 30.9	-11 19.7	288.9 -4.0	157 58.9	-15 45.5	288.5 -3.3	144 2.2	-19 9.5	288.2 -2.3
40	214 38.8	4 36.7		202 9.7	0 48.9		189 25.8	-6 16.4		176 19.8	-11 23.7		162 47.4	-15 48.8		148 50.4	-19 11.9	
14 0	219 28.5	4 32.3		206 59.2	0 53.5		194 15.0	-6 20.8		181 8.7	-11 27.7		167 35.9	-15 52.0		153 38.7	-19 14.2	
20	224 18.1	4 27.9	289.7 -4.4	211 48.7	0 58.1	289.5 -4.6	199 4.3	-6 25.3	289.2 -4.5	185 57.6	-11 31.7	288.9 -4.0	172 24.5	-15 55.3	288.5 -3.3	158 26.9	-19 16.5	288.2 -2.3
40	229 7.8	4 23.5		216 38.2	1 2.7		203 53.5	-6 29.8		190 46.5	-11 35.8		177 13.0	-15 58.6		163 15.1	-19 18.7	
15 0	233 57.4	4 19.0		221 27.7	1 7.2		208 42.8	-6 34.2		195 35.4	-11 39.7		182 1.5	-16 1.8		168 3.4	-19 21.0	
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40	243 36.7	4 10.2		231 6.7	1 16.4		218 21.2	-6 43.1		205 13.1	-11 47.7		191 38.5	-16 8.3		177 39.8	-19 25.5	
16 0	248 26.4	4 5.7		235 56.2	1 21.0		223 10.5	-6 47.5		210 2.0	-11 51.7		196 27.0	-16 11.5		182 28.0	-19 27.7	
20	253 16.0	4 1.3	289.6 -4.4	240 45.7	1 25.6	289.5 -4.6	227 59.7	-6 51.9	289.2 -4.4	214 50.9	-11 55.6	288.9 -3.9	201 15.5	-16 14.7	288.5 -3.2	187 16.2	-19 29.9	288.2 -2.2
40	258 5.7	3 56.8		245 35.2	1 30.2		232 48.9	-6 56.4		219 39.7	-11 59.6		206 4.0	-16 17.9		192 4.5	-19 32.1	
17 0	262 55.3	3 52.4		250 24.6	1 34.8		237 38.1	-7 0.8		224 28.6	-12 3.5		210 52.5	-16 21.1		196 52.7	-19 34.3	
20	267 45.0	3 47.9	289.6 -4.5	255 14.1	1 39.3	289.5 -4.6	242 27.3	-7 5.2	289.2 -4.4	229 17.4	-12 7.5	288.8 -3.9	215 41.0	-16 24.2	288.5 -3.1	201 40.9	-19 36.4	288.2 -2.1
40	272 34.6	3 43.5		260 3.6	1 43.9		247 16.5	-7 9.6		234 6.3	-12 11.4		220 29.5	-16 27.4		206 29.1	-19 38.6	
18 0	277 24.3	3 39.0		264 53.1	1 48.5		252 5.7	-7 14.0		238 55.1	-12 15.3		225 17.9	-16 30.5		211 17.3	-19 40.7	
20	282 13.9	3 34.5	289.6 -4.5	269 42.5	1 53.1	289.5 -4.6	256 54.9	-7 18.4	289.2 -4.4	243 43.9	-12 19.2	288.8 -3.9	230 6.4	-16 33.6	288.5 -3.1	216 5.5	-19 42.8	288.2 -2.1
40	287 3.5	3 30.1		274 32.0	1 57.7		261 44.1	-7 22.8		248 32.8	-12 23.1		234 54.9	-16 36.7		220 53.7	-19 44.9	
19 0	291 53.2	3 25.6		279 21.5	2 2.3		266 33.3	-7 27.2		253 21.6	-12 27.0		239 43.3	-16 39.8		225 41.9	-19 47.0	
20	296 42.8	3 21.1	289.6 -4.5	284 10.9	2 6.8	289.5 -4.6	271 22.4	-7 31.6	289.2 -4.4	258 10.4	-12 30.9	288.8 -3.9	244 31.8	-16 42.9	288.5 -3.1	230 30.1	-19 49.1	288.2 -2.0
40	301 32.4	3 16.6		289 0.4	2 11.4		276 11.6	-7 36.0		262 59.2	-12 34.8		249 20.2	-16 46.0		235 18.3	-19 51.1	
20 0	306 22.1	3 12.2		293 49.9	2 16.0		281 0.8	-7 40.4		267 48.0	-12 38.6		254 8.7	-16 49.1		240 6.5	-19 53.1	
20	311 11.7	3 7.7	289.6 -4.5	298 39.3	2 20.6	289.4 -4.6	285 49.9	-7 44.7	289.2 -4.4	272 36.8	-12 42.5	288.8 -3.9	258 57.1	-16 52.1	288.4 -3.0	244 54.7	-19 55.2	288.2 -2.0
40	316 1.3	3 3.2		303 28.8	2 25.2		290 39.1	-7 49.1		277 25.6	-12 46.3		263 45.6	-16 55.2		249 42.8	-19 57.2	
21 0	320 51.0	2 58.7		308 18.2	2 29.8		295 28.3	-7 53.5		282 14.4	-12 50.2		268 34.0	-16 58.2		254 31.0	-19 59.2	
20	325 40.6	2 54.2	289.6 -4.5	313 7.6	2 34.3	289.4 -4.6	300 17.4	-7 57.8	289.1 -4.3	287 3.2	-12 54.0	288.8 -3.8	273 22.4	-17 1.2	288.4 -3.0	259 19.2	-20 1.1	288.2 -1.9
40	330 30.2	2 49.7		317 57.1	2 38.9		305 6.6	-8 2.2		291 52.0	-12 57.8		278 10.8	-17 4.2		264 7.4	-20 3.1	
22 0	335 19.8	2 45.2		322 46.5	2 43.5		309 55.7	-8 6.5		296 40.8	-13 1.6		282 59.3	-17 7.2		268 55.6	-20 5.0	
20	340 9.5	2 40.7	289.6 -4.5	327 35.9	2 48.1	289.4 -4.6	314 44.8	-8 10.9	289.1 -4.3	301 29.5	-13 5.4	288.8 -3.8	287 47.7	-17 10.1	288.4 -2.9	273 43.7	-20 7.0	288.2 -1.9
40	344 59.1	2 36.2		332 25.4	2 52.6		319 34.0	-8 15.2		306 18.3	-13 9.2		292 36.1	-17 13.1		278 31.9	-20 8.9	
23 0	349 48.7	2 31.7		337 14.8	2 57.2		324 23.1	-8 19.5		311 7.1	-13 13.0		297 24.5	-17 16.0		283 20.1	-20 10.8	
20	354 38.3	2 27.1	289.6 -4.5	342 4.2	3 1.8	289.4 -4.6	329 12.2	-8 23.9	289.1 -4.3	315 55.8	-13 16.7	288.7 -3.8	302 12.9	-17 19.0	288.4 -2.9	288 8.2	-20 12.7	288.2 -1.9
40	359 27.9	2 22.6		346 53.6	3 6.4		334 1.3	-8 28.2		320 44.6	-13 20.5		307 1.3	-17 21.9		292 56.4	-20 14.5	

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h m	13 Mar GHA	13 Mar Dec	d	14 Mar GHA	14 Mar Dec	d	15 Mar GHA	15 Mar Dec	d	16 Mar GHA	16 Mar Dec	d	17 Mar GHA	17 Mar Dec	d	18 Mar GHA	18 Mar Dec	d
0 0	297 44.6	-20 16.4		283 30.5	-21 47.6		269 25.0	-21 55.0		255 45.3	-20 43.0		242 43.6	-18 22.3		230 24.3	-15 6.6	
20	302 32.7	-20 18.2	288.2 -1.8	288 18.6	-21 48.3	288.2 -0.7	274 13.4	-21 54.5	288.4 0.5	260 34.2	-20 41.5	288.9 1.5	247 33.0	-18 19.9	289.4 2.4	235 14.3	-15 3.6	290.0 3.0
40	307 20.9	-20 20.0		293 6.8	-21 48.9		279 1.8	-21 54.0		265 23.1	-20 40.0		252 22.5	-18 17.6		240 4.3	-15 0.5	
1 0	312 9.0	-20 21.8		297 55.0	-21 49.6		283 50.2	-21 53.5		270 11.9	-20 38.5		257 11.9	-18 15.2		244 54.4	-14 57.5	
20	316 57.2	-20 23.6	288.2 -1.8	302 43.1	-21 50.2	288.2 -0.6	288 38.6	-21 53.0	288.4 0.5	275 0.8	-20 36.9	288.9 1.6	262 1.4	-18 12.7	289.5 2.4	249 44.4	-14 54.4	290.1 3.1
40	321 45.4	-20 25.4		307 31.3	-21 50.8		293 27.0	-21 52.4		279 49.7	-20 35.3		266 50.9	-18 10.3		254 34.5	-14 51.3	
2 0	326 33.5	-20 27.1		312 19.4	-21 51.4		298 15.5	-21 51.9		284 38.6	-20 33.8		271 40.3	-18 7.9		259 24.5	-14 48.3	
20	331 21.7	-20 28.9	288.2 -1.7	317 7.6	-21 52.0	288.2 -0.6	303 3.9	-21 51.3	288.4 0.6	289 27.5	-20 32.2	288.9 1.6	276 29.8	-18 5.5	289.5 2.4	264 14.6	-14 45.2	290.1 3.1
40	336 9.8	-20 30.6		321 55.8	-21 52.5		307 52.4	-21 50.7		294 16.4	-20 30.6		281 19.3	-18 3.0		269 4.7	-14 42.1	
3 0	340 58.0	-20 32.3		326 44.0	-21 53.1		312 40.8	-21 50.2		299 5.4	-20 29.0		286 8.8	-18 0.6		273 54.8	-14 39.0	
20	345 46.1	-20 34.0	288.1 -1.7	331 32.1	-21 53.6	288.2 -0.5	317 29.2	-21 49.5	288.5 0.6	303 54.3	-20 27.3	288.9 1.7	290 58.3	-17 58.1	289.5 2.5	278 44.9	-14 35.9	290.1 3.1
40	350 34.3	-20 35.7		336 20.3	-21 54.1		322 17.7	-21 48.9		308 43.2	-20 25.7		295 47.9	-17 55.6		283 35.0	-14 32.8	
4 0	355 22.4	-20 37.4		341 8.5	-21 54.6		327 6.2	-21 48.3		313 32.2	-20 24.0		300 37.4	-17 53.1		288 25.1	-14 29.7	
20	0 10.6	-20 39.0	288.1 -1.6	345 56.7	-21 55.1	288.2 -0.5	331 54.6	-21 47.6	288.5 0.7	318 21.1	-20 22.3	289.0 1.7	305 26.9	-17 50.6	289.5 2.5	293 15.2	-14 26.5	290.1 3.1
40	4 58.7	-20 40.6		350 44.8	-21 55.5		336 43.1	-21 46.9		323 10.1	-20 20.7		310 16.5	-17 48.1		298 5.3	-14 23.4	
5 0	9 46.8	-20 42.2		355 33.0	-21 56.0		341 31.6	-21 46.3		327 59.1	-20 19.0		315 6.0	-17 45.6		302 55.5	-14 20.3	
20	14 35.0	-20 43.8	288.1 -1.6	0 21.2	-21 56.4	288.2 -0.4	346 20.1	-21 45.6	288.5 0.7	332 48.1	-20 17.3	289.0 1.7	319 55.6	-17 43.1	289.6 2.5	307 45.6	-14 17.1	290.1 3.2
40	19 23.1	-20 45.4		5 9.4	-21 56.8		351 8.6	-21 44.8		337 37.0	-20 15.5		324 45.2	-17 40.5		312 35.7	-14 14.0	
6 0	24 11.3	-20 47.0		9 57.6	-21 57.2		355 57.1	-21 44.1		342 26.0	-20 13.8		329 34.8	-17 38.0		317 25.9	-14 10.8	
20	28 59.4	-20 48.5	288.1 -1.5	14 45.8	-21 57.6	288.2 -0.4	0 45.6	-21 43.4	288.5 0.8	347 15.0	-20 12.1	289.0 1.8	334 24.3	-17 35.4	289.6 2.6	322 16.1	-14 7.6	290.2 3.2
40	33 47.5	-20 50.1		19 34.0	-21 58.0		5 34.1	-21 42.6		352 4.0	-20 10.3		339 13.9	-17 32.8		327 6.2	-14 4.5	
7 0	38 35.7	-20 51.6		24 22.2	-21 58.3		10 22.6	-21 41.8		356 53.1	-20 8.5		344 3.5	-17 30.3		331 56.4	-14 1.3	
20	43 23.8	-20 53.1	288.1 -1.5	29 10.4	-21 58.7	288.2 -0.3	15 11.1	-21 41.0	288.5 0.8	1 42.1	-20 6.7	289.0 1.8	348 53.2	-17 27.7	289.6 2.6	336 46.6	-13 58.1	290.2 3.2
40	48 11.9	-20 54.6		33 58.6	-21 59.0		19 59.6	-21 40.2		6 31.1	-20 4.9		353 42.8	-17 25.1		341 36.8	-13 54.9	
8 0	53 0.1	-20 56.0		38 46.8	-21 59.3		24 48.1	-21 39.4		11 20.2	-20 3.1		358 32.4	-17 22.5		346 27.0	-13 51.7	
20	57 48.2	-20 57.5	288.1 -1.5	43 35.0	-21 59.6	288.2 -0.3	29 36.7	-21 38.6	288.5 0.9	16 9.2	-20 1.3	289.1 1.8	3 22.1	-17 19.8	289.6 2.6	351 17.2	-13 48.5	290.2 3.2
40	62 36.3	-20 58.9		48 23.2	-21 59.8		34 25.2	-21 37.7		20 58.3	-19 59.5		8 11.7	-17 17.2		356 7.4	-13 45.3	
9 0	67 24.5	-21 0.4		53 11.4	-22 0.1		39 13.8	-21 36.8		25 47.3	-19 57.6		13 1.4	-17 14.6		0 57.6	-13 42.0	
20	72 12.6	-21 1.8	288.1 -1.4	57 59.6	-22 0.3	288.2 -0.2	44 2.3	-21 36.0	288.6 0.9	30 36.4	-19 55.8	289.1 1.9	17 51.0	-17 11.9	289.7 2.7	5 47.9	-13 38.8	290.2 3.2
40	77 0.7	-21 3.2		62 47.9	-22 0.6		48 50.9	-21 35.1		35 25.5	-19 53.9		22 40.7	-17 9.3		10 38.1	-13 35.6	
10 0	81 48.8	-21 4.5		67 36.1	-22 0.8		53 39.5	-21 34.1		40 14.6	-19 52.0		27 30.4	-17 6.6		15 28.4	-13 32.3	
20	86 37.0	-21 5.9	288.1 -1.4	72 24.3	-22 0.9	288.2 -0.2	58 28.0	-21 33.2	288.6 0.9	45 3.7	-19 50.1	289.1 1.9	32 20.1	-17 3.9	289.7 2.7	20 18.6	-13 29.1	290.3 3.2
40	91 25.1	-21 7.2		77 12.6	-22 1.1		63 16.6	-21 32.3		49 52.8	-19 48.2		37 9.8	-17 1.2		25 8.9	-13 25.8	
11 0	96 13.2	-21 8.6		82 0.8	-22 1.3		68 5.2	-21 31.3		54 41.9	-19 46.3		41 59.5	-16 58.5		29 59.1	-13 22.6	
20	101 1.4	-21 9.9	288.1 -1.3	86 49.0	-22 1.4	288.2 -0.1	72 53.8	-21 30.4	288.6 1.0	59 31.0	-19 44.4	289.1 1.9	46 49.2	-16 55.8	289.7 2.7	34 49.4	-13 19.3	290.3 3.3
40	105 49.5	-21 11.2		91 37.3	-22 1.5		77 42.4	-21 29.4		64 20.1	-19 42.4		51 38.9	-16 53.1		39 39.7	-13 16.0	
12 0	110 37.6	-21 12.4		96 25.5	-22 1.6		82 31.0	-21 28.4		69 9.3	-19 40.5		56 28.6	-16 50.4		44 30.0	-13 12.7	
20	115 25.7	-21 13.7	288.1 -1.3	101 13.8	-22 1.7	288.3 -0.1	87 19.6	-21 27.4	288.6 1.0	73 58.4	-19 38.5	289.2 2.0	61 18.4	-16 47.7	289.7 2.7	49 20.3	-13 9.4	290.3 3.3
40	120 13.9	-21 14.9		106 2.0	-22 1.8		92 8.2	-21 26.3		78 47.5	-19 36.5		66 8.1	-16 44.9		54 10.6	-13 6.2	
13 0	125 2.0	-21 16.2		110 50.3	-22 1.9		96 56.9	-21 25.3		83 36.7	-19 34.5		70 57.9	-16 42.2		59 0.9	-13 2.9	
20	129 50.1	-21 17.4	288.1 -1.2	115 38.5	-22 1.9	288.3 0.0	101 45.5	-21 24.2	288.6 1.1	88 25.9	-19 32.5	289.2 2.0	75 47.6	-16 39.4	289.8 2.8	63 51.2	-12 59.5	290.3 3.3
40	134 38.3	-21 18.6		120 26.8	-22 1.9		106 34.1	-21 23.2		93 15.1	-19 30.5		80 37.4	-16 36.7		68 41.5	-12 56.2	
14 0	139 26.4	-21 19.8		125 15.1	-22 2.0		111 22.8	-21 22.1		98 4.2	-19 28.5		85 27.2	-16 33.9		73 31.9	-12 52.9	
20	144 14.5	-21 20.9	288.1 -1.1	130 3.3	-22 2.0	288.3 0.0	116 11.4	-21 21.0	288.7 1.1	102 53.4	-19 26.4	289.2 2.1	90 17.0	-16 31.1	289.8 2.8	78 22.2	-12 49.6	290.3 3.3
40	149 2.6	-21 22.1		134 51.6	-22 1.9		121 0.1	-21 19.9		107 42.6	-19 24.4		95 6.7	-16 28.3		83 12.6	-12 46.2	
15 0	153 50.8	-21 23.2		139 39.9	-22 1.9		125 48.7	-21 18.7		112 31.8	-19 22.3		99 56.5	-16 25.5		88 2.9	-12 42.9	
20	158 38.9	-21 24.3	288.1 -1.1	144 28.2	-22 1.8	288.3 0.1	130 37.4	-21 17.6	288.7 1.1	117 21.1	-19 20.2	289.2 2.1	104 46.4	-16 22.7	289.8 2.8	92 53.3	-12 39.6	290.4 3.3
40	163 27.0	-21 25.4		149 16.4	-22 1.8		135 26.1	-21 16.4		122 10.3	-19 18.2		109 36.2	-16 19.9		97 43.6	-12 36.2	
16 0	168 15.1	-21 26.5		154 4.7	-22 1.7		140 14.8	-21 15.3		126 59.5	-19 16.1		114 26.0	-16 17.0		102 34.0	-12 32.9	
20	173 3.3	-21 27.6	288.1 -1.0	158 53.0	-22 1.6	288.3 0.1	145 3.5	-21 14.1	288.7 1.2	131 48.8	-19 13.9	289.2 2.1	119 15.8	-16 14.2	289.8 2.8	107 24.4	-12 29.5	290.4 3.4
40	177 51.4	-21 28.6		163 41.3	-22 1.5		149 52.2	-21 12.9		136 38.0	-19 11.8		124 5.7	-16 11.4		112 14.8	-12 26.1	
17 0	182 39.5	-21 29.6		168 29.6	-22 1.3		154 40.9	-21 11.7		141 27.3	-19 9.7		128 55.5	-16 8.5		117 5.2	-12 22.8	
20	187 27.7	-21 30.7	288.1 -1.0	173 17.9	-22 1.2	288.3 0.1	159 29.6	-21 10.5	288.7 1.2	146 16.5	-19 7.5	289.3 2.2	133 45.4	-16 5.6	289.9 2.9	121 55.6	-12 19.4	290.4 3.4
40	192 15.8	-21 31.7		178 6.2	-22 1.0		164 18.3	-21 9.2		151 5.8	-19 5.4		138 35.3	-16 2.8		126 46.0	-12 16.0	
18 0	197 3.9	-21 32.6		182 54.6	-22 0.9		169 7.0	-21 8.0		155 55.1	-19 3.2		143 25.1	-15 59.9		131 36.4	-12 12.6	
20	201 52.1	-21 33.6	288.1 -1.0	187 42.9	-22 0.7	288.3 0.2	173 55.8	-21 6.7	288.7 1.3	160 44.4	-19 1.0	289.3 2.2	148 15.0	-15 57.0	289.9 2.9	136 26.8	-12 9.2	290.4 3.4
40	206 40.2	-21 34.6		192 31.2	-22 0.5		178 44.5	-21 5.4		165 33.7	-18 58.9		153 4.9	-15 54.1		141 17.3	-12 5.8	
19 0	211 28.3	-21 35.5		197 19.5	-22 0.2		183 33.3	-21 4.1		170 23.0	-18 56.7		157 54.8	-15 51.2		146 7.7	-12 2.4	
20	216 16.5	-21 36.4	288.1 -0.9	202 7.9	-22 0.0	288.3 0.2	188 22.0	-21 2.8	288.8 1.3	175 12.3	-18 54.4	289.3 2.2	162 44.7	-15 48.3	289.9 2.9	150 58.1	-11 59.0	290.5 3.4
40	221 4.6	-21 37.3		206 56.2	-21 59.7		193 10.8	-21 1.5		180 1.6	-18 52.2		167 34.6	-15 45.3		155 48.6	-11 55.6	
20 0	225 52.7	-21 38.2		211 44.5	-21 59.5		197 59.5	-21 0.2		184 51.0	-18 50.0		172 24.6	-15 42.4		160 39.0	-11 52.1	
20	230 40.9	-21 39.1	288.1 -0.9	216 32.9	-21 59.2	288.3 0.3	202 48.3	-20 58.8	288.8 1.4	189 40.3	-18 47.7	289.3 2.3	177 14.5	-15 39.5	289.9 2.9	165 29.5	-11 48.7	290.5 3.4
40	235 29.0	-21 39.9		221 21.2	-21 58.9		207 37.1	-20 57.4		194 29.6	-18 45.5		182 4.4	-15 36.5		170 20.0	-11 45.3	
21 0	240 17.2	-21 40.8		226 9.6	-21 58.5		212 25.9	-20 56.1		199 19.0	-18 43.2		186 54.4	-15 33.6		175 10.5	-11 41.8	
20	245 5.3	-21 41.6	288.1 -0.8	230 57.9	-21 58.2	288.4 0.3	217 14.7	-20 54.7	288.8 1.4	204 8.4	-18 40.9	289.4 2.3	191 44.3	-15 30.6	290.0 3.0	180 0.9	-11 38.4	290.5 3.4
40	249 53.4	-21 42.4		235 46.3	-21 57.9		222 3.5	-20 53.3		208 57.7	-18 38.6		196 34.3	-15 27.6		184 51.4	-11 34.9	
22 0	254 41.6	-21 43.2		240 34.7	-21 57.5		226 52.3	-20 51.8		213 47.1	-18 36.3		201 24.3	-15 24.7		189 41.9	-11 31.5	
20	259 29.7	-21 44.0	288.1 -0.8	245 23.0	-21 57.1	288.4 0.4	231 41.1	-20 50.4	288.8 1.4	218 36.5	-18 34.0	289.4 2.3	206 14.2	-15 21.7	290.0 3.0	194 32.4	-11 28.0	290.5 3.5
40	264 17.9	-21 44.7		250 11.4	-21 56.7		236 29.9	-20 49.0		223 25.9	-18 31.7		211 4.2	-15 18.7		199 22.9	-11 24.5	
23 0	269 6.0	-21 45.5		254 59.8	-21 56.3		241 18.8	-20 47.5		228 15.3	-18 29.4		215 54.2	-15 15.7		204 13.5	-11 21.1	
20	273 54.2	-21 46.2	288.2 -0.7	259 48.2	-21 55.9	288.4 0.4	246 7.6	-20 46.0	288.8 1.5	233 4.7	-18 27.0	289.4 2.4	220 44.2	-15 12.7	290.0 3.0	209 4.0	-11 17.6	290.5 3.5
40	278 42.3	-21 46.9		264 36.6	-21 55.4		250 56.5	-20 44.5		237 54.1	-18 24.7		225 34.2	-15 9.6		213 54.5	-11 14.1	

2012 Moon

h m	19 Mar GHA	19 Mar Dec	d	d'	20 Mar GHA	20 Mar Dec	d	d'	21 Mar GHA	21 Mar Dec	d	d'	22 Mar GHA	22 Mar Dec	d	d'	23 Mar GHA	23 Mar Dec	d	d'	24 Mar GHA	24 Mar Dec	d	d'
0 0	218 45.0	-11 10.6	290.5		207 39.0	-6 48.5			196 56.9	-2 13.2			186 28.8	2 23.5			176 4.8	6 50.9			165 36.3	10 59.0		
20	223 35.6	-11 7.1		3.5	212 30.0	-6 44.7	290.9	3.8	201 48.1	-2 9.3	291.2	3.9	191 20.1	2 27.3	291.3	3.8	180 56.1	6 54.5	291.3	3.6	170 27.5	11 2.3	291.2	3.3
40	228 26.1	-11 3.6			217 20.9	-6 41.0			206 39.3	-2 5.5			196 11.4	2 31.1			185 47.4	6 58.1			175 18.7	11 5.5		
1 0	233 16.7	-11 0.1	290.6		222 11.9	-6 37.2			211 30.6	-2 1.6			201 2.7	2 34.9			190 38.7	7 1.7			180 9.9	11 8.8		
20	238 7.2	-10 56.6		3.5	227 2.8	-6 33.4	291.0	3.8	216 21.8	-1 57.7	291.2	3.9	205 54.1	2 38.7	291.3	3.8	195 30.1	7 5.3	291.3	3.6	185 1.1	11 12.0	291.2	3.2
40	242 57.8	-10 53.1			231 53.8	-6 29.6			221 13.0	-1 53.9			210 45.4	2 42.5			200 21.4	7 8.9			189 52.3	11 15.3		
2 0	247 48.4	-10 49.6	290.6		236 44.7	-6 25.9			226 4.2	-1 50.0			215 36.7	2 46.3			205 12.7	7 12.4			194 43.5	11 18.5		
20	252 39.0	-10 46.1		3.5	241 35.7	-6 22.1	291.0	3.8	230 55.4	-1 46.2	291.2	3.9	220 28.1	2 50.1	291.3	3.8	210 4.0	7 16.0	291.3	3.6	199 34.7	11 21.7	291.2	3.2
40	257 29.6	-10 42.5			246 26.7	-6 18.3			235 46.6	-1 42.3			225 19.4	2 53.9			214 55.3	7 19.6			204 25.9	11 25.0		
3 0	262 20.2	-10 39.0	290.6		251 17.7	-6 14.5			240 37.9	-1 38.4			230 10.7	2 57.7			219 46.6	7 23.2			209 17.1	11 28.2		
20	267 10.7	-10 35.5		3.5	256 8.6	-6 10.8	291.0	3.8	245 29.1	-1 34.6	291.2	3.8	235 2.1	3 1.5	291.3	3.8	224 38.0	7 26.7	291.3	3.5	214 8.3	11 31.4	291.2	3.2
40	272 1.4	-10 31.9			260 59.6	-6 7.0			250 20.3	-1 30.7			239 53.4	3 5.2			229 29.3	7 30.3			218 59.4	11 34.6		
4 0	276 52.0	-10 28.4	290.6		265 50.6	-6 3.2			255 11.5	-1 26.9			244 44.7	3 9.0			234 20.6	7 33.8			223 50.6	11 37.8		
20	281 42.6	-10 24.8		3.6	270 41.6	-5 59.4	291.0	3.8	260 2.8	-1 23.0	291.2	3.9	249 36.1	3 12.8	291.3	3.8	239 11.9	7 37.4	291.3	3.6	228 41.8	11 41.0	291.2	3.2
40	286 33.2	-10 21.3			275 32.6	-5 55.6			264 54.0	-1 19.1			254 27.4	3 16.6			244 3.2	7 41.0			233 33.0	11 44.2		
5 0	291 23.8	-10 17.7	290.6		280 23.6	-5 51.8			269 45.3	-1 15.3			259 18.7	3 20.3			248 54.5	7 44.5			238 24.1	11 47.4		
20	296 14.5	-10 14.1		3.6	285 14.6	-5 48.0	291.0	3.8	274 36.5	-1 11.4	291.2	3.9	264 10.1	3 24.1	291.3	3.8	253 45.8	7 48.0	291.3	3.5	243 15.3	11 50.6	291.2	3.2
40	301 5.1	-10 10.6			290 5.6	-5 44.2			279 27.7	-1 7.6			269 1.4	3 27.9			258 37.1	7 51.6			248 6.5	11 53.8		
6 0	305 55.8	-10 7.0	290.7		294 56.7	-5 40.4			284 19.0	-1 3.7			273 52.7	3 31.7			263 28.4	7 55.1			252 57.6	11 56.9		
20	310 46.4	-10 3.4		3.6	299 47.7	-5 36.6	291.0	3.8	289 10.2	-0 59.8	291.2	3.9	278 44.1	3 35.4	291.3	3.7	268 19.7	7 58.6	291.3	3.5	257 48.8	12 0.1	291.2	3.2
40	315 37.1	-9 59.8			304 38.7	-5 32.8			294 1.5	-0 56.0			283 35.4	3 39.2			273 11.0	8 2.2			262 39.9	12 3.2		
7 0	320 27.7	-9 56.3	290.7		309 29.7	-5 29.0			298 52.7	-0 52.1			288 26.7	3 42.9			278 2.3	8 5.7			267 31.1	12 6.4		
20	325 18.4	-9 52.7		3.6	314 20.8	-5 25.2	291.0	3.8	303 44.0	-0 48.3	291.3	3.9	293 18.1	3 46.7	291.3	3.8	282 53.6	8 9.2	291.3	3.5	272 22.2	12 9.5	291.1	3.1
40	330 9.1	-9 49.1			319 11.8	-5 21.4			308 35.2	-0 44.4			298 9.4	3 50.4			287 44.9	8 12.7			277 13.4	12 12.7		
8 0	334 59.8	-9 45.5	290.7		324 2.8	-5 17.6			313 26.5	-0 40.5			303 0.8	3 54.2			292 36.2	8 16.2			282 4.5	12 15.8		
20	339 50.5	-9 41.9		3.6	328 53.9	-5 13.8	291.0	3.8	318 17.8	-0 36.7	291.3	3.8	307 52.1	3 57.9	291.3	3.7	297 27.5	8 19.7	291.3	3.5	286 55.7	12 18.9	291.1	3.1
40	344 41.2	-9 38.3			333 44.9	-5 9.9			323 9.0	-0 32.8			312 43.4	4 1.7			302 18.8	8 23.2			291 46.8	12 22.1		
9 0	349 31.9	-9 34.7	290.7		338 36.0	-5 6.1			328 0.3	-0 29.0			317 34.8	4 5.4			307 10.1	8 26.7			296 38.0	12 25.2		
20	354 22.6	-9 31.0		3.6	343 27.0	-5 2.3	291.1	3.8	332 51.5	-0 25.1	291.3	3.9	322 26.1	4 9.2	291.3	3.8	312 1.4	8 30.2	291.3	3.5	301 29.1	12 28.3	291.1	3.1
40	359 13.3	-9 27.4			348 18.1	-4 58.5			337 42.8	-0 21.3			327 17.4	4 12.9			316 52.6	8 33.7			306 20.2	12 31.4		
10 0	4 4.0	-9 23.8	290.7		353 9.2	-4 54.7			342 34.1	-0 17.4			332 8.8	4 16.7			321 43.9	8 37.2			311 11.4	12 34.5		
20	8 54.7	-9 20.2		3.6	358 0.2	-4 50.8	291.1	3.8	347 25.4	-0 13.6	291.3	3.8	337 0.1	4 20.4	291.3	3.7	326 35.2	8 40.6	291.3	3.5	316 2.5	12 37.6	291.1	3.1
40	13 45.5	-9 16.5			2 51.3	-4 47.0			352 16.6	-0 9.7			341 51.5	4 24.1			331 26.5	8 44.1			320 53.6	12 40.6		
11 0	18 36.2	-9 12.9	290.7		7 42.4	-4 43.2			357 7.9	-0 5.9			346 42.8	4 27.9			336 17.8	8 47.6			325 44.7	12 43.7		
20	23 26.9	-9 9.3		3.6	12 33.4	-4 39.4	291.1	3.8	1 59.2	-0 2.0	291.3	3.9	351 34.1	4 31.6	291.3	3.7	341 9.1	8 51.0	291.3	3.5	330 35.9	12 46.8	291.1	3.1
40	28 17.7	-9 5.6			17 24.5	-4 35.5			6 50.5	0 1.8			356 25.5	4 35.3			346 0.3	8 54.5			335 27.0	12 49.9		
12 0	33 8.4	-9 2.0	290.8		22 15.6	-4 31.7			11 41.7	0 5.7			1 16.8	4 39.0			350 51.6	8 58.0			340 18.1	12 52.9		
20	37 59.2	-8 58.3		3.7	27 6.7	-4 27.9	291.1	3.8	16 33.0	0 9.5	291.3	3.8	6 8.2	4 42.7	291.3	3.7	355 42.9	9 1.4	291.3	3.4	345 9.2	12 56.0	291.1	3.1
40	42 50.0	-8 54.7			31 57.8	-4 24.1			21 24.3	0 13.4			10 59.5	4 46.5			0 34.2	9 4.8			350 0.3	12 59.0		
13 0	47 40.7	-8 51.0	290.8		36 48.9	-4 20.2			26 15.6	0 17.2			15 50.8	4 50.2			5 25.4	9 8.3			354 51.4	13 2.1		
20	52 31.5	-8 47.4		3.7	41 40.0	-4 16.4	291.1	3.8	31 6.9	0 21.1	291.3	3.9	20 42.2	4 53.9	291.3	3.7	10 16.7	9 11.7	291.3	3.4	359 42.5	13 5.1	291.1	3.0
40	57 22.3	-8 43.7			46 31.1	-4 12.5			35 58.2	0 24.9			25 33.5	4 57.6			15 8.0	9 15.2			4 33.6	13 8.1		
14 0	62 13.1	-8 40.0	290.8		51 22.2	-4 8.7			40 49.4	0 28.8			30 24.9	5 1.3			19 59.2	9 18.6			9 24.7	13 11.1		
20	67 3.9	-8 36.4		3.7	56 13.3	-4 4.9	291.1	3.8	45 40.7	0 32.6	291.3	3.8	35 16.2	5 5.0	291.3	3.7	24 50.5	9 22.0	291.3	3.4	14 15.8	13 14.1	291.1	3.0
40	71 54.7	-8 32.7			61 4.4	-4 1.0			50 32.0	0 36.5			40 7.5	5 8.7			29 41.8	9 25.4			19 6.9	13 17.2		
15 0	76 45.5	-8 29.0	290.8		65 55.6	-3 57.2			55 23.3	0 40.3			44 58.9	5 12.4			34 33.0	9 28.8			23 58.0	13 20.2		
20	81 36.3	-8 25.3		3.7	70 46.7	-3 53.3	291.1	3.8	60 14.6	0 44.1	291.3	3.8	49 50.2	5 16.1	291.3	3.7	39 24.3	9 32.2	291.3	3.4	28 49.1	13 23.1	291.1	3.0
40	86 27.1	-8 21.6			75 37.8	-3 49.5			65 5.9	0 48.0			54 41.5	5 19.8			44 15.5	9 35.6			33 40.2	13 26.1		
16 0	91 17.9	-8 17.9	290.8		80 28.9	-3 45.7			69 57.2	0 51.8			59 32.9	5 23.4			49 6.8	9 39.0			38 31.2	13 29.1		
20	96 8.7	-8 14.2		3.7	85 20.1	-3 41.8	291.1	3.9	74 48.5	0 55.7	291.3	3.8	64 24.2	5 27.1	291.3	3.7	53 58.0	9 42.4	291.3	3.4	43 22.3	13 32.1	291.1	3.0
40	100 59.5	-8 10.6			90 11.2	-3 38.0			79 39.8	0 59.5			69 15.5	5 30.8			58 49.3	9 45.8			48 13.4	13 35.1		
17 0	105 50.4	-8 6.9	290.8		95 2.3	-3 34.1			84 31.1	1 3.3			74 6.9	5 34.5			63 40.5	9 49.2			53 4.4	13 38.0		
20	110 41.2	-8 3.2		3.7	99 53.5	-3 30.3	291.1	3.8	89 22.4	1 7.2	291.3	3.8	78 58.2	5 38.2	291.3	3.7	68 31.8	9 52.6	291.2	3.4	57 55.5	13 41.0	291.1	3.0
40	115 32.1	-7 59.4			104 44.6	-3 26.4			94 13.7	1 11.0			83 49.6	5 41.8			73 23.0	9 55.9			62 46.6	13 43.9		
18 0	120 22.9	-7 55.7	290.9		109 35.8	-3 22.6			99 5.0	1 14.8			88 40.9	5 45.5			78 14.3	9 59.3			67 37.6	13 46.9		
20	125 13.8	-7 52.0		3.7	114 26.9	-3 18.7	291.2	3.9	103 56.4	1 18.7	291.3	3.8	93 32.2	5 49.2	291.3	3.7	83 5.5	10 2.7	291.2	3.4	72 28.7	13 49.8	291.1	2.9
40	130 4.6	-7 48.3			119 18.1	-3 14.9			108 47.7	1 22.5			98 23.5	5 52.8			87 56.8	10 6.0			77 19.8	13 52.7		
19 0	134 55.5	-7 44.6	290.9		124 9.2	-3 11.0			113 39.0	1 26.3			103 14.9	5 56.5			92 48.0	10 9.4			82 10.8	13 55.6		
20	139 46.4	-7 40.9		3.7	129 0.4	-3 7.2	291.2	3.8	118 30.3	1 30.1	291.3	3.8	108 6.2	6 0.1	291.3	3.6	97 39.2	10 12.7	291.2	3.3	87 1.9	13 58.5	291.0	2.9
40	144 37.2	-7 37.1			133 51.6	-3 3.3			123 21.6	1 34.0			112 57.5	6 3.8			102 30.5	10 16.1			91 52.9	14 1.5		
20 0	149 28.1	-7 33.4	290.9		138 42.7	-2 59.5			128 12.9	1 37.8			117 48.9	6 7.4			107 21.7	10 19.4			96 43.9	14 4.4		
20	154 19.0	-7 29.7		3.7	143 33.9	-2 55.6	291.2	3.9	133 4.2	1 41.6	291.3	3.8	122 40.2	6 11.1	291.3	3.6	112 12.9	10 22.7	291.2	3.3	101 35.0	14 7.2	291.0	2.9
40	159 9.9	-7 26.0			148 25.1	-2 51.8			137 55.5	1 45.4			127 31.5	6 14.7			117 4.2	10 26.0			106 26.0	14 10.1		
21 0	164 0.8	-7 22.2	290.9		153 16.2	-2 47.9			142 46.9	1 49.2			132 22.9	6 18.3			121 55.4	10 29.4			111 17.0	14 13.0		
20	168 51.7	-7 18.5		3.7	158 7.4	-2 44.0	291.2	3.9	147 38.2	1 53.1	291.3	3.8	137 14.2	6 22.0	291.3	3.6	126 46.6	10 32.7	291.2	3.3	116 8.1	14 15.9	291.0	2.9
40	173 42.6	-7 14.7			162 58.6	-2 40.2			152 29.5	1 56.9			142 5.5	6 25.6			131 37.8	10 36.0			120 59.1	14 18.7		
22 0	178 33.5	-7 11.0	290.9		167 49.8	-2 36.3			157 20.8	2 0.7			146 56.8	6 29.2			136 29.1	10 39.3			125 50.1	14 21.6		
20	183 24.4	-7 7.3		3.7	172 41.0	-2 32.5	291.2	3.8	162 12.1	2 4.5	291.3	3.8	151 48.2	6 32.8	291.3	3.6	141 20.3	10 42.6	291.2	3.3	130 41.1	14 24.5	291.0	2.8
40	188 15.3	-7 3.5			177 32.2	-2 28.6			167 3.5	2 8.3			156 39.5	6 36.5			146 11.5	10 45.9			135 32.2	14 27.3		
23 0	193 6.2	-6 59.8	290.9		182 23.3	-2 24.8			171 54.8	2 12.1			161 30.8	6 40.1			151 2.7	10 49.2			140 23.2	14 30.1		
20	197 57.2	-6 56.0		3.8	187 14.5	-2 20.9	291.2	3.9	176 46.1	2 15.9	291.3	3.8	166 22.1	6 43.7	291.3	3.6	155 53.9	10 52.5	291.2	3.3	145 14.2	14 33.0	291.0	2.8
40	202 48.1	-6 52.2			192 5.7	-2 17.0			181 37.4	2 19.7			171 13.5	6 47.3			160 45.1	10 55.7			150 5.2	14 35.8		

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h m	25 Mar GHA	25 Mar Dec	d	26 Mar GHA	26 Mar Dec	d	27 Mar GHA	27 Mar Dec	d	28 Mar GHA	28 Mar Dec	d	29 Mar GHA	29 Mar Dec	d	30 Mar GHA	30 Mar Dec	d
0 0	154 56.2	14 38.6		143 59.3	17 41.1		132 43.3	19 58.7		121 8.7	21 24.6		109 18.7	21 53.5		97 18.6	21 22.0	
20	159 47.2	14 41.4	291.0 2.8	148 50.1	17 43.3	290.7 2.2	137 33.8	20 0.2	290.5 1.5	125 58.9	21 25.4	290.2 0.8	114 8.7	21 53.4	290.1 0.0	102 8.6	21 21.1	290.0 -0.9
40	164 38.2	14 44.2		153 40.8	17 45.6		142 24.3	20 1.8		130 49.1	21 26.1		118 58.8	21 53.4		106 58.5	21 20.3	
1 0	169 29.2	14 47.0		158 31.6	17 47.8		147 14.7	20 3.3		135 39.4	21 26.9		123 48.8	21 53.4		111 48.5	21 19.4	
20	174 20.2	14 49.8	291.0 2.8	163 22.3	17 50.0	290.7 2.2	152 5.2	20 4.8	290.5 1.5	140 29.6	21 27.7	290.2 0.8	128 38.9	21 53.3	290.0 -0.1	116 38.4	21 18.5	290.0 -0.9
40	179 11.2	14 52.6		168 13.0	17 52.2		156 55.7	20 6.4		145 19.8	21 28.5		133 28.9	21 53.3		121 28.4	21 17.5	
2 0	184 2.2	14 55.3		173 3.8	17 54.4		161 46.1	20 7.9		150 10.0	21 29.2		138 19.0	21 53.2		126 18.3	21 16.6	
20	188 53.1	14 58.1	291.0 2.8	177 54.5	17 56.6	290.7 2.2	166 36.6	20 9.4	290.4 1.5	155 0.3	21 29.9	290.2 0.7	143 9.0	21 53.1	290.0 -0.1	131 8.3	21 15.7	289.9 -1.0
40	193 44.1	15 0.9		182 45.2	17 58.7		171 27.0	20 10.9		159 50.5	21 30.7		147 59.1	21 53.0		135 58.2	21 14.7	
3 0	198 35.1	15 3.6		187 35.9	18 0.9		176 17.5	20 12.4		164 40.7	21 31.4		152 49.1	21 52.9		140 48.2	21 13.7	
20	203 26.1	15 6.3	291.0 2.7	192 26.6	18 3.1	290.7 2.1	181 7.9	20 13.8	290.4 1.4	169 30.9	21 32.1	290.2 0.7	157 39.2	21 52.8	290.0 -0.1	145 38.1	21 12.8	289.9 -1.0
40	208 17.0	15 9.1		197 17.3	18 5.2		185 58.4	20 15.3		174 21.1	21 32.8		162 29.2	21 52.6		150 28.1	21 11.8	
4 0	213 8.0	15 11.8		202 8.0	18 7.3		190 48.8	20 16.7		179 11.3	21 33.4		167 19.2	21 52.5		155 18.0	21 10.8	
20	217 58.9	15 14.5	291.0 2.7	206 58.7	18 9.5	290.7 2.1	195 39.2	20 18.2	290.4 1.4	184 1.5	21 34.1	290.2 0.7	172 9.3	21 52.3	290.0 -0.2	160 8.0	21 9.8	289.9 -1.0
40	222 49.9	15 17.2		211 49.4	18 11.6		200 29.7	20 19.6		188 51.7	21 34.8		176 59.3	21 52.1		164 57.9	21 8.7	
5 0	227 40.9	15 19.9		216 40.1	18 13.7		205 20.1	20 21.0		193 41.9	21 35.4		181 49.3	21 52.0		169 47.9	21 7.7	
20	232 31.8	15 22.6	290.9 2.7	221 30.8	18 15.8	290.7 2.1	210 10.5	20 22.4	290.4 1.4	198 32.1	21 36.1	290.2 0.6	186 39.3	21 51.8	290.0 -0.2	174 37.8	21 6.7	289.9 -1.1
40	237 22.8	15 25.3		226 21.5	18 17.9		215 0.9	20 23.8		203 22.3	21 36.7		191 29.4	21 51.6		179 27.7	21 5.6	
6 0	242 13.7	15 28.0		231 12.2	18 20.0		219 51.3	20 25.2		208 12.4	21 37.3		196 19.4	21 51.3		184 17.7	21 4.5	
20	247 4.6	15 30.7	290.9 2.7	236 2.8	18 22.1	290.7 2.1	224 41.7	20 26.6	290.4 1.4	213 2.6	21 37.9	290.2 0.6	201 9.4	21 51.1	290.0 -0.2	189 7.6	21 3.4	289.9 -1.1
40	251 55.6	15 33.4		240 53.5	18 24.1		229 32.1	20 28.0		217 52.8	21 38.5		205 59.4	21 50.9		193 57.6	21 2.3	
7 0	256 46.5	15 36.0		245 44.2	18 26.2		234 22.6	20 29.3		222 43.0	21 39.1		210 49.5	21 50.6		198 47.5	21 1.2	
20	261 37.4	15 38.7	290.9 2.7	250 34.9	18 28.2	290.7 2.0	239 13.0	20 30.7	290.4 1.3	227 33.1	21 39.6	290.2 0.5	215 39.5	21 50.4	290.0 -0.3	203 37.5	20 59.9	289.9 -1.1
40	266 28.4	15 41.3		255 25.5	18 30.3		244 3.4	20 32.0		232 23.3	21 40.2		220 29.5	21 50.1		208 27.4	20 59.0	
8 0	271 19.3	15 44.0		260 16.2	18 32.3		248 53.7	20 33.3		237 13.5	21 40.7		225 19.5	21 49.8		213 17.3	20 57.8	
20	276 10.2	15 46.6	290.9 2.6	265 6.8	18 34.3	290.6 2.0	253 44.1	20 34.6	290.4 1.3	242 3.7	21 41.3	290.2 0.5	230 9.5	21 49.5	290.0 -0.3	218 7.3	20 56.7	289.9 -1.2
40	281 1.1	15 49.2		269 57.5	18 36.3		258 34.5	20 36.0		246 53.8	21 41.8		234 59.5	21 49.2		222 57.2	20 55.5	
9 0	285 52.0	15 51.8		274 48.1	18 38.3		263 24.9	20 37.2		251 44.0	21 42.3		239 49.5	21 48.8		227 47.2	20 54.3	
20	290 42.9	15 54.4	290.9 2.6	279 38.8	18 40.3	290.6 2.0	268 15.3	20 38.5	290.4 1.3	256 34.1	21 42.8	290.2 0.5	244 39.5	21 48.5	290.0 -0.3	232 37.1	20 53.2	289.9 -1.2
40	295 33.8	15 57.0		284 29.4	18 42.3		273 5.7	20 39.8		261 24.3	21 43.3		249 29.5	21 48.2		237 27.0	20 51.9	
10 0	300 24.7	15 59.6		289 20.0	18 44.3		277 56.0	20 41.1		266 14.4	21 43.8		254 19.5	21 47.8		242 17.0	20 50.7	
20	305 15.6	16 2.2	290.9 2.6	294 10.7	18 46.3	290.6 2.0	282 46.4	20 42.3	290.4 1.2	271 4.6	21 44.2	290.1 0.4	259 9.6	21 47.4	290.0 -0.4	247 6.9	20 49.5	289.9 -1.2
40	310 6.5	16 4.8		299 1.3	18 48.2		287 36.8	20 43.6		275 54.7	21 44.7		263 59.6	21 47.1		251 56.8	20 48.3	
11 0	314 57.4	16 7.3		303 51.9	18 50.2		292 27.1	20 44.8		280 44.9	21 45.1		268 49.6	21 46.7		256 46.8	20 47.0	
20	319 48.3	16 9.9	290.9 2.6	308 42.5	18 52.1	290.6 1.9	297 17.5	20 46.0	290.4 1.2	285 35.0	21 45.6	290.1 0.4	273 39.6	21 46.3	290.0 -0.4	261 36.7	20 45.8	289.9 -1.3
40	324 39.2	16 12.4		313 33.2	18 54.0		302 7.8	20 47.2		290 25.2	21 46.0		278 29.6	21 45.8		266 26.6	20 44.5	
12 0	329 30.1	16 15.0		318 23.8	18 55.9		306 58.2	20 48.4		295 15.3	21 46.4		283 19.5	21 45.4		271 16.6	20 43.2	
20	334 21.0	16 17.5	290.9 2.5	323 14.4	18 57.9	290.6 1.9	311 48.5	20 49.6	290.3 1.2	300 5.4	21 46.8	290.1 0.4	288 9.5	21 45.0	290.0 -0.5	276 6.5	20 41.9	289.9 -1.3
40	339 11.8	16 20.1		328 5.0	18 59.8		316 38.9	20 50.8		304 55.6	21 47.2		292 59.5	21 44.5		280 56.4	20 40.6	
13 0	344 2.7	16 22.6		332 55.6	19 1.6		321 29.2	20 52.0		309 45.7	21 47.5		297 49.5	21 44.0		285 46.4	20 39.3	
20	348 53.6	16 25.1	290.9 2.5	337 46.2	19 3.5	290.6 1.9	326 19.6	20 53.1	290.3 1.1	314 35.8	21 47.9	290.1 0.4	302 39.5	21 43.6	290.0 -0.5	290 36.3	20 37.9	289.9 -1.4
40	353 44.4	16 27.6		342 36.8	19 5.4		331 9.9	20 54.3		319 26.0	21 48.3		307 29.5	21 43.1		295 26.2	20 36.6	
14 0	358 35.3	16 30.1		347 27.4	19 7.3		336 0.2	20 55.4		324 16.1	21 48.6		312 19.5	21 42.6		300 16.2	20 35.2	
20	3 26.1	16 32.6	290.9 2.5	352 18.0	19 9.1	290.6 1.8	340 50.6	20 56.6	290.3 1.1	329 6.2	21 48.9	290.1 0.3	317 9.5	21 42.1	290.0 -0.5	305 6.1	20 33.9	289.9 -1.4
40	8 17.0	16 35.0		357 8.5	19 11.0		345 40.9	20 57.7		333 56.3	21 49.3		321 59.5	21 41.5		309 56.0	20 32.5	
15 0	13 7.8	16 37.5		1 59.1	19 12.8		350 31.2	20 58.8		338 46.4	21 49.6		326 49.5	21 41.0		314 46.0	20 31.1	
20	17 58.7	16 40.0	290.8 2.5	6 49.7	19 14.6	290.6 1.8	355 21.5	20 59.9	290.3 1.1	343 36.5	21 49.9	290.1 0.3	331 39.4	21 40.4	290.0 -0.6	319 35.9	20 29.7	289.9 -1.4
40	22 49.5	16 42.4		11 40.3	19 16.4		0 11.8	21 1.0		348 26.7	21 50.1		336 29.4	21 39.9		324 25.8	20 28.3	
16 0	27 40.4	16 44.9		16 30.8	19 18.2		5 2.1	21 2.0		353 16.8	21 50.4		341 19.4	21 39.3		329 15.8	20 26.9	
20	32 31.2	16 47.3	290.8 2.4	21 21.4	19 20.0	290.6 1.8	9 52.5	21 3.1	290.3 1.1	358 6.9	21 50.7	290.1 0.3	346 9.4	21 38.7	290.0 -0.6	334 5.7	20 25.4	289.9 -1.5
40	37 22.0	16 49.8		26 12.0	19 21.8		14 42.8	21 4.1		2 57.0	21 50.9		350 59.4	21 38.1		338 55.6	20 24.0	
17 0	42 12.9	16 52.2		31 2.5	19 23.6		19 33.1	21 5.2		7 47.1	21 51.2		355 49.3	21 37.5		343 45.6	20 22.5	
20	47 3.7	16 54.6	290.8 2.4	35 53.1	19 25.4	290.5 1.8	24 23.4	21 6.2	290.3 1.0	12 37.2	21 51.4	290.1 0.2	0 39.3	21 36.9	290.0 -0.6	348 35.5	20 21.0	289.9 -1.5
40	51 54.5	16 57.0		40 43.6	19 27.1		29 13.7	21 7.2		17 27.3	21 51.6		5 29.3	21 36.3		353 25.4	20 19.5	
18 0	56 45.3	16 59.4		45 34.2	19 28.9		34 4.0	21 8.2		22 17.4	21 51.8		10 19.3	21 35.6		358 15.4	20 18.0	
20	61 36.1	17 1.8	290.8 2.4	50 24.7	19 30.6	290.5 1.7	38 54.2	21 9.2	290.3 1.0	27 7.5	21 52.0	290.1 0.2	15 9.2	21 35.0	290.0 -0.7	3 5.3	20 16.5	289.9 -1.5
40	66 26.9	17 4.2		55 15.2	19 32.3		43 44.5	21 10.2		31 57.5	21 52.2		19 59.2	21 34.3		7 55.2	20 15.0	
19 0	71 17.7	17 6.5		60 5.8	19 34.1		48 34.8	21 11.2		36 47.6	21 52.3		24 49.2	21 33.6		12 45.1	20 13.5	
20	76 8.5	17 8.9	290.8 2.4	64 56.3	19 35.8	290.5 1.7	53 25.1	21 12.2	290.3 1.0	41 37.7	21 52.5	290.1 0.2	29 39.1	21 32.9	290.0 -0.7	17 35.1	20 11.9	289.9 -1.6
40	80 59.3	17 11.2		69 46.8	19 37.5		58 15.4	21 13.1		46 27.8	21 52.6		34 29.1	21 32.2		22 25.0	20 10.4	
20 0	85 50.1	17 13.6		74 37.4	19 39.2		63 5.6	21 14.1		51 17.9	21 52.8		39 19.1	21 31.5		27 14.9	20 8.8	
20	90 40.9	17 15.9	290.8 2.3	79 27.9	19 40.8	290.5 1.7	67 55.9	21 15.0	290.3 0.9	56 8.0	21 52.9	290.1 0.1	44 9.0	21 30.8	290.0 -0.7	32 4.9	20 7.2	289.9 -1.6
40	95 31.7	17 18.3		84 18.4	19 42.5		72 46.2	21 15.9		60 58.0	21 53.0		48 59.0	21 30.0		36 54.8	20 5.6	
21 0	100 22.5	17 20.6		89 8.9	19 44.2		77 36.4	21 16.8		65 48.1	21 53.1		53 49.0	21 29.3		41 44.7	20 4.0	
20	105 13.3	17 22.9	290.8 2.3	93 59.4	19 45.8	290.5 1.6	82 26.7	21 17.7	290.3 0.9	70 38.2	21 53.2	290.1 0.1	58 38.9	21 28.5	290.0 -0.8	46 34.6	20 2.4	289.9 -1.6
40	110 4.0	17 25.2		98 49.9	19 47.5		87 17.0	21 18.6		75 28.3	21 53.3		63 28.9	21 27.8		51 24.6	20 0.8	
22 0	114 54.8	17 27.5		103 40.4	19 49.1		92 7.2	21 19.5		80 18.3	21 53.3		68 18.9	21 27.0		56 14.5	19 59.2	
20	119 45.6	17 29.8	290.8 2.3	108 30.9	19 50.7	290.5 1.6	96 57.5	21 20.4	290.2 0.9	85 8.4	21 53.4	290.1 0.0	73 8.8	21 26.2	290.0 -0.8	61 4.4	19 57.5	289.9 -1.7
40	124 36.3	17 32.1		113 21.4	19 52.3		101 47.7	21 21.2		89 58.5	21 53.4		77 58.8	21 25.4		65 54.4	19 55.8	
23 0	129 27.1	17 34.3		118 11.9	19 53.9		106 38.0	21 22.1		94 48.5	21 53.4		82 48.7	21 24.5		70 44.3	19 54.2	
20	134 17.8	17 36.6	290.8 2.3	123 2.4	19 55.5	290.5 1.6	111 28.2	21 22.9	290.2 0.8	99 38.6	21 53.5	290.1 0.0	87 38.7	21 23.7	290.0 -0.8	75 34.2	19 52.5	289.9 -1.7
40	139 8.6	17 38.8		127 52.9	19 57.1		116 18.4	21 23.7		104 28.6	21 53.5		92 28.7	21 22.9		80 24.1	19 50.8	

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h m	31 Mar GHA	31 Mar Dec	d	d'	1 Apr GHA	1 Apr Dec	d	d'	2 Apr GHA	2 Apr Dec	d	d'	3 Apr GHA	3 Apr Dec	d	d'	4 Apr GHA	4 Apr Dec	d	d'	5 Apr GHA	5 Apr Dec	d	d'
0 0	85 14.1	19 49.1			73 9.4	17 16.2			61 5.9	13 47.3			49 1.8	9 29.7			36 51.4	4 33.6			24 26.7	-0 46.5		
20	90 4.0	19 47.4	289.9	-1.7	77 59.3	17 13.6	289.9	-2.6	65 55.9	13 44.1	290.0	-3.3	53 51.7	9 25.8	289.9	-3.9	41 41.2	4 29.3	289.8	-4.3	29 16.2	-0 51.0	289.5	-4.5
40	94 53.9	19 45.6			82 49.2	17 11.1			70 45.9	13 40.8			58 41.6	9 21.9			46 31.0	4 25.0			34 5.7	-0 55.6		
1 0	99 43.9	19 43.9			87 39.2	17 8.5			75 35.8	13 37.5			63 31.5	9 18.0			51 20.7	4 20.7			38 55.2	-1 0.1		
20	104 33.8	19 42.1	289.9	-1.8	92 29.1	17 6.0	289.9	-2.6	80 25.8	13 34.2	290.0	-3.3	68 21.5	9 14.1	289.9	-3.9	56 10.5	4 16.3	289.8	-4.3	43 44.7	-1 4.7	289.5	-4.5
40	109 23.7	19 40.4			97 19.1	17 3.4			85 15.7	13 30.9			73 11.4	9 10.2			61 0.3	4 12.0			48 34.2	-1 9.2		
2 0	114 13.6	19 38.6			102 9.0	17 0.8			90 5.7	13 27.6			78 1.3	9 6.3			65 50.0	4 7.7			53 23.7	-1 13.7		
20	119 3.6	19 36.8	289.9	-1.8	106 59.0	16 58.2	289.9	-2.6	94 55.6	13 24.3	290.0	-3.3	82 51.2	9 2.4	289.9	-3.9	70 39.8	4 3.3	289.8	-4.4	58 13.2	-1 18.3	289.5	-4.5
40	123 53.5	19 35.0			111 48.9	16 55.6			99 45.6	13 21.0			87 41.1	8 58.5			75 29.6	3 59.0			63 2.6	-1 22.8		
3 0	128 43.4	19 33.2			116 38.9	16 53.0			104 35.6	13 17.6			92 31.0	8 54.5			80 19.3	3 54.6			67 52.1	-1 27.3		
20	133 33.4	19 31.4	289.9	-1.8	121 28.8	16 50.4	289.9	-2.6	109 25.5	13 14.3	290.0	-3.4	97 20.9	8 50.6	289.9	-3.9	85 9.1	3 50.2	289.7	-4.4	72 41.6	-1 31.9	289.5	-4.6
40	138 23.3	19 29.5			126 18.8	16 47.7			114 15.5	13 10.9			102 10.8	8 46.6			89 58.8	3 45.9			77 31.0	-1 36.4		
4 0	143 13.2	19 27.7			131 8.7	16 45.1			119 5.4	13 7.5			107 0.7	8 42.7			94 48.6	3 41.5			82 20.5	-1 41.0		
20	148 3.1	19 25.8	289.9	-1.9	135 58.7	16 42.4	289.9	-2.7	123 55.4	13 4.2	290.0	-3.4	111 50.6	8 38.7	289.9	-4.0	99 38.3	3 37.1	289.7	-4.4	87 10.0	-1 45.5	289.4	-4.5
40	152 53.1	19 24.0			140 48.6	16 39.8			128 45.3	13 0.8			116 40.5	8 34.7			104 28.0	3 32.8			91 59.4	-1 50.1		
5 0	157 43.0	19 22.1			145 38.6	16 37.1			133 35.3	12 57.4			121 30.4	8 30.8			109 17.8	3 28.4			96 48.9	-1 54.6		
20	162 32.9	19 20.2	289.9	-1.9	150 28.5	16 34.4	289.9	-2.7	138 25.2	12 54.0	290.0	-3.4	126 20.3	8 26.8	289.9	-4.0	114 7.5	3 24.0	289.7	-4.4	101 38.3	-1 59.1	289.4	-4.5
40	167 22.9	19 18.3			155 18.5	16 31.7			143 15.2	12 50.6			131 10.2	8 22.8			118 57.2	3 19.6			106 27.7	-2 3.7		
6 0	172 12.8	19 16.4			160 8.4	16 29.0			148 5.1	12 47.2			136 0.1	8 18.8			123 46.9	3 15.2			111 17.2	-2 8.2		
20	177 2.7	19 14.4	289.9	-1.9	164 58.4	16 26.2	289.9	-2.7	152 55.1	12 43.7	290.0	-3.5	140 50.0	8 14.8	289.9	-4.0	128 36.7	3 10.8	289.7	-4.4	116 6.6	-2 12.8	289.4	-4.6
40	181 52.7	19 12.5			169 48.3	16 23.5			157 45.0	12 40.3			145 39.9	8 10.8			133 26.4	3 6.4			120 56.0	-2 17.3		
7 0	186 42.6	19 10.6			174 38.3	16 20.8			162 35.0	12 36.8			150 29.7	8 6.8			138 16.1	3 2.0			125 45.4	-2 21.9		
20	191 32.5	19 8.6	289.9	-2.0	179 28.2	16 18.0	290.0	-2.8	167 24.9	12 33.4	290.0	-3.5	155 19.6	8 2.7	289.9	-4.0	143 5.8	2 57.6	289.7	-4.4	130 34.8	-2 26.4	289.4	-4.5
40	196 22.4	19 6.6			184 18.2	16 15.2			172 14.9	12 29.9			160 9.5	7 58.7			147 55.5	2 53.2			135 24.2	-2 31.0		
8 0	201 12.4	19 4.6			189 8.1	16 12.5			177 4.9	12 26.4			164 59.4	7 54.7			152 45.2	2 48.8			140 13.6	-2 35.5		
20	206 2.3	19 2.6	289.9	-2.0	193 58.1	16 9.7	290.0	-2.8	181 54.8	12 23.0	290.0	-3.5	169 49.3	7 50.6	289.9	-4.1	157 34.9	2 44.4	289.7	-4.4	145 3.0	-2 40.0	289.4	-4.5
40	210 52.2	19 0.6			198 48.0	16 6.9			186 44.8	12 19.5			174 39.2	7 46.6			162 24.6	2 39.9			149 52.4	-2 44.6		
9 0	215 42.2	18 58.6			203 38.0	16 4.1			191 34.7	12 16.0			179 29.0	7 42.5			167 14.3	2 35.5			154 41.8	-2 49.1		
20	220 32.1	18 56.6	289.9	-2.0	208 27.9	16 1.3	290.0	-2.8	196 24.7	12 12.5	289.9	-3.5	184 18.9	7 38.4	289.9	-4.1	172 4.0	2 31.1	289.7	-4.4	159 31.2	-2 53.7	289.4	-4.6
40	225 22.0	18 54.5			213 17.9	15 58.4			201 14.6	12 8.9			189 8.8	7 34.4			176 53.7	2 26.6			164 20.5	-2 58.2		
10 0	230 12.0	18 52.5			218 7.8	15 55.6			206 4.6	12 5.4			193 58.7	7 30.3			181 43.4	2 22.2			169 9.9	-3 2.8		
20	235 1.9	18 50.4	289.9	-2.1	222 57.8	15 52.8	290.0	-2.9	210 54.5	12 1.9	289.9	-3.5	198 48.5	7 26.2	289.9	-4.1	186 33.1	2 17.8	289.7	-4.4	173 59.3	-3 7.3	289.4	-4.5
40	239 51.8	18 48.3			227 47.7	15 49.9			215 44.4	11 58.3			203 38.4	7 22.1			191 22.8	2 13.3			178 48.6	-3 11.8		
11 0	244 41.8	18 46.3			232 37.7	15 47.0			220 34.4	11 54.8			208 28.3	7 18.0			196 12.4	2 8.9			183 38.0	-3 16.4		
20	249 31.7	18 44.2	289.9	-2.1	237 27.6	15 44.2	290.0	-2.9	225 24.3	11 51.2	289.9	-3.6	213 18.1	7 13.9	289.9	-4.1	201 2.1	2 4.4	289.7	-4.5	188 27.3	-3 20.9	289.3	-4.5
40	254 21.6	18 42.1			242 17.6	15 41.3			230 14.3	11 47.6			218 8.0	7 9.8			205 51.8	2 0.0			193 16.7	-3 25.5		
12 0	259 11.6	18 39.9			247 7.5	15 38.4			235 4.2	11 44.1			222 57.9	7 5.7			210 41.4	1 55.5			198 6.0	-3 30.0		
20	264 1.5	18 37.8	289.9	-2.1	251 57.5	15 35.5	290.0	-2.9	239 54.2	11 40.5	289.9	-3.6	227 47.7	7 1.5	289.9	-4.1	215 31.1	1 51.1	289.7	-4.5	202 55.3	-3 34.5	289.3	-4.5
40	268 51.4	18 35.7			256 47.4	15 32.5			244 44.1	11 36.9			232 37.6	6 57.4			220 20.7	1 46.6			207 44.6	-3 39.1		
13 0	273 41.4	18 33.5			261 37.4	15 29.6			249 34.1	11 33.3			237 27.4	6 53.3			225 10.4	1 42.1			212 34.0	-3 43.6		
20	278 31.3	18 31.3	289.9	-2.2	266 27.3	15 26.7	290.0	-2.9	254 24.0	11 29.6	289.9	-3.6	242 17.3	6 49.1	289.9	-4.2	230 0.1	1 37.7	289.6	-4.5	217 23.3	-3 48.1	289.3	-4.5
40	283 21.2	18 29.2			271 17.3	15 23.7			259 14.0	11 26.0			247 7.1	6 45.0			234 49.7	1 33.2			222 12.6	-3 52.7		
14 0	288 11.2	18 27.0			276 7.3	15 20.8			264 3.9	11 22.4			251 57.0	6 40.8			239 39.3	1 28.7			227 1.9	-3 57.2		
20	293 1.1	18 24.8	289.9	-2.2	280 57.2	15 17.8	290.0	-3.0	268 53.8	11 18.8	289.9	-3.7	256 46.8	6 36.7	289.8	-4.2	244 29.0	1 24.2	289.6	-4.5	231 51.2	-4 1.7	289.3	-4.5
40	297 51.0	18 22.6			285 47.2	15 14.8			273 43.8	11 15.1			261 36.7	6 32.5			249 18.6	1 19.8			236 40.5	-4 6.2		
15 0	302 41.0	18 20.3			290 37.1	15 11.8			278 33.7	11 11.4			266 26.5	6 28.3			254 8.2	1 15.3			241 29.8	-4 10.8		
20	307 30.9	18 18.1	289.9	-2.2	295 27.1	15 8.8	290.0	-3.0	283 23.7	11 7.8	289.9	-3.7	271 16.4	6 24.2	289.8	-4.2	258 57.9	1 10.8	289.6	-4.5	246 19.0	-4 15.3	289.3	-4.5
40	312 20.9	18 15.9			300 17.0	15 5.8			288 13.6	11 4.1			276 6.2	6 20.0			263 47.5	1 6.3			251 8.3	-4 19.8		
16 0	317 10.8	18 13.6			305 7.0	15 2.8			293 3.5	11 0.4			280 56.0	6 15.8			268 37.1	1 1.8			255 57.6	-4 24.3		
20	322 0.7	18 11.3	289.9	-2.3	309 56.9	14 59.7	290.0	-3.0	297 53.5	10 56.7	289.9	-3.7	285 45.9	6 11.6	289.8	-4.2	273 26.7	0 57.3	289.6	-4.5	260 46.8	-4 28.9	289.3	-4.5
40	326 50.7	18 9.1			314 46.9	14 56.7			302 43.4	10 53.0			290 35.7	6 7.4			278 16.3	0 52.8			265 36.1	-4 33.4		
17 0	331 40.6	18 6.8			319 36.9	14 53.7			307 33.3	10 49.3			295 25.5	6 3.2			283 5.9	0 48.3			270 25.3	-4 37.9		
20	336 30.5	18 4.5	289.9	-2.3	324 26.8	14 50.6	290.0	-3.1	312 23.3	10 45.6	289.9	-3.7	300 15.4	5 59.0	289.8	-4.2	287 55.5	0 43.8	289.6	-4.5	275 14.6	-4 42.4	289.2	-4.5
40	341 20.5	18 2.2			329 16.8	14 47.5			317 13.2	10 41.9			305 5.2	5 54.8			292 45.1	0 39.3			280 3.8	-4 46.9		
18 0	346 10.4	17 59.8			334 6.7	14 44.4			322 3.2	10 38.2			309 55.0	5 50.5			297 34.7	0 34.8			284 53.1	-4 51.4		
20	351 0.4	17 57.5	289.9	-2.3	338 56.7	14 41.4	290.0	-3.1	326 53.1	10 34.4	289.9	-3.8	314 44.8	5 46.3	289.8	-4.2	302 24.3	0 30.3	289.6	-4.5	289 42.3	-4 55.9	289.2	-4.5
40	355 50.3	17 55.2			343 46.6	14 38.3			331 43.0	10 30.7			319 34.7	5 42.1			307 13.9	0 25.8			294 31.5	-5 0.5		
19 0	0 40.2	17 52.8			348 36.6	14 35.1			336 32.9	10 26.9			324 24.5	5 37.8			312 3.5	0 21.3			299 20.7	-5 5.0		
20	5 30.2	17 50.4	289.9	-2.4	353 26.6	14 32.0	290.0	-3.1	341 22.9	10 23.2	289.9	-3.8	329 14.3	5 33.6	289.8	-4.2	316 53.1	0 16.8	289.6	-4.5	304 9.9	-5 9.5	289.2	-4.5
40	10 20.1	17 48.1			358 16.5	14 28.9			346 12.8	10 19.4			334 4.1	5 29.4			321 42.6	0 12.3			308 59.1	-5 14.0		
20 0	15 10.1	17 45.7			3 6.5	14 25.8			351 2.7	10 15.6			338 53.9	5 25.1			326 32.2	0 7.8			313 48.3	-5 18.5		
20	19 60.0	17 43.3	289.9	-2.4	7 56.4	14 22.6	290.0	-3.2	355 52.7	10 11.8	289.9	-3.8	343 43.7	5 20.8	289.8	-4.3	331 21.8	0 3.3	289.6	-4.5	318 37.5	-5 23.0	289.2	-4.5
40	24 49.9	17 40.9			12 46.4	14 19.5			0 42.6	10 8.0			348 33.5	5 16.6			336 11.3	-0 1.2			323 26.7	-5 27.4		
21 0	29 39.9	17 38.4			17 36.3	14 16.3			5 32.5	10 4.2			353 23.3	5 12.3			341 0.9	-0 5.8			328 15.9	-5 31.9		
20	34 29.8	17 36.0	289.9	-2.4	22 26.3	14 13.1	290.0	-3.2	10 22.4	10 0.4	289.9	-3.8	358 13.1	5 8.0	289.8	-4.3	345 50.4	-0 10.3	289.5	-4.5	333 5.1	-5 36.4	289.2	-4.5
40	39 19.8	17 33.6			27 16.3	14 9.9			15 12.4	9 56.6			3 2.9	5 3.7			350 40.0	-0 14.8			337 54.2	-5 40.9		
22 0	44 9.7	17 31.1			32 6.2	14 6.7			20 2.3	9 52.8			7 52.7	4 59.5			355 29.5	-0 19.3			342 43.4	-5 45.4		
20	48 59.6	17 28.6	289.9	-2.5	36 56.2	14 3.5	290.0	-3.2	24 52.2	9 49.0	289.9	-3.8	12 42.5	4 55.2	289.8	-4.3	0 19.1	-0 23.9	289.5	-4.5	347 32.5	-5 49.9	289.1	-4.5
40	53 49.6	17 26.2			41 46.1	14 0.3			29 42.1	9 45.1			17 32.3	4 50.9			5 8.6	-0 28.4			352 21.7	-5 54.3		
23 0	58 39.5	17 23.7			46 36.1	13 57.1			34 32.0	9 41.3			22 22.1	4 46.6			9 58.1	-0 32.9			357 10.8	-5 58.8		
20	63 29.5	17 21.2	289.9	-2.5	51 26.0	13 53.8	290.0	-3.3	39 22.0	9 37.4	289.9	-3.9	27 11.9	4 42.3	289.8	-4.3	14 47.7	-0 37.4	289.5	-4.5	1 60.0	-6 3.3	289.1	-4.5
40	68 19.4	17 18.7			56 16.0	13 50.6			44 11.9	9 33.6			32 1.7	4 38.0			19 37.2	-0 42.0			6 49.1	-6 7.8		

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h m	6 Apr GHA	6 Apr Dec	d	7 Apr GHA	7 Apr Dec	d	8 Apr GHA	8 Apr Dec	d	9 Apr GHA	9 Apr Dec	d	10 Apr GHA	10 Apr Dec	d	11 Apr GHA	11 Apr Dec	d
0 0	11 38.2	-6 12.2		358 17.9	-11 21.1		344 21.8	-15 48.9		329 54.1	-19 12.4		315 9.1	-21 14.7		300 28.4	-21 48.2	
20	16 27.3	-6 16.7	289.1 -4.5	3 6.5	-11 25.2	288.6 -4.1	349 9.9	-15 52.2	288.1 -3.3	334 41.9	-19 14.7	287.8 -2.3	319 56.8	-21 15.8	287.7 -1.1	305 16.3	-21 48.0	287.9 0.2
40	21 16.5	-6 21.1		7 55.1	-11 29.2		353 58.1	-15 55.5		339 29.7	-19 17.0		324 44.5	-21 16.9		310 4.2	-21 47.8	
1 0	26 5.6	-6 25.6		12 43.7	-11 33.3		358 46.2	-15 58.8		344 17.5	-19 19.3		329 32.1	-21 17.9		314 52.1	-21 47.6	
20	30 54.7	-6 30.0	289.1 -4.4	17 32.4	-11 37.3	288.6 -4.0	3 34.3	-16 2.0	288.1 -3.3	349 5.3	-19 21.5	287.8 -2.2	334 19.8	-21 18.9	287.7 -1.0	319 40.1	-21 47.4	287.9 0.2
40	35 43.8	-6 34.5		22 21.0	-11 41.3		8 22.4	-16 5.3		353 53.0	-19 23.7		339 7.5	-21 20.0		324 28.0	-21 47.2	
2 0	40 32.8	-6 38.9		27 9.6	-11 45.3		13 10.5	-16 8.6		358 40.8	-19 25.9		343 55.2	-21 20.9		329 15.9	-21 47.0	
20	45 21.9	-6 43.4	289.1 -4.4	31 58.1	-11 49.4	288.6 -4.0	17 58.7	-16 11.8	288.1 -3.2	3 28.5	-19 28.1	287.8 -2.2	348 42.9	-21 21.9	287.7 -1.0	334 3.9	-21 46.7	287.9 0.3
40	50 11.0	-6 47.8		36 46.7	-11 53.4		22 46.8	-16 15.0		8 16.3	-19 30.3		353 30.6	-21 22.9		338 51.8	-21 46.4	
3 0	55 0.1	-6 52.2		41 35.3	-11 57.3		27 34.8	-16 18.2		13 4.1	-19 32.4		358 18.3	-21 23.8		343 39.8	-21 46.1	
20	59 49.1	-6 56.7	289.1 -4.4	46 23.9	-12 1.3	288.6 -4.0	32 22.9	-16 21.4	288.1 -3.2	17 51.8	-19 34.6	287.8 -2.1	3 6.0	-21 24.7	287.7 -0.9	348 27.8	-21 45.8	288.0 0.3
40	64 38.2	-7 1.1		51 12.4	-12 5.3		37 11.0	-16 24.6		22 39.6	-19 36.7		7 53.7	-21 25.6		353 15.7	-21 45.5	
4 0	69 27.2	-7 5.5		56 1.0	-12 9.3		41 59.1	-16 27.8		27 27.3	-19 38.8		12 41.4	-21 26.5		358 3.7	-21 45.2	
20	74 16.3	-7 9.9	289.0 -4.4	60 49.5	-12 13.2	288.5 -3.9	46 47.2	-16 31.0	288.1 -3.1	32 15.1	-19 40.9	287.7 -2.1	17 29.0	-21 27.4	287.7 -0.9	2 51.7	-21 44.8	288.0 0.4
40	79 5.3	-7 14.3		65 38.1	-12 17.2		51 35.2	-16 34.1		37 2.8	-19 43.0		22 16.8	-21 28.2		7 39.7	-21 44.4	
5 0	83 54.3	-7 18.8		70 26.6	-12 21.1		56 23.3	-16 37.2		41 50.5	-19 45.0		27 4.5	-21 29.1		12 27.7	-21 44.1	
20	88 43.4	-7 23.2	289.0 -4.4	75 15.1	-12 25.0	288.5 -3.9	61 11.3	-16 40.4	288.0 -3.1	46 38.3	-19 47.1	287.7 -2.0	31 52.2	-21 29.9	287.7 -0.8	17 15.7	-21 43.6	288.0 0.4
40	93 32.4	-7 27.6		80 3.7	-12 29.0		65 59.4	-16 43.5		51 26.0	-19 49.1		36 39.9	-21 30.7		22 3.7	-21 43.2	
6 0	98 21.4	-7 32.0		84 52.2	-12 32.9		70 47.4	-16 46.6		56 13.7	-19 51.1		41 27.6	-21 31.5		26 51.7	-21 42.8	
20	103 10.4	-7 36.3	289.0 -4.4	89 40.7	-12 36.8	288.5 -3.9	75 35.5	-16 49.7	288.0 -3.1	61 1.5	-19 53.1	287.7 -2.0	46 15.3	-21 32.2	287.7 -0.7	31 39.7	-21 42.3	288.0 0.5
40	107 59.4	-7 40.7		94 29.2	-12 40.7		80 23.5	-16 52.7		65 49.2	-19 55.1		51 3.0	-21 33.0		36 27.7	-21 41.9	
7 0	112 48.4	-7 45.1		99 17.7	-12 44.5		85 11.5	-16 55.8		70 36.9	-19 57.1		55 50.7	-21 33.7		41 15.7	-21 41.4	
20	117 37.4	-7 49.5	289.0 -4.4	104 6.2	-12 48.4	288.5 -3.9	89 59.5	-16 58.8	288.0 -3.0	75 24.7	-19 59.0	287.7 -1.9	60 38.4	-21 34.4	287.7 -0.7	46 3.8	-21 40.9	288.0 0.5
40	122 26.3	-7 53.9		108 54.6	-12 52.3		94 47.6	-17 1.8		80 12.4	-20 0.9		65 26.1	-21 35.1		50 51.8	-21 40.3	
8 0	127 15.3	-7 58.2		113 43.1	-12 56.1		99 35.6	-17 4.9		85 0.1	-20 2.8		70 13.9	-21 35.8		55 39.9	-21 39.8	
20	132 4.3	-8 2.6	289.0 -4.4	118 31.6	-13 0.0	288.5 -3.9	104 23.6	-17 7.9	288.0 -3.0	89 47.8	-20 4.7	287.7 -1.9	75 1.6	-21 36.5	287.7 -0.6	60 27.9	-21 39.3	288.1 0.6
40	136 53.2	-8 7.0		123 20.0	-13 3.8		109 11.6	-17 10.8		94 35.5	-20 6.6		79 49.3	-21 37.1		65 16.0	-21 38.7	
9 0	141 42.2	-8 11.3		128 8.5	-13 7.7		113 59.6	-17 13.8		99 23.2	-20 8.5		84 37.0	-21 37.7		70 4.1	-21 38.1	
20	146 31.1	-8 15.7	288.9 -4.4	132 56.9	-13 11.5	288.4 -3.8	118 47.5	-17 16.8	288.0 -2.9	104 10.9	-20 10.3	287.7 -1.8	89 24.8	-21 38.4	287.7 -0.6	74 52.1	-21 37.5	288.1 0.6
40	151 20.0	-8 20.0		137 45.4	-13 15.3		123 35.5	-17 19.7		108 58.6	-20 12.2		94 12.5	-21 38.9		79 40.2	-21 36.9	
10 0	156 9.0	-8 24.4		142 33.8	-13 19.1		128 23.5	-17 22.6		113 46.4	-20 14.0		99 0.2	-21 39.5		84 28.3	-21 36.3	
20	160 57.9	-8 28.7	288.9 -4.3	147 22.2	-13 22.9	288.4 -3.8	133 11.5	-17 25.6	288.0 -2.9	118 34.1	-20 15.8	287.7 -1.8	103 48.0	-21 40.1	287.7 -0.5	89 16.4	-21 35.6	288.1 0.7
40	165 46.8	-8 33.0		152 10.6	-13 26.6		137 59.4	-17 28.5		123 21.8	-20 17.5		108 35.7	-21 40.6		94 4.5	-21 35.0	
11 0	170 35.7	-8 37.3		156 59.1	-13 30.4		142 47.4	-17 31.4		128 9.5	-20 19.3		113 23.4	-21 41.1		98 52.6	-21 34.3	
20	175 24.6	-8 41.7	288.9 -4.3	161 47.5	-13 34.2	288.4 -3.8	147 35.4	-17 34.2	287.9 -2.8	132 57.2	-20 21.0	287.7 -1.7	118 11.2	-21 41.6	287.8 -0.5	103 40.7	-21 33.6	288.1 0.7
40	180 13.5	-8 46.0		166 35.9	-13 37.9		152 23.3	-17 37.1		137 44.9	-20 22.8		122 58.9	-21 42.1		108 28.9	-21 32.9	
12 0	185 2.4	-8 50.3		171 24.2	-13 41.7		157 11.2	-17 39.9		142 32.5	-20 24.5		127 46.7	-21 42.6		113 17.0	-21 32.1	
20	189 51.3	-8 54.6	288.9 -4.3	176 12.6	-13 45.4	288.4 -3.7	161 59.2	-17 42.8	287.9 -2.8	147 20.2	-20 26.2	287.7 -1.7	132 34.5	-21 43.1	287.8 -0.4	118 5.1	-21 31.4	288.1 0.7
40	194 40.2	-8 58.9		181 1.0	-13 49.1		166 47.1	-17 45.6		152 7.9	-20 27.9		137 22.2	-21 43.5		122 53.3	-21 30.6	
13 0	199 29.0	-9 3.2		185 49.4	-13 52.8		171 35.0	-17 48.4		156 55.6	-20 29.5		142 10.0	-21 43.9		127 41.4	-21 29.9	
20	204 17.9	-9 7.5	288.9 -4.3	190 37.7	-13 56.5	288.4 -3.7	176 23.0	-17 51.2	287.9 -2.8	161 43.3	-20 31.2	287.7 -1.6	146 57.7	-21 44.3	287.8 -0.4	132 29.6	-21 29.1	288.2 0.8
40	209 6.8	-9 11.7		195 26.1	-14 0.2		181 10.9	-17 53.9		166 31.0	-20 32.8		151 45.5	-21 44.7		137 17.8	-21 28.3	
14 0	213 55.6	-9 16.0		200 14.4	-14 3.9		185 58.8	-17 56.7		171 18.7	-20 34.4		156 33.3	-21 45.1		142 6.0	-21 27.5	
20	218 44.5	-9 20.3	288.8 -4.3	205 2.8	-14 7.5	288.3 -3.6	190 46.7	-17 59.4	287.9 -2.7	176 6.4	-20 36.0	287.7 -1.6	161 21.1	-21 45.4	287.8 -0.3	146 54.1	-21 26.6	288.2 0.9
40	223 33.3	-9 24.5		209 51.1	-14 11.2		195 34.6	-18 2.2		180 54.1	-20 37.6		166 8.8	-21 45.8		151 42.3	-21 25.8	
15 0	228 22.1	-9 28.8		214 39.4	-14 14.8		200 22.5	-18 4.9		185 41.7	-20 39.1		170 56.6	-21 46.1		156 30.5	-21 24.9	
20	233 10.9	-9 33.0	288.8 -4.2	219 27.8	-14 18.5	288.3 -3.6	205 10.4	-18 7.6	287.9 -2.7	190 29.4	-20 40.7	287.7 -1.5	175 44.4	-21 46.4	287.8 -0.3	161 18.7	-21 24.0	288.2 0.9
40	237 59.8	-9 37.3		224 16.1	-14 22.1		209 58.3	-18 10.3		195 17.1	-20 42.2		180 32.2	-21 46.6		166 6.9	-21 23.1	
16 0	242 48.6	-9 41.5		229 4.4	-14 25.7		214 46.2	-18 12.9		200 4.8	-20 43.7		185 20.0	-21 46.9		170 55.2	-21 22.2	
20	247 37.4	-9 45.7	288.8 -4.2	233 52.7	-14 29.3	288.3 -3.6	219 34.1	-18 15.6	287.9 -2.7	204 52.5	-20 45.2	287.7 -1.5	190 7.8	-21 47.2	287.8 -0.2	175 43.4	-21 21.3	288.2 0.9
40	252 26.2	-9 50.0		238 41.0	-14 32.9		224 21.9	-18 18.2		209 40.2	-20 46.7		194 55.6	-21 47.4		180 31.6	-21 20.3	
17 0	257 14.9	-9 54.2		243 29.3	-14 36.4		229 9.8	-18 20.9		214 27.8	-20 48.1		199 43.4	-21 47.6		185 19.9	-21 19.4	
20	262 3.7	-9 58.4	288.8 -4.2	248 17.5	-14 40.0	288.3 -3.6	233 57.7	-18 23.5	287.9 -2.6	219 15.5	-20 49.6	287.7 -1.4	204 31.2	-21 47.8	287.8 -0.2	190 8.1	-21 18.4	288.3 1.0
40	266 52.5	-10 2.6		253 5.8	-14 43.6		238 45.5	-18 26.1		224 3.2	-20 51.0		209 19.0	-21 48.0		194 56.4	-21 17.4	
18 0	271 41.3	-10 6.8		257 54.1	-14 47.1		243 33.4	-18 28.6		228 50.9	-20 52.4		214 6.9	-21 48.1		199 44.7	-21 16.4	
20	276 30.0	-10 11.0	288.8 -4.2	262 42.3	-14 50.6	288.3 -3.5	248 21.3	-18 31.2	287.8 -2.6	233 38.5	-20 53.8	287.7 -1.4	218 54.7	-21 48.3	287.8 -0.1	204 32.9	-21 15.4	288.3 1.0
40	281 18.8	-10 15.2		267 30.6	-14 54.2		253 9.1	-18 33.8		238 26.2	-20 55.1		223 42.5	-21 48.4		209 21.2	-21 14.4	
19 0	286 7.5	-10 19.3		272 18.8	-14 57.7		257 56.9	-18 36.3		243 13.9	-20 56.5		228 30.3	-21 48.5		214 9.5	-21 13.3	
20	290 56.3	-10 23.5	288.7 -4.2	277 7.1	-15 1.2	288.2 -3.5	262 44.8	-18 38.8	287.8 -2.5	248 1.6	-20 57.8	287.7 -1.3	233 18.2	-21 48.6	287.8 -0.1	218 57.8	-21 12.2	288.3 1.1
40	295 45.0	-10 27.7		281 55.3	-15 4.6		267 32.6	-18 41.3		252 49.3	-20 59.2		238 6.0	-21 48.7		223 46.1	-21 11.2	
20 0	300 33.7	-10 31.8		286 43.5	-15 8.1		272 20.5	-18 43.8		257 36.9	-21 0.5		242 53.9	-21 48.8		228 34.4	-21 10.1	
20	305 22.4	-10 36.0	288.7 -4.2	291 31.8	-15 11.6	288.2 -3.5	277 8.3	-18 46.3	287.8 -2.5	262 24.6	-21 1.7	287.7 -1.3	247 41.7	-21 48.8	287.9 0.0	233 22.8	-21 9.0	288.3 1.1
40	310 11.1	-10 40.1		296 20.0	-15 15.0		281 56.1	-18 48.7		267 12.3	-21 3.0		252 29.6	-21 48.8		238 11.1	-21 7.8	
21 0	314 59.8	-10 44.3		301 8.2	-15 18.5		286 43.9	-18 51.2		271 60.0	-21 4.3		257 17.4	-21 48.8		242 59.4	-21 6.7	
20	319 48.5	-10 48.4	288.7 -4.1	305 56.4	-15 21.9	288.2 -3.4	291 31.7	-18 53.6	287.8 -2.4	276 47.6	-21 5.5	287.7 -1.2	262 5.3	-21 48.8	287.9 0.0	247 47.8	-21 5.6	288.4 1.2
40	324 37.2	-10 52.5		310 44.6	-15 25.3		296 19.6	-18 56.0		281 35.3	-21 6.7		266 53.2	-21 48.8		252 36.2	-21 4.4	
22 0	329 25.9	-10 56.6		315 32.8	-15 28.7		301 7.4	-18 58.4		286 23.0	-21 7.9		271 41.0	-21 48.8		257 24.5	-21 3.2	
20	334 14.6	-11 0.7	288.7 -4.1	320 21.0	-15 32.1	288.2 -3.4	305 55.2	-19 0.8	287.8 -2.4	291 10.7	-21 9.1	287.7 -1.2	276 28.9	-21 48.7	287.9 0.1	262 12.9	-21 2.0	288.4 1.2
40	339 3.3	-11 4.8		325 9.1	-15 35.5		310 43.0	-19 3.1		295 58.4	-21 10.3		281 16.8	-21 48.6		267 1.3	-21 0.8	
23 0	343 51.9	-11 8.9		329 57.3	-15 38.8		315 30.8	-19 5.5		300 46.0	-21 11.4		286 4.7	-21 48.5		271 49.7	-20 59.6	
20	348 40.6	-11 13.0	288.6 -4.1	334 45.5	-15 42.2	288.2 -3.4	320 18.6	-19 7.8	287.8 -2.3	305 33.7	-21 12.5	287.7 -1.1	290 52.6	-21 48.4	287.9 0.1	276 38.1	-20 58.3	288.4 1.3
40	353 29.2	-11 17.1		339 33.6	-15 45.5		325 6.4	-19 10.1		310 21.4	-21 13.6		295 40.5	-21 48.3		281 26.5	-20 57.1	

2012 Moon

h m	12 Apr GHA	d	12 Apr Dec	d'	13 Apr GHA	d	13 Apr Dec	d'	14 Apr GHA	d	14 Apr Dec	d'	15 Apr GHA	d	15 Apr Dec	d'	16 Apr GHA	d	16 Apr Dec	d'	17 Apr GHA	d	17 Apr Dec	d'
0 0	286 14.9	288.4	-20 55.8	1.3	272 45.2	289.1	-18 49.1	2.2	260 5.8	289.8	-15 43.8	2.9	248 14.6	290.4	-11 56.2	3.4	237 3.2	290.9	-7 41.2	3.7	226 20.7	291.2	-3 11.7	3.8
20	291 3.3		-20 54.5		277 34.3		-18 46.9		264 55.7		-15 40.9		253 5.0		-11 52.8		241 54.1		-7 37.5		231 11.9		-3 7.9	
40	295 51.8		-20 53.2		282 23.4		-18 44.7		269 45.5		-15 37.9		257 55.4		-11 49.4		246 45.0		-7 33.9		236 3.1		-3 4.2	
1 0	300 40.2	288.5	-20 51.9	1.3	287 12.5	289.1	-18 42.4	2.2	274 35.3	289.8	-15 35.0	2.9	262 45.9	290.5	-11 46.0	3.4	251 35.9	290.9	-7 30.2	3.7	240 54.4	291.2	-3 0.4	3.8
20	305 28.7		-20 50.6		292 1.7		-18 40.2		279 25.1		-15 32.1		267 36.3		-11 42.6		256 26.8		-7 26.5		245 45.6		-2 56.6	
40	310 17.1		-20 49.2		296 50.8		-18 37.9		284 15.0		-15 29.1		272 26.8		-11 39.2		261 17.8		-7 22.8		250 36.8		-2 52.8	
2 0	315 5.6	288.5	-20 47.9	1.4	301 39.9	289.2	-18 35.7	2.3	289 4.8	289.9	-15 26.2	3.0	277 17.3	290.5	-11 35.8	3.4	266 8.7	290.9	-7 19.1	3.7	255 28.1	291.2	-2 49.0	3.8
20	319 54.1		-20 46.5		306 29.1		-18 33.4		293 54.7		-15 23.2		282 7.7		-11 32.4		270 59.6		-7 15.5		260 19.3		-2 45.2	
40	324 42.6		-20 45.1		311 18.3		-18 31.1		298 44.6		-15 20.3		286 58.2		-11 28.9		275 50.6		-7 11.8		265 10.6		-2 41.4	
3 0	329 31.1	288.5	-20 43.7	1.4	316 7.5	289.2	-18 28.8	2.3	303 34.4	289.9	-15 17.3	3.0	291 48.7	290.5	-11 25.5	3.4	280 41.5	291.0	-7 8.1	3.7	270 1.8	291.3	-2 37.6	3.8
20	334 19.6		-20 42.3		320 56.7		-18 26.5		308 24.3		-15 14.3		296 39.2		-11 22.1		285 32.5		-7 4.4		274 53.1		-2 33.8	
40	339 8.1		-20 40.9		325 45.9		-18 24.2		313 14.2		-15 11.3		301 29.7		-11 18.7		290 23.4		-7 0.7		279 44.3		-2 30.0	
4 0	343 56.6	288.5	-20 39.5	1.5	330 35.1	289.2	-18 21.8	2.3	318 4.1	289.9	-15 8.3	3.0	306 20.2	290.5	-11 15.2	3.4	295 14.4	291.0	-6 57.0	3.7	284 35.6	291.3	-2 26.2	3.8
20	348 45.1		-20 38.0		335 24.3		-18 19.5		322 54.1		-15 5.3		311 10.7		-11 11.8		300 5.4		-6 53.3		289 26.8		-2 22.4	
40	353 33.7		-20 36.5		340 13.5		-18 17.1		327 44.0		-15 2.3		316 1.2		-11 8.3		304 56.4		-6 49.6		294 18.1		-2 18.6	
5 0	358 22.2	288.6	-20 35.0	1.5	345 2.8	289.3	-18 14.8	2.4	332 33.9	290.0	-14 59.3	3.0	320 51.8	290.5	-11 4.9	3.5	309 47.3	291.0	-6 45.9	3.7	299 9.4	291.3	-2 14.8	3.8
20 3	10.8		-20 33.6		349 52.0		-18 12.4		337 23.9		-14 56.3		325 42.3		-11 1.4		314 38.3		-6 42.2		304 0.6		-2 11.0	
40 7	59.4		-20 32.0		354 41.3		-18 10.0		342 13.8		-14 53.3		330 32.8		-10 57.9		319 29.3		-6 38.4		308 51.9		-2 7.2	
6 0	12 47.9	288.6	-20 30.5	1.5	359 30.6	289.3	-18 7.6	2.4	347 3.8	290.0	-14 50.2	3.0	335 23.4	290.6	-10 54.5	3.5	324 20.3	291.0	-6 34.7	3.7	313 43.2	291.3	-2 3.4	3.8
20 17	36.5		-20 29.0		4 19.9		-18 5.2		351 53.7		-14 47.2		340 14.0		-10 51.0		329 11.3		-6 31.0		318 34.5		-1 59.6	
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7 0	27 13.7	288.6	-20 25.9	1.6	13 58.5	289.3	-18 0.4	2.5	1 33.7	290.0	-14 41.1	3.1	349 55.1	290.6	-10 44.0	3.5	338 53.3	291.0	-6 23.6	3.7	328 17.0	291.3	-1 52.0	3.8
20 32	2.3		-20 24.3		18 47.8		-17 57.9		6 23.7		-14 38.0		354 45.7		-10 40.5		343 44.3		-6 19.9		333 8.3		-1 48.2	
40 36	51.0		-20 22.7		23 37.1		-17 55.5		11 13.7		-14 34.9		359 36.3		-10 37.0		348 35.4		-6 16.1		337 59.6		-1 44.5	
8 0	41 39.6	288.7	-20 21.1	1.6	28 26.4	289.4	-17 53.0	2.5	16 3.7	290.0	-14 31.8	3.1	4 26.9	290.6	-10 33.6	3.5	353 26.4	291.0	-6 12.4	3.7	342 50.9	291.3	-1 40.7	3.8
20 46	28.2		-20 19.5		33 15.8		-17 50.5		20 53.8		-14 28.7		9 17.5		-10 30.1		358 17.4		-6 8.7		347 42.2		-1 36.9	
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9 0	56 5.5	288.7	-20 16.2	1.7	42 54.5	289.4	-17 45.6	2.5	30 33.8	290.1	-14 22.5	3.1	18 58.7	290.6	-10 23.0	3.5	7 59.5	291.0	-6 1.2	3.7	357 24.8	291.3	-1 29.3	3.8
20 60	54.2		-20 14.5		47 43.8		-17 43.1		35 23.9		-14 19.4		23 49.3		-10 19.5		12 50.5		-5 57.5		2 16.1		-1 25.5	
40 65	42.9		-20 12.9		52 33.2		-17 40.6		40 14.0		-14 16.3		28 39.9		-10 16.0		17 41.6		-5 53.8		7 7.4		-1 21.7	
10 0	70 31.6	288.7	-20 11.2	1.7	57 22.6	289.4	-17 38.0	2.5	45 4.0	290.1	-14 13.2	3.1	33 30.6	290.7	-10 12.5	3.5	22 32.6	291.1	-5 50.0	3.7	11 58.7	291.3	-1 17.9	3.8
20 75	20.3		-20 9.5		62 12.0		-17 35.5		49 54.1		-14 10.0		38 21.2		-10 9.0		27 23.7		-5 46.3		16 50.0		-1 14.1	
40 80	9.0		-20 7.8		67 1.4		-17 33.0		54 44.2		-14 6.9		43 11.9		-10 5.4		32 14.8		-5 42.5		21 41.3		-1 10.3	
11 0	84 57.7	288.7	-20 6.1	1.8	71 50.9	289.4	-17 30.4	2.6	59 34.3	290.1	-14 3.8	3.2	48 2.5	290.7	-10 1.9	3.5	37 5.8	291.1	-5 38.8	3.8	26 32.6	291.3	-1 6.5	3.8
20 89	46.4		-20 4.3		76 40.3		-17 27.9		64 24.4		-14 0.6		52 53.2		-9 58.4		41 56.9		-5 35.0		31 23.9		-1 2.7	
40 94	35.2		-20 2.6		81 29.7		-17 25.3		69 14.5		-13 57.4		57 43.9		-9 54.8		46 48.0		-5 31.3		36 15.3		-0 58.9	
12 0	99 23.9	288.8	-20 0.8	1.8	86 19.2	289.5	-17 22.7	2.6	74 4.6	290.1	-13 54.3	3.2	62 34.6	290.7	-9 51.3	3.6	51 39.0	291.1	-5 27.5	3.8	41 6.6	291.3	-0 55.1	3.8
20 104	12.7		-19 59.0		91 8.6		-17 20.1		78 54.8		-13 51.1		67 25.2		-9 47.7		56 30.1		-5 23.8		45 57.9		-0 51.3	
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13 0	113 50.2	288.8	-19 55.4	1.8	100 47.6	289.5	-17 14.9	2.6	88 35.0	290.2	-13 44.7	3.2	77 6.6	290.7	-9 40.6	3.6	66 12.3	291.1	-5 16.3	3.8	55 40.6	291.3	-0 43.7	3.8
20 118	39.0		-19 53.6		105 37.1		-17 12.3		93 25.2		-13 41.5		81 57.3		-9 37.0		71 3.4		-5 12.5		60 31.9		-0 39.9	
40 123	27.8		-19 51.8		110 26.6		-17 9.7		98 15.4		-13 38.3		86 48.0		-9 33.5		75 54.5		-5 8.8		65 23.2		-0 36.1	
14 0	128 16.6	288.8	-19 50.0	1.9	115 16.1	289.5	-17 7.0	2.6	103 5.5	290.2	-13 35.1	3.2	91 38.8	290.7	-9 29.9	3.6	80 45.6	291.1	-5 5.0	3.8	70 14.6	291.3	-0 32.3	3.8
20 133	5.4		-19 48.1		120 5.6		-17 4.4		107 55.7		-13 31.9		96 29.5		-9 26.3		85 36.7		-5 1.3		75 5.9		-0 28.5	
40 137	54.2		-19 46.2		124 55.1		-17 1.7		112 45.9		-13 28.7		101 20.2		-9 22.7		90 27.9		-4 57.5		79 57.2		-0 24.8	
15 0	142 43.1	288.8	-19 44.4	1.9	129 44.7	289.6	-16 59.1	2.7	117 36.1	290.2	-13 25.5	3.2	106 11.0	290.7	-9 19.2	3.6	95 19.0	291.1	-4 53.7	3.8	84 48.6	291.3	-0 21.0	3.8
20 147	31.9		-19 42.5		134 34.2		-16 56.4		122 26.3		-13 22.3		111 1.7		-9 15.6		100 10.1		-4 50.0		89 39.9		-0 17.2	
40 152	20.7		-19 40.6		139 23.8		-16 53.7		127 16.5		-13 19.0		115 52.4		-9 12.0		105 1.2		-4 46.2		94 31.3		-0 13.4	
16 0	157 9.6	288.9	-19 38.7	2.0	144 13.3	289.6	-16 51.0	2.7	132 6.8	290.2	-13 15.8	3.3	120 43.2	290.8	-9 8.4	3.6	109 52.4	291.1	-4 42.4	3.8	99 22.6	291.3	-0 9.6	3.8
20 161	58.5		-19 36.7		149 2.9		-16 48.3		136 57.0		-13 12.5		125 34.0		-9 4.8		114 43.5		-4 38.7		104 13.9		-0 5.8	
40 166	47.4		-19 34.8		153 52.5		-16 45.6		141 47.2		-13 9.3		130 24.7		-9 1.2		119 34.6		-4 34.9		109 5.3		-0 2.0	
17 0	171 36.2	288.9	-19 32.8	2.0	158 42.1	289.6	-16 42.9	2.7	146 37.5	290.3	-13 6.0	3.3	135 15.5	290.8	-8 57.6	3.6	124 25.8	291.2	-4 31.1	3.8	113 56.6	291.4	0 1.8	3.8
20 176	25.1		-19 30.9		163 31.7		-16 40.2		151 27.7		-13 2.7		140 6.3		-8 54.0		129 16.9		-4 27.4		118 48.0		0 5.6	
40 181	14.0		-19 28.9		168 21.3		-16 37.4		156 18.0		-12 59.5		144 57.1		-8 50.4		134 8.1		-4 23.6		123 39.4		0 9.3	
18 0	186 3.0	288.9	-19 26.9	2.0	173 11.0	289.6	-16 34.7	2.8	161 8.3	290.3	-12 56.2	3.3	149 47.9	290.8	-8 46.8	3.6	138 59.2	291.2	-4 19.8	3.8	128 30.7	291.4	0 13.1	3.8
20 190	51.9		-19 24.9		178 0.6		-16 31.9		165 58.6		-12 52.9		154 38.7		-8 43.2		143 50.4		-4 16.1		133 22.1		0 16.9	
40 195	40.8		-19 22.9		182 50.2		-16 29.2		170 48.8		-12 49.6		159 29.5		-8 39.5		148 41.6		-4 12.3		138 13.4		0 20.7	
19 0	200 29.8	289.0	-19 20.9	2.1	187 39.9	289.7	-16 26.4	2.8	175 39.1	290.3	-12 46.3	3.3	164 20.3	290.8	-8 35.9	3.6	153 32.7	291.2	-4 8.5	3.8	143 4.8	291.4	0 24.5	3.8
20 205	18.7		-19 18.8		192 29.6		-16 23.6		180 29.5		-12 43.0		169 11.1		-8 32.3		158 23.9		-4 4.7		147 56.2		0 28.3	
40 210	7.7		-19 16.8		197 19.2		-16 20.8		185 19.8		-12 39.7		174 1.9		-8 28.7		163 15.1		-4 0.9		152 47.5		0 32.0	
20 0	214 56.7	289.0	-19 14.7	2.1	202 8.9	289.7	-16 18.0	2.8	190 10.1	290.3	-12 36.4	3.3	178 52.8	290.8	-8 25.0	3.6	168 6.2	291.2	-3 57.2	3.8	157 38.9	291.4	0 35.8	3.8
20 219	45.7		-19 12.7		206 58.6		-16 15.2		195 0.4		-12 33.1		183 43.6		-8 21.4		172 57.4		-3 53.4		162 30.3		0 39.6	
40 224	34.7		-19 10.6		211 48.3		-16 12.4		199 50.8		-12 29.7		188 34.4		-8 17.8		177 48.6		-3 49.6		167 21.6		0 43.4	
21 0	229 23.7	289.0	-19 8.5	2.1	216 38.0	289.7	-16 9.6	2.9	204 41.1	290.4	-12 26.4	3.3	193 25.3	290.9	-8 14.1	3.6	182 39.8	291.2	-3 45.8	3.8	172 13.0	291.4	0 47.1	3.8
20 234	12.7		-19 6.4		221 27.7		-16 6.7		209 31.5		-12 23.1		198 16.1		-8 10.5		187 31.0		-3 42.0		177 4.4		0 50.9	
40 239	1.7		-19 4.3		226 17.5		-16 3.9		214 21.8		-12 19.7		203 7.0		-8 6.8		192 22.2		-3 38.2		181 55.7		0 54.7	
22 0	243 50.7	289.1	-19 2.1	2.1	231 7.2	289.8	-16 1.0	2.9	219 12.2	290.4	-12 16.4	3.4	207 57.9	290.9	-8 3.2	3.7	197 13.4	291.2	-3 34.5	3.8	186 47.1	291.4	0 58.5	3.8
20 248	39.8		-19 0.0		235 57.0		-15 58.2		224 2.6		-12 13.0		212 48.7		-7 59.5		202 4.6		-3 30.7		191 38.5		1 2.2	
40 253	28.9		-18 57.8		240 46.7		-15 55.3		228 53.0		-12 9.7		217 39.6		-7 55.9		206 55.8		-3 26.9		196 29.9		1 6.0	
23 0	258 17.9	289.1	-18 55.7	2.2	245 36.5	289.8	-15 52.4	2.9	233 43.4	290.4	-12 6.3	3.4	222 30.5	290.9	-7 52.2	3.7	211 47.0	291.2	-3 23.1	3.8	201 21.2	291.4	1 9.8	3.8
20 263	7.0		-18 53.5		250 26.3		-15 49.6		238 33.8		-12 2.9		227 21.4		-7 48.5		216 38.2		-3 19.3		206 12.6		1 13.5	
40 267	56.1		-18 51.3		255 16.0		-15 46.7		243 24.2		-11 59.6		232 12.3		-7 44.9		221 29.4		-3 15.5		211 4.0		1 17.3	

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h m	18 Apr GHA	d	Dec	d'	19 Apr GHA	d	Dec	d'	20 Apr GHA	d	Dec	d'	21 Apr GHA	d	Dec	d'	22 Apr GHA	d	Dec	d'	23 Apr GHA	d	Dec	d'
0 0	215 55.4	291.4	1 21.1		205 36.2	291.4	5 47.2		195 13.4	291.3	9 57.3		184 38.9	291.1	13 42.1		173 47.1	290.8	16 52.9		162 35.7	290.5	19 21.3	
20	220 46.8		1 24.8	3.8	210 27.6		5 50.8	3.6	200 4.7		10 0.6	3.3	189 29.9		13 45.0	2.9	178 38.0		16 55.3	2.4	167 26.2		19 23.0	1.7
40	225 38.1		1 28.6		215 19.0		5 54.4		204 56.0		10 3.9		194 21.0		13 47.9		183 28.8		16 57.7		172 16.8		19 24.7	
1 0	230 29.5	291.4	1 32.4		220 10.4	291.4	5 58.0		209 47.2	291.3	10 7.2		199 12.1	291.1	13 50.8		188 19.6	290.8	17 0.0		177 7.3	290.5	19 26.4	
20	235 20.9		1 36.1	3.7	225 1.8		6 1.6	3.6	214 38.5		10 10.5	3.3	204 3.2		13 53.7	2.9	193 10.4		17 2.4	2.3	181 57.8		19 28.1	1.7
40	240 12.3		1 39.9		229 53.2		6 5.2		219 29.8		10 13.8		208 54.2		13 56.6		198 1.2		17 4.7		186 48.3		19 29.8	
2 0	245 3.7	291.4	1 43.6		234 44.6	291.4	6 8.8		224 21.1	291.3	10 17.1		213 45.3	291.1	13 59.5		202 52.0	290.8	17 7.0		191 38.9	290.5	19 31.5	
20	249 55.1		1 47.4	3.8	239 36.0		6 12.4	3.6	229 12.3		10 20.4	3.3	218 36.3		14 2.3	2.8	207 42.7		17 9.3	2.3	196 29.4		19 33.1	1.6
40	254 46.5		1 51.2		244 27.4		6 16.0		234 3.6		10 23.7		223 27.4		14 5.2		212 33.5		17 11.7		201 19.9		19 34.8	
3 0	259 37.9	291.4	1 54.9		249 18.8	291.4	6 19.5		238 54.9	291.3	10 26.9		228 18.4	291.0	14 8.0		217 24.3	290.8	17 14.0		206 10.4	290.5	19 36.4	
20	264 29.3		1 58.7	3.8	254 10.1		6 23.1	3.6	243 46.1		10 30.2	3.3	233 9.5		14 10.9	2.8	222 15.1		17 16.3	2.3	211 0.9		19 38.1	1.6
40	269 20.7		2 2.4		259 1.5		6 26.7		248 37.4		10 33.5		238 0.5		14 13.7		227 5.9		17 18.5		215 51.4		19 39.7	
4 0	274 12.0	291.4	2 6.2		263 52.9	291.4	6 30.3		253 28.6	291.3	10 36.7		242 51.6	291.0	14 16.5		231 56.6	290.8	17 20.8		220 41.9	290.5	19 41.3	
20	279 3.4		2 9.9	3.7	268 44.3		6 33.8	3.5	258 19.9		10 40.0	3.3	247 42.6		14 19.4	2.8	236 47.4		17 23.1	2.3	225 32.4		19 42.9	1.6
40	283 54.8		2 13.7		273 35.7		6 37.4		263 11.1		10 43.3		252 33.6		14 22.2		241 38.1		17 25.3		230 22.9		19 44.5	
5 0	288 46.2	291.4	2 17.4		278 27.1	291.4	6 40.9		268 2.4	291.2	10 46.5		257 24.6	291.0	14 25.0		246 28.9	290.7	17 27.6		235 13.4	290.5	19 46.1	
20	293 37.6		2 21.1	3.7	283 18.5		6 44.5	3.6	272 53.6		10 49.7	3.2	262 15.7		14 27.8	2.8	251 19.7		17 29.8	2.2	240 3.8		19 47.7	1.6
40	298 29.0		2 24.9		288 9.8		6 48.1		277 44.9		10 53.0		267 6.7		14 30.6		256 10.4		17 32.1		244 54.3		19 49.3	
6 0	303 20.4	291.4	2 28.6		293 1.2	291.4	6 51.6		282 36.1	291.2	10 56.2		271 57.7	291.0	14 33.4		261 1.1	290.7	17 34.3		249 44.8	290.5	19 50.8	
20	308 11.8		2 32.4	3.7	297 52.6		6 55.1	3.5	287 27.4		10 59.4	3.2	276 48.7		14 36.2	2.8	265 51.9		17 36.5	2.2	254 35.3		19 52.4	1.5
40	313 3.2		2 36.1		302 44.0		6 58.7		292 18.6		11 2.6		281 39.7		14 38.9		270 42.6		17 38.7		259 25.7		19 53.9	
7 0	317 54.6	291.4	2 39.8		307 35.3	291.4	7 2.2		297 9.8	291.2	11 5.9		286 30.7	291.0	14 41.7		275 33.4	290.7	17 40.9		264 16.2	290.5	19 55.4	
20	322 46.0		2 43.5	3.7	312 26.7		7 5.8	3.5	302 1.1		11 9.1	3.2	291 21.7		14 44.5	2.7	280 24.1		17 43.1	2.2	269 6.7		19 57.0	1.5
40	327 37.4		2 47.3		317 18.1		7 9.3		306 52.3		11 12.3		296 12.7		14 47.2		285 14.8		17 45.3		273 57.1		19 58.5	
8 0	332 28.8	291.4	2 51.0		322 9.5	291.4	7 12.8		311 43.5	291.2	11 15.5		301 3.7	291.0	14 49.9		290 5.5	290.7	17 47.5		278 47.6	290.4	20 0.0	
20	337 20.2		2 54.7	3.7	327 0.8		7 16.3	3.5	316 34.7		11 18.7	3.2	305 54.7		14 52.7	2.7	294 56.3		17 49.6	2.2	283 38.0		20 1.4	1.5
40	342 11.6		2 58.5		331 52.2		7 19.9		321 26.0		11 21.9		310 45.7		14 55.4		299 47.0		17 51.8		288 28.5		20 2.9	
9 0	347 3.0	291.4	3 2.2		336 43.6	291.4	7 23.4		326 17.2	291.2	11 25.0		315 36.7	291.0	14 58.1		304 37.7	290.7	17 54.0		293 18.9	290.4	20 4.4	
20	351 54.4		3 5.9	3.7	341 34.9		7 26.9	3.5	331 8.4		11 28.2	3.2	320 27.7		15 0.9	2.7	309 28.4		17 56.1	2.1	298 9.3		20 5.8	1.4
40	356 45.9		3 9.6		346 26.3		7 30.4		335 59.6		11 31.4		325 18.7		15 3.6		314 19.1		17 58.2		302 59.8		20 7.3	
10 0	1 37.3	291.4	3 13.3		351 17.7	291.4	7 33.9		340 50.8	291.2	11 34.5		330 9.6	291.0	15 6.3		319 9.8	290.7	18 0.3		307 50.2	290.4	20 8.7	
20	6 28.7		3 17.0	3.7	356 9.0		7 37.4	3.5	345 42.0		11 37.7	3.2	335 0.6		15 9.0	2.7	324 0.5		18 2.5	2.1	312 40.6		20 10.2	1.4
40	11 20.1		3 20.8		1 0.4		7 40.9		350 33.2		11 40.9		339 51.6		15 11.7		328 51.2		18 4.6		317 31.1		20 11.6	
11 0	16 11.5	291.4	3 24.5		5 51.8	291.4	7 44.4		355 24.4	291.2	11 44.0		344 42.5	291.0	15 14.3		333 41.9	290.7	18 6.7		322 21.5	290.4	20 13.0	
20	21 2.9		3 28.2	3.7	10 43.1		7 47.9	3.5	0 15.6		11 47.2	3.1	349 33.5		15 17.0	2.7	338 32.5		18 8.7	2.1	327 11.9		20 14.4	1.4
40	25 54.3		3 31.9		15 34.5		7 51.4		5 6.8		11 50.3		354 24.4		15 19.7		343 23.2		18 10.8		332 2.3		20 15.8	
12 0	30 45.7	291.4	3 35.6		20 25.8	291.4	7 54.8		9 58.0	291.2	11 53.4		359 15.4	290.9	15 22.3		348 13.9	290.7	18 12.9		336 52.7	290.4	20 17.1	
20	35 37.1		3 39.3	3.7	25 17.2		7 58.3	3.5	14 49.2		11 56.5	3.1	4 6.3		15 25.0	2.7	353 4.6		18 15.0	2.0	341 43.2		20 18.5	1.4
40	40 28.5		3 43.0		30 8.5		8 1.8		19 40.4		11 59.7		8 57.3		15 27.6		357 55.2		18 17.0		346 33.6		20 19.9	
13 0	45 19.9	291.4	3 46.7		34 59.9	291.3	8 5.2		24 31.6	291.2	12 2.8		13 48.2	290.9	15 30.3		2 45.9	290.7	18 19.0		351 24.0	290.4	20 21.2	
20	50 11.3		3 50.4	3.7	39 51.2		8 8.7	3.5	29 22.7		12 5.9	3.1	18 39.2		15 32.9	2.6	7 36.6		18 21.1	2.0	356 14.4		20 22.6	1.3
40	55 2.7		3 54.1		44 42.6		8 12.2		34 13.9		12 9.0		23 30.1		15 35.5		12 27.2		18 23.1		1 4.8		20 23.9	
14 0	59 54.1	291.4	3 57.7		49 33.9	291.3	8 15.6		39 5.1	291.2	12 12.1		28 21.0	290.9	15 38.1		17 17.9	290.6	18 25.1		5 55.2	290.4	20 25.2	
20	64 45.5		4 1.4	3.7	54 25.3		8 19.1	3.5	43 56.3		12 15.2	3.1	33 11.9		15 40.7	2.6	22 8.5		18 27.1	2.0	10 45.5		20 26.5	1.3
40	69 36.9		4 5.1		59 16.6		8 22.5		48 47.4		12 18.3		38 2.9		15 43.3		26 59.2		18 29.1		15 35.9		20 27.8	
15 0	74 28.4	291.4	4 8.8		64 7.9	291.3	8 26.0		53 38.6	291.2	12 21.3		42 53.8	290.9	15 45.9		31 49.8	290.6	18 31.1		20 26.3	290.4	20 29.1	
20	79 19.8		4 12.5	3.7	68 59.3		8 29.4	3.4	58 29.8		12 24.4	3.1	47 44.7		15 48.5	2.6	36 40.4		18 33.1	2.0	25 16.7		20 30.3	1.3
40	84 11.2		4 16.2		73 50.6		8 32.8		63 20.9		12 27.5		52 35.6		15 51.1		41 31.1		18 35.1		30 7.1		20 31.6	
16 0	89 2.6	291.4	4 19.8		78 42.0	291.3	8 36.3		68 12.1	291.2	12 30.5		57 26.5	290.9	15 53.7		46 21.7	290.6	18 37.0		34 57.4	290.4	20 32.9	
20	93 54.0		4 23.5	3.7	83 33.3		8 39.7	3.4	73 3.2		12 33.6	3.1	62 17.4		15 56.2	2.5	51 12.3		18 39.0	1.9	39 47.8		20 34.1	1.2
40	98 45.4		4 27.2		88 24.6		8 43.1		77 54.4		12 36.6		67 8.3		15 58.8		56 3.0		18 40.9		44 38.2		20 35.3	
17 0	103 36.8	291.4	4 30.8		93 15.9	291.3	8 46.5		82 45.5	291.1	12 39.7		71 59.2	290.9	16 1.3		60 53.6	290.6	18 42.8		49 28.5	290.4	20 36.6	
20	108 28.2		4 34.5	3.7	98 7.3		8 50.0	3.4	87 36.7		12 42.7	3.0	76 50.1		16 3.8	2.5	65 44.2		18 44.8	1.9	54 18.9		20 37.8	1.2
40	113 19.6		4 38.2		102 58.6		8 53.4		92 27.8		12 45.8		81 41.0		16 6.4		70 34.8		18 46.7		59 9.3		20 39.0	
18 0	118 11.0	291.4	4 41.8		107 49.9	291.3	8 56.8		97 18.9	291.1	12 48.8		86 31.9	290.9	16 8.9		75 25.4	290.6	18 48.6		63 59.6	290.3	20 40.2	
20	123 2.4		4 45.5	3.7	112 41.2		9 0.2	3.4	102 10.1		12 51.8	3.0	91 22.8		16 11.4	2.5	80 16.0		18 50.5	1.9	68 50.0		20 41.3	1.2
40	127 53.8		4 49.1		117 32.6		9 3.6		107 1.2		12 54.8		96 13.6		16 13.9		85 6.6		18 52.4		73 40.3		20 42.5	
19 0	132 45.2	291.4	4 52.8		122 23.9	291.3	9 7.0		111 52.3	291.1	12 57.8		101 4.5	290.9	16 16.4		89 57.2	290.6	18 54.2		78 30.7	290.3	20 43.7	
20	137 36.6		4 56.4	3.6	127 15.2		9 10.3	3.4	116 43.5		13 0.8	3.0	105 55.4		16 18.9	2.5	94 47.8		18 56.1	1.9	83 21.0		20 44.8	1.1
40	142 28.0		5 0.1		132 6.5		9 13.7		121 34.6		13 3.8		110 46.2		16 21.4		99 38.4		18 58.0		88 11.3		20 46.0	
20 0	147 19.4	291.4	5 3.7		136 57.8	291.3	9 17.1		126 25.7	291.1	13 6.8		115 37.1	290.9	16 23.9		104 29.0	290.6	18 59.8		93 1.7	290.3	20 47.1	
20	152 10.8		5 7.4	3.6	141 49.1		9 20.5	3.4	131 16.8		13 9.8	3.0	120 28.0		16 26.3	2.4	109 19.6		19 1.7	1.8	97 52.0		20 48.2	1.1
40	157 2.2		5 11.0		146 40.4		9 23.8		136 7.9		13 12.7		125 18.8		16 28.8		114 10.1		19 3.5		102 42.3		20 49.3	
21 0	161 53.6	291.4	5 14.6		151 31.7	291.3	9 27.2		140 59.0	291.1	13 15.7		130 9.7	290.8	16 31.2		119 0.7	290.6	19 5.3		107 32.7	290.3	20 50.4	
20	166 45.0		5 18.3	3.6	156 23.0		9 30.6	3.4	145 50.1		13 18.7	3.0	135 0.5		16 33.7	2.4	123 51.3		19 7.1	1.8	112 23.0		20 51.5	1.1
40	171 36.4		5 21.9		161 14.3		9 33.9		150 41.3		13 21.6		139 51.4		16 36.1		128 41.8		19 8.9		117 13.3		20 52.6	
22 0	176 27.8	291.4	5 25.5		166 5.6	291.3	9 37.3		155 32.3	291.1	13 24.6		144 42.2	290.8	16 38.5		133 32.4	290.6	19 10.7		122 3.6	290.3	20 53.6	
20	181 19.2		5 29.1	3.6	170 56.9		9 40.6	3.3	160 23.4		13 27.5	2.9	149 33.0		16 41.0	2.4	138 23.0		19 12.5	1.8	126 54.0		20 54.7	1.0
40	186 10.6		5 32.8		175 48.2		9 44.0		165 14.5		13 30.5		154 23.9		16 43.4		143 13.5		19 14.3		131 44.3		20 55.7	
23 0	191 2.0	291.4	5 36.4		180 39.5	291.3	9 47.3		170 5.6	291.1	13 33.4		159 14.7	290.8	16 45.8		148 4.1	290.5	19 16.0		136 34.6	290.3	20 56.7	
20	195 53.4		5 40.0	3.6	185 30.8		9 50.6	3.3	174 56.7		13 36.3	2.9	164 5.5		16 48.2	2.4	152 54.6		19 17.8	1.8	141 24.9		20 57.8	1.0
40	200 44.8		5 43.6		190 22.1		9 54.0		179 47.8		13 39.2		168 56.3		16 50.6		157 45.2		19 19.5		146 15.2		20 58.8	

2012 Moon

h m	24 Apr GHA	24 Apr Dec	d	25 Apr GHA	25 Apr Dec	d	26 Apr GHA	26 Apr Dec	d	27 Apr GHA	27 Apr Dec	d	28 Apr GHA	28 Apr Dec	d	29 Apr GHA	29 Apr Dec	d
0 0	151 5.5	20 59.8		139 20.7	21 42.8		127 27.9	21 26.8		115 33.7	20 11.2		103 43.4	17 57.8		91 58.8	14 50.7	
20	155 55.8	21 0.8	1.0	144 10.9	21 42.9	0.2	132 17.9	21 26.2	-0.6	120 23.8	20 9.7	-1.5	108 33.5	17 55.5	-2.3	96 49.0	14 47.8	-3.0
40	160 46.1	21 1.7		149 1.0	21 43.1		137 8.0	21 25.5		125 13.9	20 8.3		113 23.7	17 53.3		101 39.3	14 44.8	
1 0	165 36.4	21 2.7		153 51.2	21 43.3		141 58.1	21 24.9		130 4.0	20 6.8		118 13.9	17 51.0		106 29.5	14 41.8	
20	170 26.7	21 3.7	0.9	158 41.3	21 43.4	0.1	146 48.2	21 24.2	-0.7	134 54.1	20 5.3	-1.5	123 4.1	17 48.7	-2.3	111 19.8	14 38.9	-3.0
40	175 17.0	21 4.6		163 31.4	21 43.6		151 38.2	21 23.5		139 44.2	20 3.8		127 54.3	17 46.5		116 10.0	14 35.9	
2 0	180 7.2	21 5.5		168 21.5	21 43.7		156 28.3	21 22.8		144 34.3	20 2.2		132 44.4	17 44.2		121 0.3	14 32.9	
20	184 57.5	21 6.5	0.9	173 11.7	21 43.8	0.1	161 18.4	21 22.1	-0.7	149 24.4	20 0.7	-1.5	137 34.6	17 41.9	-2.3	125 50.6	14 29.9	-3.0
40	189 47.8	21 7.4		178 1.8	21 43.9		166 8.5	21 21.3		154 14.5	19 59.2		142 24.8	17 39.5		130 40.8	14 26.9	
3 0	194 38.1	21 8.3		182 51.9	21 44.0		170 58.5	21 20.6		159 4.6	19 57.6		147 15.0	17 37.2		135 31.1	14 23.8	
20	199 28.4	21 9.2	0.9	187 42.1	21 44.1	0.1	175 48.6	21 19.9	-0.8	163 54.7	19 56.1	-1.6	152 5.2	17 34.9	-2.3	140 21.3	14 20.8	-3.0
40	204 18.6	21 10.0		192 32.2	21 44.2		180 38.7	21 19.1		168 44.8	19 54.5		156 55.4	17 32.5		145 11.6	14 17.8	
4 0	209 8.9	21 10.9		197 22.3	21 44.2		185 28.8	21 18.3		173 34.9	19 52.9		161 45.5	17 30.2		150 1.8	14 14.7	
20	213 59.2	21 11.8	0.9	202 12.4	21 44.3	0.1	190 18.8	21 17.6	-0.8	178 25.1	19 51.3	-1.6	166 35.7	17 27.8	-2.4	154 52.1	14 11.7	-3.1
40	218 49.4	21 12.6		207 2.5	21 44.3		195 8.9	21 16.8		183 15.2	19 49.7		171 25.9	17 25.4		159 42.3	14 8.6	
5 0	223 39.7	21 13.5		211 52.7	21 44.4		199 59.0	21 16.0		188 5.3	19 48.1		176 16.1	17 23.0		164 32.6	14 5.5	
20	228 29.9	21 14.3	0.8	216 42.8	21 44.4	0.0	204 49.1	21 15.1	-0.8	192 55.4	19 46.4	-1.7	181 6.3	17 20.6	-2.4	169 22.9	14 2.4	-3.1
40	233 20.2	21 15.1		221 32.9	21 44.4		209 39.1	21 14.3		197 45.5	19 44.8		185 56.5	17 18.2		174 13.1	13 59.3	
6 0	238 10.4	21 15.9		226 23.0	21 44.4		214 29.2	21 13.5		202 35.6	19 43.1		190 46.7	17 15.8		179 3.4	13 56.2	
20	243 0.7	21 16.7	0.8	231 13.1	21 44.3	0.0	219 19.3	21 12.6	-0.9	207 25.7	19 41.5	-1.7	195 36.9	17 13.4	-2.4	183 53.7	13 53.1	-3.1
40	247 50.9	21 17.5		236 3.2	21 44.3		224 9.4	21 11.8		212 15.8	19 39.8		200 27.1	17 11.0		188 43.9	13 50.0	
7 0	252 41.2	21 18.2		240 53.3	21 44.3		228 59.4	21 10.9		217 6.0	19 38.1		205 17.3	17 8.5		193 34.2	13 46.9	
20	257 31.4	21 19.0	0.8	245 43.5	21 44.2	-0.1	233 49.5	21 10.0	-0.9	221 56.1	19 36.4	-1.7	210 7.5	17 6.1	-2.5	198 24.4	13 43.7	-3.2
40	262 21.7	21 19.7		250 33.6	21 44.2		238 39.6	21 9.1		226 46.2	19 34.7		214 57.7	17 3.6		203 14.7	13 40.6	
8 0	267 11.9	21 20.5		255 23.7	21 44.1		243 29.7	21 8.2		231 36.3	19 33.0		219 47.9	17 1.1		208 5.0	13 37.4	
20	272 2.1	21 21.2	0.7	260 13.8	21 44.0	-0.1	248 19.7	21 7.3	-0.9	236 26.4	19 31.3	-1.7	224 38.1	16 58.6	-2.5	212 55.2	13 34.3	-3.2
40	276 52.4	21 21.9		265 3.9	21 43.9		253 9.8	21 6.3		241 16.6	19 29.5		229 28.3	16 56.1		217 45.5	13 31.1	
9 0	281 42.6	21 22.6		269 54.0	21 43.8		257 59.9	21 5.4		246 6.7	19 27.8		234 18.5	16 53.6		222 35.8	13 27.9	
20	286 32.8	21 23.3	0.7	274 44.1	21 43.7	-0.1	262 50.0	21 4.5	-1.0	250 56.8	19 26.0	-1.8	239 8.7	16 51.1	-2.5	227 26.0	13 24.7	-3.2
40	291 23.1	21 24.0		279 34.2	21 43.5		267 40.0	21 3.5		255 46.9	19 24.2		243 58.9	16 48.6		232 16.3	13 21.5	
10 0	296 13.3	21 24.7		284 24.3	21 43.4		272 30.1	21 2.5		260 37.1	19 22.4		248 49.1	16 46.0		237 6.6	13 18.3	
20	301 3.5	21 25.3	0.6	289 14.4	21 43.2	-0.2	277 20.2	21 1.5	-1.0	265 27.2	19 20.6	-1.8	253 39.3	16 43.5	-2.5	241 56.8	13 15.1	-3.2
40	305 53.7	21 26.0		294 4.5	21 43.0		282 10.3	21 0.5		270 17.3	19 18.8		258 29.5	16 40.9		246 47.1	13 11.9	
11 0	310 43.9	21 26.6		298 54.6	21 42.9		287 0.3	20 59.5		275 7.4	19 17.0		263 19.8	16 38.4		251 37.4	13 8.7	
20	315 34.1	21 27.3	0.6	303 44.7	21 42.7	-0.2	291 50.4	20 58.5	-1.0	279 57.6	19 15.2	-1.8	268 10.0	16 35.8	-2.6	256 27.6	13 5.4	-3.3
40	320 24.4	21 27.9		308 34.8	21 42.5		296 40.5	20 57.5		284 47.7	19 13.4		273 0.2	16 33.2		261 17.9	13 2.2	
12 0	325 14.6	21 28.5		313 24.9	21 42.3		301 30.6	20 56.4		289 37.8	19 11.5		277 50.4	16 30.6		266 8.2	12 58.9	
20	330 4.8	21 29.1	0.6	318 15.0	21 42.0	-0.3	306 20.6	20 55.4	-1.1	294 28.0	19 9.6	-1.9	282 40.6	16 28.0	-2.6	270 58.4	12 55.7	-3.3
40	334 55.0	21 29.6		323 5.1	21 41.8		311 10.7	20 54.3		299 18.1	19 7.8		287 30.8	16 25.4		275 48.7	12 52.4	
13 0	339 45.2	21 30.2		327 55.2	21 41.5		316 0.8	20 53.2		304 8.3	19 5.9		292 21.0	16 22.7		280 39.0	12 49.1	
20	344 35.4	21 30.8	0.6	332 45.3	21 41.3	-0.3	320 50.9	20 52.1	-1.1	308 58.4	19 4.0	-1.9	297 11.3	16 20.1	-2.6	285 29.2	12 45.8	-3.3
40	349 25.6	21 31.3		337 35.3	21 41.0		325 41.0	20 51.0		313 48.5	19 2.1		302 1.5	16 17.5		290 19.5	12 42.5	
14 0	354 15.8	21 31.9		342 25.4	21 40.7		330 31.0	20 49.9		318 38.7	19 0.2		306 51.7	16 14.8		295 9.8	12 39.2	
20	359 6.0	21 32.4	0.5	347 15.5	21 40.4	-0.3	335 21.1	20 48.8	-1.1	323 28.8	18 58.2	-1.9	311 41.9	16 12.1	-2.7	300 0.0	12 35.9	-3.3
40	3 56.2	21 32.9		352 5.6	21 40.1		340 11.2	20 47.6		328 18.9	18 56.3		316 32.2	16 9.5		304 50.3	12 32.6	
15 0	8 46.4	21 33.4		356 55.7	21 39.8		345 1.3	20 46.5		333 9.1	18 54.4		321 22.4	16 6.8		309 40.6	12 29.2	
20	13 36.5	21 33.9	0.5	1 45.8	21 39.5	-0.3	349 51.4	20 45.3	-1.2	337 59.2	18 52.4	-2.0	326 12.6	16 4.1	-2.7	314 30.9	12 25.9	-3.3
40	18 26.7	21 34.4		6 35.9	21 39.1		354 41.4	20 44.2		342 49.4	18 50.4		331 2.8	16 1.4		319 21.1	12 22.5	
16 0	23 16.9	21 34.9		11 26.0	21 38.8		359 31.5	20 43.0		347 39.5	18 48.5		335 53.1	15 58.7		324 11.4	12 19.2	
20	28 7.1	21 35.3	0.4	16 16.0	21 38.4	-0.4	4 21.6	20 41.8	-1.2	352 29.7	18 46.5	-2.0	340 43.3	15 56.0	-2.7	329 1.7	12 15.8	-3.4
40	32 57.3	21 35.8		21 6.1	21 38.0		9 11.7	20 40.6		357 19.8	18 44.5		345 33.5	15 53.2		333 51.9	12 12.5	
17 0	37 47.4	21 36.2		25 56.2	21 37.6		14 1.8	20 39.4		2 10.0	18 42.5		350 23.7	15 50.5		338 42.2	12 9.1	
20	42 37.6	21 36.6	0.4	30 46.3	21 37.2	-0.4	18 51.9	20 38.1	-1.3	7 0.1	18 40.4	-2.0	355 14.0	15 47.7	-2.8	343 32.5	12 5.7	-3.4
40	47 27.8	21 37.0		35 36.4	21 36.8		23 41.9	20 36.9		11 50.3	18 38.4		0 4.2	15 45.0		348 22.7	12 2.3	
18 0	52 18.0	21 37.4		40 26.5	21 36.4		28 32.0	20 35.6		16 40.4	18 36.4		4 54.4	15 42.2		353 13.0	11 58.9	
20	57 8.1	21 37.8	0.4	45 16.5	21 36.0	-0.4	33 22.1	20 34.4	-1.3	21 30.6	18 34.3	-2.1	9 44.7	15 39.4	-2.8	358 3.3	11 55.5	-3.4
40	61 58.3	21 38.2		50 6.6	21 35.5		38 12.2	20 33.1		26 20.7	18 32.2		14 34.9	15 36.6		2 53.6	11 52.0	
19 0	66 48.5	21 38.6		54 56.7	21 35.1		43 2.3	20 31.8		31 10.9	18 30.2		19 25.1	15 33.8		7 43.8	11 48.6	
20	71 38.6	21 38.9	0.3	59 46.8	21 34.6	-0.5	47 52.4	20 30.5	-1.3	36 1.0	18 28.1	-2.1	24 15.4	15 31.0	-2.8	12 34.1	11 45.2	-3.4
40	76 28.8	21 39.3		64 36.9	21 34.1		52 42.5	20 29.2		40 51.2	18 26.0		29 5.6	15 28.2		17 24.4	11 41.7	
20 0	81 19.0	21 39.6		69 26.9	21 33.6		57 32.6	20 27.9		45 41.4	18 23.9		33 55.9	15 25.4		22 14.6	11 38.3	
20	86 9.1	21 39.9	0.3	74 17.0	21 33.1	-0.5	62 22.7	20 26.6	-1.3	50 31.5	18 21.8	-2.1	38 46.1	15 22.5	-2.9	27 4.9	11 34.8	-3.5
40	90 59.3	21 40.3		79 7.1	21 32.6		67 12.7	20 25.2		55 21.7	18 19.6		43 36.3	15 19.7		31 55.2	11 31.3	
21 0	95 49.4	21 40.6		83 57.2	21 32.1		72 2.8	20 23.9		60 11.8	18 17.5		48 26.6	15 16.8		36 45.4	11 27.9	
20	100 39.6	21 40.8	0.3	88 47.3	21 31.5	-0.6	76 52.9	20 22.5	-1.4	65 2.0	18 15.3	-2.2	53 16.8	15 14.0	-2.9	41 35.7	11 24.4	-3.5
40	105 29.7	21 41.1		93 37.3	21 31.0		81 43.0	20 21.1		69 52.2	18 13.2		58 7.1	15 11.1		46 26.0	11 20.9	
22 0	110 19.9	21 41.4		98 27.4	21 30.4		86 33.1	20 19.8		74 42.3	18 11.0		62 57.3	15 8.2		51 16.3	11 17.4	
20	115 10.0	21 41.6	0.2	103 17.5	21 29.9	-0.6	91 23.2	20 18.4	-1.4	79 32.5	18 8.8	-2.2	67 47.6	15 5.3	-2.9	56 6.5	11 13.9	-3.5
40	120 0.2	21 41.9		108 7.6	21 29.3		96 13.3	20 16.9		84 22.7	18 6.6		72 37.8	15 2.4		60 56.8	11 10.4	
23 0	124 50.3	21 42.1		112 57.6	21 28.7		101 3.4	20 15.5		89 12.9	18 4.4		77 28.0	14 59.5		65 47.1	11 6.8	
20	129 40.5	21 42.3	0.2	117 47.7	21 28.1	-0.6	105 53.5	20 14.1	-1.4	94 3.0	18 2.2	-2.2	82 18.3	14 56.6	-2.9	70 37.3	11 3.3	-3.5
40	134 30.6	21 42.6		122 37.8	21 27.4		110 43.6	20 12.7		98 53.2	18 0.0		87 8.5	14 53.6		75 27.6	10 59.8	

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h m	30 Apr GHA	30 Apr Dec	1 May GHA	1 May Dec	2 May GHA	2 May Dec	3 May GHA	3 May Dec	4 May GHA	4 May Dec	5 May GHA	5 May Dec
0 0	80 17.9 290.3	10 56.2 -3.6	68 34.6 290.2	6 22.6 -4.0	56 39.7 289.9	1 20.7 -4.3	44 22.0 289.5	-3 55.4 -4.4	31 30.0 289.0	-9 7.4 -4.2	17 54.8 288.3	-13 53.1 -3.6
20	85 8.1	10 52.7	73 24.8	6 18.6	61 29.7	1 16.4	49 11.6	-3 59.8	36 19.0	-9 11.6	22 43.2	-13 56.7
40	89 58.4	10 49.1	78 14.9	6 14.6	66 19.6	1 12.1	54 1.1	-4 4.2	41 8.0	-9 15.8	27 31.5	-14 0.4
1 0	94 48.7 290.3	10 45.5 -3.6	83 5.1 290.2	6 10.5 -4.0	71 9.5 289.9	1 7.7 -4.3	58 50.6 289.5	-4 8.6 -4.4	45 56.9 289.0	-9 20.0 -4.2	32 19.8 288.3	-14 4.0 -3.6
20	99 38.9	10 42.0	87 55.3	6 6.5	75 59.5	1 3.4	63 40.2	-4 13.0	50 45.9	-9 24.2	37 8.2	-14 7.7
40	104 29.2	10 38.4	92 45.4	6 2.4	80 49.4	0 59.1	68 29.7	-4 17.4	55 34.9	-9 28.4	41 56.5	-14 11.3
2 0	109 19.5 290.3	10 34.8 -3.6	97 35.6 290.2	5 58.4 -4.1	85 39.3 289.9	0 54.7 -4.3	73 19.2 289.5	-4 21.8 -4.4	60 23.8 288.9	-9 32.5 -4.2	46 44.8 288.3	-14 14.9 -3.6
20	114 9.7	10 31.2	102 25.8	5 54.3	90 29.2	0 50.4	78 8.7	-4 26.2	65 12.7	-9 36.7	51 33.1	-14 18.5
40	118 60.0	10 27.6	107 15.9	5 50.3	95 19.1	0 46.0	82 58.2	-4 30.6	70 1.7	-9 40.9	56 21.4	-14 22.1
3 0	123 50.2 290.3	10 24.0 -3.6	112 6.1 290.2	5 46.2 -4.1	100 9.0 289.9	0 41.7 -4.4	87 47.6 289.5	-4 35.0 -4.4	74 50.6 288.9	-9 45.0 -4.2	61 9.7 288.3	-14 25.7 -3.6
20	128 40.5	10 20.4	116 56.2	5 42.1	104 58.9	0 37.3	92 37.1	-4 39.4	79 39.5	-9 49.2	65 57.9	-14 29.3
40	133 30.8	10 16.7	121 46.4	5 38.0	109 48.8	0 33.0	97 26.6	-4 43.8	84 28.4	-9 53.3	70 46.2	-14 32.8
4 0	138 21.0 290.3	10 13.1 -3.7	126 36.5 290.1	5 34.0 -4.1	114 38.7 289.9	0 28.6 -4.4	102 16.0 289.4	-4 48.2 -4.4	89 17.3 288.9	-9 57.5 -4.1	75 34.5 288.2	-14 36.4 -3.5
20	143 11.3	10 9.4	131 26.7	5 29.9	119 28.6	0 24.2	107 5.5	-4 52.6	94 6.2	-10 1.6	80 22.7	-14 39.9
40	148 1.5	10 5.8	136 16.8	5 25.8	124 18.4	0 19.9	111 54.9	-4 57.0	98 55.1	-10 5.8	85 10.9	-14 43.5
5 0	152 51.8 290.3	10 2.1 -3.7	141 7.0 290.1	5 21.7 -4.1	129 8.3 289.9	0 15.5 -4.4	116 44.4 289.4	-5 1.4 -4.4	103 43.9 288.9	-10 9.9 -4.1	89 59.2 288.2	-14 47.0 -3.5
20	157 42.1	9 58.5	145 57.1	5 17.6	133 58.2	0 11.1	121 33.8	-5 5.8	108 32.8	-10 14.0	94 47.4	-14 50.5
40	162 32.3	9 54.8	150 47.2	5 13.4	138 48.1	0 6.8	126 23.3	-5 10.2	113 21.6	-10 18.1	99 35.6	-14 54.0
6 0	167 22.6 290.3	9 51.1 -3.7	155 37.4 290.1	5 9.3 -4.1	143 37.9 289.8	0 2.4 -4.4	131 12.7 289.4	-5 14.5 -4.4	118 10.5 288.8	-10 22.2 -4.1	104 23.8 288.2	-14 57.5 -3.5
20	172 12.8	9 47.4	160 27.5	5 5.2	148 27.8	-0 2.0	136 2.1	-5 18.9	122 59.3	-10 26.3	109 12.0	-15 0.9
40	177 3.1	9 43.7	165 17.6	5 1.1	153 17.6	-0 6.3	140 51.5	-5 23.3	127 48.1	-10 30.4	114 0.2	-15 4.4
7 0	181 53.3 290.3	9 40.0 -3.7	170 7.7 290.1	4 57.0 -4.2	158 7.5 289.8	-0 10.7 -4.4	145 40.9 289.4	-5 27.7 -4.4	132 37.0 288.8	-10 34.5 -4.1	118 48.4 288.2	-15 7.9 -3.4
20	186 43.6	9 36.3	174 57.9	4 52.8	162 57.3	-0 15.1	150 30.3	-5 32.1	137 25.8	-10 38.6	123 36.5	-15 11.3
40	191 33.8	9 32.6	179 48.0	4 48.7	167 47.1	-0 19.5	155 19.7	-5 36.5	142 14.6	-10 42.7	128 24.7	-15 14.7
8 0	196 24.1 290.2	9 28.9 -3.7	184 38.1 290.1	4 44.5 -4.1	172 37.0 289.8	-0 23.9 -4.4	160 9.0 289.4	-5 40.8 -4.4	147 3.4 288.8	-10 46.7 -4.1	133 12.9 288.1	-15 18.2 -3.4
20	201 14.3	9 25.2	189 28.2	4 40.4	177 26.8	-0 28.2	164 58.4	-5 45.2	151 52.1	-10 50.8	138 1.0	-15 21.6
40	206 4.6	9 21.4	194 18.3	4 36.2	182 16.6	-0 32.6	169 47.8	-5 49.6	156 40.9	-10 54.9	142 49.1	-15 25.0
9 0	210 54.8 290.2	9 17.7 -3.8	199 8.4 290.1	4 32.1 -4.2	187 6.4 289.8	-0 37.0 -4.4	174 37.1 289.3	-5 54.0 -4.4	161 29.7 288.7	-10 58.9 -4.0	147 37.3 288.1	-15 28.4 -3.3
20	215 45.1	9 14.0	203 58.5	4 27.9	191 56.2	-0 41.4	179 26.5	-5 58.3	166 18.4	-11 2.9	152 25.4	-15 31.7
40	220 35.3	9 10.2	208 48.6	4 23.7	196 46.0	-0 45.8	184 15.8	-6 2.7	171 7.2	-11 7.0	157 13.5	-15 35.1
10 0	225 25.6 290.2	9 6.4 -3.8	213 38.7 290.1	4 19.6 -4.2	201 35.8 289.8	-0 50.2 -4.4	189 5.1 289.3	-6 7.1 -4.3	175 55.9 288.7	-11 11.0 -4.0	162 1.6 288.1	-15 38.4 -3.3
20	230 15.8	9 2.7	218 28.8	4 15.4	206 25.6	-0 54.6	193 54.5	-6 11.4	180 44.6	-11 15.0	166 49.7	-15 41.8
40	235 6.1	8 58.9	223 18.9	4 11.2	211 15.4	-0 59.0	198 43.8	-6 15.8	185 33.4	-11 19.1	171 37.8	-15 45.1
11 0	239 56.3 290.2	8 55.1 -3.8	228 9.0 290.1	4 7.0 -4.2	216 5.2 289.8	-1 3.4 -4.4	203 33.1 289.3	-6 20.1 -4.4	190 22.1 288.7	-11 23.1 -4.0	176 25.8 288.1	-15 48.4 -3.3
20	244 46.5	8 51.3	232 59.1	4 2.8	220 54.9	-1 7.8	208 22.4	-6 24.5	195 10.8	-11 27.1	181 13.9	-15 51.7
40	249 36.8	8 47.5	237 49.2	3 58.6	225 44.7	-1 12.2	213 11.7	-6 28.8	199 59.5	-11 31.1	186 2.0	-15 55.0
12 0	254 27.0 290.2	8 43.7 -3.8	242 39.3 290.1	3 54.4 -4.2	230 34.5 289.8	-1 16.6 -4.4	218 1.0 289.3	-6 33.2 -4.3	204 48.1 288.7	-11 35.0 -4.0	190 50.0 288.0	-15 58.3 -3.3
20	259 17.3	8 39.9	247 29.3	3 50.2	235 24.2	-1 21.0	222 50.3	-6 37.5	209 36.8	-11 39.0	195 38.1	-16 1.6
40	264 7.5	8 36.1	252 19.4	3 46.0	240 14.0	-1 25.4	227 39.5	-6 41.9	214 25.5	-11 43.0	200 26.1	-16 4.8
13 0	268 57.7 290.2	8 32.3 -3.8	257 9.5 290.1	3 41.8 -4.2	245 3.7 289.7	-1 29.8 -4.4	232 28.8 289.2	-6 46.2 -4.3	219 14.1 288.6	-11 47.0 -3.9	205 14.1 288.0	-16 8.1 -3.2
20	273 48.0	8 28.4	261 59.6	3 37.6	249 53.5	-1 34.2	237 18.0	-6 50.5	224 2.8	-11 50.9	210 2.1	-16 11.3
40	278 38.2	8 24.6	266 49.6	3 33.4	254 43.2	-1 38.6	242 7.3	-6 54.9	228 51.4	-11 54.9	214 50.1	-16 14.5
14 0	283 28.4 290.2	8 20.8 -3.9	271 39.7 290.1	3 29.1 -4.2	259 32.9 289.7	-1 43.0 -4.4	246 56.5 289.2	-6 59.2 -4.3	233 40.1 288.6	-11 58.8 -3.9	219 38.1 288.0	-16 17.7 -3.2
20	288 18.7	8 16.9	276 29.7	3 24.9	264 22.7	-1 47.4	251 45.8	-7 3.5	238 28.7	-12 2.7	224 26.1	-16 20.9
40	293 8.9	8 13.1	281 19.8	3 20.7	269 12.4	-1 51.8	256 35.0	-7 7.9	243 17.3	-12 6.7	229 14.1	-16 24.1
15 0	297 59.1 290.2	8 9.2 -3.9	286 9.8 290.0	3 16.5 -4.3	274 2.1 289.7	-1 56.2 -4.4	261 24.2 289.2	-7 12.2 -4.3	248 5.9 288.6	-12 10.6 -3.9	234 2.1 288.0	-16 27.3 -3.1
20	302 49.3	8 5.3	290 59.9	3 12.2	278 51.8	-2 0.6	266 13.4	-7 16.5	252 54.5	-12 14.5	238 50.1	-16 30.4
40	307 39.6	8 1.5	295 49.9	3 8.0	283 41.5	-2 5.0	271 2.6	-7 20.8	257 43.1	-12 18.4	243 38.0	-16 33.5
16 0	312 29.8 290.2	7 57.6 -3.9	300 40.0 290.0	3 3.7 -4.2	288 31.2 289.7	-2 9.4 -4.4	275 51.8 289.2	-7 25.1 -4.3	262 31.7 288.6	-12 22.3 -3.9	248 26.0 287.9	-16 36.7 -3.1
20	317 20.0	7 53.7	305 30.0	2 59.5	293 20.9	-2 13.9	280 41.0	-7 29.4	267 20.2	-12 26.2	253 13.9	-16 39.8
40	322 10.2	7 49.8	310 20.0	2 55.2	298 10.6	-2 18.3	285 30.2	-7 33.7	272 8.8	-12 30.0	258 1.9	-16 42.9
17 0	327 0.4 290.2	7 45.9 -3.9	315 10.1 290.0	2 51.0 -4.3	303 0.3 289.7	-2 22.7 -4.4	290 19.3 289.2	-7 38.0 -4.3	276 57.3 288.5	-12 33.9 -3.8	262 49.8 287.9	-16 46.0 -3.1
20	331 50.7	7 42.0	320 0.1	2 46.7	307 49.9	-2 27.1	295 8.5	-7 42.3	281 45.9	-12 37.8	267 37.7	-16 49.1
40	336 40.9	7 38.1	324 50.1	2 42.4	312 39.6	-2 31.5	299 57.7	-7 46.6	286 34.4	-12 41.6	272 25.6	-16 52.1
18 0	341 31.1 290.2	7 34.2 -3.9	329 40.1 290.0	2 38.2 -4.3	317 29.3 289.6	-2 35.9 -4.4	304 46.8 289.1	-7 50.9 -4.3	291 22.9 288.5	-12 45.4 -3.8	277 13.5 287.9	-16 55.2 -3.0
20	346 21.3	7 30.2	334 30.1	2 33.9	322 18.9	-2 40.3	309 35.9	-7 55.2	296 11.4	-12 49.3	282 1.4	-16 58.2
40	351 11.5	7 26.3	339 20.1	2 29.6	327 8.6	-2 44.7	314 25.1	-7 59.5	300 59.9	-12 53.1	286 49.3	-17 1.2
19 0	356 1.7 290.2	7 22.4 -4.0	344 10.1 290.0	2 25.3 -4.3	331 58.2 289.6	-2 49.2 -4.4	319 14.2 289.1	-8 3.8 -4.3	305 48.4 288.5	-12 56.9 -3.8	291 37.2 287.9	-17 4.2 -3.0
20	0 51.9	7 18.4	349 0.1	2 21.0	336 47.8	-2 53.6	324 3.3	-8 8.0	310 36.9	-13 0.7	296 25.1	-17 7.2
40	5 42.1	7 14.5	353 50.1	2 16.8	341 37.5	-2 58.0	328 52.4	-8 12.3	315 25.4	-13 4.5	301 12.9	-17 10.2
20 0	10 32.3 290.2	7 10.5 -4.0	358 40.1 290.0	2 12.5 -4.3	346 27.1 289.6	-3 2.4 -4.4	333 41.5 289.1	-8 16.6 -4.2	320 13.9 288.5	-13 8.3 -3.8	306 0.8 287.8	-17 13.2 -2.9
20	15 22.5	7 6.6	3 30.1	2 8.2	351 16.7	-3 6.8	338 30.6	-8 20.8	325 2.3	-13 12.1	310 48.6	-17 16.1
40	20 12.7	7 2.6	8 20.1	2 3.9	356 6.3	-3 11.2	343 19.7	-8 25.1	329 50.8	-13 15.9	315 36.5	-17 19.1
21 0	25 2.9 290.2	6 58.6 -4.0	13 10.1 290.0	1 59.6 -4.3	0 55.9 289.6	-3 15.6 -4.4	348 8.7 289.1	-8 29.3 -4.3	334 39.2 288.4	-13 19.6 -3.8	320 24.3 287.8	-17 22.0 -2.9
20	29 53.1	6 54.7	18 0.1	1 55.3	5 45.5	-3 20.1	352 57.8	-8 33.6	339 27.7	-13 23.4	325 12.1	-17 24.9
40	34 43.3	6 50.7	22 50.0	1 51.0	10 35.1	-3 24.5	357 46.9	-8 37.8	344 16.1	-13 27.1	329 60.0	-17 27.8
22 0	39 33.5 290.2	6 46.7 -4.0	27 40.0 290.0	1 46.7 -4.3	15 24.7 289.6	-3 28.9 -4.4	2 35.9 289.0	-8 42.1 -4.2	349 4.5 288.4	-13 30.9 -3.7	334 47.8 287.8	-17 30.7 -2.9
20	44 23.7	6 42.7	32 30.0	1 42.3	20 14.3	-3 33.3	7 24.9	-8 46.3	353 52.9	-13 34.6	339 35.6	-17 33.6
40	49 13.9	6 38.7	37 19.9	1 38.0	25 3.8	-3 37.7	12 14.0	-8 50.5	358 41.3	-13 38.3	344 23.4	-17 36.4
23 0	54 4.0 290.2	6 34.7 -4.0	42 9.9 289.9	1 33.7 -4.3	29 53.4 289.5	-3 42.1 -4.4	17 3.0 289.0	-8 54.7 -4.2	3 29.7 288.4	-13 42.0 -3.7	349 11.2 287.8	-17 39.3 -2.8
20	58 54.2	6 30.7	46 59.8	1 29.4	34 42.9	-3 46.5	21 52.0	-8 59.0	8 18.1	-13 45.7	353 58.9	-17 42.1
40	63 44.4	6 26.7	51 49.8	1 25.1	39 32.5	-3 50.9	26 41.0	-9 3.2	13 6.4	-13 49.4	358 46.7	-17 44.9

2012 Moon

h m	6 May GHA	6 May Dec	d	7 May GHA	7 May Dec	d	8 May GHA	8 May Dec	d	9 May GHA	9 May Dec	d	10 May GHA	10 May Dec	d	11 May GHA	11 May Dec	d
0 0	3 34.5	-17 47.7		348 38.3	-20 28.5		333 27.6	-21 39.9		318 31.0	-21 18.3		304 13.9	-19 32.4		290 51.2	-16 38.5	
20	8 22.3	-17 50.5	287.8 -2.8	353 25.7	-20 30.1	287.4 -1.6	338 15.0	-21 40.2	287.4 -0.3	323 18.8	-21 17.4	287.8 0.9	309 2.4	-19 30.4	288.5 2.0	295 40.4	-16 35.7	289.3 2.8
40	13 10.0	-17 53.3		358 13.1	-20 31.7		343 2.4	-21 40.5		328 6.5	-21 16.5		313 50.9	-19 28.4		300 29.7	-16 32.9	
1 0	17 57.8	-17 56.0		3 0.4	-20 33.3		347 49.8	-21 40.8		332 54.3	-21 15.5		318 39.3	-19 26.3		305 19.0	-16 30.1	
20	22 45.5	-17 58.8	287.7 -2.7	7 47.8	-20 34.9	287.4 -1.6	352 37.2	-21 41.1	287.4 -0.3	337 42.1	-21 14.5	287.8 1.0	323 27.8	-19 24.3	288.5 2.0	310 8.3	-16 27.3	289.3 2.8
40	27 33.2	-18 1.5		12 35.2	-20 36.4		357 24.6	-21 41.4		342 29.9	-21 13.6		328 16.3	-19 22.3		314 57.6	-16 24.4	
2 0	32 21.0	-18 4.2		17 22.6	-20 38.0		2 12.0	-21 41.6		347 17.8	-21 12.5		333 4.8	-19 20.2		319 46.9	-16 21.6	
20	37 8.7	-18 6.9	287.7 -2.7	22 9.9	-20 39.5	287.4 -1.5	6 59.4	-21 41.8	287.4 -0.2	352 5.6	-21 11.5	287.8 1.0	337 53.4	-19 18.1	288.5 2.1	324 36.2	-16 18.7	289.3 2.9
40	41 56.4	-18 9.6		26 57.3	-20 41.0		11 46.8	-21 42.0		356 53.4	-21 10.5		342 41.9	-19 16.1		329 25.6	-16 15.9	
3 0	46 44.1	-18 12.3		31 44.7	-20 42.5		16 34.2	-21 42.2		1 41.3	-21 9.4		347 30.4	-19 14.0		334 14.9	-16 13.0	
20	51 31.8	-18 14.9	287.7 -2.6	36 32.1	-20 44.0	287.4 -1.4	21 21.6	-21 42.4	287.4 -0.2	6 29.1	-21 8.4	287.9 1.1	352 19.0	-19 11.8	288.6 2.1	339 4.3	-16 10.1	289.4 2.9
40	56 19.5	-18 17.6		41 19.4	-20 45.4		26 9.0	-21 42.5		11 17.0	-21 7.3		357 7.6	-19 9.7		343 53.6	-16 7.2	
4 0	61 7.2	-18 20.2		46 6.8	-20 46.8		30 56.4	-21 42.7		16 4.8	-21 6.2		1 56.2	-19 7.6		348 43.0	-16 4.3	
20	65 54.9	-18 22.8	287.7 -2.6	50 54.1	-20 48.3	287.4 -1.4	35 43.9	-21 42.8	287.4 -0.1	20 52.7	-21 5.0	287.9 1.1	6 44.7	-19 5.4	288.6 2.2	353 32.4	-16 1.4	289.4 2.9
40	70 42.5	-18 25.4		55 41.5	-20 49.7		40 31.3	-21 42.9		25 40.6	-21 3.9		11 33.3	-19 3.3		358 21.8	-15 58.5	
5 0	75 30.2	-18 28.0		60 28.9	-20 51.0		45 18.7	-21 42.9		30 28.5	-21 2.8		16 22.0	-19 1.1		3 11.2	-15 55.5	
20	80 17.9	-18 30.5	287.7 -2.5	65 16.2	-20 52.4	287.4 -1.4	50 6.1	-21 43.0	287.4 -0.1	35 16.4	-21 1.6	287.9 1.2	21 10.6	-18 58.9	288.6 2.2	8 0.6	-15 52.6	289.4 2.9
40	85 5.5	-18 33.1		70 3.6	-20 53.7		54 53.6	-21 43.0		40 4.3	-21 0.4		25 59.2	-18 56.7		12 50.1	-15 49.7	
6 0	89 53.2	-18 35.6		74 50.9	-20 55.1		59 41.0	-21 43.1		44 52.2	-20 59.2		30 47.9	-18 54.5		17 39.5	-15 46.7	
20	94 40.8	-18 38.1	287.6 -2.5	79 38.3	-20 56.4	287.3 -1.3	64 28.5	-21 43.1	287.5 0.0	49 40.1	-20 58.0	287.9 1.2	35 36.5	-18 52.3	288.7 2.2	22 29.0	-15 43.8	289.5 3.0
40	99 28.4	-18 40.6		84 25.6	-20 57.7		69 15.9	-21 43.1		54 28.1	-20 56.8		40 25.2	-18 50.1		27 18.4	-15 40.8	
7 0	104 16.1	-18 43.1		89 13.0	-20 58.9		74 3.4	-21 43.0		59 16.0	-20 55.5		45 13.9	-18 47.8		32 7.9	-15 37.8	
20	109 3.7	-18 45.6	287.6 -2.5	94 0.3	-21 0.2	287.3 -1.3	78 50.8	-21 43.0	287.5 0.1	64 4.0	-20 54.3	288.0 1.3	50 2.5	-18 45.6	288.7 2.3	36 57.4	-15 34.8	289.5 3.0
40	113 51.3	-18 48.0		98 47.6	-21 1.4		83 38.3	-21 42.9		68 51.9	-20 53.0		54 51.2	-18 43.3		41 46.9	-15 31.8	
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20	123 26.5	-18 52.9	287.6 -2.4	108 22.3	-21 3.9	287.3 -1.2	93 13.2	-21 42.7	287.5 0.1	78 27.9	-20 50.4	288.0 1.3	64 28.7	-18 38.7	288.7 2.3	51 25.9	-15 25.8	289.5 3.0
40	128 14.1	-18 55.3		113 9.7	-21 5.0		98 0.7	-21 42.6		83 15.9	-20 49.1		69 17.4	-18 36.4		56 15.4	-15 22.8	
9 0	133 1.7	-18 57.7		117 57.0	-21 6.2		102 48.2	-21 42.5		88 3.9	-20 47.7		74 6.2	-18 34.1		61 5.0	-15 19.8	
20	137 49.3	-19 0.1	287.6 -2.4	122 44.3	-21 7.4	287.3 -1.1	107 35.7	-21 42.3	287.5 0.2	92 51.9	-20 46.4	288.0 1.4	78 54.9	-18 31.8	288.8 2.3	65 54.5	-15 16.7	289.6 3.1
40	142 36.9	-19 2.5		127 31.7	-21 8.5		112 23.2	-21 42.2		97 39.9	-20 45.0		83 43.7	-18 29.4		70 44.1	-15 13.7	
10 0	147 24.5	-19 4.8		132 19.0	-21 9.6		117 10.7	-21 42.0		102 27.9	-20 43.6		88 32.4	-18 27.1		75 33.7	-15 10.6	
20	152 12.0	-19 7.1	287.6 -2.3	137 6.4	-21 10.7	287.3 -1.1	121 58.2	-21 41.8	287.5 0.2	107 16.0	-20 42.2	288.0 1.4	93 21.2	-18 24.7	288.8 2.4	80 23.3	-15 7.6	289.6 3.1
40	156 59.6	-19 9.4		141 53.7	-21 11.8		126 45.7	-21 41.5		112 4.0	-20 40.8		98 10.0	-18 22.3		85 12.9	-15 4.5	
11 0	161 47.1	-19 11.7		146 41.0	-21 12.8		131 33.2	-21 41.3		116 52.1	-20 39.4		102 58.8	-18 20.0		90 2.5	-15 1.4	
20	166 34.7	-19 14.0	287.5 -2.3	151 28.4	-21 13.9	287.3 -1.0	136 20.7	-21 41.0	287.5 0.3	121 40.1	-20 37.9	288.1 1.5	107 47.7	-18 17.6	288.8 2.4	94 52.1	-14 58.4	289.6 3.1
40	171 22.2	-19 16.3		156 15.7	-21 14.9		141 8.2	-21 40.7		126 28.2	-20 36.5		112 36.5	-18 15.2		99 41.7	-14 55.3	
12 0	176 9.8	-19 18.5		161 3.0	-21 15.9		145 55.8	-21 40.5		131 16.3	-20 35.0		117 25.3	-18 12.7		104 31.3	-14 52.2	
20	180 57.3	-19 20.8	287.5 -2.2	165 50.4	-21 16.9	287.3 -1.0	150 43.3	-21 40.1	287.5 0.3	136 4.4	-20 33.5	288.1 1.5	122 14.2	-18 10.3	288.9 2.4	109 21.0	-14 49.1	289.7 3.1
40	185 44.9	-19 23.0		170 37.7	-21 17.8		155 30.8	-21 39.8		140 52.5	-20 32.0		127 3.1	-18 7.9		114 10.6	-14 45.9	
13 0	190 32.4	-19 25.2		175 25.0	-21 18.8		160 18.4	-21 39.5		145 40.6	-20 30.5		131 51.9	-18 5.4		119 0.3	-14 42.8	
20	195 19.9	-19 27.4	287.5 -2.2	180 12.4	-21 19.7	287.3 -0.9	165 5.9	-21 39.1	287.6 0.4	150 28.7	-20 28.9	288.1 1.6	136 40.8	-18 2.9	288.9 2.5	123 50.0	-14 39.7	289.7 3.1
40	200 7.4	-19 29.5		184 59.7	-21 20.6		169 53.5	-21 38.7		155 16.8	-20 27.4		141 29.7	-18 0.5		128 39.7	-14 36.6	
14 0	204 54.9	-19 31.7		189 47.0	-21 21.5		174 41.1	-21 38.3		160 5.0	-20 25.8		146 18.6	-17 58.0		133 29.4	-14 33.4	
20	209 42.4	-19 33.8	287.5 -2.1	194 34.4	-21 22.4	287.3 -0.9	179 28.6	-21 37.9	287.6 0.4	164 53.1	-20 24.3	288.2 1.6	151 7.6	-17 55.5	288.9 2.5	138 19.1	-14 30.3	289.7 3.1
40	214 29.9	-19 36.0		199 21.7	-21 23.3		184 16.2	-21 37.5		169 41.3	-20 22.7		155 56.5	-17 53.0		143 8.8	-14 27.1	
15 0	219 17.4	-19 38.1		204 9.1	-21 24.1		189 3.8	-21 37.0		174 29.5	-20 21.1		160 45.4	-17 50.5		147 58.5	-14 24.0	
20	224 4.9	-19 40.1	287.5 -2.1	208 56.4	-21 24.9	287.3 -0.8	193 51.4	-21 36.5	287.6 0.5	179 17.6	-20 19.4	288.2 1.6	165 34.4	-17 47.9	289.0 2.6	152 48.3	-14 20.8	289.8 3.2
40	228 52.4	-19 42.2		213 43.7	-21 25.7		198 39.0	-21 36.0		184 5.8	-20 17.8		170 23.4	-17 45.4		157 38.0	-14 17.6	
16 0	233 39.9	-19 44.3		218 31.1	-21 26.5		203 26.6	-21 35.5		188 54.0	-20 16.2		175 12.3	-17 42.8		162 27.8	-14 14.4	
20	238 27.4	-19 46.3	287.5 -2.0	223 18.4	-21 27.3	287.3 -0.8	208 14.2	-21 35.0	287.6 0.5	193 42.2	-20 14.5	288.2 1.7	180 1.3	-17 40.3	289.0 2.6	167 17.6	-14 11.2	289.8 3.2
40	243 14.9	-19 48.3		228 5.8	-21 28.0		213 1.8	-21 34.5		198 30.5	-20 12.8		184 50.3	-17 37.7		172 7.4	-14 8.0	
17 0	248 2.3	-19 50.3		232 53.1	-21 28.8		217 49.4	-21 33.9		203 18.7	-20 11.1		189 39.4	-17 35.1		176 57.2	-14 4.8	
20	252 49.8	-19 52.3	287.5 -2.0	237 40.4	-21 29.5	287.3 -0.7	222 37.0	-21 33.4	287.6 0.6	208 6.9	-20 9.4	288.2 1.7	194 28.4	-17 32.5	289.0 2.6	181 47.0	-14 1.6	289.8 3.2
40	257 37.3	-19 54.3		242 27.8	-21 30.2		227 24.7	-21 32.8		212 55.2	-20 7.7		199 17.4	-17 29.9		186 36.8	-13 58.4	
18 0	262 24.7	-19 56.2		247 15.1	-21 30.8		232 12.3	-21 32.2		217 43.4	-20 6.0		204 6.5	-17 27.3		191 26.6	-13 55.2	
20	267 12.2	-19 58.2	287.4 -1.9	252 2.5	-21 31.5	287.3 -0.7	236 59.9	-21 31.5	287.7 0.7	222 31.7	-20 4.2	288.3 1.8	208 55.5	-17 24.7	289.1 2.6	196 16.4	-13 51.9	289.8 3.3
40	271 59.6	-20 0.1		256 49.8	-21 32.1		241 47.6	-21 30.9		227 20.0	-20 2.4		213 44.6	-17 22.0		201 6.3	-13 48.7	
19 0	276 47.1	-20 2.0		261 37.2	-21 32.8		246 35.2	-21 30.2		232 8.3	-20 0.7		218 33.7	-17 19.4		205 56.1	-13 45.4	
20	281 34.5	-20 3.9	287.4 -1.9	266 24.5	-21 33.4	287.4 -0.6	251 22.9	-21 29.6	287.7 0.7	236 56.6	-19 58.9	288.3 1.8	223 22.7	-17 16.7	289.1 2.7	210 46.0	-13 42.2	289.9 3.2
40	286 21.9	-20 5.8		271 11.9	-21 33.9		256 10.6	-21 28.9		241 44.9	-19 57.1		228 11.8	-17 14.1		215 35.9	-13 38.9	
20 0	291 9.4	-20 7.6		275 59.2	-21 34.5		260 58.3	-21 28.2		246 33.2	-19 55.2		233 1.0	-17 11.4		220 25.7	-13 35.7	
20	295 56.8	-20 9.4	287.4 -1.8	280 46.6	-21 35.1	287.4 -0.5	265 45.9	-21 27.4	287.7 0.8	251 21.6	-19 53.4	288.3 1.8	237 50.1	-17 8.7	289.1 2.7	225 15.6	-13 32.4	289.9 3.3
40	300 44.2	-20 11.3		285 33.9	-21 35.6		270 33.6	-21 26.7		256 9.9	-19 51.6		242 39.2	-17 6.0		230 5.5	-13 29.1	
21 0	305 31.6	-20 13.1		290 21.3	-21 36.1		275 21.3	-21 25.9		260 58.3	-19 49.7		247 28.4	-17 3.3		234 55.5	-13 25.8	
20	310 19.1	-20 14.8	287.4 -1.8	295 8.7	-21 36.6	287.4 -0.5	280 9.1	-21 25.2	287.7 0.8	265 46.6	-19 47.8	288.4 1.9	252 17.5	-17 0.6	289.2 2.7	239 45.4	-13 22.5	289.9 3.3
40	315 6.5	-20 16.6		299 56.0	-21 37.1		284 56.8	-21 24.4		270 35.0	-19 45.9		257 6.7	-16 57.9		244 35.3	-13 19.2	
22 0	319 53.9	-20 18.4		304 43.4	-21 37.5		289 44.5	-21 23.5		275 23.4	-19 44.0		261 55.9	-16 55.1		249 25.3	-13 15.9	
20	324 41.3	-20 20.1	287.4 -1.7	309 30.8	-21 38.0	287.4 -0.4	294 32.2	-21 22.7	287.7 0.8	280 11.8	-19 42.1	288.4 1.9	266 45.1	-16 52.4	289.2 2.7	254 15.2	-13 12.6	290.0 3.3
40	329 28.7	-20 21.8		314 18.1	-21 38.4		299 20.0	-21 21.9		285 0.2	-19 40.2		271 34.3	-16 49.6		259 5.2	-13 9.3	
23 0	334 16.1	-20 23.5		319 5.5	-21 38.8		304 7.7	-21 21.0		289 48.6	-19 38.3		276 23.5	-16 46.9		263 55.2	-13 6.0	
20	339 3.5	-20 25.2	287.4 -1.7	323 52.9	-21 39.2	287.4 -0.4	308 55.5	-21 20.1	287.8 0.9	294 37.0	-19 36.3	288.4 2.0	281 12.7	-16 44.1	289.2 2.8	268 45.1	-13 2.6	290.0 3.3
40	343 50.9	-20 26.8		328 40.2	-21 39.5		313 43.2	-21 19.3		299 25.5	-19 34.3		286 1.9	-16 41.3		273 35.1	-12 59.3	

2012 Moon

h m	12 May GHA	12 May Dec	d	13 May GHA	13 May Dec	d	14 May GHA	14 May Dec	d	15 May GHA	15 May Dec	d	16 May GHA	16 May Dec	d	17 May GHA	17 May Dec	d
0 0	278 25.1	-12 56.0		266 49.0	-8 42.5		255 51.2	-4 12.9		245 18.6	0 20.7		234 58.2	4 48.5		224 38.5	9 1.6	
20	283 15.2	-12 52.6	3.4	271 39.6	-8 38.8	3.7	260 42.3	-4 9.1	3.8	250 9.9	0 24.5	3.8	239 49.6	4 52.2	3.6	229 29.8	9 5.0	3.4
40	288 5.2	-12 49.3	290.0	276 30.3	-8 35.1	290.6	265 33.3	-4 5.3	291.1	255 1.2	0 28.3	291.3	244 41.1	4 55.8	291.4	234 21.2	9 8.4	291.3
1 0	292 55.2	-12 45.9		281 20.9	-8 31.5		270 24.4	-4 1.5		259 52.6	0 32.1		249 32.5	4 59.4		239 12.5	9 11.7	
20	297 45.2	-12 42.5	3.4	286 11.6	-8 27.8	3.7	275 15.5	-3 57.7	3.8	264 43.9	0 35.9	3.8	254 23.9	5 3.1	3.6	244 3.9	9 15.1	3.4
40	302 35.3	-12 39.2	290.1	291 2.2	-8 24.1	290.7	280 6.6	-3 53.9	291.1	269 35.2	0 39.6	291.3	259 15.3	5 6.7	291.4	248 55.2	9 18.5	291.3
2 0	307 25.4	-12 35.8		295 52.9	-8 20.4		284 57.7	-3 50.1		274 26.6	0 43.4		264 6.7	5 10.3		253 46.6	9 21.8	
20	312 15.4	-12 32.4	3.4	300 43.6	-8 16.8	3.7	289 48.8	-3 46.3	3.8	279 17.9	0 47.2	3.8	268 58.1	5 13.9	3.6	258 37.9	9 25.1	3.3
40	317 5.5	-12 29.0	290.1	305 34.3	-8 13.1	290.7	294 39.9	-3 42.5	291.1	284 9.3	0 50.9	291.3	273 49.5	5 17.5	291.4	263 29.2	9 28.5	291.3
3 0	321 55.6	-12 25.6		310 24.9	-8 9.4		299 31.0	-3 38.7		289 0.6	0 54.7		278 41.0	5 21.1		268 20.6	9 31.8	
20	326 45.7	-12 22.2	3.4	315 15.6	-8 5.7	3.7	304 22.1	-3 34.9	3.8	293 52.0	0 58.5	3.8	283 32.4	5 24.8	3.6	273 11.9	9 35.2	3.3
40	331 35.8	-12 18.8	290.1	320 6.3	-8 2.0	290.7	309 13.3	-3 31.1	291.1	298 43.3	1 2.3	291.4	288 23.8	5 28.4	291.3	278 3.2	9 38.5	291.3
4 0	336 25.9	-12 15.4		324 57.1	-7 58.3		314 4.4	-3 27.3		303 34.7	1 6.0		293 15.2	5 32.0		282 54.6	9 41.8	
20	341 16.0	-12 12.0	3.4	329 47.8	-7 54.6	3.7	318 55.5	-3 23.5	3.8	308 26.0	1 9.8	3.8	298 6.6	5 35.6	3.6	287 45.9	9 45.1	3.3
40	346 6.2	-12 8.6	290.1	334 38.5	-7 50.9	290.7	323 46.6	-3 19.7	291.1	313 17.4	1 13.6	291.4	302 58.0	5 39.2	291.3	292 37.2	9 48.4	291.3
5 0	350 56.3	-12 5.2		339 29.2	-7 47.2		328 37.8	-3 15.9		318 8.7	1 17.3		307 49.4	5 42.8		297 28.5	9 51.7	
20	355 46.5	-12 1.7	3.4	344 20.0	-7 43.5	3.7	333 28.9	-3 12.1	3.8	323 0.1	1 21.1	3.8	312 40.8	5 46.3	3.6	302 19.8	9 55.0	3.3
40	0 36.6	-11 58.3	290.2	349 10.7	-7 39.8	290.7	338 20.1	-3 8.3	291.1	327 51.5	1 24.8	291.4	317 32.2	5 49.9	291.3	307 11.2	9 58.3	291.3
6 0	5 26.8	-11 54.9		354 1.5	-7 36.1		343 11.2	-3 4.5		332 42.8	1 28.6		322 23.7	5 53.5		312 2.5	10 1.6	
20	10 17.0	-11 51.4	3.5	358 52.2	-7 32.4	3.7	348 2.4	-3 0.7	3.8	337 34.2	1 32.3	3.8	327 15.1	5 57.1	3.6	316 53.8	10 4.9	3.3
40	15 7.2	-11 48.0	290.2	3 43.0	-7 28.7	290.8	352 53.5	-2 56.9	291.2	342 25.6	1 36.1	291.4	332 6.5	6 0.7	291.3	321 45.1	10 8.2	291.3
7 0	19 57.4	-11 44.5		8 33.8	-7 24.9		357 44.7	-2 53.1		347 16.9	1 39.9		336 57.9	6 4.2		326 36.4	10 11.5	
20	24 47.6	-11 41.0	3.5	13 24.5	-7 21.2	3.7	2 35.8	-2 49.2	3.8	352 8.3	1 43.6	3.7	341 49.3	6 7.8	3.6	331 27.7	10 14.8	3.3
40	29 37.8	-11 37.6	290.2	18 15.3	-7 17.5	290.8	7 27.0	-2 45.4	291.2	356 59.7	1 47.4	291.4	346 40.7	6 11.4	291.3	336 19.0	10 18.0	291.3
8 0	34 28.1	-11 34.1		23 6.1	-7 13.8		12 18.2	-2 41.6		1 51.0	1 51.1		351 32.1	6 14.9		341 10.3	10 21.3	
20	39 18.3	-11 30.6	3.5	27 56.9	-7 10.0	3.7	17 9.4	-2 37.8	3.8	6 42.4	1 54.8	3.7	356 23.5	6 18.5	3.6	346 1.6	10 24.5	3.2
40	44 8.5	-11 27.2	290.2	32 47.7	-7 6.3	290.8	22 0.5	-2 34.0	291.2	11 33.8	1 58.6	291.4	1 14.9	6 22.1	291.3	350 52.9	10 27.8	291.3
9 0	48 58.8	-11 23.7		37 38.5	-7 2.6		26 51.7	-2 30.2		16 25.2	2 2.3		6 6.3	6 25.6		355 44.2	10 31.0	
20	53 49.1	-11 20.2	3.5	42 29.3	-6 58.8	3.7	31 42.9	-2 26.4	3.8	21 16.5	2 6.1	3.8	10 57.7	6 29.2	3.6	0 35.5	10 34.3	3.3
40	58 39.3	-11 16.7	290.3	47 20.2	-6 55.1	290.8	36 34.1	-2 22.6	291.2	26 7.9	2 9.8	291.4	15 49.1	6 32.7	291.3	5 26.8	10 37.5	291.3
10 0	63 29.6	-11 13.2		52 11.0	-6 51.4		41 25.3	-2 18.8		30 59.3	2 13.6		20 40.5	6 36.3		10 18.0	10 40.8	
20	68 19.9	-11 9.7	3.5	57 1.8	-6 47.6	3.8	46 16.5	-2 15.0	3.8	35 50.7	2 17.3	3.7	25 31.9	6 39.8	3.5	15 9.3	10 44.0	3.2
40	73 10.2	-11 6.2	290.3	61 52.7	-6 43.9	290.8	51 7.7	-2 11.2	291.2	40 42.1	2 21.0	291.4	30 23.4	6 43.3	291.3	20 0.6	10 47.2	291.3
11 0	78 0.5	-11 2.7		66 43.5	-6 40.1		55 58.9	-2 7.4		45 33.5	2 24.8		35 14.8	6 46.9		24 51.9	10 50.4	
20	82 50.8	-10 59.1	3.5	71 34.4	-6 36.4	3.7	60 50.1	-2 3.6	3.8	50 24.9	2 28.5	3.7	40 6.2	6 50.4	3.5	29 43.2	10 53.6	3.2
40	87 41.2	-10 55.6	290.3	76 25.3	-6 32.6	290.9	65 41.3	-1 59.7	291.2	55 16.2	2 32.2	291.4	44 57.6	6 53.9	291.3	34 34.4	10 56.8	291.2
12 0	92 31.5	-10 52.1		81 16.1	-6 28.9		70 32.6	-1 55.9		60 7.6	2 35.9		49 49.0	6 57.4		39 25.7	11 0.0	
20	97 21.8	-10 48.6	3.5	86 7.0	-6 25.1	3.8	75 23.8	-1 52.1	3.8	64 59.0	2 39.7	3.7	54 40.4	7 1.0	3.5	44 17.0	11 3.2	3.2
40	102 12.2	-10 45.0	290.4	90 57.9	-6 21.4	290.9	80 15.0	-1 48.3	291.2	69 50.4	2 43.4	291.4	59 31.7	7 4.5	291.3	49 8.2	11 6.4	291.2
13 0	107 2.5	-10 41.5		95 48.8	-6 17.6		85 6.2	-1 44.5		74 41.8	2 47.1		64 23.1	7 8.0		53 59.5	11 9.6	
20	111 52.9	-10 37.9	3.6	100 39.7	-6 13.9	3.7	89 57.5	-1 40.7	3.8	79 33.2	2 50.8	3.7	69 14.5	7 11.5	3.5	58 50.8	11 12.8	3.2
40	116 43.3	-10 34.4	290.4	105 30.6	-6 10.1	290.9	94 48.7	-1 36.9	291.2	84 24.6	2 54.5	291.4	74 5.9	7 15.0	291.3	63 42.0	11 16.0	291.2
14 0	121 33.7	-10 30.8		110 21.5	-6 6.4		99 40.0	-1 33.1		89 16.0	2 58.2		78 57.3	7 18.5		68 33.3	11 19.1	
20	126 24.1	-10 27.3	3.5	115 12.4	-6 2.6	3.8	104 31.2	-1 29.3	3.8	94 7.4	3 2.0	3.7	83 48.7	7 22.0	3.5	73 24.5	11 22.3	3.2
40	131 14.5	-10 23.7	290.4	120 3.3	-5 58.8	290.9	109 22.4	-1 25.5	291.2	98 58.8	3 5.7	291.4	88 40.1	7 25.5	291.2	78 15.8	11 25.5	291.2
15 0	136 4.9	-10 20.2		124 54.2	-5 55.1		114 13.7	-1 21.7		103 50.2	3 9.4		93 31.5	7 29.0		83 7.0	11 28.6	
20	140 55.3	-10 16.6	3.6	129 45.1	-5 51.3	3.8	119 5.0	-1 17.9	3.8	108 41.6	3 13.1	3.7	98 22.9	7 32.5	3.5	87 58.3	11 31.8	3.2
40	145 45.7	-10 13.0	290.4	134 36.1	-5 47.5	290.9	123 56.2	-1 14.1	291.3	113 33.0	3 16.8	291.4	103 14.3	7 35.9	291.2	92 49.5	11 34.9	291.2
16 0	150 36.2	-10 9.4		139 27.0	-5 43.8		128 47.5	-1 10.3		118 24.4	3 20.5		108 5.7	7 39.4		97 40.7	11 38.1	
20	155 26.6	-10 5.9	3.6	144 18.0	-5 40.0	3.8	133 38.7	-1 6.5	3.8	123 15.8	3 24.2	3.7	112 57.0	7 42.9	3.5	102 32.0	11 41.2	3.1
40	160 17.1	-10 2.3	290.5	149 8.9	-5 36.2	291.0	138 30.0	-1 2.7	291.3	128 7.2	3 27.9	291.4	117 48.4	7 46.4	291.2	107 23.2	11 44.3	291.2
17 0	165 7.5	-9 58.7		153 59.9	-5 32.4		143 21.3	-0 58.9		132 58.6	3 31.6		122 39.8	7 49.8		112 14.4	11 47.4	
20	169 58.0	-9 55.1	3.6	158 50.8	-5 28.7	3.8	148 12.5	-0 55.1	3.8	137 50.0	3 35.2	3.7	127 31.2	7 53.3	3.5	117 5.7	11 50.5	3.1
40	174 48.5	-9 51.5	290.5	163 41.8	-5 24.9	291.0	153 3.8	-0 51.3	3.8	142 41.4	3 38.9	291.4	132 22.6	7 56.7	291.2	121 56.9	11 53.7	291.2
18 0	179 38.9	-9 47.9		168 32.8	-5 21.1		157 55.1	-0 47.5		147 32.8	3 42.6		137 13.9	8 0.2		126 48.1	11 56.8	
20	184 29.4	-9 44.3	3.6	173 23.8	-5 17.3	3.8	162 46.4	-0 43.7	3.8	152 24.2	3 46.3	3.7	142 5.3	8 3.6	3.4	131 39.3	11 59.9	3.1
40	189 19.9	-9 40.7	290.5	178 14.7	-5 13.6	291.0	167 37.7	-0 39.9	291.3	157 15.6	3 50.0	291.4	146 56.7	8 7.1	291.2	136 30.6	12 3.0	291.2
19 0	194 10.4	-9 37.1		183 5.7	-5 9.8		172 28.9	-0 36.1		162 7.1	3 53.7		151 48.1	8 10.5		141 21.8	12 6.0	
20	199 1.0	-9 33.4	3.6	187 56.7	-5 6.0	3.8	177 20.2	-0 32.3	3.8	166 58.5	3 57.3	3.7	156 39.4	8 14.0	3.4	146 13.0	12 9.1	3.1
40	203 51.5	-9 29.8	290.5	192 47.7	-5 2.2	291.0	182 11.5	-0 28.5	291.3	171 49.9	4 1.0	291.4	161 30.8	8 17.4	291.2	151 4.2	12 12.2	291.2
20 0	208 42.0	-9 26.2		197 38.7	-4 58.4		187 2.8	-0 24.7		176 41.3	4 4.7		166 22.2	8 20.8		155 55.4	12 15.3	
20	213 32.6	-9 22.6	3.6	202 29.7	-4 54.6	3.8	191 54.1	-0 20.9	3.8	181 32.7	4 8.4	3.7	171 13.6	8 24.3	3.4	160 46.6	12 18.3	3.0
40	218 23.1	-9 19.0	290.5	207 20.8	-4 50.8	291.0	196 45.4	-0 17.1	291.3	186 24.1	4 12.0	291.4	176 4.9	8 27.7	291.2	165 37.8	12 21.4	291.2
21 0	223 13.7	-9 15.3		212 11.8	-4 47.1		201 36.7	-0 13.3		191 15.5	4 15.7		180 56.3	8 31.1		170 29.0	12 24.4	
20	228 4.2	-9 11.7	3.6	217 2.8	-4 43.3	3.8	206 28.0	-0 9.6	3.8	196 6.9	4 19.3	3.7	185 47.7	8 34.5	3.4	175 20.2	12 27.5	3.1
40	232 54.8	-9 8.0	290.6	221 53.8	-4 39.5	291.0	211 19.3	-0 5.8	291.3	200 58.3	4 23.0	291.4	190 39.0	8 37.9	291.2	180 11.3	12 30.5	291.2
22 0	237 45.4	-9 4.4		226 44.9	-4 35.7		216 10.7	-0 2.0		205 49.8	4 26.7		195 30.4	8 41.3		185 2.5	12 33.6	
20	242 36.0	-9 0.8	3.6	231 35.9	-4 31.9	3.8	221 2.0	0 1.8	3.8	210 41.2	4 30.3	3.6	200 21.7	8 44.7	3.4	189 53.7	12 36.6	3.0
40	247 26.6	-8 57.1	290.6	236 27.0	-4 28.1	291.0	225 53.3	0 5.6	291.3	215 32.6	4 34.0	291.4	205 13.1	8 48.1	291.2	194 44.9	12 39.6	291.2
23 0	252 17.2	-8 53.5		241 18.0	-4 24.3		230 44.6	0 9.4		220 24.0	4 37.6		210 4.4	8 51.5		199 36.1	12 42.6	
20	257 7.8	-8 49.8	3.7	246 9.1	-4 20.5	3.8	235 35.9	0 13.2	3.8	225 15.4	4 41.2	3.6	214 55.8	8 54.9	3.4	204 27.2	12 45.6	3.0
40	261 58.4	-8 46.1	290.6	251 0.1	-4 16.7	291.1	240 27.2	0 17.0	291.3	230 6.8	4 44.9	291.4	219 47.1	8 58.3	291.2	209 18.4	12 48.6	291.2

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h m	18 May GHA	18 May Dec	d	19 May GHA	19 May Dec	d	20 May GHA	20 May Dec	d	21 May GHA	21 May Dec	d	22 May GHA	22 May Dec	d	23 May GHA	23 May Dec	d
0 0	214 9.6	12 51.6		203 24.1	16 10.1		192 18.0	18 48.7		180 51.1	20 39.5		169 7.0	21 36.1		157 13.0	21 34.1	
20	219 0.7	12 54.6	291.2 3.0	208 15.0	16 12.6	290.9 2.5	197 8.6	18 50.6	290.6 1.9	185 41.4	20 40.7	290.3 1.2	173 57.2	21 36.5	290.1 0.4	162 3.1	21 33.6	290.1 -0.5
40	223 51.9	12 57.6		213 5.9	16 15.1		201 59.2	18 52.5		190 31.7	20 41.9		178 47.3	21 36.8		166 53.1	21 33.2	
1 0	228 43.0	13 0.6		217 56.8	16 17.6		206 49.8	18 54.3		195 22.0	20 43.0		183 37.4	21 37.2		171 43.2	21 32.7	
20	233 34.2	13 3.6	291.1 3.0	222 47.7	16 20.0	290.9 2.5	211 40.4	18 56.2	290.6 1.9	200 12.3	20 44.1	290.3 1.1	188 27.5	21 37.5	290.1 0.3	176 33.2	21 32.2	290.1 -0.5
40	238 25.4	13 6.5		227 38.6	16 22.5		216 31.0	18 58.0		205 2.6	20 45.3		193 17.7	21 37.9		181 23.3	21 31.7	
2 0	243 16.5	13 9.5		232 29.4	16 25.0		221 21.5	18 59.9		209 53.0	20 46.4		198 7.8	21 38.2		186 13.3	21 31.2	
20	248 7.6	13 12.4	291.1 2.9	237 20.3	16 27.4	290.9 2.4	226 12.1	19 1.7	290.6 1.8	214 43.3	20 47.5	290.3 1.1	202 57.9	21 38.5	290.1 0.3	191 3.4	21 30.7	290.1 -0.5
40	252 58.8	13 15.4		242 11.2	16 29.9		231 2.7	19 3.5		219 33.6	20 48.6		207 48.0	21 38.8		195 53.4	21 30.2	
3 0	257 49.9	13 18.3		247 2.0	16 32.3		235 53.3	19 5.3		224 23.9	20 49.7		212 38.1	21 39.1		200 43.5	21 29.6	
20	262 41.0	13 21.3	291.1 2.9	251 52.9	16 34.7	290.9 2.4	240 43.8	19 7.1	290.6 1.8	229 14.2	20 50.8	290.3 1.1	217 28.3	21 39.4	290.1 0.3	205 33.5	21 29.1	290.1 -0.6
40	267 32.2	13 24.2		256 43.7	16 37.1		245 34.4	19 8.9		234 4.5	20 51.8		222 18.4	21 39.6		210 23.6	21 28.5	
4 0	272 23.3	13 27.1		261 34.6	16 39.5		250 24.9	19 10.7		238 54.7	20 52.9		227 8.5	21 39.9		215 13.6	21 27.9	
20	277 14.4	13 30.0	291.1 2.9	266 25.4	16 41.9	290.8 2.4	255 15.5	19 12.5	290.5 1.8	243 45.0	20 53.9	290.3 1.0	231 58.6	21 40.1	290.1 0.2	220 3.7	21 27.3	290.1 -0.6
40	282 5.5	13 33.0		271 16.3	16 44.3		260 6.0	19 14.2		248 35.3	20 54.9		236 48.7	21 40.4		224 53.7	21 26.7	
5 0	286 56.7	13 35.9		276 7.1	16 46.7		264 56.6	19 16.0		253 25.6	20 56.0		241 38.8	21 40.6		229 43.8	21 26.1	
20	291 47.8	13 38.8	291.1 2.9	280 58.0	16 49.1	290.8 2.4	269 47.1	19 17.7	290.5 1.7	258 15.9	20 57.0	290.3 1.0	246 28.9	21 40.8	290.1 0.2	234 33.8	21 25.5	290.1 -0.6
40	296 38.9	13 41.7		285 48.8	16 51.5		274 37.6	19 19.4		263 6.1	20 58.0		251 19.0	21 41.0		239 23.9	21 24.9	
6 0	301 30.0	13 44.5		290 39.6	16 53.8		279 28.2	19 21.2		267 56.4	20 59.0		256 9.1	21 41.2		244 13.9	21 24.2	
20	306 21.1	13 47.4	291.1 2.9	295 30.4	16 56.2	290.8 2.4	284 18.7	19 22.9	290.5 1.7	272 46.7	20 59.9	290.3 1.0	260 59.2	21 41.3	290.1 0.2	249 4.0	21 23.6	290.1 -0.7
40	311 12.2	13 50.3		300 21.2	16 58.5		289 9.2	19 24.6		277 36.9	21 0.9		265 49.3	21 41.5		253 54.0	21 22.9	
7 0	316 3.3	13 53.2		305 12.1	17 0.9		293 59.7	19 26.3		282 27.2	21 1.9		270 39.4	21 41.7		258 44.1	21 22.2	
20	320 54.4	13 56.0	291.1 2.8	310 2.9	17 3.2	290.8 2.3	298 50.2	19 28.0	290.5 1.7	287 17.5	21 2.8	290.3 0.9	275 29.5	21 41.8	290.1 0.1	263 34.1	21 21.5	290.1 -0.7
40	325 45.5	13 58.9		314 53.7	17 5.5		303 40.7	19 29.6		292 7.7	21 3.8		280 19.6	21 41.9		268 24.2	21 20.8	
8 0	330 36.5	14 1.7		319 44.5	17 7.8		308 31.2	19 31.3		296 58.0	21 4.7		285 9.7	21 42.0		273 14.2	21 20.1	
20	335 27.6	14 4.6	291.1 2.8	324 35.3	17 10.1	290.8 2.3	313 21.7	19 33.0	290.5 1.6	301 48.2	21 5.6	290.2 0.9	289 59.8	21 42.2	290.1 0.1	278 4.3	21 19.4	290.1 -0.7
40	340 18.7	14 7.4		329 26.1	17 12.4		318 12.2	19 34.6		306 38.5	21 6.5		294 49.9	21 42.2		282 54.3	21 18.6	
9 0	345 9.8	14 10.2		334 16.9	17 14.7		323 2.7	19 36.2		311 28.7	21 7.4		299 40.0	21 42.3		287 44.4	21 17.9	
20	350 0.8	14 13.0	291.1 2.8	339 7.6	17 17.0	290.8 2.3	327 53.2	19 37.9	290.5 1.6	316 19.0	21 8.3	290.2 0.9	304 30.1	21 42.4	290.1 0.1	292 34.4	21 17.1	290.1 -0.8
40	354 51.9	14 15.8		343 58.4	17 19.2		332 43.7	19 39.5		321 9.2	21 9.1		309 20.2	21 42.5		297 24.5	21 16.4	
10 0	359 43.0	14 18.6		348 49.2	17 21.5		337 34.2	19 41.1		325 59.4	21 10.0		314 10.2	21 42.5		302 14.6	21 15.6	
20	4 34.0	14 21.4	291.1 2.8	353 40.0	17 23.8	290.8 2.2	342 24.7	19 42.7	290.5 1.6	330 49.7	21 10.8	290.2 0.8	319 0.3	21 42.5	290.1 0.0	307 4.6	21 14.8	290.1 -0.8
40	9 25.1	14 24.2		358 30.7	17 26.0		347 15.1	19 44.3		335 39.9	21 11.7		323 50.4	21 42.6		311 54.7	21 14.0	
11 0	14 16.1	14 27.0		3 21.5	17 28.2		352 5.6	19 45.9		340 30.1	21 12.5		328 40.5	21 42.6		316 44.7	21 13.1	
20	19 7.2	14 29.8	291.0 2.8	8 12.3	17 30.5	290.8 2.2	356 56.1	19 47.4	290.5 1.5	345 20.3	21 13.3	290.2 0.8	333 30.6	21 42.6	290.1 0.0	321 34.8	21 12.3	290.1 -0.8
40	23 58.2	14 32.6		13 3.0	17 32.7		1 46.5	19 49.0		350 10.6	21 14.1		338 20.7	21 42.6		326 24.8	21 11.5	
12 0	28 49.3	14 35.3		17 53.8	17 34.9		6 37.0	19 50.5		355 0.8	21 14.9		343 10.7	21 42.6		331 14.9	21 10.6	
20	33 40.3	14 38.1	291.0 2.8	22 44.5	17 37.1	290.7 2.2	11 27.5	19 52.1	290.5 1.5	359 51.0	21 15.7	290.2 0.8	348 0.8	21 42.5	290.1 -0.1	336 4.9	21 9.8	290.1 -0.9
40	38 31.3	14 40.8		27 35.3	17 39.3		16 17.9	19 53.6		4 41.2	21 16.5		352 50.9	21 42.5		340 55.0	21 8.9	
13 0	43 22.3	14 43.6		32 26.0	17 41.5		21 8.4	19 55.1		9 31.4	21 17.2		357 41.0	21 42.4		345 45.1	21 8.0	
20	48 13.4	14 46.3	291.0 2.7	37 16.7	17 43.7	290.7 2.2	25 58.8	19 56.6	290.4 1.5	14 21.6	21 18.0	290.2 0.7	2 31.0	21 42.4	290.1 -0.1	350 35.1	21 7.1	290.1 -0.9
40	53 4.4	14 49.1		42 7.5	17 45.8		30 49.2	19 58.1		19 11.8	21 18.7		7 21.1	21 42.3		355 25.2	21 6.2	
14 0	57 55.4	14 51.8		46 58.2	17 48.0		35 39.7	19 59.6		24 2.0	21 19.4		12 11.2	21 42.2		0 15.2	21 5.3	
20	62 46.4	14 54.5	291.0 2.7	51 48.9	17 50.1	290.7 2.1	40 30.1	20 1.1	290.4 1.5	28 52.2	21 20.2	290.2 0.7	17 1.3	21 42.1	290.1 -0.1	5 5.3	21 4.3	290.1 -1.0
40	67 37.4	14 57.2		56 39.6	17 52.3		45 20.5	20 2.6		33 42.4	21 20.9		21 51.3	21 42.0		9 55.4	21 3.4	
15 0	72 28.4	14 59.9		61 30.3	17 54.4		50 11.0	20 4.0		38 32.6	21 21.6		26 41.4	21 41.8		14 45.4	21 2.4	
20	77 19.4	15 2.6	291.0 2.7	66 21.0	17 56.5	290.7 2.1	55 1.4	20 5.5	290.4 1.4	43 22.8	21 22.2	290.2 0.7	31 31.5	21 41.7	290.1 -0.1	19 35.5	21 1.4	290.1 -1.0
40	82 10.4	15 5.3		71 11.7	17 58.7		59 51.8	20 6.9		48 13.0	21 22.9		36 21.5	21 41.6		24 25.6	21 0.5	
16 0	87 1.4	15 8.0		76 2.4	18 0.8		64 42.2	20 8.3		53 3.2	21 23.6		41 11.6	21 41.4		29 15.6	20 59.5	
20	91 52.4	15 10.6	291.0 2.7	80 53.1	18 2.9	290.7 2.1	69 32.6	20 9.7	290.4 1.4	57 53.4	21 24.2	290.2 0.6	46 1.7	21 41.2	290.1 -0.2	34 5.7	20 58.5	290.1 -1.0
40	96 43.4	15 13.3		85 43.8	18 5.0		74 23.0	20 11.2		62 43.6	21 24.9		50 51.7	21 41.0		38 55.7	20 57.5	
17 0	101 34.4	15 16.0		90 34.5	18 7.0		79 13.4	20 12.6		67 33.8	21 25.5		55 41.8	21 40.9		43 45.8	20 56.4	
20	106 25.4	15 18.6	291.0 2.6	95 25.2	18 9.1	290.7 2.1	84 3.8	20 13.9	290.4 1.4	72 23.9	21 26.1	290.2 0.6	60 31.9	21 40.6	290.1 -0.2	48 35.9	20 55.4	290.1 -1.0
40	111 16.3	15 21.3		100 15.9	18 11.2		88 54.2	20 15.3		77 14.1	21 26.7		65 21.9	21 40.4		53 25.9	20 54.3	
18 0	116 7.3	15 23.9		105 6.6	18 13.2		93 44.6	20 16.7		82 4.3	21 27.3		70 12.0	21 40.2		58 16.0	20 53.3	
20	120 58.3	15 26.5	291.0 2.6	109 57.2	18 15.3	290.7 2.0	98 35.0	20 18.0	290.4 1.3	86 54.5	21 27.9	290.2 0.6	75 2.0	21 40.0	290.1 -0.3	63 6.1	20 52.2	290.1 -1.1
40	125 49.2	15 29.2		114 47.9	18 17.3		103 25.4	20 19.4		91 44.6	21 28.5		79 52.1	21 39.7		67 56.2	20 51.1	
19 0	130 40.2	15 31.8		119 38.6	18 19.3		108 15.8	20 20.7		96 34.8	21 29.0		84 42.2	21 39.4		72 46.2	20 50.0	
20	135 31.2	15 34.4	291.0 2.6	124 29.2	18 21.4	290.7 2.0	113 6.1	20 22.1	290.4 1.3	101 25.0	21 29.6	290.2 0.5	89 32.2	21 39.2	290.1 -0.3	77 36.3	20 48.9	290.1 -1.1
40	140 22.1	15 37.0		129 19.9	18 23.4		117 56.5	20 23.4		106 15.1	21 30.1		94 22.3	21 38.9		82 26.4	20 47.8	
20 0	145 13.1	15 39.6		134 10.5	18 25.4		122 46.9	20 24.7		111 5.3	21 30.6		99 12.3	21 38.6		87 16.4	20 46.7	
20	150 4.0	15 42.2	290.9 2.6	139 1.2	18 27.4	290.6 2.0	127 37.3	20 26.0	290.4 1.3	115 55.4	21 31.2	290.2 0.5	104 2.4	21 38.3	290.1 -0.3	92 6.5	20 45.6	290.1 -1.2
40	154 54.9	15 44.7		143 51.8	18 29.4		132 27.6	20 27.3		120 45.6	21 31.7		108 52.5	21 37.9		96 56.6	20 44.4	
21 0	159 45.9	15 47.3		148 42.5	18 31.3		137 18.0	20 28.5		125 35.7	21 32.1		113 42.5	21 37.6		101 46.7	20 43.2	
20	164 36.8	15 49.9	290.9 2.6	153 33.1	18 33.3	290.6 2.0	142 8.3	20 29.8	290.4 1.3	130 25.9	21 32.6	290.1 0.5	118 32.6	21 37.3	290.1 -0.4	106 36.8	20 42.1	290.1 -1.2
40	169 27.7	15 52.4		158 23.7	18 35.3		146 58.7	20 31.0		135 16.0	21 33.1		123 22.6	21 36.9		111 26.8	20 40.9	
22 0	174 18.7	15 55.0		163 14.4	18 37.2		151 49.0	20 32.3		140 6.2	21 33.6		128 12.7	21 36.5		116 16.9	20 39.7	
20	179 9.6	15 57.5	290.9 2.5	168 5.0	18 39.1	290.6 1.9	156 39.4	20 33.5	290.3 1.2	144 56.3	21 34.0	290.1 0.4	133 2.7	21 36.2	290.1 -0.4	121 7.0	20 38.5	290.1 -1.2
40	184 0.5	16 0.1		172 55.6	18 41.1		161 29.7	20 34.7		149 46.5	21 34.4		137 52.8	21 35.8		125 57.1	20 37.3	
23 0	188 51.4	16 2.6		177 46.2	18 43.0		166 20.1	20 36.0		154 36.6	21 34.9		142 42.8	21 35.4		130 47.2	20 36.0	
20	193 42.3	16 5.1	290.9 2.5	182 36.8	18 44.9	290.6 1.9	171 10.4	20 37.2	290.3 1.2	159 26.8	21 35.3	290.1 0.4	147 32.9	21 35.0	290.1 -0.4	135 37.2	20 34.8	290.1 -1.2
40	198 33.2	16 7.6		187 27.4	18 46.8		176 0.7	20 38.3		164 16.9	21 35.7		152 22.9	21 34.5		140 27.3	20 33.5	

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	24 May				25 May				26 May				27 May				28 May				29 May			
	GHA		Dec		GHA		Dec		GHA		Dec		GHA		Dec		GHA		Dec		GHA		Dec	
h m	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'
0 0	145	17.4	20	32.3	133	27.6	18	32.5	121	47.8	15	39.5	110	17.6	11	59.8	98	52.4	7	42.0	87	23.7	2	55.9
20	150	7.5 290.1	20	31.0 -1.3	138	17.8 290.2	18	30.5 -2.1	126	38.1 290.4	15	36.7 -2.8	115	8.1 290.5	11	56.5 -3.3	103	42.9 290.5	7	38.2 -3.8	92	14.1 290.4	2	51.7 -4.1
40	154	57.6	20	29.7	143	8.1	18	28.4	131	28.5	15	33.9	119	58.6	11	53.1	108	33.4	7	34.4	97	4.4	2	47.6
1 0	159	47.7	20	28.4	147	58.3	18	26.3	136	18.9	15	31.2	124	49.0	11	49.8	113	23.9	7	30.6	101	54.8	2	43.5
20	164	37.8 290.1	20	27.1 -1.3	152	48.5 290.2	18	24.2 -2.1	141	9.2 290.4	15	28.4 -2.8	129	39.5 290.5	11	46.4 -3.4	118	14.4 290.5	7	26.8 -3.8	106	45.1 290.3	2	39.3 -4.1
40	169	27.9	20	25.8	157	38.7	18	22.2	145	59.6	15	25.6	134	30.0	11	43.1	123	4.8	7	22.9	111	35.5	2	35.2
2 0	174	18.0	20	24.5	162	28.9	18	20.1	150	49.9	15	22.8	139	20.4	11	39.7	127	55.3	7	19.1	116	25.8	2	31.1
20	179	8.1 290.1	20	23.1 -1.4	167	19.1 290.2	18	17.9 -2.1	155	40.3 290.4	15	20.0 -2.8	144	10.9 290.5	11	36.3 -3.4	132	45.8 290.5	7	15.3 -3.8	121	16.1 290.3	2	26.9 -4.2
40	183	58.2	20	21.8	172	9.3	18	15.8	160	30.7	15	17.2	149	1.4	11	32.9	137	36.3	7	11.4	126	6.5	2	22.8
3 0	188	48.3	20	20.4	176	59.6	18	13.7	165	21.0	15	14.4	153	51.9	11	29.5	142	26.8	7	7.6	130	56.8	2	18.6
20	193	38.4 290.1	20	19.0 -1.4	181	49.8 290.2	18	11.5 -2.2	170	11.4 290.4	15	11.6 -2.8	158	42.3 290.5	11	26.1 -3.4	147	17.2 290.5	7	3.7 -3.9	135	47.1 290.3	2	14.5 -4.1
40	198	28.5	20	17.6	186	40.0	18	9.4	175	1.8	15	8.7	163	32.8	11	22.7	152	7.7	6	59.9	140	37.5	2	10.3
4 0	203	18.6	20	16.2	191	30.3	18	7.2	179	52.2	15	5.9	168	23.3	11	19.3	156	58.2	6	56.0	145	27.8	2	6.2
20	208	8.7 290.1	20	14.8 -1.4	196	20.5 290.2	18	5.0 -2.2	184	42.5 290.4	15	3.0 -2.9	173	13.7 290.5	11	15.8 -3.4	161	48.7 290.5	6	52.1 -3.9	150	18.1 290.3	2	2.0 -4.2
40	212	58.8	20	13.4	201	10.7	18	2.9	189	32.9	15	0.2	178	4.2	11	12.4	166	39.1	6	48.3	155	8.4	1	57.9
5 0	217	48.9	20	12.0	206	1.0	18	0.7	194	23.3	14	57.3	182	54.7	11	9.0	171	29.6	6	44.4	159	58.7	1	53.7
20	222	39.0 290.1	20	10.6 -1.5	210	51.2 290.2	17	58.5 -2.2	199	13.7 290.4	14	54.4 -2.9	187	45.2 290.5	11	5.5 -3.5	176	20.1 290.5	6	40.5 -3.9	164	49.1 290.3	1	49.5 -4.2
40	227	29.1	20	9.1	215	41.4	17	56.2	204	4.1	14	51.5	192	35.7	11	2.1	181	10.5	6	36.6	169	39.4	1	45.4
6 0	232	19.2	20	7.6	220	31.7	17	54.0	208	54.5	14	48.6	197	26.1	10	58.6	186	1.0	6	32.7	174	29.7	1	41.2
20	237	9.3 290.1	20	6.2 -1.5	225	21.9 290.2	17	51.8 -2.2	213	44.8 290.4	14	45.7 -2.9	202	16.6 290.5	10	55.1 -3.5	190	51.5 290.5	6	28.8 -3.9	179	20.0 290.3	1	37.0 -4.2
40	241	59.4	20	4.7	230	12.2	17	49.5	218	35.2	14	42.8	207	7.1	10	51.7	195	41.9	6	24.9	184	10.3	1	32.8
7 0	246	49.5	20	3.2	235	2.4	17	47.3	223	25.6	14	39.9	211	57.6	10	48.2	200	32.4	6	21.0	189	0.6	1	28.7
20	251	39.7 290.1	20	1.7 -1.5	239	52.7 290.3	17	45.0 -2.3	228	16.0 290.4	14	36.9 -3.0	216	48.1 290.5	10	44.7 -3.5	205	22.9 290.5	6	17.1 -3.9	193	50.9 290.3	1	24.5 -4.2
40	256	29.8	20	0.2	244	42.9	17	42.7	233	6.4	14	34.0	221	38.5	10	41.2	210	13.3	6	13.2	198	41.1	1	20.3
8 0	261	19.9	19	58.6	249	33.2	17	40.5	237	56.8	14	31.0	226	29.0	10	37.7	215	3.8	6	9.3	203	31.4	1	16.1
20	266	10.0 290.1	19	57.1 -1.5	254	23.4 290.3	17	38.2 -2.3	242	47.2 290.4	14	28.1 -3.0	231	19.5 290.5	10	34.2 -3.5	219	54.2 290.5	6	5.3 -3.9	208	21.7 290.3	1	11.9 -4.2
40	271	0.1	19	55.5	259	13.7	17	35.9	247	37.6	14	25.1	236	10.0	10	30.7	224	44.7	6	1.4	213	12.0	1	7.7
9 0	275	50.3	19	54.0	264	3.9	17	33.5	252	28.0	14	22.1	241	0.5	10	27.1	229	35.1	5	57.5	218	2.2	1	3.5
20	280	40.4 290.1	19	52.4 -1.6	268	54.2 290.3	17	31.2 -2.3	257	18.4 290.4	14	19.1 -3.0	245	51.0 290.5	10	23.6 -3.5	234	25.6 290.5	5	53.5 -4.0	222	52.5 290.3	0	59.3 -4.2
40	285	30.5	19	50.8	273	44.5	17	28.9	262	8.8	14	16.2	250	41.5	10	20.1	239	16.1	5	49.6	227	42.8	0	55.1
10 0	290	20.6	19	49.2	278	34.7	17	26.5	266	59.2	14	13.2	255	31.9	10	16.5	244	6.5	5	45.6	232	33.0	0	50.9
20	295	10.8 290.1	19	47.6 -1.6	283	25.0 290.3	17	24.2 -2.4	271	49.6 290.4	14	10.1 -3.0	260	22.4 290.5	10	13.0 -3.5	248	57.0 290.4	5	41.7 -4.0	237	23.3 290.3	0	46.7 -4.2
40	300	0.9	19	46.0	288	15.3	17	21.8	276	40.0	14	7.1	265	12.9	10	9.4	253	47.4	5	37.7	242	13.5	0	42.5
11 0	304	51.0	19	44.4	293	5.5	17	19.4	281	30.4	14	4.1	270	3.4	10	5.9	258	37.8	5	33.7	247	3.8	0	38.3
20	309	41.2 290.1	19	42.7 -1.7	297	55.8 290.3	17	17.1 -2.4	286	20.9 290.4	14	1.1 -3.0	274	53.9 290.5	10	2.3 -3.6	263	28.3 290.4	5	29.8 -4.0	251	54.0 290.2	0	34.1 -4.2
40	314	31.3	19	41.1	302	46.1	17	14.7	291	11.3	13	58.0	279	44.4	9	58.7	268	18.7	5	25.8	256	44.3	0	29.9
12 0	319	21.4	19	39.4	307	36.4	17	12.3	296	1.7	13	55.0	284	34.9	9	55.1	273	9.2	5	21.8	261	34.5	0	25.7
20	324	11.6 290.1	19	37.7 -1.7	312	26.7 290.3	17	9.9 -2.4	300	52.1 290.4	13	51.9 -3.1	289	25.4 290.5	9	51.5 -3.6	277	59.6 290.4	5	17.8 -4.0	266	24.7 290.2	0	21.5 -4.2
40	329	1.7	19	36.1	317	16.9	17	7.4	305	42.5	13	48.8	294	15.8	9	47.9	282	50.1	5	13.8	271	15.0	0	17.3
13 0	333	51.9	19	34.4	322	7.2	17	5.0	310	33.0	13	45.8	299	6.3	9	44.3	287	40.5	5	9.8	276	5.2	0	13.0
20	338	42.0 290.1	19	32.7 -1.7	326	57.5 290.3	17	2.6 -2.5	315	23.4 290.4	13	42.7 -3.1	303	56.8 290.5	9	40.7 -3.6	292	30.9 290.4	5	5.8 -4.0	280	55.4 290.2	0	8.8 -4.2
40	343	32.2	19	30.9	331	47.8	17	0.1	320	13.8	13	39.6	308	47.3	9	37.1	297	21.4	5	1.8	285	45.6	0	4.6
14 0	348	22.3	19	29.2	336	38.1	16	57.6	325	4.2	13	36.5	313	37.8	9	33.5	302	11.8	4	57.8	290	35.8	0	0.4
20	353	12.5 290.2	19	27.5 -1.7	341	28.4 290.3	16	55.2 -2.5	329	54.7 290.4	13	33.4 -3.1	318	28.3 290.5	9	29.9 -3.6	307	2.2 290.4	4	53.8 -4.0	295	26.1 290.2	-0	3.9 -4.2
40	358	2.6	19	25.7	346	18.7	16	52.7	334	45.1	13	30.3	323	18.8	9	26.2	311	52.6	4	49.8	300	16.3	-0	8.1
15 0	2	52.8	19	24.0	351	9.0	16	50.2	339	35.5	13	27.1	328	9.3	9	22.6	316	43.1	4	45.8	305	6.5	-0	12.3
20	7	42.9 290.2	19	22.2 -1.8	355	59.3 290.3	16	47.7 -2.5	344	25.9 290.4	13	24.0 -3.1	332	59.8 290.5	9	18.9 -3.7	321	33.5 290.4	4	41.8 -4.0	309	56.6 290.2	-0	16.5 -4.2
40	12	33.1	19	20.4	0	49.6	16	45.2	349	16.4	13	20.9	337	50.3	9	15.3	326	23.9	4	37.8	314	46.8	-0	20.8
16 0	17	23.2	19	18.6	5	39.9	16	42.7	354	6.8	13	17.7	342	40.7	9	11.6	331	14.3	4	33.7	319	37.0	-0	25.0
20	22	13.4 290.2	19	16.8 -1.8	10	30.2 290.3	16	40.2 -2.5	358	57.2 290.4	13	14.6 -3.2	347	31.2 290.5	9	8.0 -3.7	336	4.8 290.4	4	29.7 -4.0	324	27.2 290.2	-0	29.2 -4.2
40	27	3.6	19	15.0	15	20.5	16	37.6	3	47.7	13	11.4	352	21.7	9	4.3	340	55.2	4	25.6	329	17.4	-0	33.5
17 0	31	53.7	19	13.2	20	10.8	16	35.1	8	38.1	13	8.2	357	12.2	9	0.6	345	45.6	4	21.6	334	7.6	-0	37.7
20	36	43.9 290.2	19	11.4 -1.8	25	1.1 290.3	16	32.5 -2.6	13	28.6 290.4	13	5.1 -3.2	2	2.7 290.5	8	56.9 -3.7	350	36.0 290.4	4	17.6 -4.0	338	57.7 290.2	-0	42.0 -4.2
40	41	34.1	19	9.5	29	51.4	16	30.0	18	19.0	13	1.9	6	53.2	8	53.2	355	26.4	4	13.5	343	47.9	-0	46.2
18 0	46	24.2	19	7.7	34	41.8	16	27.4	23	9.4	12	58.7	11	43.7	8	49.6	0	16.8	4	9.5	348	38.0	-0	50.4
20	51	14.4 290.2	19	5.8 -1.9	39	32.1 290.3	16	24.8 -2.6	27	59.9 290.4	12	55.5 -3.2	16	34.2 290.5	8	45.8 -3.7	5	7.2 290.4	4	5.4 -4.1	353	28.2 290.1	-0	54.7 -4.3
40	56	4.6	19	3.9	44	22.4	16	22.2	32	50.3	12	52.3	21	24.7	8	42.1	9	57.6	4	1.3	358	18.3	-0	58.9
19 0	60	54.8	19	2.1	49	12.7	16	19.6	37	40.8	12	49.0	26	15.2	8	38.4	14	48.0	3	57.3	3	8.5	-1	3.2
20	65	44.9 290.2	19	0.2 -1.9	54	3.0 290.3	16	17.0 -2.6	42	31.2 290.4	12	45.8 -3.2	31	5.6 290.5	8	34.7 -3.7	19	38.4 290.4	3	53.2 -4.1	7	58.6 290.1	-1	7.4 -4.2
40	70	35.1	18	58.3	58	53.4	16	14.4	47	21.7	12	42.6	35	56.1	8	31.0	24	28.8	3	49.1	12	48.7	-1	11.7
20 0	75	25.3	18	56.3	63	43.7	16	11.7	52	12.1	12	39.3	40	46.6	8	27.3	29	19.2	3	45.1	17	38.9	-1	15.9
20	80	15.5 290.2	18	54.4 -1.9	68	34.0 290.3	16	9.1 -2.6	57	2.6 290.5	12	36.1 -3.2	45	37.1 290.5	8	23.5 -3.8	34	9.6 290.4	3	41.0 -4.1	22	29.0 290.1	-1	20.2 -4.3
40	85	5.7	18	52.5	73	24.4	16	6.4	61	53.0	12	32.8	50	27.6	8	19.8	38	60.0	3	36.9	27	19.1	-1	24.4
21 0	89	55.9	18	50.5	78	14.7	16	3.8	66	43.5	12	29.6	55	18.1	8	16.0	43	50.4	3	32.8	32	9.2	-1	28.7
20	94	46.0 290.2	18	48.6 -2.0	83	5.0 290.3	16	1.1 -2.7	71	33.9 290.5	12	26.3 -3.3	60	8.6 290.5	8	12.3 -3.8	48	40.7 290.4	3	28.7 -4.1	36	59.3 290.1	-1	32.9 -4.2
40	99	36.2	18	46.6	87	55.4	15	58.4	76	24.4	12	23.0	64	59.1	8	8.5	53	31.1	3	24.6	41	49.4	-1	37.2
22 0	104	26.4	18	44.6	92	45.7	15	55.8	81	14.9	12	19.7	69	49.5	8	4.7	58	21.5	3	20.5	46	39.5	-1	41.4
20	109	16.6 290.2	18	42.6 -2.0	97	36.0 290.3	15	53.1 -2.7	86	5.3 290.5	12	16.4 -3.3	74	40.0 290.5	8	1.0 -3.8	63	11.9 290.4	3	16.4 -4.1	51	29.6 290.1	-1	45.7 -4.3
40	114	6.8	18	40.6	102	26.4	15	50.4	90	55.8	12	13.1	79	30.5	7	57.2	68	2.2	3	12.3	56	19.7	-1	50.0
23 0	118	57.0	18	38.6	107	16.7	15	47.6	95	46.2	12	9.8	84	21.0	7	53.4	72	52.6	3	8.2	61	9.8	-1	54.2
20	123	47.2 290.2	18	36.6 -2.0	112	7.1 290.3	15	44.9 -2.7	100	36.7 290.5	12	6.5 -3.3	89	11.5 290.5	7	49.6 -3.8	77	43.0 290.4	3	4.1 -4.1	65	59.9 290.1	-1	58.5 -4.3
40	128	37.4	18	34.6	116	57.4	15	42.2	105	27.2	12	3.2	94	2.0	7	45.8	82	33.3	3	0.0	70	50.0	-2	2.7

2012 Moon

	30 May				31 May				1 Jun				2 Jun				3 Jun				4 Jun			
	GHA		Dec		GHA		Dec		GHA		Dec		GHA		Dec		GHA		Dec		GHA		Dec	
h m	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'	o	' d	o	' d'
0 0	75	40.0	-2	7.0	63	28.5	-7	12.1	50	37.0	-12	1.6	36	57.0	-16	14.2	22	28.6	-19	26.8	7	24.8	-21	19.0
20	80	30.1 290.1	-2	11.2 -4.3	68	18.1 289.6	-7	16.3 -4.2	55	25.9 288.9	-12	5.4 -3.8	41	45.2 288.2	-16	17.3 -3.1	27	16.3 287.6	-19	28.9 -2.1	12	12.1 287.3	-21	20.0 -0.9
40	85	20.1	-2	15.5	73	7.7	-7	20.4	60	14.9	-12	9.2	46	33.5	-16	20.4	32	3.9	-19	31.1	16	59.4	-21	20.9
1 0	90	10.2	-2	19.8	77	57.3	-7	24.6	65	3.8	-12	13.0	51	21.7	-16	23.5	36	51.5	-19	33.2	21	46.7	-21	21.7
20	95	0.2 290.0	-2	24.0 -4.2	82	46.8 289.6	-7	28.8 -4.2	69	52.7 288.9	-12	16.8 -3.8	56	9.9 288.2	-16	26.6 -3.1	41	39.2 287.6	-19	35.3 -2.1	26	34.0 287.3	-21	22.6 -0.9
40	99	50.3	-2	28.3	87	36.4	-7	32.9	74	41.7	-12	20.6	60	58.1	-16	29.7	46	26.8	-19	37.4	31	21.3	-21	23.5
2 0	104	40.3	-2	32.5	92	25.9	-7	37.1	79	30.6	-12	24.4	65	46.4	-16	32.8	51	14.4	-19	39.4	36	8.6	-21	24.3
20	109	30.3 290.0	-2	36.8 -4.3	97	15.5 289.5	-7	41.2 -4.1	84	19.5 288.9	-12	28.1 -3.7	70	34.6 288.2	-16	35.9 -3.1	56	2.0 287.6	-19	41.5 -2.1	40	55.9 287.3	-21	25.1 -0.8
40	114	20.4	-2	41.1	102	5.0	-7	45.4	89	8.4	-12	31.9	75	22.7	-16	38.9	60	49.6	-19	43.5	45	43.2	-21	25.9
3 0	119	10.4	-2	45.3	106	54.5	-7	49.5	93	57.2	-12	35.6	80	10.9	-16	42.0	65	37.2	-19	45.6	50	30.5	-21	26.7
20	124	0.4 290.0	-2	49.6 -4.3	111	44.0 289.5	-7	53.7 -4.2	98	46.1 288.9	-12	39.4 -3.8	84	59.1 288.2	-16	45.0 -3.0	70	24.8 287.6	-19	47.6 -2.0	55	17.8 287.3	-21	27.4 -0.7
40	128	50.4	-2	53.8	116	33.5	-7	57.8	103	35.0	-12	43.1	89	47.3	-16	48.0	75	12.3	-19	49.6	60	5.1	-21	28.2
4 0	133	40.4	-2	58.1	121	23.0	-8	2.0	108	23.8	-12	46.9	94	35.4	-16	51.0	79	59.9	-19	51.5	64	52.4	-21	28.9
20	138	30.4 290.0	-3	2.4 -4.3	126	12.5 289.5	-8	6.1 -4.1	113	12.6 288.8	-12	50.6 -3.7	99	23.6 288.1	-16	54.0 -3.0	84	47.5 287.6	-19	53.5 -2.0	69	39.7 287.3	-21	29.6 -0.7
40	143	20.4	-3	6.6	131	2.0	-8	10.2	118	1.5	-12	54.3	104	11.7	-16	57.0	89	35.0	-19	55.4	74	27.0	-21	30.3
5 0	148	10.4	-3	10.9	135	51.5	-8	14.3	122	50.3	-12	58.0	108	59.8	-17	0.0	94	22.6	-19	57.4	79	14.3	-21	31.0
20	153	0.3 290.0	-3	15.2 -4.3	140	40.9 289.5	-8	18.5 -4.1	127	39.1 288.8	-13	1.7 -3.7	113	47.9 288.1	-17	2.9 -2.9	99	10.1 287.5	-19	59.3 -1.9	84	1.5 287.3	-21	31.6 -0.6
40	157	50.3	-3	19.4	145	30.4	-8	22.6	132	27.9	-13	5.4	118	36.0	-17	5.9	103	57.7	-20	1.2	88	48.8	-21	32.3
6 0	162	40.3	-3	23.7	150	19.8	-8	26.7	137	16.7	-13	9.1	123	24.1	-17	8.8	108	45.2	-20	3.0	93	36.1	-21	32.9
20	167	30.2 290.0	-3	27.9 -4.3	155	9.3 289.4	-8	30.8 -4.1	142	5.5 288.8	-13	12.8 -3.7	128	12.2 288.1	-17	11.7 -2.9	113	32.7 287.5	-20	4.9 -1.9	98	23.4 287.3	-21	33.5 -0.6
40	172	20.2	-3	32.2	159	58.7	-8	34.9	146	54.3	-13	16.4	133	0.3	-17	14.6	118	20.2	-20	6.7	103	10.7	-21	34.0
7 0	177	10.1	-3	36.5	164	48.1	-8	39.0	151	43.0	-13	20.1	137	48.4	-17	17.5	123	7.8	-20	8.6	107	58.0	-21	34.6
20	182	0.1 289.9	-3	40.7 -4.2	169	37.5 289.4	-8	43.1 -4.1	156	31.8 288.7	-13	23.7 -3.6	142	36.4 288.1	-17	20.4 -2.9	127	55.3 287.5	-20	10.4 -1.8	112	45.2 287.3	-21	35.1 -0.5
40	186	50.0	-3	45.0	174	27.0	-8	47.2	161	20.5	-13	27.4	147	24.5	-17	23.3	132	42.8	-20	12.2	117	32.5	-21	35.7
8 0	191	39.9	-3	49.2	179	16.3	-8	51.3	166	9.2	-13	31.0	152	12.5	-17	26.1	137	30.3	-20	14.0	122	19.8	-21	36.2
20	196	29.9 289.9	-3	53.5 -4.3	184	5.7 289.4	-8	55.4 -4.1	170	58.0 288.7	-13	34.6 -3.6	157	0.6 288.0	-17	29.0 -2.8	142	17.8 287.5	-20	15.7 -1.7	127	7.1 287.3	-21	36.7 -0.5
40	201	19.8	-3	57.8	188	55.1	-8	59.5	175	46.7	-13	38.3	161	48.6	-17	31.8	147	5.2	-20	17.5	131	54.4	-21	37.1
9 0	206	9.7	-4	2.0	193	44.5	-9	3.6	180	35.4	-13	41.9	166	36.6	-17	34.6	151	52.7	-20	19.2	136	41.7	-21	37.6
20	210	59.6 289.9	-4	6.3 -4.3	198	33.8 289.4	-9	7.6 -4.1	185	24.1 288.7	-13	45.5 -3.6	171	24.6 288.0	-17	37.4 -2.8	156	40.2 287.5	-20	20.9 -1.7	141	28.9 287.3	-21	38.0 -0.4
40	215	49.5	-4	10.5	203	23.2	-9	11.7	190	12.8	-13	49.0	176	12.6	-17	40.2	161	27.7	-20	22.6	146	16.2	-21	38.4
10 0	220	39.4	-4	14.8	208	12.5	-9	15.8	195	1.4	-13	52.6	181	0.6	-17	43.0	166	15.1	-20	24.3	151	3.5	-21	38.8
20	225	29.2 289.9	-4	19.0 -4.2	213	1.9 289.3	-9	19.8 -4.0	199	50.1 288.7	-13	56.2 -3.6	185	48.6 288.0	-17	45.8 -2.7	171	2.6 287.5	-20	25.9 -1.6	155	50.8 287.3	-21	39.2 -0.4
40	230	19.1	-4	23.3	217	51.2	-9	23.9	204	38.8	-13	59.8	190	36.6	-17	48.5	175	50.1	-20	27.6	160	38.1	-21	39.5
11 0	235	9.0	-4	27.5	222	40.5	-9	27.9	209	27.4	-14	3.3	195	24.5	-17	51.2	180	37.5	-20	29.2	165	25.4	-21	39.9
20	239	58.9 289.9	-4	31.8 -4.3	227	29.8 289.3	-9	32.0 -4.0	214	16.0 288.6	-14	6.9 -3.5	200	12.5 287.9	-17	54.0 -2.7	185	24.9 287.4	-20	30.8 -1.6	170	12.6 287.3	-21	40.2 -0.3
40	244	48.7	-4	36.0	232	19.1	-9	36.0	219	4.7	-14	10.4	205	0.4	-17	56.7	190	12.4	-20	32.4	174	59.9	-21	40.5
12 0	249	38.6	-4	40.3	237	8.4	-9	40.0	223	53.3	-14	13.9	209	48.4	-17	59.4	194	59.8	-20	34.0	179	47.2	-21	40.8
20	254	28.4 289.8	-4	44.5 -4.2	241	57.7 289.3	-9	44.1 -4.0	228	41.9 288.6	-14	17.4 -3.5	214	36.3 287.9	-18	2.0 -2.7	199	47.3 287.4	-20	35.5 -1.5	184	34.5 287.3	-21	41.1 -0.2
40	259	18.3	-4	48.8	246	47.0	-9	48.1	233	30.5	-14	20.9	219	24.2	-18	4.7	204	34.7	-20	37.1	189	21.8	-21	41.3
13 0	264	8.1	-4	53.0	251	36.3	-9	52.1	238	19.1	-14	24.4	224	12.1	-18	7.4	209	22.1	-20	38.6	194	9.1	-21	41.5
20	268	57.9 289.8	-4	57.3 -4.2	256	25.5 289.2	-9	56.1 -4.0	243	7.6 288.6	-14	27.9 -3.5	229	0.0 287.9	-18	10.0 -2.6	214	9.5 287.4	-20	40.1 -1.5	198	56.4 287.3	-21	41.7 -0.2
40	273	47.7	-5	1.5	261	14.8	-10	0.1	247	56.2	-14	31.4	233	47.9	-18	12.6	218	56.9	-20	41.6	203	43.7	-21	41.9
14 0	278	37.5	-5	5.7	266	4.0	-10	4.2	252	44.8	-14	34.9	238	35.8	-18	15.2	223	44.3	-20	43.1	208	31.0	-21	42.1
20	283	27.3 289.8	-5	10.0 -4.3	270	53.2 289.2	-10	8.2 -4.0	257	33.3 288.5	-14	38.3 -3.4	243	23.7 287.9	-18	17.8 -2.6	228	31.7 287.4	-20	44.5 -1.4	213	18.3 287.3	-21	42.3 -0.1
40	288	17.1	-5	14.2	275	42.5	-10	12.1	262	21.9	-14	41.8	248	11.5	-18	20.4	233	19.1	-20	46.0	218	5.5	-21	42.4
15 0	293	6.9	-5	18.5	280	31.7	-10	16.1	267	10.4	-14	45.2	252	59.4	-18	23.0	238	6.5	-20	47.4	222	52.8	-21	42.5
20	297	56.7 289.8	-5	22.7 -4.2	285	20.9 289.2	-10	20.1 -4.0	271	58.9 288.5	-14	48.7 -3.4	257	47.3 287.8	-18	25.5 -2.5	242	53.9 287.4	-20	48.8 -1.4	227	40.1 287.3	-21	42.6 -0.1
40	302	46.5	-5	26.9	290	10.1	-10	24.1	276	47.4	-14	52.1	262	35.1	-18	28.1	247	41.3	-20	50.2	232	27.4	-21	42.7
16 0	307	36.3	-5	31.2	294	59.3	-10	28.1	281	35.9	-14	55.5	267	22.9	-18	30.6	252	28.7	-20	51.5	237	14.8	-21	42.8
20	312	26.0 289.8	-5	35.4 -4.2	299	48.4 289.2	-10	32.0 -4.0	286	24.4 288.5	-14	58.9 -3.4	272	10.8 287.8	-18	33.1 -2.5	257	16.1 287.4	-20	52.9 -1.3	242	2.1 287.3	-21	42.8 0.0
40	317	15.8	-5	39.6	304	37.6	-10	36.0	291	12.9	-15	2.3	276	58.6	-18	35.6	262	3.4	-20	54.2	246	49.4	-21	42.9
17 0	322	5.5	-5	43.8	309	26.8	-10	40.0	296	1.3	-15	5.7	281	46.4	-18	38.1	266	50.8	-20	55.5	251	36.7	-21	42.9
20	326	55.3 289.7	-5	48.1 -4.2	314	15.9 289.1	-10	43.9 -3.9	300	49.8 288.4	-15	9.0 -3.3	286	34.2 287.8	-18	40.6 -2.5	271	38.2 287.4	-20	56.8 -1.3	256	24.0 287.3	-21	42.9 0.0
40	331	45.0	-5	52.3	319	5.1	-10	47.8	305	38.3	-15	12.4	291	22.0	-18	43.0	276	25.5	-20	58.1	261	11.3	-21	42.8
18 0	336	34.7	-5	56.5	323	54.2	-10	51.8	310	26.7	-15	15.7	296	9.8	-18	45.5	281	12.9	-20	59.4	265	58.6	-21	42.8
20	341	24.4 289.7	-6	0.7 -4.2	328	43.3 289.1	-10	55.7 -3.9	315	15.1 288.4	-15	19.1 -3.3	300	57.6 287.8	-18	47.9 -2.4	286	0.2 287.4	-21	0.6 -1.2	270	45.9 287.3	-21	42.7 0.1
40	346	14.2	-6	4.9	333	32.4	-10	59.6	320	3.5	-15	22.4	305	45.3	-18	50.3	290	47.6	-21	1.8	275	33.3	-21	42.6
19 0	351	3.9	-6	9.2	338	21.5	-11	3.6	324	52.0	-15	25.7	310	33.1	-18	52.7	295	34.9	-21	3.0	280	20.6	-21	42.5
20	355	53.6 289.7	-6	13.4 -4.2	343	10.6 289.1	-11	7.5 -3.9	329	40.4 288.4	-15	29.0 -3.3	315	20.8 287.7	-18	55.1 -2.4	300	22.3 287.3	-21	4.2 -1.2	285	7.9 287.3	-21	42.4 0.1
40	0	43.3	-6	17.6	347	59.7	-11	11.4	334	28.7	-15	32.3	320	8.6	-18	57.4	305	9.6	-21	5.4	289	55.2	-21	42.3
20 0	5	32.9	-6	21.8	352	48.8	-11	15.3	339	17.1	-15	35.6	324	56.3	-18	59.8	309	57.0	-21	6.6	294	42.6	-21	42.1
20	10	22.6 289.7	-6	26.0 -4.2	357	37.9 289.1	-11	19.2 -3.9	344	5.5 288.4	-15	38.9 -3.3	329	44.1 287.7	-19	2.1 -2.3	314	44.3 287.3	-21	7.7 -1.1	299	29.9 287.3	-21	42.0 0.2
40	15	12.3	-6	30.2	2	26.9	-11	23.1	348	53.9	-15	42.1	334	31.8	-19	4.4	319	31.6	-21	8.8	304	17.3	-21	41.8
21 0	20	1.9	-6	34.4	7	16.0	-11	26.9	353	42.2	-15	45.4	339	19.5	-19	6.7	324	19.0	-21	9.9	309	4.6	-21	41.6
20	24	51.6 289.6	-6	38.6 -4.2	12	5.0 289.0	-11	30.8 -3.9	358	30.6 288.3	-15	48.6 -3.2	344	7.2 287.7	-19	9.0 -2.3	329	6.3 287.3	-21	11.0 -1.1	313	52.0 287.3	-21	41.3 0.3
40	29	41.2	-6	42.8	16	54.0	-11	34.7	3	18.9	-15	51.9	348	54.9	-19	11.3	333	53.6	-21	12.1	318	39.3	-21	41.1
22 0	34	30.9	-6	47.0	21	43.1	-11	38.6	8	7.2	-15	55.1	353	42.6	-19	13.6	338	41.0	-21	13.1	323	26.7	-21	40.8
20	39	20.5 289.6	-6	51.2 -4.2	26	32.1 289.0	-11	42.4 -3.8	12	55.5 288.3	-15	58.3 -3.2	358	30.3 287.7	-19	15.8 -2.2	343	28.3 287.3	-21	14.2 -1.0	328	14.0 287.4	-21	40.6 0.3
40	44	10.1	-6	55.4	31	21.1	-11	46.3	17	43.8	-16	1.5	3	18.0	-19	18.0	348	15.6	-21	15.2	333	1.4	-21	40.3
23 0	48	59.7	-6	59.5	36	10.1	-11	50.1	22	32.1	-16	4.7	8	5.6	-19	20.2	353	2.9	-21	16.2	337	48.7	-21	39.9
20	53	49.4 289.6	-7	3.7 -4.2	40	59.0 289.0	-11	53.9 -3.8	27	20.4 288.3	-16	7.8 -3.2	12	53.3 287.7	-19	22.4 -2.2	357	50.2 287.3	-21	17.1 -0.9	342	36.1 287.4	-21	39.6 0.3
40	58	39.0	-7	7.9	45	48.0	-11	57.8	32	8.7	-16	11.0	17	41.0	-19	24.6	2	37.5	-21	18.1	347	23.5	-21	39.2

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h m	5 Jun GHA	5 Jun Dec	d	6 Jun GHA	6 Jun Dec	d	7 Jun GHA	7 Jun Dec	d	8 Jun GHA	8 Jun Dec	d	9 Jun GHA	9 Jun Dec	d	10 Jun GHA	10 Jun Dec	d
0 0	352 10.8	-21 38.9		337 17.0	-20 26.8		323 7.9	-17 55.1		309 55.4	-14 23.1		297 39.0	-10 11.6		286 10.0	-5 38.8	
20	356 58.2	-21 38.5	287.4 0.4	342 4.9	-20 25.2	287.9 1.6	327 56.4	-17 52.5	288.6 2.6	314 44.8	-14 19.8	289.4 3.3	302 29.2	-10 7.9	290.1 3.7	291 0.7	-5 34.9	290.7 3.9
40	1 45.6	-21 38.1		346 52.7	-20 23.5		332 45.1	-17 49.9		319 34.2	-14 16.5		307 19.3	-10 4.2		295 51.4	-5 31.1	
1 0	6 33.0	-21 37.7		351 40.6	-20 21.9		337 33.7	-17 47.3		324 23.6	-14 13.3		312 9.5	-10 0.5		300 42.2	-5 27.2	
20	11 20.4	-21 37.2	287.4 0.5	356 28.5	-20 20.3	287.9 1.7	342 22.3	-17 44.7	288.6 2.6	329 13.0	-14 10.0	289.4 3.3	316 59.6	-9 56.8	290.2 3.7	305 32.9	-5 23.3	290.7 3.9
40	16 7.8	-21 36.8		1 16.4	-20 18.6		347 10.9	-17 42.0		334 2.5	-14 6.7		321 49.8	-9 53.1		310 23.6	-5 19.4	
2 0	20 55.2	-21 36.3		6 4.3	-20 16.9		351 59.6	-17 39.4		338 51.9	-14 3.4		326 40.0	-9 49.4		315 14.4	-5 15.6	
20	25 42.6	-21 35.8	287.4 0.5	10 52.2	-20 15.2	287.9 1.7	356 48.2	-17 36.8	288.7 2.7	343 41.4	-14 0.1	289.5 3.3	331 30.2	-9 45.7	290.2 3.7	320 5.1	-5 11.7	290.8 3.9
40	30 30.0	-21 35.3		15 40.1	-20 13.5		1 36.9	-17 34.1		348 30.9	-13 56.7		336 20.3	-9 42.0		324 55.9	-5 7.8	
3 0	35 17.4	-21 34.7		20 28.0	-20 11.8		6 25.6	-17 31.4		353 20.4	-13 53.4		341 10.6	-9 38.3		329 46.6	-5 4.0	
20	40 4.8	-21 34.2	287.4 0.6	25 16.0	-20 10.1	287.9 1.8	11 14.3	-17 28.7	288.7 2.7	358 9.9	-13 50.1	289.5 3.3	346 0.8	-9 34.6	290.2 3.7	334 37.4	-5 0.1	290.8 3.9
40	44 52.3	-21 33.6		30 3.9	-20 8.3		16 3.0	-17 26.0		2 59.4	-13 46.7		350 51.0	-9 30.9		339 28.1	-4 56.2	
4 0	49 39.7	-21 33.0		34 51.9	-20 6.5		20 51.7	-17 23.3		7 48.9	-13 43.4		355 41.2	-9 27.1		344 18.9	-4 52.3	
20	54 27.1	-21 32.4	287.4 0.6	39 39.8	-20 4.8	288.0 1.8	25 40.4	-17 20.6	288.7 2.7	12 38.4	-13 40.0	289.5 3.4	0 31.5	-9 23.4	290.2 3.7	349 9.7	-4 48.5	290.8 3.9
40	59 14.6	-21 31.8		44 27.8	-20 3.0		30 29.2	-17 17.9		17 28.0	-13 36.7		5 21.7	-9 19.7		354 0.5	-4 44.6	
5 0	64 2.0	-21 31.2		49 15.8	-20 1.1		35 17.9	-17 15.2		22 17.5	-13 33.3		10 12.0	-9 16.0		358 51.3	-4 40.7	
20	68 49.4	-21 30.5	287.5 0.7	54 3.8	-19 59.3	288.0 1.8	40 6.7	-17 12.4	288.8 2.8	27 7.1	-13 29.9	289.6 3.4	15 2.2	-9 12.2	290.3 3.8	3 42.1	-4 36.8	290.8 3.9
40	73 36.9	-21 29.9		58 51.8	-19 57.5		44 55.5	-17 9.7		31 56.7	-13 26.5		19 52.5	-9 8.5		8 32.9	-4 32.9	
6 0	78 24.4	-21 29.2		63 39.8	-19 55.6		49 44.3	-17 6.9		36 46.3	-13 23.1		24 42.8	-9 4.7		13 23.7	-4 29.1	
20	83 11.8	-21 28.5	287.5 0.7	68 27.8	-19 53.7	288.0 1.9	54 33.0	-17 4.1	288.8 2.8	41 35.9	-13 19.8	289.6 3.4	29 33.1	-9 1.0	290.3 3.7	18 14.5	-4 25.2	290.8 3.9
40	87 59.3	-21 27.7		73 15.9	-19 51.9		59 21.9	-17 1.3		46 25.5	-13 16.4		34 23.4	-8 57.2		23 5.4	-4 21.3	
7 0	92 46.8	-21 27.0		78 3.9	-19 50.0		64 10.7	-16 58.5		51 15.1	-13 12.9		39 13.7	-8 53.5		27 56.2	-4 17.4	
20	97 34.3	-21 26.2	287.5 0.8	82 52.0	-19 48.0	288.1 1.9	68 59.5	-16 55.7	288.8 2.8	56 4.7	-13 9.5	289.6 3.4	44 4.0	-8 49.7	290.3 3.8	32 47.0	-4 13.5	290.8 3.9
40	102 21.7	-21 25.5		87 40.0	-19 46.1		73 48.3	-16 52.9		60 54.4	-13 6.1		48 54.3	-8 46.0		37 37.9	-4 9.7	
8 0	107 9.2	-21 24.7		92 28.1	-19 44.2		78 37.2	-16 50.1		65 44.0	-13 2.7		53 44.7	-8 42.2		42 28.7	-4 5.8	
20	111 56.7	-21 23.8	287.5 0.8	97 16.2	-19 42.2	288.1 2.0	83 26.1	-16 47.2	288.9 2.9	70 33.7	-12 59.2	289.7 3.4	58 35.0	-8 38.4	290.4 3.8	47 19.6	-4 1.9	290.9 3.9
40	116 44.2	-21 23.0		102 4.3	-19 40.2		88 14.9	-16 44.4		75 23.3	-12 55.8		63 25.4	-8 34.7		52 10.4	-3 58.0	
9 0	121 31.7	-21 22.2		106 52.4	-19 38.3		93 3.8	-16 41.5		80 13.0	-12 52.4		68 15.7	-8 30.9		57 1.3	-3 54.1	
20	126 19.3	-21 21.3	287.5 0.9	111 40.5	-19 36.3	288.1 2.0	97 52.7	-16 38.6	288.9 2.9	85 2.7	-12 48.9	289.7 3.5	73 6.1	-8 27.1	290.4 3.8	61 52.2	-3 50.2	290.9 3.9
40	131 6.8	-21 20.4		116 28.6	-19 34.2		102 41.6	-16 35.7		89 52.4	-12 45.4		77 56.5	-8 23.3		66 43.1	-3 46.3	
10 0	135 54.3	-21 19.5		121 16.8	-19 32.2		107 30.5	-16 32.8		94 42.1	-12 42.0		82 46.9	-8 19.6		71 33.9	-3 42.5	
20	140 41.8	-21 18.6	287.5 0.9	126 4.9	-19 30.2	288.2 2.1	112 19.5	-16 29.9	288.9 2.9	99 31.8	-12 38.5	289.7 3.5	87 37.3	-8 15.8	290.4 3.8	76 24.8	-3 38.6	290.9 3.9
40	145 29.4	-21 17.7		130 53.0	-19 28.1		117 8.4	-16 27.0		104 21.6	-12 35.0		92 27.7	-8 12.0		81 15.7	-3 34.7	
11 0	150 16.9	-21 16.7		135 41.2	-19 26.0		121 57.4	-16 24.1		109 11.3	-12 31.5		97 18.1	-8 8.2		86 6.6	-3 30.8	
20	155 4.5	-21 15.8	287.6 1.0	140 29.4	-19 24.0	288.2 2.1	126 46.3	-16 21.2	289.0 2.9	114 1.1	-12 28.1	289.8 3.5	102 8.5	-8 4.4	290.4 3.8	90 57.5	-3 26.9	290.9 3.9
40	159 52.1	-21 14.8		145 17.6	-19 21.9		131 35.3	-16 18.2		118 50.8	-12 24.6		106 58.9	-8 0.6		95 48.4	-3 23.0	
12 0	164 39.6	-21 13.8		150 5.8	-19 19.7		136 24.3	-16 15.3		123 40.6	-12 21.1		111 49.4	-7 56.8		100 39.4	-3 19.1	
20	169 27.2	-21 12.8	287.6 1.0	154 54.0	-19 17.6	288.2 2.1	141 13.3	-16 12.3	289.0 3.0	128 30.4	-12 17.5	289.8 3.5	116 39.8	-7 53.0	290.5 3.8	105 30.3	-3 15.3	290.9 3.9
40	174 14.8	-21 11.7		159 42.2	-19 15.5		146 2.3	-16 9.4		133 20.2	-12 14.0		121 30.2	-7 49.2		110 21.2	-3 11.4	
13 0	179 2.4	-21 10.7		164 30.4	-19 13.3		150 51.3	-16 6.4		138 10.0	-12 10.5		126 20.7	-7 45.4		115 12.1	-3 7.5	
20	183 50.0	-21 9.6	287.6 1.1	169 18.6	-19 11.2	288.2 2.2	155 40.4	-16 3.4	289.0 3.0	142 59.8	-12 7.0	289.8 3.5	131 11.2	-7 41.6	290.5 3.8	120 3.1	-3 3.6	290.9 3.9
40	188 37.6	-21 8.5		174 6.9	-19 9.0		160 29.4	-16 0.4		147 49.6	-12 3.5		136 1.6	-7 37.8		124 54.0	-2 59.7	
14 0	193 25.2	-21 7.4		178 55.1	-19 6.8		165 18.5	-15 57.4		152 39.5	-11 59.9		140 52.1	-7 34.0		129 45.0	-2 55.8	
20	198 12.8	-21 6.3	287.6 1.1	183 43.4	-19 4.6	288.3 2.2	170 7.5	-15 54.4	289.1 3.0	157 29.3	-11 56.4	289.9 3.5	145 42.6	-7 30.2	290.5 3.8	134 35.9	-2 51.9	291.0 3.9
40	203 0.4	-21 5.2		188 31.7	-19 2.4		174 56.6	-15 51.3		162 19.1	-11 52.8		150 33.1	-7 26.4		139 26.9	-2 48.1	
15 0	207 48.0	-21 4.0		193 20.0	-19 0.1		179 45.7	-15 48.3		167 9.0	-11 49.3		155 23.6	-7 22.6		144 17.9	-2 44.2	
20	212 35.7	-21 2.8	287.6 1.2	198 8.3	-18 57.9	288.3 2.2	184 34.8	-15 45.3	289.1 3.1	171 58.9	-11 45.7	289.9 3.6	160 14.1	-7 18.7	290.5 3.8	149 8.8	-2 40.3	291.0 3.9
40	217 23.3	-21 1.7		202 56.6	-18 55.6		189 23.9	-15 42.2		176 48.8	-11 42.2		165 4.6	-7 14.9		153 59.8	-2 36.4	
16 0	222 11.0	-21 0.5		207 44.9	-18 53.4		194 13.1	-15 39.1		181 38.7	-11 38.6		169 55.2	-7 11.1		158 50.8	-2 32.5	
20	226 58.6	-20 59.2	287.7 1.2	212 33.2	-18 51.1	288.3 2.3	199 2.2	-15 36.1	289.1 3.1	186 28.6	-11 35.0	289.9 3.6	174 45.7	-7 7.3	290.5 3.8	163 41.8	-2 28.6	291.0 3.9
40	231 46.3	-20 58.0		217 21.6	-18 48.8		203 51.3	-15 33.0		191 18.5	-11 31.5		179 36.3	-7 3.4		168 32.8	-2 24.7	
17 0	236 34.0	-20 56.8		222 9.9	-18 46.5		208 40.5	-15 29.9		196 8.4	-11 27.9		184 26.8	-6 59.6		173 23.7	-2 20.9	
20	241 21.6	-20 55.5	287.7 1.3	226 58.3	-18 44.1	288.4 2.4	213 29.7	-15 26.8	289.2 3.1	200 58.3	-11 24.3	289.9 3.6	189 17.4	-6 55.8	290.6 3.8	178 14.7	-2 17.0	291.0 3.9
40	246 9.3	-20 54.2		231 46.7	-18 41.8		218 18.8	-15 23.7		205 48.3	-11 20.7		194 7.9	-6 51.9		183 5.7	-2 13.1	
18 0	250 57.0	-20 52.9		236 35.1	-18 39.4		223 8.0	-15 20.6		210 38.2	-11 17.1		198 58.5	-6 48.1		187 56.8	-2 9.2	
20	255 44.7	-20 51.6	287.7 1.3	241 23.4	-18 37.1	288.4 2.4	227 57.2	-15 17.5	289.2 3.1	215 28.2	-11 13.5	290.0 3.6	203 49.1	-6 44.3	290.6 3.8	192 47.8	-2 5.3	291.0 3.9
40	260 32.5	-20 50.3		246 11.9	-18 34.7		232 46.4	-15 14.3		220 18.2	-11 9.9		208 39.7	-6 40.4		197 38.8	-2 1.4	
19 0	265 20.2	-20 48.9		251 0.3	-18 32.3		237 35.7	-15 11.2		225 8.2	-11 6.3		213 30.3	-6 36.6		202 29.8	-1 57.6	
20	270 7.9	-20 47.5	287.7 1.4	255 48.7	-18 29.9	288.4 2.4	242 24.9	-15 8.0	289.2 3.2	229 58.1	-11 2.7	290.0 3.6	218 20.9	-6 32.7	290.6 3.8	207 20.8	-1 53.7	291.0 3.9
40	274 55.6	-20 46.2		260 37.1	-18 27.5		247 14.2	-15 4.9		234 48.2	-10 59.0		223 11.5	-6 28.9		212 11.9	-1 49.8	
20 0	279 43.4	-20 44.8		265 25.6	-18 25.1		252 3.4	-15 1.7		239 38.2	-10 55.4		228 2.1	-6 25.1		217 2.9	-1 45.9	
20	284 31.1	-20 43.4	287.8 1.4	270 14.1	-18 22.7	288.5 2.5	256 52.7	-14 58.5	289.3 3.2	244 28.2	-10 51.8	290.0 3.6	232 52.7	-6 21.2	290.6 3.9	221 53.9	-1 42.0	291.0 3.9
40	289 18.9	-20 41.9		275 2.5	-18 20.2		261 42.0	-14 55.4		249 18.2	-10 48.2		237 43.3	-6 17.4		226 45.0	-1 38.2	
21 0	294 6.7	-20 40.5		279 51.0	-18 17.7		266 31.3	-14 52.2		254 8.3	-10 44.5		242 34.0	-6 13.5		231 36.0	-1 34.3	
20	298 54.5	-20 39.0	287.8 1.5	284 39.5	-18 15.3	288.5 2.5	271 20.6	-14 49.0	289.3 3.2	258 58.3	-10 40.9	290.1 3.6	247 24.6	-6 9.7	290.7 3.9	236 27.1	-1 30.4	291.1 3.9
40	303 42.2	-20 37.5		289 28.0	-18 12.8		276 9.9	-14 45.8		263 48.4	-10 37.2		252 15.3	-6 5.8		241 18.1	-1 26.5	
22 0	308 30.0	-20 36.1		294 16.5	-18 10.3		280 59.2	-14 42.5		268 38.4	-10 33.6		257 5.9	-6 1.9		246 9.2	-1 22.7	
20	313 17.8	-20 34.5	287.8 1.5	299 5.0	-18 7.8	288.5 2.5	285 48.5	-14 39.3	289.3 3.2	273 28.5	-10 29.9	290.1 3.7	261 56.6	-5 58.1	290.7 3.8	251 0.3	-1 18.8	291.1 3.9
40	318 5.7	-20 33.0		303 53.6	-18 5.3		290 37.9	-14 36.1		278 18.6	-10 26.3		266 47.3	-5 54.2		255 51.3	-1 14.9	
23 0	322 53.5	-20 31.5		308 42.1	-18 2.7		295 27.2	-14 32.9		283 8.7	-10 22.6		271 37.9	-5 50.4		260 42.4	-1 11.0	
20	327 41.3	-20 29.9	287.8 1.6	313 30.7	-18 0.2	288.6 2.5	300 16.6	-14 29.6	289.4 3.3	287 58.8	-10 18.9	290.1 3.7	276 28.6	-5 46.5	290.7 3.9	265 33.5	-1 7.2	291.1 3.9
40	332 29.1	-20 28.4		318 19.3	-17 57.6		305 6.0	-14 26.4		292 48.9	-10 15.2		281 19.3	-5 42.6		270 24.6	-1 3.3	

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h m	11 Jun GHA	11 Jun Dec	d	12 Jun GHA	12 Jun Dec	d	13 Jun GHA	13 Jun Dec	d	14 Jun GHA	14 Jun Dec	d	15 Jun GHA	15 Jun Dec	d	16 Jun GHA	16 Jun Dec	d
0 0	275 15.7	-0 59.4		264 42.4	3 35.0		254 17.2	7 55.2		243 48.7	11 53.1		233 7.6	15 20.9		222 7.6	18 10.9	
20	280 6.8	-0 55.6	291.1 3.9	269 33.7	3 38.7	291.3 3.7	259 8.5	7 58.7	291.3 3.5	248 39.9	11 56.2	291.2 3.1	237 58.6	15 23.6	291.0 2.6	226 58.3	18 12.9	290.7 2.0
40	284 57.9	-0 51.7		274 25.0	3 42.5		263 59.8	8 2.2		253 31.1	11 59.3		242 49.6	15 26.2		231 49.0	18 15.0	
1 0	289 49.0	-0 47.8		279 16.2	3 46.2		268 51.1	8 5.6		258 22.3	12 2.4		247 40.5	15 28.8		236 39.6	18 17.0	
20	294 40.1	-0 44.0	291.1 3.9	284 7.5	3 49.9	291.3 3.7	273 42.5	8 9.1	291.3 3.5	263 13.5	12 5.5	291.2 3.1	252 31.5	15 31.4	291.0 2.6	241 30.3	18 19.1	290.7 2.0
40	299 31.2	-0 40.1		288 58.8	3 53.6		278 33.8	8 12.6		268 4.7	12 8.6		257 22.5	15 34.0		246 21.0	18 21.1	
2 0	304 22.3	-0 36.2		293 50.1	3 57.3		283 25.1	8 16.0		272 55.9	12 11.7		262 13.4	15 36.7		251 11.6	18 23.1	
20	309 13.4	-0 32.4	291.1 3.8	298 41.4	4 1.1	291.3 3.7	288 16.4	8 19.5	291.3 3.4	277 47.1	12 14.8	291.2 3.1	267 4.4	15 39.2	290.9 2.6	256 2.3	18 25.1	290.7 2.0
40	314 4.5	-0 28.5		303 32.7	4 4.8		293 7.7	8 22.9		282 38.2	12 17.8		271 55.3	15 41.8		260 53.0	18 27.1	
3 0	318 55.6	-0 24.7		308 24.0	4 8.5		297 59.0	8 26.3		287 29.4	12 20.9		276 46.3	15 44.4		265 43.6	18 29.1	
20	323 46.8	-0 20.8	291.1 3.9	313 15.3	4 12.2	291.3 3.7	302 50.3	8 29.8	291.3 3.4	292 20.6	12 24.0	291.2 3.1	281 37.2	15 47.0	290.9 2.6	270 34.2	18 31.0	290.6 2.0
40	328 37.9	-0 16.9		318 6.6	4 15.9		307 41.7	8 33.2		297 11.8	12 27.0		286 28.1	15 49.5		275 24.9	18 33.0	
4 0	333 29.0	-0 13.1		322 57.9	4 19.6		312 33.0	8 36.6		302 2.9	12 30.1		291 19.1	15 52.1		280 15.5	18 35.0	
20	338 20.2	-0 9.2	291.1 3.9	327 49.3	4 23.3	291.3 3.7	317 24.3	8 40.1	291.3 3.4	306 54.1	12 33.1	291.2 3.0	296 10.0	15 54.6	290.9 2.5	285 6.2	18 36.9	290.6 1.9
40	343 11.3	-0 5.4		332 40.6	4 27.0		322 15.6	8 43.5		311 45.3	12 36.1		301 0.9	15 57.2		289 56.8	18 38.9	
5 0	348 2.4	-0 1.5		337 31.9	4 30.7		327 6.9	8 46.9		316 36.4	12 39.2		305 51.8	15 59.7		294 47.4	18 40.8	
20	352 53.6	0 2.3	291.2 3.8	342 23.2	4 34.4	291.3 3.7	331 58.2	8 50.3	291.3 3.4	321 27.6	12 42.2	291.2 3.0	310 42.8	16 2.2	290.9 2.5	299 38.0	18 42.7	290.6 1.9
40	357 44.7	0 6.2		347 14.5	4 38.0		336 49.5	8 53.7		326 18.8	12 45.2		315 33.7	16 4.8		304 28.6	18 44.6	
6 0	2 35.9	0 10.0		352 5.8	4 41.7		341 40.8	8 57.1		331 9.9	12 48.2		320 24.6	16 7.3		309 19.2	18 46.5	
20	7 27.1	0 13.9	291.2 3.9	356 57.1	4 45.4	291.3 3.7	346 32.1	9 0.5	291.3 3.4	336 1.1	12 51.2	291.1 3.0	325 15.5	16 9.8	290.9 2.5	314 9.9	18 48.4	290.6 1.9
40	12 18.2	0 17.7		1 48.4	4 49.1		351 23.4	9 3.9		340 52.2	12 54.2		330 6.4	16 12.3		319 0.5	18 50.3	
7 0	17 9.4	0 21.6		6 39.7	4 52.7		356 14.7	9 7.3		345 43.4	12 57.2		334 57.3	16 14.8		323 51.1	18 52.2	
20	22 0.5	0 25.4	291.2 3.8	11 31.0	4 56.4	291.3 3.7	1 6.0	9 10.7	291.3 3.4	350 34.5	13 0.2	291.1 3.0	339 48.2	16 17.2	290.9 2.5	328 41.6	18 54.1	290.6 1.9
40	26 51.7	0 29.2		16 22.4	5 0.1		5 57.3	9 14.0		355 25.7	13 3.2		344 39.1	16 19.7		333 32.2	18 55.9	
8 0	31 42.9	0 33.1		21 13.7	5 3.7		10 48.6	9 17.4		0 16.8	13 6.1		349 29.9	16 22.2		338 22.8	18 57.8	
20	36 34.1	0 36.9	291.2 3.8	26 5.0	5 7.4	291.3 3.7	15 39.9	9 20.8	291.3 3.4	5 7.9	13 9.1	291.1 3.0	354 20.8	16 24.6	290.9 2.4	343 13.4	18 59.6	290.6 1.8
40	41 25.3	0 40.8		30 56.3	5 11.1		20 31.2	9 24.1		9 59.1	13 12.0		359 11.7	16 27.1		348 4.0	19 1.4	
9 0	46 16.4	0 44.6		35 47.6	5 14.7		25 22.5	9 27.5		14 50.2	13 15.0		4 2.6	16 29.5		352 54.5	19 3.3	
20	51 7.6	0 48.4	291.2 3.8	40 39.0	5 18.4	291.3 3.6	30 13.7	9 30.8	291.3 3.3	19 41.3	13 17.9	291.1 2.9	8 53.4	16 32.0	290.9 2.4	357 45.1	19 5.1	290.6 1.8
40	55 58.8	0 52.3		45 30.3	5 22.0		35 5.0	9 34.2		24 32.4	13 20.9		13 44.3	16 34.4		2 35.7	19 6.9	
10 0	60 50.0	0 56.1		50 21.6	5 25.6		39 56.3	9 37.5		29 23.6	13 23.8		18 35.2	16 36.8		7 26.2	19 8.7	
20	65 41.2	0 59.9	291.2 3.8	55 12.9	5 29.3	291.3 3.6	44 47.6	9 40.9	291.3 3.3	34 14.7	13 26.7	291.1 2.9	23 26.0	16 39.2	290.9 2.4	12 16.8	19 10.5	290.6 1.8
40	70 32.4	1 3.7		60 4.2	5 32.9		49 38.9	9 44.2		39 5.8	13 29.7		28 16.9	16 41.6		17 7.3	19 12.2	
11 0	75 23.6	1 7.6		64 55.6	5 36.5		54 30.2	9 47.5		43 56.9	13 32.6		33 7.7	16 44.0		21 57.9	19 14.0	
20	80 14.8	1 11.4	291.2 3.8	69 46.9	5 40.2	291.3 3.6	59 21.4	9 50.8	291.3 3.3	48 48.0	13 35.5	291.1 2.9	37 58.6	16 46.4	290.8 2.4	26 48.4	19 15.7	290.5 1.7
40	85 6.0	1 15.2		74 38.2	5 43.8		64 12.7	9 54.1		53 39.1	13 38.4		42 49.4	16 48.8		31 39.0	19 17.5	
12 0	89 57.2	1 19.0		79 29.5	5 47.4		69 4.0	9 57.5		58 30.2	13 41.3		47 40.3	16 51.1		36 29.5	19 19.2	
20	94 48.4	1 22.8	291.2 3.8	84 20.9	5 51.0	291.3 3.6	73 55.3	10 0.8	291.3 3.3	63 21.3	13 44.2	291.1 2.9	52 31.1	16 53.5	290.8 2.4	41 20.0	19 21.0	290.5 1.7
40	99 39.7	1 26.7		89 12.2	5 54.6		78 46.6	10 4.1		68 12.4	13 47.0		57 21.9	16 55.8		46 10.6	19 22.7	
13 0	104 30.9	1 30.5		94 3.5	5 58.3		83 37.8	10 7.4		73 3.5	13 49.9		62 12.7	16 58.2		51 1.1	19 24.4	
20	109 22.1	1 34.3	291.2 3.8	98 54.8	6 1.9	291.3 3.6	88 29.1	10 10.7	291.3 3.3	77 54.6	13 52.8	291.1 2.9	67 3.6	17 0.5	290.8 2.3	55 51.6	19 26.1	290.5 1.7
40	114 13.3	1 38.1		103 46.2	6 5.5		93 20.4	10 13.9		82 45.7	13 55.6		71 54.4	17 2.8		60 42.1	19 27.8	
14 0	119 4.5	1 41.9		108 37.5	6 9.1		98 11.6	10 17.2		87 36.8	13 58.5		76 45.2	17 5.2		65 32.6	19 29.4	
20	123 55.8	1 45.7	291.2 3.8	113 28.8	6 12.7	291.3 3.6	103 2.9	10 20.5	291.3 3.3	92 27.8	14 1.3	291.1 2.8	81 36.0	17 7.5	290.8 2.3	70 23.1	19 31.1	290.5 1.7
40	128 47.0	1 49.5		118 20.1	6 16.3		107 54.2	10 23.8		97 18.9	14 4.2		86 26.8	17 9.8		75 13.6	19 32.8	
15 0	133 38.2	1 53.3		123 11.5	6 19.8		112 45.4	10 27.0		102 10.0	14 7.0		91 17.6	17 12.1		80 4.1	19 34.4	
20	138 29.5	1 57.1	291.2 3.8	128 2.8	6 23.4	291.3 3.6	117 36.7	10 30.3	291.3 3.3	107 1.1	14 9.9	291.1 2.8	96 8.4	17 14.4	290.8 2.3	84 54.6	19 36.1	290.5 1.6
40	143 20.7	2 0.9		132 54.1	6 27.0		122 27.9	10 33.5		111 52.1	14 12.7		100 59.2	17 16.6		89 45.1	19 37.7	
16 0	148 12.0	2 4.7		137 45.4	6 30.6		127 19.2	10 36.8		116 43.2	14 15.5		105 50.0	17 18.9		94 35.6	19 39.3	
20	153 3.2	2 8.5	291.2 3.8	142 36.8	6 34.2	291.3 3.6	132 10.4	10 40.0	291.3 3.2	121 34.2	14 18.3	291.1 2.8	110 40.8	17 21.2	290.8 2.3	99 26.1	19 40.9	290.5 1.6
40	157 54.4	2 12.3		147 28.1	6 37.7		137 1.7	10 43.3		126 25.3	14 21.1		115 31.5	17 23.4		104 16.6	19 42.5	
17 0	162 45.7	2 16.0		152 19.4	6 41.3		141 53.0	10 46.5		131 16.3	14 23.9		120 22.3	17 25.7		109 7.0	19 44.1	
20	167 36.9	2 19.8	291.3 3.8	157 10.7	6 44.8	291.3 3.6	146 44.2	10 49.7	291.2 3.2	136 7.4	14 26.7	291.0 2.8	125 13.1	17 27.9	290.8 2.2	113 57.5	19 45.7	290.5 1.6
40	172 28.2	2 23.6		162 2.1	6 48.4		151 35.4	10 53.0		140 58.4	14 29.5		130 3.8	17 30.1		118 48.0	19 47.3	
18 0	177 19.5	2 27.4		166 53.4	6 52.0		156 26.7	10 56.2		145 49.5	14 32.2		134 54.6	17 32.4		123 38.4	19 48.8	
20	182 10.7	2 31.2	291.3 3.8	171 44.7	6 55.5	291.3 3.5	161 17.9	10 59.4	291.2 3.2	150 40.5	14 35.0	291.0 2.8	139 45.4	17 34.6	290.8 2.2	128 28.9	19 50.4	290.5 1.6
40	187 2.0	2 34.9		176 36.0	6 59.1		166 9.2	11 2.6		155 31.6	14 37.8		144 36.1	17 36.8		133 19.3	19 51.9	
19 0	191 53.2	2 38.7		181 27.4	7 2.6		171 0.4	11 5.8		160 22.6	14 40.5		149 26.9	17 39.0		138 9.8	19 53.5	
20	196 44.5	2 42.5	291.3 3.8	186 18.7	7 6.1	291.3 3.5	175 51.6	11 9.0	291.2 3.2	165 13.6	14 43.2	291.0 2.7	154 17.6	17 41.2	290.7 2.2	143 0.2	19 55.0	290.4 1.5
40	201 35.8	2 46.3		191 10.0	7 9.7		180 42.9	11 12.2		170 4.6	14 46.0		159 8.4	17 43.3		147 50.7	19 56.5	
20 0	206 27.0	2 50.0		196 1.3	7 13.2		185 34.1	11 15.4		174 55.7	14 48.7		163 59.1	17 45.5		152 41.1	19 58.0	
20	211 18.3	2 53.8	291.3 3.8	200 52.7	7 16.7	291.3 3.5	190 25.3	11 18.5	291.2 3.2	179 46.7	14 51.4	291.0 2.7	168 49.8	17 47.7	290.7 2.2	157 31.5	19 59.5	290.4 1.5
40	216 9.6	2 57.5		205 44.0	7 20.2		195 16.6	11 21.7		184 37.7	14 54.2		173 40.6	17 49.8		162 21.9	20 1.0	
21 0	221 0.8	3 1.3		210 35.3	7 23.8		200 7.8	11 24.9		189 28.7	14 56.9		178 31.3	17 52.0		167 12.4	20 2.5	
20	225 52.1	3 5.1	291.3 3.8	215 26.6	7 27.3	291.3 3.5	204 59.0	11 28.0	291.2 3.1	194 19.7	14 59.6	291.0 2.7	183 22.0	17 54.1	290.7 2.1	172 2.8	20 3.9	290.4 1.4
40	230 43.4	3 8.8		220 18.0	7 30.8		209 50.2	11 31.2		199 10.7	15 2.3		188 12.7	17 56.2		176 53.2	20 5.4	
22 0	235 34.7	3 12.6		225 9.3	7 34.3		214 41.4	11 34.3		204 1.7	15 5.0		193 3.4	17 58.4		181 43.6	20 6.8	
20	240 26.0	3 16.3	291.3 3.7	230 0.6	7 37.8	291.3 3.5	219 32.7	11 37.5	291.2 3.2	208 52.7	15 7.6	291.0 2.7	197 54.1	18 0.5	290.7 2.1	186 34.0	20 8.3	290.4 1.4
40	245 17.2	3 20.1		234 51.9	7 41.3		224 23.9	11 40.6		213 43.7	15 10.3		202 44.8	18 2.6		191 24.4	20 9.7	
23 0	250 8.5	3 23.8		239 43.2	7 44.8		229 15.1	11 43.8		218 34.7	15 13.0		207 35.5	18 4.7		196 14.8	20 11.1	
20	254 59.8	3 27.5	291.3 3.7	244 34.6	7 48.3	291.3 3.5	234 6.3	11 46.9	291.2 3.1	223 25.7	15 15.6	291.0 2.6	212 26.2	18 6.7	290.7 2.1	201 5.2	20 12.5	290.4 1.4
40	259 51.1	3 31.3		249 25.9	7 51.8		238 57.5	11 50.0		228 16.7	15 18.3		217 16.9	18 8.8		205 55.6	20 13.9	

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h m	17 Jun GHA	17 Jun Dec	d	18 Jun GHA	18 Jun Dec	d	19 Jun GHA	19 Jun Dec	d	20 Jun GHA	20 Jun Dec	d	21 Jun GHA	21 Jun Dec	d	22 Jun GHA	22 Jun Dec	d
0 0	210 46.0	20 15.3		199 4.4	21 27.1		187 8.7	21 41.1		175 7.3	20 54.7		163 9.1	19 8.6		151 20.7	16 27.1	
20	215 36.4	20 16.6	1.4	203 54.6	21 27.7	0.6	191 58.7	21 40.9	-0.2	179 57.2	20 53.6	-1.1	167 59.1	19 6.7	-1.9	156 11.0	16 24.5	-2.6
40	220 26.8	20 18.0	290.4	208 44.7	21 28.3	290.1	196 48.7	21 40.6	290.0	184 47.2	20 52.5	290.0	172 49.2	19 4.8	290.1	161 1.2	16 21.9	290.3
1 0	225 17.1	20 19.4		213 34.8	21 28.9		201 38.7	21 40.4		189 37.2	20 51.4		177 39.3	19 3.0		165 51.5	16 19.3	
20	230 7.5	20 20.7	1.3	218 25.0	21 29.4	0.5	206 28.7	21 40.1	-0.3	194 27.2	20 50.3	-1.1	182 29.4	19 1.0	-1.9	170 41.8	16 16.7	-2.6
40	234 57.9	20 22.0	290.4	223 15.1	21 30.0	290.1	211 18.7	21 39.9	290.0	199 17.2	20 49.2	290.0	187 19.5	18 59.1	290.1	175 32.0	16 14.0	290.3
2 0	239 48.2	20 23.3		228 5.2	21 30.5		216 8.7	21 39.6		204 7.2	20 48.1		192 9.6	18 57.2		180 22.3	16 11.4	
20	244 38.6	20 24.7	1.3	232 55.4	21 31.1	0.5	220 58.6	21 39.3	-0.3	208 57.2	20 46.9	-1.2	196 59.7	18 55.3	-2.0	185 12.5	16 8.7	-2.7
40	249 29.0	20 26.0	290.4	237 45.5	21 31.6	290.1	225 48.6	21 39.0	290.0	213 47.2	20 45.8	290.0	201 49.8	18 53.3	290.1	190 2.8	16 6.1	290.3
3 0	254 19.3	20 27.3		242 35.6	21 32.1		230 38.6	21 38.6		218 37.1	20 44.6		206 39.9	18 51.3		194 53.1	16 3.4	
20	259 9.7	20 28.5	1.3	247 25.7	21 32.6	0.5	235 28.6	21 38.3	-0.3	223 27.1	20 43.5	-1.2	211 30.0	18 49.4	-2.0	199 43.3	16 0.7	-2.7
40	264 0.0	20 29.8	290.3	252 15.8	21 33.1	290.1	240 18.6	21 38.0	290.0	228 17.1	20 42.3	290.0	216 20.1	18 47.4	290.1	204 33.6	15 58.0	290.3
4 0	268 50.4	20 31.1		257 5.9	21 33.6		245 8.6	21 37.6		233 7.1	20 41.1		221 10.2	18 45.4		209 23.9	15 55.3	
20	273 40.7	20 32.3	1.2	261 56.0	21 34.0	0.4	249 58.6	21 37.2	-0.4	237 57.1	20 39.9	-1.2	226 0.3	18 43.4	-2.0	214 14.2	15 52.6	-2.7
40	278 31.0	20 33.5	290.3	266 46.1	21 34.5	290.1	254 48.6	21 36.8	290.0	242 47.1	20 38.6	290.0	230 50.4	18 41.4	290.1	219 4.5	15 49.9	290.3
5 0	283 21.4	20 34.8		271 36.2	21 34.9		259 38.6	21 36.4		247 37.1	20 37.4		235 40.5	18 39.3		223 54.7	15 47.1	
20	288 11.7	20 36.0	1.2	276 26.3	21 35.4	0.4	264 28.5	21 36.0	-0.4	252 27.1	20 36.2	-1.3	240 30.6	18 37.3	-2.0	228 45.0	15 44.4	-2.7
40	293 2.0	20 37.2	290.3	281 16.4	21 35.8	290.1	269 18.5	21 35.6	290.0	257 17.1	20 34.9	290.0	245 20.8	18 35.3	290.1	233 35.3	15 41.6	290.3
6 0	297 52.3	20 38.4		286 6.5	21 36.2		274 8.5	21 35.2		262 7.1	20 33.6		250 10.9	18 33.2		238 25.6	15 38.9	
20	302 42.6	20 39.6	1.2	290 56.6	21 36.6	0.4	278 58.5	21 34.8	-0.5	266 57.1	20 32.4	-1.3	255 1.0	18 31.1	-2.1	243 15.9	15 36.1	-2.8
40	307 32.9	20 40.8	290.3	295 46.7	21 37.0	290.1	283 48.5	21 34.3	290.0	271 47.1	20 31.1	290.0	259 51.1	18 29.1	290.1	248 6.2	15 33.3	290.3
7 0	312 23.3	20 41.9		300 36.8	21 37.3		288 38.4	21 33.8		276 37.1	20 29.8		264 41.2	18 27.0		252 56.5	15 30.6	
20	317 13.6	20 43.1	1.2	305 26.9	21 37.7	0.4	293 28.4	21 33.4	-0.5	281 27.1	20 28.5	-1.3	269 31.4	18 24.9	-2.1	257 46.8	15 27.8	-2.8
40	322 3.9	20 44.2	290.3	310 17.0	21 38.1	290.1	298 18.4	21 32.9	290.0	286 17.1	20 27.1	290.0	274 21.5	18 22.8	290.1	262 37.1	15 25.0	290.3
8 0	326 54.2	20 45.4		315 7.0	21 38.4		303 8.4	21 32.4		291 7.1	20 25.8		279 11.6	18 20.6		267 27.4	15 22.2	
20	331 44.4	20 46.5	1.1	319 57.1	21 38.7	0.3	307 58.4	21 31.9	-0.5	295 57.1	20 24.5	-1.4	284 1.8	18 18.5	-2.1	272 17.7	15 19.3	-2.8
40	336 34.7	20 47.6	290.3	324 47.2	21 39.0	290.1	312 48.3	21 31.3	290.0	300 47.1	20 23.1	290.0	288 51.9	18 16.4	290.1	277 8.0	15 16.5	290.3
9 0	341 25.0	20 48.7		329 37.3	21 39.4		317 38.3	21 30.8		305 37.1	20 21.7		293 42.0	18 14.2		281 58.3	15 13.7	
20	346 15.3	20 49.8	1.1	334 27.3	21 39.6	0.3	322 28.3	21 30.3	-0.6	310 27.1	20 20.4	-1.4	298 32.2	18 12.1	-2.2	286 48.7	15 10.8	-2.9
40	351 5.6	20 50.9	290.3	339 17.4	21 39.9	290.1	327 18.3	21 29.7	290.0	315 17.2	20 19.0	290.0	303 22.3	18 9.9	290.1	291 39.0	15 8.0	290.3
10 0	355 55.9	20 51.9		344 7.5	21 40.2		332 8.3	21 29.1		320 7.2	20 17.6		308 12.5	18 7.7		296 29.3	15 5.1	
20	0 46.1	20 53.0	1.1	348 57.6	21 40.5	0.2	336 58.2	21 28.6	-0.6	324 57.2	20 16.1	-1.4	313 2.6	18 5.5	-2.2	301 19.6	15 2.2	-2.9
40	5 36.4	20 54.1	290.3	353 47.6	21 40.7	290.1	341 48.2	21 28.0	290.0	329 47.2	20 14.7	290.0	317 52.8	18 3.3	290.2	306 10.0	14 59.3	290.3
11 0	10 26.7	20 55.1		358 37.7	21 40.9		346 38.2	21 27.4		334 37.2	20 13.3		322 42.9	18 1.1		311 0.3	14 56.5	
20	15 16.9	20 56.1	1.0	3 27.7	21 41.2	0.2	351 28.2	21 26.7	-0.6	339 27.2	20 11.8	-1.5	327 33.1	17 58.9	-2.2	315 50.6	14 53.6	-2.9
40	20 7.2	20 57.1	290.3	8 17.8	21 41.4	290.1	356 18.1	21 26.1	290.0	344 17.2	20 10.4	290.0	332 23.2	17 56.7	290.2	320 40.9	14 50.7	290.3
12 0	24 57.4	20 58.1		13 7.8	21 41.6		1 8.1	21 25.5		349 7.3	20 8.9		337 13.4	17 54.4		325 31.3	14 47.7	
20	29 47.7	20 59.1	1.0	17 57.9	21 41.8	0.2	5 58.1	21 24.8	-0.7	353 57.3	20 7.4	-1.5	342 3.6	17 52.2	-2.3	330 21.6	14 44.8	-2.9
40	34 37.9	21 0.1	290.2	22 47.9	21 42.0	290.1	10 48.1	21 24.2	290.0	358 47.3	20 5.9	290.0	346 53.7	17 49.9	290.2	335 12.0	14 41.9	290.3
13 0	39 28.2	21 1.1		27 38.0	21 42.1		15 38.0	21 23.5		3 37.3	20 4.4		351 43.9	17 47.6		340 2.3	14 38.9	
20	44 18.4	21 2.1	1.0	32 28.0	21 42.3	0.1	20 28.0	21 22.8	-0.7	8 27.4	20 2.9	-1.5	356 34.1	17 45.4	-2.3	344 52.6	14 36.0	-2.9
40	49 8.7	21 3.0	290.2	37 18.1	21 42.4	290.0	25 18.0	21 22.1	290.0	13 17.4	20 1.4	290.0	1 24.2	17 43.1	290.2	349 43.0	14 33.0	290.3
14 0	53 58.9	21 4.0		42 8.1	21 42.5		30 8.0	21 21.4		18 7.4	19 59.9		6 14.4	17 40.8		354 33.3	14 30.1	
20	58 49.1	21 4.9	0.9	46 58.2	21 42.7	0.1	34 57.9	21 20.7	-0.7	22 57.4	19 58.3	-1.6	11 4.6	17 38.4	-2.3	359 23.7	14 27.1	-3.0
40	63 39.4	21 5.8	290.2	51 48.2	21 42.8	290.0	39 47.9	21 19.9	290.0	27 47.5	19 56.7	290.0	15 54.8	17 36.1	290.2	4 14.1	14 24.1	290.4
15 0	68 29.6	21 6.7		56 38.3	21 42.9		44 37.9	21 19.2		32 37.5	19 55.2		20 44.9	17 33.8		9 4.4	14 21.1	
20	73 19.8	21 7.6	0.9	61 28.3	21 43.0	0.1	49 27.8	21 18.4	-0.8	37 27.5	19 53.6	-1.6	25 35.1	17 31.4	-2.4	13 54.8	14 18.1	-3.0
40	78 10.0	21 8.5	290.2	66 18.3	21 43.0	290.0	54 17.8	21 17.7	290.0	42 17.6	19 52.0	290.0	30 25.3	17 29.1	290.2	18 45.1	14 15.1	290.4
16 0	83 0.2	21 9.4		71 8.4	21 43.1		59 7.8	21 16.9		47 7.6	19 50.4		35 15.5	17 26.7		23 35.5	14 12.1	
20	87 50.4	21 10.2	0.8	75 58.4	21 43.2	0.0	63 57.8	21 16.1	-0.8	51 57.7	19 48.8	-1.6	40 5.7	17 24.4	-2.4	28 25.9	14 9.1	-3.0
40	92 40.6	21 11.1	290.2	80 48.4	21 43.2	290.0	68 47.7	21 15.3	290.0	56 47.7	19 47.2	290.0	44 55.9	17 22.0	290.2	33 16.2	14 6.0	290.4
17 0	97 30.9	21 11.9		85 38.4	21 43.2		73 37.7	21 14.5		61 37.7	19 45.5		49 46.1	17 19.6		38 6.6	14 3.0	
20	102 21.1	21 12.8	0.8	90 28.5	21 43.2	0.0	78 27.7	21 13.7	-0.8	66 27.8	19 43.9	-1.7	54 36.3	17 17.2	-2.4	42 57.0	14 0.0	-3.1
40	107 11.3	21 13.6	290.2	95 18.5	21 43.2	290.0	83 17.7	21 12.8	290.0	71 17.8	19 42.2	290.0	59 26.5	17 14.8	290.2	47 47.3	13 56.9	290.4
18 0	112 1.4	21 14.4		100 8.5	21 43.2		88 7.6	21 12.0		76 7.9	19 40.5		64 16.7	17 12.4		52 37.7	13 53.8	
20	116 51.6	21 15.2	0.8	104 58.5	21 43.2	0.0	92 57.6	21 11.1	-0.9	80 57.9	19 38.9	-1.7	69 6.9	17 9.9	-2.5	57 28.1	13 50.8	-3.1
40	121 41.8	21 16.0	290.2	109 48.6	21 43.2	290.0	97 47.6	21 10.2	290.1	85 48.0	19 37.2	290.0	73 57.1	17 7.5	290.2	62 18.5	13 47.7	290.4
19 0	126 32.0	21 16.8		114 38.6	21 43.1		102 37.6	21 9.3		90 38.0	19 35.5		78 47.3	17 5.0		67 8.9	13 44.6	
20	131 22.2	21 17.5	0.7	119 28.6	21 43.1	-0.1	107 27.6	21 8.5	-0.9	95 28.1	19 33.8	-1.7	83 37.5	17 2.6	-2.5	71 59.3	13 41.5	-3.1
40	136 12.4	21 18.3	290.2	124 18.6	21 43.0	290.0	112 17.5	21 7.5	290.1	100 18.2	19 32.0	290.0	88 27.7	17 0.1	290.2	76 49.6	13 38.4	290.4
20 0	141 2.6	21 19.0		129 8.6	21 42.9		117 7.5	21 6.6		105 8.2	19 30.3		93 17.9	16 57.6		81 40.0	13 35.3	
20	145 52.7	21 19.8	0.7	133 58.6	21 42.9	-0.1	121 57.5	21 5.7	-0.9	109 58.3	19 28.5	-1.8	98 8.2	16 55.1	-2.5	86 30.4	13 32.2	-3.1
40	150 42.9	21 20.5	290.2	138 48.6	21 42.8	290.0	126 47.5	21 4.7	290.1	114 48.3	19 26.8	290.0	102 58.4	16 52.6	290.2	91 20.8	13 29.0	290.4
21 0	155 33.1	21 21.2		143 38.7	21 42.6		131 37.4	21 3.8		119 38.4	19 25.0		107 48.6	16 50.1		96 11.2	13 25.9	
20	160 23.2	21 21.9	0.7	148 28.7	21 42.5	-0.1	136 27.4	21 2.8	-1.0	124 28.5	19 23.2	-1.8	112 38.8	16 47.6	-2.5	101 1.6	13 22.7	-3.2
40	165 13.4	21 22.6	290.2	153 18.7	21 42.4	290.0	141 17.4	21 1.8	290.1	129 18.5	19 21.4	290.0	117 29.1	16 45.1	290.2	105 52.0	13 19.6	290.4
22 0	170 3.5	21 23.3		158 8.7	21 42.2		146 7.4	21 0.9		134 8.6	19 19.6		122 19.3	16 42.6		110 42.4	13 16.4	
20	174 53.7	21 23.9	0.6	162 58.7	21 42.1	-0.2	150 57.4	20 59.9	-1.0	138 58.7	19 17.8	-1.8	127 9.5	16 40.0	-2.6	115 32.8	13 13.3	-3.2
40	179 43.9	21 24.6	290.2	167 48.7	21 41.9	290.0	155 47.3	20 58.8	290.1	143 48.7	19 16.0	290.0	131 59.8	16 37.5	290.2	120 23.2	13 10.1	290.4
23 0	184 34.0	21 25.2		172 38.7	21 41.7		160 37.3	20 57.8		148 38.8	19 14.2		136 50.0	16 34.9		125 13.7	13 6.9	
20	189 24.2	21 25.9	0.6	177 28.7	21 41.5	-0.2	165 27.3	20 56.8	-1.0	153 28.9	19 12.3	-1.9	141 40.2	16 32.3	-2.6	130 4.1	13 3.7	-3.2
40	194 14.3	21 26.5	290.1	182 18.7	21 41.3	290.0	170 17.3	20 55.7	290.1	158 19.0	19 10.5	290.0	146 30.5	16 29.7	290.2	134 54.5	13 0.5	290.4

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h m	23 Jun GHA	d	23 Jun Dec	d'	24 Jun GHA	d	24 Jun Dec	d'	25 Jun GHA	d	25 Jun Dec	d'	26 Jun GHA	d	26 Jun Dec	d'	27 Jun GHA	d	27 Jun Dec	d'	28 Jun GHA	d	28 Jun Dec	d'
0 0	139 44.9		12 57.3		128 19.5		8 48.2		116 58.1		4 10.3		105 31.0		-0 44.7		93 46.4		-5 43.6		81 31.6		-10 31.3	
20	144 35.3	290.4	12 54.1	-3.2	133 10.0	290.5	8 44.5	-3.7	121 48.6	290.5	4 6.3	-4.0	110 21.4	290.4	-0 48.8	-4.1	98 36.4	290.0	-5 47.7	-4.1	86 21.1	289.5	-10 35.1	-3.8
40	149 25.7		12 50.9		138 0.5		8 40.8		126 39.1		4 2.3		115 11.8		-0 53.0		103 26.4		-5 51.8		91 10.6		-10 39.0	
1 0	154 16.2		12 47.6		142 51.1		8 37.1		131 29.7		3 58.3		120 2.1		-0 57.1		108 16.5		-5 55.9		96 0.2		-10 42.8	
20	159 6.6	290.4	12 44.4	-3.2	147 41.6	290.5	8 33.4	-3.7	136 20.2	290.5	3 54.3	-4.0	124 52.5	290.3	-1 1.3	-4.2	113 6.5	290.0	-6 0.0	-4.1	100 49.7	289.5	-10 46.6	-3.8
40	163 57.0		12 41.2		152 32.1		8 29.7		141 10.7		3 50.2		129 42.8		-1 5.5		117 56.5		-6 4.1		105 39.2		-10 50.4	
2 0	168 47.4		12 37.9		157 22.7		8 26.0		146 1.2		3 46.2		134 33.2		-1 9.6		122 46.5		-6 8.2		110 28.6		-10 54.2	
20	173 37.9	290.4	12 34.7	-3.3	162 13.2	290.5	8 22.3	-3.7	150 51.7	290.5	3 42.2	-4.0	139 23.5	290.3	-1 13.8	-4.2	127 36.5	290.0	-6 12.3	-4.1	115 18.1	289.5	-10 58.0	-3.8
40	178 28.3		12 31.4		167 3.7		8 18.5		155 42.3		3 38.2		144 13.8		-1 17.9		132 26.5		-6 16.4		120 7.6		-11 1.8	
3 0	183 18.7		12 28.1		171 54.3		8 14.8		160 32.8		3 34.1		149 4.2		-1 22.1		137 16.4		-6 20.5		124 57.0		-11 5.6	
20	188 9.2	290.4	12 24.8	-3.3	176 44.8	290.5	8 11.1	-3.7	165 23.3	290.5	3 30.1	-4.0	153 54.5	290.3	-1 26.3	-4.2	142 6.4	290.0	-6 24.6	-4.1	129 46.5	289.4	-11 9.4	-3.8
40	192 59.6		12 21.5		181 35.3		8 7.3		170 13.8		3 26.1		158 44.8		-1 30.4		146 56.4		-6 28.7		134 35.9		-11 13.2	
4 0	197 50.1		12 18.2		186 25.9		8 3.6		175 4.3		3 22.0		163 35.2		-1 34.6		151 46.3		-6 32.8		139 25.4		-11 17.0	
20	202 40.5	290.4	12 14.9	-3.3	191 16.4	290.5	7 59.8	-3.8	179 54.8	290.5	3 18.0	-4.0	168 25.5	290.3	-1 38.8	-4.2	156 36.3	289.9	-6 36.8	-4.1	144 14.8	289.4	-11 20.7	-3.7
40	207 31.0		12 11.6		196 6.9		7 56.1		184 45.3		3 13.9		173 15.8		-1 42.9		161 26.3		-6 40.9		149 4.2		-11 24.5	
5 0	212 21.4		12 8.3		200 57.5		7 52.3		189 35.8		3 9.9		178 6.1		-1 47.1		166 16.2		-6 45.0		153 53.6		-11 28.2	
20	217 11.8	290.5	12 5.0	-3.3	205 48.0	290.5	7 48.5	-3.8	194 26.3	290.5	3 5.8	-4.1	182 56.4	290.3	-1 51.2	-4.2	171 6.1	289.9	-6 49.1	-4.1	158 43.1	289.4	-11 32.0	-3.8
40	222 2.3		12 1.7		210 38.6		7 44.8		199 16.8		3 1.8		187 46.7		-1 55.4		175 56.1		-6 53.1		163 32.4		-11 35.7	
6 0	226 52.8		11 58.3		215 29.1		7 41.0		204 7.3		2 57.7		192 37.0		-1 59.6		180 46.0		-6 57.2		168 21.8		-11 39.5	
20	231 43.2	290.5	11 55.0	-3.3	220 19.6	290.5	7 37.2	-3.8	208 57.8	290.5	2 53.6	-4.1	197 27.3	290.3	-2 3.7	-4.2	185 35.9	289.9	-7 1.3	-4.1	173 11.2	289.4	-11 43.2	-3.7
40	236 33.7		11 51.6		225 10.2		7 33.4		213 48.3		2 49.6		202 17.6		-2 7.9		190 25.8		-7 5.3		178 0.6		-11 46.9	
7 0	241 24.1		11 48.3		230 0.7		7 29.6		218 38.8		2 45.5		207 7.9		-2 12.1		195 15.7		-7 9.4		182 49.9		-11 50.6	
20	246 14.6	290.5	11 44.9	-3.4	234 51.2	290.5	7 25.8	-3.8	223 29.3	290.5	2 41.4	-4.1	211 58.2	290.3	-2 16.2	-4.2	200 5.6	289.9	-7 13.5	-4.1	187 39.3	289.3	-11 54.3	-3.7
40	251 5.0		11 41.5		239 41.8		7 22.0		228 19.8		2 37.4		216 48.5		-2 20.4		204 55.5		-7 17.5		192 28.6		-11 58.0	
8 0	255 55.5		11 38.1		244 32.3		7 18.2		233 10.3		2 33.3		221 38.7		-2 24.6		209 45.4		-7 21.6		197 18.0		-12 1.7	
20	260 46.0	290.5	11 34.8	-3.4	249 22.9	290.5	7 14.4	-3.8	238 0.8	290.5	2 29.2	-4.1	226 29.0	290.3	-2 28.7	-4.2	214 35.3	289.9	-7 25.6	-4.0	202 7.3	289.3	-12 5.4	-3.7
40	265 36.4		11 31.4		254 13.4		7 10.6		242 51.2		2 25.1		231 19.3		-2 32.9		219 25.2		-7 29.6		206 56.6		-12 9.1	
9 0	270 26.9		11 28.0		259 4.0		7 6.8		247 41.7		2 21.0		236 9.5		-2 37.1		224 15.0		-7 33.7		211 45.9		-12 12.8	
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40	280 7.8		11 21.1		268 45.0		6 59.1		257 22.7		2 12.9		245 50.1		-2 45.4		233 54.7		-7 41.8		221 24.5		-12 20.1	
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20	289 48.8	290.5	11 14.3	-3.4	278 26.1	290.5	6 51.4	-3.9	267 3.6	290.5	2 4.7	-4.1	255 30.5	290.2	-2 53.7	-4.1	243 34.4	289.8	-7 49.8	-4.0	231 3.1	289.3	-12 27.4	-3.6
40	294 39.3		11 10.8		283 16.7		6 47.6		271 54.1		2 0.6		260 20.8		-2 57.9		248 24.3		-7 53.8		235 52.4		-12 31.0	
11 0	299 29.8		11 7.4		288 7.2		6 43.7		276 44.6		1 56.5		265 11.0		-3 2.0		253 14.1		-7 57.9		240 41.6		-12 34.7	
20	304 20.2	290.5	11 4.0	-3.5	292 57.7	290.5	6 39.9	-3.8	281 35.1	290.5	1 52.4	-4.1	270 1.3	290.2	-3 6.2	-4.2	258 3.9	289.8	-8 1.9	-4.0	245 30.9	289.2	-12 38.3	-3.6
40	309 10.7		11 0.5		297 48.3		6 36.0		286 25.5		1 48.3		274 51.5		-3 10.4		262 53.7		-8 5.9		250 20.1		-12 41.9	
12 0	314 1.2		10 57.0		302 38.8		6 32.2		291 16.0		1 44.2		279 41.7		-3 14.5		267 43.5		-8 9.9		255 9.4		-12 45.5	
20	318 51.7	290.5	10 53.6	-3.5	307 29.4	290.5	6 28.3	-3.9	296 6.5	290.5	1 40.1	-4.1	284 31.9	290.2	-3 18.7	-4.2	272 33.3	289.8	-8 13.9	-4.0	259 58.6	289.2	-12 49.1	-3.6
40	323 42.2		10 50.1		312 19.9		6 24.4		300 56.9		1 36.0		289 22.1		-3 22.8		277 23.1		-8 17.9		264 47.8		-12 52.7	
13 0	328 32.7		10 46.6		317 10.5		6 20.5		305 47.4		1 31.9		294 12.3		-3 27.0		282 12.9		-8 21.9		269 37.0		-12 56.3	
20	333 23.1	290.5	10 43.1	-3.5	322 1.0	290.5	6 16.7	-3.9	310 37.8	290.5	1 27.8	-4.1	299 2.6	290.2	-3 31.2	-4.2	287 2.7	289.8	-8 25.9	-4.0	274 26.2	289.2	-12 59.9	-3.6
40	338 13.6		10 39.6		326 51.5		6 12.8		315 28.3		1 23.6		303 52.8		-3 35.3		291 52.4		-8 29.9		279 15.4		-13 3.5	
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40	352 45.1		10 29.1		341 23.2		6 1.1		329 59.6		1 11.3		318 23.3		-3 47.8		306 21.7		-8 41.8		293 42.9		-13 14.1	
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20	2 26.1	290.5	10 22.1	-3.5	351 4.2	290.5	5 53.3	-3.9	339 40.5	290.4	1 3.0	-4.1	328 3.7	290.2	-3 56.1	-4.2	316 1.2	289.7	-8 49.8	-4.0	303 21.2	289.1	-13 21.2	-3.5
40	7 16.6		10 18.5		355 54.8		5 49.4		344 31.0		0 58.9		332 53.8		-4 0.2		320 50.9		-8 53.7		308 10.3		-13 24.7	
16 0	12 7.1		10 15.0		0 45.3		5 45.5		349 21.4		0 54.8		337 44.0		-4 4.4		325 40.6		-8 57.7		312 59.5		-13 28.3	
20	16 57.6	290.5	10 11.4	-3.6	5 35.9	290.5	5 41.5	-3.9	354 11.8	290.4	0 50.7	-4.1	342 34.2	290.2	-4 8.5	-4.1	330 30.3	289.7	-9 1.6	-3.9	317 48.6	289.1	-13 31.8	-3.5
40	21 48.1		10 7.9		10 26.4		5 37.6		359 2.3		0 46.5		347 24.3		-4 12.7		335 20.0		-9 5.6		322 37.7		-13 35.3	
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20	31 29.1	290.5	10 0.8	-3.6	20 7.5	290.5	5 29.7	-3.9	8 43.1	290.4	0 38.3	-4.1	357 4.6	290.1	-4 21.0	-4.2	344 59.4	289.7	-9 13.5	-3.9	332 15.9	289.1	-13 42.2	-3.5
40	36 19.6		9 57.2		24 58.0		5 25.8		13 33.5		0 34.1		1 54.8		-4 25.1		349 49.1		-9 17.4		337 5.0		-13 45.7	
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40	50 51.2		9 46.4		39 29.6		5 14.0		28 4.8		0 21.7		16 25.1		-4 37.6		4 18.1		-9 29.2		351 32.2		-13 56.1	
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20	75 3.7	290.5	9 28.4	-3.6	63 42.3	290.5	4 54.2	-4.0	52 16.8	290.4	0 1.0	-4.2	40 35.7	290.1	-4 58.2	-4.1	28 26.3	289.6	-9 48.7	-3.9	15 37.3	289.0	-14 13.2	-3.4
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21 0	84 44.8		9 21.1		73 23.4		4 46.2		61 57.6		-0 7.3		50 15.9		-5 6.5		38 5.5		-9 56.5		25 15.3		-14 20.0	
20	89 35.3	290.5	9 17.5	-3.6	78 13.9	290.5	4 42.3	-4.0	66 48.0	290.4	-0 11.4	-4.1	55 5.9	290.1	-5 10.6	-4.1	42 55.1	289.6	-10 0.4	-3.9	30 4.3	289.0	-14 23.4	-3.4
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23 0	113 47.9		8 59.2		102 26.5		4 22.3		90 59.9		-0 32.2		79 16.3		-5 31.2		67 3.0		-10 19.8		54 9.0		-14 40.2	
20	118 38.4	290.5	8 55.6	-3.7	107 17.1	290.5	4 18.3	-4.0	95 50.3	290.4	-0 36.4	-4.2	84 6.3	290.0	-5 35.4	-4.1	71 52.5	289.5	-10 23.6	-3.8	58 58.0	288.9	-14 43.5	-3.3
40	123 29.0		8 51.9		112 7.6		4 14.3		100 40.7		-0 40.5		88 56.4		-5 39.5		76 42.1		-10 27.5		63 46.9		-14 46.8	

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h m	29 Jun GHA	29 Jun Dec	d	30 Jun GHA	30 Jun Dec	d	1 Jul GHA	1 Jul Dec	d	2 Jul GHA	2 Jul Dec	d	3 Jul GHA	3 Jul Dec	d	4 Jul GHA	4 Jul Dec	d
0 0	68 35.8	-14 50.1		54 53.3	-18 20.5		40 27.8	-20 42.7		25 35.0	-21 41.1		10 40.1	-21 9.1		356 10.2	-19 11.3	
20	73 24.7	-14 53.4	-3.3	59 41.6	-18 23.0	-2.5	45 15.6	-20 44.1	-1.4	30 22.5	-21 41.3	-0.2	15 27.8	-21 8.0	1.1	0 58.4	-19 9.1	2.2
40	78 13.6	288.9 -14 56.7		64 29.8	288.2 -18 25.4		50 3.3	287.7 -20 45.5		35 10.0	287.5 -21 41.4		20 15.5	287.7 -21 6.9		5 46.6	288.2 -19 6.9	
1 0	83 2.5	-15 0.0		69 18.1	-18 27.9		54 51.0	-20 46.9		39 57.5	-21 41.6		25 3.2	-21 5.8		10 34.8	-19 4.7	
20	87 51.4	-15 3.3	-3.3	74 6.3	-18 30.3	-2.4	59 38.7	-20 48.2	-1.3	44 45.1	-21 41.7	-0.1	29 50.9	-21 4.7	1.1	15 23.0	-19 2.5	2.2
40	92 40.2	288.9 -15 6.6		78 54.5	288.2 -18 32.8		64 26.5	287.7 -20 49.6		49 32.6	287.5 -21 41.8		34 38.6	287.7 -21 3.6		20 11.2	288.2 -19 0.3	
2 0	97 29.1	-15 9.8		83 42.7	-18 35.2		69 14.2	-20 50.9		54 20.1	-21 41.9		39 26.3	-21 2.4		24 59.5	-18 58.0	
20	102 17.9	-15 13.1	-3.2	88 30.9	-18 37.6	-2.4	74 1.9	-20 52.2	-1.3	59 7.6	-21 42.0	-0.1	44 14.0	-21 1.2	1.2	29 47.7	-18 55.8	2.3
40	107 6.8	288.8 -15 16.3		93 19.1	288.2 -18 40.0		78 49.6	287.7 -20 53.5		63 55.1	287.5 -21 42.0		49 1.8	287.7 -21 0.0		34 36.0	288.3 -18 53.5	
3 0	111 55.6	-15 19.5		98 7.3	-18 42.4		83 37.3	-20 54.8		68 42.7	-21 42.1		53 49.5	-20 58.8		39 24.3	-18 51.2	
20	116 44.4	-15 22.7	-3.2	102 55.5	-18 44.7	-2.3	88 25.0	-20 56.1	-1.2	73 30.2	-21 42.1	0.0	58 37.2	-20 57.6	1.2	44 12.5	-18 48.9	2.3
40	121 33.2	288.8 -15 25.9		107 43.6	288.2 -18 47.1		93 12.6	287.7 -20 57.3		78 17.7	287.5 -21 42.1		63 25.0	287.7 -20 56.4		49 0.8	288.3 -18 46.6	
4 0	126 22.0	-15 29.1		112 31.8	-18 49.4		98 0.3	-20 58.5		83 5.2	-21 42.1		68 12.7	-20 55.1		53 49.1	-18 44.2	
20	131 10.8	-15 32.3	-3.2	117 19.9	-18 51.7	-2.3	102 48.0	-20 59.7	-1.2	87 52.7	-21 42.0	0.1	73 0.5	-20 53.9	1.3	58 37.4	-18 41.9	2.3
40	135 59.6	288.8 -15 35.5		122 8.1	288.1 -18 54.0		107 35.7	287.7 -21 0.9		92 40.3	287.5 -21 42.0		77 48.2	287.8 -20 52.6		63 25.7	288.3 -18 39.5	
5 0	140 48.4	-15 38.6		126 56.2	-18 56.3		112 23.3	-21 2.1		97 27.8	-21 41.9		82 36.0	-20 51.3		68 14.1	-18 37.2	
20	145 37.1	-15 41.8	-3.2	131 44.3	-18 58.6	-2.3	117 11.0	-21 3.3	-1.2	102 15.3	-21 41.8	0.1	87 23.8	-20 49.9	1.3	73 2.4	-18 34.8	2.4
40	150 25.9	288.8 -15 44.9		136 32.5	288.1 -19 0.9		121 58.7	287.7 -21 4.4		107 2.8	287.5 -21 41.7		92 11.6	287.8 -20 48.6		77 50.8	288.3 -18 32.4	
6 0	155 14.6	-15 48.1		141 20.6	-19 3.1		126 46.3	-21 5.6		111 50.4	-21 41.6		96 59.3	-20 47.3		82 39.1	-18 30.0	
20	160 3.3	-15 51.2	-3.1	146 8.7	-19 5.4	-2.2	131 34.0	-21 6.7	-1.1	116 37.9	-21 41.5	0.2	101 47.1	-20 45.9	1.4	87 27.5	-18 27.6	2.4
40	164 52.1	288.7 -15 54.3		150 56.8	288.1 -19 7.6		136 21.6	287.6 -21 7.8		121 25.4	287.5 -21 41.3		106 34.9	287.8 -20 44.5		92 15.8	288.4 -18 25.1	
7 0	169 40.8	-15 57.4		155 44.9	-19 9.8		141 9.2	-21 8.9		126 12.9	-21 41.1		111 22.7	-20 43.1		97 4.2	-18 22.7	
20	174 29.5	-16 0.5	-3.1	160 32.9	-19 12.0	-2.2	145 56.9	-21 9.9	-1.0	131 0.5	-21 40.9	0.2	116 10.5	-20 41.7	1.4	101 52.6	-18 20.2	2.5
40	179 18.2	288.7 -16 3.6		165 21.0	288.1 -19 14.2		150 44.5	287.6 -21 11.0		135 48.0	287.5 -21 40.7		120 58.4	287.8 -20 40.2		106 41.0	288.4 -18 17.8	
8 0	184 6.9	-16 6.7		170 9.1	-19 16.4		155 32.1	-21 12.0		140 35.5	-21 40.5		125 46.2	-20 38.8		111 29.4	-18 15.3	
20	188 55.6	-16 9.7	-3.0	174 57.1	-19 18.5	-2.1	160 19.8	-21 13.0	-1.0	145 23.1	-21 40.3	0.3	130 34.0	-20 37.3	1.5	116 17.8	-18 12.8	2.5
40	193 44.2	288.7 -16 12.8		179 45.2	288.0 -19 20.6		165 7.4	287.6 -21 14.0		150 10.6	287.5 -21 40.0		135 21.8	287.8 -20 35.9		121 6.3	288.4 -18 10.3	
9 0	198 32.9	-16 15.8		184 33.2	-19 22.8		169 55.0	-21 15.0		154 58.1	-21 39.7		140 9.7	-20 34.4		125 54.7	-18 7.8	
20	203 21.5	-16 18.8	-3.0	189 21.3	-19 24.9	-2.1	174 42.6	-21 16.0	-0.9	159 45.7	-21 39.4	0.3	144 57.5	-20 32.8	1.5	130 43.1	-18 5.2	2.6
40	208 10.2	288.6 -16 21.8		194 9.3	288.0 -19 27.0		179 30.2	287.6 -21 16.9		164 33.2	287.5 -21 39.1		149 45.4	287.9 -20 31.3		135 31.6	288.5 -18 2.7	
10 0	212 58.8	-16 24.9		198 57.3	-19 29.1		184 17.8	-21 17.8		169 20.7	-21 38.8		154 33.2	-20 29.8		140 20.1	-18 0.1	
20	217 47.4	-16 27.8	-3.0	203 45.3	-19 31.1	-2.0	189 5.4	-21 18.7	-0.9	174 8.3	-21 38.4	0.4	159 21.1	-20 28.2	1.6	145 8.6	-17 57.6	2.6
40	222 36.1	288.6 -16 30.8		208 33.3	288.0 -19 33.2		193 53.0	287.6 -21 19.6		178 55.8	287.5 -21 38.0		164 9.0	287.9 -20 26.6		149 57.0	288.5 -17 55.0	
11 0	227 24.7	-16 33.8		213 21.3	-19 35.2		198 40.6	-21 20.5		183 43.4	-21 37.7		168 56.9	-20 25.1		154 45.5	-17 52.4	
20	232 13.3	-16 36.8	-3.0	218 9.3	-19 37.2	-2.0	203 28.2	-21 21.4	-0.8	188 30.9	-21 37.2	0.4	173 44.8	-20 23.4	1.6	159 34.0	-17 49.8	2.6
40	237 1.9	288.6 -16 39.7		222 57.3	288.0 -19 39.2		208 15.8	287.6 -21 22.2		193 18.5	287.6 -21 36.8		178 32.6	287.9 -20 21.8		164 22.6	288.5 -17 47.2	
12 0	241 50.4	-16 42.7		227 45.3	-19 41.2		213 3.4	-21 23.0		198 6.0	-21 36.4		183 20.5	-20 20.2		169 11.1	-17 44.5	
20	246 39.0	-16 45.6	-2.9	232 33.2	-19 43.2	-2.0	217 51.0	-21 23.8	-0.8	202 53.6	-21 35.9	0.5	188 8.5	-20 18.5	1.7	173 59.6	-17 41.9	2.6
40	251 27.6	288.6 -16 48.5		237 21.2	288.0 -19 45.2		222 38.6	287.6 -21 24.6		207 41.2	287.6 -21 35.5		192 56.4	287.9 -20 16.9		178 48.2	288.5 -17 39.2	
13 0	256 16.1	-16 51.4		242 9.1	-19 47.1		227 26.1	-21 25.4		212 28.7	-21 35.0		197 44.3	-20 15.2		183 36.7	-17 36.6	
20	261 4.7	-16 54.3	-2.9	246 57.1	-19 49.0	-1.9	232 13.7	-21 26.2	-0.7	217 16.3	-21 34.5	0.5	202 32.2	-20 13.5	1.7	188 25.3	-17 33.9	2.7
40	265 53.2	288.5 -16 57.2		251 45.0	287.9 -19 51.0		237 1.3	287.6 -21 26.9		222 3.8	287.6 -21 33.9		207 20.2	287.9 -20 11.8		193 13.9	288.6 -17 31.2	
14 0	270 41.7	-17 0.0		256 32.9	-19 52.9		241 48.8	-21 27.6		226 51.4	-21 33.4		212 8.1	-20 10.0		198 2.4	-17 28.5	
20	275 30.2	-17 2.9	-2.9	261 20.9	-19 54.7	-1.9	246 36.4	-21 28.3	-0.7	231 39.0	-21 32.8	0.6	216 56.1	-20 8.3	1.7	202 51.0	-17 25.8	2.7
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20	289 55.7	-17 11.4	-2.8	275 44.6	-20 0.3	-1.8	260 59.1	-21 30.3	-0.6	246 1.7	-21 31.0	0.6	231 20.0	-20 3.0	1.8	217 16.9	-17 17.6	2.7
40	294 44.2	288.5 -17 14.2		280 32.5	287.9 -20 2.1		265 46.7	287.6 -21 31.0		250 49.3	287.6 -21 30.4		236 8.0	288.0 -20 1.2		222 5.5	288.6 -17 14.8	
16 0	299 32.7	-17 17.0		285 20.4	-20 3.9		270 34.2	-21 31.6		255 36.9	-21 29.8		240 55.9	-19 59.3		226 54.2	-17 12.1	
20	304 21.1	-17 19.8	-2.8	290 8.3	-20 5.7	-1.8	275 21.8	-21 32.2	-0.6	260 24.5	-21 29.1	0.7	245 43.9	-19 57.5	1.8	231 42.8	-17 9.3	2.8
40	309 9.6	288.5 -17 22.6		294 56.1	287.9 -20 7.5		280 9.3	287.5 -21 32.8		265 12.1	287.6 -21 28.4		250 32.0	288.0 -19 55.7		236 31.5	288.7 -17 6.5	
17 0	313 58.0	-17 25.3		299 44.0	-20 9.3		284 56.8	-21 33.3		269 59.7	-21 27.7		255 20.0	-19 53.8		241 20.1	-17 3.7	
20	318 46.5	-17 28.1	-2.8	304 31.9	-20 11.0	-1.7	289 44.4	-21 33.9	-0.5	274 47.3	-21 27.0	0.7	260 8.0	-19 51.9	1.9	246 8.8	-17 0.9	2.8
40	323 34.9	288.4 -17 30.8		309 19.7	287.9 -20 12.8		294 31.9	287.5 -21 34.4		279 34.9	287.6 -21 26.3		264 56.0	288.0 -19 50.0		250 57.5	288.7 -16 58.0	
18 0	328 23.3	-17 33.6		314 7.6	-20 14.5		299 19.5	-21 34.9		284 22.5	-21 25.5		269 44.1	-19 48.1		255 46.2	-16 55.2	
20	333 11.7	-17 36.3	-2.7	318 55.4	-20 16.2	-1.7	304 7.0	-21 35.4	-0.5	289 10.1	-21 24.7	0.8	274 32.1	-19 46.2	1.9	260 34.9	-16 52.4	2.9
40	338 0.1	288.4 -17 39.0		323 43.3	287.8 -20 17.9		308 54.6	287.5 -21 35.9		293 57.7	287.6 -21 24.0		279 20.2	288.1 -19 44.3		265 23.7	288.7 -16 49.5	
19 0	342 48.5	-17 41.7		328 31.1	-20 19.5		313 42.1	-21 36.3		298 45.3	-21 23.2		284 8.2	-19 42.3		270 12.4	-16 46.6	
20	347 36.9	-17 44.3	-2.7	333 18.9	-20 21.2	-1.6	318 29.6	-21 36.8	-0.4	303 33.0	-21 22.3	0.8	288 56.3	-19 40.3	2.0	275 1.1	-16 43.7	2.9
40	352 25.3	288.4 -17 47.0		338 6.7	287.8 -20 22.8		323 17.2	287.5 -21 37.2		308 20.6	287.6 -21 21.5		293 44.4	288.1 -19 38.4		279 49.9	288.8 -16 40.9	
20 0	357 13.6	-17 49.7		342 54.5	-20 24.4		328 4.7	-21 37.6		313 8.2	-21 20.7		298 32.5	-19 36.4		284 38.7	-16 38.0	
20	2 2.0	-17 52.3	-2.6	347 42.4	-20 26.1	-1.6	332 52.2	-21 38.0	-0.4	317 55.8	-21 19.8	0.9	303 20.6	-19 34.3	2.0	289 27.4	-16 35.0	2.9
40	6 50.3	288.3 -17 54.9		352 30.2	287.8 -20 27.6		337 39.7	287.5 -21 38.4		322 43.5	287.6 -21 18.9		308 8.7	288.1 -19 32.3		294 16.2	288.8 -16 32.1	
21 0	11 38.7	-17 57.5		357 17.9	-20 29.2		342 27.3	-21 38.7		327 31.1	-21 18.0		312 56.8	-19 30.3		299 5.0	-16 29.2	
20	16 27.0	-18 0.1	-2.6	2 5.7	-20 30.8	-1.5	347 14.8	-21 39.1	-0.3	332 18.8	-21 17.1	0.9	317 44.9	-19 28.2	2.1	303 53.8	-16 26.2	3.0
40	21 15.3	288.3 -18 2.7		6 53.5	287.8 -20 32.3		352 2.3	287.5 -21 39.4		337 6.4	287.7 -21 16.1		322 33.0	288.2 -19 26.2		308 42.6	288.8 -16 23.3	
22 0	26 3.6	-18 5.3		11 41.3	-20 33.8		356 49.9	-21 39.7		341 54.1	-21 15.2		327 21.2	-19 24.1		313 31.5	-16 20.3	
20	30 51.9	-18 7.9	-2.6	16 29.1	-20 35.4	-1.5	1 37.4	-21 40.0	-0.3	346 41.7	-21 14.2	1.0	332 9.3	-19 22.0	2.1	318 20.3	-16 17.4	3.0
40	35 40.2	288.3 -18 10.4		21 16.8	287.8 -20 36.9		6 24.9	287.5 -21 40.2		351 29.4	287.7 -21 13.2		336 57.5	288.2 -19 19.9		323 9.2	288.8 -16 14.4	
23 0	40 28.5	-18 13.0		26 4.6	-20 38.3		11 12.4	-21 40.5		356 17.1	-21 12.2		341 45.6	-19 17.8		327 58.0	-16 11.4	
20	45 16.8	-18 15.5	-2.5	30 52.3	-20 39.8	-1.5	15 59.9	-21 40.7	-0.2	1 4.8	-21 11.2	1.0	346 33.8	-19 15.6	2.2	332 46.9	-16 8.4	3.0
40	50 5.1	288.3 -18 18.0		35 40.1	287.7 -20 41.2		20 47.5	287.5 -21 40.9		5 52.4	287.7 -21 10.1		351 22.0	288.2 -19 13.5		337 35.8	288.9 -16 5.4	

2012 Moon

h m	5 Jul GHA	5 Jul Dec	d	6 Jul GHA	6 Jul Dec	d	7 Jul GHA	7 Jul Dec	d	8 Jul GHA	8 Jul Dec	d	9 Jul GHA	9 Jul Dec	d	10 Jul GHA	10 Jul Dec	d
0 0	342 24.6	-16 2.3		329 31.3	-12 2.1		317 27.5	-7 30.9		306 4.0	-2 46.7		295 8.8	1 56.3		284 29.3	6 26.9	
20	347 13.5	-15 59.3	288.9 3.0	334 20.9	-11 58.5	289.6 3.6	322 17.8	-7 27.0	290.3 3.9	310 54.8	-2 42.7	290.7 4.0	299 59.9	2 0.2	291.0 3.9	289 20.5	6 30.5	291.2 3.6
40	352 2.4	-15 56.3		339 10.6	-11 54.9		327 8.0	-7 23.1		315 45.5	-2 38.7		304 50.9	2 4.1		294 11.7	6 34.1	
1 0	356 51.4	-15 53.2		344 0.2	-11 51.3		331 58.3	-7 19.2		320 36.3	-2 34.8		309 42.0	2 7.9		299 2.8	6 37.7	
20	1 40.3	-15 50.1	288.9 3.1	348 49.9	-11 47.7	289.7 3.6	336 48.6	-7 15.3	290.3 3.9	325 27.0	-2 30.8	290.8 4.0	314 33.0	2 11.8	291.1 3.9	303 54.0	6 41.3	291.2 3.6
40	6 29.2	-15 47.1		353 39.5	-11 44.0		341 38.9	-7 11.4		330 17.8	-2 26.8		319 24.1	2 15.6		308 45.2	6 45.0	
2 0	11 18.2	-15 44.0		358 29.2	-11 40.4		346 29.2	-7 7.5		335 8.5	-2 22.9		324 15.1	2 19.5		313 36.4	6 48.6	
20	16 7.1	-15 40.9	289.0 3.1	3 18.9	-11 36.8	289.7 3.6	351 19.5	-7 3.6	290.3 3.9	339 59.3	-2 18.9	290.8 4.0	329 6.2	2 23.3	291.1 3.8	318 27.5	6 52.2	291.2 3.6
40	20 56.1	-15 37.8		8 8.6	-11 33.1		356 9.8	-6 59.7		344 50.1	-2 14.9		333 57.2	2 27.2		323 18.7	6 55.8	
3 0	25 45.1	-15 34.7		12 58.3	-11 29.5		1 0.1	-6 55.8		349 40.8	-2 11.0		338 48.3	2 31.0		328 9.9	6 59.3	
20	30 34.1	-15 31.6	289.0 3.1	17 48.0	-11 25.8	289.7 3.7	5 50.4	-6 51.9	290.3 3.9	354 31.6	-2 7.0	290.8 4.0	343 39.4	2 34.9	291.1 3.9	333 1.1	7 2.9	291.2 3.6
40	35 23.1	-15 28.4		22 37.7	-11 22.2		10 40.8	-6 48.0		359 22.4	-2 3.1		348 30.4	2 38.7		337 52.2	7 6.5	
4 0	40 12.1	-15 25.3		27 27.4	-11 18.5		15 31.1	-6 44.0		4 13.2	-1 59.1		353 21.5	2 42.6		342 43.4	7 10.1	
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40	49 50.1	-15 19.0		37 6.9	-11 11.2		25 11.8	-6 36.2		13 54.8	-1 51.2		3 3.6	2 50.2		352 25.8	7 17.2	
5 0	54 39.2	-15 15.8		41 56.7	-11 7.5		30 2.2	-6 32.3		18 45.6	-1 47.2		7 54.7	2 54.0		357 16.9	7 20.8	
20	59 28.2	-15 12.6	289.1 3.2	46 46.4	-11 3.8	289.8 3.7	34 52.5	-6 28.3	290.4 3.9	23 36.4	-1 43.2	290.8 4.0	12 45.8	2 57.9	291.1 3.8	2 8.1	7 24.4	291.2 3.6
40	64 17.3	-15 9.5		51 36.2	-11 0.1		39 42.9	-6 24.4		28 27.3	-1 39.3		17 36.9	3 1.7		6 59.3	7 27.9	
6 0	69 6.4	-15 6.3		56 26.0	-10 56.5		44 33.3	-6 20.5		33 18.1	-1 35.3		22 28.0	3 5.5		11 50.5	7 31.5	
20	73 55.5	-15 3.1	289.1 3.2	61 15.8	-10 52.8	289.8 3.7	49 23.7	-6 16.6	290.4 3.9	38 8.9	-1 31.4	290.8 3.9	27 19.1	3 9.3	291.1 3.8	16 41.7	7 35.0	291.2 3.5
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7 0	83 33.6	-14 56.6		70 55.4	-10 45.3		59 4.5	-6 8.7		47 50.6	-1 23.5		37 1.2	3 17.0		26 24.0	7 42.1	
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40	93 11.9	-14 50.2		80 35.1	-10 37.9		68 45.3	-6 0.8		57 32.3	-1 15.6		46 43.4	3 24.6		36 6.4	7 49.1	
8 0	98 1.0	-14 46.9		85 24.9	-10 34.2		73 35.8	-5 56.9		62 23.1	-1 11.6		51 34.5	3 28.4		40 57.6	7 52.7	
20	102 50.2	-14 43.7	289.2 3.3	90 14.8	-10 30.5	289.9 3.7	78 26.2	-5 52.9	290.4 4.0	67 14.0	-1 7.6	290.9 4.0	56 25.6	3 32.2	291.1 3.8	45 48.7	7 56.2	291.2 3.5
40	107 39.3	-14 40.4		95 4.6	-10 26.7		83 16.6	-5 49.0		72 4.8	-1 3.7		61 16.7	3 36.0		50 39.9	7 59.7	
9 0	112 28.5	-14 37.1		99 54.5	-10 23.0		88 7.1	-5 45.0		76 55.7	-0 59.7		66 7.8	3 39.8		55 31.1	8 3.2	
20	117 17.7	-14 33.9	289.2 3.3	104 44.4	-10 19.3	289.9 3.7	92 57.5	-5 41.1	290.5 3.9	81 46.6	-0 55.8	290.9 3.9	70 58.9	3 43.6	291.1 3.8	60 22.3	8 6.7	291.2 3.5
40	122 6.8	-14 30.6		109 34.2	-10 15.5		97 48.0	-5 37.1		86 37.4	-0 51.9		75 50.1	3 47.3		65 13.5	8 10.2	
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20	131 45.2	-14 24.0	289.2 3.3	119 14.0	-10 8.0	289.9 3.8	107 29.0	-5 29.2	290.5 4.0	96 19.2	-0 44.0	290.9 3.9	85 32.3	3 54.9	291.1 3.8	74 55.8	8 17.2	291.2 3.5
40	136 34.5	-14 20.6		124 3.9	-10 4.3		112 19.4	-5 25.3		101 10.1	-0 40.0		90 23.4	3 58.7		79 47.0	8 20.7	
11 0	141 23.7	-14 17.3		128 53.9	-10 0.5		117 9.9	-5 21.3		106 1.0	-0 36.1		95 14.5	4 2.5		84 38.2	8 24.2	
20	146 12.9	-14 14.0	289.2 3.3	133 43.8	-9 56.7	289.9 3.8	122 0.4	-5 17.4	290.5 3.9	110 51.9	-0 32.1	290.9 3.9	100 5.6	4 6.2	291.1 3.8	89 29.4	8 27.6	291.2 3.5
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12 0	155 51.4	-14 7.3		143 23.7	-9 49.2		131 41.4	-5 9.5		120 33.7	-0 24.3		109 47.9	4 13.8		99 11.7	8 34.6	
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20	175 8.5	-13 53.9	289.3 3.4	162 43.6	-9 34.1	290.0 3.8	151 3.6	-4 53.6	290.5 4.0	139 57.4	-0 8.5	290.9 3.9	129 12.4	4 28.8	291.1 3.8	118 36.4	8 48.4	291.2 3.5
40	179 57.9	-13 50.5		167 33.6	-9 30.3		155 54.1	-4 49.7		144 48.3	-0 4.6		134 3.5	4 32.5		123 27.6	8 51.8	
14 0	184 47.2	-13 47.1		172 23.6	-9 26.5		160 44.7	-4 45.7		149 39.2	-0 0.7		138 54.7	4 36.3		128 18.8	8 55.3	
20	189 36.5	-13 43.7	289.3 3.4	177 13.6	-9 22.7	290.0 3.8	165 35.2	-4 41.8	290.6 4.0	154 30.1	0 3.3	290.9 3.9	143 45.8	4 40.0	291.1 3.7	133 9.9	8 58.7	291.2 3.4
40	194 25.8	-13 40.3		182 3.6	-9 18.9		170 25.8	-4 37.8		159 21.1	0 7.2		148 36.9	4 43.8		138 1.1	9 2.1	
15 0	199 15.2	-13 36.9		186 53.6	-9 15.0		175 16.3	-4 33.8		164 12.0	0 11.1		153 28.1	4 47.5		142 52.3	9 5.5	
20	204 4.5	-13 33.4	289.4 3.4	191 43.7	-9 11.2	290.0 3.8	180 6.9	-4 29.9	290.6 4.0	169 3.0	0 15.0	291.0 3.9	158 19.2	4 51.2	291.1 3.7	147 43.5	9 9.0	291.2 3.4
40	208 53.9	-13 30.0		196 33.7	-9 7.4		184 57.5	-4 25.9		173 53.9	0 19.0		163 10.4	4 54.9		152 34.6	9 12.4	
16 0	213 43.3	-13 26.6		201 23.7	-9 3.6		189 48.1	-4 21.9		178 44.9	0 22.9		168 1.5	4 58.7		157 25.8	9 15.8	
20	218 32.7	-13 23.1	289.4 3.5	206 13.8	-8 59.8	290.1 3.8	194 38.7	-4 18.0	290.6 4.0	183 35.8	0 26.8	291.0 3.9	172 52.7	5 2.4	291.1 3.7	162 17.0	9 19.2	291.2 3.4
40	223 22.1	-13 19.7		211 3.9	-8 55.9		199 29.3	-4 14.0		188 26.8	0 30.7		177 43.8	5 6.1		167 8.2	9 22.6	
17 0	228 11.5	-13 16.2		215 54.0	-8 52.1		204 19.9	-4 10.0		193 17.8	0 34.6		182 34.9	5 9.8		171 59.3	9 26.0	
20	233 0.9	-13 12.8	289.4 3.5	220 44.0	-8 48.3	290.1 3.8	209 10.5	-4 6.1	290.6 4.0	198 8.7	0 38.5	291.0 3.9	187 26.1	5 13.5	291.2 3.7	176 50.5	9 29.3	291.2 3.4
40	237 50.3	-13 9.3		225 34.1	-8 44.4		214 1.1	-4 2.1		202 59.7	0 42.4		192 17.2	5 17.2		181 41.7	9 32.7	
18 0	242 39.8	-13 5.8		230 24.2	-8 40.6		218 51.8	-3 58.1		207 50.7	0 46.4		197 8.4	5 20.9		186 32.8	9 36.1	
20	247 29.2	-13 2.3	289.5 3.5	235 14.4	-8 36.8	290.1 3.8	223 42.4	-3 54.2	290.6 4.0	212 41.7	0 50.3	291.0 3.9	201 59.5	5 24.6	291.2 3.7	191 24.0	9 39.5	291.2 3.4
40	252 18.7	-12 58.8		240 4.5	-8 32.9		228 33.0	-3 50.2		217 32.6	0 54.2		206 50.7	5 28.3		196 15.2	9 42.8	
19 0	257 8.1	-12 55.3		244 54.6	-8 29.1		233 23.7	-3 46.2		222 23.6	0 58.1		211 41.9	5 32.0		201 6.3	9 46.2	
20	261 57.6	-12 51.8	289.5 3.5	249 44.7	-8 25.2	290.1 3.9	238 14.3	-3 42.3	290.7 4.0	227 14.6	1 2.0	291.0 3.9	216 33.0	5 35.7	291.2 3.7	205 57.5	9 49.5	291.2 3.3
40	266 47.1	-12 48.3		254 34.9	-8 21.3		243 5.0	-3 38.3		232 5.6	1 5.9		221 24.2	5 39.4		210 48.7	9 52.9	
20 0	271 36.6	-12 44.8		259 25.0	-8 17.5		247 55.6	-3 34.3		236 56.6	1 9.8		226 15.3	5 43.0		215 39.8	9 56.2	
20	276 26.1	-12 41.3	289.5 3.5	264 15.2	-8 13.6	290.2 3.9	252 46.3	-3 30.3	290.7 4.0	241 47.6	1 13.6	291.0 3.9	231 6.5	5 46.7	291.2 3.7	220 31.0	9 59.6	291.2 3.3
40	281 15.6	-12 37.8		269 5.4	-8 9.8		257 37.0	-3 26.4		246 38.6	1 17.5		235 57.7	5 50.4		225 22.2	10 2.9	
21 0	286 5.1	-12 34.2		273 55.5	-8 5.9		262 27.7	-3 22.4		251 29.6	1 21.4		240 48.8	5 54.1		230 13.3	10 6.2	
20	290 54.7	-12 30.7	289.5 3.5	278 45.7	-8 2.0	290.2 3.9	267 18.3	-3 18.4	290.7 4.0	256 20.6	1 25.3	291.0 3.9	245 40.0	5 57.7	291.2 3.6	235 4.5	10 9.5	291.2 3.3
40	295 44.2	-12 27.1		283 35.9	-7 58.1		272 9.0	-3 14.5		261 11.6	1 29.2		250 31.1	6 1.4		239 55.6	10 12.9	
22 0	300 33.8	-12 23.6		288 26.1	-7 54.3		276 59.7	-3 10.5		266 2.7	1 33.1		255 22.3	6 5.0		244 46.8	10 16.2	
20	305 23.3	-12 20.0	289.6 3.6	293 16.3	-7 50.4	290.2 3.9	281 50.4	-3 6.5	290.7 4.0	270 53.7	1 37.0	291.0 3.9	260 13.5	6 8.7	291.2 3.7	249 37.9	10 19.5	291.2 3.3
40	310 12.9	-12 16.4		298 6.6	-7 46.5		286 41.1	-3 2.6		275 44.7	1 40.8		265 4.6	6 12.3		254 29.1	10 22.8	
23 0	315 2.5	-12 12.9		302 56.8	-7 42.6		291 31.9	-2 58.6		280 35.7	1 44.7		269 55.8	6 16.0		259 20.3	10 26.1	
20	319 52.1	-12 9.3	289.6 3.6	307 47.0	-7 38.7	290.2 3.9	296 22.6	-2 54.6	290.7 4.0	285 26.8	1 48.6	291.0 3.9	274 47.0	6 19.6	291.2 3.6	264 11.4	10 29.3	291.2 3.3
40	324 41.7	-12 5.7		312 37.3	-7 34.8		301 13.3	-2 50.7		290 17.8	1 52.5		279 38.2	6 23.2		269 2.6	10 32.6	

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h m	11 Jul GHA	11 Jul Dec	d	12 Jul GHA	12 Jul Dec	d	13 Jul GHA	13 Jul Dec	d	14 Jul GHA	14 Jul Dec	d	15 Jul GHA	15 Jul Dec	d	16 Jul GHA	16 Jul Dec	d
0 0	273 53.7	10 35.9		263 11.8	14 15.6		252 15.7	17 18.7		241 0.6	19 38.1		229 25.4	21 7.1		217 33.2	21 39.9	
20	278 44.9	291.1	10 39.2	3.3	268 2.8	291.0	14 18.4	2.8	257 6.5	290.8	17 21.0	2.2	245 51.1	290.5	19 39.7	1.6	234 15.6	290.2	21 8.0	0.8	222 23.2	290.0	21 39.9	0.0
40	283 36.0		10 42.4		272 53.8		14 21.2		261 57.2		17 23.2		250 41.5		19 41.3		239 5.8		21 8.8		227 13.2		21 40.0	
1 0	288 27.1		10 45.7		277 44.8		14 24.0		266 48.0		17 25.4		255 32.0		19 42.9		243 56.0		21 9.6		232 3.2		21 40.0	
20	293 18.3	291.1	10 48.9	3.2	282 35.8	291.0	14 26.8	2.8	271 38.7	290.7	17 27.7	2.2	260 22.5	290.5	19 44.5	1.6	248 46.2	290.2	21 10.4	0.8	236 53.2	290.0	21 40.0	0.0
40	298 9.4		10 52.2		287 26.8		14 29.6		276 29.5		17 29.9		265 12.9		19 46.0		253 36.4		21 11.3		241 43.2		21 40.0	
2 0	303 0.6		10 55.4		292 17.7		14 32.4		281 20.2		17 32.1		270 3.4		19 47.6		258 26.6		21 12.0		246 33.2		21 40.0	
20	307 51.7	291.1	10 58.7	3.2	297 8.7	291.0	14 35.1	2.7	286 10.9	290.7	17 34.3	2.2	274 53.9	290.5	19 49.1	1.5	263 16.8	290.2	21 12.8	0.8	251 23.3	290.0	21 39.9	-0.1
40	312 42.9		11 1.9		301 59.7		14 37.9		291 1.7		17 36.5		279 44.3		19 50.6		268 7.0		21 13.6		256 13.3		21 39.9	
3 0	317 34.0		11 5.1		306 50.7		14 40.6		295 52.4		17 38.7		284 34.8		19 52.1		272 57.2		21 14.4		261 3.3		21 39.8	
20	322 25.1	291.1	11 8.3	3.2	311 41.7	291.0	14 43.4	2.8	300 43.1	290.7	17 40.9	2.2	289 25.2	290.4	19 53.6	1.5	277 47.4	290.2	21 15.1	0.7	265 53.2	290.0	21 39.8	-0.1
40	327 16.3		11 11.5		316 32.6		14 46.1		305 33.9		17 43.0		294 15.6		19 55.1		282 37.6		21 15.9		270 43.2		21 39.7	
4 0	332 7.4		11 14.8		321 23.6		14 48.9		310 24.6		17 45.2		299 6.1		19 56.6		287 27.7		21 16.6		275 33.2		21 39.6	
20	336 58.5	291.1	11 18.0	3.2	326 14.6	291.0	14 51.6	2.7	315 15.3	290.7	17 47.3	2.1	303 56.5	290.4	19 58.1	1.5	292 17.9	290.2	21 17.3	0.7	280 23.2	290.0	21 39.5	-0.1
40	341 49.7		11 21.1		331 5.5		14 54.3		320 6.0		17 49.5		308 46.9		19 59.6		297 8.1		21 18.0		285 13.2		21 39.4	
5 0	346 40.8		11 24.3		335 56.5		14 57.0		324 56.7		17 51.6		313 37.4		20 1.0		301 58.3		21 18.7		290 3.2		21 39.3	
20	351 31.9	291.1	11 27.5	3.2	340 47.4	291.0	14 59.7	2.7	329 47.4	290.7	17 53.7	2.1	318 27.8	290.4	20 2.5	1.4	306 48.4	290.2	21 19.4	0.7	294 53.2	290.0	21 39.1	-0.2
40	356 23.0		11 30.7		345 38.4		15 2.4		334 38.1		17 55.8		323 18.2		20 3.9		311 38.6		21 20.1		299 43.2		21 39.0	
6 0	1 14.2		11 33.9		350 29.3		15 5.1		339 28.8		17 57.9		328 8.6		20 5.3		316 28.7		21 20.8		304 33.2		21 38.8	
20	6 5.3	291.1	11 37.0	3.1	355 20.3	290.9	15 7.8	2.7	344 19.5	290.7	18 0.0	2.1	332 59.0	290.4	20 6.8	1.4	321 18.9	290.2	21 21.4	0.6	309 23.2	290.0	21 38.7	-0.2
40	10 56.4		11 40.2		0 11.2		15 10.5		349 10.2		18 2.1		337 49.4		20 8.2		326 9.1		21 22.1		314 13.1		21 38.5	
7 0	15 47.5		11 43.3		5 2.2		15 13.1		354 0.9		18 4.2		342 39.8		20 9.6		330 59.2		21 22.7		319 3.1		21 38.3	
20	20 38.6	291.1	11 46.5	3.2	9 53.1	290.9	15 15.8	2.7	358 51.6	290.7	18 6.3	2.1	347 30.2	290.4	20 11.0	1.4	335 49.3	290.1	21 23.3	0.6	323 53.1	290.0	21 38.1	-0.2
40	25 29.8		11 49.6		14 44.0		15 18.4		3 42.2		18 8.3		352 20.6		20 12.3		340 39.5		21 23.9		328 43.1		21 37.9	
8 0	30 20.9		11 52.8		19 35.0		15 21.1		8 32.9		18 10.4		357 11.0		20 13.7		345 29.6		21 24.5		333 33.0		21 37.6	
20	35 12.0	291.1	11 55.9	3.1	24 25.9	290.9	15 23.7	2.6	13 23.6	290.7	18 12.4	2.0	2 1.4	290.4	20 15.1	1.3	350 19.8	290.1	21 25.1	0.6	338 23.0	290.0	21 37.4	-0.2
40	40 3.1		11 59.0		29 16.8		15 26.3		18 14.2		18 14.5		6 51.8		20 16.4		355 9.9		21 25.7		343 13.0		21 37.1	
9 0	44 54.2		12 2.1		34 7.8		15 29.0		23 4.9		18 16.5		11 42.2		20 17.7		0 0.0		21 26.2		348 3.0		21 36.9	
20	49 45.3	291.1	12 5.2	3.1	38 58.7	290.9	15 31.6	2.6	27 55.6	290.7	18 18.5	2.0	16 32.5	290.4	20 19.1	1.3	4 50.2	290.1	21 26.8	0.6	352 52.9	290.0	21 36.6	-0.3
40	54 36.4		12 8.3		43 49.6		15 34.2		32 46.2		18 20.5		21 22.9		20 20.4		9 40.3		21 27.3		357 42.9		21 36.3	
10 0	59 27.5		12 11.4		48 40.5		15 36.8		37 36.9		18 22.5		26 13.3		20 21.7		14 30.4		21 27.9		2 32.8		21 36.0	
20	64 18.6	291.1	12 14.5	3.1	53 31.4	290.9	15 39.4	2.6	42 27.5	290.6	18 24.5	2.0	31 3.6	290.4	20 23.0	1.3	19 20.5	290.1	21 28.4	0.5	7 22.8	290.0	21 35.7	-0.3
40	69 9.7		12 17.6		58 22.3		15 41.9		47 18.1		18 26.5		35 54.0		20 24.3		24 10.6		21 28.9		12 12.8		21 35.4	
11 0	74 0.8		12 20.7		63 13.2		15 44.5		52 8.8		18 28.5		40 44.4		20 25.5		29 0.8		21 29.4		17 2.7		21 35.0	
20	78 51.9	291.1	12 23.8	3.1	68 4.1	290.9	15 47.1	2.6	56 59.4	290.6	18 30.4	1.9	45 34.7	290.3	20 26.8	1.3	33 50.9	290.1	21 29.9	0.5	21 52.7	290.0	21 34.7	-0.3
40	83 43.0		12 26.8		72 55.0		15 49.6		61 50.0		18 32.4		50 25.1		20 28.1		38 41.0		21 30.4		26 42.7		21 34.3	
12 0	88 34.1		12 29.9		77 45.9		15 52.2		66 40.7		18 34.3		55 15.4		20 29.3		43 31.1		21 30.8		31 32.6		21 34.0	
20	93 25.2	291.1	12 32.9	3.0	82 36.8	290.9	15 54.7	2.5	71 31.3	290.6	18 36.3	1.9	60 5.7	290.3	20 30.5	1.2	48 21.2	290.1	21 31.3	0.4	36 22.6	290.0	21 33.6	-0.4
40	98 16.3		12 36.0		87 27.7		15 57.3		76 21.9		18 38.2		64 56.1		20 31.8		53 11.3		21 31.7		41 12.5		21 33.2	
13 0	103 7.4		12 39.0		92 18.6		15 59.8		81 12.5		18 40.1		69 46.4		20 33.0		58 1.4		21 32.1		46 2.5		21 32.8	
20	107 58.4	291.1	12 42.1	3.0	97 9.4	290.9	16 2.3	2.5	86 3.1	290.6	18 42.0	1.9	74 36.7	290.3	20 34.2	1.2	62 51.5	290.1	21 32.6	0.4	50 52.4	290.0	21 32.4	-0.4
40	112 49.5		12 45.1		102 0.3		16 4.8		90 53.7		18 43.9		79 27.1		20 35.4		67 41.6		21 33.0		55 42.4		21 31.9	
14 0	117 40.6		12 48.1		106 51.2		16 7.3		95 44.3		18 45.8		84 17.4		20 36.6		72 31.7		21 33.4		60 32.3		21 31.5	
20	122 31.7	291.1	12 51.1	3.0	111 42.0	290.9	16 9.8	2.5	100 34.9	290.6	18 47.7	1.9	89 7.7	290.3	20 37.7	1.1	77 21.7	290.1	21 33.7	0.4	65 22.3	289.9	21 31.0	-0.5
40	127 22.7		12 54.1		116 32.9		16 12.3		105 25.5		18 49.5		93 58.0		20 38.9		82 11.8		21 34.1		70 12.2		21 30.6	
15 0	132 13.8		12 57.1		121 23.8		16 14.8		110 16.1		18 51.4		98 48.3		20 40.0		87 1.9		21 34.5		75 2.2		21 30.1	
20	137 4.9	291.1	13 0.1	3.0	126 14.6	290.9	16 17.3	2.5	115 6.7	290.6	18 53.3	1.8	103 38.7	290.3	20 41.2	1.1	91 52.0	290.1	21 34.8	0.3	79 52.1	289.9	21 29.6	-0.5
40	141 55.9		13 3.1		131 5.5		16 19.7		119 57.3		18 55.1		108 29.0		20 42.3		96 42.1		21 35.2		84 42.1		21 29.1	
16 0	146 47.0		13 6.1		135 56.3		16 22.2		124 47.9		18 56.9		113 19.3		20 43.4		101 32.1		21 35.5		89 32.0		21 28.6	
20	151 38.1	291.1	13 9.1	3.0	140 47.2	290.8	16 24.6	2.4	129 38.5	290.6	18 58.8	1.8	118 9.6	290.3	20 44.5	1.1	106 22.2	290.1	21 35.8	0.3	94 21.9	289.9	21 28.1	-0.5
40	156 29.1		13 12.0		145 38.0		16 27.1		134 29.0		19 0.6		122 59.8		20 45.6		111 12.3		21 36.1		99 11.9		21 27.5	
17 0	161 20.2		13 15.0		150 28.9		16 29.5		139 19.6		19 2.4		127 50.1		20 46.7		116 2.3		21 36.4		104 1.8		21 27.0	
20	166 11.2	291.1	13 17.9	2.9	155 19.7	290.8	16 31.9	2.4	144 10.2	290.6	19 4.2	1.8	132 40.4	290.3	20 47.8	1.1	120 52.4	290.1	21 36.7	0.3	108 51.8	289.9	21 26.4	-0.6
40	171 2.3		13 20.9		160 10.5		16 34.4		149 0.7		19 6.0		137 30.7		20 48.9		125 42.5		21 37.0		113 41.7		21 25.8	
18 0	175 53.3		13 23.8		165 1.4		16 36.8		153 51.3		19 7.8		142 21.0		20 49.9		130 32.5		21 37.2		118 31.6		21 25.3	
20	180 44.4	291.0	13 26.8	2.9	169 52.2	290.8	16 39.2	2.4	158 41.8	290.5	19 9.5	1.7	147 11.3	290.3	20 51.0	1.0	135 22.6	290.1	21 37.5	0.2	123 21.6	289.9	21 24.7	-0.6
40	185 35.4		13 29.7		174 43.0		16 41.6		163 32.4		19 11.3		152 1.5		20 52.0		140 12.6		21 37.7		128 11.5		21 24.1	
19 0	190 26.5		13 32.6		179 33.8		16 43.9		168 22.9		19 13.0		156 51.8		20 53.0		145 2.7		21 37.9		133 1.5		21 23.4	
20	195 17.5	291.0	13 35.5	2.9	184 24.7	290.8	16 46.3	2.4	173 13.4	290.5	19 14.8	1.7	161 42.1	290.3	20 54.0	1.0	149 52.7	290.0	21 38.1	0.2	137 51.4	289.9	21 22.8	-0.6
40	200 8.6		13 38.4		189 15.5		16 48.7		178 4.0		19 16.5		166 32.3		20 55.0		154 42.8		21 38.3		142 41.3		21 22.2	
20 0	204 59.6		13 41.3		194 6.3		16 51.0		182 54.5		19 18.2		171 22.6		20 56.0		159 32.8		21 38.5		147 31.3		21 21.5	
20	209 50.6	291.0	13 44.2	2.9	198 57.1	290.8	16 53.4	2.4	187 45.0	290.5	19 19.9	1.7	176 12.8	290.2	20 57.0	1.0	164 22.9	290.0	21 38.7	0.2	152 21.2	289.9	21 20.9	-0.7
40	214 41.6		13 47.1		203 47.9		16 55.7		192 35.6		19 21.6		181 3.1		20 58.0		169 12.9		21 38.9		157 11.1		21 20.2	
21 0	219 32.7		13 50.0		208 38.7		16 58.1		197 26.1		19 23.3		185 53.3		20 58.9		174 2.9		21 39.0		162 1.0		21 19.5	
20	224 23.7	291.0	13 52.9	2.9	213 29.5	290.8	17 0.4	2.3	202 16.6	290.5	19 25.0	1.7	190 43.6	290.2	20 59.9	1.0	178 53.0	290.0	21 39.2	0.1	166 51.0	289.9	21 18.8	-0.7
40	229 14.7		13 55.7		218 20.3		17 2.7		207 7.1		19 26.7		195 33.8		21 0.8		183 43.0		21 39.3		171 40.9		21 18.1	
22 0	234 5.7		13 58.6		223 11.1		17 5.0		211 57.6		19 28.3		200 24.1		21 1.8		188 33.0		21 39.4		176 30.8		21 17.3	
20	238 56.8	291.0	14 1.5	2.8	228 1.8	290.8	17 7.3	2.3	216 48.1	290.5	19 30.0	1.7	205 14.3	290.2	21 2.7	0.9	193 23.1	290.0	21 39.5	0.1	181 20.8	289.9	21 16.6	-0.7
40	243 47.8		14 4.3		232 52.6		17 9.6		221 38.6		19 31.6		210 4.5		21 3.6		198 13.1		21 39.6		186 10.7		21 15.9	
23 0	248 38.8		14 7.1		237 43.4		17 11.9		226 29.1		19 33.3		214 54.7		21 4.5		203 3.1		21 39.7		191 0.6		21 15.1	
20	253 29.8	291.0	14 10.0	2.8	242 34.2	290.8	17 14.2	2.3	231 19.6	290.5	19 34.9	1.6	219 45.0	290.2	21 5.4	0.9	207 53.1	290.0	21 39.8	0.1	195 50.6	289.9	21 14.3	-0.8
40	258 20.8		14 12.8		247 24.9		17 16.5		236 10.1		19 36.5		224 35.2		21 6.2		212 43.2		21 39.9		200 40.5		21 13.5	

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h m	17 Jul GHA	17 Jul Dec	d	18 Jul GHA	18 Jul Dec	d	19 Jul GHA	19 Jul Dec	d	20 Jul GHA	20 Jul Dec	d	21 Jul GHA	21 Jul Dec	d	22 Jul GHA	22 Jul Dec	d
0 0	205 30.4	21 12.8		193 25.3	19 44.8		181 25.6	17 18.6		169 35.9	14 0.2		157 57.1	9 58.5		146 25.5	5 24.7	
20	210 20.3	21 11.9	-0.8	198 15.3	19 43.1	-1.7	186 15.6	17 16.2	-2.4	174 26.1	13 57.1	-3.1	162 47.5	9 54.9	-3.6	151 15.9	5 20.7	-4.0
40	215 10.3	21 11.1	289.9	203 5.2	19 41.5	290.0	191 5.7	17 13.7	290.1	179 16.4	13 54.0	290.2	167 37.8	9 51.3	290.4	156 6.3	5 16.8	290.4
1 0	220 0.2	21 10.3		207 55.2	19 39.8		195 55.8	17 11.3		184 6.6	13 50.9		172 28.2	9 47.7		160 56.7	5 12.8	
20	224 50.1	21 9.5	-0.9	212 45.1	19 38.1	-1.7	200 45.8	17 8.9	-2.5	188 56.8	13 47.8	-3.1	177 18.5	9 44.0	-3.6	165 47.2	5 8.8	-4.0
40	229 40.0	21 8.6	289.9	217 35.1	19 36.5	290.0	205 35.9	17 6.4	290.1	193 47.1	13 44.7	290.2	182 8.9	9 40.4	290.4	170 37.6	5 4.8	290.4
2 0	234 30.0	21 7.7		222 25.0	19 34.8		210 26.0	17 3.9		198 37.3	13 41.6		186 59.3	9 36.8		175 28.0	5 0.8	
20	239 19.9	21 6.9	-0.9	227 15.0	19 33.1	-1.7	215 16.1	17 1.5	-2.5	203 27.5	13 38.4	-3.2	191 49.6	9 33.1	-3.7	180 18.4	4 56.8	-4.0
40	244 9.8	21 6.0	289.9	232 5.0	19 31.3	290.0	220 6.2	16 59.0	290.1	208 17.8	13 35.3	290.2	196 40.0	9 29.5	290.4	185 8.8	4 52.9	290.4
3 0	248 59.7	21 5.1		236 54.9	19 29.6		224 56.2	16 56.5		213 8.0	13 32.1		201 30.4	9 25.8		189 59.2	4 48.9	
20	253 49.6	21 4.1	-0.9	241 44.9	19 27.9	-1.8	229 46.3	16 54.0	-2.5	217 58.3	13 29.0	-3.2	206 20.7	9 22.1	-3.7	194 49.6	4 44.8	-4.0
40	258 39.6	21 3.2	289.9	246 34.9	19 26.1	290.0	234 36.4	16 51.5	290.1	222 48.5	13 25.8	290.2	211 11.1	9 18.5	290.4	199 40.1	4 40.8	290.4
4 0	263 29.5	21 2.3		251 24.8	19 24.3		239 26.5	16 48.9		227 38.7	13 22.6		216 1.5	9 14.8		204 30.5	4 36.8	
20	268 19.4	21 1.3	-1.0	256 14.8	19 22.6	-1.8	244 16.6	16 46.4	-2.5	232 29.0	13 19.5	-3.2	220 51.9	9 11.1	-3.7	209 20.9	4 32.8	-4.0
40	273 9.3	21 0.4	289.9	261 4.7	19 20.8	290.0	249 6.7	16 43.8	290.1	237 19.2	13 16.3	290.3	225 42.2	9 7.4	290.4	214 11.3	4 28.8	290.4
5 0	277 59.3	20 59.4		265 54.7	19 19.0		253 56.8	16 41.3		242 9.5	13 13.1		230 32.6	9 3.7		219 1.7	4 24.8	
20	282 49.2	20 58.4	-1.0	270 44.7	19 17.2	-1.8	258 46.9	16 38.7	-2.6	246 59.8	13 9.9	-3.2	235 23.0	9 0.0	-3.7	223 52.1	4 20.8	-4.0
40	287 39.1	20 57.4	289.9	275 34.7	19 15.3	290.0	263 37.0	16 36.2	290.1	251 50.0	13 6.6	290.3	240 13.4	8 56.3	290.4	228 42.5	4 16.7	290.4
6 0	292 29.0	20 56.4		280 24.6	19 13.5		268 27.1	16 33.6		256 40.3	13 3.4		245 3.7	8 52.6		233 32.9	4 12.7	
20	297 18.9	20 55.4	-1.0	285 14.6	19 11.7	-1.9	273 17.2	16 31.0	-2.6	261 30.5	13 0.2	-3.2	249 54.1	8 48.9	-3.7	238 23.4	4 8.7	-4.0
40	302 8.9	20 54.4	289.9	290 4.6	19 9.8	290.0	278 7.3	16 28.4	290.1	266 20.8	12 57.0	290.3	254 44.5	8 45.2	290.4	243 13.8	4 4.6	290.4
7 0	306 58.8	20 53.3		294 54.6	19 7.9		282 57.4	16 25.8		271 11.1	12 53.7		259 34.9	8 41.4		248 4.2	4 0.6	
20	311 48.7	20 52.3	-1.1	299 44.5	19 6.1	-1.9	287 47.5	16 23.1	-2.6	276 1.3	12 50.5	-3.3	264 25.3	8 37.7	-3.7	252 54.6	3 56.6	-4.0
40	316 38.6	20 51.2	289.9	304 34.5	19 4.2	290.0	292 37.6	16 20.5	290.1	280 51.6	12 47.2	290.3	269 15.7	8 34.0	290.4	257 45.0	3 52.5	290.4
8 0	321 28.6	20 50.1		309 24.5	19 2.3		297 27.8	16 17.9		285 41.9	12 43.9		274 6.0	8 30.2		262 35.4	3 48.5	
20	326 18.5	20 49.0	-1.1	314 14.5	19 0.4	-1.9	302 17.9	16 15.2	-2.7	290 32.1	12 40.6	-3.3	278 56.4	8 26.5	-3.7	267 25.8	3 44.4	-4.1
40	331 8.4	20 47.9	289.9	319 4.5	18 58.5	290.0	307 8.0	16 12.5	290.1	295 22.4	12 37.4	290.3	283 46.8	8 22.7	290.4	272 16.2	3 40.4	290.4
9 0	335 58.3	20 46.8		323 54.4	18 56.5		311 58.1	16 9.9		300 12.7	12 34.1		288 37.2	8 19.0		277 6.6	3 36.3	
20	340 48.2	20 45.7	-1.1	328 44.4	18 54.6	-1.9	316 48.3	16 7.2	-2.7	305 3.0	12 30.8	-3.3	293 27.6	8 15.2	-3.8	281 57.0	3 32.2	-4.1
40	345 38.2	20 44.6	289.9	333 34.4	18 52.6	290.0	321 38.4	16 4.5	290.1	309 53.3	12 27.5	290.3	298 18.0	8 11.4	290.4	286 47.4	3 28.2	290.4
10 0	350 28.1	20 43.4		338 24.4	18 50.7		326 28.5	16 1.8		314 43.5	12 24.2		303 8.4	8 7.6		291 37.8	3 24.1	
20	355 18.0	20 42.3	-1.2	343 14.4	18 48.7	-2.0	331 18.6	15 59.1	-2.7	319 33.8	12 20.8	-3.3	307 58.8	8 3.9	-3.8	296 28.2	3 20.1	-4.1
40	0 7.9	20 41.1	289.9	348 4.4	18 46.7	290.0	336 8.8	15 56.4	290.1	324 24.1	12 17.5	290.3	312 49.2	8 0.1	290.4	301 18.7	3 16.0	290.4
11 0	4 57.9	20 39.9		352 54.4	18 44.7		340 58.9	15 53.6		329 14.4	12 14.2		317 39.6	7 56.3		306 9.1	3 11.9	
20	9 47.8	20 38.7	-1.2	357 44.4	18 42.7	-2.0	345 49.0	15 50.9	-2.7	334 4.7	12 10.8	-3.4	322 30.0	7 52.5	-3.8	310 59.5	3 7.8	-4.1
40	14 37.7	20 37.5	289.9	2 34.4	18 40.7	290.0	350 39.2	15 48.2	290.1	338 55.0	12 7.5	290.3	327 20.4	7 48.7	290.4	315 49.9	3 3.8	290.4
12 0	19 27.6	20 36.3		7 24.4	18 38.7		355 29.3	15 45.4		343 45.3	12 4.1		332 10.8	7 44.9		320 40.3	2 59.7	
20	24 17.6	20 35.1	-1.2	12 14.4	18 36.6	-2.1	0 19.5	15 42.6	-2.8	348 35.6	12 0.7	-3.4	337 1.2	7 41.1	-3.8	325 30.7	2 55.6	-4.1
40	29 7.5	20 33.8	289.9	17 4.4	18 34.6	290.0	5 9.6	15 39.9	290.1	353 25.9	11 57.4	290.3	341 51.6	7 37.2	290.4	330 21.1	2 51.5	290.4
13 0	33 57.4	20 32.6		21 54.4	18 32.5		9 59.8	15 37.1		358 16.2	11 54.0		346 42.0	7 33.4		335 11.5	2 47.4	
20	38 47.3	20 31.3	-1.3	26 44.4	18 30.4	-2.1	14 49.9	15 34.3	-2.8	3 6.5	11 50.6	-3.4	351 32.4	7 29.6	-3.8	340 1.9	2 43.3	-4.1
40	43 37.3	20 30.0	289.9	31 34.4	18 28.4	290.0	19 40.1	15 31.5	290.2	7 56.8	11 47.2	290.3	356 22.8	7 25.8	290.4	344 52.2	2 39.2	290.4
14 0	48 27.2	20 28.7		36 24.4	18 26.3		24 30.2	15 28.7		12 47.1	11 43.8		1 13.2	7 21.9		349 42.6	2 35.1	
20	53 17.1	20 27.4	-1.3	41 14.4	18 24.2	-2.1	29 20.4	15 25.9	-2.8	17 37.4	11 40.4	-3.4	6 3.6	7 18.1	-3.8	354 33.0	2 31.1	-4.1
40	58 7.0	20 26.1	289.9	46 4.4	18 22.0	290.0	34 10.5	15 23.0	290.2	22 27.7	11 37.0	290.3	10 54.0	7 14.2	290.4	359 23.4	2 27.0	290.4
15 0	62 57.0	20 24.8		50 54.5	18 19.9		39 0.7	15 20.2		27 18.0	11 33.5		15 44.4	7 10.4		4 13.8	2 22.9	
20	67 46.9	20 23.5	-1.3	55 44.5	18 17.8	-2.1	43 50.9	15 17.3	-2.9	32 8.3	11 30.1	-3.4	20 34.8	7 6.5	-3.9	9 4.2	2 18.8	-4.1
40	72 36.8	20 22.1	289.9	60 34.5	18 15.6	290.0	48 41.0	15 14.5	290.2	36 58.7	11 26.7	290.3	25 25.2	7 2.7	290.4	13 54.6	2 14.6	290.4
16 0	77 26.8	20 20.8		65 24.5	18 13.5		53 31.2	15 11.6		41 49.0	11 23.2		30 15.6	6 58.8		18 45.0	2 10.5	
20	82 16.7	20 19.4	-1.4	70 14.5	18 11.3	-2.2	58 21.4	15 8.7	-2.9	46 39.3	11 19.8	-3.4	35 6.0	6 54.9	-3.9	23 35.4	2 6.4	-4.1
40	87 6.6	20 18.0	289.9	75 4.6	18 9.1	290.0	63 11.6	15 5.9	290.2	51 29.6	11 16.3	290.3	39 56.4	6 51.1	290.4	28 25.8	2 2.3	290.4
17 0	91 56.6	20 16.6		79 54.6	18 6.9		68 1.7	15 3.0		56 19.9	11 12.9		44 46.8	6 47.2		33 16.2	1 58.2	
20	96 46.5	20 15.2	-1.4	84 44.6	18 4.7	-2.2	72 51.9	15 0.1	-2.9	61 10.3	11 9.4	-3.5	49 37.2	6 43.3	-3.9	38 6.5	1 54.1	-4.1
40	101 36.4	20 13.8	289.9	89 34.6	18 2.5	290.0	77 42.1	14 57.2	290.2	66 0.6	11 5.9	290.3	54 27.6	6 39.4	290.4	42 56.9	1 50.0	290.4
18 0	106 26.4	20 12.4		94 24.7	18 0.3		82 32.3	14 54.2		70 50.9	11 2.4		59 18.1	6 35.5		47 47.3	1 45.9	
20	111 16.3	20 11.0	-1.5	99 14.7	17 58.1	-2.2	87 22.5	14 51.3	-2.9	75 41.2	10 58.9	-3.5	64 8.5	6 31.6	-3.9	52 37.7	1 41.7	-4.1
40	116 6.2	20 9.5	289.9	104 4.7	17 55.8	290.0	92 12.6	14 48.4	290.2	80 31.6	10 55.4	290.3	68 58.9	6 27.7	290.4	57 28.1	1 37.6	290.4
19 0	120 56.2	20 8.0		108 54.8	17 53.6		97 2.8	14 45.4		85 21.9	10 51.9		73 49.3	6 23.8		62 18.4	1 33.5	
20	125 46.1	20 6.6	-1.5	113 44.8	17 51.3	-2.3	101 53.0	14 42.5	-3.0	90 12.2	10 48.4	-3.5	78 39.7	6 19.9	-3.9	67 8.8	1 29.4	-4.1
40	130 36.0	20 5.1	289.9	118 34.9	17 49.1	290.0	106 43.2	14 39.5	290.2	95 2.6	10 44.9	290.3	83 30.1	6 16.0	290.4	71 59.2	1 25.2	290.4
20 0	135 26.0	20 3.6		123 24.9	17 46.8		111 33.4	14 36.5		99 52.9	10 41.4		88 20.5	6 12.1		76 49.6	1 21.1	
20	140 15.9	20 2.1	-1.5	128 14.9	17 44.5	-2.3	116 23.6	14 33.5	-3.0	104 43.3	10 37.8	-3.6	93 10.9	6 8.1	-3.9	81 39.9	1 17.0	-4.1
40	145 5.9	20 0.6	289.9	133 5.0	17 42.2	290.0	121 13.8	14 30.6	290.2	109 33.6	10 34.3	290.3	98 1.4	6 4.2	290.4	86 30.3	1 12.8	290.4
21 0	149 55.8	19 59.0		137 55.0	17 39.9		126 4.0	14 27.6		114 23.9	10 30.7		102 51.8	6 0.3		91 20.7	1 8.7	
20	154 45.7	19 57.5	-1.5	142 45.1	17 37.5	-2.3	130 54.2	14 24.5	-3.0	119 14.3	10 27.2	-3.5	107 42.2	5 56.3	-3.9	96 11.0	1 4.6	-4.1
40	159 35.7	19 56.0	289.9	147 35.1	17 35.2	290.1	135 44.4	14 21.5	290.2	124 4.6	10 23.6	290.3	112 32.6	5 52.4	290.4	101 1.4	1 0.4	290.4
22 0	164 25.6	19 54.4		152 25.2	17 32.9		140 34.6	14 18.5		128 55.0	10 20.1		117 23.0	5 48.5		105 51.8	0 56.3	
20	169 15.6	19 52.8	-1.6	157 15.3	17 30.5	-2.4	145 24.8	14 15.5	-3.0	133 45.3	10 16.5	-3.6	122 13.4	5 44.5	-4.0	110 42.1	0 52.2	-4.1
40	174 5.5	19 51.2	289.9	162 5.3	17 28.1	290.1	150 15.1	14 12.4	290.2	138 35.7	10 12.9	290.4	127 3.8	5 40.6	290.4	115 32.5	0 48.0	290.4
23 0	178 55.5	19 49.6		166 55.4	17 25.8		155 5.3	14 9.4		143 26.0	10 9.3		131 54.2	5 36.6		120 22.8	0 43.9	
20	183 45.4	19 48.0	-1.6	171 45.4	17 23.4	-2.4	159 55.5	14 6.3	-3.1	148 16.4	10 5.7	-3.6	136 44.7	5 32.6	-4.0	125 13.2	0 39.7	-4.1
40	188 35.4	19 46.4	289.9	176 35.5	17 21.0	290.1	164 45.7	14 3.3	290.2	153 6.7	10 2.1	290.4	141 35.1	5 28.7	290.4	130 3.6	0 35.6	290.4

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h m	23 Jul GHA	d	Dec	d'	24 Jul GHA	d	Dec	d'	25 Jul GHA	d	Dec	d'	26 Jul GHA	d	Dec	d'	27 Jul GHA	d	Dec	d'	28 Jul GHA	d	Dec	d'
0 0	134 53.9		0 31.5		123 12.6		-4 27.3		111 10.7		-9 16.6		98 37.9		-13 39.9		85 27.5		-17 20.0		71 39.0		-19 59.7	
20	139 44.3	290.3	0 27.3	-4.2	128 2.7	290.1	-4 31.5	-4.1	116 0.4	289.8	-9 20.5	-3.9	103 27.2	289.3	-13 43.3	-3.4	90 16.3	288.7	-17 22.7	-2.7	76 27.2	288.2	-20 1.5	-1.7
40	144 34.6		0 23.2		132 52.9		-4 35.6		120 50.2		-9 24.3		108 16.5		-13 46.7		95 5.0		-17 25.4		81 15.5		-20 3.2	
1 0	149 24.9		0 19.0		137 43.0		-4 39.7		125 40.0		-9 28.2		113 5.8		-13 50.1		99 53.7		-17 28.0		86 3.7		-20 4.9	
20	154 15.3	290.3	0 14.9	-4.1	142 33.1	290.1	-4 43.8	-4.1	130 29.7	289.8	-9 32.1	-3.9	117 55.0	289.3	-13 53.4	-3.4	104 42.4	288.7	-17 30.6	-2.6	90 52.0	288.2	-20 6.5	-1.6
40	159 5.6		0 10.7		147 23.2		-4 47.9		135 19.5		-9 35.9		122 44.3		-13 56.8		109 31.2		-17 33.3		95 40.2		-20 8.2	
2 0	163 56.0		0 6.6		152 13.4		-4 52.0		140 9.2		-9 39.8		127 33.6		-14 0.2		114 19.9		-17 35.9		100 28.4		-20 9.8	
20	168 46.3	290.3	0 2.4	-4.2	157 3.5	290.1	-4 56.1	-4.1	144 59.0	289.7	-9 43.6	-3.8	132 22.8	289.2	-14 3.5	-3.3	119 8.6	288.7	-17 38.5	-2.6	105 16.6	288.2	-20 11.5	-1.6
40	173 36.7		-0 1.7		161 53.6		-5 0.2		149 48.7		-9 47.4		137 12.0		-14 6.8		123 57.3		-17 41.1		110 4.8		-20 13.1	
3 0	178 27.0		-0 5.9		166 43.7		-5 4.3		154 38.4		-9 51.3		142 1.3		-14 10.2		128 45.9		-17 43.6		114 53.0		-20 14.7	
20	183 17.3	290.3	-0 10.0	-4.2	171 33.8	290.1	-5 8.4	-4.1	159 28.2	289.7	-9 55.1	-3.8	146 50.5	289.2	-14 13.5	-3.3	133 34.6	288.7	-17 46.2	-2.6	119 41.2	288.2	-20 16.3	-1.6
40	188 7.7		-0 14.2		176 23.9		-5 12.5		164 17.9		-9 58.9		151 39.7		-14 16.8		138 23.3		-17 48.7		124 29.4		-20 17.8	
4 0	192 58.0		-0 18.4		181 14.0		-5 16.6		169 7.6		-10 2.7		156 28.9		-14 20.1		143 12.0		-17 51.3		129 17.6		-20 19.4	
20	197 48.3	290.3	-0 22.5	-4.1	186 4.1	290.1	-5 20.7	-4.1	173 57.3	289.7	-10 6.5	-3.8	161 18.1	289.2	-14 23.4	-3.3	148 0.6	288.6	-17 53.8	-2.5	134 5.8	288.2	-20 20.9	-1.5
40	202 38.6		-0 26.7		190 54.2		-5 24.8		178 47.0		-10 10.3		166 7.3		-14 26.6		152 49.3		-17 56.3		138 54.0		-20 22.5	
5 0	207 29.0		-0 30.8		195 44.2		-5 28.9		183 36.7		-10 14.1		170 56.5		-14 29.9		157 37.9		-17 58.8		143 42.2		-20 24.0	
20	212 19.3	290.3	-0 35.0	-4.2	200 34.3	290.1	-5 33.0	-4.1	188 26.4	289.7	-10 17.9	-3.8	175 45.7	289.2	-14 33.2	-3.3	162 26.5	288.6	-18 1.3	-2.5	148 30.4	288.2	-20 25.5	-1.5
40	217 9.6		-0 39.1		205 24.4		-5 37.1		193 16.0		-10 21.7		180 34.9		-14 36.4		167 15.2		-18 3.8		153 18.5		-20 27.0	
6 0	221 59.9		-0 43.3		210 14.5		-5 41.2		198 5.7		-10 25.5		185 24.0		-14 39.7		172 3.8		-18 6.3		158 6.7		-20 28.4	
20	226 50.2	290.3	-0 47.5	-4.2	215 4.5	290.1	-5 45.2	-4.1	202 55.4	289.7	-10 29.3	-3.8	190 13.2	289.1	-14 42.9	-3.2	176 52.4	288.6	-18 8.7	-2.4	162 54.8	288.1	-20 29.9	-1.4
40	231 40.5		-0 51.6		219 54.6		-5 49.3		207 45.0		-10 33.1		195 2.3		-14 46.1		181 41.0		-18 11.2		167 43.0		-20 31.3	
7 0	236 30.8		-0 55.8		224 44.6		-5 53.4		212 34.7		-10 36.8		199 51.5		-14 49.4		186 29.6		-18 13.6		172 31.1		-20 32.7	
20	241 21.1	290.3	-0 59.9	-4.2	229 34.7	290.0	-5 57.5	-4.1	217 24.3	289.6	-10 40.6	-3.8	204 40.6	289.1	-14 52.6	-3.2	191 18.2	288.6	-18 16.0	-2.4	177 19.3	288.1	-20 34.1	-1.4
40	246 11.4		-1 4.1		234 24.7		-6 1.5		222 14.0		-10 44.3		209 29.7		-14 55.8		196 6.8		-18 18.4		182 7.4		-20 35.5	
8 0	251 1.7		-1 8.3		239 14.8		-6 5.6		227 3.6		-10 48.1		214 18.8		-14 59.0		200 55.3		-18 20.8		186 55.5		-20 36.9	
20	255 52.0	290.3	-1 12.4	-4.1	244 4.8	290.0	-6 9.7	-4.1	231 53.2	289.6	-10 51.8	-3.7	219 7.9	289.1	-15 2.1	-3.2	205 43.9	288.6	-18 23.2	-2.4	191 43.7	288.1	-20 38.3	-1.3
40	260 42.3		-1 16.6		248 54.8		-6 13.7		236 42.9		-10 55.6		223 57.0		-15 5.3		210 32.5		-18 25.5		196 31.8		-20 39.6	
9 0	265 32.6		-1 20.7		253 44.9		-6 17.8		241 32.5		-10 59.3		228 46.1		-15 8.5		215 21.0		-18 27.9		201 19.9		-20 40.9	
20	270 22.9	290.3	-1 24.9	-4.2	258 34.9	290.0	-6 21.8	-4.0	246 22.1	289.6	-11 3.0	-3.7	233 35.2	289.1	-15 11.6	-3.1	220 9.6	288.5	-18 30.2	-2.3	206 8.0	288.1	-20 42.2	-1.3
40	275 13.2		-1 29.1		263 24.9		-6 25.9		251 11.7		-11 6.7		238 24.3		-15 14.8		224 58.1		-18 32.5		210 56.1		-20 43.5	
10 0	280 3.5		-1 33.2		268 14.9		-6 29.9		256 1.3		-11 10.4		243 13.4		-15 17.9		229 46.6		-18 34.8		215 44.2		-20 44.8	
20	284 53.8	290.3	-1 37.4	-4.2	273 4.9	290.0	-6 34.0	-4.1	260 50.9	289.6	-11 14.1	-3.7	248 2.4	289.1	-15 21.0	-3.1	234 35.2	288.5	-18 37.1	-2.3	220 32.3	288.1	-20 46.1	-1.3
40	289 44.0		-1 41.5		277 54.9		-6 38.0		265 40.4		-11 17.8		252 51.5		-15 24.1		239 23.7		-18 39.4		225 20.4		-20 47.3	
11 0	294 34.3		-1 45.7		282 44.9		-6 42.1		270 30.0		-11 21.5		257 40.6		-15 27.2		244 12.2		-18 41.7		230 8.5		-20 48.6	
20	299 24.6	290.3	-1 49.9	-4.2	287 34.9	290.0	-6 46.1	-4.0	275 19.6	289.6	-11 25.2	-3.7	262 29.6	289.0	-15 30.3	-3.1	249 0.7	288.5	-18 44.0	-2.2	234 56.6	288.1	-20 49.8	-1.2
40	304 14.9		-1 54.0		292 24.9		-6 50.1		280 9.1		-11 28.9		267 18.6		-15 33.4		253 49.2		-18 46.2		239 44.7		-20 51.0	
12 0	309 5.1		-1 58.2		297 14.9		-6 54.2		284 58.7		-11 32.6		272 7.7		-15 36.5		258 37.7		-18 48.4		244 32.7		-20 52.2	
20	313 55.4	290.3	-2 2.3	-4.1	302 4.9	290.0	-6 58.2	-4.0	289 48.2	289.5	-11 36.2	-3.6	276 56.7	289.0	-15 39.5	-3.0	263 26.2	288.5	-18 50.7	-2.2	249 20.8	288.1	-20 53.4	-1.2
40	318 45.7		-2 6.5		306 54.8		-7 2.2		294 37.8		-11 39.9		281 45.7		-15 42.6		268 14.7		-18 52.9		254 8.9		-20 54.5	
13 0	323 35.9		-2 10.6		311 44.8		-7 6.2		299 27.3		-11 43.5		286 34.7		-15 45.6		273 3.1		-18 55.1		258 56.9		-20 55.7	
20	328 26.2	290.3	-2 14.8	-4.2	316 34.8	290.0	-7 10.2	-4.0	304 16.8	289.5	-11 47.2	-3.6	291 23.7	289.0	-15 48.7	-3.0	277 51.6	288.5	-18 57.2	-2.2	263 45.0	288.1	-20 56.8	-1.1
40	333 16.4		-2 19.0		321 24.7		-7 14.2		309 6.3		-11 50.8		296 12.7		-15 51.7		282 40.1		-18 59.4		268 33.0		-20 57.9	
14 0	338 6.7		-2 23.1		326 14.7		-7 18.3		313 55.9		-11 54.4		301 1.6		-15 54.7		287 28.5		-19 1.6		273 21.1		-20 59.0	
20	342 56.9	290.2	-2 27.3	-4.2	331 4.6	289.9	-7 22.3	-4.0	318 45.4	289.5	-11 58.1	-3.6	305 50.6	289.0	-15 57.7	-3.0	292 16.9	288.4	-19 3.7	-2.1	278 9.1	288.0	-21 0.1	-1.1
40	347 47.2		-2 31.4		335 54.5		-7 26.3		323 34.9		-12 1.7		310 39.6		-16 0.7		297 5.4		-19 5.8		282 57.2		-21 1.1	
15 0	352 37.4		-2 35.6		340 44.5		-7 30.3		328 24.4		-12 5.3		315 28.5		-16 3.7		301 53.8		-19 8.0		287 45.2		-21 2.2	
20	357 27.6	290.2	-2 39.7	-4.1	345 34.4	289.9	-7 34.2	-4.0	333 13.8	289.5	-12 8.9	-3.6	320 17.5	288.9	-16 6.6	-2.9	306 42.2	288.4	-19 10.0	-2.1	292 33.2	288.0	-21 3.2	-1.0
40	2 17.9		-2 43.9		350 24.3		-7 38.2		338 3.3		-12 12.5		325 6.4		-16 9.6		311 30.6		-19 12.1		297 21.3		-21 4.2	
16 0	7 8.1		-2 48.0		355 14.3		-7 42.2		342 52.8		-12 16.1		329 55.4		-16 12.5		316 19.1		-19 14.2		302 9.3		-21 5.2	
20	11 58.3	290.2	-2 52.2	-4.2	0 4.2	289.9	-7 46.2	-4.0	347 42.3	289.5	-12 19.7	-3.6	334 44.3	288.9	-16 15.5	-2.9	321 7.5	288.4	-19 16.3	-2.0	306 57.3	288.0	-21 6.2	-1.0
40	16 48.6		-2 56.3		4 54.1		-7 50.2		352 31.7		-12 23.2		339 33.2		-16 18.4		325 55.9		-19 18.3		311 45.3		-21 7.2	
17 0	21 38.8		-3 0.5		9 44.0		-7 54.1		357 21.2		-12 26.8		344 22.1		-16 21.3		330 44.2		-19 20.3		316 33.4		-21 8.1	
20	26 29.0	290.2	-3 4.6	-4.1	14 33.9	289.9	-7 58.1	-4.0	2 10.6	289.4	-12 30.4	-3.5	349 11.0	288.9	-16 24.2	-2.9	335 32.6	288.4	-19 22.4	-2.0	321 21.4	288.0	-21 9.1	-0.9
40	31 19.2		-3 8.8		19 23.8		-8 2.1		7 0.0		-12 33.9		353 59.9		-16 27.1		340 21.0		-19 24.4		326 9.4		-21 10.0	
18 0	36 9.4		-3 12.9		24 13.7		-8 6.0		11 49.5		-12 37.4		358 48.8		-16 30.0		345 9.4		-19 26.4		330 57.4		-21 10.9	
20	40 59.6	290.2	-3 17.1	-4.2	29 3.5	289.9	-8 10.0	-4.0	16 38.9	289.4	-12 41.0	-3.5	3 37.7	288.9	-16 32.9	-2.9	349 57.7	288.4	-19 28.3	-1.9	335 45.4	288.0	-21 11.8	-0.9
40	45 49.8		-3 21.2		33 53.4		-8 14.0		21 28.3		-12 44.5		8 26.6		-16 35.7		354 46.1		-19 30.3		340 33.4		-21 12.7	
19 0	50 40.0		-3 25.4		38 43.3		-8 17.9		26 17.7		-12 48.0		13 15.4		-16 38.6		359 34.4		-19 32.2		345 21.4		-21 13.5	
20	55 30.2	290.2	-3 29.5	-4.1	43 33.2	289.9	-8 21.8	-3.9	31 7.1	289.4	-12 51.5	-3.5	18 4.3	288.8	-16 41.4	-2.8	4 22.8	288.3	-19 34.2	-1.9	350 9.4	288.0	-21 14.4	-0.8
40	60 20.4		-3 33.6		48 23.0		-8 25.8		35 56.5		-12 55.1		22 53.1		-16 44.3		9 11.1		-19 36.1		354 57.4		-21 15.2	
20 0	65 10.6		-3 37.8		53 12.9		-8 29.7		40 45.9		-12 58.6		27 42.0		-16 47.1		13 59.5		-19 38.0		359 45.4		-21 16.0	
20	70 0.8	290.2	-3 41.9	-4.1	58 2.7	289.8	-8 33.7	-3.9	45 35.3	289.4	-13 2.0	-3.5	32 30.8	288.8	-16 49.9	-2.8	18 47.8	288.3	-19 39.9	-1.9	4 33.3	288.0	-21 16.8	-0.8
40	74 51.0		-3 46.1		62 52.6		-8 37.6		50 24.6		-13 5.5		37 19.7		-16 52.7		23 36.1		-19 41.8		9 21.3		-21 17.6	
21 0	79 41.2		-3 50.2		67 42.4		-8 41.5		55 14.0		-13 9.0		42 8.5		-16 55.5		28 24.4		-19 43.6		14 9.3		-21 18.3	
20	84 31.3	290.2	-3 54.3	-4.1	72 32.2	289.8	-8 45.4	-3.9	60 3.3	289.3	-13 12.5	-3.5	46 57.3	288.8	-16 58.3	-2.8	33 12.7	288.3	-19 45.5	-1.8	18 57.3	288.0	-21 19.1	-0.7
40	89 21.5		-3 58.5		77 22.0		-8 49.3		64 52.7		-13 15.9		51 46.1		-17 1.0		38 1.0		-19 47.3		23 45.2		-21 19.8	
22 0	94 11.7		-4 2.6		82 11.9		-8 53.2		69 42.0		-13 19.4		56 34.9		-17 3.8		42 49.3		-19 49.1		28 33.2		-21 20.5	
20	99 1.8	290.2	-4 6.7	-4.1	87 1.7	289.8	-8 57.1	-3.9	74 31.4	289.3	-13 22.8	-3.4	61 23.7	288.8	-17 6.5	-2.7	47 37.6	288.3	-19 50.9	-1.8	33 21.2	288.0	-21 21.2	-0.7
40	103 52.0		-4 10.9		91 51.5		-9 1.0		79 20.7		-13 26.3		66 12.5		-17 9.2		52 25.9		-19 52.7		38 9.1		-21 21.9	
23 0	108 42.1		-4 15.0		96 41.3		-9 4.9		84 10.0		-13 29.7		71 1.2		-17 11.9		57 14.2		-19 54.5		42 57.1		-21 22.5	
20	113 32.3	290.1	-4 19.1	-4.1	101 31.1	289.8	-9 8.8	-3.9	88 59.3	289.3	-13 33.1	-3.4	75 50.0	288.8	-17 14.7	-2.7	62 2.4	288.3	-19 56.3	-1.7	47 45.1	288.0	-21 23.2	-0.6
40	118 22.4		-4 23.2		106 20.9		-9 12.7		93 48.6		-13 36.5		80 38.8		-17 17.3		66 50.7		-19 58.0		52 33.0		-21 23.8	

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h m	29 Jul GHA	d	Dec	d'	30 Jul GHA	d	Dec	d'	31 Jul GHA	d	Dec	d'	1 Aug GHA	d	Dec	d'	2 Aug GHA	d	Dec	d'	3 Aug GHA	d	Dec	d'
0 0	57 21.0		-21 24.4		42 51.1		-21 25.3		28 31.5		-20 2.0		14 41.8		-17 23.6		1 33.6		-13 45.6		349 9.4		-9 26.8	
20	62 8.9	287.9	-21 25.0	-0.6	47 39.0	287.9	-21 24.7	0.6	33 19.7	288.2	-20 0.3	1.7	19 30.6	288.8	-17 20.9	2.7	6 23.0	289.4	-13 42.3	3.4	353 59.3	290.0	-9 23.0	3.8
40	66 56.9		-21 25.6		52 27.0		-21 24.1		38 8.0		-19 58.6		24 19.3		-17 18.3		11 12.4		-13 38.9		358 49.3		-9 19.2	
1 0	71 44.8		-21 26.2		57 14.9		-21 23.4		42 56.2		-19 56.8		29 8.1		-17 15.6		16 1.8		-13 35.5		3 39.3		-9 15.4	
20	76 32.7	287.9	-21 26.7	-0.5	62 2.9	287.9	-21 22.8	0.6	47 44.5	288.3	-19 55.1	1.8	33 56.9	288.8	-17 12.9	2.7	20 51.1	289.4	-13 32.1	3.4	8 29.2	290.0	-9 11.6	3.8
40	81 20.7		-21 27.2		66 50.8		-21 22.1		52 32.7		-19 53.3		38 45.6		-17 10.2		25 40.5		-13 28.7		13 19.2		-9 7.8	
2 0	86 8.6		-21 27.8		71 38.8		-21 21.5		57 21.0		-19 51.5		43 34.4		-17 7.5		30 30.0		-13 25.3		18 9.2		-9 4.0	
20	90 56.6	287.9	-21 28.3	-0.5	76 26.7	288.0	-21 20.8	0.7	62 9.3	288.3	-19 49.7	1.8	48 23.2	288.8	-17 4.7	2.8	35 19.4	289.4	-13 21.9	3.4	22 59.2	290.0	-9 0.2	3.8
40	95 44.5		-21 28.7		81 14.7		-21 20.1		66 57.5		-19 47.9		53 12.1		-17 2.0		40 8.8		-13 18.5		27 49.2		-8 56.4	
3 0	100 32.4		-21 29.2		86 2.6		-21 19.4		71 45.8		-19 46.1		58 0.9		-16 59.2		44 58.2		-13 15.1		32 39.2		-8 52.5	
20	105 20.4	287.9	-21 29.7	-0.4	90 50.6	288.0	-21 18.6	0.8	76 34.1	288.3	-19 44.2	1.9	62 49.7	288.8	-16 56.5	2.8	49 47.7	289.5	-13 11.7	3.4	37 29.3	290.0	-8 48.7	3.8
40	110 8.3		-21 30.1		95 38.6		-21 17.9		81 22.4		-19 42.4		67 38.5		-16 53.7		54 37.1		-13 8.2		42 19.3		-8 44.9	
4 0	114 56.2		-21 30.5		100 26.5		-21 17.1		86 10.7		-19 40.5		72 27.4		-16 50.9		59 26.6		-13 4.8		47 9.3		-8 41.1	
20	119 44.2	287.9	-21 30.9	-0.4	105 14.5	288.0	-21 16.3	0.8	90 59.0	288.3	-19 38.6	1.9	77 16.2	288.9	-16 48.1	2.8	64 16.1	289.5	-13 1.4	3.5	51 59.4	290.1	-8 37.2	3.9
40	124 32.1		-21 31.3		110 2.5		-21 15.5		95 47.3		-19 36.7		82 5.1		-16 45.3		69 5.5		-12 57.9		56 49.4		-8 33.4	
5 0	129 20.0		-21 31.7		114 50.4		-21 14.7		100 35.7		-19 34.8		86 54.0		-16 42.5		73 55.0		-12 54.4		61 39.5		-8 29.5	
20	134 7.9	287.9	-21 32.0	-0.3	119 38.4	288.0	-21 13.8	0.9	105 24.0	288.3	-19 32.9	1.9	91 42.8	288.9	-16 39.7	2.8	78 44.5	289.5	-12 51.0	3.5	66 29.6	290.1	-8 25.7	3.8
40	138 55.8		-21 32.3		124 26.4		-21 13.0		110 12.3		-19 30.9		96 31.7		-16 36.8		83 34.0		-12 47.5		71 19.6		-8 21.8	
6 0	143 43.8		-21 32.7		129 14.4		-21 12.1		115 0.7		-19 29.0		101 20.6		-16 34.0		88 23.5		-12 44.0		76 9.7		-8 18.0	
20	148 31.7	287.9	-21 33.0	-0.3	134 2.4	288.0	-21 11.2	0.9	119 49.0	288.4	-19 27.0	2.0	106 9.5	288.9	-16 31.1	2.9	93 13.1	289.5	-12 40.5	3.5	80 59.8	290.1	-8 14.1	3.9
40	153 19.6		-21 33.3		138 50.3		-21 10.4		124 37.4		-19 25.0		110 58.4		-16 28.3		98 2.6		-12 37.0		85 49.9		-8 10.2	
7 0	158 7.5		-21 33.5		143 38.3		-21 9.4		129 25.7		-19 23.0		115 47.4		-16 25.4		102 52.1		-12 33.5		90 40.0		-8 6.4	
20	162 55.4	287.9	-21 33.8	-0.2	148 26.3	288.0	-21 8.5	0.9	134 14.1	288.4	-19 21.0	2.0	120 36.3	288.9	-16 22.5	2.9	107 41.7	289.6	-12 30.0	3.5	95 30.1	290.1	-8 2.5	3.9
40	167 43.3		-21 34.0		153 14.3		-21 7.6		139 2.5		-19 19.0		125 25.2		-16 19.6		112 31.2		-12 26.5		100 20.2		-7 58.6	
8 0	172 31.3		-21 34.2		158 2.3		-21 6.6		143 50.8		-19 16.9		130 14.2		-16 16.7		117 20.8		-12 22.9		105 10.4		-7 54.7	
20	177 19.2	287.9	-21 34.4	-0.2	162 50.3	288.0	-21 5.6	1.0	148 39.2	288.4	-19 14.9	2.1	135 3.1	289.0	-16 13.7	2.9	122 10.4	289.6	-12 19.4	3.5	110 0.5	290.1	-7 50.9	3.9
40	182 7.1		-21 34.6		167 38.4		-21 4.6		153 27.6		-19 12.8		139 52.1		-16 10.8		126 59.9		-12 15.9		114 50.6		-7 47.0	
9 0	186 55.0		-21 34.8		172 26.4		-21 3.6		158 16.0		-19 10.7		144 41.1		-16 7.9		131 49.5		-12 12.3		119 40.8		-7 43.1	
20	191 42.9	287.9	-21 34.9	-0.1	177 14.4	288.0	-21 2.6	1.0	163 4.4	288.4	-19 8.6	2.1	149 30.0	289.0	-16 4.9	3.0	136 39.1	289.6	-12 8.8	3.6	124 30.9	290.2	-7 39.2	3.9
40	196 30.8		-21 35.1		182 2.4		-21 1.5		167 52.9		-19 6.5		154 19.0		-16 1.9		141 28.7		-12 5.2		129 21.1		-7 35.3	
10 0	201 18.7		-21 35.2		186 50.4		-21 0.5		172 41.3		-19 4.4		159 8.0		-15 59.0		146 18.3		-12 1.6		134 11.3		-7 31.4	
20	206 6.6	287.9	-21 35.3	-0.1	191 38.5	288.0	-20 59.4	1.1	177 29.7	288.4	-19 2.2	2.2	163 57.0	289.0	-15 56.0	3.0	151 8.0	289.6	-11 58.1	3.6	139 1.4	290.2	-7 27.5	3.9
40	210 54.5		-21 35.4		196 26.5		-20 58.3		182 18.1		-19 0.1		168 46.0		-15 53.0		155 57.6		-11 54.5		143 51.6		-7 23.6	
11 0	215 42.4		-21 35.4		201 14.5		-20 57.2		187 6.6		-18 57.9		173 35.1		-15 50.0		160 47.2		-11 50.9		148 41.8		-7 19.7	
20	220 30.3	287.9	-21 35.5	-0.1	206 2.6	288.0	-20 56.1	1.1	191 55.0	288.5	-18 55.8	2.2	178 24.1	289.0	-15 47.0	3.0	165 36.9	289.7	-11 47.3	3.6	153 32.0	290.2	-7 15.8	3.9
40	225 18.2		-21 35.5		210 50.6		-20 54.9		196 43.5		-18 53.6		183 13.1		-15 43.9		170 26.5		-11 43.7		158 22.2		-7 11.9	
12 0	230 6.2		-21 35.6		215 38.6		-20 53.8		201 32.0		-18 51.4		188 2.2		-15 40.9		175 16.2		-11 40.1		163 12.4		-7 8.0	
20	234 54.1	287.9	-21 35.6	0.0	220 26.7	288.1	-20 52.6	1.2	206 20.4	288.5	-18 49.1	2.2	192 51.2	289.1	-15 37.9	3.0	180 5.8	289.7	-11 36.5	3.6	168 2.6	290.2	-7 4.1	3.9
40	239 42.0		-21 35.5		225 14.8		-20 51.4		211 8.9		-18 46.9		197 40.3		-15 34.8		184 55.5		-11 32.9		172 52.8		-7 0.2	
13 0	244 29.9		-21 35.5		230 2.8		-20 50.2		215 57.4		-18 44.7		202 29.4		-15 31.8		189 45.2		-11 29.3		177 43.1		-6 56.2	
20	249 17.8	287.9	-21 35.5	0.1	234 50.9	288.1	-20 49.0	1.2	220 45.9	288.5	-18 42.4	2.3	207 18.5	289.1	-15 28.7	3.1	194 34.9	289.7	-11 25.7	3.6	182 33.3	290.2	-6 52.3	3.9
40	254 5.7		-21 35.4		239 38.9		-20 47.8		225 34.4		-18 40.1		212 7.5		-15 25.6		199 24.6		-11 22.0		187 23.5		-6 48.4	
14 0	258 53.6		-21 35.3		244 27.0		-20 46.5		230 22.9		-18 37.9		216 56.6		-15 22.5		204 14.3		-11 18.4		192 13.8		-6 44.5	
20	263 41.5	287.9	-21 35.2	0.1	249 15.1	288.1	-20 45.3	1.3	235 11.4	288.5	-18 35.6	2.3	221 45.7	289.1	-15 19.4	3.1	209 4.0	289.7	-11 14.7	3.7	197 4.1	290.3	-6 40.5	3.9
40	268 29.4		-21 35.1		254 3.2		-20 44.0		239 60.0		-18 33.3		226 34.9		-15 16.3		213 53.8		-11 11.1		201 54.3		-6 36.6	
15 0	273 17.3		-21 35.0		258 51.3		-20 42.7		244 48.5		-18 30.9		231 24.0		-15 13.2		218 43.5		-11 7.4		206 44.6		-6 32.7	
20	278 5.2	287.9	-21 34.8	0.2	263 39.4	288.1	-20 41.4	1.3	249 37.0	288.5	-18 28.6	2.3	236 13.1	289.1	-15 10.1	3.1	223 33.2	289.8	-11 3.8	3.7	211 34.9	290.3	-6 28.7	3.9
40	282 53.1		-21 34.7		268 27.5		-20 40.1		254 25.6		-18 26.3		241 2.3		-15 6.9		228 23.0		-11 0.1		216 25.1		-6 24.8	
16 0	287 41.0		-21 34.5		273 15.6		-20 38.7		259 14.1		-18 23.9		245 51.4		-15 3.8		233 12.8		-10 56.4		221 15.4		-6 20.9	
20	292 28.9	287.9	-21 34.3	0.2	278 3.7	288.1	-20 37.4	1.4	264 2.7	288.6	-18 21.5	2.4	250 40.6	289.2	-15 0.6	3.2	238 2.5	289.8	-10 52.8	3.7	226 5.7	290.3	-6 16.9	4.0
40	297 16.8		-21 34.1		282 51.8		-20 36.0		268 51.3		-18 19.2		255 29.7		-14 57.4		242 52.3		-10 49.1		230 56.0		-6 13.0	
17 0	302 4.7		-21 33.9		287 39.9		-20 34.6		273 39.8		-18 16.8		260 18.9		-14 54.3		247 42.1		-10 45.4		235 46.3		-6 9.0	
20	306 52.7	287.9	-21 33.6	0.3	292 28.0	288.1	-20 33.2	1.4	278 28.4	288.6	-18 14.3	2.4	265 8.1	289.2	-14 51.1	3.2	252 31.9	289.8	-10 41.7	3.7	240 36.6	290.3	-6 5.1	3.9
40	311 40.6		-21 33.4		297 16.1		-20 31.8		283 17.0		-18 11.9		269 57.3		-14 47.9		257 21.7		-10 38.0		245 27.0		-6 1.1	
18 0	316 28.5		-21 33.1		302 4.3		-20 30.4		288 5.6		-18 9.5		274 46.5		-14 44.7		262 11.5		-10 34.3		250 17.3		-5 57.2	
20	321 16.4	287.9	-21 32.8	0.3	306 52.4	288.1	-20 28.9	1.5	292 54.2	288.6	-18 7.0	2.5	279 35.7	289.2	-14 41.5	3.2	267 1.3	289.8	-10 30.6	3.7	255 7.6	290.3	-5 53.2	4.0
40	326 4.3		-21 32.5		311 40.5		-20 27.5		297 42.9		-18 4.6		284 24.9		-14 38.3		271 51.1		-10 26.9		259 58.0		-5 49.3	
19 0	330 52.2		-21 32.2		316 28.7		-20 26.0		302 31.5		-18 2.1		289 14.2		-14 35.0		276 41.0		-10 23.2		264 48.3		-5 45.3	
20	335 40.1	287.9	-21 31.8	0.4	321 16.8	288.2	-20 24.5	1.5	307 20.1	288.6	-17 59.6	2.5	294 3.4	289.2	-14 31.8	3.2	281 30.8	289.8	-10 19.4	3.7	269 38.7	290.4	-5 41.4	4.0
40	340 28.0		-21 31.4		326 5.0		-20 23.0		312 8.8		-17 57.1		298 52.6		-14 28.6		286 20.6		-10 15.7		274 29.0		-5 37.4	
20 0	345 16.0		-21 31.1		330 53.1		-20 21.5		316 57.4		-17 54.6		303 41.9		-14 25.3		291 10.5		-10 12.0		279 19.4		-5 33.4	
20	350 3.9	287.9	-21 30.7	0.4	335 41.3	288.2	-20 19.9	1.6	321 46.1	288.7	-17 52.1	2.5	308 31.2	289.3	-14 22.0	3.3	296 0.4	289.9	-10 8.2	3.7	284 9.7	290.4	-5 29.5	4.0
40	354 51.8		-21 30.3		340 29.5		-20 18.4		326 34.7		-17 49.6		313 20.4		-14 18.8		300 50.2		-10 4.5		289 0.1		-5 25.5	
21 0	359 39.7		-21 29.8		345 17.7		-20 16.8		331 23.4		-17 47.0		318 9.7		-14 15.5		305 40.1		-10 0.8		293 50.5		-5 21.5	
20	4 27.6	287.9	-21 29.4	0.4	350 5.8	288.2	-20 15.2	1.6	336 12.1	288.7	-17 44.5	2.6	322 59.0	289.3	-14 12.2	3.3	310 30.0	289.9	-9 57.0	3.8	298 40.9	290.4	-5 17.6	4.0
40	9 15.6		-21 28.9		354 54.0		-20 13.6		341 0.8		-17 41.9		327 48.3		-14 8.9		315 19.9		-9 53.2		303 31.3		-5 13.6	
22 0	14 3.5		-21 28.5		359 42.2		-20 12.0		345 49.5		-17 39.3		332 37.6		-14 5.6		320 9.8		-9 49.5		308 21.7		-5 9.6	
20	18 51.4	287.9	-21 28.0	0.5	4 30.4	288.2	-20 10.4	1.6	350 38.2	288.7	-17 36.7	2.6	337 26.9	289.3	-14 2.3	3.3	324 59.7	289.9	-9 45.7	3.8	313 12.1	290.4	-5 5.7	4.0
40	23 39.4		-21 27.5		9 18.6		-20 8.7		355 26.9		-17 34.1		342 16.2		-13 59.0		329 49.6		-9 41.9		318 2.5		-5 1.7	
23 0	28 27.3		-21 26.9		14 6.8		-20 7.1		0 15.6		-17 31.5		347 5.6		-13 55.7		334 39.6		-9 38.2		322 52.9		-4 57.7	
20	33 15.2	287.9	-21 26.4	0.5	18 55.1	288.2	-20 5.4	1.7	5 4.3	288.7	-17 28.9	2.6	351 54.9	289.4	-13 52.3	3.4	339 29.5	289.9	-9 34.4	3.8	327 43.4	290.4	-4 53.7	4.0
40	38 3.2		-21 25.8		23 43.3		-20 3.7		9 53.1		-17 26.3		356 44.3		-13 49.0		344 19.4		-9 30.6		332 33.8		-4 49.8	

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h m	4 Aug GHA	4 Aug Dec	d	5 Aug GHA	5 Aug Dec	d	6 Aug GHA	6 Aug Dec	d	7 Aug GHA	7 Aug Dec	d	8 Aug GHA	8 Aug Dec	d	9 Aug GHA	9 Aug Dec	d
0 0	337 24.2	-4 45.8		326 9.2	0 1.1		315 13.6	4 40.3		304 26.9	9 0.7		293 39.4	12 53.4		282 43.2	16 10.7	
20	342 14.7	-4 41.8	4.0	330 60.0	0 5.1	4.0	320 4.6	4 44.0	3.8	309 18.0	9 4.2	3.4	298 30.4	12 56.4	3.0	287 34.0	16 13.2	2.5
40	347 5.1	-4 37.8		335 50.8	0 9.0		324 55.6	4 47.8		314 9.0	9 7.6		303 21.3	12 59.4		292 24.8	16 15.7	
1 0	351 55.6	-4 33.8		340 41.6	0 13.0		329 46.6	4 51.6		319 0.0	9 11.0		308 12.3	13 2.4		297 15.5	16 18.1	
20	356 46.0	-4 29.9	4.0	345 32.4	0 16.9	3.9	334 37.6	4 55.3	3.7	323 51.1	9 14.4	3.4	313 3.3	13 5.4	3.0	302 6.3	16 20.5	2.4
40	1 36.5	-4 25.9		350 23.2	0 20.9		339 28.6	4 59.1		328 42.1	9 17.9		317 54.2	13 8.4		306 57.1	16 23.0	
2 0	6 27.0	-4 21.9		355 14.0	0 24.8		344 19.5	5 2.8		333 33.1	9 21.3		322 45.2	13 11.3		311 47.9	16 25.4	
20	11 17.4	-4 17.9	4.0	0 4.8	0 28.8	4.0	349 10.5	5 6.6	3.8	338 24.2	9 24.7	3.4	327 36.1	13 14.3	3.0	316 38.7	16 27.8	2.4
40	16 7.9	-4 13.9		4 55.6	0 32.7		354 1.5	5 10.3		343 15.2	9 28.1		332 27.1	13 17.2		321 29.4	16 30.2	
3 0	20 58.4	-4 9.9		9 46.4	0 36.7		358 52.5	5 14.1		348 6.2	9 31.5		337 18.0	13 20.2		326 20.2	16 32.6	
20	25 48.9	-4 5.9	4.0	14 37.2	0 40.6	3.9	3 43.5	5 17.8	3.7	352 57.2	9 34.9	3.4	342 9.0	13 23.1	2.9	331 11.0	16 35.0	2.4
40	30 39.4	-4 2.0		19 28.0	0 44.6		8 34.5	5 21.5		357 48.3	9 38.3		346 59.9	13 26.0		336 1.7	16 37.3	
4 0	35 29.9	-3 58.0		24 18.9	0 48.5		13 25.5	5 25.2		2 39.3	9 41.6		351 50.8	13 29.0		340 52.5	16 39.7	
20	40 20.4	-3 54.0	4.0	29 9.7	0 52.4	3.9	18 16.5	5 29.0	3.7	7 30.3	9 45.0	3.4	356 41.8	13 31.9	2.9	345 43.3	16 42.1	2.3
40	45 10.9	-3 50.0		34 0.5	0 56.4		23 7.5	5 32.7		12 21.4	9 48.4		1 32.7	13 34.8		350 34.0	16 44.4	
5 0	50 1.4	-3 46.0		38 51.4	1 0.3		27 58.5	5 36.4		17 12.4	9 51.8		6 23.6	13 37.7		355 24.8	16 46.7	
20	54 52.0	-3 42.0	4.0	43 42.2	1 4.2	3.9	32 49.5	5 40.1	3.7	22 3.4	9 55.1	3.3	11 14.6	13 40.6	2.9	0 15.5	16 49.1	2.3
40	59 42.5	-3 38.0		48 33.0	1 8.2		37 40.5	5 43.8		26 54.4	9 58.5		16 5.5	13 43.5		5 6.3	16 51.4	
6 0	64 33.0	-3 34.0		53 23.9	1 12.1		42 31.5	5 47.5		31 45.5	10 1.8		20 56.4	13 46.4		9 57.0	16 53.7	
20	69 23.6	-3 30.0	4.0	58 14.7	1 16.0	3.9	47 22.5	5 51.2	3.7	36 36.5	10 5.1	3.3	25 47.4	13 49.2	2.9	14 47.8	16 56.0	2.3
40	74 14.1	-3 26.0		63 5.6	1 20.0		52 13.5	5 54.9		41 27.5	10 8.5		30 38.3	13 52.1		19 38.5	16 58.3	
7 0	79 4.7	-3 22.0		67 56.5	1 23.9		57 4.6	5 58.6		46 18.5	10 11.8		35 29.2	13 55.0		24 29.2	17 0.6	
20	83 55.2	-3 18.1	4.0	72 47.3	1 27.8	3.9	61 55.6	6 2.3	3.7	51 9.6	10 15.1	3.3	40 20.1	13 57.8	2.8	29 20.0	17 2.9	2.3
40	88 45.8	-3 14.1		77 38.2	1 31.7		66 46.6	6 6.0		56 0.6	10 18.5		45 11.1	14 0.7		34 10.7	17 5.2	
8 0	93 36.4	-3 10.1		82 29.0	1 35.6		71 37.6	6 9.6		60 51.6	10 21.8		50 2.0	14 3.5		39 1.4	17 7.4	
20	98 26.9	-3 6.1	4.0	87 19.9	1 39.5	3.9	76 28.6	6 13.3	3.7	65 42.6	10 25.1	3.3	54 52.9	14 6.3	2.8	43 52.2	17 9.7	2.3
40	103 17.5	-3 2.1		92 10.8	1 43.4		81 19.6	6 17.0		70 33.7	10 28.4		59 43.8	14 9.1		48 42.9	17 11.9	
9 0	108 8.1	-2 58.1		97 1.7	1 47.4		86 10.6	6 20.7		75 24.7	10 31.7		64 34.7	14 12.0		53 33.6	17 14.2	
20	112 58.7	-2 54.1	4.0	101 52.5	1 51.3	3.9	91 1.6	6 24.3	3.6	80 15.7	10 35.0	3.3	69 25.6	14 14.8	2.8	58 24.3	17 16.4	2.2
40	117 49.3	-2 50.1		106 43.4	1 55.2		95 52.7	6 28.0		85 6.7	10 38.2		74 16.5	14 17.6		63 15.0	17 18.6	
10 0	122 39.9	-2 46.1		111 34.3	1 59.1		100 43.7	6 31.6		89 57.7	10 41.5		79 7.4	14 20.4		68 5.7	17 20.9	
20	127 30.5	-2 42.1	4.0	116 25.2	2 3.0	3.9	105 34.7	6 35.3	3.6	94 48.8	10 44.8	3.3	83 58.3	14 23.1	2.8	72 56.4	17 23.1	2.2
40	132 21.1	-2 38.1		121 16.1	2 6.9		110 25.7	6 38.9		99 39.8	10 48.0		88 49.2	14 25.9		77 47.1	17 25.3	
11 0	137 11.7	-2 34.1		126 7.0	2 10.7		115 16.7	6 42.5		104 30.8	10 51.3		93 40.1	14 28.7		82 37.8	17 27.4	
20	142 2.3	-2 30.1	4.0	130 57.9	2 14.6	3.9	120 7.8	6 46.2	3.6	109 21.8	10 54.6	3.2	98 31.0	14 31.5	2.8	87 28.5	17 29.6	2.2
40	146 53.0	-2 26.1		135 48.8	2 18.5		124 58.8	6 49.8		114 12.8	10 57.8		103 21.9	14 34.2		92 19.2	17 31.8	
12 0	151 43.6	-2 22.1		140 39.7	2 22.4		129 49.8	6 53.4		119 3.8	11 1.0		108 12.8	14 37.0		97 9.9	17 34.0	
20	156 34.2	-2 18.2	4.0	145 30.6	2 26.3	3.9	134 40.8	6 57.1	3.6	123 54.8	11 4.3	3.2	113 3.7	14 39.7	2.7	102 0.6	17 36.1	2.1
40	161 24.9	-2 14.2		150 21.5	2 30.2		139 31.9	7 0.7		128 45.8	11 7.5		117 54.6	14 42.4		106 51.3	17 38.3	
13 0	166 15.5	-2 10.2		155 12.4	2 34.0		144 22.9	7 4.3		133 36.9	11 10.7		122 45.5	14 45.2		111 42.0	17 40.4	
20	171 6.1	-2 6.2	4.0	160 3.3	2 37.9	3.9	149 13.9	7 7.9	3.6	138 27.9	11 13.9	3.2	127 36.3	14 47.9	2.7	116 32.6	17 42.5	2.1
40	175 56.8	-2 2.2		164 54.2	2 41.8		154 4.9	7 11.5		143 18.9	11 17.1		132 27.2	14 50.6		121 23.3	17 44.6	
14 0	180 47.5	-1 58.2		169 45.1	2 45.7		158 56.0	7 15.1		148 9.9	11 20.3		137 18.1	14 53.3		126 14.0	17 46.7	
20	185 38.1	-1 54.2	4.0	174 36.0	2 49.5	3.8	163 47.0	7 18.7	3.6	153 0.9	11 23.5	3.2	142 9.0	14 56.0	2.7	131 4.7	17 48.8	2.1
40	190 28.8	-1 50.2		179 26.9	2 53.4		168 38.0	7 22.3		157 51.9	11 26.7		146 59.8	14 58.7		135 55.3	17 50.9	
15 0	195 19.5	-1 46.2		184 17.9	2 57.2		173 29.1	7 25.8		162 42.9	11 29.9		151 50.7	15 1.4		140 46.0	17 53.0	
20	200 10.1	-1 42.2	4.0	189 8.8	3 1.1	3.9	178 20.1	7 29.4	3.6	167 33.9	11 33.1	3.2	156 41.6	15 4.0	2.6	145 36.6	17 55.1	2.1
40	205 0.8	-1 38.3		193 59.7	3 5.0		183 11.1	7 33.0		172 24.9	11 36.3		161 32.4	15 6.7		150 27.3	17 57.1	
16 0	209 51.5	-1 34.3		198 50.7	3 8.8		188 2.1	7 36.6		177 15.9	11 39.4		166 23.3	15 9.3		155 17.9	17 59.2	
20	214 42.2	-1 30.3	4.0	203 41.6	3 12.7	3.8	192 53.2	7 40.1	3.5	182 6.9	11 42.6	3.2	171 14.1	15 12.0	2.7	160 8.6	18 1.2	2.0
40	219 32.9	-1 26.3		208 32.5	3 16.5		197 44.2	7 43.7		186 57.9	11 45.7		176 5.0	15 14.6		164 59.2	18 3.3	
17 0	224 23.6	-1 22.3		213 23.5	3 20.3		202 35.2	7 47.2		191 48.9	11 48.9		180 55.9	15 17.3		169 49.9	18 5.3	
20	229 14.3	-1 18.3	4.0	218 14.4	3 24.2	3.9	207 26.3	7 50.8	3.6	196 39.9	11 52.0	3.1	185 46.7	15 19.9	2.6	174 40.5	18 7.3	2.0
40	234 5.0	-1 14.3		223 5.3	3 28.0		212 17.3	7 54.3		201 30.9	11 55.2		190 37.6	15 22.5		179 31.2	18 9.3	
18 0	238 55.7	-1 10.4		227 56.3	3 31.9		217 8.3	7 57.9		206 21.8	11 58.3		195 28.4	15 25.1		184 21.8	18 11.3	
20	243 46.4	-1 6.4	4.0	232 47.2	3 35.7	3.8	221 59.4	8 1.4	3.5	211 12.8	12 1.4	3.1	200 19.2	15 27.7	2.6	189 12.4	18 13.3	2.0
40	248 37.1	-1 2.4		237 38.2	3 39.5		226 50.4	8 4.9		216 3.8	12 4.5		205 10.1	15 30.3		194 3.0	18 15.3	
19 0	253 27.8	-0 58.4		242 29.1	3 43.3		231 41.4	8 8.5		220 54.8	12 7.6		210 0.9	15 32.9		198 53.7	18 17.3	
20	258 18.6	-0 54.4	4.0	247 20.1	3 47.2	3.8	236 32.5	8 12.0	3.5	225 45.8	12 10.7	3.1	214 51.8	15 35.5	2.6	203 44.3	18 19.3	2.0
40	263 9.3	-0 50.5		252 11.0	3 51.0		241 23.5	8 15.5		230 36.8	12 13.8		219 42.6	15 38.1		208 34.9	18 21.2	
20 0	268 0.0	-0 46.5		257 2.0	3 54.8		246 14.5	8 19.0		235 27.8	12 16.9		224 33.4	15 40.6		213 25.5	18 23.2	
20	272 50.8	-0 42.5	4.0	261 53.0	3 58.6	3.8	251 5.6	8 22.5	3.5	240 18.7	12 20.0	3.1	229 24.2	15 43.2	2.6	218 16.1	18 25.1	1.9
40	277 41.5	-0 38.5		266 43.9	4 2.4		255 56.6	8 26.0		245 9.7	12 23.1		234 15.1	15 45.7		223 6.7	18 27.0	
21 0	282 32.3	-0 34.6		271 34.9	4 6.2		260 47.6	8 29.5		250 0.7	12 26.1		239 5.9	15 48.3		227 57.3	18 28.9	
20	287 23.0	-0 30.6	4.0	276 25.8	4 10.0	3.8	265 38.7	8 33.0	3.5	254 51.7	12 29.2	3.1	243 56.7	15 50.8	2.5	232 47.9	18 30.8	1.9
40	292 13.8	-0 26.6		281 16.8	4 13.8		270 29.7	8 36.5		259 42.6	12 32.2		248 47.5	15 53.3		237 38.5	18 32.7	
22 0	297 4.5	-0 22.7		286 7.8	4 17.6		275 20.7	8 40.0		264 33.6	12 35.3		253 38.3	15 55.8		242 29.1	18 34.6	
20	301 55.3	-0 18.7	4.0	290 58.8	4 21.4	3.8	280 11.8	8 43.4	3.5	269 24.6	12 38.3	3.0	258 29.2	15 58.3	2.5	247 19.7	18 36.5	1.9
40	306 46.1	-0 14.7		295 49.7	4 25.2		285 2.8	8 46.9		274 15.6	12 41.4		263 20.0	16 0.8		252 10.3	18 38.4	
23 0	311 36.8	-0 10.8		300 40.7	4 29.0		289 53.8	8 50.4		279 6.5	12 44.4		268 10.8	16 3.3		257 0.9	18 40.3	
20	316 27.6	-0 6.8	4.0	305 31.7	4 32.7	3.8	294 44.9	8 53.8	3.4	283 57.5	12 47.4	3.0	273 1.6	16 5.8	2.5	261 51.4	18 42.1	1.8
40	321 18.4	-0 2.8		310 22.7	4 36.5		299 35.9	8 57.3		288 48.5	12 50.4		277 52.4	16 8.3		266 42.0	18 43.9	

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0 0	271 32.6 290.6	18 45.8	260 5.1 290.3	20 32.3	248 21.4 290.1	21 24.8	236 25.3 290.0	21 19.2	224 22.7 289.9	20 13.6	212 20.1 290.0	18 8.7
20	276 23.2	18 47.6 1.8	264 55.4	20 33.4 1.1	253 11.5	21 25.1 0.3	241 15.3	21 18.7 -0.5	229 12.7	20 12.3 -1.3	217 10.0	18 6.5 -2.2
40	281 13.7	18 49.4	269 45.8	20 34.5	258 1.6	21 25.4	246 5.3	21 18.2	234 2.6	20 10.9	222 0.0	18 4.4
1 0	286 4.3 290.6	18 51.2	274 36.1 290.3	20 35.6	262 51.8 290.1	21 25.7	250 55.3 290.0	21 17.7	238 52.6 290.0	20 9.6	226 50.0 290.0	18 2.2
20	290 54.9	18 53.0 1.8	279 26.4	20 36.7 1.1	267 41.9	21 26.0 0.3	255 45.2	21 17.2 -0.5	243 42.5	20 8.2 -1.4	231 40.0	18 0.1 -2.2
40	295 45.4	18 54.8	284 16.7	20 37.7	272 32.0	21 26.3	260 35.2	21 16.6	248 32.5	20 6.8	236 30.0	17 57.9
2 0	300 36.0 290.5	18 56.6	289 7.0 290.3	20 38.8	277 22.1 290.1	21 26.6	265 25.2 290.0	21 16.1	253 22.4 290.0	20 5.4	241 20.0 290.0	17 55.7
20	305 26.5	18 58.4 1.8	293 57.4	20 39.8 1.0	282 12.2	21 26.9 0.2	270 15.2	21 15.5 -0.6	258 12.4	20 4.0 -1.4	246 10.0	17 53.5 -2.2
40	310 17.1	19 0.1	298 47.7	20 40.9	287 2.3	21 27.1	275 5.2	21 14.9	263 2.3	20 2.6	250 60.0	17 51.3
3 0	315 7.6 290.5	19 1.9	303 38.0 290.3	20 41.9	291 52.4 290.1	21 27.3	279 55.2 290.0	21 14.3	267 52.3 290.0	20 1.2	255 50.0 290.0	17 49.0
20	319 58.1	19 3.6 1.7	308 28.3	20 42.9 1.0	296 42.5	21 27.6 0.2	284 45.2	21 13.7 -0.6	272 42.2	19 59.8 -1.4	260 40.0	17 46.8 -2.2
40	324 48.7	19 5.3	313 18.6	20 43.9	301 32.7	21 27.8	289 35.1	21 13.1	277 32.2	19 58.3	265 30.0	17 44.6
4 0	329 39.2 290.5	19 7.1	318 8.9 290.3	20 44.9	306 22.8 290.1	21 28.0	294 25.1 290.0	21 12.5	282 22.1 290.0	19 56.9	270 20.0 290.0	17 42.3
20	334 29.7	19 8.8 1.7	322 59.2	20 45.9 1.0	311 12.9	21 28.2 0.2	299 15.1	21 11.9 -0.6	287 12.1	19 55.4 -1.5	275 10.0	17 40.0 -2.3
40	339 20.3	19 10.5	327 49.5	20 46.9	316 2.9	21 28.4	304 5.1	21 11.2	292 2.0	19 53.9	279 60.0	17 37.8
5 0	344 10.8 290.5	19 12.2	332 39.7 290.3	20 47.8	320 53.0 290.1	21 28.5	308 55.1 290.0	21 10.6	296 52.0 290.0	19 52.4	284 50.0 290.0	17 35.5
20	349 1.3	19 13.8 1.7	337 30.0	20 48.8 1.0	325 43.1	21 28.7 0.2	313 45.0	21 9.9 -0.7	301 41.9	19 50.9 -1.5	289 40.0	17 33.2 -2.3
40	353 51.8	19 15.5	342 20.3	20 49.7	330 33.2	21 28.8	318 35.0	21 9.2	306 31.9	19 49.4	294 30.0	17 30.9
6 0	358 42.3 290.5	19 17.2	347 10.6 290.3	20 50.7	335 23.3 290.1	21 29.0	323 25.0 290.0	21 8.5	311 21.8 290.0	19 47.8	299 20.0 290.0	17 28.6
20	3 32.8	19 18.8 1.6	352 0.9	20 51.6 0.9	340 13.4	21 29.1 0.1	328 15.0	21 7.8 -0.7	316 11.8	19 46.3 -1.5	304 10.0	17 26.2 -2.4
40	8 23.4	19 20.5	356 51.1	20 52.5	345 3.5	21 29.2	333 4.9	21 7.1	321 1.7	19 44.8	309 0.0	17 23.9
7 0	13 13.9 290.5	19 22.1	1 41.4 290.3	20 53.4	349 53.6 290.1	21 29.3	337 54.9 290.0	21 6.3	325 51.7 290.0	19 43.2	313 50.0 290.0	17 21.5
20	18 4.4	19 23.7 1.6	6 31.7	20 54.3 0.9	354 43.6	21 29.4 0.1	342 44.9	21 5.6 -0.7	330 41.6	19 41.6 -1.6	318 40.0	17 19.2 -2.4
40	22 54.9	19 25.4	11 21.9	20 55.2	359 33.7	21 29.5	347 34.9	21 4.8	335 31.6	19 40.0	323 30.0	17 16.8
8 0	27 45.3 290.5	19 27.0	16 12.2 290.3	20 56.0	4 23.8 290.1	21 29.5	352 24.8 290.0	21 4.1	340 21.6 290.0	19 38.4	328 20.0 290.0	17 14.4
20	32 35.8	19 28.6 1.6	21 2.5	20 56.9 0.9	9 13.9	21 29.6 0.1	357 14.8	21 3.3 -0.8	345 11.5	19 36.8 -1.6	333 10.1	17 12.0 -2.4
40	37 26.3	19 30.1	25 52.7	20 57.7	14 3.9	21 29.7	2 4.8	21 2.5	350 1.5	19 35.2	338 0.1	17 9.6
9 0	42 16.8 290.5	19 31.7	30 43.0 290.2	20 58.6	18 54.0 290.1	21 29.7	6 54.7 290.0	21 1.7	354 51.4 290.0	19 33.6	342 50.1 290.0	17 7.2
20	47 7.3	19 33.3 1.6	35 33.2	20 59.4 0.8	23 44.1	21 29.7 0.0	11 44.7	21 0.9 -0.8	359 41.4	19 31.9 -1.7	347 40.1	17 4.8 -2.4
40	51 57.8	19 34.8	40 23.5	21 0.2	28 34.1	21 29.7	16 34.7	21 0.1	4 31.3	19 30.3	352 30.1	17 2.4
10 0	56 48.2 290.5	19 36.4	45 13.7 290.2	21 1.0	33 24.2 290.1	21 29.7	21 24.6 290.0	20 59.2	9 21.3 290.0	19 28.6	357 20.1 290.0	16 59.9
20	61 38.7	19 37.9 1.5	50 3.9	21 1.8 0.8	38 14.3	21 29.7 0.0	26 14.6	20 58.4 -0.8	14 11.2	19 26.9 -1.7	2 10.2	16 57.5 -2.5
40	66 29.2	19 39.5	54 54.2	21 2.6	43 4.3	21 29.7	31 4.5	20 57.5	19 1.2	19 25.3	7 0.2	16 55.0
11 0	71 19.6 290.5	19 41.0	59 44.4 290.2	21 3.3	47 54.4 290.1	21 29.6	35 54.5 290.0	20 56.7	23 51.2 290.0	19 23.6	11 50.2 290.0	16 52.5
20	76 10.1	19 42.5 1.5	64 34.6	21 4.1 0.8	52 44.4	21 29.6 0.0	40 44.5	20 55.8 -0.9	28 41.1	19 21.8 -1.7	16 40.2	16 50.0 -2.5
40	81 0.5	19 44.0	69 24.9	21 4.8	57 34.5	21 29.5	45 34.4	20 54.9	33 31.1	19 20.1	21 30.3	16 47.5
12 0	85 51.0 290.4	19 45.5	74 15.1 290.2	21 5.6	62 24.5 290.0	21 29.5	50 24.4 290.0	20 54.0	38 21.0 290.0	19 18.4	26 20.3 290.0	16 45.0
20	90 41.4	19 46.9 1.5	79 5.3	21 6.3 0.7	67 14.6	21 29.4 -0.1	55 14.4	20 53.1 -0.9	43 11.0	19 16.6 -1.8	31 10.3	16 42.5 -2.5
40	95 31.9	19 48.4	83 55.5	21 7.0	72 4.6	21 29.3	60 4.3	20 52.1	48 1.0	19 14.9	36 0.3	16 40.0
13 0	100 22.3 290.4	19 49.9	88 45.8 290.2	21 7.7	76 54.7 290.0	21 29.2	64 54.3 290.0	20 51.2	52 50.9 290.0	19 13.1	40 50.4 290.0	16 37.5
20	105 12.8	19 51.3 1.4	93 36.0	21 8.4 0.7	81 44.7	21 29.1 -0.1	69 44.2	20 50.2 -1.0	57 40.9	19 11.4 -1.8	45 40.4	16 34.9 -2.6
40	110 3.2	19 52.7	98 26.2	21 9.1	86 34.8	21 28.9	74 34.2	20 49.3	62 30.9	19 9.6	50 30.4	16 32.4
14 0	114 53.6 290.4	19 54.2	103 16.4 290.2	21 9.8	91 24.8 290.0	21 28.8	79 24.2 290.0	20 48.3	67 20.8 290.0	19 7.8	55 20.5 290.0	16 29.8
20	119 44.1	19 55.6 1.4	108 6.6	21 10.4 0.6	96 14.9	21 28.7 -0.2	84 14.1	20 47.3 -1.0	72 10.8	19 6.0 -1.8	60 10.5	16 27.2 -2.6
40	124 34.5	19 57.0	112 56.8	21 11.1	101 4.9	21 28.5	89 4.1	20 46.3	77 0.7	19 4.1	65 0.6	16 24.7
15 0	129 24.9 290.4	19 58.4	117 47.0 290.2	21 11.7	105 54.9 290.0	21 28.3	93 54.0 290.0	20 45.3	81 50.7 290.0	19 2.3	69 50.6 290.0	16 22.1
20	134 15.3	19 59.8 1.4	122 37.2	21 12.4 0.6	110 45.0	21 28.1 -0.2	98 44.0	20 44.3 -1.0	86 40.7	19 0.5 -1.9	74 40.6	16 19.5 -2.6
40	139 5.8	20 1.2	127 27.4	21 13.0	115 35.0	21 27.9	103 33.9	20 43.2	91 30.6	18 58.6	79 30.7	16 16.8
16 0	143 56.2 290.4	20 2.5	132 17.6 290.2	21 13.6	120 25.0 290.0	21 27.7	108 23.9 290.0	20 42.2	96 20.6 290.0	18 56.7	84 20.7 290.0	16 14.2
20	148 46.6	20 3.9 1.4	137 7.8	21 14.2 0.6	125 15.0	21 27.5 -0.2	113 13.8	20 41.1 -1.1	101 10.6	18 54.9 -1.9	89 10.8	16 11.6 -2.6
40	153 37.0	20 5.2	141 58.0	21 14.8	130 5.1	21 27.3	118 3.8	20 40.1	106 0.5	18 53.0	94 0.8	16 8.9
17 0	158 27.4 290.4	20 6.6	146 48.1 290.2	21 15.3	134 55.1 290.0	21 27.0	122 53.7 290.0	20 39.0	110 50.5 290.0	18 51.1	98 50.8 290.0	16 6.3
20	163 17.8	20 7.9 1.3	151 38.3	21 15.9 0.6	139 45.1	21 26.8 -0.3	127 43.7	20 37.9 -1.1	115 40.5	18 49.2 -1.9	103 40.9	16 3.6 -2.7
40	168 8.2	20 9.2	156 28.5	21 16.4	144 35.1	21 26.5	132 33.7	20 36.8	120 30.5	18 47.2	108 30.9	16 0.9
18 0	172 58.6 290.4	20 10.5	161 18.7 290.2	21 17.0	149 25.2 290.0	21 26.2	137 23.6 290.0	20 35.7	125 20.4 290.0	18 45.3	113 21.0 290.1	15 58.3
20	177 49.0	20 11.8 1.3	166 8.8	21 17.5 0.5	154 15.2	21 25.9 -0.3	142 13.6	20 34.5 -1.1	130 10.4	18 43.4 -2.0	118 11.0	15 55.6 -2.7
40	182 39.4	20 13.1	170 59.0	21 18.0	159 5.2	21 25.6	147 3.5	20 33.4	135 0.4	18 41.4	123 1.1	15 52.9
19 0	187 29.7 290.4	20 14.4	175 49.2 290.2	21 18.5	163 55.2 290.0	21 25.3	151 53.5 290.0	20 32.3	139 50.3 290.0	18 39.4	127 51.1 290.1	15 50.2
20	192 20.1	20 15.6 1.2	180 39.3	21 19.0 0.5	168 45.2	21 25.0 -0.3	156 43.4	20 31.1 -1.2	144 40.3	18 37.5 -2.0	132 41.2	15 47.4 -2.7
40	197 10.5	20 16.9	185 29.5	21 19.5	173 35.2	21 24.7	161 33.4	20 29.9	149 30.3	18 35.5	137 31.3	15 44.7
20 0	202 0.9 290.4	20 18.1	190 19.7 290.2	21 20.0	178 25.3 290.0	21 24.3	166 23.3 290.0	20 28.7	154 20.3 290.0	18 33.5	142 21.3 290.1	15 42.0
20	206 51.2	20 19.4 1.2	195 9.8	21 20.5 0.4	183 15.3	21 24.0 -0.4	171 13.3	20 27.5 -1.2	159 10.2	18 31.5 -2.0	147 11.4	15 39.2 -2.8
40	211 41.6	20 20.6	199 60.0	21 20.9	188 5.3	21 23.6	176 3.2	20 26.3	164 0.2	18 29.5	152 1.4	15 36.4
21 0	216 32.0 290.4	20 21.8	204 50.1 290.1	21 21.3	192 55.3 290.0	21 23.2	180 53.2 289.9	20 25.1	168 50.2 290.0	18 27.4	156 51.5 290.1	15 33.7
20	221 22.3	20 23.0 1.2	209 40.3	21 21.8 0.4	197 45.3	21 22.8 -0.4	185 43.1	20 23.9 -1.2	173 40.2	18 25.4 -2.0	161 41.6	15 30.9 -2.8
40	226 12.7	20 24.2	214 30.4	21 22.2	202 35.3	21 22.4	190 33.1	20 22.6	178 30.2	18 23.3	166 31.6	15 28.1
22 0	231 3.0 290.3	20 25.4	219 20.6 290.1	21 22.6	207 25.3 290.0	21 22.0	195 23.0 290.0	20 21.4	183 20.1 290.0	18 21.3	171 21.7 290.1	15 25.3
20	235 53.4	20 26.6 1.2	224 10.7	21 23.0 0.4	212 15.3	21 21.6 -0.4	200 13.0	20 20.1 -1.3	188 10.1	18 19.2 -2.1	176 11.8	15 22.5 -2.8
40	240 43.7	20 27.7	229 0.9	21 23.4	217 5.3	21 21.1	205 2.9	20 18.8	193 0.1	18 17.1	181 1.8	15 19.7
23 0	245 34.1 290.3	20 28.9	233 51.0 290.1	21 23.7	221 55.3 290.0	21 20.7	209 52.9 289.9	20 17.6	197 50.1 290.0	18 15.0	185 51.9 290.1	15 16.9
20	250 24.4	20 30.0 1.1	238 41.1	21 24.1 0.4	226 45.3	21 20.2 -0.5	214 42.8	20 16.3 -1.3	202 40.1	18 12.9 -2.1	190 42.0	15 14.0 -2.9
40	255 14.8	20 31.2	243 31.3	21 24.5	231 35.3	21 19.7	219 32.8	20 14.9	207 30.1	18 10.8	195 32.0	15 11.2

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h m	16 Aug GHA	16 Aug Dec	d	17 Aug GHA	17 Aug Dec	d	18 Aug GHA	18 Aug Dec	d	19 Aug GHA	19 Aug Dec	d	20 Aug GHA	20 Aug Dec	d	21 Aug GHA	21 Aug Dec	d
0 0	200 22.1	15 8.3		188 30.8	11 19.7		176 44.4	6 53.1		164 57.9	2 1.1		153 3.7	-3 1.3		140 53.2	-7 57.7	
20	205 12.2	15 5.5	290.1 -2.9	193 20.9	11 16.3	290.2 -3.5	181 34.6	6 49.1	290.2 -3.9	169 48.0	1 56.9	290.2 -4.2	157 53.7	-3 5.5	290.0 -4.2	145 42.8	-8 1.7	289.7 -4.0
40	210 2.3	15 2.6		198 11.1	11 12.8		186 24.8	6 45.2		174 38.2	1 52.7		162 43.7	-3 9.7		150 32.5	-8 5.7	
1 0	214 52.3	14 59.7		203 1.3	11 9.3		191 15.0	6 41.3		179 28.3	1 48.6		167 33.7	-3 13.9		155 22.2	-8 9.6	
20	219 42.4	14 56.8	290.1 -2.9	207 51.4	11 5.8	290.2 -3.5	196 5.2	6 37.4	290.2 -3.9	184 18.5	1 44.4	290.1 -4.2	172 23.7	-3 18.1	290.0 -4.2	160 11.9	-8 13.6	289.7 -4.0
40	224 32.5	14 53.9		212 41.6	11 2.3		200 55.4	6 33.4		189 8.6	1 40.2		177 13.6	-3 22.3		165 1.6	-8 17.6	
2 0	229 22.6	14 51.0		217 31.8	10 58.8		205 45.6	6 29.5		193 58.8	1 36.1		182 3.6	-3 26.5		169 51.3	-8 21.6	
20	234 12.7	14 48.1	290.1 -2.9	222 21.9	10 55.3	290.2 -3.5	210 35.8	6 25.6	290.2 -3.9	198 48.9	1 31.9	290.1 -4.2	186 53.6	-3 30.7	290.0 -4.2	174 40.9	-8 25.5	289.7 -3.9
40	239 2.7	14 45.1		227 12.1	10 51.8		215 26.0	6 21.6		203 39.1	1 27.7		191 43.5	-3 34.9		179 30.6	-8 29.5	
3 0	243 52.8	14 42.2		232 2.3	10 48.2		220 16.2	6 17.7		208 29.2	1 23.5		196 33.5	-3 39.1		184 20.2	-8 33.4	
20	248 42.9	14 39.3	290.1 -3.0	236 52.5	10 44.7	290.2 -3.5	225 6.4	6 13.7	290.2 -4.0	213 19.3	1 19.3	290.1 -4.2	201 23.4	-3 43.2	290.0 -4.2	189 9.9	-8 37.4	289.6 -4.0
40	253 33.0	14 36.3		241 42.6	10 41.2		229 56.6	6 9.7		218 9.5	1 15.2		206 13.4	-3 47.4		193 59.5	-8 41.3	
4 0	258 23.1	14 33.3		246 32.8	10 37.6		234 46.8	6 5.8		222 59.6	1 11.0		211 3.4	-3 51.6		198 49.2	-8 45.3	
20	263 13.2	14 30.4	290.1 -3.0	251 23.0	10 34.1	290.2 -3.6	239 37.0	6 1.8	290.2 -4.0	227 49.8	1 6.8	290.1 -4.2	215 53.3	-3 55.8	289.9 -4.2	203 38.8	-8 49.2	289.6 -3.9
40	268 3.3	14 27.4		256 13.2	10 30.5		244 27.2	5 57.8		232 39.9	1 2.6		220 43.2	-4 0.0		208 28.4	-8 53.1	
5 0	272 53.4	14 24.4		261 3.3	10 26.9		249 17.4	5 53.8		237 30.0	0 58.4		225 33.2	-4 4.1		213 18.1	-8 57.0	
20	277 43.5	14 21.4	290.1 -3.0	265 53.5	10 23.3	290.2 -3.6	254 7.6	5 49.9	290.2 -4.0	242 20.1	0 54.2	290.1 -4.2	230 23.1	-4 8.3	289.9 -4.2	218 7.7	-9 1.0	289.6 -3.9
40	282 33.6	14 18.4		270 43.7	10 19.8		258 57.8	5 45.9		247 10.3	0 50.0		235 13.0	-4 12.5		222 57.3	-9 4.9	
6 0	287 23.7	14 15.3		275 33.9	10 16.2		263 48.0	5 41.9		252 0.4	0 45.8		240 3.0	-4 16.7		227 46.9	-9 8.8	
20	292 13.8	14 12.3	290.1 -3.0	280 24.0	10 12.6	290.2 -3.6	268 38.2	5 37.9	290.2 -4.0	256 50.5	0 41.6	290.1 -4.2	244 52.9	-4 20.8	289.9 -4.2	232 36.5	-9 12.7	289.6 -3.9
40	297 3.9	14 9.3		285 14.2	10 9.0		273 28.4	5 33.9		261 40.6	0 37.4		249 42.8	-4 25.0		237 26.1	-9 16.6	
7 0	301 54.0	14 6.2		290 4.4	10 5.4		278 18.6	5 29.9		266 30.8	0 33.2		254 32.7	-4 29.2		242 15.7	-9 20.5	
20	306 44.1	14 3.2	290.1 -3.1	294 54.6	10 1.7	290.2 -3.6	283 8.8	5 25.9	290.2 -4.0	271 20.9	0 29.0	290.1 -4.2	259 22.7	-4 33.3	289.9 -4.1	247 5.3	-9 24.3	289.6 -3.9
40	311 34.2	14 0.1		299 44.8	9 58.1		287 59.0	5 21.9		276 11.0	0 24.8		264 12.6	-4 37.5		251 54.9	-9 28.2	
8 0	316 24.3	13 57.0		304 35.0	9 54.5		292 49.2	5 17.8		281 1.1	0 20.6		269 2.5	-4 41.6		256 44.5	-9 32.1	
20	321 14.4	13 54.0	290.1 -3.1	309 25.1	9 50.8	290.2 -3.6	297 39.4	5 13.8	290.2 -4.0	285 51.2	0 16.4	290.1 -4.2	273 52.4	-4 45.8	289.9 -4.2	261 34.1	-9 36.0	289.6 -3.9
40	326 4.5	13 50.9		314 15.3	9 47.2		302 29.6	5 9.8		290 41.3	0 12.2		278 42.3	-4 49.9		266 23.6	-9 39.8	
9 0	330 54.6	13 47.8		319 5.5	9 43.6		307 19.8	5 5.8		295 31.4	0 8.0		283 32.2	-4 54.1		271 13.2	-9 43.7	
20	335 44.7	13 44.7	290.1 -3.1	323 55.7	9 39.9	290.2 -3.7	312 10.0	5 1.7	290.2 -4.0	300 21.5	0 3.8	290.1 -4.2	288 22.1	-4 58.2	289.9 -4.1	276 2.7	-9 47.5	289.6 -3.8
40	340 34.8	13 41.5		328 45.9	9 36.2		317 0.2	4 57.7		305 11.6	-0 0.4		293 11.9	-5 2.4		280 52.3	-9 51.4	
10 0	345 24.9	13 38.4		333 36.1	9 32.6		321 50.4	4 53.7		310 1.7	-0 4.6		298 1.8	-5 6.5		285 41.9	-9 55.2	
20	350 15.0	13 35.3	290.1 -3.1	338 26.3	9 28.9	290.2 -3.7	326 40.6	4 49.6	290.2 -4.1	314 51.8	-0 8.8	290.1 -4.2	302 51.7	-5 10.7	289.9 -4.2	290 31.4	-9 59.0	289.5 -3.8
40	355 5.2	13 32.1		343 16.4	9 25.2		331 30.8	4 45.6		319 41.9	-0 13.0		307 41.6	-5 14.8		295 20.9	-10 2.9	
11 0	359 55.3	13 29.0		348 6.6	9 21.5		336 21.0	4 41.5		324 32.0	-0 17.2		312 31.5	-5 19.0		300 10.5	-10 6.7	
20	4 45.4	13 25.8	290.1 -3.2	352 56.8	9 17.8	290.2 -3.7	341 11.2	4 37.5	290.2 -4.1	329 22.1	-0 21.4	290.1 -4.2	317 21.3	-5 23.1	289.9 -4.1	304 60.0	-10 10.5	289.5 -3.8
40	9 35.5	13 22.7		357 47.0	9 14.1		346 1.4	4 33.4		334 12.2	-0 25.6		322 11.2	-5 27.2		309 49.5	-10 14.3	
12 0	14 25.6	13 19.5		2 37.2	9 10.4		350 51.6	4 29.3		339 2.3	-0 29.8		327 1.1	-5 31.3		314 39.0	-10 18.1	
20	19 15.8	13 16.3	290.1 -3.2	7 27.4	9 6.7	290.2 -3.7	355 41.8	4 25.3	290.2 -4.1	343 52.4	-0 34.0	290.1 -4.2	331 50.9	-5 35.5	289.9 -4.1	319 28.5	-10 21.9	289.5 -3.8
40	24 5.9	13 13.1		12 17.6	9 3.0		0 32.0	4 21.2		348 42.5	-0 38.2		336 40.8	-5 39.6		324 18.0	-10 25.7	
13 0	28 56.0	13 9.9		17 7.8	8 59.2		5 22.1	4 17.1		353 32.5	-0 42.5		341 30.6	-5 43.7		329 7.5	-10 29.5	
20	33 46.1	13 6.7	290.1 -3.2	21 58.0	8 55.5	290.2 -3.7	10 12.3	4 13.1	290.2 -4.1	358 22.6	-0 46.7	290.1 -4.2	346 20.4	-5 47.8	289.8 -4.1	333 57.0	-10 33.3	289.5 -3.8
40	38 36.3	13 3.5		26 48.2	8 51.8		15 2.5	4 9.0		3 12.7	-0 50.9		351 10.3	-5 51.9		338 46.5	-10 37.0	
14 0	43 26.4	13 0.2		31 38.4	8 48.0		19 52.7	4 4.9		8 2.8	-0 55.1		356 0.1	-5 56.0		343 36.0	-10 40.8	
20	48 16.5	12 57.0	290.1 -3.2	36 28.6	8 44.3	290.2 -3.7	24 42.9	4 0.8	290.2 -4.1	12 52.8	-0 59.3	290.1 -4.2	0 50.0	-6 0.2	289.8 -4.1	348 25.5	-10 44.6	289.5 -3.7
40	53 6.6	12 53.8		41 18.8	8 40.5		29 33.1	3 56.7		17 42.9	-1 3.5		5 39.8	-6 4.3		353 15.0	-10 48.3	
15 0	57 56.8	12 50.5		46 9.0	8 36.8		34 23.3	3 52.6		22 33.0	-1 7.7		10 29.6	-6 8.4		358 4.4	-10 52.0	
20	62 46.9	12 47.3	290.1 -3.3	50 59.2	8 33.0	290.2 -3.8	39 13.5	3 48.5	290.2 -4.1	27 23.0	-1 11.9	290.1 -4.2	15 19.4	-6 12.5	289.8 -4.1	2 53.9	-10 55.8	289.5 -3.7
40	67 37.0	12 44.0		55 49.3	8 29.2		44 3.6	3 44.4		32 13.1	-1 16.2		20 9.2	-6 16.5		7 43.3	-10 59.5	
16 0	72 27.2	12 40.7		60 39.5	8 25.4		48 53.8	3 40.3		37 3.2	-1 20.4		24 59.0	-6 20.6		12 32.8	-11 3.2	
20	77 17.3	12 37.4	290.1 -3.3	65 29.7	8 21.7	290.2 -3.8	53 44.0	3 36.2	290.2 -4.1	41 53.2	-1 24.6	290.1 -4.2	29 48.9	-6 24.7	289.8 -4.1	17 22.2	-11 7.0	289.4 -3.7
40	82 7.5	12 34.1		70 19.9	8 17.9		58 34.2	3 32.1		46 43.3	-1 28.8		34 38.7	-6 28.8		22 11.7	-11 10.7	
17 0	86 57.6	12 30.8		75 10.1	8 14.1		63 24.4	3 28.0		51 33.3	-1 33.0		39 28.5	-6 32.9		27 1.1	-11 14.4	
20	91 47.7	12 27.5	290.1 -3.3	80 0.3	8 10.3	290.2 -3.8	68 14.5	3 23.9	290.2 -4.1	56 23.4	-1 37.2	290.0 -4.2	44 18.2	-6 37.0	289.8 -4.1	31 50.5	-11 18.1	289.4 -3.7
40	96 37.9	12 24.2		84 50.5	8 6.4		73 4.7	3 19.8		61 13.4	-1 41.4		49 8.0	-6 41.0		36 39.9	-11 21.8	
18 0	101 28.0	12 20.9		89 40.7	8 2.6		77 54.9	3 15.7		66 3.5	-1 45.6		53 57.8	-6 45.1		41 29.4	-11 25.4	
20	106 18.2	12 17.6	290.1 -3.3	94 30.9	7 58.8	290.2 -3.8	82 45.1	3 11.5	290.2 -4.1	70 53.5	-1 49.8	290.0 -4.2	58 47.6	-6 49.2	289.8 -4.1	46 18.8	-11 29.1	289.4 -3.7
40	111 8.3	12 14.2		99 21.1	7 55.0		87 35.2	3 7.4		75 43.5	-1 54.1		63 37.4	-6 53.2		51 8.2	-11 32.8	
19 0	115 58.5	12 10.9		104 11.3	7 51.2		92 25.4	3 3.3		80 33.6	-1 58.3		68 27.1	-6 57.3		55 57.6	-11 36.4	
20	120 48.6	12 7.5	290.1 -3.4	109 1.5	7 47.3	290.2 -3.9	97 15.6	2 59.2	290.2 -4.1	85 23.6	-2 2.5	290.0 -4.2	73 16.9	-7 1.3	289.8 -4.0	60 47.0	-11 40.1	289.4 -3.7
40	125 38.8	12 4.1		113 51.7	7 43.5		102 5.8	2 55.0		90 13.6	-2 6.7		78 6.7	-7 5.4		65 36.3	-11 43.7	
20 0	130 28.9	12 0.8		118 41.9	7 39.6		106 55.9	2 50.9		95 3.7	-2 10.9		82 56.4	-7 9.4		70 25.7	-11 47.4	
20	135 19.1	11 57.4	290.2 -3.4	123 32.1	7 35.8	290.2 -3.8	111 46.1	2 46.7	290.2 -4.1	99 53.7	-2 15.1	290.0 -4.2	87 46.2	-7 13.5	289.7 -4.1	75 15.1	-11 51.0	289.4 -3.6
40	140 9.2	11 54.0		128 22.4	7 31.9		116 36.3	2 42.6		104 43.7	-2 19.3		92 35.9	-7 17.5		80 4.5	-11 54.6	
21 0	144 59.4	11 50.6		133 12.6	7 28.1		121 26.4	2 38.5		109 33.7	-2 23.5		97 25.7	-7 21.6		84 53.8	-11 58.2	
20	149 49.5	11 47.2	290.2 -3.4	138 2.8	7 24.2	290.2 -3.9	126 16.6	2 34.3	290.2 -4.2	114 23.7	-2 27.7	290.0 -4.2	102 15.4	-7 25.6	289.7 -4.0	89 43.2	-12 1.8	289.4 -3.6
40	154 39.7	11 43.8		142 53.0	7 20.3		131 6.8	2 30.2		119 13.7	-2 31.9		107 5.1	-7 29.6		94 32.5	-12 5.5	
22 0	159 29.8	11 40.4		147 43.2	7 16.4		135 56.9	2 26.0		124 3.7	-2 36.1		111 54.9	-7 33.6		99 21.9	-12 9.0	
20	164 20.0	11 37.0	290.2 -3.4	152 33.4	7 12.6	290.2 -3.9	140 47.1	2 21.9	290.2 -4.1	128 53.8	-2 40.3	290.0 -4.2	116 44.6	-7 37.7	289.7 -4.0	104 11.2	-12 12.6	289.3 -3.6
40	169 10.1	11 33.5		157 23.6	7 8.7		145 37.3	2 17.7		133 43.8	-2 44.5		121 34.3	-7 41.7		109 0.6	-12 16.2	
23 0	174 0.3	11 30.1		162 13.8	7 4.8		150 27.4	2 13.6		138 33.8	-2 48.7		126 24.0	-7 45.7		113 49.9	-12 19.8	
20	178 50.5	11 26.6	290.2 -3.5	167 4.0	7 0.9	290.2 -3.9	155 17.6	2 9.4	290.2 -4.2	143 23.8	-2 52.9	290.0 -4.2	131 13.7	-7 49.7	289.7 -4.0	118 39.2	-12 23.3	289.3 -3.5
40	183 40.6	11 23.2		171 54.2	6 57.0		160 7.7	2 5.2		148 13.7	-2 57.1		136 3.5	-7 53.7		123 28.5	-12 26.9	

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h m	22 Aug GHA	22 Aug Dec	d	23 Aug GHA	23 Aug Dec	d	24 Aug GHA	24 Aug Dec	d	25 Aug GHA	25 Aug Dec	d	26 Aug GHA	26 Aug Dec	d	27 Aug GHA	27 Aug Dec	d
0 0	128 17.8	-12 30.4	289.3	115 12.2	-16 21.9	-3.5	101 35.8	-19 15.6	288.9	87 35.7	-20 58.0	-2.8	73 25.8	-21 20.8	288.2	59 23.8	-20 23.1	288.5
20	133 7.1	-12 34.0		120 1.0	-16 24.8		106 24.3	-19 17.6		92 23.9	-20 58.8		78 14.0	-21 20.5	0.3	64 12.3	-20 21.8	1.4
40	137 56.4	-12 37.5		124 49.9	-16 27.6		111 12.8	-19 19.5		97 12.1	-20 59.7		83 2.2	-21 20.3		69 0.7	-20 20.4	
1 0	142 45.7	-12 41.0	289.3	129 38.7	-16 30.4	-3.5	116 1.2	-19 21.4	288.8	102 0.4	-21 0.5	-2.8	87 50.4	-21 20.0	288.2	73 49.2	-20 19.0	288.5
20	147 35.0	-12 44.5		134 27.6	-16 33.2		120 49.7	-19 23.3		106 48.6	-21 1.4		92 38.6	-21 19.7	0.3	78 37.6	-20 17.6	1.4
40	152 24.3	-12 48.0		139 16.4	-16 36.0		125 38.1	-19 25.2		111 36.8	-21 2.2		97 26.8	-21 19.4		83 26.1	-20 16.2	
2 0	157 13.6	-12 51.5	289.3	144 5.3	-16 38.8	-3.5	130 26.6	-19 27.0	288.8	116 25.0	-21 3.0	-2.8	102 15.0	-21 19.0	288.2	88 14.6	-20 14.8	288.5
20	162 2.8	-12 55.0		148 54.1	-16 41.6		135 15.0	-19 28.9		121 13.2	-21 3.7		107 3.3	-21 18.7	0.4	93 3.0	-20 13.4	1.4
40	166 52.1	-12 58.5		153 42.9	-16 44.4		140 3.5	-19 30.7		126 1.4	-21 4.5		111 51.5	-21 18.3		97 51.5	-20 11.9	
3 0	171 41.3	-13 2.0	289.2	158 31.7	-16 47.1	-3.5	144 51.9	-19 32.5	288.8	130 49.6	-21 5.3	-2.7	116 39.7	-21 17.9	288.2	102 40.0	-20 10.5	288.5
20	176 30.6	-13 5.5		163 20.5	-16 49.9		149 40.3	-19 34.3		135 37.9	-21 6.0		121 27.9	-21 17.5	0.4	107 28.5	-20 9.0	1.5
40	181 19.8	-13 8.9		168 9.3	-16 52.6		154 28.7	-19 36.1		140 26.1	-21 6.7		126 16.2	-21 17.1		112 17.0	-20 7.5	
4 0	186 9.1	-13 12.4	289.2	172 58.1	-16 55.3	-3.4	159 17.2	-19 37.9	288.8	145 14.3	-21 7.4	-2.7	131 4.4	-21 16.7	288.2	117 5.5	-20 6.0	288.5
20	190 58.3	-13 15.8		177 46.9	-16 58.0		164 5.6	-19 39.7		150 2.5	-21 8.1		135 52.6	-21 16.2	0.5	121 54.0	-20 4.5	1.5
40	195 47.5	-13 19.2		182 35.7	-17 0.7		168 54.0	-19 41.4		154 50.7	-21 8.8		140 40.9	-21 15.8		126 42.5	-20 3.0	
5 0	200 36.8	-13 22.6	289.2	187 24.5	-17 3.4	-3.4	173 42.4	-19 43.2	288.8	159 38.9	-21 9.4	-2.7	145 29.1	-21 15.3	288.2	131 31.0	-20 1.4	288.5
20	205 26.0	-13 26.1		192 13.3	-17 6.1		178 30.8	-19 44.9		164 27.1	-21 10.1		150 17.3	-21 14.8	0.5	136 19.5	-19 59.9	1.6
40	210 15.2	-13 29.5		197 2.1	-17 8.7		183 19.2	-19 46.6		169 15.3	-21 10.7		155 5.6	-21 14.3		141 8.1	-19 58.3	
6 0	215 4.4	-13 32.9	289.2	201 50.8	-17 11.4	-3.4	188 7.6	-19 48.3	288.8	174 3.5	-21 11.3	-2.6	159 53.8	-21 13.8	288.2	145 56.6	-19 56.7	288.5
20	219 53.6	-13 36.2		206 39.6	-17 14.0		192 56.0	-19 50.0		178 51.7	-21 11.9		164 42.1	-21 13.3	0.6	150 45.1	-19 55.1	1.6
40	224 42.8	-13 39.6		211 28.3	-17 16.6		197 44.4	-19 51.7		183 39.9	-21 12.5		169 30.3	-21 12.7		155 33.7	-19 53.5	
7 0	229 31.9	-13 43.0	289.2	216 17.1	-17 19.2	-3.3	202 32.7	-19 53.3	288.7	188 28.1	-21 13.0	-2.6	174 18.6	-21 12.1	288.3	160 22.2	-19 51.9	288.6
20	234 21.1	-13 46.4		221 5.8	-17 21.8		207 21.1	-19 55.0		193 16.3	-21 13.6		179 6.8	-21 11.6	0.6	165 10.8	-19 50.2	1.7
40	239 10.3	-13 49.7		225 54.5	-17 24.4		212 9.5	-19 56.6		198 4.4	-21 14.1		183 55.1	-21 11.0		169 59.3	-19 48.6	
8 0	243 59.5	-13 53.0	289.2	230 43.3	-17 27.0	-3.3	216 57.9	-19 58.2	288.7	202 52.6	-21 14.6	-2.6	188 43.3	-21 10.3	288.3	174 47.9	-19 46.9	288.6
20	248 48.6	-13 56.4		235 32.0	-17 29.6		221 46.2	-19 59.8		207 40.8	-21 15.1		193 31.6	-21 9.7	0.6	179 36.5	-19 45.2	1.7
40	253 37.8	-13 59.7		240 20.7	-17 32.1		226 34.6	-20 1.4		212 29.0	-21 15.6		198 19.9	-21 9.1		184 25.0	-19 43.5	
9 0	258 26.9	-14 3.0	289.1	245 9.4	-17 34.7	-3.3	231 23.0	-20 2.9	288.7	217 17.2	-21 16.1	-2.5	203 8.1	-21 8.4	288.3	189 13.6	-19 41.8	288.6
20	263 16.1	-14 6.3		249 58.1	-17 37.2		236 11.3	-20 4.5		222 5.4	-21 16.5		207 56.4	-21 7.7	0.7	194 2.2	-19 40.1	1.7
40	268 5.2	-14 9.6		254 46.8	-17 39.7		240 59.7	-20 6.0		226 53.6	-21 16.9		212 44.7	-21 7.0		198 50.8	-19 38.4	
10 0	272 54.3	-14 12.9	289.1	259 35.5	-17 42.2	-3.3	245 48.0	-20 7.5	288.7	231 41.8	-21 17.4	-2.5	217 32.9	-21 6.3	288.3	203 39.4	-19 36.6	288.6
20	277 43.4	-14 16.2		264 24.2	-17 44.7		250 36.3	-20 9.0		236 30.0	-21 17.8		222 21.2	-21 5.6	0.7	208 28.0	-19 34.8	1.8
40	282 32.6	-14 19.5		269 12.9	-17 47.2		255 24.7	-20 10.5		241 18.1	-21 18.2		227 9.5	-21 4.9		213 16.6	-19 33.1	
11 0	287 21.7	-14 22.7	289.1	274 1.6	-17 49.6	-3.2	260 13.0	-20 12.0	288.7	246 6.3	-21 18.5	-2.4	231 57.8	-21 4.1	288.3	218 5.2	-19 31.3	288.6
20	292 10.8	-14 26.0		278 50.3	-17 52.1		265 1.4	-20 13.5		250 54.5	-21 18.9		236 46.1	-21 3.4	0.8	222 53.9	-19 29.5	1.8
40	296 59.9	-14 29.2		283 38.9	-17 54.5		269 49.7	-20 14.9		255 42.7	-21 19.2		241 34.4	-21 2.6		227 42.5	-19 27.7	
12 0	301 49.0	-14 32.4	289.1	288 27.6	-17 56.9	-3.2	274 38.0	-20 16.4	288.6	260 30.9	-21 19.6	-2.4	246 22.7	-21 1.8	288.3	232 31.1	-19 25.8	288.6
20	306 38.0	-14 35.6		293 16.2	-17 59.4		279 26.3	-20 17.8		265 19.1	-21 19.9		251 11.0	-21 1.0	0.8	237 19.8	-19 24.0	1.9
40	311 27.1	-14 38.9		298 4.9	-18 1.8		284 14.6	-20 19.2		270 7.2	-21 20.2		255 59.3	-21 0.1		242 8.4	-19 22.1	
13 0	316 16.2	-14 42.1	289.1	302 53.5	-18 4.2	-3.2	289 3.0	-20 20.6	288.6	274 55.4	-21 20.4	-2.3	260 47.6	-20 59.3	288.3	246 57.1	-19 20.2	288.7
20	321 5.3	-14 45.3		307 42.2	-18 6.5		293 51.3	-20 21.9		279 43.6	-21 20.7		265 35.9	-20 58.4	0.9	251 45.7	-19 18.4	1.9
40	325 54.3	-14 48.4		312 30.8	-18 8.9		298 39.6	-20 23.3		284 31.8	-21 20.9		270 24.2	-20 57.6		256 34.4	-19 16.5	
14 0	330 43.4	-14 51.6	289.0	317 19.4	-18 11.2	-3.2	303 27.9	-20 24.7	288.6	289 20.0	-21 21.2	-2.3	275 12.5	-20 56.7	288.3	261 23.1	-19 14.6	288.7
20	335 32.4	-14 54.8		322 8.1	-18 13.6		308 16.2	-20 26.0		294 8.2	-21 21.4		280 0.8	-20 55.8	0.9	266 11.7	-19 12.6	2.0
40	340 21.5	-14 57.9		326 56.7	-18 15.9		313 4.5	-20 27.3		298 56.4	-21 21.6		284 49.1	-20 54.9		271 0.4	-19 10.7	
15 0	345 10.5	-15 1.1	289.0	331 45.3	-18 18.2	-3.1	317 52.8	-20 28.6	288.6	303 44.5	-21 21.8	-2.3	289 37.5	-20 53.9	288.3	275 49.1	-19 8.7	288.7
20	349 59.5	-15 4.2		336 33.9	-18 20.5		322 41.1	-20 29.9		308 32.7	-21 21.9		294 25.8	-20 53.0	1.0	280 37.8	-19 6.8	2.0
40	354 48.6	-15 7.3		341 22.5	-18 22.8		327 29.4	-20 31.2		313 20.9	-21 22.1		299 14.1	-20 52.0		285 26.5	-19 4.8	
16 0	359 37.6	-15 10.4	289.0	346 11.1	-18 25.1	-3.1	332 17.6	-20 32.4	288.6	318 9.1	-21 22.2	-2.2	304 2.5	-20 51.0	288.3	290 15.2	-19 2.8	288.7
20 4	26.6	-15 13.5		350 59.7	-18 27.3		337 5.9	-20 33.6		322 57.3	-21 22.4		308 50.8	-20 50.0	1.0	295 3.9	-19 0.8	2.0
40 9	15.6	-15 16.6		355 48.3	-18 29.6		341 54.2	-20 34.9		327 45.5	-21 22.5		313 39.2	-20 49.0		299 52.7	-18 58.8	
17 0	14 4.6	-15 19.7	289.0	0 36.8	-18 31.8	-3.1	346 42.5	-20 36.1	288.6	332 33.7	-21 22.6	-2.2	318 27.5	-20 48.0	288.4	304 41.4	-18 56.8	288.7
20	18 53.6	-15 22.8		5 25.4	-18 34.0		351 30.8	-20 37.3		337 21.8	-21 22.6		323 15.9	-20 47.0	1.0	309 30.1	-18 54.7	2.1
40	23 42.6	-15 25.8		10 14.0	-18 36.2		356 19.0	-20 38.5		342 10.0	-21 22.7		328 4.2	-20 45.9		314 18.9	-18 52.7	
18 0	28 31.6	-15 28.9	289.0	15 2.5	-18 38.4	-3.0	1 7.3	-20 39.6	288.6	346 58.2	-21 22.7	-2.2	332 52.6	-20 44.9	288.4	319 7.6	-18 50.6	288.8
20	33 20.5	-15 31.9		19 51.1	-18 40.6		5 55.6	-20 40.8		351 46.4	-21 22.8		337 40.9	-20 43.8	1.1	323 56.4	-18 48.5	2.1
40	38 9.5	-15 34.9		24 39.7	-18 42.8		10 43.8	-20 41.9		356 34.6	-21 22.8		342 29.3	-20 42.7		328 45.1	-18 46.5	
19 0	42 58.5	-15 38.0	289.0	29 28.2	-18 44.9	-3.0	15 32.1	-20 43.0	288.5	1 22.8	-21 22.8	-2.1	347 17.7	-20 41.6	288.4	333 33.9	-18 44.3	288.8
20	47 47.4	-15 41.0		34 16.7	-18 47.1		20 20.3	-20 44.1		6 11.0	-21 22.7		352 6.1	-20 40.4	1.2	338 22.7	-18 42.2	2.1
40	52 36.4	-15 44.0		39 5.3	-18 49.2		25 8.6	-20 45.2		10 59.2	-21 22.7		356 54.4	-20 39.3		343 11.5	-18 40.1	
20 0	57 25.3	-15 47.0	288.9	43 53.8	-18 51.3	-2.9	29 56.9	-20 46.3	288.5	15 47.4	-21 22.6	-2.1	1 42.8	-20 38.1	288.4	348 0.2	-18 38.0	288.8
20	62 14.2	-15 49.9		48 42.3	-18 53.4		34 45.1	-20 47.3		20 35.6	-21 22.6		6 31.2	-20 37.0	1.2	352 49.0	-18 35.8	2.2
40	67 3.2	-15 52.9		53 30.9	-18 55.5		39 33.4	-20 48.4		25 23.7	-21 22.5		11 19.6	-20 35.8		357 37.8	-18 33.6	
21 0	71 52.1	-15 55.8	288.9	58 19.4	-18 57.6	-2.9	44 21.6	-20 49.4	288.5	30 11.9	-21 22.4	-2.0	16 8.0	-20 34.6	288.4	2 26.6	-18 31.5	288.8
20	76 41.0	-15 58.8		63 7.9	-18 59.6		49 9.8	-20 50.4		35 0.1	-21 22.3		20 56.4	-20 33.4	1.2	7 15.5	-18 29.3	2.2
40	81 29.9	-16 1.7		67 56.4	-19 1.7		53 58.1	-20 51.4		39 48.3	-21 22.2		25 44.8	-20 32.1		12 4.3	-18 27.1	
22 0	86 18.8	-16 4.6	288.9	72 44.9	-19 3.7	-2.9	58 46.3	-20 52.4	288.5	44 36.5	-21 22.0	-2.0	30 33.2	-20 30.9	288.4	16 53.1	-18 24.9	288.8
20	91 7.7	-16 7.6		77 33.4	-19 5.7		63 34.6	-20 53.4		49 24.7	-21 21.8		35 21.7	-20 29.6	1.3	21 41.9	-18 22.6	2.3
40	95 56.6	-16 10.5		82 21.9	-19 7.7		68 22.8	-20 54.3		54 12.9	-21 21.7		40 10.1	-20 28.4		26 30.8	-18 20.4	
23 0	100 45.5	-16 13.3	288.9	87 10.4	-19 9.7	-2.9	73 11.0	-20 55.2	288.4	59 1.1	-21 21.5	-2.0	44 58.5	-20 27.1	288.4	31 19.6	-18 18.1	288.9
20	105 34.4	-16 16.2		91 58.9	-19 11.7		77 59.2	-20 56.2		63 49.4	-21 21.3		49 46.9	-20 25.8	1.3	36 8.5	-18 15.9	2.3
40	110 23.3	-16 19.1		96 47.4	-19 13.7		82 47.5	-20 57.1		68 37.6	-21 21.0		54 35.4	-20 24.4		40 57.3	-18 13.6	

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h m	28 Aug GHA	d	28 Aug Dec	d'	29 Aug GHA	d	29 Aug Dec	d'	30 Aug GHA	d	30 Aug Dec	d'	31 Aug GHA	d	31 Aug Dec	d'	1 Sep GHA	d	1 Sep Dec	d'	2 Sep GHA	d	2 Sep Dec	d'
0 0	45 46.2	288.9	-18 11.3		32 43.5	289.4	-14 57.7		20 18.8	289.9	-10 58.1		8 29.0	290.4	-6 29.2		357 7.0	290.7	-1 47.1		346 3.8	290.9	2 53.8	
20	50 35.1		-18 9.0	2.3	37 32.9		-14 54.7	3.1	25 8.7		-10 54.5	3.6	13 19.3		-6 25.4	3.9	1 57.6		-1 43.2	3.9	350 54.7		2 57.7	3.8
40	55 24.0		-18 6.7		42 22.3		-14 51.6		29 58.6		-10 51.0		18 9.7		-6 21.5		6 48.3		-1 39.2		355 45.5		3 1.5	
1 0	60 12.8	288.9	-18 4.4		47 11.7	289.4	-14 48.5		34 48.6	289.9	-10 47.4		23 0.1	290.4	-6 17.6		11 39.0	290.7	-1 35.3		0 36.4	290.9	3 5.3	
20	65 1.7		-18 2.0	2.4	52 1.1		-14 45.5	3.1	39 38.5		-10 43.8	3.6	27 50.4		-6 13.8	3.9	16 29.7		-1 31.4	3.9	5 27.3		3 9.2	3.8
40	69 50.6		-17 59.7		56 50.5		-14 42.4		44 28.4		-10 40.2		32 40.8		-6 9.9		21 20.4		-1 27.4		10 18.2		3 13.0	
2 0	74 39.6	288.9	-17 57.3		61 40.0	289.4	-14 39.3		49 18.4	290.0	-10 36.6		37 31.2	290.4	-6 6.0		26 11.1	290.7	-1 23.5		15 9.1	290.9	3 16.8	
20	79 28.5		-17 55.0	2.4	66 29.4		-14 36.2	3.1	54 8.3		-10 33.0	3.6	42 21.6		-6 2.1	3.9	31 1.8		-1 19.6	3.9	19 60.0		3 20.6	3.8
40	84 17.4		-17 52.6		71 18.9		-14 33.1		58 58.3		-10 29.4		47 12.0		-5 58.3		35 52.5		-1 15.6		24 50.9		3 24.4	
3 0	89 6.3	288.9	-17 50.2		76 8.3	289.5	-14 29.9		63 48.3	290.0	-10 25.8		52 2.4	290.4	-5 54.4		40 43.2	290.7	-1 11.7		29 41.7	290.9	3 28.2	
20	93 55.3		-17 47.8	2.4	80 57.8		-14 26.8	3.1	68 38.2		-10 22.1	3.6	56 52.8		-5 50.5	3.9	45 33.9		-1 7.7	3.9	34 32.6		3 32.0	3.8
40	98 44.2		-17 45.4		85 47.3		-14 23.7		73 28.2		-10 18.5		61 43.2		-5 46.6		50 24.7		-1 3.8		39 23.5		3 35.9	
4 0	103 33.2	289.0	-17 42.9		90 36.7	289.5	-14 20.5		78 18.2	290.0	-10 14.9		66 33.6	290.4	-5 42.7		55 15.4	290.7	-0 59.9		44 14.4	290.9	3 39.7	
20	108 22.1		-17 40.5	2.4	95 26.2		-14 17.4	3.2	83 8.2		-10 11.2	3.6	71 24.0		-5 38.8	3.9	60 6.1		-0 55.9	3.9	49 5.3		3 43.5	3.8
40	113 11.1		-17 38.1		100 15.7		-14 14.2		87 58.2		-10 7.6		76 14.5		-5 34.9		64 56.8		-0 52.0		53 56.2		3 47.3	
5 0	118 0.0	289.0	-17 35.6		105 5.2	289.5	-14 11.0		92 48.2	290.0	-10 4.0		81 4.9	290.4	-5 31.1		69 47.6	290.7	-0 48.1		58 47.1		3 51.0	
20	122 49.0		-17 33.1	2.5	109 54.7		-14 7.9	3.2	97 38.2		-10 0.3	3.7	85 55.3		-5 27.2	3.9	74 38.3		-0 44.1	3.9	63 38.0	290.9	3 54.8	3.8
40	127 38.0		-17 30.6		114 44.3		-14 4.7		102 28.3		-9 56.7		90 45.8		-5 23.3		79 29.0		-0 40.2		68 28.9		3 58.6	
6 0	132 27.0	289.0	-17 28.1		119 33.8	289.5	-14 1.5		107 18.3	290.0	-9 53.0		95 36.2	290.5	-5 19.4		84 19.8	290.7	-0 36.3		73 19.8		4 2.4	
20	137 16.0		-17 25.6	2.5	124 23.3		-13 58.3	3.2	112 8.3		-9 49.3	3.7	100 26.7		-5 15.5	3.9	89 10.5		-0 32.3	3.9	78 10.7	290.9	4 6.2	3.8
40	142 5.0		-17 23.1		129 12.8		-13 55.1		116 58.4		-9 45.7		105 17.1		-5 11.6		94 1.3		-0 28.4		83 1.7		4 10.0	
7 0	146 54.0	289.0	-17 20.6		134 2.4	289.6	-13 51.8		121 48.4	290.1	-9 42.0		110 7.6	290.5	-5 7.7		98 52.0	290.8	-0 24.5		87 52.6		4 13.7	
20	151 43.1		-17 18.0	2.6	138 51.9		-13 48.6	3.2	126 38.5		-9 38.3	3.7	114 58.0		-5 3.7	3.9	103 42.8		-0 20.5	3.9	92 43.5	290.9	4 17.5	3.8
40	156 32.1		-17 15.5		143 41.5		-13 45.4		131 28.5		-9 34.6		119 48.5		-4 59.8		108 33.5		-0 16.6		97 34.4		4 21.3	
8 0	161 21.1	289.1	-17 12.9		148 31.1	289.6	-13 42.1		136 18.6	290.1	-9 30.9		124 39.0	290.5	-4 55.9		113 24.3	290.8	-0 12.7		102 25.3		4 25.0	
20	166 10.2		-17 10.3	2.6	153 20.6		-13 38.9	3.2	141 8.7		-9 27.2	3.7	129 29.5		-4 52.0	3.9	118 15.0		-0 8.8	3.9	107 16.2	290.9	4 28.8	3.8
40	170 59.2		-17 7.8		158 10.2		-13 35.6		145 58.8		-9 23.5		134 19.9		-4 48.1		123 5.8		-0 4.8		112 7.1		4 32.6	
9 0	175 48.3	289.1	-17 5.2		162 59.8	289.6	-13 32.4		150 48.8	290.1	-9 19.8		139 10.4	290.5	-4 44.2		127 56.6	290.8	-0 0.9		116 58.0		4 36.3	
20	180 37.3		-17 2.6	2.6	167 49.4		-13 29.1	3.3	155 38.9		-9 16.1	3.7	144 0.9		-4 40.3	3.9	132 47.3		0 3.0	3.9	121 49.0	290.9	4 40.1	3.8
40	185 26.4		-16 59.9		172 39.0		-13 25.8		160 29.0		-9 12.4		148 51.4		-4 36.4		137 38.1		0 6.9		126 39.9		4 43.8	
10 0	190 15.5	289.1	-16 57.3		177 28.6	289.6	-13 22.5		165 19.1	290.1	-9 8.7		153 41.9	290.5	-4 32.4		142 28.9	290.8	0 10.8		131 30.8		4 47.6	
20	195 4.6		-16 54.7	2.6	182 18.3		-13 19.2	3.3	170 9.3		-9 5.0	3.7	158 32.4		-4 28.5	3.9	147 19.7		0 14.8	3.9	136 21.7	290.9	4 51.3	3.7
40	199 53.7		-16 52.0		187 7.9		-13 15.9		174 59.4		-9 1.2		163 22.9		-4 24.6		152 10.4		0 18.7		141 12.6		4 55.0	
11 0	204 42.8	289.1	-16 49.4		191 57.5	289.6	-13 12.6		179 49.5	290.1	-8 57.5		168 13.5	290.5	-4 20.7		157 1.2	290.8	0 22.6		146 3.6		4 58.8	
20	209 31.9		-16 46.7	2.7	196 47.2		-13 9.3	3.3	184 39.6		-8 53.8	3.7	173 4.0		-4 16.7	3.9	161 52.0		0 26.5	3.9	150 54.5	290.9	5 2.5	3.7
40	214 21.0		-16 44.0		201 36.8		-13 6.0		189 29.8		-8 50.0		177 54.5		-4 12.8		166 42.8		0 30.4		155 45.4		5 6.2	
12 0	219 10.1	289.1	-16 41.3		206 26.5	289.7	-13 2.6		194 19.9	290.2	-8 46.3		182 45.0	290.5	-4 8.9		171 33.6	290.8	0 34.3		160 36.3		5 9.9	
20	223 59.2		-16 38.6	2.7	211 16.1		-12 59.3	3.3	199 10.1		-8 42.6	3.7	187 35.6		-4 5.0	3.9	176 24.4		0 38.2	3.9	165 27.3	290.9	5 13.7	3.7
40	228 48.4		-16 35.9		216 5.8		-12 55.9		204 0.2		-8 38.8		192 26.1		-4 1.0		181 15.2		0 42.1		170 18.2		5 17.4	
13 0	233 37.5	289.2	-16 33.2		220 55.5	289.7	-12 52.6		208 50.4	290.2	-8 35.1		197 16.7	290.6	-3 57.1		186 6.0	290.8	0 46.0		175 9.1		5 21.1	
20	238 26.7		-16 30.4	2.8	225 45.2		-12 49.2	3.4	213 40.5		-8 31.3	3.8	202 7.2		-3 53.2	3.9	190 56.8		0 49.9	3.9	180 0.1	290.9	5 24.8	3.7
40	243 15.8		-16 27.7		230 34.8		-12 45.8		218 30.7		-8 27.5		206 57.8		-3 49.3		195 47.6		0 53.8		184 51.0		5 28.5	
14 0	248 5.0	289.2	-16 24.9		235 24.5	289.7	-12 42.5		223 20.9	290.2	-8 23.8		211 48.3	290.6	-3 45.3		200 38.4	290.8	0 57.7		189 41.9		5 32.2	
20	252 54.2		-16 22.2	2.8	240 14.2		-12 39.1	3.4	228 11.1		-8 20.0	3.8	216 38.9		-3 41.4	3.9	205 29.2		1 1.6	3.9	194 32.9	290.9	5 35.9	3.7
40	257 43.4		-16 19.4		245 4.0		-12 35.7		233 1.3		-8 16.2		221 29.4		-3 37.5		210 20.0		1 5.5		199 23.8		5 39.6	
15 0	262 32.6	289.2	-16 16.6		249 53.7	289.7	-12 32.3		237 51.5	290.2	-8 12.4		226 20.0	290.6	-3 33.5		215 10.9	290.8	1 9.4		204 14.7		5 43.3	
20	267 21.8		-16 13.8	2.8	254 43.4		-12 28.9	3.4	242 41.7		-8 8.7	3.8	231 10.6		-3 29.6	3.9	220 1.7		1 13.3	3.9	209 5.7	290.9	5 47.0	3.7
40	272 11.0		-16 11.0		259 33.1		-12 25.5		247 31.9		-8 4.9		236 1.2		-3 25.6		224 52.5		1 17.2		213 56.6		5 50.6	
16 0	277 0.2	289.2	-16 8.2		264 22.9	289.8	-12 22.1		252 22.1	290.2	-8 1.1		240 51.8	290.6	-3 21.7		229 43.3	290.8	1 21.1		218 47.5		5 54.3	
20	281 49.4		-16 5.4	2.8	269 12.6		-12 18.6	3.4	257 12.3		-7 57.3	3.8	245 42.3		-3 17.8	3.9	234 34.2		1 25.0	3.9	223 38.5	290.9	5 58.0	3.7
40	286 38.6		-16 2.5		274 2.4		-12 15.2		262 2.5		-7 53.5		250 32.9		-3 13.8		239 25.0		1 28.9		228 29.4		6 1.6	
17 0	291 27.9	289.2	-15 59.7		278 52.2	289.8	-12 11.8		266 52.8	290.2	-7 49.7		255 23.5	290.6	-3 9.9		244 15.8	290.8	1 32.8		233 20.4		6 5.3	
20	296 17.1		-15 56.8	2.9	283 41.9		-12 8.3	3.5	271 43.0		-7 45.9	3.8	260 14.1		-3 6.0	3.9	249 6.6		1 36.7	3.9	238 11.3	290.9	6 9.0	3.7
40	301 6.3		-15 54.0		288 31.7		-12 4.9		276 33.3		-7 42.1		265 4.7		-3 2.0		253 57.5		1 40.5		243 2.2		6 12.6	
18 0	305 55.6	289.3	-15 51.1		293 21.5	289.8	-12 1.4		281 23.5	290.3	-7 38.3		269 55.3	290.6	-2 58.1		258 48.3	290.8	1 44.4		247 53.2		6 16.3	
20	310 44.9		-15 48.2	2.9	298 11.3		-11 57.9	3.5	286 13.8		-7 34.5	3.8	274 46.0		-2 54.1	3.9	263 39.2		1 48.3	3.9	252 44.1	290.9	6 19.9	3.6
40	315 34.1		-15 45.3		303 1.1		-11 54.5		291 4.0		-7 30.7		279 36.6		-2 50.2		268 30.0		1 52.2		257 35.1		6 23.6	
19 0	320 23.4	289.3	-15 42.4		307 50.9	289.8	-11 51.0		295 54.3	290.3	-7 26.9		284 27.2	290.6	-2 46.3		273 20.8	290.8	1 56.0		262 26.0		6 27.2	
20	325 12.7		-15 39.5	2.9	312 40.7		-11 47.5	3.5	300 44.6		-7 23.0	3.8	289 17.8		-2 42.3	4.0	278 11.7		1 59.9	3.9	267 17.0	290.9	6 30.8	3.6
40	330 2.0		-15 36.6		317 30.5		-11 44.0		305 34.8		-7 19.2		294 8.4		-2 38.4		283 2.5		2 3.8		272 7.9		6 34.5	
20 0	334 51.3	289.3	-15 33.6		322 20.3	289.8	-11 40.5		310 25.1	290.3	-7 15.4		298 59.1	290.6	-2 34.4		287 53.4	290.9	2 7.6		276 58.8		6 38.1	
20	339 40.6		-15 30.7	2.9	327 10.2		-11 37.0	3.5	315 15.4		-7 11.6	3.8	303 49.7		-2 30.5	3.9	292 44.3		2 11.5	3.9	281 49.8	290.9	6 41.7	3.6
40	344 29.9		-15 27.7		332 0.0		-11 33.5		320 5.7		-7 7.7		308 40.4		-2 26.6		297 35.1		2 15.4		286 40.7		6 45.3	
21 0	349 19.2	289.3	-15 24.8		336 49.9	289.9	-11 30.0		324 56.0	290.3	-7 3.9		313 31.0	290.7	-2 22.6		302 26.0	290.9	2 19.2		291 31.7		6 48.9	
20	354 8.6		-15 21.8	3.0	341 39.7		-11 26.5	3.5	329 46.3		-7 0.0	3.8	318 21.6		-2 18.7	3.9	307 16.8		2 23.1	3.9	296 22.6	290.9	6 52.6	3.6
40	358 57.9		-15 18.8		346 29.6		-11 23.0		334 36.6		-6 56.2		323 12.3		-2 14.7		312 7.7		2 26.9		301 13.6		6 56.2	
22 0	3 47.3	289.4	-15 15.8		351 19.4	289.9	-11 19.4		339 27.0	290.3	-6 52.4		328 3.0	290.7	-2 10.8		316 58.6	290.9	2 30.8		306 4.5		6 59.8	
20	8 36.6		-15 12.8	3.0	356 9.3		-11 15.9	3.5	344 17.3		-6 48.5	3.9	332 53.6		-2 6.8	3.9	321 49.4		2 34.6	3.8	310 55.5	290.9	7 3.4	3.6
40	13 26.0		-15 9.8		0 59.2		-11 12.3		349 7.6		-6 44.7		337 44.3		-2 2.9		326 40.3		2 38.5		315 46.4		7 6.9	
23 0	18 15.3	289.4	-15 6.8		5 49.1	289.9	-11 8.8		353 57.9	290.3	-6 40.8		342 34.9	290.7	-1 59.0		331 31.2	290.9	2 42.3		320 37.4		7 10.5	
20	23 4.7		-15 3.8	3.0	10 39.0		-11 5.2	3.6	358 48.3		-6 37.0	3.9	347 25.6		-1 55.0	4.0	336 22.0		2 46.2	3.8	325 28.3	290.9	7 14.1	3.6
40	27 54.1		-15 0.8		15 28.9		-11 1.7		3 38.6		-6 33.1		352 16.3		-1 51.1		341 12.9		2 50.0		330 19.3		7 17.7	

2012 Moon

h m	3 Sep GHA	3 Sep Dec	d	4 Sep GHA	4 Sep Dec	d	5 Sep GHA	5 Sep Dec	d	6 Sep GHA	6 Sep Dec	d	7 Sep GHA	7 Sep Dec	d	8 Sep GHA	8 Sep Dec	d
0 0	335 10.2	7 21.3		324 17.8	11 24.6		313 19.5	14 54.9		302 10.5	17 44.7		290 48.2	19 47.5		279 12.8	20 58.3	
20	340 1.2	7 24.8	290.9 3.5	329 8.7	11 27.7	290.9 3.2	318 10.3	14 57.6	290.8 2.6	307 1.1	17 46.7	290.6 2.0	295 38.6	19 48.9	290.4 1.3	284 3.1	20 58.9	290.3 0.6
40	344 52.1	7 28.4		333 59.6	11 30.9		323 1.1	15 0.2		311 51.7	17 48.8		300 29.0	19 50.2		288 53.4	20 59.4	
1 0	349 43.1	7 31.9		338 50.5	11 34.1		327 51.9	15 2.8		316 42.3	17 50.8		305 19.5	19 51.5		293 43.6	21 0.0	
20	354 34.0	7 35.5	290.9 3.6	343 41.4	11 37.2	290.9 3.1	332 42.7	15 5.5	290.8 2.6	321 32.9	17 52.8	290.6 2.0	310 9.9	19 52.9	290.4 1.3	298 33.9	21 0.6	290.3 0.6
40	359 24.9	7 39.0		348 32.3	11 40.3		337 33.4	15 8.1		326 23.5	17 54.8		315 0.3	19 54.2		303 24.1	21 1.1	
2 0	4 15.9	7 42.6		353 23.2	11 43.5		342 24.2	15 10.7		331 14.1	17 56.8		319 50.7	19 55.5		308 14.4	21 1.7	
20	9 6.8	7 46.1	290.9 3.5	358 14.1	11 46.6	290.9 3.1	347 15.0	15 13.3	290.8 2.6	336 4.7	17 58.8	290.6 2.0	324 41.1	19 56.8	290.4 1.3	313 4.6	21 2.2	290.2 0.5
40	13 57.8	7 49.7		3 5.0	11 49.7		352 5.8	15 15.9		340 55.3	18 0.7		329 31.5	19 58.0		317 54.9	21 2.7	
3 0	18 48.7	7 53.2		7 55.9	11 52.8		356 56.5	15 18.5		345 45.9	18 2.7		334 22.0	19 59.3		322 45.1	21 3.2	
20	23 39.7	7 56.7	290.9 3.5	12 46.8	11 55.9	290.9 3.1	1 47.3	15 21.1	290.8 2.6	350 36.5	18 4.7	290.6 2.0	339 12.4	20 0.6	290.4 1.2	327 35.4	21 3.7	290.2 0.5
40	28 30.6	8 0.2		17 37.7	11 59.1		6 38.1	15 23.6		355 27.1	18 6.6		344 2.8	20 1.8		332 25.6	21 4.2	
4 0	33 21.6	8 3.7		22 28.6	12 2.1		11 28.9	15 26.2		0 17.7	18 8.6		348 53.2	20 3.0		337 15.8	21 4.7	
20	38 12.5	8 7.2	290.9 3.5	27 19.5	12 5.2	290.9 3.1	16 19.6	15 28.8	290.8 2.5	5 8.3	18 10.5	290.6 1.9	353 43.6	20 4.3	290.4 1.2	342 6.1	21 5.2	290.2 0.5
40	43 3.5	8 10.8		32 10.4	12 8.3		21 10.4	15 31.3		9 58.9	18 12.4		358 34.0	20 5.5		346 56.3	21 5.6	
5 0	47 54.4	8 14.3		37 1.3	12 11.4		26 1.1	15 33.8		14 49.5	18 14.3		3 24.3	20 6.7		351 46.5	21 6.1	
20	52 45.4	8 17.7	290.9 3.5	41 52.2	12 14.5	290.9 3.1	30 51.9	15 36.4	290.8 2.5	19 40.0	18 16.2	290.6 1.9	8 14.7	20 7.9	290.4 1.2	356 36.8	21 6.5	290.2 0.4
40	57 36.3	8 21.2		46 43.1	12 17.5		35 42.7	15 38.9		24 30.6	18 18.1		13 5.1	20 9.1		1 27.0	21 6.9	
6 0	62 27.3	8 24.7		51 34.0	12 20.6		40 33.4	15 41.4		29 21.2	18 20.0		17 55.5	20 10.3		6 17.2	21 7.3	
20	67 18.2	8 28.2	290.9 3.5	56 24.9	12 23.6	290.9 3.0	45 24.2	15 43.9	290.7 2.5	34 11.7	18 21.9	290.6 1.9	22 45.9	20 11.4	290.4 1.1	11 7.5	21 7.7	290.2 0.4
40	72 9.2	8 31.7		61 15.8	12 26.7		50 14.9	15 46.4		39 2.3	18 23.8		27 36.3	20 12.6		15 57.7	21 8.1	
7 0	77 0.1	8 35.1		66 6.6	12 29.7		55 5.6	15 48.9		43 52.9	18 25.6		32 26.7	20 13.7		20 47.9	21 8.5	
20	81 51.1	8 38.6	290.9 3.5	70 57.5	12 32.7	290.9 3.0	59 56.4	15 51.4	290.7 2.5	48 43.4	18 27.5	290.6 1.8	37 17.0	20 14.9	290.4 1.1	25 38.1	21 8.9	290.2 0.4
40	86 42.0	8 42.1		75 48.4	12 35.7		64 47.1	15 53.9		53 34.0	18 29.3		42 7.4	20 16.0		30 28.3	21 9.2	
8 0	91 33.0	8 45.5		80 39.3	12 38.8		69 37.9	15 56.3		58 24.6	18 31.1		46 57.8	20 17.1		35 18.6	21 9.6	
20	96 23.9	8 49.0	290.9 3.4	85 30.2	12 41.8	290.9 3.0	74 28.6	15 58.8	290.7 2.5	63 15.1	18 32.9	290.6 1.8	51 48.1	20 18.2	290.4 1.1	40 8.8	21 9.9	290.2 0.3
40	101 14.9	8 52.4		90 21.0	12 44.8		79 19.3	16 1.2		68 5.7	18 34.7		56 38.5	20 19.3		44 59.0	21 10.2	
9 0	106 5.8	8 55.8		95 11.9	12 47.8		84 10.1	16 3.7		72 56.2	18 36.5		61 28.9	20 20.4		49 49.2	21 10.5	
20	110 56.8	8 59.3	290.9 3.4	100 2.8	12 50.7	290.9 3.0	89 0.8	16 6.1	290.7 2.4	77 46.8	18 38.3	290.5 1.8	66 19.2	20 21.5	290.4 1.1	54 39.4	21 10.8	290.2 0.3
40	115 47.7	9 2.7		104 53.7	12 53.7		93 51.5	16 8.5		82 37.3	18 40.1		71 9.6	20 22.5		59 29.6	21 11.1	
10 0	120 38.7	9 6.1		109 44.5	12 56.7		98 42.3	16 11.0		87 27.8	18 41.9		75 59.9	20 23.6		64 19.8	21 11.4	
20	125 29.6	9 9.5	290.9 3.4	114 35.4	12 59.7	290.9 3.0	103 33.0	16 13.4	290.7 2.4	92 18.4	18 43.7	290.5 1.7	80 50.3	20 24.6	290.4 1.0	69 10.0	21 11.7	290.2 0.3
40	130 20.6	9 12.9		119 26.3	13 2.6		108 23.7	16 15.8		97 8.9	18 45.4		85 40.7	20 25.7		74 0.2	21 11.9	
11 0	135 11.5	9 16.3		124 17.1	13 5.6		113 14.4	16 18.2		101 59.5	18 47.1		90 31.0	20 26.7		78 50.4	21 12.2	
20	140 2.4	9 19.7	290.9 3.4	129 8.0	13 8.5	290.9 2.9	118 5.1	16 20.5	290.7 2.4	106 50.0	18 48.9	290.5 1.7	95 21.4	20 27.7	290.3 1.0	83 40.6	21 12.4	290.2 0.2
40	144 53.4	9 23.1		133 58.9	13 11.4		122 55.8	16 22.9		111 40.5	18 50.6		100 11.7	20 28.7		88 30.8	21 12.6	
12 0	149 44.3	9 26.5		138 49.7	13 14.4		127 46.6	16 25.3		116 31.0	18 52.3		105 2.0	20 29.7		93 21.0	21 12.8	
20	154 35.3	9 29.9	290.9 3.4	143 40.6	13 17.3	290.9 2.9	132 37.3	16 27.6	290.7 2.3	121 21.6	18 54.0	290.5 1.7	109 52.4	20 30.7	290.3 1.0	98 11.2	21 13.0	290.2 0.2
40	159 26.2	9 33.3		148 31.5	13 20.2		137 28.0	16 30.0		126 12.1	18 55.7		114 42.7	20 31.6		103 1.4	21 13.2	
13 0	164 17.2	9 36.6		153 22.3	13 23.1		142 18.7	16 32.3		131 2.6	18 57.4		119 33.0	20 32.6		107 51.6	21 13.4	
20	169 8.1	9 40.0	290.9 3.4	158 13.2	13 26.0	290.9 2.9	147 9.4	16 34.7	290.7 2.3	135 53.1	18 59.1	290.5 1.7	124 23.4	20 33.5	290.3 0.9	112 41.8	21 13.6	290.2 0.2
40	173 59.0	9 43.4		163 4.0	13 28.9		152 0.1	16 37.0		140 43.6	19 0.7		129 13.7	20 34.5		117 32.0	21 13.7	
14 0	178 50.0	9 46.7		167 54.9	13 31.8		156 50.8	16 39.3		145 34.1	19 2.4		134 4.0	20 35.4		122 22.2	21 13.9	
20	183 40.9	9 50.1	290.9 3.4	172 45.7	13 34.7	290.8 2.9	161 41.5	16 41.6	290.7 2.3	150 24.6	19 4.0	290.5 1.6	138 54.4	20 36.3	290.3 0.9	127 12.3	21 14.0	290.2 0.1
40	188 31.8	9 53.4		177 36.6	13 37.5		166 32.1	16 43.9		155 15.1	19 5.7		143 44.7	20 37.2		132 2.5	21 14.1	
15 0	193 22.8	9 56.8		182 27.4	13 40.4		171 22.8	16 46.2		160 5.6	19 7.3		148 35.0	20 38.1		136 52.7	21 14.3	
20	198 13.7	10 0.1	290.9 3.3	187 18.3	13 43.3	290.8 2.9	176 13.5	16 48.5	290.7 2.3	164 56.1	19 8.9	290.5 1.6	153 25.3	20 39.0	290.3 0.9	141 42.9	21 14.4	290.2 0.1
40	203 4.7	10 3.4		192 9.1	13 46.1		181 4.2	16 50.7		169 46.6	19 10.5		158 15.6	20 39.9		146 33.1	21 14.5	
16 0	207 55.6	10 6.7		196 59.9	13 49.0		185 54.9	16 53.0		174 37.1	19 12.1		163 6.0	20 40.7		151 23.2	21 14.5	
20	212 46.5	10 10.0	290.9 3.3	201 50.8	13 51.8	290.8 2.8	190 45.6	16 55.3	290.7 2.2	179 27.6	19 13.7	290.5 1.6	167 56.3	20 41.6	290.3 0.9	156 13.4	21 14.6	290.2 0.1
40	217 37.5	10 13.3		206 41.6	13 54.6		195 36.2	16 57.5		184 18.1	19 15.3		172 46.6	20 42.4		161 3.6	21 14.7	
17 0	222 28.4	10 16.7		211 32.4	13 57.4		200 26.9	16 59.7		189 8.6	19 16.9		177 36.9	20 43.3		165 53.8	21 14.7	
20	227 19.3	10 19.9	290.9 3.3	216 23.3	14 0.3	290.8 2.8	205 17.6	17 2.0	290.7 2.2	193 59.1	19 18.4	290.5 1.5	182 27.2	20 44.1	290.3 0.8	170 43.9	21 14.7	290.2 0.0
40	232 10.3	10 23.2		221 14.1	14 3.1		210 8.3	17 4.2		198 49.6	19 20.0		187 17.5	20 44.9		175 34.1	21 14.8	
18 0	237 1.2	10 26.5		226 4.9	14 5.9		214 58.9	17 6.4		203 40.0	19 21.5		192 7.8	20 45.7		180 24.3	21 14.8	
20	241 52.1	10 29.8	290.9 3.3	230 55.8	14 8.6	290.8 2.8	219 49.6	17 8.6	290.7 2.2	208 30.5	19 23.0	290.5 1.5	196 58.1	20 46.5	290.3 0.8	185 14.4	21 14.8	290.2 0.0
40	246 43.0	10 33.1		235 46.6	14 11.4		224 40.2	17 10.8		213 21.0	19 24.6		201 48.4	20 47.3		190 4.6	21 14.8	
19 0	251 34.0	10 36.3		240 37.4	14 14.2		229 30.9	17 13.0		218 11.5	19 26.1		206 38.7	20 48.0		194 54.8	21 14.8	
20	256 24.9	10 39.6	290.9 3.3	245 28.2	14 17.0	290.8 2.8	234 21.6	17 15.2	290.7 2.2	223 1.9	19 27.6	290.5 1.5	211 29.0	20 48.8	290.3 0.8	199 44.9	21 14.7	290.2 -0.1
40	261 15.8	10 42.8		250 19.0	14 19.7		239 12.2	17 17.3		227 52.4	19 29.1		216 19.3	20 49.5		204 35.1	21 14.7	
20 0	266 6.8	10 46.1		255 9.9	14 22.5		244 2.9	17 19.5		232 42.8	19 30.5		221 9.6	20 50.3		209 25.2	21 14.6	
20	270 57.7	10 49.3	290.9 3.2	260 0.7	14 25.2	290.8 2.7	248 53.5	17 21.6	290.6 2.1	237 33.3	19 32.0	290.5 1.5	225 59.8	20 51.0	290.3 0.7	214 15.4	21 14.6	290.2 -0.1
40	275 48.6	10 52.6		264 51.5	14 28.0		253 44.2	17 23.8		242 23.8	19 33.5		230 50.1	20 51.7		219 5.5	21 14.5	
21 0	280 39.5	10 55.8		269 42.3	14 30.7		258 34.8	17 25.9		247 14.2	19 34.9		235 40.4	20 52.4		223 55.7	21 14.4	
20	285 30.4	10 59.0	290.9 3.2	274 33.1	14 33.4	290.8 2.7	263 25.4	17 28.0	290.6 2.1	252 4.7	19 36.4	290.4 1.4	240 30.7	20 53.1	290.3 0.7	228 45.9	21 14.3	290.2 -0.1
40	290 21.4	11 2.2		279 23.9	14 36.1		268 16.1	17 30.1		256 55.1	19 37.8		245 21.0	20 53.8		233 36.0	21 14.2	
22 0	295 12.3	11 5.4		284 14.7	14 38.8		273 6.7	17 32.2		261 45.6	19 39.2		250 11.2	20 54.5		238 26.2	21 14.1	
20	300 3.2	11 8.7	290.9 3.2	289 5.5	14 41.5	290.8 2.7	277 57.3	17 34.3	290.6 2.1	266 36.0	19 40.6	290.4 1.4	255 1.5	20 55.1	290.3 0.6	243 16.3	21 13.9	290.1 -0.2
40	304 54.1	11 11.9		293 56.3	14 44.2		282 48.0	17 36.4		271 26.4	19 42.0		259 51.8	20 55.8		248 6.5	21 13.8	
23 0	309 45.0	11 15.0		298 47.1	14 46.9		287 38.6	17 38.5		276 16.9	19 43.4		264 42.1	20 56.4		252 56.6	21 13.6	
20	314 36.0	11 18.2	290.9 3.2	303 37.9	14 49.6	290.8 2.7	292 29.2	17 40.6	290.6 2.1	281 7.3	19 44.8	290.4 1.4	269 32.3	20 57.0	290.3 0.6	257 46.7	21 13.5	290.1 -0.2
40	319 26.9	11 21.4		308 28.7	14 52.2		297 19.9	17 42.6		285 57.8	19 46.2		274 22.6	20 57.7		262 36.9	21 13.3	

h m	9 Sep GHA	9 Sep Dec	d	10 Sep GHA	10 Sep Dec	d	11 Sep GHA	11 Sep Dec	d	12 Sep GHA	12 Sep Dec	d	13 Sep GHA	13 Sep Dec	d	14 Sep GHA	14 Sep Dec	d
0 0	267 27.0	21 13.1		255 34.9	20 30.0		243 41.0	18 48.8		231 48.6	16 11.9		219 58.7	12 44.1		208 9.6	8 33.2	
20	272 17.2	21 12.9	-0.2	260 25.0	20 29.0	-1.0	248 31.1	18 47.0	-1.8	236 38.7	16 9.3	-2.6	224 48.9	12 40.9	-3.2	212 59.7	8 29.5	-3.7
40	277 7.3	21 12.7	290.1	265 15.1	20 27.9	290.1	253 21.2	18 45.2	290.1	241 28.8	16 6.8	290.2	229 39.0	12 37.7	290.2	217 49.9	8 25.7	290.1
1 0	281 57.5	21 12.5		270 5.2	20 26.9		258 11.3	18 43.3		246 19.0	16 4.2		234 29.2	12 34.5		222 40.0	8 22.0	
20	286 47.6	21 12.2	-0.3	274 55.3	20 25.9	-1.1	263 1.4	18 41.5	-1.8	251 9.1	16 1.6	-2.6	239 19.3	12 31.3	-3.2	227 30.1	8 18.2	-3.8
40	291 37.7	21 12.0	290.1	279 45.4	20 24.8	290.1	267 51.5	18 39.7	290.1	255 59.2	15 59.0	290.2	244 9.5	12 28.0	290.2	232 20.3	8 14.5	290.1
2 0	296 27.9	21 11.7		284 35.5	20 23.7		272 41.6	18 37.8		260 49.3	15 56.4		248 59.7	12 24.8		237 10.4	8 10.7	
20	301 18.0	21 11.5	-0.3	289 25.5	20 22.7	-1.1	277 31.6	18 35.9	-1.9	265 39.5	15 53.8	-2.6	253 49.8	12 21.5	-3.3	242 0.5	8 6.9	-3.8
40	306 8.1	21 11.2	290.1	294 15.6	20 21.6	290.1	282 21.7	18 34.0	290.1	270 29.6	15 51.2	290.2	258 40.0	12 18.2	290.2	246 50.6	8 3.1	290.1
3 0	310 58.3	21 10.9		299 5.7	20 20.5		287 11.8	18 32.2		275 19.7	15 48.6		263 30.1	12 15.0		251 40.8	7 59.3	
20	315 48.4	21 10.6	-0.3	303 55.8	20 19.4	-1.1	292 1.9	18 30.3	-1.9	280 9.9	15 45.9	-2.7	268 20.3	12 11.7	-3.3	256 30.9	7 55.5	-3.8
40	320 38.5	21 10.3	290.1	308 45.9	20 18.2	290.1	296 52.0	18 28.3	290.1	284 60.0	15 43.3	290.2	273 10.4	12 8.4	290.2	261 21.0	7 51.7	290.1
4 0	325 28.7	21 10.0		313 36.0	20 17.1		301 42.1	18 26.4		289 50.1	15 40.6		278 0.6	12 5.1		266 11.2	7 47.9	
20	330 18.8	21 9.6	-0.4	318 26.0	20 16.0	-1.2	306 32.2	18 24.5	-1.9	294 40.2	15 38.0	-2.7	282 50.7	12 1.8	-3.3	271 1.3	7 44.1	-3.8
40	335 8.9	21 9.3	290.1	323 16.1	20 14.8	290.1	311 22.3	18 22.5	290.1	299 30.4	15 35.3	290.2	287 40.9	11 58.4	290.2	275 51.4	7 40.3	290.1
5 0	339 59.0	21 8.9		328 6.2	20 13.6		316 12.4	18 20.6		304 20.5	15 32.6		292 31.0	11 55.1		280 41.5	7 36.4	
20	344 49.2	21 8.6	-0.4	332 56.3	20 12.5	-1.2	321 2.5	18 18.6	-2.0	309 10.6	15 29.9	-2.7	297 21.2	11 51.8	-3.3	285 31.7	7 32.6	-3.8
40	349 39.3	21 8.2	290.1	337 46.4	20 11.3	290.1	325 52.6	18 16.6	290.1	314 0.8	15 27.2	290.2	302 11.4	11 48.4	290.2	290 21.8	7 28.8	290.1
6 0	354 29.4	21 7.8		342 36.5	20 10.1		330 42.7	18 14.7		318 50.9	15 24.5		307 1.5	11 45.1		295 11.9	7 24.9	
20	359 19.5	21 7.4	-0.4	347 26.5	20 8.9	-1.2	335 32.8	18 12.7	-2.0	323 41.0	15 21.8	-2.7	311 51.7	11 41.7	-3.4	300 2.0	7 21.1	-3.8
40	4 9.7	21 7.0	290.1	352 16.6	20 7.6	290.1	340 22.9	18 10.6	290.1	328 31.2	15 19.0	290.2	316 41.8	11 38.4	290.2	304 52.2	7 17.2	290.1
7 0	8 59.8	21 6.6		357 6.7	20 6.4		345 13.0	18 8.6		333 21.3	15 16.3		321 32.0	11 35.0		309 42.3	7 13.4	
20	13 49.9	21 6.1	-0.5	1 56.8	20 5.1	-1.3	350 3.1	18 6.6	-2.0	338 11.4	15 13.5	-2.8	326 22.1	11 31.6	-3.4	314 32.4	7 9.5	-3.9
40	18 40.0	21 5.7	290.1	6 46.9	20 3.9	290.1	354 53.2	18 4.6	290.1	343 1.6	15 10.8	290.2	331 12.3	11 28.2	290.2	319 22.5	7 5.6	290.1
8 0	23 30.1	21 5.2		11 37.0	20 2.6		359 43.3	18 2.5		347 51.7	15 8.0		336 2.4	11 24.8		324 12.6	7 1.7	
20	28 20.3	21 4.7	-0.5	16 27.0	20 1.3	-1.3	4 33.4	18 0.4	-2.1	352 41.9	15 5.2	-2.8	340 52.6	11 21.4	-3.4	329 2.7	6 57.9	-3.9
40	33 10.4	21 4.3	290.1	21 17.1	20 0.1	290.1	9 23.5	17 58.4	290.1	357 32.0	15 2.4	290.2	345 42.8	11 18.0	290.2	333 52.8	6 54.0	290.1
9 0	38 0.5	21 3.8		26 7.2	19 58.8		14 13.6	17 56.3		2 22.1	14 59.6		350 32.9	11 14.6		338 43.0	6 50.1	
20	42 50.6	21 3.3	-0.5	30 57.3	19 57.4	-1.3	19 3.7	17 54.2	-2.1	7 12.3	14 56.8	-2.8	355 23.1	11 11.2	-3.4	343 33.1	6 46.2	-3.9
40	47 40.7	21 2.8	290.1	35 47.4	19 56.1	290.1	23 53.8	17 52.1	290.1	12 2.4	14 54.0	290.2	0 13.2	11 7.7	290.2	348 23.2	6 42.3	290.1
10 0	52 30.8	21 2.2		40 37.5	19 54.8		28 43.9	17 50.0		16 52.5	14 51.1		5 3.4	11 4.3		353 13.3	6 38.4	
20	57 20.9	21 1.7	-0.5	45 27.5	19 53.4	-1.4	33 34.0	17 47.8	-2.1	21 42.7	14 48.3	-2.8	9 53.5	11 0.8	-3.5	358 3.4	6 34.4	-3.9
40	62 11.0	21 1.1	290.1	50 17.6	19 52.1	290.1	38 24.1	17 45.7	290.1	26 32.8	14 45.5	290.2	14 43.7	10 57.4	290.2	2 53.5	6 30.5	290.1
11 0	67 1.2	21 0.6		55 7.7	19 50.7		43 14.2	17 43.6		31 23.0	14 42.6		19 33.8	10 53.9		7 43.6	6 26.6	
20	71 51.3	21 0.0	-0.6	59 57.8	19 49.3	-1.4	48 4.3	17 41.4	-2.2	36 13.1	14 39.7	-2.9	24 24.0	10 50.5	-3.5	12 33.7	6 22.7	-3.9
40	76 41.4	20 59.4	290.1	64 47.9	19 47.9	290.1	52 54.4	17 39.2	290.1	41 3.2	14 36.9	290.2	29 14.1	10 47.0	290.2	17 23.8	6 18.7	290.1
12 0	81 31.5	20 58.8		69 37.9	19 46.5		57 44.5	17 37.1		45 53.4	14 34.0		34 4.3	10 43.5		22 13.9	6 14.8	
20	86 21.6	20 58.2	-0.6	74 28.0	19 45.1	-1.4	62 34.6	17 34.9	-2.2	50 43.5	14 31.1	-2.9	38 54.4	10 40.0	-3.5	27 4.0	6 10.8	-4.0
40	91 11.7	20 57.6	290.1	79 18.1	19 43.7	290.1	67 24.7	17 32.7	290.1	55 33.7	14 28.2	290.2	43 44.6	10 36.5	290.2	31 54.1	6 6.9	290.1
13 0	96 1.8	20 57.0		84 8.2	19 42.3		72 14.8	17 30.5		60 23.8	14 25.3		48 34.8	10 33.0		36 44.2	6 2.9	
20	100 51.9	20 56.3	-0.7	88 58.3	19 40.8	-1.5	77 4.9	17 28.3	-2.2	65 14.0	14 22.3	-2.9	53 24.9	10 29.5	-3.5	41 34.3	5 59.0	-4.0
40	105 42.0	20 55.7	290.1	93 48.4	19 39.4	290.1	81 55.0	17 26.0	290.1	70 4.1	14 19.4	290.2	58 15.1	10 25.9	290.2	46 24.4	5 55.0	290.1
14 0	110 32.1	20 55.0		98 38.4	19 37.9		86 45.1	17 23.8		74 54.2	14 16.5		63 5.2	10 22.4		51 14.5	5 51.0	
20	115 22.2	20 54.4	-0.7	103 28.5	19 36.4	-1.5	91 35.2	17 21.5	-2.3	79 44.4	14 13.5	-3.0	67 55.4	10 18.9	-3.5	56 4.6	5 47.1	-4.0
40	120 12.3	20 53.7	290.1	108 18.6	19 34.9	290.1	96 25.3	17 19.3	290.1	84 34.5	14 10.6	290.2	72 45.5	10 15.3	290.2	60 54.7	5 43.1	290.1
15 0	125 2.4	20 53.0		113 8.7	19 33.4		101 15.4	17 17.0		89 24.7	14 7.6		77 35.7	10 11.8		65 44.8	5 39.1	
20	129 52.5	20 52.3	-0.7	117 58.8	19 31.9	-1.5	106 5.6	17 14.7	-2.3	94 14.8	14 4.6	-3.0	82 25.8	10 8.2	-3.6	70 34.8	5 35.1	-4.0
40	134 42.6	20 51.6	290.1	122 48.9	19 30.4	290.1	110 55.7	17 12.4	290.1	99 5.0	14 1.6	290.2	87 16.0	10 4.6	290.2	75 24.9	5 31.1	290.1
16 0	139 32.7	20 50.8		127 38.9	19 28.9		115 45.8	17 10.1		103 55.1	13 58.6		92 6.1	10 1.1		80 15.0	5 27.1	
20	144 22.8	20 50.1	-0.7	132 29.0	19 27.3	-1.6	120 35.9	17 7.8	-2.3	108 45.3	13 55.6	-3.0	96 56.3	9 57.5	-3.6	85 5.1	5 23.1	-4.0
40	149 12.9	20 49.3	290.1	137 19.1	19 25.8	290.1	125 26.0	17 5.5	290.1	113 35.4	13 52.6	290.2	101 46.4	9 53.9	290.1	89 55.2	5 19.1	290.1
17 0	154 3.0	20 48.6		142 9.2	19 24.2		130 16.1	17 3.2		118 25.6	13 49.6		106 36.6	9 50.3		94 45.2	5 15.1	
20	158 53.1	20 47.8	-0.8	146 59.3	19 22.6	-1.6	135 6.2	17 0.8	-2.4	123 15.7	13 46.6	-3.0	111 26.7	9 46.7	-3.6	99 35.3	5 11.1	-4.0
40	163 43.2	20 47.0	290.1	151 49.4	19 21.0	290.1	139 56.3	16 58.5	290.1	128 5.9	13 43.5	290.2	116 16.9	9 43.1	290.1	104 25.4	5 7.0	290.1
18 0	168 33.3	20 46.2		156 39.4	19 19.4		144 46.5	16 56.1		132 56.0	13 40.5		121 7.0	9 39.5		109 15.5	5 3.0	
20	173 23.4	20 45.4	-0.8	161 29.5	19 17.8	-1.6	149 36.6	16 53.8	-2.4	137 46.2	13 37.4	-3.1	125 57.2	9 35.8	-3.6	114 5.5	4 59.0	-4.0
40	178 13.5	20 44.6	290.1	166 19.6	19 16.2	290.1	154 26.7	16 51.4	290.1	142 36.3	13 34.4	290.2	130 47.3	9 32.2	290.1	118 55.6	4 54.9	290.1
19 0	183 3.6	20 43.8		171 9.7	19 14.6		159 16.8	16 49.0		147 26.5	13 31.3		135 37.5	9 28.6		123 45.7	4 50.9	
20	187 53.7	20 42.9	-0.9	175 59.8	19 12.9	-1.7	164 6.9	16 46.6	-2.4	152 16.6	13 28.2	-3.1	140 27.6	9 24.9	-3.7	128 35.7	4 46.9	-4.0
40	192 43.8	20 42.1	290.1	180 49.9	19 11.3	290.1	168 57.0	16 44.2	290.1	157 6.8	13 25.1	290.2	145 17.7	9 21.3	290.1	133 25.8	4 42.8	290.1
20 0	197 33.9	20 41.2		185 40.0	19 9.6		173 47.1	16 41.7		161 56.9	13 22.0		150 7.9	9 17.6		138 15.9	4 38.8	
20	202 24.0	20 40.3	-0.9	190 30.0	19 7.9	-1.7	178 37.3	16 39.3	-2.4	166 47.1	13 18.9	-3.1	154 58.0	9 14.0	-3.7	143 5.9	4 34.7	-4.1
40	207 14.0	20 39.4	290.1	195 20.1	19 6.3	290.1	183 27.4	16 36.9	290.1	171 37.2	13 15.8	290.2	159 48.2	9 10.3	290.1	147 56.0	4 30.6	290.1
21 0	212 4.1	20 38.5		200 10.2	19 4.6		188 17.5	16 34.4		176 27.4	13 12.7		164 38.3	9 6.6		152 46.0	4 26.6	
20	216 54.2	20 37.6	-0.9	205 0.3	19 2.9	-1.7	193 7.6	16 32.0	-2.5	181 17.5	13 9.5	-3.2	169 28.5	9 2.9	-3.7	157 36.1	4 22.5	-4.1
40	221 44.3	20 36.7	290.1	209 50.4	19 1.1	290.1	197 57.7	16 29.5	290.1	186 7.7	13 6.4	290.2	174 18.6	8 59.2	290.1	162 26.2	4 18.4	290.1
22 0	226 34.4	20 35.8		214 40.5	18 59.4		202 47.9	16 27.0		190 57.8	13 3.2		179 8.7	8 55.5		167 16.2	4 14.4	
20	231 24.5	20 34.8	-1.0	219 30.6	18 57.7	-1.8	207 38.0	16 24.5	-2.5	195 48.0	13 0.1	-3.2	183 58.9	8 51.8	-3.7	172 6.3	4 10.3	-4.1
40	236 14.6	20 33.9	290.1	224 20.7	18 55.9	290.1	212 28.1	16 22.0	290.1	200 38.1	12 56.9	290.2	188 49.0	8 48.1	290.1	176 56.3	4 6.2	290.0
23 0	241 4.7	20 32.9		229 10.7	18 54.1		217 18.2	16 19.5		205 28.3	12 53.7		193 39.2	8 44.4		181 46.3	4 2.1	
20	245 54.8	20 31.9	-1.0	234 0.8	18 52.4	-1.8	222 8.3	16 17.0	-2.5	210 18.4	12 50.5	-3.2	198 29.3	8 40.7	-3.7	186 36.4	3 58.0	-4.1
40	250 44.8	20 31.0	290.1	238 50.9	18 50.6	290.1	226 58.5	16 14.4	290.1	215 8.6	12 47.3	290.2	203 19.4	8 37.0	290.1	191 26.4	3 53.9	290.0

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h m	15 Sep GHA	15 Sep Dec	d	16 Sep GHA	16 Sep Dec	d	17 Sep GHA	17 Sep Dec	d	18 Sep GHA	18 Sep Dec	d	19 Sep GHA	19 Sep Dec	d	20 Sep GHA	20 Sep Dec	d
0 0	196 16.5	3 49.8		184 12.5	-1 12.3		171 49.7	-6 16.2		159 0.8	-11 2.9		145 41.1	-15 12.2		131 52.0	-18 25.2	
20	201 6.5	3 45.7	290.0 -4.1	189 2.4	-1 16.5	289.8 -4.2	176 39.3	-6 20.4	289.5 -4.1	163 49.9	-11 6.7	289.1 -3.8	150 29.8	-15 15.3	288.7 -3.1	136 40.3	-18 27.4	288.3 -2.2
40	205 56.5	3 41.6		193 52.2	-1 20.8		181 28.8	-6 24.5		168 39.0	-11 10.4		155 18.5	-15 18.4		141 28.6	-18 29.6	
1 0	210 46.6	3 37.5		198 42.0	-1 25.0		186 18.3	-6 28.6		173 28.1	-11 14.2		160 7.1	-15 21.5		146 16.9	-18 31.7	
20	215 36.6	3 33.4	290.0 -4.1	203 31.8	-1 29.3	289.8 -4.3	191 7.8	-6 32.8	289.5 -4.1	178 17.2	-11 17.9	289.1 -3.7	164 55.8	-15 24.6	288.7 -3.1	151 5.2	-18 33.9	288.3 -2.2
40	220 26.6	3 29.3		208 21.6	-1 33.5		195 57.3	-6 36.9		183 6.2	-11 21.6		169 44.5	-15 27.6		155 53.4	-18 36.1	
2 0	225 16.7	3 25.1		213 11.5	-1 37.8		200 46.7	-6 41.0		187 55.3	-11 25.4		174 33.1	-15 30.7		160 41.7	-18 38.2	
20	230 6.7	3 21.0	290.0 -4.1	218 1.3	-1 42.0	289.8 -4.2	205 36.2	-6 45.2	289.5 -4.1	192 44.4	-11 29.1	289.1 -3.7	179 21.7	-15 33.7	288.6 -3.0	165 30.0	-18 40.3	288.3 -2.1
40	234 56.7	3 16.9		222 51.1	-1 46.3		210 25.7	-6 49.3		197 33.5	-11 32.8		184 10.4	-15 36.7		170 18.3	-18 42.4	
3 0	239 46.7	3 12.8		227 40.9	-1 50.5		215 15.2	-6 53.4		202 22.5	-11 36.5		188 59.0	-15 39.8		175 6.6	-18 44.5	
20	244 36.7	3 8.6	290.0 -4.2	232 30.7	-1 54.8	289.8 -4.3	220 4.6	-6 57.5	289.5 -4.1	207 11.6	-11 40.2	289.0 -3.7	193 47.6	-15 42.8	288.6 -3.0	179 54.8	-18 46.6	288.3 -2.1
40	249 26.8	3 4.5		237 20.5	-1 59.0		224 54.1	-7 1.6		212 0.6	-11 43.9		198 36.3	-15 45.8		184 43.1	-18 48.7	
4 0	254 16.8	3 0.3		242 10.2	-2 3.3		229 43.6	-7 5.7		216 49.7	-11 47.6		203 24.9	-15 48.7		189 31.4	-18 50.7	
20	259 6.8	2 56.2	290.0 -4.1	247 0.0	-2 7.5	289.8 -4.2	234 33.0	-7 9.8	289.4 -4.1	221 38.7	-11 51.3	289.0 -3.7	208 13.5	-15 51.7	288.6 -3.0	194 19.6	-18 52.7	288.3 -2.0
40	263 56.8	2 52.1		251 49.8	-2 11.8		239 22.5	-7 13.9		226 27.7	-11 54.9		213 2.1	-15 54.7		199 7.9	-18 54.8	
5 0	268 46.8	2 47.9		256 39.6	-2 16.0		244 11.9	-7 18.0		231 16.8	-11 58.6		217 50.7	-15 57.6		203 56.1	-18 56.8	
20	273 36.8	2 43.8	290.0 -4.2	261 29.4	-2 20.3	289.8 -4.3	249 1.3	-7 22.1	289.4 -4.1	236 5.8	-12 2.2	289.0 -3.6	222 39.3	-16 0.6	288.6 -2.9	208 44.4	-18 58.8	288.2 -2.0
40	278 26.8	2 39.6		266 19.1	-2 24.5		253 50.8	-7 26.2		240 54.8	-12 5.9		227 27.8	-16 3.5		213 32.6	-19 0.8	
6 0	283 16.8	2 35.4		271 8.9	-2 28.8		258 40.2	-7 30.3		245 43.8	-12 9.5		232 16.4	-16 6.4		218 20.9	-19 2.7	
20	288 6.8	2 31.3	290.0 -4.2	275 58.7	-2 33.0	289.8 -4.2	263 29.6	-7 34.4	289.4 -4.1	250 32.8	-12 13.1	289.0 -3.6	237 5.0	-16 9.3	288.6 -2.9	223 9.1	-19 4.7	288.2 -1.9
40	292 56.8	2 27.1		280 48.4	-2 37.3		268 19.0	-7 38.4		255 21.8	-12 16.7		241 53.6	-16 12.2		227 57.3	-19 6.6	
7 0	297 46.8	2 22.9		285 38.2	-2 41.5		273 8.4	-7 42.5		260 10.8	-12 20.4		246 42.1	-16 15.1		232 45.6	-19 8.5	
20	302 36.8	2 18.8	290.0 -4.2	290 27.9	-2 45.8	289.7 -4.3	277 57.8	-7 46.6	289.4 -4.1	264 59.8	-12 24.0	289.0 -3.6	251 30.7	-16 17.9	288.6 -2.8	237 33.8	-19 10.4	288.2 -1.9
40	307 26.8	2 14.6		295 17.7	-2 50.0		282 47.2	-7 50.6		269 48.7	-12 27.5		256 19.2	-16 20.8		242 22.0	-19 12.3	
8 0	312 16.7	2 10.4		300 7.4	-2 54.3		287 36.6	-7 54.7		274 37.7	-12 31.1		261 7.8	-16 23.6		247 10.2	-19 14.2	
20	317 6.7	2 6.2	290.0 -4.2	304 57.2	-2 58.5	289.7 -4.2	292 26.0	-7 58.7	289.4 -4.0	279 26.7	-12 34.7	289.0 -3.6	265 56.3	-16 26.5	288.5 -2.8	251 58.5	-19 16.1	288.2 -1.8
40	321 56.7	2 2.1		309 46.9	-3 2.8		297 15.4	-8 2.8		284 15.6	-12 38.3		270 44.8	-16 29.3		256 46.7	-19 17.9	
9 0	326 46.7	1 57.9		314 36.6	-3 7.0		302 4.8	-8 6.8		289 4.6	-12 41.8		275 33.4	-16 32.1		261 34.9	-19 19.7	
20	331 36.7	1 53.7	290.0 -4.2	319 26.3	-3 11.3	289.7 -4.2	306 54.1	-8 10.9	289.4 -4.0	293 53.5	-12 45.4	288.9 -3.6	280 21.9	-16 34.9	288.5 -2.8	266 23.1	-19 21.6	288.2 -1.8
40	336 26.6	1 49.5		324 16.1	-3 15.5		311 43.5	-8 14.9		298 42.5	-12 48.9		285 10.4	-16 37.7		271 11.3	-19 23.4	
10 0	341 16.6	1 45.3		329 5.8	-3 19.7		316 32.9	-8 18.9		303 31.4	-12 52.5		289 58.9	-16 40.4		275 59.5	-19 25.2	
20	346 6.6	1 41.1	290.0 -4.2	333 55.5	-3 24.0	289.7 -4.3	321 22.2	-8 22.9	289.3 -4.0	308 20.3	-12 56.0	288.9 -3.5	294 47.4	-16 43.2	288.5 -2.8	280 47.7	-19 26.9	288.2 -1.7
40	350 56.5	1 36.9		338 45.2	-3 28.2		326 11.6	-8 26.9		313 9.2	-12 59.5		299 35.9	-16 45.9		285 35.9	-19 28.7	
11 0	355 46.5	1 32.7		343 34.9	-3 32.5		331 0.9	-8 31.0		317 58.2	-13 3.0		304 24.4	-16 48.7		290 24.1	-19 30.4	
20	0 36.4	1 28.5	290.0 -4.2	348 24.6	-3 36.7	289.7 -4.2	335 50.2	-8 35.0	289.3 -4.0	322 47.1	-13 6.5	288.9 -3.5	309 12.9	-16 51.4	288.5 -2.7	295 12.3	-19 32.2	288.2 -1.7
40	5 26.4	1 24.3		353 14.3	-3 40.9		340 39.6	-8 39.0		327 36.0	-13 10.0		314 1.4	-16 54.1		300 0.4	-19 33.9	
12 0	10 16.3	1 20.1		358 4.0	-3 45.2		345 28.9	-8 43.0		332 24.9	-13 13.5		318 49.9	-16 56.8		304 48.6	-19 35.6	
20	15 6.3	1 15.9	289.9 -4.2	2 53.7	-3 49.4	289.7 -4.2	350 18.2	-8 47.0	289.3 -4.0	337 13.8	-13 16.9	288.9 -3.4	323 38.4	-16 59.5	288.5 -2.7	309 36.8	-19 37.3	288.2 -1.7
40	19 56.2	1 11.7		7 43.3	-3 53.6		355 7.5	-8 50.9		342 2.6	-13 20.4		328 26.8	-17 2.1		314 25.0	-19 38.9	
13 0	24 46.2	1 7.5		12 33.0	-3 57.8		359 56.8	-8 54.9		346 51.5	-13 23.8		333 15.3	-17 4.8		319 13.2	-19 40.6	
20	29 36.1	1 3.3	289.9 -4.2	17 22.7	-4 2.1	289.7 -4.2	4 46.1	-8 58.9	289.3 -4.0	351 40.4	-13 27.3	288.9 -3.4	338 3.8	-17 7.5	288.5 -2.6	324 1.3	-19 42.2	288.2 -1.6
40	34 26.1	0 59.1		22 12.4	-4 6.3		9 35.4	-9 2.9		356 29.3	-13 30.7		342 52.2	-17 10.1		328 49.5	-19 43.9	
14 0	39 16.0	0 54.9		27 2.0	-4 10.5		14 24.7	-9 6.8		1 18.1	-13 34.1		347 40.7	-17 12.7		333 37.7	-19 45.5	
20	44 5.9	0 50.6	289.9 -4.2	31 51.7	-4 14.7	289.7 -4.2	19 14.0	-9 10.8	289.3 -4.0	6 7.0	-13 37.5	288.8 -3.4	352 29.1	-17 15.3	288.4 -2.6	338 25.8	-19 47.1	288.2 -1.6
40	48 55.8	0 46.4		36 41.3	-4 19.0		24 3.3	-9 14.7		10 55.8	-13 41.0		357 17.6	-17 17.9		343 14.0	-19 48.6	
15 0	53 45.8	0 42.2		41 31.0	-4 23.2		28 52.6	-9 18.7		15 44.7	-13 44.3		2 6.0	-17 20.5		348 2.1	-19 50.2	
20	58 35.7	0 38.0	289.9 -4.2	46 20.6	-4 27.4	289.6 -4.2	33 41.8	-9 22.6	289.3 -3.9	20 33.5	-13 47.7	288.8 -3.4	6 54.4	-17 23.1	288.4 -2.6	352 50.3	-19 51.8	288.2 -1.5
40	63 25.6	0 33.8		51 10.3	-4 31.6		38 31.1	-9 26.6		25 22.3	-13 51.1		11 42.9	-17 25.6		357 38.5	-19 53.3	
16 0	68 15.5	0 29.5		55 59.9	-4 35.8		43 20.4	-9 30.5		30 11.2	-13 54.5		16 31.3	-17 28.2		2 26.6	-19 54.8	
20	73 5.4	0 25.3	289.9 -4.2	60 49.5	-4 40.0	289.6 -4.2	48 9.6	-9 34.4	289.2 -3.9	34 60.0	-13 57.8	288.8 -3.3	21 19.7	-17 30.7	288.4 -2.5	7 14.8	-19 56.3	288.1 -1.5
40	77 55.4	0 21.1		65 39.2	-4 44.3		52 58.9	-9 38.3		39 48.8	-14 1.2		26 8.1	-17 33.2		12 2.9	-19 57.8	
17 0	82 45.3	0 16.8		70 28.8	-4 48.5		57 48.1	-9 42.2		44 37.6	-14 4.5		30 56.5	-17 35.7		16 51.0	-19 59.3	
20	87 35.2	0 12.6	289.9 -4.2	75 18.4	-4 52.7	289.6 -4.2	62 37.3	-9 46.1	289.2 -3.9	49 26.4	-14 7.8	288.8 -3.3	35 44.9	-17 38.2	288.4 -2.5	21 39.2	-20 0.7	288.1 -1.4
40	92 25.1	0 8.4		80 8.0	-4 56.9		67 26.6	-9 50.0		54 15.2	-14 11.2		40 33.3	-17 40.7		26 27.3	-20 2.2	
18 0	97 15.0	0 4.1		84 57.6	-5 1.1		72 15.8	-9 53.9		59 4.0	-14 14.5		45 21.7	-17 43.1		31 15.5	-20 3.6	
20	102 4.9	0 0.1	289.9 -4.2	89 47.2	-5 5.3	289.6 -4.2	77 5.0	-9 57.8	289.2 -3.9	63 52.8	-14 17.8	288.8 -3.3	50 10.1	-17 45.6	288.4 -2.4	36 3.6	-20 5.0	288.1 -1.4
40	106 54.7	-0 4.3		94 36.8	-5 9.5		81 54.2	-10 1.7		68 41.5	-14 21.0		54 58.5	-17 48.0		40 51.7	-20 6.4	
19 0	111 44.6	-0 8.6		99 26.4	-5 13.6		86 43.4	-10 5.6		73 30.3	-14 24.3		59 46.8	-17 50.4		45 39.9	-20 7.8	
20	116 34.5	-0 12.8	289.9 -4.2	104 16.0	-5 17.8	289.6 -4.2	91 32.6	-10 9.4	289.2 -3.9	78 19.1	-14 27.6	288.8 -3.3	64 35.2	-17 52.9	288.4 -2.4	50 28.0	-20 9.2	288.1 -1.4
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20	131 4.1	-0 25.5	289.9 -4.2	118 44.8	-5 30.4	289.6 -4.2	106 0.2	-10 21.0	289.2 -3.8	92 45.3	-14 37.3	288.7 -3.2	79 0.3	-18 0.0	288.4 -2.4	64 52.4	-20 13.2	288.1 -1.3
40	135 54.0	-0 29.8		123 34.3	-5 34.6		110 49.3	-10 24.9		97 34.1	-14 40.5		83 48.7	-18 2.4		69 40.5	-20 14.5	
21 0	140 43.9	-0 34.0		128 23.9	-5 38.8		115 38.5	-10 28.7		102 22.8	-14 43.8		88 37.0	-18 4.7		74 28.6	-20 15.8	
20	145 33.7	-0 38.3	289.9 -4.3	133 13.4	-5 42.9	289.6 -4.2	120 27.7	-10 32.5	289.2 -3.8	107 11.5	-14 47.0	288.7 -3.2	93 25.4	-18 7.0	288.3 -2.3	79 16.7	-20 17.1	288.1 -1.3
40	150 23.6	-0 42.5		138 3.0	-5 47.1		125 16.8	-10 36.3		112 0.2	-14 50.2		98 13.7	-18 9.3		84 4.9	-20 18.3	
22 0	155 13.5	-0 46.8		142 52.5	-5 51.3		130 6.0	-10 40.2		116 49.0	-14 53.3		103 2.0	-18 11.6		88 53.0	-20 19.6	
20	160 3.3	-0 51.0	289.8 -4.2	147 42.1	-5 55.4	289.5 -4.2	134 55.1	-10 44.0	289.1 -3.8	121 37.7	-14 56.5	288.7 -3.2	107 50.4	-18 13.9	288.3 -2.3	93 41.1	-20 20.8	288.1 -1.2
40	164 53.2	-0 55.3		152 31.6	-5 59.6		139 44.3	-10 47.8		126 26.4	-14 59.7		112 38.7	-18 16.2		98 29.2	-20 22.0	
23 0	169 43.0	-0 59.5		157 21.2	-6 3.8		144 33.4	-10 51.6		131 15.1	-15 2.8		117 27.0	-18 18.5		103 17.3	-20 23.2	
20	174 32.8	-1 3.8	289.8 -4.3	162 10.7	-6 7.9	289.5 -4.1	149 22.5	-10 55.3	289.1 -3.8	136 3.8	-15 6.0	288.7 -3.1	122 15.3	-18 20.7	288.3 -2.2	108 5.4	-20 24.4	288.1 -1.2
40	179 22.7	-1 8.0		167 0.2	-6 12.1		154 11.6	-10 59.1		140 52.5	-15 9.1		127 3.6	-18 23.0		112 53.5	-20 25.5	

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h m	21 Sep GHA	21 Sep Dec	d	22 Sep GHA	22 Sep Dec	d	23 Sep GHA	23 Sep Dec	d	24 Sep GHA	24 Sep Dec	d	25 Sep GHA	25 Sep Dec	d	26 Sep GHA	26 Sep Dec	d
0 0	117 41.6	-20 26.7		103 25.4	-21 8.1		89 21.3	-20 28.7		75 45.2	-18 35.2		62 46.3	-15 39.6		50 26.6	-11 56.6	
20	122 29.7	-20 27.8	-1.1	108 13.5	-21 8.1	0.0	94 9.7	-20 27.6	1.1	80 34.1	-18 33.1	2.1	67 35.8	-15 36.8	2.8	55 16.6	-11 53.3	3.3
40	127 17.9	-20 29.0		113 1.7	-21 8.1		98 58.2	-20 26.5		85 23.0	-18 31.1		72 25.3	-15 34.0		60 6.6	-11 49.9	
1 0	132 6.0	-20 30.1		117 49.8	-21 8.1		103 46.6	-20 25.4		90 11.9	-18 29.0		77 14.7	-15 31.1		64 56.6	-11 46.6	
20	136 54.1	-20 31.1	-1.1	122 38.0	-21 8.0	0.1	108 35.1	-20 24.3	1.2	95 0.9	-18 26.9	2.1	82 4.2	-15 28.3	2.8	69 46.6	-11 43.2	3.4
40	141 42.2	-20 32.2		127 26.1	-21 8.0		113 23.6	-20 23.1		99 49.8	-18 24.8		86 53.7	-15 25.5		74 36.6	-11 39.8	
2 0	146 30.3	-20 33.3		132 14.3	-21 7.9		118 12.0	-20 21.9		104 38.8	-18 22.7		91 43.2	-15 22.6		79 26.6	-11 36.4	
20	151 18.4	-20 34.3	-1.0	137 2.5	-21 7.8	0.1	123 0.5	-20 20.8	1.2	109 27.7	-18 20.6	2.1	96 32.7	-15 19.7	2.9	84 16.6	-11 33.0	3.4
40	156 6.5	-20 35.3		141 50.6	-21 7.7		127 49.0	-20 19.6		114 16.7	-18 18.5		101 22.2	-15 16.9		89 6.7	-11 29.6	
3 0	160 54.6	-20 36.3		146 38.8	-21 7.5		132 37.5	-20 18.4		119 5.7	-18 16.3		106 11.8	-15 14.0		93 56.7	-11 26.2	
20	165 42.7	-20 37.3	-1.0	151 27.0	-21 7.4	0.1	137 26.0	-20 17.2	1.2	123 54.7	-18 14.2	2.1	111 1.3	-15 11.1	2.9	98 46.8	-11 22.8	3.4
40	170 30.8	-20 38.3		156 15.2	-21 7.2		142 14.5	-20 15.9		128 43.6	-18 12.0		115 50.8	-15 8.2		103 36.8	-11 19.4	
4 0	175 18.9	-20 39.3		161 3.3	-21 7.1		147 3.0	-20 14.7		133 32.6	-18 9.9		120 40.4	-15 5.3		108 26.9	-11 16.0	
20	180 7.0	-20 40.2	-0.9	165 51.5	-21 6.9	0.2	151 51.5	-20 13.4	1.3	138 21.6	-18 7.7	2.2	125 29.9	-15 2.4	2.9	113 17.0	-11 12.5	3.4
40	184 55.1	-20 41.2		170 39.7	-21 6.7		156 40.0	-20 12.1		143 10.7	-18 5.5		130 19.5	-14 59.5		118 7.0	-11 9.1	
5 0	189 43.1	-20 42.1		175 27.9	-21 6.5		161 28.5	-20 10.8		147 59.7	-18 3.3		135 9.1	-14 56.5		122 57.1	-11 5.7	
20	194 31.2	-20 43.0	-0.9	180 16.1	-21 6.2	0.3	166 17.1	-20 9.5	1.3	152 48.7	-18 1.0	2.2	139 58.6	-14 53.6	2.9	127 47.2	-11 2.2	3.5
40	199 19.3	-20 43.9		185 4.3	-21 6.0		171 5.6	-20 8.2		157 37.7	-17 58.8		144 48.2	-14 50.6		132 37.3	-10 58.8	
6 0	204 7.4	-20 44.7		189 52.5	-21 5.7		175 54.1	-20 6.9		162 26.8	-17 56.6		149 37.8	-14 47.7		137 27.4	-10 55.3	
20	208 55.5	-20 45.6	-0.8	194 40.7	-21 5.4	0.3	180 42.7	-20 5.5	1.4	167 15.8	-17 54.3	2.3	154 27.4	-14 44.7	3.0	142 17.5	-10 51.9	3.5
40	213 43.6	-20 46.4		199 28.9	-21 5.1		185 31.2	-20 4.2		172 4.9	-17 52.0		159 17.0	-14 41.8		147 7.6	-10 48.4	
7 0	218 31.7	-20 47.2		204 17.1	-21 4.8		190 19.8	-20 2.8		176 53.9	-17 49.8		164 6.6	-14 38.8		151 57.7	-10 44.9	
20	223 19.8	-20 48.0	-0.8	209 5.3	-21 4.5	0.3	195 8.4	-20 1.4	1.4	181 43.0	-17 47.5	2.3	168 56.3	-14 35.8	3.0	156 47.8	-10 41.4	3.5
40	228 7.9	-20 48.8		213 53.5	-21 4.1		199 56.9	-20 0.0		186 32.1	-17 45.2		173 45.9	-14 32.8		161 38.0	-10 38.0	
8 0	232 56.0	-20 49.6		218 41.8	-21 3.8		204 45.5	-19 58.6		191 21.2	-17 42.9		178 35.5	-14 29.8		166 28.1	-10 34.5	
20	237 44.1	-20 50.4	-0.7	223 30.0	-21 3.4	0.4	209 34.1	-19 57.2	1.4	196 10.3	-17 40.5	2.3	183 25.2	-14 26.8	3.0	171 18.3	-10 31.0	3.5
40	242 32.2	-20 51.1		228 18.2	-21 3.0		214 22.7	-19 55.7		200 59.4	-17 38.2		188 14.8	-14 23.7		176 8.4	-10 27.5	
9 0	247 20.3	-20 51.8		233 6.4	-21 2.6		219 11.3	-19 54.3		205 48.5	-17 35.9		193 4.5	-14 20.7		180 58.6	-10 24.0	
20	252 8.4	-20 52.5	-0.7	237 54.7	-21 2.2	0.4	223 59.9	-19 52.8	1.5	210 37.6	-17 33.5	2.4	197 54.1	-14 17.7	3.0	185 48.7	-10 20.5	3.5
40	256 56.5	-20 53.2		242 42.9	-21 1.7		228 48.5	-19 51.3		215 26.7	-17 31.1		202 43.8	-14 14.6		190 38.9	-10 17.0	
10 0	261 44.6	-20 53.9		247 31.2	-21 1.3		233 37.1	-19 49.8		220 15.9	-17 28.8		207 33.5	-14 11.6		195 29.1	-10 13.4	
20	266 32.6	-20 54.6	-0.7	252 19.4	-21 0.8	0.5	238 25.8	-19 48.3	1.5	225 5.0	-17 26.4	2.4	212 23.2	-14 8.5	3.1	200 19.3	-10 9.9	3.5
40	271 20.7	-20 55.2		257 7.7	-21 0.3		243 14.4	-19 46.8		229 54.1	-17 24.0		217 12.9	-14 5.4		205 9.4	-10 6.4	
11 0	276 8.8	-20 55.9		261 55.9	-20 59.8		248 3.0	-19 45.2		234 43.3	-17 21.6		222 2.6	-14 2.4		209 59.6	-10 2.9	
20	280 56.9	-20 56.5	-0.6	266 44.2	-20 59.3	0.5	252 51.7	-19 43.7	1.5	239 32.5	-17 19.1	2.4	226 52.3	-13 59.3	3.1	214 49.8	-9 59.3	3.6
40	285 45.0	-20 57.1		271 32.4	-20 58.8		257 40.3	-19 42.1		244 21.6	-17 16.7		231 42.0	-13 56.2		219 40.1	-9 55.8	
12 0	290 33.1	-20 57.7		276 20.7	-20 58.3		262 29.0	-19 40.6		249 10.8	-17 14.3		236 31.7	-13 53.1		224 30.3	-9 52.2	
20	295 21.2	-20 58.2	-0.5	281 9.0	-20 57.7	0.6	267 17.6	-19 39.0	1.6	253 60.0	-17 11.8	2.5	241 21.5	-13 50.0	3.1	229 20.5	-9 48.7	3.5
40	300 9.3	-20 58.8		285 57.2	-20 57.1		272 6.3	-19 37.4		258 49.2	-17 9.3		246 11.2	-13 46.8		234 10.7	-9 45.1	
13 0	304 57.4	-20 59.3		290 45.5	-20 56.5		276 55.0	-19 35.7		263 38.4	-17 6.9		251 0.9	-13 43.7		239 0.9	-9 41.6	
20	309 45.5	-20 59.8	-0.5	295 33.8	-20 55.9	0.6	281 43.7	-19 34.1	1.6	268 27.6	-17 4.4	2.5	255 50.7	-13 40.6	3.1	243 51.2	-9 38.0	3.6
40	314 33.6	-21 0.3		300 22.1	-20 55.3		286 32.3	-19 32.5		273 16.8	-17 1.9		260 40.5	-13 37.5		248 41.4	-9 34.4	
14 0	319 21.7	-21 0.8		305 10.4	-20 54.7		291 21.0	-19 30.8		278 6.0	-16 59.4		265 30.2	-13 34.3		253 31.7	-9 30.8	
20	324 9.8	-21 1.3	-0.5	309 58.7	-20 54.0	0.7	296 9.7	-19 29.1	1.7	282 55.3	-16 56.9	2.5	270 20.0	-13 31.2	3.2	258 21.9	-9 27.3	3.6
40	328 57.9	-21 1.8		314 47.0	-20 53.4		300 58.5	-19 27.5		287 44.5	-16 54.3		275 9.8	-13 28.0		263 12.2	-9 23.7	
15 0	333 46.0	-21 2.2		319 35.3	-20 52.7		305 47.2	-19 25.8		292 33.8	-16 51.8		279 59.6	-13 24.8		268 2.4	-9 20.1	
20	338 34.1	-21 2.6	-0.4	324 23.6	-20 52.0	0.7	310 35.9	-19 24.1	1.7	297 23.0	-16 49.3	2.6	284 49.4	-13 21.6	3.2	272 52.7	-9 16.5	3.6
40	343 22.2	-21 3.0		329 11.9	-20 51.3		315 24.6	-19 22.3		302 12.3	-16 46.7		289 39.2	-13 18.5		277 43.0	-9 12.9	
16 0	348 10.3	-21 3.4		334 0.2	-20 50.6		320 13.4	-19 20.6		307 1.5	-16 44.1		294 29.0	-13 15.3		282 33.3	-9 9.3	
20	352 58.4	-21 3.8	-0.4	338 48.5	-20 49.8	0.8	325 2.1	-19 18.9	1.8	311 50.8	-16 41.6	2.6	299 18.8	-13 12.1	3.2	287 23.6	-9 5.7	3.6
40	357 46.5	-21 4.2		343 36.9	-20 49.1		329 50.9	-19 17.1		316 40.1	-16 39.0		304 8.6	-13 8.9		292 13.9	-9 2.1	
17 0	2 34.7	-21 4.5		348 25.2	-20 48.3		334 39.6	-19 15.3		321 29.4	-16 36.4		308 58.5	-13 5.7		297 4.2	-8 58.5	
20	7 22.8	-21 4.8	-0.3	353 13.5	-20 47.5	0.8	339 28.4	-19 13.5	1.8	326 18.7	-16 33.8	2.6	313 48.3	-13 2.4	3.2	301 54.5	-8 54.8	3.6
40	12 10.9	-21 5.2		358 1.9	-20 46.7		344 17.2	-19 11.7		331 8.0	-16 31.2		318 38.2	-12 59.2		306 44.8	-8 51.2	
18 0	16 59.0	-21 5.5		2 50.2	-20 45.9		349 5.9	-19 9.9		335 57.3	-16 28.5		323 28.0	-12 56.0		311 35.1	-8 47.6	
20	21 47.1	-21 5.7	-0.3	7 38.6	-20 45.1	0.8	353 54.7	-19 8.1	1.8	340 46.7	-16 25.9	2.6	328 17.9	-12 52.7	3.3	316 25.4	-8 44.0	3.6
40	26 35.2	-21 6.0		12 26.9	-20 44.2		358 43.5	-19 6.3		345 36.0	-16 23.2		333 7.7	-12 49.5		321 15.8	-8 40.3	
19 0	31 23.4	-21 6.3		17 15.3	-20 43.4		3 32.3	-19 4.4		350 25.3	-16 20.6		337 57.6	-12 46.2		326 6.1	-8 36.7	
20	36 11.5	-21 6.5	-0.2	22 3.6	-20 42.5	0.9	8 21.1	-19 2.6	1.9	355 14.7	-16 17.9	2.7	342 47.5	-12 43.0	3.3	330 56.4	-8 33.0	3.6
40	40 59.6	-21 6.7		26 52.0	-20 41.6		13 9.9	-19 0.7		0 4.0	-16 15.2		347 37.4	-12 39.7		335 46.8	-8 29.4	
20 0	45 47.7	-21 6.9		31 40.4	-20 40.7		17 58.8	-18 58.8		4 53.4	-16 12.6		352 27.3	-12 36.4		340 37.1	-8 25.8	
20	50 35.8	-21 7.1	-0.2	36 28.8	-20 39.8	0.9	22 47.6	-18 56.9	1.9	9 42.8	-16 9.9	2.7	357 17.2	-12 33.2	3.3	345 27.5	-8 22.1	3.7
40	55 24.0	-21 7.3		41 17.1	-20 38.8		27 36.4	-18 55.0		14 32.1	-16 7.2		2 7.1	-12 29.9		350 17.9	-8 18.4	
21 0	60 12.1	-21 7.4		46 5.5	-20 37.9		32 25.3	-18 53.1		19 21.5	-16 4.4		6 57.0	-12 26.6		355 8.2	-8 14.8	
20	65 0.2	-21 7.6	-0.1	50 53.9	-20 36.9	1.0	37 14.1	-18 51.1	2.0	24 10.9	-16 1.7	2.7	11 46.9	-12 23.3	3.3	359 58.6	-8 11.1	3.7
40	69 48.4	-21 7.7		55 42.3	-20 36.0		42 3.0	-18 49.2		29 0.3	-15 59.0		16 36.9	-12 20.0		4 49.0	-8 7.4	
22 0	74 36.5	-21 7.8		60 30.7	-20 35.0		46 51.8	-18 47.2		33 49.7	-15 56.2		21 26.8	-12 16.7		9 39.4	-8 3.8	
20	79 24.6	-21 7.9	-0.1	65 19.1	-20 34.0	1.0	51 40.7	-18 45.2	2.0	38 39.1	-15 53.5	2.7	26 16.8	-12 13.3	3.3	14 29.8	-8 0.1	3.7
40	84 12.8	-21 8.0		70 7.6	-20 32.9		56 29.6	-18 43.3		43 28.6	-15 50.7		31 6.7	-12 10.0		19 20.2	-7 56.4	
23 0	89 0.9	-21 8.0		74 56.0	-20 31.9		61 18.5	-18 41.3		48 18.0	-15 48.0		35 56.7	-12 6.7		24 10.6	-7 52.7	
20	93 49.1	-21 8.1	0.0	79 44.4	-20 30.9	1.1	66 7.4	-18 39.2	2.0	53 7.4	-15 45.2	2.8	40 46.6	-12 3.3	3.4	29 1.0	-7 49.0	3.7
40	98 37.2	-21 8.1		84 32.8	-20 29.8		70 56.3	-18 37.2		57 56.9	-15 42.4		45 36.6	-12 0.0		33 51.4	-7 45.4	

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h m	27 Sep GHA	d	27 Sep Dec	d'	28 Sep GHA	d	28 Sep Dec	d'	29 Sep GHA	d	29 Sep Dec	d'	30 Sep GHA	d	30 Sep Dec	d'	1 Oct GHA	d	1 Oct Dec	d'	2 Oct GHA	d	2 Oct Dec	d'
0 0	38 41.8	290.4	-7 41.7	3.7	27 24.2	290.7	-3 9.2	3.8	16 24.5	290.9	1 27.1	3.8	5 33.5	291.0	5 55.2	3.6	354 42.9	290.9	10 4.0	3.3	343 46.0	290.8	13 43.7	2.8
20	43 32.2		-7 38.0		32 14.9		-3 5.4		21 15.5		1 30.9		10 24.5		5 58.8		359 33.8		10 7.3		348 36.8		13 46.6	
40	48 22.7		-7 34.3		37 5.7		-3 1.6		26 6.4		1 34.7		15 15.5		6 2.4		4 24.7		10 10.6		353 27.7		13 49.4	
1 0	53 13.1	290.4	-7 30.6	3.7	41 56.4	290.8	-2 57.7	3.8	30 57.3	290.9	1 38.5	3.8	20 6.5	291.0	6 6.0	3.6	9 15.7	290.9	10 13.8	3.3	358 18.5	290.8	13 52.1	2.8
20	58 3.5		-7 26.9		46 47.2		-2 53.9		35 48.2		1 42.3		24 57.4		6 9.6		14 6.6		10 17.1		3 9.3		13 54.9	
40	62 54.0		-7 23.1		51 37.9		-2 50.0		40 39.2		1 46.1		29 48.4		6 13.2		18 57.5		10 20.3		8 0.1		13 57.7	
2 0	67 44.4	290.5	-7 19.4	3.7	56 28.7	290.8	-2 46.2	3.8	45 30.1	290.9	1 49.9	3.8	34 39.4	291.0	6 16.8	3.6	23 48.5	290.9	10 23.6	3.2	12 50.9	290.8	14 0.5	2.7
20	72 34.9		-7 15.7		61 19.4		-2 42.3		50 21.0		1 53.7		39 30.4		6 20.4		28 39.4		10 26.8		17 41.7		14 3.2	
40	77 25.3		-7 12.0		66 10.2		-2 38.5		55 11.9		1 57.5		44 21.3		6 24.0		33 30.3		10 30.1		22 32.5		14 6.0	
3 0	82 15.8	290.5	-7 8.3	3.7	71 1.0	290.8	-2 34.7	3.9	60 2.9	290.9	2 1.3	3.8	49 12.3	291.0	6 27.6	3.6	38 21.2	290.9	10 33.3	3.2	27 23.3	290.8	14 8.7	2.7
20	87 6.3		-7 4.5		75 51.7		-2 30.8		64 53.8		2 5.1		54 3.3		6 31.2		43 12.1		10 36.5		32 14.0		14 11.5	
40	91 56.7		-7 0.8		80 42.5		-2 27.0		69 44.7		2 8.9		58 54.3		6 34.7		48 3.1		10 39.7		37 4.8		14 14.2	
4 0	96 47.2	290.5	-6 57.1	3.7	85 33.3	290.8	-2 23.1	3.8	74 35.7	290.9	2 12.7	3.8	63 45.3	291.0	6 38.3	3.6	52 54.0	290.9	10 42.9	3.2	41 55.6	290.8	14 16.9	2.7
20	101 37.7		-6 53.4		90 24.1		-2 19.3		79 26.6		2 16.5		68 36.2		6 41.9		57 44.9		10 46.1		46 46.4		14 19.6	
40	106 28.2		-6 49.6		95 14.8		-2 15.4		84 17.5		2 20.3		73 27.2		6 45.4		62 35.8		10 49.3		51 37.2		14 22.3	
5 0	111 18.7	290.5	-6 45.9	3.8	100 5.6	290.8	-2 11.6	3.9	89 8.5	290.9	2 24.0	3.8	78 18.2	291.0	6 49.0	3.5	67 26.7	290.9	10 52.5	3.2	56 28.0	290.8	14 25.0	2.7
20	116 9.2		-6 42.1		104 56.4		-2 7.7		93 59.4		2 27.8		83 9.2		6 52.5		72 17.6		10 55.7		61 18.7		14 27.7	
40	120 59.7		-6 38.4		109 47.2		-2 3.9		98 50.4		2 31.6		88 0.1		6 56.1		77 8.6		10 58.9		66 9.5		14 30.4	
6 0	125 50.2	290.5	-6 34.6	3.7	114 38.0	290.8	-2 0.0	3.8	103 41.3	290.9	2 35.4	3.8	92 51.1	291.0	6 59.6	3.5	81 59.5	290.9	11 2.1	3.1	71 0.3	290.8	14 33.1	2.7
20	130 40.7		-6 30.9		119 28.8		-1 56.2		108 32.3		2 39.1		97 42.1		7 3.2		86 50.4		11 5.2		75 51.1		14 35.8	
40	135 31.2		-6 27.1		124 19.6		-1 52.3		113 23.2		2 42.9		102 33.1		7 6.7		91 41.3		11 8.4		80 41.8		14 38.4	
7 0	140 21.8	290.5	-6 23.4	3.8	129 10.4	290.8	-1 48.5	3.9	118 14.2	290.9	2 46.7	3.8	107 24.0	291.0	7 10.2	3.5	96 32.2	290.9	11 11.5	3.2	85 32.6	290.8	14 41.1	2.6
20	145 12.3		-6 19.6		134 1.2		-1 44.6		123 5.1		2 50.5		112 15.0		7 13.8		101 23.1		11 14.7		90 23.4		14 43.7	
40	150 2.8		-6 15.9		138 52.0		-1 40.8		127 56.1		2 54.2		117 6.0		7 17.3		106 14.0		11 17.8		95 14.1		14 46.4	
8 0	154 53.4	290.5	-6 12.1	3.8	143 42.8	290.8	-1 36.9	3.8	132 47.0	291.0	2 58.0	3.7	121 57.0	291.0	7 20.8	3.5	111 4.9	290.9	11 21.0	3.1	100 4.9	290.8	14 49.0	2.6
20	159 43.9		-6 8.3		148 33.6		-1 33.1		137 38.0		3 1.7		126 47.9		7 24.3		115 55.8		11 24.1		104 55.6		14 51.6	
40	164 34.5		-6 4.6		153 24.4		-1 29.2		142 28.9		3 5.5		131 38.9		7 27.8		120 46.7		11 27.2		109 46.4		14 54.2	
9 0	169 25.0	290.6	-6 0.8	3.8	158 15.2	290.8	-1 25.4	3.9	147 19.9	291.0	3 9.2	3.7	136 29.9	291.0	7 31.3	3.5	125 37.6	290.9	11 30.3	3.1	114 37.2	290.7	14 56.8	2.6
20	174 15.6		-5 57.0		163 6.1		-1 21.5		152 10.8		3 13.0		141 20.9		7 34.8		130 28.5		11 33.4		119 27.9		14 59.4	
40	179 6.1		-5 53.2		167 56.9		-1 17.7		157 1.8		3 16.7		146 11.8		7 38.3		135 19.4		11 36.6		124 18.7		15 2.0	
10 0	183 56.7	290.6	-5 49.5	3.8	172 47.7	290.8	-1 13.8	3.8	161 52.7	291.0	3 20.5	3.7	151 2.8	291.0	7 41.8	3.5	140 10.3	290.9	11 39.6	3.1	129 9.4	290.7	15 4.6	2.6
20	188 47.3		-5 45.7		177 38.5		-1 10.0		166 43.7		3 24.2		155 53.8		7 45.3		145 1.1		11 42.7		134 0.1		15 7.2	
40	193 37.8		-5 41.9		182 29.4		-1 6.2		171 34.7		3 28.0		160 44.7		7 48.8		149 52.0		11 45.8		138 50.9		15 9.8	
11 0	198 28.4	290.6	-5 38.1	3.8	187 20.2	290.8	-1 2.3	3.8	176 25.6	291.0	3 31.7	3.7	165 35.7	291.0	7 52.3	3.5	154 42.9	290.9	11 48.9	3.1	143 41.6	290.7	15 12.3	2.5
20	203 19.0		-5 34.3		192 11.0		-0 58.5		181 16.6		3 35.5		170 26.7		7 55.8		159 33.8		11 52.0		148 32.4		15 14.9	
40	208 9.6		-5 30.6		197 1.9		-0 54.6		186 7.5		3 39.2		175 17.6		7 59.2		164 24.7		11 55.0		153 23.1		15 17.4	
12 0	213 0.2	290.6	-5 26.8	3.8	201 52.7	290.8	-0 50.8	3.9	190 58.5	291.0	3 42.9	3.7	180 8.6	291.0	8 2.7	3.4	169 15.6	290.9	11 58.1	3.0	158 13.8	290.7	15 19.9	2.5
20	217 50.8		-5 23.0		206 43.6		-0 46.9		195 49.5		3 46.7		184 59.6		8 6.1		174 6.4		12 1.2		163 4.6		15 22.5	
40	222 41.4		-5 19.2		211 34.4		-0 43.1		200 40.4		3 50.4		189 50.5		8 9.6		178 57.3		12 4.2		167 55.3		15 25.0	
13 0	227 32.0	290.6	-5 15.4	3.8	216 25.3	290.9	-0 39.2	3.8	205 31.4	291.0	3 54.1	3.7	194 41.5	291.0	8 13.0	3.5	183 48.2	290.9	12 7.2	3.0	172 46.0	290.7	15 27.5	2.5
20	232 22.6		-5 11.6		221 16.1		-0 35.4		210 22.4		3 57.8		199 32.5		8 16.5		188 39.1		12 10.3		177 36.7		15 30.0	
40	237 13.2		-5 7.8		226 7.0		-0 31.5		215 13.3		4 1.5		204 23.4		8 19.9		193 29.9		12 13.3		182 27.5		15 32.5	
14 0	242 3.8	290.6	-5 4.0	3.8	230 57.8	290.9	-0 27.7	3.8	220 4.3	291.0	4 5.3	3.7	209 14.4	291.0	8 23.4	3.4	198 20.8	290.9	12 16.3	3.0	187 18.2	290.7	15 35.0	2.5
20	246 54.4		-5 0.2		235 48.7		-0 23.9		224 55.3		4 9.0		214 5.4		8 26.8		203 11.7		12 19.3		192 8.9		15 37.5	
40	251 45.1		-4 56.4		240 39.6		-0 20.0		229 46.2		4 12.7		218 56.3		8 30.2		208 2.5		12 22.3		196 59.6		15 39.9	
15 0	256 35.7	290.6	-4 52.6	3.8	245 30.4	290.9	-0 16.2	3.8	234 37.2	291.0	4 16.4	3.7	223 47.3	291.0	8 33.6	3.4	212 53.4	290.9	12 25.3	3.0	201 50.3	290.7	15 42.4	2.4
20	261 26.3		-4 48.8		250 21.3		-0 12.3		239 28.2		4 20.1		228 38.2		8 37.1		217 44.3		12 28.3		206 41.0		15 44.9	
40	266 17.0		-4 44.9		255 12.1		-0 8.5		244 19.1		4 23.8		233 29.2		8 40.5		222 35.1		12 31.3		211 31.7		15 47.3	
16 0	271 7.6	290.7	-4 41.1	3.8	260 3.0	290.9	-0 4.7	3.8	249 10.1	291.0	4 27.5	3.7	238 20.2	291.0	8 43.9	3.4	227 26.0	290.9	12 34.3	3.0	216 22.5	290.7	15 49.7	2.4
20	275 58.3		-4 37.3		264 53.9		-0 0.8		254 1.1		4 31.2		243 11.1		8 47.3		232 16.8		12 37.3		221 13.2		15 52.2	
40	280 48.9		-4 33.5		269 44.8		0 3.0		258 52.0		4 34.9		248 2.1		8 50.7		237 7.7		12 40.2		226 3.9		15 54.6	
17 0	285 39.6	290.7	-4 29.7	3.8	274 35.6	290.9	0 6.8	3.8	263 43.0	291.0	4 38.6	3.7	252 53.0	291.0	8 54.1	3.4	241 58.6	290.8	12 43.2	2.9	230 54.6	290.7	15 57.0	2.4
20	290 30.2		-4 25.9		279 26.5		0 10.7		268 34.0		4 42.2		257 44.0		8 57.4		246 49.4		12 46.2		235 45.2		15 59.4	
40	295 20.9		-4 22.0		284 17.4		0 14.5		273 25.0		4 45.9		262 34.9		9 0.8		251 40.3		12 49.1		240 35.9		16 1.8	
18 0	300 11.6	290.7	-4 18.2	3.8	289 8.3	290.9	0 18.3	3.8	278 15.9	291.0	4 49.6	3.7	267 25.9	291.0	9 4.2	3.4	256 31.1	290.8	12 52.0	2.9	245 26.6	290.7	16 4.2	2.4
20	305 2.2		-4 14.4		293 59.2		0 22.2		283 6.9		4 53.3		272 16.9		9 7.6		261 22.0		12 55.0		250 17.3		16 6.6	
40	309 52.9		-4 10.6		298 50.1		0 26.0		287 57.9		4 56.9		277 7.8		9 10.9		266 12.8		12 57.9		255 8.0		16 9.0	
19 0	314 43.6	290.7	-4 6.8	3.8	303 41.0	290.9	0 29.8	3.8	292 48.9	291.0	5 0.6	3.7	281 58.8	290.9	9 14.3	3.3	271 3.6	290.8	13 0.8	2.9	259 58.7	290.7	16 11.3	2.4
20	319 34.3		-4 2.9		308 31.8		0 33.7		297 39.8		5 4.3		286 49.7		9 17.7		275 54.5		13 3.7		264 49.4		16 13.7	
40	324 25.0		-3 59.1		313 22.7		0 37.5		302 30.8		5 7.9		291 40.7		9 21.0		280 45.3		13 6.6		269 40.1		16 16.0	
20 0	329 15.6	290.7	-3 55.3	3.8	318 13.6	290.9	0 41.3	3.8	307 21.8	291.0	5 11.6	3.7	296 31.6	290.9	9 24.3	3.3	285 36.2	290.8	13 9.5	2.9	274 30.7	290.7	16 18.4	2.3
20	334 6.3		-3 51.4		323 4.5		0 45.1		312 12.8		5 15.3		301 22.5		9 27.7		290 27.0		13 12.4		279 21.4		16 20.7	
40	338 57.0		-3 47.6		327 55.4		0 49.0		317 3.7		5 18.9		306 13.5		9 31.0		295 17.8		13 15.3		284 12.1		16 23.0	
21 0	343 47.7	290.7	-3 43.8	3.8	332 46.3	290.9	0 52.8	3.8	321 54.7	291.0	5 22.6	3.6	311 4.4	290.9	9 34.3	3.3	300 8.7	290.8	13 18.2	2.9	289 2.7	290.7	16 25.3	2.3
20	348 38.4		-3 39.9		337 37.2		0 56.6		326 45.7		5 26.2		315 55.4		9 37.7		304 59.5		13 21.1		293 53.4		16 27.6	
40	353 29.1		-3 36.1		342 28.1		1 0.4		331 36.7		5 29.8		320 46.3		9 41.0		309 50.3		13 23.9		298 44.1		16 29.9	
22 0	358 19.9	290.7	-3 32.3	3.8	347 19.1	290.9	1 4.2	3.8	336 27.7	291.0	5 33.5	3.6	325 37.3	290.9	9 44.3	3.3	314 41.1	290.8	13 26.8	2.8	303 34.7	290.7	16 32.2	2.3
20 3	10.6		-3 28.4		352 10.0		1 8.1		341 18.6		5 37.1		330 28.2		9 47.6		319 32.0		13 29.6		308 25.4		16 34.5	
40 8	1.3		-3 24.6		357 0.9		1 11.9		346 9.6		5 40.7		335 19.1		9 50.9		324 22.8		13 32.5		313 16.1		16 36.8	
23 0	12 52.0	290.7	-3 20.8	3.9	1 51.8	290.9	1 15.7	3.8	351 0.6	291.0	5 44.4	3.6	340 10.1	290.9	9 54.2	3.3	329 13.6	290.8	13 35.3	2.8	318 6.7	290.7	16 39.0	2.2
20	17 42.7		-3 16.9		6 42.7		1 19.5		355 51.6		5 48.0		345 1.0		9 57.5		334 4.4		13 38.1		322 57.4		16 41.3	
40	22 33.5		-3 13.1		11 33.6		1 23.3		0 42.5		5 51.6		349 51.9		10 0.8		338 55.2		13 40.9		327 48.0		16 43.5	

2012 Moon

h m	3 Oct GHA	d	3 Oct Dec	d'	4 Oct GHA	d	4 Oct Dec	d'	5 Oct GHA	d	5 Oct Dec	d'	6 Oct GHA	d	6 Oct Dec	d'	7 Oct GHA	d	7 Oct Dec	d'	8 Oct GHA	d	8 Oct Dec	d'
0 0	332 38.7		16 45.7		321 19.1		19 2.8		309 48.2		20 29.3		298 9.3		21 1.4		286 26.8		20 37.2		274 44.8		19 16.9	
20	337 29.3	290.6	16 48.0	2.2	326 9.5	290.5	19 4.4	1.5	314 38.5	290.3	20 30.1	0.8	302 59.6	290.3	21 1.4	0.0	291 17.0	290.2	20 36.5	-0.7	279 35.1	290.3	19 15.4	-1.5
40	342 20.0		16 50.2		331 0.0		19 5.9		319 28.9		20 30.9		307 49.8		21 1.5		296 7.2		20 35.7		284 25.4		19 13.9	
1 0	347 10.6		16 52.4		335 50.5		19 7.4		324 19.2		20 31.7		312 40.1		21 1.5		300 57.5		20 35.0		289 15.7		19 12.4	
20	352 1.2	290.6	16 54.6	2.2	340 41.0	290.5	19 9.0	1.5	329 9.6	290.3	20 32.5	0.8	317 30.3	290.3	21 1.5	0.0	305 47.7	290.2	20 34.2	-0.8	294 5.9	290.3	19 10.8	-1.6
40	356 51.9		16 56.8		345 31.4		19 10.5		333 59.9		20 33.3		322 20.6		21 1.5		310 38.0		20 33.4		298 56.2		19 9.3	
2 0	1 42.5		16 59.0		350 21.9		19 12.0		338 50.2		20 34.1		327 10.8		21 1.5		315 28.2		20 32.6		303 46.5		19 7.7	
20	6 33.1	290.6	17 1.1	2.2	355 12.4	290.5	19 13.5	1.5	343 40.5	290.3	20 34.8	0.7	332 1.1	290.3	21 1.5	0.0	320 18.4	290.2	20 31.8	-0.8	308 36.8	290.3	19 6.2	-1.6
40	11 23.8		17 3.3		0 2.8		19 15.0		348 30.9		20 35.6		336 51.3		21 1.5		325 8.7		20 31.0		313 27.0		19 4.6	
3 0	16 14.4		17 5.5		4 53.3		19 16.5		353 21.2		20 36.3		341 41.6		21 1.4		329 58.9		20 30.2		318 17.3		19 3.0	
20	21 5.0	290.6	17 7.6	2.1	9 43.7	290.5	19 17.9	1.5	358 11.5	290.3	20 37.1	0.7	346 31.8	290.3	21 1.4	0.0	334 49.2	290.2	20 29.4	-0.8	323 7.6	290.3	19 1.4	-1.6
40	25 55.6		17 9.8		14 34.2		19 19.4		3 1.8		20 37.8		351 22.1		21 1.3		339 39.4		20 28.5		327 57.9		18 59.8	
4 0	30 46.3		17 11.9		19 24.6		19 20.9		7 52.2		20 38.5		356 12.3		21 1.3		344 29.6		20 27.7		332 48.1		18 58.2	
20	35 36.9	290.6	17 14.0	2.1	24 15.1	290.4	19 22.3	1.4	12 42.5	290.3	20 39.2	0.7	1 2.6	290.2	21 1.2	-0.1	349 19.9	290.2	20 26.8	-0.9	337 38.4	290.3	18 56.6	-1.6
40	40 27.5		17 16.1		29 5.5		19 23.7		17 32.8		20 39.9		5 52.8		21 1.1		354 10.1		20 25.9		342 28.7		18 54.9	
5 0	45 18.1		17 18.2		33 56.0		19 25.1		22 23.1		20 40.5		10 43.1		21 1.0		359 0.4		20 25.0		347 19.0		18 53.3	
20	50 8.7	290.6	17 20.3	2.1	38 46.4	290.4	19 26.6	1.4	27 13.4	290.3	20 41.2	0.7	15 33.3	290.2	21 0.9	-0.1	3 50.6	290.2	20 24.1	-0.9	352 9.3	290.3	18 51.6	-1.7
40	54 59.3		17 22.4		43 36.9		19 28.0		32 3.8		20 41.9		20 23.6		21 0.8		8 40.8		20 23.2		356 59.5		18 49.9	
6 0	59 49.9		17 24.5		48 27.3		19 29.3		36 54.1		20 42.5		25 13.8		21 0.6		13 31.1		20 22.3		1 49.8		18 48.3	
20	64 40.5	290.6	17 26.5	2.0	53 17.7	290.4	19 30.7	1.4	41 44.4	290.3	20 43.1	0.6	30 4.1	290.2	21 0.5	-0.2	18 21.3	290.2	20 21.4	-0.9	6 40.1	290.3	18 46.6	-1.7
40	69 31.1		17 28.6		58 8.2		19 32.1		46 34.7		20 43.8		34 54.3		21 0.3		23 11.6		20 20.5		11 30.4		18 44.9	
7 0	74 21.7		17 30.6		62 58.6		19 33.5		51 25.0		20 44.4		39 44.6		21 0.1		28 1.8		20 19.5		16 20.7		18 43.2	
20	79 12.3	290.6	17 32.7	2.0	67 49.0	290.4	19 34.8	1.3	56 15.3	290.3	20 45.0	0.6	44 34.8	290.2	21 0.0	-0.2	32 52.1	290.2	20 18.5	-1.0	21 11.0	290.3	18 41.4	-1.7
40	84 2.9		17 34.7		72 39.5		19 36.1		61 5.6		20 45.6		49 25.1		20 59.8		37 42.3		20 17.6		26 1.3		18 39.7	
8 0	88 53.5		17 36.7		77 29.9		19 37.5		65 55.9		20 46.1		54 15.3		20 59.6		42 32.6		20 16.6		30 51.5		18 38.0	
20	93 44.1	290.6	17 38.7	2.0	82 20.3	290.4	19 38.8	1.3	70 46.2	290.3	20 46.7	0.6	59 5.5	290.2	20 59.4	-0.2	47 22.8	290.2	20 15.6	-1.0	35 41.8	290.3	18 36.2	-1.8
40	98 34.7		17 40.8		87 10.8		19 40.1		75 36.5		20 47.3		63 55.8		20 59.2		52 13.0		20 14.6		40 32.1		18 34.5	
9 0	103 25.2		17 42.7		92 1.2		19 41.4		80 26.8		20 47.8		68 46.0		20 58.9		57 3.3		20 13.6		45 22.4		18 32.7	
20	108 15.8	290.6	17 44.7	2.0	96 51.6	290.4	19 42.7	1.3	85 17.1	290.3	20 48.4	0.5	73 36.3	290.2	20 58.7	-0.2	61 53.5	290.2	20 12.6	-1.0	50 12.7	290.3	18 30.9	-1.8
40	113 6.4		17 46.7		101 42.0		19 44.0		90 7.4		20 48.9		78 26.5		20 58.4		66 43.8		20 11.5		55 3.0		18 29.1	
10 0	117 57.0		17 48.7		106 32.4		19 45.2		94 57.7		20 49.4		83 16.8		20 58.2		71 34.0		20 10.5		59 53.3		18 27.3	
20	122 47.6	290.6	17 50.6	1.9	111 22.8	290.4	19 46.5	1.3	99 48.0	290.3	20 49.9	0.5	88 7.0	290.2	20 57.9	-0.3	76 24.3	290.2	20 9.4	-1.1	64 43.6	290.3	18 25.5	-1.8
40	127 38.1		17 52.6		116 13.3		19 47.8		104 38.3		20 50.4		92 57.2		20 57.6		81 14.5		20 8.4		69 33.9		18 23.7	
11 0	132 28.7		17 54.5		121 3.7		19 49.0		109 28.6		20 50.9		97 47.5		20 57.3		86 4.8		20 7.3		74 24.2		18 21.9	
20	137 19.3	290.6	17 56.4	1.9	125 54.1	290.4	19 50.2	1.2	114 18.9	290.3	20 51.4	0.5	102 37.7	290.2	20 57.0	-0.3	90 55.0	290.2	20 6.2	-1.1	79 14.5	290.3	18 20.0	-1.9
40	142 9.8		17 58.4		130 44.5		19 51.4		119 9.2		20 51.8		107 28.0		20 56.7		95 45.3		20 5.1		84 4.8		18 18.2	
12 0	147 0.4		18 0.3		135 34.9		19 52.6		123 59.5		20 52.3		112 18.2		20 56.3		100 35.5		20 4.0		88 55.0		18 16.3	
20	151 51.0	290.6	18 2.2	1.9	140 25.3	290.4	19 53.8	1.2	128 49.8	290.3	20 52.7	0.4	117 8.4	290.2	20 56.0	-0.3	105 25.8	290.3	20 2.9	-1.1	93 45.3	290.3	18 14.4	-1.9
40	156 41.5		18 4.1		145 15.7		19 55.0		133 40.1		20 53.2		121 58.7		20 55.6		110 16.0		20 1.7		98 35.6		18 12.5	
13 0	161 32.1		18 6.0		150 6.1		19 56.2		138 30.4		20 53.6		126 48.9		20 55.3		115 6.3		20 0.6		103 25.9		18 10.6	
20	166 22.6	290.6	18 7.8	1.9	154 56.5	290.4	19 57.4	1.2	143 20.6	290.3	20 54.0	0.4	131 39.2	290.2	20 54.9	-0.4	119 56.5	290.3	19 59.4	-1.2	108 16.2	290.3	18 8.7	-1.9
40	171 13.2		18 9.7		159 46.9		19 58.5		148 10.9		20 54.4		136 29.4		20 54.5		124 46.8		19 58.3		113 6.5		18 6.8	
14 0	176 3.7		18 11.6		164 37.3		19 59.7		153 1.2		20 54.8		141 19.6		20 54.1		129 37.0		19 57.1		117 56.8		18 4.9	
20	180 54.3	290.5	18 13.4	1.8	169 27.7	290.4	20 0.8	1.1	157 51.5	290.3	20 55.1	0.4	146 9.9	290.2	20 53.7	-0.4	134 27.3	290.3	19 55.9	-1.2	122 47.1	290.3	18 3.0	-1.9
40	185 44.8		18 15.2		174 18.0		20 1.9		162 41.8		20 55.5		151 0.1		20 53.3		139 17.5		19 54.7		127 37.4		18 1.0	
15 0	190 35.3		18 17.1		179 8.4		20 3.1		167 32.1		20 55.9		155 50.4		20 52.9		144 7.8		19 53.5		132 27.7		17 59.1	
20	195 25.9	290.5	18 18.9	1.8	183 58.8	290.4	20 4.2	1.1	172 22.3	290.3	20 56.2	0.3	160 40.6	290.2	20 52.4	-0.5	148 58.0	290.3	19 52.3	-1.2	137 18.1	290.3	17 57.1	-2.0
40	200 16.4		18 20.7		188 49.2		20 5.3		177 12.6		20 56.5		165 30.8		20 52.0		153 48.3		19 51.0		142 8.4		17 55.1	
16 0	205 6.9		18 22.5		193 39.6		20 6.3		182 2.9		20 56.9		170 21.1		20 51.5		158 38.5		19 49.8		146 58.7		17 53.2	
20	209 57.5	290.5	18 24.3	1.8	198 30.0	290.4	20 7.4	1.1	186 53.2	290.3	20 57.2	0.3	175 11.3	290.2	20 51.1	-0.5	163 28.8	290.3	19 48.6	-1.3	151 49.0	290.3	17 51.2	-2.0
40	214 48.0		18 26.1		203 20.3		20 8.5		191 43.5		20 57.5		180 1.5		20 50.6		168 19.1		19 47.3		156 39.3		17 49.2	
17 0	219 38.5		18 27.8		208 10.7		20 9.5		196 33.7		20 57.8		184 51.8		20 50.1		173 9.3		19 46.0		161 29.6		17 47.1	
20	224 29.1	290.5	18 29.6	1.8	213 1.1	290.4	20 10.6	1.0	201 24.0	290.3	20 58.0	0.3	189 42.0	290.2	20 49.6	-0.5	177 59.6	290.3	19 44.7	-1.3	166 19.9	290.3	17 45.1	-2.0
40	229 19.6		18 31.3		217 51.5		20 11.6		206 14.3		20 58.3		194 32.3		20 49.1		182 49.8		19 43.5		171 10.2		17 43.1	
18 0	234 10.1		18 33.1		222 41.8		20 12.6		211 4.5		20 58.6		199 22.5		20 48.5		187 40.1		19 42.2		176 0.5		17 41.0	
20	239 0.6	290.5	18 34.8	1.7	227 32.2	290.4	20 13.7	1.0	215 54.8	290.3	20 58.8	0.2	204 12.7	290.2	20 48.0	-0.5	192 30.3	290.3	19 40.8	-1.3	180 50.8	290.3	17 39.0	-2.0
40	243 51.1		18 36.5		232 22.6		20 14.7		220 45.1		20 59.1		209 3.0		20 47.4		197 20.6		19 39.5		185 41.1		17 36.9	
19 0	248 41.6		18 38.3		237 12.9		20 15.7		225 35.4		20 59.3		213 53.2		20 46.9		202 10.9		19 38.2		190 31.4		17 34.9	
20	253 32.2	290.5	18 40.0	1.7	242 3.3	290.4	20 16.6	1.0	230 25.6	290.3	20 59.5	0.2	218 43.4	290.2	20 46.3	-0.6	207 1.1	290.3	19 36.8	-1.4	195 21.8	290.3	17 32.8	-2.1
40	258 22.7		18 41.7		246 53.7		20 17.6		235 15.9		20 59.7		223 33.7		20 45.7		211 51.4		19 35.5		200 12.1		17 30.7	
20 0	263 13.2		18 43.3		251 44.0		20 18.6		240 6.2		20 59.9		228 23.9		20 45.1		216 41.7		19 34.1		205 2.4		17 28.6	
20	268 3.7	290.5	18 45.0	1.7	256 34.4	290.4	20 19.5	0.9	244 56.4	290.3	21 0.1	0.2	233 14.2	290.2	20 44.5	-0.6	221 31.9	290.3	19 32.7	-1.4	209 52.7	290.3	17 26.5	-2.1
40	272 54.2		18 46.7		261 24.7		20 20.5		249 46.7		21 0.2		238 4.4		20 43.9		226 22.2		19 31.4		214 43.0		17 24.3	
21 0	277 44.7		18 48.3		266 15.1		20 21.4		254 37.0		21 0.4		242 54.6		20 43.3		231 12.4		19 30.0		219 33.3		17 22.2	
20	282 35.2	290.5	18 50.0	1.6	271 5.4	290.4	20 22.3	0.9	259 27.2	290.3	21 0.6	0.1	247 44.9	290.2	20 42.7	-0.6	236 2.7	290.3	19 28.5	-1.4	224 23.7	290.3	17 20.1	-2.2
40	287 25.7		18 51.6		275 55.8		20 23.2		264 17.5		21 0.7		252 35.1		20 42.0		240 53.0		19 27.1		229 14.0		17 17.9	
22 0	292 16.2		18 53.2		280 46.1		20 24.1		269 7.7		21 0.8		257 25.3		20 41.4		245 43.2		19 25.7		234 4.3		17 15.7	
20	297 6.6	290.5	18 54.9	1.6	285 36.5	290.3	20 25.0	0.9	273 58.0	290.3	21 0.9	0.1	262 15.6	290.2	20 40.7	-0.7	250 33.5	290.3	19 24.3	-1.5	238 54.6	290.3	17 13.6	-2.2
40	301 57.1		18 56.5		290 26.8		20 25.9		278 48.3		21 1.0		267 5.8		20 40.0		255 23.8		19 22.8		243 44.9		17 11.4	
23 0	306 47.6		18 58.1		295 17.2		20 26.7		283 38.5		21 1.1		271 56.1		20 39.3		260 14.0		19 21.3		248 35.3		17 9.2	
20	311 38.1	290.5	18 59.7	1.6	300 7.5	290.3	20 27.6	0.9	288 28.8	290.3	21 1.2	0.1	276 46.3	290.2	20 38.6	-0.7	265 4.3	290.3	19 19.9	-1.5	253 25.6	290.3	17 7.0	-2.2
40	316 28.6		19 1.2		304 57.9		20 28.4		293 19.0		21 1.3		281 36.5		20 37.9		269 54.6		19 18.4		258 15.9		17 4.8	

	9 Oct						10 Oct						11 Oct						12 Oct						13 Oct						14 Oct					
	GHA			Dec			GHA			Dec			GHA			Dec			GHA			Dec			GHA			Dec			GHA			Dec		
h m	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d	o	'	d
0 0	263	6.2		17	2.6		251	31.0		13	58.0		239	56.4		10	9.1		228	16.5		5	43.5		216	23.4		0	52.1		204	7.7		-4	10.9	
20	267	56.5	290.3	17	0.3	-2.2	256	21.4	290.4	13	55.2	-2.9	244	46.7	290.3	10	5.6	-3.5	233	6.7	290.2	5	39.6	-3.9	221	13.4	290.0	0	48.0	-4.2	208	57.3	289.6	-4	15.2	-4.2
40	272	46.9		16	58.1		261	11.7		13	52.3		249	37.0		10	2.1		237	56.9		5	35.7		226	3.4		0	43.8		213	46.9		-4	19.4	
1 0	277	37.2		16	55.9		266	2.1		13	49.3		254	27.4		9	58.7		242	47.1		5	31.8		230	53.3		0	39.6		218	36.4		-4	23.6	
20	282	27.5	290.3	16	53.6	-2.3	270	52.4	290.4	13	46.4	-2.9	259	17.7	290.3	9	55.2	-3.5	247	37.3	290.2	5	27.9	-3.9	235	43.3	289.9	0	35.5	-4.2	223	26.0	289.6	-4	27.8	-4.2
40	287	17.8		16	51.3		275	42.8		13	43.5		264	8.0		9	51.7		252	27.5		5	24.0		240	33.2		0	31.3		228	15.5		-4	32.0	
2 0	292	8.2		16	49.0		280	33.2		13	40.6		268	58.3		9	48.2		257	17.7		5	20.1		245	23.1		0	27.1		233	5.1		-4	36.2	
20	296	58.5	290.3	16	46.8	-2.3	285	23.5	290.4	13	37.6	-3.0	273	48.7	290.3	9	44.7	-3.5	262	7.9	290.2	5	16.1	-3.9	250	13.1	289.9	0	22.9	-4.2	237	54.6	289.5	-4	40.4	-4.2
40	301	48.8		16	44.5		290	13.9		13	34.7		278	39.0		9	41.2		266	58.1		5	12.2		255	3.0		0	18.8		242	44.2		-4	44.6	
3 0	306	39.2		16	42.2		295	4.2		13	31.7		283	29.3		9	37.7		271	48.3		5	8.3		259	52.9		0	14.6		247	33.7		-4	48.8	
20	311	29.5	290.3	16	39.8	-2.3	299	54.6	290.4	13	28.7	-3.0	288	19.6	290.3	9	34.2	-3.5	276	38.5	290.2	5	4.3	-4.0	264	42.8	289.9	0	10.4	-4.2	252	23.2	289.5	-4	53.0	-4.2
40	316	19.8		16	37.5		304	45.0		13	25.8		293	10.0		9	30.6		281	28.7		5	0.4		269	32.7		0	6.2		257	12.7		-4	57.2	
4 0	321	10.2		16	35.2		309	35.3		13	22.8		298	0.3		9	27.1		286	18.8		4	56.4		274	22.7		0	2.0		262	2.2		-5	1.4	
20	326	0.5	290.3	16	32.8	-2.4	314	25.7	290.4	13	19.8	-3.0	302	50.6	290.3	9	23.6	-3.6	291	9.0	290.2	4	52.5	-4.0	279	12.6	289.9	-0	2.2	-4.2	266	51.7	289.5	-5	5.6	-4.2
40	330	50.8		16	30.5		319	16.0		13	16.8		307	40.9		9	20.0		295	59.2		4	48.5		284	2.5		-0	6.4		271	41.2		-5	9.8	
5 0	335	41.2		16	28.1		324	6.4		13	13.8		312	31.2		9	16.4		300	49.4		4	44.5		288	52.4		-0	10.6		276	30.7		-5	14.0	
20	340	31.5	290.3	16	25.7	-2.4	328	56.8	290.4	13	10.8	-3.0	317	21.5	290.3	9	12.9	-3.6	305	39.5	290.2	4	40.6	-4.0	293	42.2	289.9	-0	14.8	-4.2	281	20.2	289.5	-5	18.2	-4.2
40	345	21.8		16	23.3		333	47.1		13	7.7		322	11.9		9	9.3		310	29.7		4	36.6		298	32.1		-0	19.0		286	9.7		-5	22.3	
6 0	350	12.2		16	21.0		338	37.5		13	4.7		327	2.2		9	5.7		315	19.8		4	32.6		303	22.0		-0	23.2		290	59.1		-5	26.5	
20	355	2.5	290.3	16	18.6	-2.4	343	27.8	290.4	13	1.7	-3.1	331	52.5	290.3	9	2.2	-3.6	320	10.0	290.2	4	28.6	-4.0	308	11.9	289.9	-0	27.4	-4.2	295	48.6	289.5	-5	30.7	-4.2
40	359	52.8		16	16.1		348	18.2		12	58.6		336	42.8		8	58.6		325	0.2		4	24.6		313	1.8		-0	31.6		300	38.1		-5	34.9	
7 0	4	43.2		16	13.7		353	8.6		12	55.5		341	33.1		8	55.0		329	50.3		4	20.7		317	51.6		-0	35.8		305	27.5		-5	39.1	
20	9	33.5	290.3	16	11.3	-2.4	357	58.9	290.4	12	52.5	-3.1	346	23.4	290.3	8	51.4	-3.6	334	40.5	290.1	4	16.7	-4.0	322	41.5	289.9	-0	40.0	-4.2	310	17.0	289.4	-5	43.2	-4.2
40	14	23.8		16	8.8		2	49.3		12	49.4		351	13.7		8	47.8		339	30.6		4	12.7		327	31.3		-0	44.2		315	6.4		-5	47.4	
8 0	19	14.2		16	6.4		7	39.6		12	46.3		356	4.0		8	44.1		344	20.8		4	8.7		332	21.2		-0	48.4		319	55.8		-5	51.6	
20	24	4.5	290.3	16	3.9	-2.5	12	30.0	290.4	12	43.2	-3.1	0	54.3	290.3	8	40.5	-3.6	349	10.9	290.1	4	4.6	-4.0	337	11.0	289.8	-0	52.6	-4.2	324	45.2	289.4	-5	55.7	-4.2
40	28	54.9		16	1.5		17	20.3		12	40.1		5	44.6		8	36.9		354	1.0		4	0.6		342	0.9		-0	56.8		329	34.7		-5	59.9	
9 0	33	45.2		15	59.0		22	10.7		12	37.0		10	34.9		8	33.3		358	51.2		3	56.6		346	50.7		-1	1.0		334	24.1		-6	4.1	
20	38	35.5	290.3	15	56.5	-2.5	27	1.1	290.4	12	33.9	-3.1	15	25.2	290.3	8	29.6	-3.7	3	41.3	290.1	3	52.6	-4.0	351	40.6	289.8	-1	5.2	-4.2	339	13.5	289.4	-6	8.2	-4.1
40	43	25.9		15	54.0		31	51.4		12	30.8		20	15.5		8	26.0		8	31.4		3	48.6		356	30.4		-1	9.4		344	2.9		-6	12.4	
10 0	48	16.2		15	51.5		36	41.8		12	27.6		25	5.8		8	22.3		13	21.5		3	44.5		1	20.2		-1	13.7		348	52.3		-6	16.5	
20	53	6.6	290.3	15	49.0	-2.5	41	32.1	290.4	12	24.5	-3.1	29	56.1	290.3	8	18.7	-3.7	18	11.7	290.1	3	40.5	-4.0	6	10.0	289.8	-1	17.9	-4.2	353	41.6	289.4	-6	20.7	-4.2
40	57	56.9		15	46.5		46	22.5		12	21.4		34	46.4		8	15.0		23	1.8		3	36.5		10	59.8		-1	22.1		358	31.0		-6	24.8	
11 0	62	47.3		15	43.9		51	12.8		12	18.2		39	36.7		8	11.3		27	51.9		3	32.4		15	49.6		-1	26.3		3	20.4		-6	29.0	
20	67	37.6	290.3	15	41.4	-2.5	56	3.2	290.4	12	15.0	-3.2	44	27.0	290.3	8	7.6	-3.7	32	42.0	290.1	3	28.4	-4.0	20	39.4	289.8	-1	30.5	-4.2	8	9.7	289.4	-6	33.1	-4.1
40	72	28.0		15	38.8		60	53.6		12	11.9		49	17.3		8	4.0		37	32.1		3	24.3		25	29.2		-1	34.7		12	59.1		-6	37.3	
12 0	77	18.3		15	36.3		65	43.9		12	8.7		54	7.5		8	0.3		42	22.2		3	20.3		30	19.0		-1	39.0		17	48.4		-6	41.4	
20	82	8.6	290.3	15	33.7	-2.6	70	34.3	290.4	12	5.5	-3.2	58	57.8	290.3	7	56.6	-3.7	47	12.3	290.1	3	16.2	-4.1	35	8.8	289.8	-1	43.2	-4.2	22	37.8	289.3	-6	45.5	-4.1
40	86	59.0		15	31.1		75	24.6		12	2.3		63	48.1		7	52.9		52	2.4		3	12.2		39	58.6		-1	47.4		27	27.1		-6	49.7	
13 0	91	49.3		15	28.5		80	15.0		11	59.1		68	38.4		7	49.2		56	52.5		3	8.1		44	48.4		-1	51.6		32	16.4		-6	53.8	
20	96	39.7	290.3	15	25.9	-2.6	85	5.3	290.4	11	55.9	-3.2	73	28.7	290.3	7	45.4	-3.7	61	42.6	290.1	3	4.0	-4.1	49	38.1	289.8	-1	55.9	-4.2	37	5.8	289.3	-6	57.9	-4.1
40	101	30.0		15	23.3		89	55.7		11	52.7		78	19.0		7	41.7		66	32.7		3	0.0		54	27.9		-2	0.1		41	55.1		-7	2.1	
14 0	106	20.4		15	20.7		94	46.0		11	49.4		83	9.2		7	38.0		71	22.8		2	55.9		59	17.6		-2	4.3		46	44.4		-7	6.2	
20	111	10.7	290.3	15	18.1	-2.6	99	36.4	290.4	11	46.2	-3.2	87	59.5	290.3	7	34.3	-3.7	76	12.8	290.1	2	51.8	-4.1	64	7.4	289.7	-2	8.5	-4.2	51	33.7	289.3	-7	10.3	-4.1
40	116	1.1		15	15.4		104	26.7		11	42.9		92	49.8		7	30.5		81	2.9		2	47.7		68	57.1		-2	12.7		56	23.0		-7	14.4	
15 0	120	51.4		15	12.8		109	17.1		11	39.7		97	40.0		7	26.8		85	53.0		2	43.6		73	46.9		-2	17.0		61	12.3		-7	18.5	
20	125	41.8	290.4	15	10.2	-2.7	114	7.4	290.4	11	36.4	-3.3	102	30.3	290.3	7	23.0	-3.8	90	43.1	290.1	2	39.5	-4.1	78	36.6	289.7	-2	21.2	-4.2	66	1.5	289.3	-7	22.6	-4.1
40	130	32.1		15	7.5		118	57.8		11	33.2		107	20.6		7	19.3		95	33.1		2	35.4		83	26.3		-2	25.4		70	50.8		-7	26.7	
16 0	135	22.5		15	4.8		123	48.1		11	29.9		112	10.8		7	15.5		100	23.2		2	31.4		88	16.1		-2	29.6		75	40.1		-7	30.8	
20	140	12.8	290.4	15	2.1	-2.7	128	38.5	290.3	11	26.6	-3.3	117	1.1	290.3	7	11.7	-3.8	105	13.2	290.1	2	27.3	-4.1	93	5.8	289.7	-2	33.9	-4.2	80	29.3	289.2	-7	34.9	-4.1
40	145	3.2		14	59.4		133	28.8		11	23.3		121	51.4		7	8.0		110	3.3		2	23.2		97	55.5		-2	38.1		85	18.6		-7	39.0	
17 0	149	53.5		14	56.8		138	19.2		11	20.0		126	41.6		7	4.2		114	53.3		2	19.0		102	45.2		-2	42.3		90	7.8		-7	43.1	
20	154	43.9	290.4	14	54.0	-2.7	143	9.5	290.3	11	16.7	-3.3	131	31.9	290.3	7	0.4	-3.8	119	43.4	290.0	2	14.9	-4.1	107	34.9	289.7	-2	46.5	-4.2	94	57.1	289.2	-7	47.1	-4.1
40	159	34.2		14	51.3		147	59.9		11	13.4		136	22.1		6	56.6		124	33.4		2	10.8		112	24.6		-2	50.8		99	46.3		-7	51.2	
18 0	164	24.6		14	48.6		152	50.2		11	10.1		141	12.4		6	52.8		129	23.5		2	6.7		117	14.3		-2	55.0		104	35.5		-7	55.3	
20	169	15.0	290.4	14	45.9	-2.7	157	40.6	290.3	11	6.8	-3.3	146	2.6	290.2	6	49.0	-3.8	134	13.5	290.0	2	2.6	-4.1	122	4.0	289.7	-2	59.2	-4.2	109	24.7	289.2	-7	59.4	-4.1
40	174	5.3		14	43.1		162	30.9		11	3.4		150	52.9		6	45.2		139	3.5		1	58.5		126	53.7		-3	3.4		114	13.9		-8	3.4	
19 0	178	55.7		14	40.4		167	21.3		11	0.1		155	43.1		6	41.4		143	53.5		1	54.3		131	43.3		-3	7.7		119	3.1		-8	7.5	
20	183	46.0	290.4	14	37.6	-2.8	172	11.6	290.3	10	56.7	-3.4	160	33.4	290.2	6	37.6	-3.8	148	43.6	290.0	1	50.2	-4.1	136	33.0	289.7	-3	11.9	-4.2	123	52.3	289.2	-8	11.5	-4.0
40	188	36.4		14	34.8		177	2.0		10	53.4		165	23.6		6	33.7		153	33.6		1	46.1		141	22.7		-3	16.1		128	41.5		-8	15.6	
20 0	193	26.7		14	32.1		181	52.3		10	50.0		170	13.8		6	29.9		158	23.6		1	42.0		146	12.3		-3	20.3		133	30.7		-8	19.6	
20	198	17.1	290.4	14	29.3	-2.8	186	42.6	290.3	10	46.6	-3.4	175	4.1	290.2	6	26.1	-3.8	163	13.6	290.0	1	37.8	-4.2	151	2.0	289.6	-3	24.6	-4.2	138	19.8	289.2	-8	23.7	-4.0
40	203	7.4		14	26.5		191	33.0		10	43.3		179	54.3		6	22.2		168	3.6		1	33.7		155	51.6		-3	28.8		143	9.0		-8	27.7	
21 0	207	57.8		14	23.7		196	23.3		10	39.9		184	44.5		6	18.4		172	53.6		1	29.5		160	41.3		-3	33.0		147	58.2		-8	31.7	
20	212	48.2	290.4	14	20.9	-2.8	201	13.7	290.3	10	36.5	-3.4	189	34.8	290.2	6	14.5	-3.9	177	43.6	290.0	1	25.4	-4.1	165	30.9	289.6	-3	37.2	-4.2	152	47.3	289.1	-8	35.8	-4.0
40	217	38.5		14	18.0		206	4.0		10	33.1		194	25.0		6	10.7		182	33.6		1	21.2		170	20.5		-3	41.4		157	36.4		-8	39.8	
22 0	222	28.9		14	15.2		210	54.3		10	29.7		199	15.2		6	6.8		187	23.6		1	17.1		175	10.1		-3	45.7		162	25.6		-8	43.8	
20	227	19.2	290.4	14	12.4	-2.8	215	44.7	290.3	10	26.3	-3.4	204	5.4	290.2	6	2.9	-3.9	192	13.6	290.0	1	12.9	-4.2	179	59.7	289.6	-3	49.9	-4.2	167	14.7	289.1	-8	47.8	-4.0
40	232	9.6		14	9.5		220	35.0		10	22.8		208	55.7		5	59.1		197	3.6		1	8.8		184	49.4		-3	54.1		172	3.8		-8	51.8	
23 0	236	59.9		14	6.7		225	25.4		10	19.4		213	45.9		5	55.2		201	53.5		1	4.6		189	39.0		-3	58.3		176	52.9		-8	55.8	
20	241	50.3	290.4	14	3.8	-2.9	230	15.7	290.3	10	16.0	-3.4	218	36.1	290.2	5	51.3	-3.9	206	43.5	290.0	1	0.5	-4.2	194	28.5	289.6	-4	2.5	-4.2	181	42.0	289.1	-8	59.8	-4.0
40	246	40.7		14	0.9		235	6.0		10	12.5		223	26.3		5	47.4		211	33.5		0	56.3		199	18.1		-4	6.7		186	31.1		-9	3.8	

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h	m	15 Oct GHA	15 Oct Dec	d	d'	16 Oct GHA	16 Oct Dec	d	d'	17 Oct GHA	17 Oct Dec	d	d'	18 Oct GHA	18 Oct Dec	d	d'	19 Oct GHA	19 Oct Dec	d	d'	20 Oct GHA	20 Oct Dec	d	d'
0	0	191 20.2	-9 7.8	289.1	-4.0	177 54.6	-13 37.3	288.5	-3.4	163 50.4	-17 17.0	288.0	-2.6	149 16.5	-19 47.1	287.7	-1.5	134 30.7	-20 54.5	287.7	-0.3	119 56.1	-20 36.0	288.0	0.9
	20	196 9.3	-9 11.8			182 43.1	-13 40.7			168 38.5	-17 19.6			154 4.2	-19 48.6			139 18.5	-20 54.8			124 44.1	-20 35.2		
	40	200 58.4	-9 15.8			187 31.6	-13 44.1			173 26.5	-17 22.2			158 52.0	-19 50.1			144 6.2	-20 55.2			129 32.2	-20 34.3		
1	0	205 47.4	-9 19.7	289.1	-4.0	192 20.1	-13 47.6	288.5	-3.4	178 14.5	-17 24.7	288.0	-2.6	163 39.7	-19 51.6	287.7	-1.5	148 53.9	-20 55.4	287.7	-0.3	134 20.2	-20 33.4	288.1	0.9
	20	210 36.5	-9 23.7			197 8.6	-13 51.0			183 2.5	-17 27.3			168 27.4	-19 53.1			153 41.6	-20 55.7			139 8.3	-20 32.5		
	40	215 25.6	-9 27.7			201 57.1	-13 54.4			187 50.6	-17 29.9			173 15.1	-19 54.5			158 29.4	-20 56.0			143 56.4	-20 31.6		
2	0	220 14.6	-9 31.6	289.0	-3.9	206 45.6	-13 57.8	288.5	-3.4	192 38.6	-17 32.4	288.0	-2.5	178 2.8	-19 56.0	287.7	-1.4	163 17.1	-20 56.2	287.7	-0.2	148 44.4	-20 30.7	288.1	0.9
	20	225 3.6	-9 35.6			211 34.1	-14 1.2			197 26.6	-17 34.9			182 50.6	-19 57.4			168 4.8	-20 56.4			153 32.5	-20 29.8		
	40	229 52.7	-9 39.5			216 22.6	-14 4.5			202 14.6	-17 37.4			187 38.3	-19 58.8			172 52.6	-20 56.7			158 20.6	-20 28.8		
3	0	234 41.7	-9 43.4	289.0	-3.9	221 11.1	-14 7.9	288.5	-3.3	207 2.5	-17 39.9	288.0	-2.5	192 26.0	-20 0.2	287.7	-1.4	177 40.3	-20 56.9	287.7	-0.1	163 8.7	-20 27.9	288.1	1.0
	20	239 30.7	-9 47.4			225 59.5	-14 11.2			211 50.5	-17 42.4			197 13.7	-20 1.6			182 28.1	-20 57.0			167 56.8	-20 26.9		
	40	244 19.7	-9 51.3			230 48.0	-14 14.6			216 38.5	-17 44.8			202 1.4	-20 2.9			187 15.8	-20 57.2			172 44.9	-20 25.9		
4	0	249 8.7	-9 55.2	289.0	-3.9	235 36.4	-14 17.9	288.4	-3.3	221 26.5	-17 47.3	288.0	-2.4	206 49.1	-20 4.3	287.7	-1.3	192 3.6	-20 57.3	287.8	-0.1	177 33.0	-20 24.9	288.1	1.0
	20	253 57.7	-9 59.1			240 24.9	-14 21.2			226 14.4	-17 49.7			211 36.8	-20 5.6			196 51.3	-20 57.5			182 21.1	-20 23.9		
	40	258 46.7	-10 3.0			245 13.3	-14 24.6			231 2.4	-17 52.2			216 24.5	-20 6.9			201 39.1	-20 57.6			187 9.2	-20 22.8		
5	0	263 35.6	-10 6.9	289.0	-3.9	250 1.7	-14 27.9	288.4	-3.3	235 50.4	-17 54.6	287.9	-2.4	221 12.2	-20 8.2	287.7	-1.3	206 26.8	-20 57.7	287.8	0.0	191 57.3	-20 21.8	288.1	1.1
	20	268 24.6	-10 10.8			254 50.2	-14 31.2			240 38.3	-17 57.0			225 59.9	-20 9.5			211 14.6	-20 57.7			196 45.5	-20 20.7		
	40	273 13.6	-10 14.7			259 38.6	-14 34.4			245 26.3	-17 59.3			230 47.6	-20 10.8			216 2.4	-20 57.8			201 33.6	-20 19.6		
6	0	278 2.5	-10 18.6	288.9	-3.9	264 27.0	-14 37.7	288.4	-3.3	250 14.2	-18 1.7	287.9	-2.3	235 35.3	-20 12.0	287.7	-1.2	220 50.1	-20 57.8	287.8	0.0	206 21.8	-20 18.5	288.2	1.1
	20	282 51.5	-10 22.5			269 15.4	-14 41.0			255 2.1	-18 4.0			240 23.0	-20 13.2			225 37.9	-20 57.9			211 9.9	-20 17.4		
	40	287 40.4	-10 26.4			274 3.8	-14 44.2			259 50.1	-18 6.4			245 10.7	-20 14.4			230 25.7	-20 57.9			215 58.1	-20 16.3		
7	0	292 29.3	-10 30.2	288.9	-3.9	278 52.1	-14 47.5	288.4	-3.2	264 38.0	-18 8.7	287.9	-2.3	249 58.4	-20 15.6	287.7	-1.2	235 13.5	-20 57.9	287.8	0.1	220 46.3	-20 15.1	288.2	1.2
	20	297 18.3	-10 34.1			283 40.5	-14 50.7			269 25.9	-18 11.0			254 46.1	-20 16.8			240 1.2	-20 57.8			225 34.5	-20 14.0		
	40	302 7.2	-10 37.9			288 28.9	-14 53.9			274 13.8	-18 13.3			259 33.8	-20 18.0			244 49.0	-20 57.8			230 22.6	-20 12.8		
8	0	306 56.1	-10 41.8	288.9	-3.8	293 17.2	-14 57.1	288.3	-3.2	279 1.7	-18 15.6	287.9	-2.2	264 21.5	-20 19.1	287.7	-1.1	249 36.8	-20 57.7	287.8	0.1	235 10.8	-20 11.6	288.2	1.2
	20	311 45.0	-10 45.6			298 5.6	-15 0.3			283 49.6	-18 17.8			269 9.2	-20 20.3			254 24.6	-20 57.7			239 59.0	-20 10.4		
	40	316 33.9	-10 49.4			302 53.9	-15 3.5			288 37.5	-18 20.1			273 56.8	-20 21.4			259 12.4	-20 57.6			244 47.2	-20 9.2		
9	0	321 22.8	-10 53.3	288.9	-3.8	307 42.3	-15 6.7	288.3	-3.1	293 25.4	-18 22.3	287.9	-2.2	278 44.5	-20 22.5	287.7	-1.1	264 0.2	-20 57.5	287.8	0.1	249 35.5	-20 8.0	288.2	1.3
	20	326 11.6	-10 57.1			312 30.6	-15 9.8			298 13.3	-18 24.5			283 32.2	-20 23.6			268 48.0	-20 57.4			254 23.7	-20 6.7		
	40	331 0.5	-11 0.9			317 18.9	-15 13.0			303 1.2	-18 26.7			288 19.9	-20 24.6			273 35.8	-20 57.2			259 11.9	-20 5.5		
10	0	335 49.4	-11 4.7	288.8	-3.8	322 7.3	-15 16.1	288.3	-3.1	307 49.1	-18 28.9	287.9	-2.2	293 7.6	-20 25.7	287.7	-1.0	278 23.6	-20 57.1	287.8	0.2	264 0.1	-20 4.2	288.3	1.3
	20	340 38.2	-11 8.5			326 55.6	-15 19.2			312 37.0	-18 31.1			297 55.3	-20 26.7			283 11.4	-20 56.9			268 48.4	-20 2.9		
	40	345 27.1	-11 12.3			331 43.9	-15 22.3			317 24.8	-18 33.3			302 43.0	-20 27.7			287 59.3	-20 56.7			273 36.6	-20 1.6		
11	0	350 15.9	-11 16.1	288.8	-3.8	336 32.2	-15 25.4	288.3	-3.1	322 12.7	-18 35.4	287.9	-2.1	307 30.6	-20 28.7	287.7	-1.0	292 47.1	-20 56.5	287.8	0.2	278 24.9	-20 0.3	288.3	1.3
	20	355 4.7	-11 19.8			341 20.5	-15 28.5			327 0.6	-18 37.5			312 18.3	-20 29.7			297 34.9	-20 56.3			283 13.2	-19 59.0		
	40	359 53.6	-11 23.6			346 8.7	-15 31.6			331 48.4	-18 39.7			317 6.0	-20 30.6			302 22.8	-20 56.0			288 1.5	-19 57.6		
12	0	4 42.4	-11 27.4	288.8	-3.7	350 57.0	-15 34.7	288.3	-3.0	336 36.3	-18 41.8	287.8	-2.1	321 53.7	-20 31.6	287.7	-0.9	307 10.6	-20 55.8	287.8	0.3	292 49.7	-19 56.3	288.3	1.4
	20	9 31.2	-11 31.1			355 45.3	-15 37.7			341 24.1	-18 43.8			326 41.4	-20 32.5			311 58.4	-20 55.5			297 38.0	-19 54.9		
	40	14 20.0	-11 34.9			0 33.5	-15 40.8			346 12.0	-18 45.9			331 29.1	-20 33.4			316 46.3	-20 55.2			302 26.3	-19 53.5		
13	0	19 8.8	-11 38.6	288.8	-3.7	5 21.8	-15 43.8	288.2	-3.0	350 59.8	-18 48.0	287.8	-2.0	336 16.8	-20 34.3	287.7	-0.9	321 34.1	-20 54.9	287.9	0.3	307 14.6	-19 52.1	288.3	1.4
	20	23 57.5	-11 42.3			10 10.0	-15 46.9			355 47.6	-18 50.0			341 4.4	-20 35.2			326 22.0	-20 54.6			312 2.9	-19 50.7		
	40	28 46.3	-11 46.0			14 58.3	-15 49.9			0 35.5	-18 52.0			345 52.1	-20 36.1			331 9.8	-20 54.3			316 51.3	-19 49.2		
14	0	33 35.1	-11 49.8	288.8	-3.7	19 46.5	-15 52.9	288.2	-3.0	5 23.3	-18 54.0	287.8	-2.0	350 39.8	-20 36.9	287.7	-0.8	335 57.7	-20 53.9	287.9	0.4	321 39.6	-19 47.8	288.3	1.5
	20	38 23.9	-11 53.5			24 34.7	-15 55.8			10 11.1	-18 56.0			355 27.5	-20 37.7			340 45.6	-20 53.6			326 27.9	-19 46.3		
	40	43 12.6	-11 57.2			29 23.0	-15 58.8			14 58.9	-18 58.0			0 15.2	-20 38.6			345 33.5	-20 53.2			331 16.3	-19 44.9		
15	0	48 1.4	-12 0.9	288.7	-3.7	34 11.2	-16 1.8	288.2	-2.9	19 46.8	-19 0.0	287.8	-1.9	5 2.9	-20 39.4	287.7	-0.7	350 21.3	-20 52.8	287.9	0.4	336 4.6	-19 43.4	288.4	1.5
	20	52 50.1	-12 4.5			38 59.4	-16 4.7			24 34.6	-19 1.9			9 50.5	-20 40.1			355 9.2	-20 52.4			340 53.0	-19 41.9		
	40	57 38.8	-12 8.2			43 47.6	-16 7.7			29 22.4	-19 3.9			14 38.2	-20 40.9			359 57.1	-20 51.9			345 41.4	-19 40.4		
16	0	62 27.5	-12 11.9	288.7	-3.6	48 35.8	-16 10.6	288.2	-2.9	34 10.2	-19 5.8	287.8	-1.9	19 25.9	-20 41.6	287.7	-0.7	4 45.0	-20 51.5	287.9	0.5	350 29.8	-19 38.8	288.4	1.5
	20	67 16.3	-12 15.5			53 23.9	-16 13.5			38 58.0	-19 7.7			24 13.6	-20 42.4			9 32.9	-20 51.0			355 18.1	-19 37.3		
	40	72 5.0	-12 19.2			58 12.1	-16 16.4			43 45.8	-19 9.6			29 1.3	-20 43.1			14 20.8	-20 50.5			0 6.5	-19 35.7		
17	0	76 53.7	-12 22.8	288.7	-3.6	63 0.3	-16 19.3	288.2	-2.9	48 33.6	-19 11.4	287.8	-1.9	33 49.0	-20 43.8	287.7	-0.7	19 8.7	-20 50.1	287.9	0.5	4 54.9	-19 34.2	288.4	1.6
	20	81 42.4	-12 26.5			67 48.5	-16 22.2			53 21.4	-19 13.3			38 36.7	-20 44.5			23 56.6	-20 49.5			9 43.4	-19 32.6		
	40	86 31.0	-12 30.1			72 36.6	-16 25.0			58 9.2	-19 15.1			43 24.4	-20 45.1			28 44.6	-20 49.0			14 31.8	-19 31.0		
18	0	91 19.7	-12 33.7	288.7	-3.6	77 24.8	-16 27.9	288.1	-2.8	62 56.9	-19 17.0	287.8	-1.8	48 12.0	-20 45.8	287.7	-0.6	33 32.5	-20 48.5	287.9	0.6	19 20.2	-19 29.4	288.4	1.6
	20	96 8.4	-12 37.3			82 12.9	-16 30.7			67 44.7	-19 18.8			52 59.7	-20 46.4			38 20.4	-20 47.9			24 8.6	-19 27.8		
	40	100 57.0	-12 40.9			87 1.1	-16 33.5			72 32.5	-19 20.6			57 47.4	-20 47.0			43 8.3	-20 47.3			28 57.1	-19 26.1		
19	0	105 45.7	-12 44.5	288.6	-3.6	91 49.2	-16 36.4	288.1	-2.8	77 20.3	-19 22.3	287.8	-1.8	62 35.1	-20 47.6	287.7	-0.6	47 56.3	-20 46.7	288.0	0.6	33 45.5	-19 24.5	288.5	1.7
	20	110 34.3	-12 48.1			96 37.3	-16 39.2			82 8.0	-19 24.1			67 22.8	-20 48.2			52 44.2	-20 46.1			38 34.0	-19 22.8		
	40	115 23.0	-12 51.6			101 25.4	-16 41.9			86 55.8	-19 25.8			72 10.5	-20 48.7			57 32.2	-20 45.5			43 22.5	-19 21.1		
20	0	120 11.6	-12 55.2	288.6	-3.5	106 13.6	-16 44.7	288.1	-2.8	91 43.6	-19 27.6	287.8	-1.7	76 58.2	-20 49.3	287.7	-0.5	62 20.1	-20 44.9	288.0	0.7	48 10.9	-19 19.4	288.5	1.7
	20	125 0.2	-12 58.8			111 1.7	-16 47.5			96 31.3	-19 29.3			81 45.9	-20 49.8			67 8.1	-20 44.2			52 59.4	-19 17.7		
	40	129 48.8	-13 2.3			115 49.8	-16 50.2			101 19.1	-19 31.0			86 33.6	-20 50.3			71 56.1	-20 43.6			57 47.9	-19 16.0		
21	0	134 37.5	-13 5.8	288.6	-3.5	120 37.9	-16 53.0	288.1	-2.7	106 6.8	-19 32.7	287.7	-1.6	91 21.3	-20 50.8	287.7	-0.5	76 44.1	-20 42.9	288.0	0.7	62 36.4	-19 14.3	288.5	1.8
	20	139 26.0	-13 9.4			125 25.9	-16 55.7			110 54.6	-19 34.3			96 9.0	-20 51.3			81 32.0	-20 42.2			67 24.9	-19 12.5		
	40	144 14.6	-13 12.9			130 14.0	-16 58.4			115 42.3	-19 36.0			100 56.7	-20 51.8			86 20.0	-20 41.5			72 13.5	-19 10.8		
22	0	149 3.2	-13 16.4	288.6	-3.5	135 2.1	-17 1.1	288.1	-2.7	120 30.1	-19 37.6	287.7	-1.6	105 44.4	-20 52.2	287.7	-0.4	91 8.0	-20 40.7	288.0	0.8	77 2.0	-19 9.0	288.5	1.8
	20	153 51.8	-13 19.9			139 50.2	-17 3.8			125 17.8	-19 39.2			110 32.2	-20 52.6			95 56.0	-20 40.0			81 50.5	-19 7.2		
	40	158 40.4	-13 23.4			144 38.2	-17 6.4			130 5.6	-19 40.8			115 19.9	-20 53.0			100 44.0	-20 39.2			86 39.1	-19 5.4		
23	0	163 28.9	-13 26.9	288.5	-3.5	149 26.3	-17 9.1	288.0	-2.6	134 53.3	-19 42.4	287.7	-1.6	120 7.6	-20 53.4	287.7	-0.4	105 32.0	-20 38.4	288.0	0.8	91 27.6	-19 3.6	288.6	1.8
	20	168 17.5	-13 30.3			154 14.4	-17 11.7			139 41.0	-19 44.0			124 55.3	-20 53.8			110 20.1	-20 37.6			96 16.2	-19 1.8		
	40	173 6.0	-13 33.8			159 2.4	-17 14.4			144 28.8	-19 45.6			129 43.0	-20 54.2			115 8.1	-20 36.8			101 4.8	-19 0.0		

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h m	21 Oct GHA	21 Oct Dec	d	22 Oct GHA	22 Oct Dec	d	23 Oct GHA	23 Oct Dec	d	24 Oct GHA	24 Oct Dec	d	25 Oct GHA	25 Oct Dec	d	26 Oct GHA	26 Oct Dec	d
0 0	105 53.4	-18 58.1	288.6	92 35.0	-16 14.3	289.3	80 3.6	-12 41.0	289.9	68 14.3	-8 34.2	290.4	56 57.8	-4 8.7	290.8	46 3.0	0 22.8	291.0
20	110 41.9	-18 56.3	1.9	97 24.2	-16 11.7	2.7	84 53.5	-12 37.7	3.3	73 4.7	-8 30.6	3.6	61 48.6	-4 4.9	3.8	50 54.0	0 26.6	3.8
40	115 30.5	-18 54.4		102 13.5	-16 9.0		89 43.4	-12 34.5		77 55.2	-8 27.0		66 39.4	-4 1.2		55 45.0	0 30.3	
1 0	120 19.2	-18 52.5	288.6	107 2.7	-16 6.3	289.3	94 33.3	-12 31.2	289.9	82 45.6	-8 23.4	290.4	71 30.2	-3 57.4	290.8	60 36.0	0 34.1	291.0
20	125 7.8	-18 50.6	1.9	111 52.0	-16 3.6	2.7	99 23.2	-12 28.0	3.2	87 36.0	-8 19.8	3.6	76 21.0	-3 53.6	3.8	65 27.0	0 37.9	3.8
40	129 56.4	-18 48.7		116 41.3	-16 0.9		104 13.1	-12 24.7		92 26.4	-8 16.2		81 11.8	-3 49.9		70 18.0	0 41.6	
2 0	134 45.0	-18 46.8	288.7	121 30.6	-15 58.2	289.3	109 3.0	-12 21.5	289.9	97 16.9	-8 12.6	290.4	86 2.6	-3 46.1	290.8	75 9.0	0 45.4	291.0
20	139 33.7	-18 44.8	2.0	126 19.9	-15 55.5	2.7	113 52.9	-12 18.2	3.3	102 7.3	-8 9.0	3.6	90 53.4	-3 42.4	3.8	80 0.0	0 49.1	3.7
40	144 22.3	-18 42.9		131 9.2	-15 52.8		118 42.9	-12 14.9		106 57.7	-8 5.4		95 44.2	-3 38.6		84 51.0	0 52.9	
3 0	149 11.0	-18 40.9	288.7	135 58.5	-15 50.0	289.3	123 32.8	-12 11.6	290.0	111 48.2	-8 1.8	290.5	100 35.0	-3 34.8	290.8	89 42.1	0 56.6	291.0
20	153 59.7	-18 39.0	2.0	140 47.8	-15 47.3	2.7	128 22.8	-12 8.3	3.3	116 38.7	-7 58.1	3.6	105 25.8	-3 31.1	3.8	94 33.1	1 0.4	3.8
40	158 48.3	-18 37.0		145 37.2	-15 44.5		133 12.7	-12 5.0		121 29.1	-7 54.5		110 16.6	-3 27.3		99 24.1	1 4.1	
4 0	163 37.0	-18 35.0	288.7	150 26.5	-15 41.8	289.4	138 2.7	-12 1.7	290.0	126 19.6	-7 50.9	290.5	115 7.5	-3 23.5	290.8	104 15.1	1 7.9	291.0
20	168 25.7	-18 33.0	2.0	155 15.9	-15 39.0	2.8	142 52.7	-11 58.4	3.3	131 10.1	-7 47.3	3.6	119 58.3	-3 19.8	3.8	109 6.2	1 11.6	3.7
40	173 14.4	-18 30.9		160 5.2	-15 36.2		147 42.6	-11 55.1		136 0.6	-7 43.6		124 49.1	-3 16.0		113 57.2	1 15.3	
5 0	178 3.1	-18 28.9	288.7	164 54.6	-15 33.4	289.4	152 32.6	-11 51.8	290.0	140 51.1	-7 40.0	290.5	129 40.0	-3 12.2	290.8	118 48.2	1 19.1	291.0
20	182 51.9	-18 26.9	2.1	169 44.0	-15 30.6	2.8	157 22.6	-11 48.5	3.3	145 41.5	-7 36.3	3.6	134 30.8	-3 8.4	3.8	123 39.3	1 22.8	3.7
40	187 40.6	-18 24.8		174 33.4	-15 27.8		162 12.6	-11 45.1		150 32.0	-7 32.7		139 21.6	-3 4.7		128 30.3	1 26.6	
6 0	192 29.3	-18 22.7	288.8	179 22.8	-15 25.0	289.4	167 2.7	-11 41.8	290.0	155 22.6	-7 29.1	290.5	144 12.5	-3 0.9	290.9	133 21.3	1 30.3	291.0
20	197 18.1	-18 20.7	2.1	184 12.2	-15 22.2	2.8	171 52.7	-11 38.5	3.3	160 13.1	-7 25.4	3.7	149 3.4	-2 57.1	3.8	138 12.4	1 34.0	3.7
40	202 6.8	-18 18.6		189 1.6	-15 19.3		176 42.7	-11 35.1		165 3.6	-7 21.8		153 54.2	-2 53.4		143 3.4	1 37.8	
7 0	206 55.6	-18 16.5	288.8	193 51.1	-15 16.5	289.4	181 32.7	-11 31.8	290.1	169 54.1	-7 18.1	290.5	158 45.1	-2 49.6	290.9	147 54.4	1 41.5	291.0
20	211 44.4	-18 14.3	2.1	198 40.5	-15 13.6	2.9	186 22.8	-11 28.4	3.4	174 44.6	-7 14.4	3.7	163 35.9	-2 45.8	3.8	152 45.5	1 45.2	3.7
40	216 33.2	-18 12.2		203 29.9	-15 10.8		191 12.8	-11 25.0		179 35.2	-7 10.8		168 26.8	-2 42.0		157 36.5	1 49.0	
8 0	221 22.0	-18 10.1	288.8	208 19.4	-15 7.9	289.5	196 2.9	-11 21.7	290.1	184 25.7	-7 7.1	290.6	173 17.7	-2 38.3	290.9	162 27.6	1 52.7	291.0
20	226 10.8	-18 7.9	2.2	213 8.9	-15 5.0	2.9	200 53.0	-11 18.3	3.4	189 16.3	-7 3.5	3.7	178 8.5	-2 34.5	3.8	167 18.6	1 56.4	3.7
40	230 59.6	-18 5.7		217 58.3	-15 2.1		205 43.0	-11 14.9		194 6.8	-6 59.8		182 59.4	-2 30.7		172 9.7	2 0.1	
9 0	235 48.4	-18 3.6	288.8	222 47.8	-14 59.2	289.5	210 33.1	-11 11.5	290.1	198 57.4	-6 56.1	290.6	187 50.3	-2 26.9	290.9	177 0.7	2 3.8	291.1
20	240 37.2	-18 1.4	2.2	227 37.3	-14 56.3	2.9	215 23.2	-11 8.1	3.4	203 47.9	-6 52.4	3.7	192 41.2	-2 23.2	3.8	181 51.8	2 7.6	3.7
40	245 26.1	-17 59.2		232 26.8	-14 53.4		220 13.3	-11 4.7		208 38.5	-6 48.8		197 32.1	-2 19.4		186 42.8	2 11.3	
10 0	250 14.9	-17 57.0	288.9	237 16.3	-14 50.5	289.5	225 3.4	-11 1.3	290.1	213 29.1	-6 45.1	290.6	202 23.0	-2 15.6	290.9	191 33.9	2 15.0	291.1
20	255 3.8	-17 54.8	2.2	242 5.8	-14 47.6	2.9	229 53.5	-10 57.9	3.4	218 19.7	-6 41.4	3.7	207 13.9	-2 11.8	3.8	196 24.9	2 18.7	3.7
40	259 52.7	-17 52.5		246 55.4	-14 44.6		234 43.7	-10 54.5		223 10.3	-6 37.7		212 4.7	-2 8.0		201 16.0	2 22.4	
11 0	264 41.5	-17 50.3	288.9	251 44.9	-14 41.7	289.6	239 33.8	-10 51.1	290.1	228 0.9	-6 34.0	290.6	216 55.6	-2 4.3	290.9	206 7.0	2 26.1	291.1
20	269 30.4	-17 48.0	2.3	256 34.4	-14 38.7	3.0	244 23.9	-10 47.7	3.4	232 51.4	-6 30.3	3.7	221 46.6	-2 0.5	3.8	210 58.1	2 29.8	3.7
40	274 19.3	-17 45.7		261 24.0	-14 35.8		249 14.1	-10 44.2		237 42.0	-6 26.6		226 37.5	-1 56.7		215 49.2	2 33.5	
12 0	279 8.2	-17 43.5	288.9	266 13.6	-14 32.8	289.6	254 4.2	-10 40.8	290.2	242 32.7	-6 23.0	290.6	231 28.4	-1 52.9	290.9	220 40.2	2 37.3	291.1
20	283 57.1	-17 41.2	2.3	271 3.1	-14 29.8	3.0	258 54.4	-10 37.4	3.4	247 23.3	-6 19.3	3.7	236 19.3	-1 49.2	3.8	225 31.3	2 41.0	3.7
40	288 46.1	-17 38.9		275 52.7	-14 26.8		263 44.6	-10 33.9		252 13.9	-6 15.6		241 10.2	-1 45.4		230 22.3	2 44.7	
13 0	293 35.0	-17 36.6	289.0	280 42.3	-14 23.8	289.6	268 34.7	-10 30.5	290.2	257 4.5	-6 11.9	290.6	246 1.1	-1 41.6	290.9	235 13.4	2 48.4	291.1
20	298 23.9	-17 34.2	2.3	285 31.9	-14 20.8	3.0	273 24.9	-10 27.0	3.5	261 55.1	-6 8.2	3.7	250 52.0	-1 37.8	3.8	240 4.5	2 52.0	3.7
40	303 12.9	-17 31.9		290 21.5	-14 17.8		278 15.1	-10 23.6		266 45.8	-6 4.5		255 43.0	-1 34.1		244 55.5	2 55.7	
14 0	308 1.8	-17 29.6	289.0	295 11.1	-14 14.8	289.6	283 5.3	-10 20.1	290.2	271 36.4	-6 0.7	290.6	260 33.9	-1 30.3	290.9	249 46.6	2 59.4	291.1
20	312 50.8	-17 27.2	2.4	300 0.8	-14 11.8	3.0	287 55.5	-10 16.6	3.5	276 27.1	-5 57.0	3.7	265 24.8	-1 26.5	3.8	254 37.7	3 3.1	3.7
40	317 39.8	-17 24.8		304 50.4	-14 8.8		292 45.7	-10 13.2		281 17.7	-5 53.3		270 15.8	-1 22.7		259 28.7	3 6.8	
15 0	322 28.8	-17 22.5	289.0	309 40.0	-14 5.7	289.7	297 35.9	-10 9.7	290.2	286 8.4	-5 49.6	290.7	275 6.7	-1 18.9	290.9	264 19.8	3 10.5	291.1
20	327 17.8	-17 20.1	2.4	314 29.7	-14 2.7	3.0	302 26.1	-10 6.2	3.5	290 59.0	-5 45.9	3.7	279 57.6	-1 15.2	3.8	269 10.9	3 14.2	3.7
40	332 6.8	-17 17.7		319 19.3	-13 59.6		307 16.4	-10 2.7		295 49.7	-5 42.2		284 48.6	-1 11.4		274 1.9	3 17.9	
16 0	336 55.8	-17 15.3	289.0	324 9.0	-13 56.6	289.7	312 6.6	-9 59.2	290.3	300 40.3	-5 38.5	290.7	289 39.5	-1 7.6	291.0	278 53.0	3 21.5	291.1
20	341 44.8	-17 12.8	2.4	328 58.7	-13 53.5	3.1	316 56.8	-9 55.7	3.5	305 31.0	-5 34.7	3.7	294 30.5	-1 3.8	3.8	283 44.1	3 25.2	3.7
40	346 33.9	-17 10.4		333 48.4	-13 50.4		321 47.1	-9 52.2		310 21.7	-5 31.0		299 21.4	-1 0.1		288 35.1	3 28.9	
17 0	351 22.9	-17 8.0	289.1	338 38.1	-13 47.3	289.7	326 37.4	-9 48.7	290.3	315 12.4	-5 27.3	290.7	304 12.4	-0 56.3	291.0	293 26.2	3 32.5	291.1
20	356 12.0	-17 5.5	2.5	343 27.8	-13 44.2	3.1	331 27.6	-9 45.2	3.5	320 3.1	-5 23.6	3.7	309 3.3	-0 52.5	3.8	298 17.3	3 36.2	3.7
40	1 1.0	-17 3.1		348 17.5	-13 41.2		336 17.9	-9 41.7		324 53.8	-5 19.8		313 54.3	-0 48.7		303 8.4	3 39.9	
18 0	5 50.1	-17 0.6	289.1	353 7.2	-13 38.0	289.7	341 8.2	-9 38.2	290.3	329 44.5	-5 16.1	290.7	318 45.2	-0 45.0	291.0	307 59.4	3 43.5	291.1
20	10 39.2	-16 58.1	2.5	357 56.9	-13 34.9	3.1	345 58.5	-9 34.7	3.5	334 35.2	-5 12.4	3.7	323 36.2	-0 41.2	3.8	312 50.5	3 47.2	3.7
40	15 28.3	-16 55.6		2 46.7	-13 31.8		350 48.8	-9 31.2		339 25.9	-5 8.6		328 27.2	-0 37.4		317 41.6	3 50.9	
19 0	20 17.4	-16 53.1	289.1	7 36.4	-13 28.7	289.8	355 39.1	-9 27.6	290.3	344 16.6	-5 4.9	290.7	333 18.1	-0 33.7	291.0	322 32.7	3 54.5	291.1
20	25 6.5	-16 50.6	2.5	12 26.2	-13 25.6	3.1	0 29.4	-9 24.1	3.5	349 7.3	-5 1.2	3.7	338 9.1	-0 29.9	3.8	327 23.7	3 58.2	3.7
40	29 55.6	-16 48.1		17 15.9	-13 22.4		5 19.7	-9 20.6		353 58.0	-4 57.4		343 0.1	-0 26.1		332 14.8	4 1.8	
20 0	34 44.7	-16 45.5	289.1	22 5.7	-13 19.3	289.8	10 10.0	-9 17.0	290.3	358 48.7	-4 53.7	290.7	347 51.1	-0 22.3	291.0	337 5.9	4 5.5	291.1
20	39 33.8	-16 43.0	2.5	26 55.5	-13 16.1	3.2	15 0.3	-9 13.5	3.5	3 39.5	-4 49.9	3.8	352 42.0	-0 18.6	3.8	341 57.0	4 9.1	3.6
40	44 23.0	-16 40.4		31 45.3	-13 12.9		19 50.6	-9 9.9		8 30.2	-4 46.2		357 33.0	-0 14.8		346 48.1	4 12.8	
21 0	49 12.1	-16 37.9	289.2	36 35.1	-13 9.8	289.8	24 41.0	-9 6.4	290.4	13 21.0	-4 42.4	290.7	2 24.0	-0 11.0	291.0	351 39.1	4 16.4	291.1
20	54 1.3	-16 35.3	2.6	41 24.9	-13 6.6	3.2	29 31.3	-9 2.8	3.6	18 11.7	-4 38.7	3.7	7 15.0	-0 7.3	3.8	356 30.2	4 20.0	3.6
40	58 50.5	-16 32.7		46 14.7	-13 3.4		34 21.7	-8 59.2		23 2.4	-4 35.0		12 6.0	-0 3.5		1 21.3	4 23.7	
22 0	63 39.7	-16 30.1	289.2	51 4.5	-13 0.2	289.8	39 12.0	-8 55.7	290.4	27 53.2	-4 31.2	290.8	16 57.0	0 0.3	291.0	6 12.4	4 27.3	291.1
20	68 28.9	-16 27.5	2.6	55 54.3	-12 57.0	3.2	44 2.4	-8 52.1	3.6	32 44.0	-4 27.5	3.8	21 48.0	0 4.0	3.8	11 3.5	4 30.9	3.6
40	73 18.1	-16 24.9		60 44.2	-12 53.8		48 52.8	-8 48.5		37 34.7	-4 23.7		26 39.0	0 7.8		15 54.5	4 34.5	
23 0	78 7.3	-16 22.3	289.2	65 34.0	-12 50.6	289.9	53 43.2	-8 45.0	290.4	42 25.5	-4 19.9	290.8	31 30.0	0 11.6	291.0	20 45.6	4 38.2	291.1
20	82 56.5	-16 19.6	2.7	70 23.9	-12 47.4	3.2	58 33.5	-8 41.4	3.6	47 16.3	-4 16.2	3.7	36 21.0	0 15.3	3.7	25 36.7	4 41.8	3.6
40	87 45.7	-16 17.0		75 13.7	-12 44.2		63 23.9	-8 37.8		52 7.0	-4 12.4		41 12.0	0 19.1		30 27.8	4 45.4	

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h m	27 Oct GHA	d	Dec	d'	28 Oct GHA	d	Dec	d'	29 Oct GHA	d	Dec	d'	30 Oct GHA	d	Dec	d'	31 Oct GHA	d	Dec	d'	1 Nov GHA	d	Dec	d'
0 0	35 18.9		4 49.0		24 35.8		8 59.5		13 46.0		12 44.8		2 44.3		15 55.9		351 28.7		18 24.9		340 0.3		20 5.1	
20	40 10.0	291.1	4 52.6	3.6	29 26.9	291.0	9 2.9	3.3	18 36.9	290.9	12 47.7	2.9	7 35.1	290.7	15 58.3	2.4	356 19.2	290.5	18 26.6	1.7	344 50.6	290.4	20 6.1	1.0
40	45 1.0		4 56.2		34 17.9		9 6.2		23 27.8		12 50.6		12 25.8		16 0.7		1 9.7		18 28.4		349 41.0		20 7.1	
1 0	49 52.1		4 59.8		39 8.9		9 9.5		28 18.7		12 53.5		17 16.5		16 3.0		6 0.2		18 30.1		354 31.3		20 8.1	
20	54 43.2	291.1	5 3.4	3.6	43 60.0	291.0	9 12.8	3.3	33 9.6	290.9	12 56.4	2.9	22 7.2	290.7	16 5.4	2.4	10 50.7	290.5	18 31.8	1.7	359 21.7	290.4	20 9.1	1.0
40	59 34.3		5 7.0		48 51.0		9 16.1		38 0.5		12 59.3		26 57.9		16 7.7		15 41.2		18 33.5		4 12.1		20 10.1	
2 0	64 25.4		5 10.6		53 42.0		9 19.4		42 51.4		13 2.2		31 48.6		16 10.1		20 31.8		18 35.2		9 2.4		20 11.1	
20	69 16.4	291.1	5 14.2	3.6	58 33.0	291.0	9 22.7	3.3	47 42.3	290.9	13 5.0	2.9	36 39.3	290.7	16 12.4	2.3	25 22.3	290.5	18 36.9	1.7	13 52.8	290.4	20 12.1	0.9
40	74 7.5		5 17.8		63 24.1		9 26.0		52 33.2		13 7.9		41 30.0		16 14.7		30 12.8		18 38.5		18 43.1		20 13.0	
3 0	78 58.6		5 21.4		68 15.1		9 29.3		57 24.1		13 10.8		46 20.7		16 17.0		35 3.3		18 40.2		23 33.5		20 13.9	
20	83 49.7	291.1	5 25.0	3.6	73 6.1	291.0	9 32.6	3.3	62 14.9	290.9	13 13.6	2.8	51 11.3	290.7	16 19.3	2.3	39 53.8	290.5	18 41.8	1.6	28 23.8	290.3	20 14.9	0.9
40	88 40.8		5 28.5		77 57.1		9 35.8		67 5.8		13 16.4		56 2.0		16 21.6		44 44.3		18 43.5		33 14.2		20 15.8	
4 0	93 31.9		5 32.1		82 48.2		9 39.1		71 56.7		13 19.3		60 52.7		16 23.9		49 34.7		18 45.1		38 4.5		20 16.7	
20	98 22.9	291.1	5 35.7	3.6	87 39.2	291.0	9 42.4	3.3	76 47.5	290.9	13 22.1	2.8	65 43.4	290.7	16 26.2	2.3	54 25.2	290.5	18 46.7	1.6	42 54.9	290.3	20 17.6	0.9
40	103 14.0		5 39.3		92 30.2		9 45.6		81 38.4		13 24.9		70 34.1		16 28.4		59 15.7		18 48.4		47 45.2		20 18.5	
5 0	108 5.1		5 42.8		97 21.2		9 48.9		86 29.3		13 27.7		75 24.7		16 30.7		64 6.2		18 50.0		52 35.6		20 19.4	
20	112 56.2	291.1	5 46.4	3.6	102 12.2	291.0	9 52.1	3.2	91 20.1	290.9	13 30.5	2.8	80 15.4	290.7	16 32.9	2.2	68 56.7	290.5	18 51.6	1.6	57 25.9	290.3	20 20.2	0.9
40	117 47.3		5 49.9		107 3.2		9 55.4		96 11.0		13 33.3		85 6.1		16 35.2		73 47.2		18 53.1		62 16.2		20 21.1	
6 0	122 38.4		5 53.5		111 54.3		9 58.6		101 1.9		13 36.1		89 56.7		16 37.4		78 37.6		18 54.7		67 6.6		20 22.0	
20	127 29.4	291.1	5 57.0	3.5	116 45.3	291.0	10 1.8	3.2	105 52.7	290.9	13 38.9	2.8	94 47.4	290.7	16 39.6	2.2	83 28.1	290.5	18 56.3	1.6	71 56.9	290.3	20 22.8	0.8
40	132 20.5		6 0.6		121 36.3		10 5.1		110 43.6		13 41.7		99 38.1		16 41.8		88 18.6		18 57.8		76 47.3		20 23.6	
7 0	137 11.6		6 4.1		126 27.3		10 8.3		115 34.4		13 44.5		104 28.7		16 44.1		93 9.1		18 59.4		81 37.6		20 24.4	
20	142 2.7	291.1	6 7.7	3.5	131 18.3	291.0	10 11.5	3.2	120 25.3	290.8	13 47.2	2.7	109 19.4	290.7	16 46.3	2.2	97 59.5	290.5	19 0.9	1.5	86 27.9	290.3	20 25.2	0.8
40	146 53.8		6 11.2		136 9.3		10 14.7		125 16.1		13 50.0		114 10.0		16 48.4		102 50.0		19 2.5		91 18.3		20 26.0	
8 0	151 44.8		6 14.7		141 0.3		10 17.9		130 7.0		13 52.7		119 0.7		16 50.6		107 40.5		19 4.0		96 8.6		20 26.8	
20	156 35.9	291.1	6 18.3	3.5	145 51.3	291.0	10 21.1	3.2	134 57.8	290.8	13 55.5	2.8	123 51.3	290.6	16 52.8	2.2	112 30.9	290.5	19 5.5	1.5	100 58.9	290.3	20 27.6	0.8
40	161 27.0		6 21.8		150 42.3		10 24.3		139 48.6		13 58.2		128 42.0		16 55.0		117 21.4		19 7.0		105 49.2		20 28.4	
9 0	166 18.1		6 25.3		155 33.3		10 27.5		144 39.5		14 1.0		133 32.6		16 57.1		122 11.8		19 8.5		110 39.6		20 29.1	
20	171 9.1	291.1	6 28.8	3.5	160 24.3	291.0	10 30.7	3.2	149 30.3	290.8	14 3.7	2.7	138 23.3	290.6	16 59.3	2.1	127 2.3	290.5	19 10.0	1.5	115 29.9	290.3	20 29.8	0.7
40	176 0.2		6 32.4		165 15.3		10 33.8		154 21.1		14 6.4		143 13.9		17 1.4		131 52.8		19 11.4		120 20.2		20 30.6	
10 0	180 51.3		6 35.9		170 6.3		10 37.0		159 12.0		14 9.1		148 4.5		17 3.5		136 43.2		19 12.9		125 10.5		20 31.3	
20	185 42.4	291.1	6 39.4	3.5	174 57.2	291.0	10 40.2	3.2	164 2.8	290.8	14 11.8	2.7	152 55.1	290.6	17 5.7	2.1	141 33.7	290.4	19 14.3	1.4	130 0.9	290.3	20 32.0	0.7
40	190 33.5		6 42.9		179 48.2		10 43.3		168 53.6		14 14.5		157 45.8		17 7.8		146 24.1		19 15.8		134 51.2		20 32.7	
11 0	195 24.5		6 46.4		184 39.2		10 46.5		173 44.4		14 17.2		162 36.4		17 9.9		151 14.5		19 17.2		139 41.5		20 33.4	
20	200 15.6	291.1	6 49.9	3.5	189 30.2	291.0	10 49.6	3.1	178 35.3	290.8	14 19.8	2.7	167 27.0	290.6	17 12.0	2.1	156 5.0	290.4	19 18.6	1.4	144 31.8	290.3	20 34.1	0.7
40	205 6.7		6 53.4		194 21.2		10 52.8		183 26.1		14 22.5		172 17.6		17 14.1		160 55.4		19 20.0		149 22.1		20 34.7	
12 0	209 57.8		6 56.8		199 12.2		10 55.9		188 16.9		14 25.2		177 8.3		17 16.1		165 45.9		19 21.4		154 12.5		20 35.4	
20	214 48.8	291.1	7 0.3	3.5	204 3.1	291.0	10 59.0	3.1	193 7.7	290.8	14 27.8	2.6	181 58.9	290.6	17 18.2	2.1	170 36.3	290.4	19 22.8	1.4	159 2.8	290.3	20 36.1	0.6
40	219 39.9		7 3.8		208 54.1		11 2.2		197 58.5		14 30.5		186 49.5		17 20.3		175 26.7		19 24.2		163 53.1		20 36.7	
13 0	224 31.0		7 7.3		213 45.1		11 5.3		202 49.3		14 33.1		191 40.1		17 22.3		180 17.2		19 25.6		168 43.4		20 37.3	
20	229 22.0	291.1	7 10.8	3.5	218 36.1	291.0	11 8.4	3.1	207 40.1	290.8	14 35.8	2.6	196 30.7	290.6	17 24.3	2.0	185 7.6	290.4	19 26.9	1.3	173 33.7	290.3	20 37.9	0.6
40	234 13.1		7 14.2		223 27.0		11 11.5		212 30.9		14 38.4		201 21.3		17 26.4		189 58.0		19 28.3		178 24.0		20 38.5	
14 0	239 4.2		7 17.7		228 18.0		11 14.6		217 21.7		14 41.0		206 11.9		17 28.4		194 48.4		19 29.6		183 14.3		20 39.1	
20	243 55.2	291.1	7 21.1	3.5	233 9.0	291.0	11 17.7	3.1	222 12.5	290.8	14 43.6	2.6	211 2.5	290.6	17 30.4	2.0	199 38.9	290.4	19 30.9	1.3	188 4.6	290.3	20 39.7	0.6
40	248 46.3		7 24.6		237 59.9		11 20.8		227 3.3		14 46.2		215 53.1		17 32.4		204 29.3		19 32.3		192 54.9		20 40.3	
15 0	253 37.4		7 28.1		242 50.9		11 23.9		231 54.1		14 48.8		220 43.7		17 34.4		209 19.7		19 33.6		197 45.2		20 40.8	
20	258 28.5	291.1	7 31.5	3.4	247 41.8	291.0	11 27.0	3.1	236 44.9	290.8	14 51.4	2.6	225 34.3	290.6	17 36.4	2.0	214 10.1	290.4	19 34.9	1.3	202 35.6	290.3	20 41.4	0.6
40	263 19.5		7 34.9		252 32.8		11 30.0		241 35.6		14 54.0		230 24.9		17 38.4		219 0.5		19 36.2		207 25.9		20 41.9	
16 0	268 10.6		7 38.4		257 23.8		11 33.1		246 26.4		14 56.5		235 15.4		17 40.4		223 50.9		19 37.4		212 16.2		20 42.5	
20	273 1.6	291.1	7 41.8	3.4	262 14.7	291.0	11 36.2	3.1	251 17.2	290.8	14 59.1	2.6	240 6.0	290.6	17 42.3	1.9	228 41.4	290.4	19 38.7	1.3	217 6.5	290.3	20 43.0	0.5
40	277 52.7		7 45.2		267 5.7		11 39.2		256 8.0		15 1.7		244 56.6		17 44.3		233 31.8		19 40.0		221 56.8		20 43.5	
17 0	282 43.8		7 48.7		271 56.6		11 42.3		260 58.8		15 4.2		249 47.2		17 46.2		238 22.2		19 41.2		226 47.1		20 44.0	
20	287 34.8	291.1	7 52.1	3.4	276 47.6	290.9	11 45.3	3.0	265 49.5	290.8	15 6.8	2.5	254 37.8	290.6	17 48.1	1.9	243 12.6	290.4	19 42.5	1.2	231 37.4	290.3	20 44.5	0.5
40	292 25.9		7 55.5		281 38.5		11 48.3		270 40.3		15 9.3		259 28.3		17 50.1		248 3.0		19 43.7		236 27.7		20 45.0	
18 0	297 16.9		7 58.9		286 29.4		11 51.4		275 31.1		15 11.8		264 18.9		17 52.0		252 53.4		19 44.9		241 18.0		20 45.4	
20	302 8.0	291.1	8 2.3	3.4	291 20.4	290.9	11 54.4	3.0	280 21.8	290.8	15 14.3	2.5	269 9.5	290.6	17 53.9	1.9	257 43.8	290.4	19 46.1	1.2	246 8.3	290.3	20 45.9	0.5
40	306 59.1		8 5.7		296 11.3		11 57.4		285 12.6		15 16.8		274 0.0		17 55.8		262 34.2		19 47.3		250 58.5		20 46.3	
19 0	311 50.1		8 9.1		301 2.3		12 0.4		290 3.3		15 19.3		278 50.6		17 57.7		267 24.6		19 48.5		255 48.8		20 46.8	
20	316 41.2	291.1	8 12.5	3.4	305 53.2	290.9	12 3.4	3.0	294 54.1	290.8	15 21.8	2.5	283 41.1	290.6	17 59.6	1.9	272 15.0	290.4	19 49.7	1.2	260 39.1	290.3	20 47.2	0.4
40	321 32.2		8 15.9		310 44.1		12 6.4		299 44.8		15 24.3		288 31.7		18 1.4		277 5.3		19 50.8		265 29.4		20 47.6	
20 0	326 23.3		8 19.3		315 35.1		12 9.4		304 35.6		15 26.8		293 22.2		18 3.3		281 55.7		19 52.0		270 19.7		20 48.0	
20	331 14.3	291.1	8 22.7	3.4	320 26.0	290.9	12 12.4	3.0	309 26.3	290.7	15 29.3	2.5	298 12.8	290.5	18 5.1	1.8	286 46.1	290.4	19 53.2	1.1	275 10.0	290.3	20 48.4	0.4
40	336 5.4		8 26.0		325 16.9		12 15.4		314 17.1		15 31.7		303 3.3		18 7.0		291 36.5		19 54.3		280 0.3		20 48.8	
21 0	340 56.4		8 29.4		330 7.8		12 18.4		319 7.8		15 34.2		307 53.9		18 8.8		296 26.9		19 55.4		284 50.6		20 49.1	
20	345 47.5	291.0	8 32.8	3.4	334 58.8	290.9	12 21.3	2.9	323 58.5	290.7	15 36.6	2.4	312 44.4	290.5	18 10.6	1.8	301 17.3	290.4	19 56.5	1.1	289 40.9	290.3	20 49.5	0.4
40	350 38.5		8 36.1		339 49.7		12 24.3		328 49.3		15 39.1		317 35.0		18 12.4		306 7.6		19 57.6		294 31.2		20 49.8	
22 0	355 29.6		8 39.5		344 40.6		12 27.2		333 40.0		15 41.5		322 25.5		18 14.3		310 58.0		19 58.7		299 21.5		20 50.2	
20	0 20.6	291.0	8 42.9	3.3	349 31.5	290.9	12 30.2	3.0	338 30.7	290.7	15 43.9	2.4	327 16.0	290.5	18 16.0	1.8	315 48.4	290.4	19 59.8	1.1	304 11.8	290.3	20 50.5	0.3
40	5 11.7		8 46.2		354 22.4		12 33.1		343 21.5		15 46.4		332 6.6		18 17.8		320 38.8		20 0.9		309 2.0		20 50.8	
23 0	10 2.7		8 49.5		359 13.3		12 36.1		348 12.2		15 48.8		336 57.1		18 19.6		325 29.1		20 2.0		313 52.3		20 51.1	
20	14 53.7	291.0	8 52.9	3.3	4 4.2	290.9	12 39.0	2.9	353 2.9	290.7	15 51.2	2.4	341 47.6	290.5	18 21.4	1.8	330 19.5	290.4	20 3.0	1.0	318 42.6	290.3	20 51.4	0.3
40	19 44.8		8 56.2		8 55.1		12 41.9		357 53.6		15 53.6		346 38.2		18 23.1		335 9.9		20 4.1		323 32.9		20 51.7	

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h m	2 Nov GHA	2 Nov Dec	d	3 Nov GHA	3 Nov Dec	d	4 Nov GHA	4 Nov Dec	d	5 Nov GHA	5 Nov Dec	d	6 Nov GHA	6 Nov Dec	d	7 Nov GHA	7 Nov Dec	d
0 0	328 23.2	20 52.0		316 43.3	20 43.3		305 6.4	19 39.2		293 36.7	17 42.1		282 15.1	14 56.3		270 59.2	11 27.2	
20	333 13.5	20 52.2	0.2	321 33.6	20 42.8	-0.5	309 56.8	19 37.9	-1.3	298 27.2	17 40.2	-2.0	287 5.7	14 53.7	-2.6	275 49.8	11 24.0	-3.2
40	338 3.8	20 52.5		326 23.9	20 42.2		314 47.2	19 36.6		303 17.7	17 38.2		291 56.3	14 51.1		280 40.4	11 20.8	
1 0	342 54.0	20 52.7		331 14.2	20 41.7		319 37.5	19 35.3		308 8.1	17 36.2		296 46.9	14 48.4		285 31.1	11 17.6	
20	347 44.3	20 53.0	0.2	336 4.5	20 41.1	-0.6	324 27.9	19 34.0	-1.3	312 58.6	17 34.2	-2.0	301 37.5	14 45.8	-2.7	290 21.7	11 14.4	-3.2
40	352 34.6	20 53.2		340 54.7	20 40.6		329 18.3	19 32.7		317 49.1	17 32.1		306 28.0	14 43.1		295 12.3	11 11.2	
2 0	357 24.9	20 53.4		345 45.0	20 40.0		334 8.7	19 31.4		322 39.6	17 30.1		311 18.6	14 40.4		300 2.9	11 8.0	
20	2 15.2	20 53.6	0.2	350 35.3	20 39.4	-0.6	338 59.0	19 30.1	-1.3	327 30.1	17 28.1	-2.0	316 9.2	14 37.8	-2.7	304 53.6	11 4.8	-3.2
40	7 5.4	20 53.8		355 25.6	20 38.9		343 49.4	19 28.7		332 20.6	17 26.0		320 59.8	14 35.1		309 44.2	11 1.6	
3 0	11 55.7	20 53.9		0 15.9	20 38.3		348 39.8	19 27.4		337 11.1	17 24.0		325 50.4	14 32.4		314 34.8	10 58.3	
20	16 46.0	20 54.1	0.2	5 6.2	20 37.6	-0.6	353 30.2	19 26.0	-1.4	342 1.6	17 21.9	-2.1	330 41.0	14 29.7	-2.7	319 25.5	10 55.1	-3.2
40	21 36.3	20 54.3		9 56.5	20 37.0		358 20.5	19 24.6		346 52.1	17 19.8		335 31.6	14 27.0		324 16.1	10 51.8	
4 0	26 26.6	20 54.4		14 46.8	20 36.4		3 10.9	19 23.3		351 42.6	17 17.8		340 22.2	14 24.3		329 6.7	10 48.6	
20	31 16.8	20 54.5	0.1	19 37.1	20 35.7	-0.7	8 1.3	19 21.9	-1.4	356 33.1	17 15.7	-2.1	345 12.8	14 21.6	-2.7	333 57.3	10 45.3	-3.3
40	36 7.1	20 54.7		24 27.4	20 35.1		12 51.7	19 20.5		1 23.6	17 13.6		350 3.4	14 18.8		338 48.0	10 42.1	
5 0	40 57.4	20 54.8		29 17.7	20 34.4		17 42.1	19 19.0		6 14.1	17 11.4		354 54.0	14 16.1		343 38.6	10 38.8	
20	45 47.7	20 54.9	0.1	34 8.0	20 33.8	-0.7	22 32.5	19 17.6	-1.4	11 4.6	17 9.3	-2.1	359 44.6	14 13.4	-2.8	348 29.2	10 35.5	-3.3
40	50 38.0	20 55.0		38 58.3	20 33.1		27 22.9	19 16.2		15 55.1	17 7.2		4 35.2	14 10.6		353 19.8	10 32.2	
6 0	55 28.2	20 55.0		43 48.6	20 32.4		32 13.2	19 14.7		20 45.6	17 5.1		9 25.8	14 7.8		358 10.5	10 28.9	
20	60 18.5	20 55.1	0.1	48 38.9	20 31.7	-0.7	37 3.6	19 13.3	-1.4	25 36.1	17 2.9	-2.2	14 16.4	14 5.1	-2.8	3 1.1	10 25.6	-3.3
40	65 8.8	20 55.2		53 29.2	20 31.0		41 54.0	19 11.8		30 26.6	17 0.8		19 7.0	14 2.3		7 51.7	10 22.3	
7 0	69 59.1	20 55.2		58 19.5	20 30.2		46 44.4	19 10.4		35 17.1	16 58.6		23 57.6	13 59.5		12 42.3	10 19.0	
20	74 49.3	20 55.3	0.0	63 9.8	20 29.5	-0.7	51 34.8	19 8.9	-1.5	40 7.6	16 56.4	-2.2	28 48.2	13 56.7	-2.8	17 33.0	10 15.7	-3.3
40	79 39.6	20 55.3		68 0.1	20 28.7		56 25.2	19 7.4		44 58.1	16 54.2		33 38.8	13 53.9		22 23.6	10 12.3	
8 0	84 29.9	20 55.3		72 50.4	20 28.0		61 15.6	19 5.9		49 48.6	16 52.0		38 29.4	13 51.1		27 14.2	10 9.0	
20	89 20.2	20 55.3	0.0	77 40.7	20 27.2	-0.8	66 6.0	19 4.4	-1.5	54 39.2	16 49.8	-2.2	43 20.0	13 48.3	-2.8	32 4.8	10 5.7	-3.3
40	94 10.4	20 55.3		82 31.0	20 26.4		70 56.4	19 2.8		59 29.7	16 47.6		48 10.6	13 45.5		36 55.4	10 2.3	
9 0	99 0.7	20 55.3		87 21.4	20 25.6		75 46.8	19 1.3		64 20.2	16 45.4		53 1.2	13 42.6		41 46.1	9 59.0	
20	103 51.0	20 55.2	-0.1	92 11.7	20 24.8	-0.8	80 37.2	18 59.8	-1.6	69 10.7	16 43.2	-2.2	57 51.8	13 39.8	-2.8	46 36.7	9 55.6	-3.4
40	108 41.3	20 55.2		97 2.0	20 24.0		85 27.6	18 58.2		74 1.3	16 40.9		62 42.4	13 36.9		51 27.3	9 52.2	
10 0	113 31.6	20 55.1		101 52.3	20 23.2		90 18.1	18 56.6		78 51.8	16 38.7		67 33.1	13 34.1		56 17.9	9 48.8	
20	118 21.8	20 55.1	-0.1	106 42.6	20 22.4	-0.8	95 8.5	18 55.1	-1.6	83 42.3	16 36.4	-2.3	72 23.7	13 31.2	-2.9	61 8.5	9 45.5	-3.4
40	123 12.1	20 55.0		111 32.9	20 21.5		99 58.9	18 53.5		88 32.8	16 34.2		77 14.3	13 28.3		65 59.1	9 42.1	
11 0	128 2.4	20 54.9		116 23.2	20 20.7		104 49.3	18 51.9		93 23.4	16 31.9		82 4.9	13 25.5		70 49.8	9 38.7	
20	132 52.7	20 54.8	-0.1	121 13.5	20 19.8	-0.9	109 39.7	18 50.3	-1.6	98 13.9	16 29.6	-2.3	86 55.5	13 22.6	-2.9	75 40.4	9 35.3	-3.4
40	137 42.9	20 54.7		126 3.9	20 18.9		114 30.1	18 48.7		103 4.4	16 27.3		91 46.1	13 19.7		80 31.0	9 31.9	
12 0	142 33.2	20 54.6		130 54.2	20 18.0		119 20.5	18 47.1		107 55.0	16 25.0		96 36.7	13 16.8		85 21.6	9 28.5	
20	147 23.5	20 54.5	-0.1	135 44.5	20 17.1	-0.9	124 11.0	18 45.4	-1.7	112 45.5	16 22.7	-2.3	101 27.4	13 13.9	-2.9	90 12.2	9 25.0	-3.4
40	152 13.8	20 54.3		140 34.8	20 16.2		129 1.4	18 43.8		117 36.0	16 20.4		106 18.0	13 10.9		95 2.8	9 21.6	
13 0	157 4.0	20 54.2		145 25.1	20 15.3		133 51.8	18 42.1		122 26.6	16 18.0		111 8.6	13 8.0		99 53.4	9 18.2	
20	161 54.3	20 54.0	-0.2	150 15.5	20 14.4	-0.9	138 42.2	18 40.5	-1.7	127 17.1	16 15.7	-2.3	115 59.2	13 5.1	-2.9	104 44.1	9 14.7	-3.4
40	166 44.6	20 53.9		155 5.8	20 13.4		143 32.7	18 38.8		132 7.6	16 13.4		120 49.8	13 2.1		109 34.7	9 11.3	
14 0	171 34.9	20 53.7		159 56.1	20 12.5		148 23.1	18 37.1		136 58.2	16 11.0		125 40.4	12 59.2		114 25.3	9 7.9	
20	176 25.1	20 53.5	-0.2	164 46.4	20 11.5	-1.0	153 13.5	18 35.4	-1.7	141 48.7	16 8.6	-2.4	130 31.1	12 56.2	-3.0	119 15.9	9 4.4	-3.5
40	181 15.4	20 53.3		169 36.8	20 10.6		158 3.9	18 33.7		146 39.3	16 6.3		135 21.7	12 53.3		124 6.5	9 0.9	
15 0	186 5.7	20 53.1		174 27.1	20 9.6		162 54.4	18 32.0		151 29.8	16 3.9		140 12.3	12 50.3		128 57.1	8 57.5	
20	190 56.0	20 52.9	-0.2	179 17.4	20 8.6	-1.0	167 44.8	18 30.3	-1.7	156 20.4	16 1.5	-2.4	145 2.9	12 47.3	-3.0	133 47.7	8 54.0	-3.5
40	195 46.2	20 52.6		184 7.8	20 7.6		172 35.3	18 28.5		161 10.9	15 59.1		149 53.5	12 44.3		138 38.3	8 50.5	
16 0	200 36.5	20 52.4		188 58.1	20 6.6		177 25.7	18 26.8		166 1.5	15 56.7		154 44.2	12 41.3		143 28.9	8 47.0	
20	205 26.8	20 52.1	-0.3	193 48.4	20 5.6	-1.0	182 16.1	18 25.1	-1.8	170 52.0	15 54.3	-2.4	159 34.8	12 38.3	-3.0	148 19.5	8 43.5	-3.5
40	210 17.1	20 51.9		198 38.8	20 4.5		187 6.6	18 23.3		175 42.6	15 51.8		164 25.4	12 35.3		153 10.1	8 40.0	
17 0	215 7.4	20 51.6		203 29.1	20 3.5		191 57.0	18 21.5		180 33.1	15 49.4		169 16.0	12 32.3		158 0.7	8 36.5	
20	219 57.6	20 51.3	-0.3	208 19.4	20 2.4	-1.1	196 47.5	18 19.7	-1.8	185 23.7	15 47.0	-2.4	174 6.7	12 29.3	-3.0	162 51.3	8 33.0	-3.5
40	224 47.9	20 51.0		213 9.8	20 1.4		201 37.9	18 18.0		190 14.3	15 44.5		178 57.3	12 26.2		167 41.9	8 29.5	
18 0	229 38.2	20 50.7		218 0.1	20 0.3		206 28.4	18 16.2		195 4.8	15 42.1		183 47.9	12 23.2		172 32.5	8 26.0	
20	234 28.5	20 50.4	-0.3	222 50.5	19 59.2	-1.1	211 18.8	18 14.3	-1.8	199 55.4	15 39.6	-2.5	188 38.5	12 20.1	-3.1	177 23.1	8 22.4	-3.5
40	239 18.8	20 50.0		227 40.8	19 58.1		216 9.3	18 12.5		204 45.9	15 37.1		193 29.2	12 17.1		182 13.7	8 18.9	
19 0	244 9.0	20 49.7		232 31.1	19 57.0		220 59.7	18 10.7		209 36.5	15 34.6		198 19.8	12 14.0		187 4.3	8 15.4	
20	248 59.3	20 49.3	-0.4	237 21.5	19 55.9	-1.1	225 50.2	18 8.9	-1.8	214 27.1	15 32.1	-2.5	203 10.4	12 10.9	-3.1	191 54.9	8 11.8	-3.6
40	253 49.6	20 49.0		242 11.8	19 54.8		230 40.6	18 7.0		219 17.6	15 29.6		208 1.0	12 7.9		196 45.5	8 8.3	
20 0	258 39.9	20 48.6		247 2.2	19 53.6		235 31.1	18 5.2		224 8.2	15 27.1		212 51.7	12 4.8		201 36.0	8 4.7	
20	263 30.2	20 48.2	-0.4	251 52.5	19 52.5	-1.1	240 21.5	18 3.3	-1.9	228 58.8	15 24.6	-2.5	217 42.3	12 1.7	-3.1	206 26.6	8 1.1	-3.6
40	268 20.4	20 47.8		256 42.9	19 51.3		245 12.0	18 1.4		233 49.3	15 22.1		222 32.9	11 58.6		211 17.2	7 57.6	
21 0	273 10.7	20 47.4		261 33.2	19 50.2		250 2.5	17 59.5		238 39.9	15 19.5		227 23.5	11 55.5		216 7.8	7 54.0	
20	278 1.0	20 47.0	-0.4	266 23.6	19 49.0	-1.2	254 52.9	17 57.6	-1.9	243 30.5	15 17.0	-2.5	232 14.2	11 52.4	-3.1	220 58.4	7 50.4	-3.6
40	282 51.3	20 46.6		271 13.9	19 47.8		259 43.4	17 55.7		248 21.1	15 14.4		237 4.8	11 49.2		225 49.0	7 46.8	
22 0	287 41.6	20 46.1		276 4.3	19 46.6		264 33.9	17 53.8		253 11.6	15 11.9		241 55.4	11 46.1		230 39.5	7 43.2	
20	292 31.9	20 45.7	-0.5	280 54.6	19 45.4	-1.2	269 24.3	17 51.9	-1.9	258 2.2	15 9.3	-2.6	246 46.0	11 43.0	-3.1	235 30.1	7 39.6	-3.6
40	297 22.2	20 45.2		285 45.0	19 44.2		274 14.8	17 50.0		262 52.8	15 6.7		251 36.7	11 39.8		240 20.7	7 36.0	
23 0	302 12.4	20 44.7		290 35.4	19 42.9		279 5.3	17 48.0		267 43.4	15 4.1		256 27.3	11 36.7		245 11.3	7 32.4	
20	307 2.7	20 44.3	-0.5	295 25.7	19 41.7	-1.2	283 55.7	17 46.1	-2.0	272 33.9	15 1.5	-2.6	261 17.9	11 33.5	-3.2	250 1.8	7 28.8	-3.6
40	311 53.0	20 43.8		300 16.1	19 40.4		288 46.2	17 44.1		277 24.5	14 58.9		266 8.6	11 30.4		254 52.4	7 25.2	

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h m	8 Nov GHA	8 Nov Dec	d	9 Nov GHA	9 Nov Dec	d	10 Nov GHA	10 Nov Dec	d	11 Nov GHA	11 Nov Dec	d	12 Nov GHA	12 Nov Dec	d	13 Nov GHA	13 Nov Dec	d
0 0	259 43.0	7 21.5		248 17.7	2 47.7		236 32.3	-2 3.8		224 14.9	-6 58.9		211 14.9	-11 39.5		197 26.0	-15 43.9	
20	264 33.5	7 17.9	290.6 -3.6	253 8.0	2 43.7	290.4 -4.0	241 22.3	-2 7.9	290.0 -4.1	229 4.4	-7 2.9	289.5 -4.0	216 3.7	-11 43.2	288.8 -3.7	202 14.1	-15 46.9	288.1 -3.0
40	269 24.1	7 14.3		257 58.4	2 39.7		246 12.3	-2 12.0		233 53.9	-7 7.0		220 52.5	-11 46.9		207 2.2	-15 50.0	
1 0	274 14.7	7 10.6		262 48.7	2 35.8		251 2.2	-2 16.1		238 43.3	-7 11.0		225 41.3	-11 50.6		211 50.4	-15 53.0	
20	279 5.2	7 7.0	290.6 -3.6	267 39.1	2 31.8	290.4 -4.0	255 52.2	-2 20.3	290.0 -4.1	243 32.8	-7 15.1	289.4 -4.0	230 30.1	-11 54.3	288.8 -3.7	216 38.5	-15 56.0	288.1 -3.0
40	283 55.8	7 3.3		272 29.5	2 27.8		260 42.2	-2 24.4		248 22.2	-7 19.1		235 18.9	-11 57.9		221 26.6	-15 58.9	
2 0	288 46.4	6 59.7		277 19.8	2 23.9		265 32.2	-2 28.5		253 11.7	-7 23.1		240 7.7	-12 1.6		226 14.7	-16 1.9	
20	293 36.9	6 56.0	290.6 -3.7	282 10.1	2 19.9	290.3 -4.0	270 22.2	-2 32.6	290.0 -4.1	258 1.1	-7 27.1	289.4 -4.0	244 56.5	-12 5.3	288.8 -3.6	231 2.8	-16 4.9	288.1 -2.9
40	298 27.5	6 52.3		287 0.5	2 15.9		275 12.1	-2 36.7		262 50.5	-7 31.2		249 45.2	-12 8.9		235 50.8	-16 7.8	
3 0	303 18.0	6 48.7		291 50.8	2 11.9		280 2.1	-2 40.8		267 39.9	-7 35.2		254 34.0	-12 12.5		240 38.9	-16 10.7	
20	308 8.6	6 45.0	290.5 -3.7	296 41.1	2 8.0	290.3 -4.0	284 52.0	-2 44.9	289.9 -4.1	272 29.3	-7 39.2	289.4 -4.0	259 22.7	-12 16.2	288.7 -3.6	245 27.0	-16 13.7	288.1 -2.9
40	312 59.1	6 41.3		301 31.5	2 4.0		289 42.0	-2 49.1		277 18.7	-7 43.2		264 11.5	-12 19.8		250 15.0	-16 16.6	
4 0	317 49.7	6 37.6		306 21.8	2 0.0		294 31.9	-2 53.2		282 8.1	-7 47.2		269 0.2	-12 23.4		255 3.1	-16 19.5	
20	322 40.2	6 33.9	290.5 -3.7	311 12.1	1 56.0	290.3 -4.0	299 21.8	-2 57.3	289.9 -4.1	286 57.5	-7 51.2	289.4 -4.0	273 48.9	-12 27.0	288.7 -3.6	259 51.1	-16 22.4	288.0 -2.9
40	327 30.8	6 30.2		316 2.4	1 52.0		304 11.7	-3 1.4		291 46.9	-7 55.2		278 37.6	-12 30.6		264 39.1	-16 25.2	
5 0	332 21.3	6 26.5		320 52.7	1 48.0		309 1.7	-3 5.5		296 36.2	-7 59.2		283 26.3	-12 34.2		269 27.1	-16 28.1	
20	337 11.8	6 22.8	290.5 -3.7	325 43.0	1 44.0	290.3 -4.0	313 51.6	-3 9.6	289.9 -4.1	301 25.6	-8 3.2	289.3 -4.0	288 15.0	-12 37.8	288.7 -3.6	274 15.2	-16 30.9	288.0 -2.8
40	342 2.4	6 19.1		330 33.3	1 40.0		318 41.5	-3 13.8		306 14.9	-8 7.2		293 3.7	-12 41.4		279 3.2	-16 33.8	
6 0	346 52.9	6 15.4		335 23.6	1 36.0		323 31.4	-3 17.9		311 4.3	-8 11.2		297 52.3	-12 44.9		283 51.1	-16 36.6	
20	351 43.4	6 11.6	290.5 -3.7	340 13.9	1 32.0	290.3 -4.0	328 21.3	-3 22.0	289.9 -4.1	315 53.6	-8 15.2	289.3 -4.0	302 41.0	-12 48.5	288.6 -3.6	288 39.1	-16 39.4	288.0 -2.8
40	356 34.0	6 7.9		345 4.2	1 27.9		333 11.1	-3 26.1		320 42.9	-8 19.2		307 29.6	-12 52.1		293 27.1	-16 42.2	
7 0	1 24.5	6 4.2		349 54.5	1 23.9		338 1.0	-3 30.2		325 32.2	-8 23.2		312 18.3	-12 55.6		298 15.1	-16 45.0	
20	6 15.0	6 0.4	290.5 -3.8	354 44.8	1 19.9	290.3 -4.0	342 50.9	-3 34.3	289.9 -4.1	330 21.5	-8 27.1	289.3 -4.0	317 6.9	-12 59.1	288.6 -3.5	303 3.0	-16 47.8	287.9 -2.8
40	11 5.5	5 56.7		359 35.1	1 15.9		347 40.7	-3 38.5		335 10.8	-8 31.1		321 55.5	-13 2.7		307 51.0	-16 50.5	
8 0	15 56.1	5 52.9		4 25.3	1 11.8		352 30.6	-3 42.6		340 0.1	-8 35.1		326 44.1	-13 6.2		312 38.9	-16 53.3	
20	20 46.6	5 49.2	290.5 -3.8	9 15.6	1 7.8	290.3 -4.0	357 20.4	-3 46.7	289.8 -4.1	344 49.4	-8 39.0	289.3 -3.9	331 32.7	-13 9.7	288.6 -3.5	317 26.8	-16 56.0	287.9 -2.7
40	25 37.1	5 45.4		14 5.9	1 3.8		2 10.3	-3 50.8		349 38.6	-8 43.0		336 21.3	-13 13.2		322 14.8	-16 58.7	
9 0	30 27.6	5 41.6		18 56.1	0 59.8		7 0.1	-3 54.9		354 27.9	-8 46.9		341 9.9	-13 16.7		327 2.7	-17 1.4	
20	35 18.1	5 37.9	290.5 -3.8	23 46.4	0 55.7	290.2 -4.1	11 49.9	-3 59.0	289.8 -4.1	359 17.1	-8 50.9	289.2 -4.0	345 58.4	-13 20.2	288.6 -3.5	331 50.6	-17 4.1	287.9 -2.7
40	40 8.6	5 34.1		28 36.6	0 51.7		16 39.8	-4 3.1		4 6.4	-8 54.8		350 47.0	-13 23.6		336 38.5	-17 6.8	
10 0	44 59.1	5 30.3		33 26.9	0 47.6		21 29.6	-4 7.3		8 55.6	-8 58.8		355 35.5	-13 27.1		341 26.4	-17 9.5	
20	49 49.6	5 26.5	290.5 -3.8	38 17.1	0 43.6	290.2 -4.0	26 19.4	-4 11.4	289.8 -4.1	13 44.8	-9 2.7	289.2 -3.9	0 24.1	-13 30.6	288.5 -3.5	346 14.2	-17 12.1	287.9 -2.6
40	54 40.1	5 22.7		43 7.3	0 39.5		31 9.2	-4 15.5		18 34.0	-9 6.6		5 12.6	-13 34.0		351 2.1	-17 14.8	
11 0	59 30.6	5 18.9		47 57.5	0 35.5		35 59.0	-4 19.6		23 23.2	-9 10.6		10 1.1	-13 37.5		355 50.0	-17 17.4	
20	64 21.1	5 15.1	290.5 -3.8	52 47.8	0 31.5	290.2 -4.1	40 48.8	-4 23.7	289.8 -4.1	28 12.4	-9 14.5	289.2 -3.9	14 49.6	-13 40.9	288.5 -3.4	0 37.8	-17 20.0	287.8 -2.6
40	69 11.6	5 11.3		57 38.0	0 27.4		45 38.5	-4 27.8		33 1.6	-9 18.4		19 38.1	-13 44.3		5 25.7	-17 22.6	
12 0	74 2.1	5 7.5		62 28.2	0 23.3		50 28.3	-4 31.9		37 50.8	-9 22.3		24 26.6	-13 47.7		10 13.5	-17 25.2	
20	78 52.6	5 3.7	290.5 -3.8	67 18.4	0 19.3	290.2 -4.0	55 18.1	-4 36.0	289.8 -4.1	42 39.9	-9 26.2	289.2 -3.9	29 15.1	-13 51.1	288.5 -3.4	15 1.3	-17 27.8	287.8 -2.6
40	83 43.1	4 59.9		72 8.6	0 15.2		60 7.8	-4 40.1		47 29.1	-9 30.1		34 3.6	-13 54.5		19 49.2	-17 30.3	
13 0	88 33.6	4 56.1		76 58.8	0 11.2		64 57.6	-4 44.3		52 18.2	-9 34.0		38 52.1	-13 57.9		24 37.0	-17 32.9	
20	93 24.0	4 52.3	290.5 -3.8	81 49.0	0 7.1	290.2 -4.1	69 47.3	-4 48.4	289.7 -4.1	57 7.4	-9 37.9	289.1 -3.9	43 40.5	-14 1.3	288.4 -3.4	29 24.8	-17 35.4	287.8 -2.5
40	98 14.5	4 48.4		86 39.2	0 3.0		74 37.0	-4 52.5		61 56.5	-9 41.8		48 28.9	-14 4.6		34 12.6	-17 37.9	
14 0	103 5.0	4 44.6		91 29.4	-0 1.0		79 26.8	-4 56.6		66 45.6	-9 45.7		53 17.4	-14 8.0		39 0.4	-17 40.4	
20	107 55.4	4 40.8	290.5 -3.8	96 19.5	-0 5.1	290.2 -4.1	84 16.5	-5 0.7	289.7 -4.1	71 34.7	-9 49.6	289.1 -3.9	58 5.8	-14 11.3	288.4 -3.3	43 48.2	-17 42.9	287.8 -2.5
40	112 45.9	4 36.9		101 9.7	-0 9.2		89 6.2	-5 4.8		76 23.8	-9 53.4		62 54.2	-14 14.7		48 35.9	-17 45.4	
15 0	117 36.4	4 33.1		105 59.9	-0 13.2		93 55.9	-5 8.9		81 12.9	-9 57.3		67 42.6	-14 18.0		53 23.7	-17 47.9	
20	122 26.8	4 29.2	290.5 -3.9	110 50.0	-0 17.3	290.2 -4.1	98 45.6	-5 13.0	289.7 -4.1	86 2.0	-10 1.2	289.1 -3.9	72 31.0	-14 21.3	288.4 -3.3	58 11.5	-17 50.3	287.8 -2.4
40	127 17.3	4 25.4		115 40.2	-0 21.4		103 35.3	-5 17.1		90 51.1	-10 5.0		77 19.4	-14 24.6		62 59.2	-17 52.7	
16 0	132 7.8	4 21.5		120 30.3	-0 25.5		108 24.9	-5 21.2		95 40.2	-10 8.9		82 7.8	-14 27.9		67 47.0	-17 55.2	
20	136 58.2	4 17.6	290.4 -3.9	125 20.5	-0 29.6	290.1 -4.1	113 14.6	-5 25.3	289.7 -4.1	100 29.2	-10 12.7	289.0 -3.8	86 56.1	-14 31.2	288.4 -3.3	72 34.7	-17 57.6	287.7 -2.4
40	141 48.7	4 13.8		130 10.6	-0 33.6		118 4.3	-5 29.3		105 18.3	-10 16.6		91 44.5	-14 34.5		77 22.4	-18 0.0	
17 0	146 39.1	4 9.9		135 0.8	-0 37.7		122 53.9	-5 33.4		110 7.3	-10 20.4		96 32.8	-14 37.8		82 10.2	-18 2.3	
20	151 29.5	4 6.0	290.4 -3.9	139 50.9	-0 41.8	290.1 -4.1	127 43.6	-5 37.5	289.6 -4.1	114 56.3	-10 24.2	289.0 -3.8	101 21.2	-14 41.0	288.3 -3.2	86 57.9	-18 4.7	287.7 -2.4
40	156 20.0	4 2.1		144 41.0	-0 45.9		132 33.2	-5 41.6		119 45.3	-10 28.1		106 9.5	-14 44.3		91 45.6	-18 7.0	
18 0	161 10.4	3 58.2		149 31.1	-0 50.0		137 22.9	-5 45.7		124 34.4	-10 31.9		110 57.8	-14 47.5		96 33.3	-18 9.4	
20	166 0.8	3 54.4	290.4 -3.9	154 21.2	-0 54.1	290.1 -4.1	142 12.5	-5 49.8	289.6 -4.1	129 23.4	-10 35.7	289.0 -3.8	115 46.1	-14 50.7	288.3 -3.2	101 21.0	-18 11.7	287.7 -2.3
40	170 51.3	3 50.5		159 11.3	-0 58.2		147 2.1	-5 53.9		134 12.3	-10 39.5		120 34.4	-14 53.9		106 8.7	-18 14.0	
19 0	175 41.7	3 46.6		164 1.4	-1 2.3		151 51.7	-5 57.9		139 1.3	-10 43.3		125 22.7	-14 57.2		110 56.4	-18 16.3	
20	180 32.1	3 42.7	290.4 -3.9	168 51.5	-1 6.4	290.1 -4.1	156 41.3	-6 2.0	289.6 -4.1	143 50.3	-10 47.1	289.0 -3.8	130 11.0	-15 0.3	288.3 -3.2	115 44.0	-18 18.6	287.7 -2.3
40	185 22.5	3 38.8		173 41.6	-1 10.5		161 30.9	-6 6.1		148 39.3	-10 50.9		134 59.3	-15 3.5		120 31.7	-18 20.8	
20 0	190 13.0	3 34.9		178 31.7	-1 14.6		166 20.5	-6 10.2		153 28.2	-10 54.7		139 47.5	-15 6.7		125 19.4	-18 23.1	
20	195 3.4	3 30.9	290.4 -3.9	183 21.8	-1 18.7	290.1 -4.1	171 10.1	-6 14.2	289.6 -4.1	158 17.1	-10 58.4	288.9 -3.8	144 35.8	-15 9.9	288.2 -3.2	130 7.0	-18 25.3	287.6 -2.2
40	199 53.8	3 27.0		188 11.9	-1 22.8		175 59.6	-6 18.3		163 6.1	-11 2.2		149 24.0	-15 13.0		134 54.7	-18 27.5	
21 0	204 44.2	3 23.1		193 1.9	-1 26.9		180 49.2	-6 22.4		167 55.0	-11 6.0		154 12.3	-15 16.2		139 42.3	-18 29.7	
20	209 34.6	3 19.2	290.4 -3.9	197 52.0	-1 31.0	290.1 -4.1	185 38.8	-6 26.5	289.5 -4.1	172 43.9	-11 9.7	288.9 -3.7	159 0.5	-15 19.3	288.2 -3.1	144 29.9	-18 31.9	287.6 -2.2
40	214 25.0	3 15.3		202 42.0	-1 35.1		190 28.3	-6 30.5		177 32.8	-11 13.5		163 48.7	-15 22.4		149 17.5	-18 34.1	
22 0	219 15.4	3 11.3		207 32.1	-1 39.2		195 17.8	-6 34.6		182 21.7	-11 17.2		168 36.9	-15 25.5		154 5.2	-18 36.2	
20	224 5.8	3 7.4	290.4 -3.9	212 22.1	-1 43.3	290.0 -4.1	200 7.4	-6 38.6	289.5 -4.0	187 10.6	-11 21.0	288.9 -3.7	173 25.1	-15 28.6	288.2 -3.1	158 52.8	-18 38.4	287.6 -2.1
40	228 56.1	3 3.5		217 12.2	-1 47.4		204 56.9	-6 42.7		191 59.5	-11 24.7		178 13.3	-15 31.7		163 40.4	-18 40.5	
23 0	233 46.5	2 59.5		222 2.2	-1 51.5		209 46.4	-6 46.7		196 48.3	-11 28.4		183 1.5	-15 34.8		168 28.0	-18 42.6	
20	238 36.9	2 55.6	290.4 -3.9	226 52.2	-1 55.6	290.0 -4.1	214 35.9	-6 50.8	289.5 -4.1	201 37.2	-11 32.1	288.8 -3.7	187 49.7	-15 37.8	288.2 -3.0	173 15.6	-18 44.7	287.6 -2.1
40	243 27.3	2 51.6		231 42.2	-1 59.7		219 25.4	-6 54.8		206 26.1	-11 35.8		192 37.8	-15 40.9		178 3.2	-18 46.8	

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0 0	182 50.7	-18 48.8		167 44.0	-20 34.5		152 31.4	-20 50.0		137 41.7	-19 37.0		123 36.5	-17 8.0		110 25.6	-13 41.4	
20	187 38.3	-18 50.9	-2.0	172 31.3	-20 35.3	-0.8	157 18.9	-20 49.6	0.4	142 29.6	-19 35.4	1.6	128 25.2	-17 5.4	2.5	115 15.0	-13 38.2	3.2
40	192 25.9	-18 52.9	287.6	177 18.6	-20 36.1	287.3	162 6.3	-20 49.1	287.4	147 17.5	-19 33.8	287.9	133 13.8	-17 2.9	288.6	120 4.4	-13 35.0	289.4
1 0	197 13.4	-18 54.9		182 5.9	-20 36.9		166 53.7	-20 48.7		152 5.4	-19 32.2		138 2.5	-17 0.4		124 53.9	-13 31.8	
20	202 1.0	-18 56.9	-2.0	186 53.2	-20 37.7	-0.8	171 41.2	-20 48.2	0.5	156 53.4	-19 30.5	1.7	142 51.1	-16 57.8	2.6	129 43.3	-13 28.6	3.2
40	206 48.5	-18 58.9	287.5	191 40.5	-20 38.5	287.3	176 28.6	-20 47.7	287.4	161 41.3	-19 28.9	288.0	147 39.8	-16 55.2	288.7	134 32.7	-13 25.4	289.4
2 0	211 36.1	-19 0.9		196 27.8	-20 39.2		181 16.1	-20 47.2		166 29.3	-19 27.2		152 28.5	-16 52.7		139 22.2	-13 22.2	
20	216 23.6	-19 2.8	-1.9	201 15.1	-20 40.0	-0.7	186 3.5	-20 46.6	0.6	171 17.3	-19 25.6	1.7	157 17.2	-16 50.1	2.6	144 11.6	-13 19.0	3.2
40	221 11.2	-19 4.8	287.5	206 2.4	-20 40.7	287.3	190 51.0	-20 46.1	287.5	176 5.3	-19 23.9	288.0	162 5.9	-16 47.5	288.7	149 1.1	-13 15.8	289.5
3 0	225 58.7	-19 6.7		210 49.7	-20 41.4		195 38.4	-20 45.5		180 53.3	-19 22.2		166 54.6	-16 44.9		153 50.6	-13 12.5	
20	230 46.2	-19 8.6	-1.9	215 37.0	-20 42.1	-0.7	200 25.9	-20 44.9	0.6	185 41.3	-19 20.4	1.7	171 43.4	-16 42.3	2.6	158 40.1	-13 9.3	3.2
40	235 33.7	-19 10.5	287.5	220 24.3	-20 42.8	287.3	205 13.4	-20 44.4	287.5	190 29.3	-19 18.7	288.0	176 32.1	-16 39.6	288.7	163 29.6	-13 6.0	289.5
4 0	240 21.2	-19 12.4		225 11.5	-20 43.4		210 0.8	-20 43.7		195 17.3	-19 17.0		181 20.9	-16 37.0		168 19.1	-13 2.8	
20	245 8.7	-19 14.2	-1.8	229 58.8	-20 44.0	-0.6	214 48.3	-20 43.1	0.6	200 5.3	-19 15.2	1.8	186 9.6	-16 34.3	2.7	173 8.6	-12 59.5	3.3
40	249 56.2	-19 16.1	287.5	234 46.1	-20 44.7	287.3	219 35.8	-20 42.5	287.5	204 53.3	-19 13.4	288.0	190 58.4	-16 31.7	288.8	177 58.1	-12 56.2	289.5
5 0	254 43.7	-19 17.9		239 33.4	-20 45.3		224 23.3	-20 41.8		209 41.4	-19 11.6		195 47.2	-16 29.0		182 47.7	-12 53.0	
20	259 31.2	-19 19.7	-1.8	244 20.7	-20 45.8	-0.5	229 10.8	-20 41.1	0.7	214 29.5	-19 9.8	1.8	200 36.0	-16 26.3	2.7	187 37.2	-12 49.7	3.3
40	264 18.7	-19 21.5	287.5	249 8.0	-20 46.4	287.3	233 58.3	-20 40.4	287.5	219 17.5	-19 8.0	288.1	205 24.8	-16 23.6	288.8	192 26.8	-12 46.4	289.6
6 0	269 6.2	-19 23.3		253 55.3	-20 46.9		238 45.8	-20 39.7		224 5.6	-19 6.2		210 13.6	-16 20.9		197 16.4	-12 43.1	
20	273 53.6	-19 25.0	-1.7	258 42.6	-20 47.5	-0.5	243 33.3	-20 39.0	0.7	228 53.7	-19 4.3	1.9	215 2.4	-16 18.2	2.7	202 5.9	-12 39.8	3.3
40	278 41.1	-19 26.8	287.5	263 29.9	-20 48.0	287.3	248 20.9	-20 38.2	287.5	233 41.8	-19 2.5	288.1	219 51.3	-16 15.5	288.8	206 55.5	-12 36.5	289.6
7 0	283 28.6	-19 28.5		268 17.2	-20 48.5		253 8.4	-20 37.5		238 29.9	-19 0.6		224 40.1	-16 12.8		211 45.1	-12 33.2	
20	288 16.0	-19 30.2	-1.7	273 4.4	-20 48.9	-0.4	257 55.9	-20 36.7	0.8	243 18.0	-18 58.7	1.9	229 29.0	-16 10.0	2.8	216 34.7	-12 29.8	3.3
40	293 3.5	-19 31.9	287.5	277 51.7	-20 49.4	287.3	262 43.5	-20 35.9	287.6	248 6.1	-18 56.8	288.1	234 17.9	-16 7.3	288.9	221 24.4	-12 26.5	289.6
8 0	297 50.9	-19 33.6		282 39.0	-20 49.8		267 31.0	-20 35.1		252 54.2	-18 54.9		239 6.8	-16 4.5		226 14.0	-12 23.2	
20	302 38.3	-19 35.3	-1.7	287 26.3	-20 50.2	-0.4	272 18.6	-20 34.2	0.9	257 42.4	-18 53.0	1.9	243 55.6	-16 1.7	2.8	231 3.6	-12 19.8	3.4
40	307 25.8	-19 36.9	287.4	292 13.6	-20 50.6	287.3	277 6.1	-20 33.4	287.6	262 30.5	-18 51.0	288.2	248 44.6	-15 59.0	288.9	235 53.3	-12 16.5	289.6
9 0	312 13.2	-19 38.6		297 0.9	-20 51.0		281 53.7	-20 32.5		267 18.7	-18 49.1		253 33.5	-15 56.2		240 42.9	-12 13.1	
20	317 0.6	-19 40.2	-1.6	301 48.2	-20 51.4	-0.4	286 41.3	-20 31.6	0.9	272 6.9	-18 47.1	2.0	258 22.4	-15 53.4	2.8	245 32.6	-12 9.8	3.4
40	321 48.1	-19 41.8	287.4	306 35.5	-20 51.7	287.3	291 28.8	-20 30.7	287.6	276 55.1	-18 45.1	288.2	263 11.3	-15 50.6	288.9	250 22.3	-12 6.4	289.7
10 0	326 35.5	-19 43.4		311 22.8	-20 52.1		296 16.4	-20 29.8		281 43.2	-18 43.1		268 0.3	-15 47.7		255 12.0	-12 3.0	
20	331 22.9	-19 44.9	-1.5	316 10.1	-20 52.4	-0.3	301 4.0	-20 28.9	0.9	286 31.4	-18 41.1	2.0	272 49.2	-15 44.9	2.8	260 1.7	-11 59.6	3.4
40	336 10.3	-19 46.5	287.4	320 57.4	-20 52.7	287.3	305 51.6	-20 27.9	287.6	291 19.7	-18 39.1	288.2	277 38.2	-15 42.1	289.0	264 51.4	-11 56.3	289.7
11 0	340 57.7	-19 48.0		325 44.7	-20 53.0		310 39.2	-20 27.0		296 7.9	-18 37.1		282 27.2	-15 39.2		269 41.1	-11 52.9	
20	345 45.1	-19 49.5	-1.5	330 32.0	-20 53.2	-0.2	315 26.8	-20 26.0	1.0	300 56.1	-18 35.0	2.1	287 16.2	-15 36.4	2.9	274 30.8	-11 49.5	3.4
40	350 32.5	-19 51.0	287.4	335 19.3	-20 53.5	287.3	320 14.5	-20 25.0	287.6	305 44.4	-18 33.0	288.2	292 5.2	-15 33.5	289.0	279 20.6	-11 46.1	289.7
12 0	355 19.9	-19 52.5		340 6.6	-20 53.7		325 2.1	-20 24.0		310 32.6	-18 30.9		296 54.2	-15 30.6		284 10.3	-11 42.7	
20	0 7.3	-19 54.0	-1.4	344 53.9	-20 53.9	-0.2	329 49.7	-20 22.9	1.1	315 20.9	-18 28.8	2.1	301 43.2	-15 27.7	2.9	289 0.0	-11 39.3	3.4
40	4 54.7	-19 55.4	287.4	349 41.2	-20 54.1	287.3	334 37.3	-20 21.9	287.6	320 9.1	-18 26.7	288.3	306 32.2	-15 24.9	289.0	293 49.8	-11 35.8	289.8
13 0	9 42.1	-19 56.8		354 28.6	-20 54.2		339 25.0	-20 20.8		324 57.4	-18 24.6		311 21.3	-15 21.9		298 39.6	-11 32.4	
20	14 29.4	-19 58.3	-1.4	359 15.9	-20 54.4	-0.1	344 12.6	-20 19.8	1.1	329 45.7	-18 22.5	2.1	316 10.3	-15 19.0	2.9	303 29.4	-11 29.0	3.4
40	19 16.8	-19 59.7	287.4	4 3.2	-20 54.5	287.3	349 0.3	-20 18.7	287.7	334 34.0	-18 20.3	288.3	320 59.4	-15 16.1	289.1	308 19.2	-11 25.6	289.8
14 0	24 4.2	-20 1.0		8 50.5	-20 54.6		353 48.0	-20 17.6		339 22.3	-18 18.2		325 48.5	-15 13.2		313 9.0	-11 22.1	
20	28 51.6	-20 2.4	-1.4	13 37.8	-20 54.7	-0.1	358 35.7	-20 16.4	1.2	344 10.7	-18 16.0	2.2	330 37.6	-15 10.2	3.0	317 58.8	-11 18.7	3.4
40	33 38.9	-20 3.7	287.4	18 25.2	-20 54.8	287.3	3 23.3	-20 15.3	287.7	348 59.0	-18 13.8	288.3	335 26.7	-15 7.3	289.1	322 48.6	-11 15.2	289.8
15 0	38 26.3	-20 5.1		23 12.5	-20 54.9		8 11.0	-20 14.1		353 47.3	-18 11.6		340 15.8	-15 4.3		327 38.4	-11 11.8	
20	43 13.6	-20 6.4	-1.3	27 59.8	-20 54.9	0.0	12 58.7	-20 13.0	1.2	358 35.7	-18 9.4	2.2	345 4.9	-15 1.4	3.0	332 28.3	-11 8.3	3.5
40	48 1.0	-20 7.7	287.4	32 47.1	-20 55.0	287.3	17 46.4	-20 11.8	287.7	3 24.0	-18 7.2	288.4	349 54.0	-14 58.4	289.1	337 18.1	-11 4.9	289.8
16 0	52 48.3	-20 9.0		37 34.5	-20 55.0		22 34.1	-20 10.6		8 12.4	-18 5.0		354 43.2	-14 55.4		342 8.0	-11 1.4	
20	57 35.7	-20 10.2	-1.2	42 21.8	-20 55.0	0.0	27 21.9	-20 9.3	1.3	13 0.8	-18 2.8	2.3	359 32.3	-14 52.4	3.0	346 57.8	-10 57.9	3.5
40	62 23.0	-20 11.5	287.3	47 9.1	-20 54.9	287.3	32 9.6	-20 8.1	287.7	17 49.2	-18 0.5	288.4	4 21.5	-14 49.4	289.2	351 47.7	-10 54.4	289.9
17 0	67 10.4	-20 12.7		51 56.5	-20 54.9		36 57.3	-20 6.8		22 37.6	-17 58.2		9 10.6	-14 46.4		356 37.6	-10 50.9	
20	71 57.7	-20 13.9	-1.2	56 43.8	-20 54.8	0.1	41 45.1	-20 5.6	1.3	27 26.0	-17 56.0	2.3	13 59.8	-14 43.4	3.0	1 27.5	-10 47.5	3.5
40	76 45.1	-20 15.1	287.3	61 31.2	-20 54.8	287.3	46 32.8	-20 4.3	287.8	32 14.4	-17 53.7	288.4	18 49.0	-14 40.4	289.2	6 17.4	-10 44.0	289.9
18 0	81 32.4	-20 16.3		66 18.5	-20 54.7		51 20.6	-20 3.0		37 2.9	-17 51.4		23 38.2	-14 37.4		11 7.3	-10 40.5	
20	86 19.7	-20 17.4	-1.1	71 5.9	-20 54.6	0.1	56 8.3	-20 1.7	1.3	41 51.3	-17 49.1	2.3	28 27.4	-14 34.3	3.1	15 57.2	-10 37.0	3.5
40	91 7.0	-20 18.6	287.3	75 53.2	-20 54.4	287.4	60 56.1	-20 0.3	287.8	46 39.8	-17 46.7	288.5	33 16.6	-14 31.3	289.2	20 47.1	-10 33.4	289.9
19 0	95 54.4	-20 19.7		80 40.6	-20 54.3		65 43.9	-19 59.0		51 28.2	-17 44.4		38 5.9	-14 28.2		25 37.1	-10 29.9	
20	100 41.7	-20 20.8	-1.1	85 28.0	-20 54.1	0.2	70 31.7	-19 57.6	1.4	56 16.7	-17 42.1	2.4	42 55.1	-14 25.1	3.1	30 27.0	-10 26.4	3.5
40	105 29.0	-20 21.9	287.3	90 15.3	-20 53.9	287.4	75 19.5	-19 56.3	287.8	61 5.2	-17 39.7	288.5	47 44.4	-14 22.1	289.3	35 17.0	-10 22.9	290.0
20 0	110 16.3	-20 23.0		95 2.7	-20 53.7		80 7.3	-19 54.9		65 53.7	-17 37.3		52 33.6	-14 19.0		40 6.9	-10 19.4	
20	115 3.7	-20 24.0	-1.0	99 50.1	-20 53.5	0.2	84 55.1	-19 53.5	1.4	70 42.2	-17 34.9	2.4	57 22.9	-14 15.9	3.1	44 56.9	-10 15.8	3.5
40	119 51.0	-20 25.0	287.3	104 37.4	-20 53.3	287.4	89 42.9	-19 52.0	287.8	75 30.7	-17 32.5	288.5	62 12.2	-14 12.8	289.3	49 46.9	-10 12.3	290.0
21 0	124 38.3	-20 26.1		109 24.8	-20 53.0		94 30.8	-19 50.6		80 19.3	-17 30.1		67 1.5	-14 9.7		54 36.9	-10 8.8	
20	129 25.6	-20 27.1	-1.0	114 12.2	-20 52.8	0.3	99 18.6	-19 49.1	1.5	85 7.8	-17 27.7	2.4	71 50.8	-14 6.6	3.1	59 26.9	-10 5.2	3.6
40	134 12.9	-20 28.1	287.3	118 59.6	-20 52.5	287.4	104 6.5	-19 47.7	287.8	89 56.4	-17 25.3	288.6	76 40.1	-14 3.5	289.3	64 16.9	-10 1.7	290.0
22 0	139 0.2	-20 29.0		123 47.0	-20 52.2		108 54.3	-19 46.2		94 44.9	-17 22.8		81 29.4	-14 0.3		69 6.9	-9 58.1	
20	143 47.5	-20 30.0	-0.9	128 34.4	-20 51.8	0.3	113 42.2	-19 44.7	1.5	99 33.5	-17 20.4	2.5	86 18.8	-13 57.2	3.1	73 56.9	-9 54.6	3.6
40	148 34.8	-20 30.9	287.3	133 21.8	-20 51.5	287.4	118 30.1	-19 43.2	287.9	104 22.1	-17 17.9	288.6	91 8.1	-13 54.1	289.4	78 47.0	-9 51.0	290.0
23 0	153 22.1	-20 31.8		138 9.2	-20 51.2		123 18.0	-19 41.7		109 10.7	-17 15.4		95 57.5	-13 50.9		83 37.0	-9 47.4	
20	158 9.4	-20 32.7	-0.9	142 56.6	-20 50.8	0.4	128 5.8	-19 40.1	1.6	113 59.3	-17 13.0	2.5	100 46.9	-13 47.7	3.2	88 27.1	-9 43.9	3.6
40	162 56.7	-20 33.6	287.3	147 44.0	-20 50.4	287.4	132 53.7	-19 38.6	287.9	118 47.9	-17 10.5	288.6	105 36.2	-13 44.6	289.4	93 17.1	-9 40.3	290.1

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h m	20 Nov GHA	20 Nov Dec	d	21 Nov GHA	21 Nov Dec	d	22 Nov GHA	22 Nov Dec	d	23 Nov GHA	23 Nov Dec	d	24 Nov GHA	24 Nov Dec	d	25 Nov GHA	25 Nov Dec	d
0 0	98 7.2	-9 36.7		86 32.1	-5 11.0		75 28.1	-0 38.5		64 42.4	3 49.4		54 3.1	8 2.8		43 20.3	11 53.1	
20	102 57.2	-9 33.1	290.1 3.6	91 22.7	-5 7.3	290.6 3.8	80 19.0	-0 34.7	290.9 3.8	69 33.5	3 53.0	291.1 3.6	58 54.2	8 6.2	291.1 3.4	48 11.4	11 56.1	291.0 3.0
40	107 47.3	-9 29.5		96 13.3	-5 3.5		85 10.0	-0 30.9		74 24.6	3 56.6		63 45.3	8 9.6		53 2.4	11 59.0	
1 0	112 37.4	-9 25.9		101 3.9	-4 59.7		90 0.9	-0 27.2		79 15.7	4 0.3		68 36.5	8 12.9		57 53.4	12 2.0	
20	117 27.5	-9 22.3	290.1 3.6	105 54.5	-4 55.9	290.6 3.8	94 51.9	-0 23.4	290.9 3.8	84 6.8	4 3.9	291.1 3.6	73 27.6	8 16.3	291.1 3.4	62 44.4	12 5.0	291.0 3.0
40	122 17.6	-9 18.7		110 45.1	-4 52.2		99 42.8	-0 19.6		88 57.9	4 7.5		78 18.7	8 19.7		67 35.4	12 8.0	
2 0	127 7.8	-9 15.1		115 35.8	-4 48.4		104 33.8	-0 15.9		93 49.0	4 11.2		83 9.8	8 23.0		72 26.4	12 10.9	
20	131 57.9	-9 11.5	290.1 3.6	120 26.4	-4 44.6	290.6 3.8	109 24.7	-0 12.1	291.0 3.8	98 40.1	4 14.8	291.1 3.6	88 0.9	8 26.4	291.1 3.3	77 17.4	12 13.9	291.0 3.0
40	136 48.0	-9 7.9		125 17.0	-4 40.8		114 15.7	-0 8.3		103 31.2	4 18.4		92 52.0	8 29.7		82 8.4	12 16.8	
3 0	141 38.2	-9 4.3		130 7.7	-4 37.1		119 6.6	-0 4.5		108 22.3	4 22.0		97 43.1	8 33.0		86 59.4	12 19.8	
20	146 28.3	-9 0.7	290.2 3.6	134 58.3	-4 33.3	290.7 3.8	123 57.6	-0 0.8	291.0 3.8	113 13.4	4 25.6	291.1 3.6	102 34.2	8 36.4	291.1 3.3	91 50.3	12 22.7	291.0 2.9
40	151 18.5	-8 57.1		139 49.0	-4 29.5		128 48.6	0 3.0		118 4.6	4 29.3		107 25.3	8 39.7		96 41.3	12 25.7	
4 0	156 8.6	-8 53.5		144 39.6	-4 25.7		133 39.5	0 6.8		122 55.7	4 32.9		112 16.5	8 43.0		101 32.3	12 28.6	
20	160 58.8	-8 49.8	290.2 3.6	149 30.3	-4 22.0	290.7 3.8	138 30.5	0 10.5	291.0 3.7	127 46.8	4 36.5	291.1 3.6	117 7.6	8 46.4	291.1 3.3	106 23.3	12 31.5	291.0 2.9
40	165 49.0	-8 46.2		154 21.0	-4 18.2		143 21.5	0 14.3		132 37.9	4 40.1		121 58.7	8 49.7		111 14.3	12 34.4	
5 0	170 39.2	-8 42.6		159 11.6	-4 14.4		148 12.5	0 18.0		137 29.0	4 43.7		126 49.8	8 53.0		116 5.3	12 37.3	
20	175 29.4	-8 38.9	290.2 3.7	164 2.3	-4 10.6	290.7 3.8	153 3.5	0 21.8	291.0 3.8	142 20.1	4 47.3	291.1 3.6	131 40.9	8 56.3	291.1 3.3	120 56.2	12 40.2	291.0 2.9
40	180 19.6	-8 35.3		168 53.0	-4 6.8		157 54.5	0 25.6		147 11.3	4 50.9		136 32.0	8 59.6		125 47.2	12 43.1	
6 0	185 9.8	-8 31.6		173 43.7	-4 3.0		162 45.4	0 29.3		152 2.4	4 54.4		141 23.1	9 2.9		130 38.2	12 46.0	
20	190 0.0	-8 28.0	290.2 3.6	178 34.4	-3 59.3	290.7 3.8	167 36.4	0 33.1	291.0 3.8	156 53.5	4 58.0	291.1 3.6	146 14.2	9 6.2	291.1 3.3	135 29.2	12 48.9	291.0 2.9
40	194 50.2	-8 24.3		183 25.1	-3 55.5		172 27.4	0 36.8		161 44.6	5 1.6		151 5.3	9 9.5		140 20.1	12 51.8	
7 0	199 40.5	-8 20.7		188 15.8	-3 51.7		177 18.4	0 40.6		166 35.7	5 5.2		155 56.4	9 12.7		145 11.1	12 54.6	
20	204 30.7	-8 17.0	290.3 3.7	193 6.5	-3 47.9	290.7 3.8	182 9.4	0 44.3	291.0 3.7	171 26.9	5 8.8	291.1 3.6	160 47.5	9 16.0	291.1 3.3	150 2.0	12 57.5	291.0 2.9
40	209 21.0	-8 13.4		197 57.2	-3 44.1		187 0.4	0 48.1		176 18.0	5 12.3		165 38.6	9 19.3		154 53.0	13 0.4	
8 0	214 11.2	-8 9.7		202 47.9	-3 40.3		191 51.4	0 51.8		181 9.1	5 15.9		170 29.7	9 22.6		159 44.0	13 3.2	
20	219 1.5	-8 6.0	290.3 3.7	207 38.7	-3 36.5	290.7 3.8	196 42.5	0 55.6	291.0 3.8	186 0.2	5 19.5	291.1 3.6	175 20.8	9 25.8	291.1 3.2	164 34.9	13 6.0	291.0 2.8
40	223 51.8	-8 2.4		212 29.4	-3 32.7		201 33.5	0 59.3		190 51.3	5 23.0		180 11.8	9 29.1		169 25.9	13 8.9	
9 0	228 42.1	-7 58.7		217 20.1	-3 29.0		206 24.5	1 3.1		195 42.5	5 26.6		185 2.9	9 32.3		174 16.8	13 11.7	
20	233 32.4	-7 55.0	290.3 3.7	222 10.9	-3 25.2	290.7 3.8	211 15.5	1 6.8	291.0 3.7	200 33.6	5 30.1	291.1 3.5	189 54.0	9 35.6	291.1 3.3	179 7.8	13 14.5	290.9 2.8
40	238 22.7	-7 51.4		227 1.6	-3 21.4		216 6.5	1 10.5		205 24.7	5 33.7		194 45.1	9 38.8		183 58.7	13 17.4	
10 0	243 13.0	-7 47.7		231 52.4	-3 17.6		220 57.5	1 14.3		210 15.8	5 37.2		199 36.2	9 42.1		188 49.7	13 20.2	
20	248 3.3	-7 44.0	290.3 3.7	236 43.2	-3 13.8	290.8 3.8	225 48.6	1 18.0	291.0 3.7	215 7.0	5 40.8	291.1 3.6	204 27.3	9 45.3	291.1 3.2	193 40.6	13 23.0	290.9 2.8
40	252 53.6	-7 40.3		241 33.9	-3 10.0		230 39.6	1 21.7		219 58.1	5 44.3		209 18.4	9 48.5		198 31.5	13 25.8	
11 0	257 43.9	-7 36.6		246 24.7	-3 6.2		235 30.6	1 25.5		224 49.2	5 47.9		214 9.4	9 51.7		203 22.5	13 28.5	
20	262 34.3	-7 32.9	290.3 3.7	251 15.5	-3 2.4	290.8 3.8	240 21.7	1 29.2	291.0 3.7	229 40.4	5 51.4	291.1 3.5	219 0.5	9 55.0	291.1 3.2	208 13.4	13 31.3	290.9 2.8
40	267 24.6	-7 29.2		256 6.2	-2 58.6		245 12.7	1 32.9		234 31.5	5 54.9		223 51.6	9 58.2		213 4.3	13 34.1	
12 0	272 14.9	-7 25.5		260 57.0	-2 54.8		250 3.7	1 36.7		239 22.6	5 58.5		228 42.7	10 1.4		217 55.3	13 36.9	
20	277 5.3	-7 21.8	290.4 3.7	265 47.8	-2 51.1	290.8 3.8	254 54.8	1 40.4	291.0 3.7	244 13.7	6 2.0	291.1 3.5	233 33.8	10 4.6	291.1 3.2	222 46.2	13 39.6	290.9 2.7
40	281 55.7	-7 18.1		270 38.6	-2 47.3		259 45.8	1 44.1		249 4.9	6 5.5		238 24.8	10 7.8		227 37.1	13 42.4	
13 0	286 46.0	-7 14.4		275 29.4	-2 43.5		264 36.9	1 47.8		253 56.0	6 9.0		243 15.9	10 11.0		232 28.0	13 45.1	
20	291 36.4	-7 10.7	290.4 3.7	280 20.2	-2 39.7	290.8 3.8	269 27.9	1 51.6	291.0 3.7	258 47.1	6 12.5	291.1 3.5	248 7.0	10 14.1	291.1 3.2	237 18.9	13 47.9	290.9 2.7
40	296 26.8	-7 7.0		285 11.0	-2 35.9		274 18.9	1 55.3		263 38.2	6 16.0		252 58.1	10 17.3		242 9.8	13 50.6	
14 0	301 17.2	-7 3.3		290 1.8	-2 32.1		279 10.0	1 59.0		268 29.4	6 19.5		257 49.1	10 20.5		247 0.8	13 53.3	
20	306 7.6	-6 59.6	290.4 3.7	294 52.6	-2 28.3	290.8 3.8	284 1.1	2 2.7	291.1 3.7	273 20.5	6 23.0	291.1 3.5	262 40.2	10 23.7	291.1 3.2	251 51.7	13 56.1	290.9 2.7
40	310 58.0	-6 55.9		299 43.5	-2 24.5		288 52.1	2 6.4		278 11.6	6 26.5		267 31.3	10 26.8		256 42.6	13 58.8	
15 0	315 48.4	-6 52.1		304 34.3	-2 20.7		293 43.2	2 10.1		283 2.8	6 30.0		272 22.3	10 30.0		261 33.5	14 1.5	
20	320 38.8	-6 48.4	290.4 3.7	309 25.1	-2 16.9	290.8 3.8	298 34.2	2 13.8	291.1 3.7	287 53.9	6 33.5	291.1 3.5	277 13.4	10 33.1	291.1 3.1	266 24.4	14 4.2	290.9 2.7
40	325 29.3	-6 44.7		314 15.9	-2 13.1		303 25.3	2 17.5		292 45.0	6 37.0		282 4.4	10 36.3		271 15.3	14 6.9	
16 0	330 19.7	-6 41.0		319 6.8	-2 9.3		308 16.3	2 21.2		297 36.1	6 40.5		286 55.5	10 39.4		276 6.2	14 9.6	
20	335 10.1	-6 37.2	290.4 3.7	323 57.6	-2 5.6	290.8 3.8	313 7.4	2 24.9	291.1 3.7	302 27.3	6 44.0	291.1 3.5	291 46.6	10 42.5	291.1 3.1	280 57.0	14 12.2	290.9 2.7
40	340 0.6	-6 33.5		328 48.5	-2 1.8		317 58.5	2 28.6		307 18.4	6 47.4		296 37.6	10 45.7		285 47.9	14 14.9	
17 0	344 51.0	-6 29.8		333 39.3	-1 58.0		322 49.5	2 32.3		312 9.5	6 50.9		301 28.7	10 48.8		290 38.8	14 17.6	
20	349 41.5	-6 26.1	290.5 3.7	338 30.2	-1 54.2	290.9 3.8	327 40.6	2 36.0	291.1 3.7	317 0.6	6 54.4	291.1 3.5	306 19.7	10 51.9	291.0 3.1	295 29.7	14 20.2	290.9 2.6
40	354 32.0	-6 22.3		343 21.0	-1 50.4		332 31.7	2 39.7		321 51.8	6 57.8		311 10.8	10 55.0		300 20.6	14 22.9	
18 0	359 22.4	-6 18.6		348 11.9	-1 46.6		337 22.8	2 43.4		326 42.9	7 1.3		316 1.8	10 58.1		305 11.5	14 25.5	
20	4 12.9	-6 14.8	290.5 3.7	353 2.8	-1 42.8	290.9 3.8	342 13.8	2 47.1	291.1 3.7	331 34.0	7 4.8	291.1 3.4	320 52.9	11 1.2	291.0 3.1	310 2.3	14 28.1	290.9 2.6
40	9 3.4	-6 11.1		357 53.6	-1 39.0		347 4.9	2 50.8		336 25.1	7 8.2		325 43.9	11 4.3		314 53.2	14 30.8	
19 0	13 53.9	-6 7.4		2 44.5	-1 35.2		351 56.0	2 54.4		341 16.3	7 11.6		330 34.9	11 7.4		319 44.1	14 33.4	
20	18 44.4	-6 3.6	290.5 3.8	7 35.4	-1 31.4	290.9 3.8	356 47.1	2 58.1	291.1 3.7	346 7.4	7 15.1	291.1 3.5	335 26.0	11 10.5	291.0 3.1	324 34.9	14 36.0	290.9 2.6
40	23 34.9	-5 59.9		12 26.3	-1 27.7		1 38.2	3 1.8		350 58.5	7 18.5		340 17.0	11 13.6		329 25.8	14 38.6	
20 0	28 25.4	-5 56.1		17 17.2	-1 23.9		6 29.2	3 5.5		355 49.7	7 22.0		345 8.1	11 16.7		334 16.7	14 41.2	
20	33 16.0	-5 52.4	290.5 3.7	22 8.0	-1 20.1	290.9 3.8	11 20.3	3 9.2	291.1 3.7	0 40.8	7 25.4	291.1 3.4	349 59.1	11 19.7	291.0 3.0	339 7.5	14 43.8	290.9 2.6
40	38 6.5	-5 48.6		26 58.9	-1 16.3		16 11.4	3 12.8		5 31.9	7 28.8		354 50.1	11 22.8		343 58.4	14 46.4	
21 0	42 57.0	-5 44.9		31 49.8	-1 12.5		21 2.5	3 16.5		10 23.0	7 32.2		359 41.2	11 25.8		348 49.2	14 49.0	
20	47 47.6	-5 41.1	290.5 3.8	36 40.7	-1 8.7	290.9 3.8	25 53.6	3 20.2	291.1 3.7	15 14.1	7 35.6	291.1 3.4	4 32.2	11 28.9	291.0 3.1	353 40.1	14 51.5	290.8 2.5
40	52 38.1	-5 37.4		41 31.6	-1 5.0		30 44.7	3 23.8		20 5.3	7 39.1		9 23.2	11 31.9		358 30.9	14 54.1	
22 0	57 28.7	-5 33.6		46 22.6	-1 1.2		35 35.8	3 27.5		24 56.4	7 42.5		14 14.2	11 35.0		3 21.8	14 56.6	
20	62 19.2	-5 29.8	290.6 3.8	51 13.5	-0 57.4	290.9 3.8	40 26.9	3 31.1	291.1 3.6	29 47.5	7 45.9	291.1 3.4	19 5.3	11 38.0	291.0 3.0	8 12.6	14 59.2	290.8 2.6
40	67 9.8	-5 26.1		56 4.4	-0 53.6		45 18.0	3 34.8		34 38.6	7 49.3		23 56.3	11 41.0		13 3.4	15 1.7	
23 0	72 0.3	-5 22.3		60 55.3	-0 49.8		50 9.1	3 38.4		39 29.7	7 52.7		28 47.3	11 44.0		17 54.3	15 4.3	
20	76 50.9	-5 18.6	290.6 3.8	65 46.2	-0 46.1	290.9 3.8	55 0.2	3 42.1	291.1 3.7	44 20.9	7 56.1	291.1 3.4	33 38.3	11 47.1	291.0 3.0	22 45.1	15 6.8	290.8 2.5
40	81 41.5	-5 14.8		70 37.2	-0 42.3		59 51.3	3 45.7		49 12.0	7 59.4		38 29.3	11 50.1		27 35.9	15 9.3	

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h m	26 Nov GHA	26 Nov Dec	d	27 Nov GHA	27 Nov Dec	d	28 Nov GHA	28 Nov Dec	d	29 Nov GHA	29 Nov Dec	d	30 Nov GHA	30 Nov Dec	d	1 Dec GHA	1 Dec Dec	d
0 0	32 26.8	15 11.8		21 18.2	17 51.2		9 54.4	19 44.2		358 18.6	20 45.3		346 37.0	20 51.2		334 57.1	20 1.3	
20	37 17.6	15 14.3	290.8 2.5	26 8.8	17 53.1	290.6 1.9	14 44.8	19 45.4	290.4 1.2	3 8.9	20 45.8	290.3 0.5	351 27.3	20 50.9	290.3 -0.3	339 47.5	20 0.2	290.3 -1.1
40	42 8.4	15 16.8		30 59.4	17 55.0		19 35.2	19 46.7		7 59.1	20 46.3		356 17.5	20 50.6		344 37.8	19 59.1	
1 0	46 59.2	15 19.3		35 50.0	17 56.9		24 25.6	19 47.8		12 49.4	20 46.7		1 7.8	20 50.2		349 28.1	19 58.0	
20	51 50.0	15 21.8	290.8 2.5	40 40.6	17 58.8	290.6 1.9	29 16.0	19 49.0	290.4 1.2	17 39.7	20 47.1	290.3 0.4	5 58.0	20 49.9	290.3 -0.3	354 18.4	19 56.9	290.3 -1.1
40	56 40.8	15 24.2		45 31.2	18 0.6		34 6.4	19 50.2		22 30.0	20 47.6		10 48.3	20 49.5		359 8.8	19 55.8	
2 0	61 31.7	15 26.7		50 21.8	18 2.5		38 56.8	19 51.4		27 20.2	20 48.0		15 38.5	20 49.2		3 59.1	19 54.6	
20	66 22.5	15 29.2	290.8 2.4	55 12.4	18 4.3	290.6 1.8	43 47.2	19 52.5	290.4 1.1	32 10.5	20 48.4	290.3 0.4	20 28.8	20 48.8	290.3 -0.4	8 49.4	19 53.5	290.3 -1.1
40	71 13.3	15 31.6		60 3.0	18 6.2		48 37.6	19 53.7		37 0.8	20 48.8		25 19.1	20 48.4		13 39.8	19 52.3	
3 0	76 4.1	15 34.0		64 53.6	18 8.0		53 28.0	19 54.8		41 51.1	20 49.1		30 9.3	20 48.0		18 30.1	19 51.2	
20	80 54.9	15 36.5	290.8 2.4	69 44.1	18 9.8	290.6 1.8	58 18.4	19 55.9	290.4 1.1	46 41.3	20 49.5	290.3 0.4	34 59.6	20 47.6	290.3 -0.4	23 20.4	19 50.0	290.3 -1.2
40	85 45.6	15 38.9		74 34.7	18 11.6		63 8.7	19 57.0		51 31.6	20 49.9		39 49.8	20 47.2		28 10.8	19 48.8	
4 0	90 36.4	15 41.3		79 25.3	18 13.4		67 59.1	19 58.1		56 21.9	20 50.2		44 40.1	20 46.7		33 1.1	19 47.6	
20	95 27.2	15 43.7	290.8 2.4	84 15.8	18 15.2	290.6 1.8	72 49.5	19 59.2	290.4 1.1	61 12.1	20 50.5	290.3 0.3	49 30.3	20 46.3	290.3 -0.4	37 51.5	19 46.4	290.3 -1.2
40	100 18.0	15 46.1		89 6.4	18 17.0		77 39.9	20 0.3		66 2.4	20 50.9		54 20.6	20 45.8		42 41.8	19 45.2	
5 0	105 8.8	15 48.5		93 57.0	18 18.8		82 30.2	20 1.4		70 52.7	20 51.2		59 10.8	20 45.4		47 32.2	19 44.0	
20	109 59.6	15 50.9	290.8 2.4	98 47.5	18 20.6	290.6 1.8	87 20.6	20 2.5	290.4 1.1	75 42.9	20 51.5	290.3 0.3	64 1.1	20 44.9	290.3 -0.5	52 22.5	19 42.7	290.4 -1.3
40	114 50.3	15 53.3		103 38.1	18 22.3		92 11.0	20 3.5		80 33.2	20 51.8		68 51.4	20 44.4		57 12.9	19 41.5	
6 0	119 41.1	15 55.6		108 28.6	18 24.1		97 1.4	20 4.6		85 23.5	20 52.1		73 41.6	20 43.9		62 3.2	19 40.2	
20	124 31.9	15 58.0	290.8 2.4	113 19.2	18 25.8	290.5 1.7	101 51.7	20 5.6	290.4 1.0	90 13.7	20 52.3	290.3 0.2	78 31.9	20 43.4	290.3 -0.5	66 53.6	19 39.0	290.4 -1.3
40	129 22.6	16 0.4		118 9.7	18 27.5		106 42.1	20 6.6		95 4.0	20 52.6		83 22.1	20 42.9		71 43.9	19 37.7	
7 0	134 13.4	16 2.7		123 0.3	18 29.2		111 32.5	20 7.6		99 54.2	20 52.8		88 12.4	20 42.4		76 34.3	19 36.4	
20	139 4.2	16 5.0	290.8 2.3	127 50.8	18 31.0	290.5 1.7	116 22.8	20 8.6	290.4 1.0	104 44.5	20 53.1	290.3 0.2	93 2.7	20 41.8	290.3 -0.6	81 24.6	19 35.1	290.4 -1.3
40	143 54.9	16 7.4		132 41.4	18 32.7		121 13.2	20 9.6		109 34.8	20 53.3		97 52.9	20 41.3		86 15.0	19 33.8	
8 0	148 45.7	16 9.7		137 31.9	18 34.3		126 3.5	20 10.6		114 25.0	20 53.5		102 43.2	20 40.7		91 5.4	19 32.5	
20	153 36.4	16 12.0	290.7 2.3	142 22.4	18 36.0	290.5 1.7	130 53.9	20 11.6	290.4 1.0	119 15.3	20 53.7	290.3 0.2	107 33.5	20 40.1	290.3 -0.6	95 55.7	19 31.2	290.4 -1.3
40	158 27.2	16 14.3		147 13.0	18 37.7		135 44.2	20 12.5		124 5.5	20 53.9		112 23.7	20 39.5		100 46.1	19 29.8	
9 0	163 17.9	16 16.6		152 3.5	18 39.4		140 34.6	20 13.5		128 55.8	20 54.1		117 14.0	20 39.0		105 36.5	19 28.5	
20	168 8.7	16 18.9	290.7 2.3	156 54.0	18 41.0	290.5 1.6	145 24.9	20 14.4	290.3 0.9	133 46.0	20 54.3	290.3 0.2	122 4.3	20 38.3	290.3 -0.6	110 26.8	19 27.1	290.4 -1.4
40	172 59.4	16 21.2		161 44.5	18 42.7		150 15.3	20 15.3		138 36.3	20 54.4		126 54.5	20 37.7		115 17.2	19 25.8	
10 0	177 50.1	16 23.4		166 35.1	18 44.3		155 5.6	20 16.3		143 26.6	20 54.6		131 44.8	20 37.1		120 7.6	19 24.4	
20	182 40.9	16 25.7	290.7 2.3	171 25.6	18 45.9	290.5 1.6	159 56.0	20 17.2	290.3 0.9	148 16.8	20 54.7	290.3 0.1	136 35.1	20 36.5	290.3 -0.6	124 58.0	19 23.0	290.4 -1.4
40	187 31.6	16 28.0		176 16.1	18 47.5		164 46.3	20 18.1		153 7.1	20 54.9		141 25.3	20 35.8		129 48.3	19 21.6	
11 0	192 22.3	16 30.2		181 6.6	18 49.1		169 36.6	20 18.9		157 57.3	20 55.0		146 15.6	20 35.2		134 38.7	19 20.2	
20	197 13.0	16 32.4	290.7 2.2	185 57.1	18 50.7	290.5 1.6	174 27.0	20 19.8	290.3 0.9	162 47.6	20 55.1	290.3 0.1	151 5.9	20 34.5	290.3 -0.7	139 29.1	19 18.8	290.4 -1.4
40	202 3.8	16 34.7		190 47.6	18 52.3		179 17.3	20 20.7		167 37.8	20 55.2		155 56.2	20 33.8		144 19.5	19 17.4	
12 0	206 54.5	16 36.9		195 38.1	18 53.9		184 7.6	20 21.5		172 28.1	20 55.3		160 46.4	20 33.1		149 9.9	19 15.9	
20	211 45.2	16 39.1	290.7 2.2	200 28.6	18 55.5	290.5 1.6	188 58.0	20 22.4	290.3 0.8	177 18.3	20 55.4	290.3 0.1	165 36.7	20 32.4	290.3 -0.7	154 0.3	19 14.5	290.4 -1.4
40	216 35.9	16 41.3		205 19.1	18 57.0		193 48.3	20 23.2		182 8.6	20 55.4		170 27.0	20 31.7		158 50.7	19 13.0	
13 0	221 26.6	16 43.5		210 9.6	18 58.6		198 38.6	20 24.0		186 58.8	20 55.5		175 17.3	20 31.0		163 41.1	19 11.6	
20	226 17.3	16 45.7	290.7 2.2	215 0.1	19 0.1	290.5 1.5	203 29.0	20 24.9	290.3 0.8	191 49.1	20 55.5	290.3 0.0	180 7.5	20 30.3	290.3 -0.7	168 31.4	19 10.1	290.4 -1.5
40	231 8.0	16 47.9		219 50.6	19 1.7		208 19.3	20 25.7		196 39.3	20 55.6		184 57.8	20 29.5		173 21.8	19 8.6	
14 0	235 58.7	16 50.0		224 41.1	19 3.2		213 9.6	20 26.5		201 29.6	20 55.6		189 48.1	20 28.8		178 12.2	19 7.1	
20	240 49.4	16 52.2	290.7 2.2	229 31.5	19 4.7	290.5 1.5	217 59.9	20 27.2	290.3 0.8	206 19.8	20 55.6	290.2 0.0	194 38.4	20 28.0	290.3 -0.8	183 2.6	19 5.6	290.4 -1.5
40	245 40.1	16 54.4		234 22.0	19 6.2		222 50.2	20 28.0		211 10.1	20 55.6		199 28.7	20 27.2		187 53.1	19 4.1	
15 0	250 30.8	16 56.5		239 12.5	19 7.7		227 40.6	20 28.8		216 0.3	20 55.6		204 18.9	20 26.4		192 43.5	19 2.6	
20	255 21.5	16 58.7	290.7 2.1	244 3.0	19 9.2	290.5 1.5	232 30.9	20 29.5	290.3 0.7	220 50.6	20 55.6	290.2 0.0	209 9.2	20 25.6	290.3 -0.8	197 33.9	19 1.0	290.4 -1.6
40	260 12.2	17 0.8		248 53.4	19 10.6		237 21.2	20 30.3		225 40.8	20 55.5		213 59.5	20 24.8		202 24.3	18 59.5	
16 0	265 2.8	17 2.9		253 43.9	19 12.1		242 11.5	20 31.0		230 31.1	20 55.5		218 49.8	20 24.0		207 14.7	18 57.9	
20	269 53.5	17 5.0	290.7 2.1	258 34.4	19 13.5	290.5 1.4	247 1.8	20 31.7	290.3 0.7	235 21.3	20 55.4	290.2 -0.1	223 40.1	20 23.2	290.3 -0.8	212 5.1	18 56.4	290.4 -1.6
40	274 44.2	17 7.1		263 24.8	19 15.0		251 52.1	20 32.4		240 11.6	20 55.4		228 30.4	20 22.4		216 55.5	18 54.8	
17 0	279 34.9	17 9.2		268 15.3	19 16.4		256 42.4	20 33.1		245 1.8	20 55.3		233 20.7	20 21.5		221 45.9	18 53.2	
20	284 25.5	17 11.3	290.7 2.1	273 5.8	19 17.8	290.5 1.4	261 32.7	20 33.8	290.3 0.7	249 52.1	20 55.2	290.2 -0.1	238 11.0	20 20.6	290.3 -0.9	226 36.4	18 51.6	290.4 -1.6
40	289 16.2	17 13.4		277 56.2	19 19.3		266 23.1	20 34.5		254 42.3	20 55.1		243 1.3	20 19.8		231 26.8	18 50.0	
18 0	294 6.9	17 15.4		282 46.7	19 20.7		271 13.4	20 35.2		259 32.6	20 55.0		247 51.6	20 18.9		236 17.2	18 48.4	
20	298 57.5	17 17.5	290.7 2.1	287 37.1	19 22.1	290.4 1.4	276 3.7	20 35.8	290.3 0.6	264 22.8	20 54.9	290.2 -0.1	252 41.9	20 18.0	290.3 -0.9	241 7.6	18 46.8	290.4 -1.6
40	303 48.2	17 19.6		292 27.6	19 23.4		280 54.0	20 36.5		269 13.1	20 54.7		257 32.2	20 17.1		245 58.1	18 45.1	
19 0	308 38.8	17 21.6		297 18.0	19 24.8		285 44.3	20 37.1		274 3.3	20 54.6		262 22.5	20 16.2		250 48.5	18 43.5	
20	313 29.5	17 23.6	290.6 2.0	302 8.5	19 26.2	290.4 1.4	290 34.6	20 37.7	290.3 0.6	278 53.5	20 54.5	290.2 -0.2	267 12.8	20 15.3	290.3 -0.9	255 38.9	18 41.8	290.4 -1.7
40	318 20.1	17 25.7		306 58.9	19 27.5		295 24.9	20 38.3		283 43.8	20 54.3		272 3.1	20 14.3		260 29.4	18 40.2	
20 0	323 10.8	17 27.7		311 49.3	19 28.9		300 15.1	20 38.9		288 34.0	20 54.1		276 53.4	20 13.4		265 19.8	18 38.5	
20	328 1.4	17 29.7	290.6 2.0	316 39.8	19 30.2	290.4 1.3	305 5.4	20 39.5	290.3 0.6	293 24.3	20 53.9	290.2 -0.2	281 43.7	20 12.4	290.3 -1.0	270 10.2	18 36.8	290.4 -1.7
40	332 52.0	17 31.7		321 30.2	19 31.5		309 55.7	20 40.1		298 14.5	20 53.7		286 34.0	20 11.5		275 0.7	18 35.1	
21 0	337 42.7	17 33.7		326 20.6	19 32.9		314 46.0	20 40.7		303 4.8	20 53.5		291 24.3	20 10.5		279 51.1	18 33.4	
20	342 33.3	17 35.7	290.6 2.0	331 11.1	19 34.2	290.4 1.3	319 36.3	20 41.2	290.3 0.5	307 55.0	20 53.3	290.2 -0.2	296 14.6	20 9.5	290.3 -1.0	284 41.6	18 31.7	290.4 -1.7
40	347 23.9	17 37.6		336 1.5	19 35.5		324 26.6	20 41.8		312 45.3	20 53.1		301 4.9	20 8.5		289 32.0	18 30.0	
22 0	352 14.6	17 39.6		340 51.9	19 36.7		329 16.9	20 42.3		317 35.5	20 52.9		305 55.2	20 7.5		294 22.5	18 28.3	
20	357 5.2	17 41.6	290.6 1.9	345 42.3	19 38.0	290.4 1.3	334 7.2	20 42.9	290.3 0.5	322 25.8	20 52.6	290.2 -0.3	310 45.5	20 6.5	290.3 -1.0	299 12.9	18 26.5	290.5 -1.8
40	1 55.8	17 43.5		350 32.7	19 39.3		338 57.5	20 43.4		327 16.0	20 52.3		315 35.9	20 5.5		304 3.4	18 24.8	
23 0	6 46.4	17 45.4		355 23.2	19 40.5		343 47.7	20 43.9		332 6.3	20 52.1		320 26.2	20 4.4		308 53.9	18 23.0	
20	11 37.0	17 47.4	290.6 1.9	0 13.6	19 41.8	290.4 1.2	348 38.0	20 44.4	290.3 0.5	336 56.5	20 51.8	290.2 -0.3	325 16.5	20 3.4	290.3 -1.0	313 44.3	18 21.2	290.5 -1.8
40	16 27.6	17 49.3		5 4.0	19 43.0		353 28.3	20 44.9		341 46.8	20 51.5		330 6.8	20 2.3		318 34.8	18 19.5	

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h m	2 Dec GHA	2 Dec Dec	d	3 Dec GHA	3 Dec Dec	d	4 Dec GHA	4 Dec Dec	d	5 Dec GHA	5 Dec Dec	d	6 Dec GHA	6 Dec Dec	d	7 Dec GHA	7 Dec Dec	d
0 0	323 25.2	18 17.7		312 4.9	15 45.0		300 55.9	12 29.2		289 54.0	8 37.7		278 51.5	4 18.4		267 37.8	-0 19.4	
20	328 15.7	18 15.9	290.5 -1.8	316 55.6	15 42.5	290.6 -2.5	305 46.7	12 26.2	290.8 -3.0	294 44.8	8 34.3	290.8 -3.4	283 42.2	4 14.7	290.7 -3.7	272 28.3	-0 23.3	290.5 -3.9
40	333 6.2	18 14.1		321 46.2	15 40.1		310 37.5	12 23.3		299 35.7	8 30.9		288 33.0	4 10.9		277 18.8	-0 27.3	
1 0	337 56.7	18 12.2		326 36.9	15 37.6		315 28.3	12 20.3		304 26.5	8 27.4		293 23.7	4 7.2		282 9.3	-0 31.2	
20	342 47.1	18 10.4	290.5 -1.8	331 27.5	15 35.1	290.6 -2.5	320 19.0	12 17.2	290.8 -3.0	309 17.3	8 24.0	290.8 -3.4	298 14.5	4 3.4	290.7 -3.8	286 59.8	-0 35.2	290.5 -4.0
40	347 37.6	18 8.6		336 18.1	15 32.7		325 9.8	12 14.2		314 8.1	8 20.5		303 5.2	3 59.6		291 50.3	-0 39.1	
2 0	352 28.1	18 6.7		341 8.8	15 30.2		330 0.6	12 11.2		318 59.0	8 17.1		307 55.9	3 55.9		296 40.8	-0 43.1	
20	357 18.6	18 4.9	290.5 -1.8	345 59.4	15 27.7	290.7 -2.5	334 51.4	12 8.2	290.8 -3.0	323 49.8	8 13.6	290.8 -3.5	312 46.7	3 52.1	290.7 -3.8	301 31.3	-0 47.0	290.5 -3.9
40	2 9.1	18 3.0		350 50.1	15 25.2		339 42.2	12 5.1		328 40.6	8 10.1		317 37.4	3 48.3		306 21.7	-0 51.0	
3 0	6 59.5	18 1.2		355 40.7	15 22.7		344 32.9	12 2.1		333 31.4	8 6.7		322 28.1	3 44.5		311 12.2	-0 54.9	
20	11 50.0	17 59.3	290.5 -1.9	0 31.4	15 20.2	290.7 -2.5	349 23.7	11 59.0	290.8 -3.1	338 22.3	8 3.2	290.8 -3.5	327 18.8	3 40.7	290.7 -3.8	316 2.7	-0 58.9	290.4 -4.0
40	16 40.5	17 57.4		5 22.1	15 17.7		354 14.5	11 56.0		343 13.1	7 59.7		332 9.6	3 37.0		320 53.1	-1 2.8	
4 0	21 31.0	17 55.5		10 12.7	15 15.1		359 5.3	11 52.9		348 3.9	7 56.2		337 0.3	3 33.2		325 43.6	-1 6.8	
20	26 21.5	17 53.6	290.5 -1.9	15 3.4	15 12.6	290.7 -2.5	3 56.1	11 49.9	290.8 -3.1	352 54.7	7 52.7	290.8 -3.5	341 51.0	3 29.4	290.7 -3.8	330 34.0	-1 10.7	290.4 -4.0
40	31 12.0	17 51.7		19 54.0	15 10.1		8 46.9	11 46.8		357 45.5	7 49.2		346 41.7	3 25.6		335 24.5	-1 14.7	
5 0	36 2.5	17 49.7		24 44.7	15 7.5		13 37.7	11 43.7		2 36.4	7 45.7		351 32.4	3 21.8		340 14.9	-1 18.7	
20	40 53.0	17 47.8	290.5 -1.9	29 35.4	15 4.9	290.7 -2.6	18 28.5	11 40.6	290.8 -3.1	7 27.2	7 42.2	290.8 -3.5	356 23.1	3 18.0	290.7 -3.8	345 5.4	-1 22.6	290.4 -3.9
40	45 43.5	17 45.8		34 26.1	15 2.4		23 19.2	11 37.5		12 18.0	7 38.7		1 13.9	3 14.1		349 55.8	-1 26.6	
6 0	50 34.0	17 43.9		39 16.7	14 59.8		28 10.0	11 34.4		17 8.8	7 35.2		6 4.6	3 10.3		354 46.2	-1 30.5	
20	55 24.5	17 41.9	290.5 -2.0	44 7.4	14 57.2	290.7 -2.6	33 0.8	11 31.3	290.8 -3.1	21 59.6	7 31.6	290.8 -3.5	10 55.3	3 6.5	290.7 -3.8	359 36.6	-1 34.5	290.4 -4.0
40	60 15.0	17 39.9		48 58.1	14 54.6		37 51.6	11 28.2		26 50.4	7 28.1		15 46.0	3 2.7		4 27.1	-1 38.5	
7 0	65 5.6	17 38.0		53 48.8	14 52.0		42 42.4	11 25.1		31 41.3	7 24.6		20 36.7	2 58.9		9 17.5	-1 42.4	
20	69 56.1	17 36.0	290.5 -2.0	58 39.4	14 49.4	290.7 -2.6	47 33.2	11 21.9	290.8 -3.1	36 32.1	7 21.0	290.8 -3.5	25 27.4	2 55.1	290.7 -3.8	14 7.9	-1 46.4	290.4 -4.0
40	74 46.6	17 34.0		63 30.1	14 46.8		52 24.0	11 18.8		41 22.9	7 17.5		30 18.0	2 51.2		18 58.3	-1 50.4	
8 0	79 37.1	17 31.9		68 20.8	14 44.2		57 14.8	11 15.7		46 13.7	7 14.0		35 8.7	2 47.4		23 48.7	-1 54.3	
20	84 27.6	17 29.9	290.5 -2.0	73 11.5	14 41.5	290.7 -2.7	62 5.6	11 12.5	290.8 -3.2	51 4.5	7 10.4	290.8 -3.6	39 59.4	2 43.6	290.7 -3.8	28 39.1	-1 58.3	290.4 -4.0
40	89 18.2	17 27.9		78 2.2	14 38.9		66 56.4	11 9.4		55 55.3	7 6.8		44 50.1	2 39.7		33 29.4	-2 2.3	
9 0	94 8.7	17 25.9		82 52.9	14 36.2		71 47.2	11 6.2		60 46.2	7 3.3		49 40.8	2 35.9		38 19.8	-2 6.2	
20	98 59.2	17 23.8	290.5 -2.1	87 43.6	14 33.6	290.7 -2.7	76 38.0	11 3.0	290.8 -3.2	65 37.0	6 59.7	290.8 -3.6	54 31.5	2 32.0	290.7 -3.8	43 10.2	-2 10.2	290.4 -4.0
40	103 49.8	17 21.8		92 34.3	14 30.9		81 28.8	10 59.9		70 27.8	6 56.1		59 22.1	2 28.2		48 0.6	-2 14.2	
10 0	108 40.3	17 19.7		97 25.0	14 28.2		86 19.6	10 56.7		75 18.6	6 52.6		64 12.8	2 24.4		52 50.9	-2 18.1	
20	113 30.8	17 17.6	290.5 -2.1	102 15.7	14 25.6	290.7 -2.7	91 10.5	10 53.5	290.8 -3.2	80 9.4	6 49.0	290.8 -3.6	69 3.5	2 20.5	290.7 -3.9	57 41.3	-2 22.1	290.3 -4.0
40	118 21.4	17 15.5		107 6.4	14 22.9		96 1.3	10 50.3		85 0.2	6 45.4		73 54.1	2 16.7		62 31.6	-2 26.1	
11 0	123 11.9	17 13.4		111 57.1	14 20.2		100 52.1	10 47.1		89 51.0	6 41.8		78 44.8	2 12.8		67 22.0	-2 30.0	
20	128 2.5	17 11.3	290.5 -2.1	116 47.8	14 17.5	290.7 -2.7	105 42.9	10 43.9	290.8 -3.2	94 41.8	6 38.2	290.8 -3.6	83 35.5	2 8.9	290.7 -3.9	72 12.3	-2 34.0	290.3 -4.0
40	132 53.0	17 9.2		121 38.5	14 14.8		110 33.7	10 40.7		99 32.6	6 34.6		88 26.1	2 5.1		77 2.6	-2 38.0	
12 0	137 43.6	17 7.1		126 29.2	14 12.0		115 24.5	10 37.5		104 23.4	6 31.0		93 16.8	2 1.2		81 53.0	-2 42.0	
20	142 34.1	17 5.0	290.6 -2.1	131 19.9	14 9.3	290.7 -2.7	120 15.3	10 34.2	290.8 -3.2	109 14.2	6 27.4	290.8 -3.6	98 7.4	1 57.3	290.6 -3.9	86 43.3	-2 45.9	290.3 -4.0
40	147 24.7	17 2.8		136 10.6	14 6.6		125 6.1	10 31.0		114 5.0	6 23.8		102 58.1	1 53.5		91 33.6	-2 49.9	
13 0	152 15.2	17 0.7		141 1.3	14 3.8		129 56.9	10 27.8		118 55.8	6 20.2		107 48.7	1 49.6		96 23.9	-2 53.9	
20	157 5.8	16 58.5	290.6 -2.2	145 52.1	14 1.1	290.7 -2.7	134 47.8	10 24.5	290.8 -3.3	123 46.6	6 16.6	290.8 -3.6	112 39.3	1 45.7	290.6 -3.9	101 14.2	-2 57.8	290.3 -4.0
40	161 56.4	16 56.4		150 42.8	13 58.3		139 38.6	10 21.3		128 37.4	6 12.9		117 30.0	1 41.9		106 4.5	-3 1.8	
14 0	166 46.9	16 54.2		155 33.5	13 55.6		144 29.4	10 18.0		133 28.2	6 9.3		122 20.6	1 38.0		110 54.8	-3 5.8	
20	171 37.5	16 52.0	290.6 -2.2	160 24.2	13 52.8	290.7 -2.8	149 20.2	10 14.8	290.8 -3.3	138 19.0	6 5.7	290.8 -3.6	127 11.2	1 34.1	290.6 -3.9	115 45.1	-3 9.8	290.3 -4.0
40	176 28.1	16 49.8		165 14.9	13 50.0		154 11.0	10 11.5		143 9.8	6 2.0		132 1.9	1 30.2		120 35.4	-3 13.7	
15 0	181 18.6	16 47.6		170 5.7	13 47.2		159 1.8	10 8.2		148 0.6	5 58.4		136 52.5	1 26.3		125 25.7	-3 17.7	
20	186 9.2	16 45.4	290.6 -2.2	174 56.4	13 44.4	290.7 -2.8	163 52.6	10 5.0	290.8 -3.3	152 51.4	5 54.7	290.8 -3.7	141 43.1	1 22.4	290.6 -3.9	130 15.9	-3 21.7	290.3 -4.0
40	190 59.8	16 43.2		179 47.1	13 41.6		168 43.5	10 1.7		157 42.2	5 51.1		146 33.7	1 18.5		135 6.2	-3 25.7	
16 0	195 50.4	16 41.0		184 37.9	13 38.8		173 34.3	9 58.4		162 33.0	5 47.4		151 24.3	1 14.6		139 56.4	-3 29.6	
20	200 40.9	16 38.7	290.6 -2.3	189 28.6	13 36.0	290.7 -2.8	178 25.1	9 55.1	290.8 -3.3	167 23.8	5 43.8	290.8 -3.7	156 14.9	1 10.8	290.6 -3.9	144 46.7	-3 33.6	290.2 -4.0
40	205 31.5	16 36.5		194 19.3	13 33.2		183 15.9	9 51.8		172 14.6	5 40.1		161 5.5	1 6.9		149 36.9	-3 37.6	
17 0	210 22.1	16 34.2		199 10.1	13 30.4		188 6.7	9 48.5		177 5.4	5 36.4		165 56.1	1 3.0		154 27.2	-3 41.5	
20	215 12.7	16 32.0	290.6 -2.3	204 0.8	13 27.5	290.7 -2.9	192 57.6	9 45.2	290.8 -3.3	181 56.1	5 32.7	290.8 -3.7	170 46.7	0 59.1	290.6 -3.9	159 17.4	-3 45.5	290.2 -4.0
40	220 3.3	16 29.7		208 51.6	13 24.7		197 48.4	9 41.9		186 46.9	5 29.1		175 37.3	0 55.1		164 7.6	-3 49.5	
18 0	224 53.9	16 27.4		213 42.3	13 21.8		202 39.2	9 38.5		191 37.7	5 25.4		180 27.9	0 51.2		168 57.8	-3 53.5	
20	229 44.5	16 25.1	290.6 -2.3	218 33.0	13 19.0	290.7 -2.9	207 30.0	9 35.2	290.8 -3.3	196 28.5	5 21.7	290.8 -3.7	185 18.5	0 47.3	290.6 -3.9	173 48.0	-3 57.4	290.2 -4.0
40	234 35.1	16 22.8		223 23.8	13 16.1		212 20.8	9 31.9		201 19.3	5 18.0		190 9.1	0 43.4		178 38.3	-4 1.4	
19 0	239 25.7	16 20.5		228 14.5	13 13.2		217 11.7	9 28.5		206 10.0	5 14.3		194 59.7	0 39.5		183 28.5	-4 5.4	
20	244 16.3	16 18.2	290.6 -2.3	233 5.3	13 10.3	290.8 -2.9	222 2.5	9 25.2	290.8 -3.3	211 0.8	5 10.6	290.8 -3.7	199 50.2	0 35.6	290.6 -3.9	188 18.6	-4 9.3	290.2 -4.0
40	249 6.9	16 15.9		237 56.0	13 7.4		226 53.3	9 21.8		215 51.6	5 6.9		204 40.8	0 31.7		193 8.8	-4 13.3	
20 0	253 57.5	16 13.6		242 46.8	13 4.5		231 44.1	9 18.5		220 42.4	5 3.2		209 31.4	0 27.8		197 59.0	-4 17.3	
20	258 48.1	16 11.2	290.6 -2.4	247 37.5	13 1.6	290.8 -2.9	236 35.0	9 15.1	290.8 -3.4	225 33.1	4 59.5	290.8 -3.7	214 21.9	0 23.8	290.6 -3.9	202 49.2	-4 21.2	290.2 -4.0
40	263 38.7	16 8.9		252 28.3	12 58.7		241 25.8	9 11.7		230 23.9	4 55.8		219 12.5	0 19.9		207 39.3	-4 25.2	
21 0	268 29.3	16 6.5		257 19.1	12 55.8		246 16.6	9 8.3		235 14.7	4 52.1		224 3.0	0 16.0		212 29.5	-4 29.2	
20	273 19.9	16 4.2	290.6 -2.4	262 9.8	12 52.9	290.8 -2.9	251 7.4	9 5.0	290.8 -3.4	240 5.4	4 48.4	290.8 -3.7	228 53.6	0 12.1	290.5 -3.9	217 19.7	-4 33.1	290.1 -4.0
40	278 10.5	16 1.8		267 0.6	12 50.0		255 58.3	9 1.6		244 56.2	4 44.6		233 44.1	0 8.1		222 9.8	-4 37.1	
22 0	283 1.2	15 59.4		271 51.3	12 47.0		260 49.1	8 58.2		249 47.0	4 40.9		238 34.7	0 4.2		226 59.9	-4 41.1	
20	287 51.8	15 57.0	290.6 -2.4	276 42.1	12 44.1	290.8 -2.9	265 39.9	8 54.8	290.8 -3.4	254 37.7	4 37.2	290.8 -3.7	243 25.2	0 0.3	290.5 -3.9	231 50.1	-4 45.0	290.1 -3.9
40	292 42.4	15 54.6		281 32.9	12 41.1		270 30.7	8 51.4		259 28.5	4 33.4		248 15.7	-0 3.7		236 40.2	-4 49.0	
23 0	297 33.0	15 52.2		286 23.6	12 38.2		275 21.5	8 48.0		264 19.2	4 29.7		253 6.3	-0 7.6		241 30.3	-4 52.9	
20	302 23.7	15 49.8	290.6 -2.4	291 14.4	12 35.2	290.8 -3.0	280 12.4	8 44.6	290.8 -3.4	269 10.0	4 25.9	290.8 -3.8	257 56.8	-0 11.5	290.5 -3.9	246 20.4	-4 56.9	290.1 -4.0
40	307 14.3	15 47.4		296 5.2	12 32.2		285 3.2	8 41.1		274 0.7	4 22.2		262 47.3	-0 15.5		251 10.5	-5 0.9	

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h m	8 Dec GHA	8 Dec Dec	d	9 Dec GHA	9 Dec Dec	d	10 Dec GHA	10 Dec Dec	d	11 Dec GHA	11 Dec Dec	d	12 Dec GHA	12 Dec Dec	d	13 Dec GHA	13 Dec Dec	d
0 0	256 0.6	-5 4.8		243 46.9	-9 43.9		230 45.5	-13 59.3		216 50.4	-17 30.1		202 6.1	-19 54.5		186 50.3	-20 54.7	
20	260 50.7	-5 8.8	290.1 -4.0	248 36.4	-9 47.7	289.5 -3.8	235 34.2	-14 2.6	288.8 -3.3	221 38.4	-17 32.6	288.0 -2.5	206 53.5	-19 56.0	287.4 -1.4	191 37.5	-20 54.9	287.2 -0.2
40	265 40.8	-5 12.7		253 25.9	-9 51.5		240 23.0	-14 5.9		226 26.4	-17 35.1		211 41.0	-19 57.4		196 24.7	-20 55.0	
1 0	270 30.9	-5 16.7		258 15.4	-9 55.2		245 11.8	-14 9.2		231 14.5	-17 37.6		216 28.4	-19 58.8		201 11.9	-20 55.2	
20	275 20.9	-5 20.6	290.1 -3.9	263 4.9	-9 58.9	289.5 -3.7	250 0.5	-14 12.4	288.7 -3.2	236 2.5	-17 40.1	288.0 -2.5	221 15.8	-20 0.2	287.4 -1.4	205 59.1	-20 55.3	287.2 -0.1
40	280 11.0	-5 24.6		267 54.3	-10 2.7		254 49.2	-14 15.7		240 50.5	-17 42.5		226 3.2	-20 1.6		210 46.3	-20 55.4	
2 0	285 1.0	-5 28.5		272 43.8	-10 6.4		259 38.0	-14 18.9		245 38.4	-17 45.0		230 50.6	-20 2.9		215 33.5	-20 55.5	
20	289 51.1	-5 32.5	290.0 -4.0	277 33.2	-10 10.1	289.4 -3.7	264 26.7	-14 22.1	288.7 -3.2	250 26.4	-17 47.4	288.0 -2.4	235 38.0	-20 4.3	287.4 -1.3	220 20.6	-20 55.6	287.2 -0.1
40	294 41.1	-5 36.4		282 22.6	-10 13.9		269 15.4	-14 25.4		255 14.4	-17 49.8		240 25.4	-20 5.6		225 7.8	-20 55.7	
3 0	299 31.2	-5 40.4		287 12.1	-10 17.6		274 4.1	-14 28.6		260 2.3	-17 52.2		245 12.8	-20 6.9		229 55.0	-20 55.7	
20	304 21.2	-5 44.3	290.0 -3.9	292 1.5	-10 21.3	289.4 -3.7	278 52.7	-14 31.8	288.7 -3.2	264 50.3	-17 54.6	287.9 -2.4	250 0.2	-20 8.2	287.4 -1.3	234 42.2	-20 55.8	287.2 0.0
40	309 11.2	-5 48.3		296 50.9	-10 25.0		283 41.4	-14 35.0		269 38.2	-17 57.0		254 47.6	-20 9.5		239 29.4	-20 55.8	
4 0	314 1.2	-5 52.2		301 40.3	-10 28.7		288 30.1	-14 38.2		274 26.1	-17 59.4		259 35.0	-20 10.8		244 16.6	-20 55.8	
20	318 51.2	-5 56.1	290.0 -3.9	306 29.6	-10 32.4	289.4 -3.7	293 18.7	-14 41.3	288.6 -3.2	279 14.0	-18 1.7	287.9 -2.3	264 22.4	-20 12.0	287.4 -1.2	249 3.8	-20 55.7	287.2 0.1
40	323 41.2	-6 0.1		311 19.0	-10 36.1		298 7.3	-14 44.5		284 1.9	-18 4.0		269 9.7	-20 13.2		253 50.9	-20 55.7	
5 0	328 31.2	-6 4.0		316 8.4	-10 39.8		302 56.0	-14 47.7		288 49.8	-18 6.4		273 57.1	-20 14.4		258 38.1	-20 55.6	
20	333 21.2	-6 7.9	290.0 -3.9	320 57.7	-10 43.4	289.3 -3.7	307 44.6	-14 50.8	288.6 -3.1	293 37.7	-18 8.7	287.9 -2.3	278 44.4	-20 15.6	287.3 -1.2	263 25.3	-20 55.6	287.2 0.1
40	338 11.1	-6 11.9		325 47.1	-10 47.1		312 33.2	-14 53.9		298 25.6	-18 11.0		283 31.8	-20 16.8		268 12.5	-20 55.5	
6 0	343 1.1	-6 15.8		330 36.4	-10 50.8		317 21.8	-14 57.1		303 13.5	-18 13.3		288 19.1	-20 18.0		272 59.7	-20 55.3	
20	347 51.1	-6 19.7	289.9 -3.9	335 25.7	-10 54.5	289.3 -3.7	322 10.4	-15 0.2	288.6 -3.1	308 1.3	-18 15.5	287.9 -2.2	293 6.5	-20 19.1	287.3 -1.1	277 46.9	-20 55.2	287.2 0.1
40	352 41.0	-6 23.7		340 15.0	-10 58.1		326 58.9	-15 3.3		312 49.2	-18 17.8		297 53.8	-20 20.2		282 34.1	-20 55.1	
7 0	357 31.0	-6 27.6		345 4.4	-11 1.8		331 47.5	-15 6.4		317 37.0	-18 20.0		302 41.1	-20 21.3		287 21.3	-20 54.9	
20	2 20.9	-6 31.5	289.9 -3.9	349 53.6	-11 5.4	289.3 -3.6	336 36.0	-15 9.5	288.5 -3.1	322 24.9	-18 22.2	287.8 -2.2	307 28.5	-20 22.4	287.3 -1.1	292 8.5	-20 54.7	287.2 0.2
40	7 10.8	-6 35.4		354 42.9	-11 9.1		341 24.6	-15 12.6		327 12.7	-18 24.4		312 15.8	-20 23.5		296 55.7	-20 54.5	
8 0	12 0.7	-6 39.3		359 32.2	-11 12.7		346 13.1	-15 15.6		332 0.5	-18 26.6		317 3.1	-20 24.6		301 42.9	-20 54.3	
20	16 50.6	-6 43.3	289.9 -3.9	4 21.5	-11 16.3	289.3 -3.6	351 1.6	-15 18.7	288.5 -3.1	336 48.3	-18 28.8	287.8 -2.2	321 50.4	-20 25.6	287.3 -1.0	306 30.1	-20 54.0	287.2 0.3
40	21 40.5	-6 47.2		9 10.7	-11 19.9		355 50.1	-15 21.7		341 36.1	-18 31.0		326 37.7	-20 26.6		311 17.3	-20 53.8	
9 0	26 30.4	-6 51.1		13 60.0	-11 23.6		0 38.6	-15 24.8		346 23.9	-18 33.2		331 25.0	-20 27.6		316 4.5	-20 53.5	
20	31 20.3	-6 55.0	289.9 -3.9	18 49.2	-11 27.2	289.2 -3.6	5 27.1	-15 27.8	288.5 -3.0	351 11.7	-18 35.3	287.8 -2.1	336 12.3	-20 28.6	287.3 -1.0	320 51.7	-20 53.2	287.2 0.3
40	36 10.2	-6 58.9		23 38.4	-11 30.8		10 15.6	-15 30.8		355 59.5	-18 37.4		340 59.6	-20 29.6		325 38.9	-20 52.9	
10 0	41 0.1	-7 2.8		28 27.6	-11 34.4		15 4.1	-15 33.8		0 47.2	-18 39.5		345 46.9	-20 30.6		330 26.1	-20 52.5	
20	45 49.9	-7 6.7	289.9 -3.9	33 16.9	-11 38.0	289.2 -3.6	19 52.5	-15 36.8	288.4 -3.0	5 35.0	-18 41.6	287.7 -2.1	350 34.2	-20 31.5	287.3 -0.9	335 13.3	-20 52.2	287.2 0.4
40	50 39.8	-7 10.6		38 6.0	-11 41.6		24 41.0	-15 39.8		10 22.7	-18 43.7		355 21.4	-20 32.4		340 0.5	-20 51.8	
11 0	55 29.6	-7 14.5		42 55.2	-11 45.1		29 29.4	-15 42.8		15 10.4	-18 45.8		0 8.7	-20 33.3		344 47.7	-20 51.4	
20	60 19.5	-7 18.4	289.8 -3.9	47 44.4	-11 48.7	289.2 -3.6	34 17.8	-15 45.8	288.4 -3.0	19 58.2	-18 47.8	287.7 -2.0	4 56.0	-20 34.2	287.3 -0.9	349 34.9	-20 51.0	287.2 0.4
40	65 9.3	-7 22.3		52 33.6	-11 52.3		39 6.3	-15 48.7		24 45.9	-18 49.9		9 43.3	-20 35.1		354 22.2	-20 50.6	
12 0	69 59.1	-7 26.2		57 22.7	-11 55.8		43 54.7	-15 51.7		29 33.6	-18 51.9		14 30.5	-20 35.9		359 9.4	-20 50.2	
20	74 48.9	-7 30.1	289.8 -3.9	62 11.9	-11 59.4	289.1 -3.6	48 43.1	-15 54.6	288.4 -2.9	34 21.3	-18 53.9	287.7 -2.0	19 17.8	-20 36.7	287.3 -0.8	3 56.6	-20 49.7	287.2 0.5
40	79 38.7	-7 33.9		67 1.0	-12 3.0		53 31.4	-15 57.5		39 9.0	-18 55.9		24 5.1	-20 37.6		8 43.8	-20 49.3	
13 0	84 28.5	-7 37.8		71 50.1	-12 6.5		58 19.8	-16 0.5		43 56.7	-18 57.9		28 52.3	-20 38.4		13 31.1	-20 48.8	
20	89 18.3	-7 41.7	289.8 -3.9	76 39.2	-12 10.0	289.1 -3.5	63 8.2	-16 3.4	288.4 -2.9	48 44.4	-18 59.8	287.7 -1.9	33 39.6	-20 39.1	287.2 -0.7	18 18.3	-20 48.2	287.2 0.5
40	94 8.1	-7 45.6		81 28.4	-12 13.6		67 56.5	-16 6.3		53 32.0	-19 1.8		38 26.8	-20 39.9		23 5.5	-20 47.7	
14 0	98 57.9	-7 49.4		86 17.4	-12 17.1		72 44.9	-16 9.1		58 19.7	-19 3.7		43 14.1	-20 40.6		27 52.8	-20 47.2	
20	103 47.6	-7 53.3	289.8 -3.9	91 6.5	-12 20.6	289.1 -3.5	77 33.2	-16 12.0	288.3 -2.9	63 7.4	-19 5.6	287.6 -1.9	48 1.3	-20 41.4	287.2 -0.7	32 40.0	-20 46.6	287.2 0.6
40	108 37.4	-7 57.2		95 55.6	-12 24.1		82 21.5	-16 14.9		67 55.0	-19 7.5		52 48.5	-20 42.1		37 27.3	-20 46.0	
15 0	113 27.1	-8 1.0		100 44.7	-12 27.6		87 9.8	-16 17.7		72 42.6	-19 9.4		57 35.8	-20 42.8		42 14.5	-20 45.4	
20	118 16.9	-8 4.9	289.7 -3.9	105 33.7	-12 31.1	289.0 -3.5	91 58.1	-16 20.5	288.3 -2.8	77 30.3	-19 11.3	287.6 -1.9	62 23.0	-20 43.4	287.2 -0.6	47 1.7	-20 44.8	287.3 0.6
40	123 6.6	-8 8.8		110 22.8	-12 34.6		96 46.4	-16 23.4		82 17.9	-19 13.2		67 10.2	-20 44.1		51 49.0	-20 44.2	
16 0	127 56.3	-8 12.6		115 11.8	-12 38.1		101 34.7	-16 26.2		87 5.5	-19 15.0		71 57.5	-20 44.7		56 36.3	-20 43.5	
20	132 46.0	-8 16.5	289.7 -3.8	120 0.8	-12 41.5	289.0 -3.5	106 23.0	-16 29.0	288.3 -2.8	91 53.1	-19 16.8	287.6 -1.8	76 44.7	-20 45.3	287.2 -0.6	61 23.5	-20 42.9	287.3 0.7
40	137 35.7	-8 20.3		124 49.8	-12 45.0		111 11.2	-16 31.8		96 40.7	-19 18.6		81 31.9	-20 45.9		66 10.8	-20 42.2	
17 0	142 25.4	-8 24.1		129 38.8	-12 48.5		115 59.5	-16 34.5		101 28.3	-19 20.4		86 19.1	-20 46.5		70 58.0	-20 41.5	
20	147 15.1	-8 28.0	289.7 -3.8	134 27.8	-12 51.9	289.0 -3.4	120 47.7	-16 37.3	288.2 -2.8	106 15.9	-19 22.2	287.6 -1.8	91 6.4	-20 47.1	287.2 -0.6	75 45.3	-20 40.8	287.3 0.7
40	152 4.8	-8 31.8		139 16.8	-12 55.4		125 36.0	-16 40.1		111 3.5	-19 24.0		95 53.6	-20 47.6		80 32.6	-20 40.0	
18 0	156 54.5	-8 35.6		144 5.8	-12 58.8		130 24.2	-16 42.8		115 51.0	-19 25.7		100 40.8	-20 48.2		85 19.9	-20 39.3	
20	161 44.1	-8 39.5	289.7 -3.8	148 54.7	-13 2.2	288.9 -3.4	135 12.4	-16 45.5	288.2 -2.7	120 38.6	-19 27.5	287.6 -1.7	105 28.0	-20 48.7	287.2 -0.5	90 7.2	-20 38.5	287.3 0.8
40	166 33.8	-8 43.3		153 43.7	-13 5.7		140 0.6	-16 48.3		125 26.2	-19 29.2		110 15.2	-20 49.2		94 54.4	-20 37.7	
19 0	171 23.4	-8 47.1		158 32.6	-13 9.1		144 48.8	-16 51.0		130 13.7	-19 30.9		115 2.4	-20 49.7		99 41.7	-20 36.9	
20	176 13.0	-8 50.9	289.6 -3.8	163 21.6	-13 12.5	288.9 -3.4	149 36.9	-16 53.7	288.2 -2.7	135 1.3	-19 32.6	287.5 -1.7	119 49.6	-20 50.1	287.2 -0.4	104 29.0	-20 36.1	287.3 0.9
40	181 2.7	-8 54.7		168 10.5	-13 15.9		154 25.1	-16 56.4		139 48.8	-19 34.2		124 36.8	-20 50.6		109 16.3	-20 35.2	
20 0	185 52.3	-8 58.6		172 59.4	-13 19.3		159 13.3	-16 59.0		144 36.3	-19 35.9		129 24.0	-20 51.0		114 3.6	-20 34.3	
20	190 41.9	-9 2.4	289.6 -3.8	177 48.3	-13 22.6	288.9 -3.4	164 1.4	-17 1.7	288.1 -2.7	149 23.8	-19 37.5	287.5 -1.6	134 11.2	-20 51.4	287.2 -0.4	118 50.9	-20 33.5	287.3 0.9
40	195 31.5	-9 6.2		182 37.2	-13 26.0		168 49.6	-17 4.3		154 11.3	-19 39.2		138 58.4	-20 51.8		123 38.3	-20 32.6	
21 0	200 21.1	-9 10.0		187 26.1	-13 29.4		173 37.7	-17 7.0		158 58.8	-19 40.8		143 45.6	-20 52.2		128 25.6	-20 31.7	
20	205 10.6	-9 13.8	289.6 -3.8	192 14.9	-13 32.8	288.9 -3.3	178 25.8	-17 9.6	288.1 -2.6	163 46.3	-19 42.4	287.5 -1.6	148 32.8	-20 52.5	287.2 -0.3	133 12.9	-20 30.7	287.3 1.0
40	210 0.2	-9 17.5		197 3.8	-13 36.1		183 13.9	-17 12.2		168 33.8	-19 43.9		153 20.0	-20 52.8		138 0.2	-20 29.8	
22 0	214 49.8	-9 21.3		201 52.6	-13 39.4		188 2.0	-17 14.8		173 21.3	-19 45.5		158 7.2	-20 53.2		142 47.5	-20 28.8	
20	219 39.3	-9 25.1	289.5 -3.8	206 41.5	-13 42.8	288.8 -3.3	192 50.1	-17 17.4	288.1 -2.6	178 8.8	-19 47.0	287.5 -1.5	162 54.4	-20 53.5	287.2 -0.3	147 34.9	-20 27.8	287.3 1.0
40	224 28.9	-9 28.9		211 30.3	-13 46.1		197 38.2	-17 20.0		182 56.3	-19 48.6		167 41.6	-20 53.7		152 22.2	-20 26.8	
23 0	229 18.4	-9 32.7		216 19.1	-13 49.4		202 26.3	-17 22.5		187 43.7	-19 50.1		172 28.8	-20 54.0		157 9.6	-20 25.8	
20	234 7.9	-9 36.4	289.5 -3.7	221 7.9	-13 52.7	288.8 -3.3	207 14.3	-17 25.1	288.0 -2.5	192 31.2	-19 51.6	287.5 -1.5	177 16.0	-20 54.2	287.2 -0.2	161 56.9	-20 24.8	287.4 1.0
40	238 57.4	-9 40.2		225 56.7	-13 56.0		212 2.4	-17 27.6		197 18.6	-19 53.0		182 3.2	-20 54.5		166 44.3	-20 23.7	

h m	14 Dec GHA	14 Dec Dec	d	15 Dec GHA	15 Dec Dec	d	16 Dec GHA	16 Dec Dec	d	17 Dec GHA	17 Dec Dec	d	18 Dec GHA	18 Dec Dec	d	19 Dec GHA	19 Dec Dec	d
0 0	171 31.6	-20 22.7		156 39.9	-18 23.5		142 36.2	-15 13.3		129 28.1	-11 13.2		117 11.9	-6 44.5		105 37.4	-2 4.9	
20	176 19.0	-20 21.6	1.1	161 27.8	-18 21.3	2.2	147 24.9	-15 10.3	3.1	134 17.5	-11 9.7	3.6	122 2.0	-6 40.6	3.9	110 28.0	-2 1.1	3.9
40	181 6.4	-20 20.5		166 15.8	-18 19.1		152 13.6	-15 7.2		139 7.0	-11 6.1		126 52.1	-6 36.8		115 18.6	-1 57.2	
1 0	185 53.8	-20 19.4		171 3.7	-18 16.9		157 2.2	-15 4.1		143 56.4	-11 2.5		131 42.2	-6 32.9		120 9.2	-1 53.3	
20	190 41.1	-20 18.2	1.2	175 51.7	-18 14.6	2.3	161 50.9	-15 1.1	3.1	148 45.9	-10 58.9	3.6	136 32.4	-6 29.1	3.8	124 59.8	-1 49.4	3.9
40	195 28.5	-20 17.1		180 39.6	-18 12.4		166 39.7	-14 58.0		153 35.4	-10 55.3		141 22.5	-6 25.2		129 50.4	-1 45.5	
2 0	200 15.9	-20 15.9		185 27.6	-18 10.1		171 28.4	-14 54.9		158 24.9	-10 51.7		146 12.6	-6 21.4		134 41.0	-1 41.6	
20	205 3.3	-20 14.7	1.2	190 15.6	-18 7.8	2.3	176 17.1	-14 51.8	3.1	163 14.4	-10 48.0	3.6	151 2.8	-6 17.5	3.9	139 31.6	-1 37.7	3.9
40	209 50.7	-20 13.5		195 3.6	-18 5.5		181 5.9	-14 48.7		168 3.9	-10 44.4		155 52.9	-6 13.7		144 22.2	-1 33.9	
3 0	214 38.2	-20 12.3		199 51.5	-18 3.2		185 54.6	-14 45.6		172 53.4	-10 40.8		160 43.1	-6 9.8		149 12.9	-1 30.0	
20	219 25.6	-20 11.1	1.3	204 39.6	-18 0.9	2.3	190 43.4	-14 42.4	3.2	177 42.9	-10 37.2	3.6	165 33.2	-6 5.9	3.9	154 3.5	-1 26.1	3.9
40	224 13.0	-20 9.8		209 27.6	-17 58.6		195 32.2	-14 39.3		182 32.5	-10 33.5		170 23.4	-6 2.1		158 54.1	-1 22.2	
4 0	229 0.4	-20 8.5		214 15.6	-17 56.2		200 21.0	-14 36.1		187 22.0	-10 29.9		175 13.6	-5 58.2		163 44.8	-1 18.3	
20	233 47.9	-20 7.3	1.3	219 3.6	-17 53.9	2.4	205 9.8	-14 33.0	3.1	192 11.6	-10 26.3	3.6	180 3.8	-5 54.3	3.9	168 35.4	-1 14.5	3.9
40	238 35.3	-20 5.9		223 51.7	-17 51.5		209 58.6	-14 29.8		197 1.1	-10 22.6		184 54.0	-5 50.5		173 26.1	-1 10.6	
5 0	243 22.8	-20 4.6		228 39.7	-17 49.1		214 47.4	-14 26.7		201 50.7	-10 19.0		189 44.2	-5 46.6		178 16.7	-1 6.7	
20	248 10.2	-20 3.3	1.3	233 27.8	-17 46.7	2.4	219 36.2	-14 23.5	3.2	206 40.3	-10 15.3	3.7	194 34.4	-5 42.7	3.9	183 7.4	-1 2.8	3.9
40	252 57.7	-20 1.9		238 15.9	-17 44.3		224 25.1	-14 20.3		211 29.9	-10 11.6		199 24.6	-5 38.9		187 58.1	-0 59.0	
6 0	257 45.2	-20 0.6		243 4.0	-17 41.9		229 13.9	-14 17.1		216 19.5	-10 8.0		204 14.9	-5 35.0		192 48.8	-0 55.1	
20	262 32.6	-19 59.2	1.4	247 52.1	-17 39.4	2.5	234 2.8	-14 13.9	3.2	221 9.1	-10 4.3	3.7	209 5.1	-5 31.1	3.9	197 39.4	-0 51.2	3.9
40	267 20.1	-19 57.8		252 40.2	-17 37.0		238 51.7	-14 10.7		225 58.8	-10 0.6		213 55.3	-5 27.2		202 30.1	-0 47.4	
7 0	272 7.6	-19 56.4		257 28.3	-17 34.5		243 40.6	-14 7.4		230 48.4	-9 56.9		218 45.6	-5 23.4		207 20.8	-0 43.5	
20	276 55.1	-19 54.9	1.5	262 16.4	-17 32.0	2.5	248 29.5	-14 4.2	3.2	235 38.0	-9 53.3	3.7	223 35.9	-5 19.5	3.9	212 11.5	-0 39.6	3.9
40	281 42.6	-19 53.5		267 4.5	-17 29.5		253 18.4	-14 1.0		240 27.7	-9 49.6		228 26.1	-5 15.6		217 2.2	-0 35.8	
8 0	286 30.1	-19 52.0		271 52.7	-17 27.0		258 7.3	-13 57.7		245 17.4	-9 45.9		233 16.4	-5 11.7		221 52.9	-0 31.9	
20	291 17.6	-19 50.5	1.5	276 40.9	-17 24.5	2.5	262 56.2	-13 54.5	3.3	250 7.0	-9 42.2	3.7	238 6.7	-5 7.8	3.9	226 43.6	-0 28.0	3.9
40	296 5.2	-19 49.0		281 29.0	-17 22.0		267 45.2	-13 51.2		254 56.7	-9 38.5		242 57.0	-5 4.0		231 34.3	-0 24.2	
9 0	300 52.7	-19 47.5		286 17.2	-17 19.4		272 34.1	-13 47.9		259 46.4	-9 34.8		247 47.3	-5 0.1		236 25.0	-0 20.3	
20	305 40.2	-19 46.0	1.5	291 5.4	-17 16.9	2.6	277 23.1	-13 44.6	3.3	264 36.1	-9 31.1	3.7	252 37.6	-4 56.2	3.9	241 15.8	-0 16.5	3.8
40	310 27.8	-19 44.5		295 53.6	-17 14.3		282 12.1	-13 41.4		269 25.8	-9 27.3		257 27.9	-4 52.3		246 6.5	-0 12.6	
10 0	315 15.3	-19 42.9		300 41.8	-17 11.7		287 1.1	-13 38.1		274 15.5	-9 23.6		262 18.2	-4 48.4		250 57.2	-0 8.8	
20	320 2.9	-19 41.3	1.6	305 30.0	-17 9.2	2.6	291 50.1	-13 34.8	3.3	279 5.3	-9 19.9	3.7	267 8.5	-4 44.5	3.9	255 48.0	-0 4.9	3.9
40	324 50.5	-19 39.7		310 18.2	-17 6.5		296 39.1	-13 31.4		283 55.0	-9 16.2		271 58.8	-4 40.7		260 38.7	-0 1.1	
11 0	329 38.0	-19 38.1		315 6.5	-17 3.9		301 28.1	-13 28.1		288 44.8	-9 12.4		276 49.2	-4 36.8		265 29.5	0 2.8	
20	334 25.6	-19 36.5	1.6	319 54.7	-17 1.3	2.6	306 17.1	-13 24.8	3.3	293 34.5	-9 8.7	3.7	281 39.5	-4 32.9	3.9	270 20.2	0 6.6	3.8
40	339 13.2	-19 34.8		324 43.0	-16 58.7		311 6.2	-13 21.5		298 24.3	-9 5.0		286 29.9	-4 29.0		275 11.0	0 10.5	
12 0	344 0.8	-19 33.2		329 31.3	-16 56.0		315 55.2	-13 18.1		303 14.1	-9 1.2		291 20.2	-4 25.1		280 1.7	0 14.3	
20	348 48.4	-19 31.5	1.7	334 19.6	-16 53.4	2.7	320 44.3	-13 14.8	3.4	308 3.8	-8 57.5	3.7	296 10.6	-4 21.2	3.9	284 52.5	0 18.2	3.9
40	353 36.0	-19 29.8		339 7.9	-16 50.7		325 33.3	-13 11.4		312 53.6	-8 53.7		301 1.0	-4 17.3		289 43.2	0 22.0	
13 0	358 23.6	-19 28.1		343 56.2	-16 48.0		330 22.4	-13 8.0		317 43.4	-8 50.0		305 51.3	-4 13.4		294 34.0	0 25.9	
20	3 11.3	-19 26.4	1.7	348 44.5	-16 45.3	2.7	335 11.5	-13 4.7	3.4	322 33.3	-8 46.2	3.8	310 41.7	-4 9.5	3.9	299 24.8	0 29.7	3.8
40	7 58.9	-19 24.7		353 32.8	-16 42.6		340 0.6	-13 1.3		327 23.1	-8 42.5		315 32.1	-4 5.6		304 15.6	0 33.5	
14 0	12 46.6	-19 22.9		358 21.1	-16 39.9		344 49.7	-12 57.9		332 12.9	-8 38.7		320 22.5	-4 1.7		309 6.3	0 37.4	
20	17 34.2	-19 21.2	1.8	3 9.5	-16 37.2	2.7	349 38.9	-12 54.5	3.4	337 2.8	-8 34.9	3.8	325 12.9	-3 57.8	3.9	313 57.1	0 41.2	3.8
40	22 21.9	-19 19.4		7 57.8	-16 34.4		354 28.0	-12 51.1		341 52.6	-8 31.2		330 3.3	-3 54.0		318 47.9	0 45.0	
15 0	27 9.5	-19 17.6		12 46.2	-16 31.7		359 17.2	-12 47.7		346 42.5	-8 27.4		334 53.8	-3 50.1		323 38.7	0 48.8	
20	31 57.2	-19 15.8	1.8	17 34.6	-16 28.9	2.8	4 6.3	-12 44.3	3.4	351 32.3	-8 23.6	3.8	339 44.2	-3 46.2	3.9	328 29.5	0 52.7	3.8
40	36 44.9	-19 13.9		22 23.0	-16 26.1		8 55.5	-12 40.9		356 22.2	-8 19.8		344 34.6	-3 42.3		333 20.3	0 56.5	
16 0	41 32.6	-19 12.1		27 11.4	-16 23.3		13 44.7	-12 37.4		1 12.1	-8 16.1		349 25.0	-3 38.4		338 11.1	1 0.3	
20	46 20.3	-19 10.3	1.9	31 59.8	-16 20.5	2.8	18 33.8	-12 34.0	3.4	6 2.0	-8 12.3	3.8	354 15.5	-3 34.5	3.9	343 1.9	1 4.1	3.8
40	51 8.0	-19 8.4		36 48.2	-16 17.7		23 23.1	-12 30.6		10 51.9	-8 8.5		359 5.9	-3 30.6		347 52.8	1 7.9	
17 0	55 55.7	-19 6.5		41 36.6	-16 14.9		28 12.3	-12 27.1		15 41.8	-8 4.7		3 56.4	-3 26.7		352 43.6	1 11.8	
20	60 43.5	-19 4.6	1.9	46 25.1	-16 12.1	2.8	33 1.5	-12 23.7	3.5	20 31.7	-8 0.9	3.8	8 46.9	-3 22.8	3.9	357 34.4	1 15.6	3.8
40	65 31.2	-19 2.7		51 13.5	-16 9.2		37 50.7	-12 20.2		25 21.7	-7 57.1		13 37.3	-3 18.9		2 25.2	1 19.4	
18 0	70 19.0	-19 0.7		56 2.0	-16 6.4		42 40.0	-12 16.7		30 11.6	-7 53.3		18 27.8	-3 15.0		7 16.1	1 23.2	
20	75 6.7	-18 58.8	1.9	60 50.5	-16 3.5	2.9	47 29.2	-12 13.2	3.5	35 1.5	-7 49.5	3.8	23 18.3	-3 11.1	3.9	12 6.9	1 27.0	3.8
40	79 54.5	-18 56.8		65 38.9	-16 0.7		52 18.5	-12 9.8		39 51.5	-7 45.7		28 8.8	-3 7.2		16 57.7	1 30.8	
19 0	84 42.2	-18 54.9		70 27.4	-15 57.8		57 7.7	-12 6.3		44 41.5	-7 41.9		32 59.3	-3 3.3		21 48.6	1 34.6	
20	89 30.0	-18 52.9	2.0	75 16.0	-15 54.9	2.9	61 57.0	-12 2.8	3.5	49 31.4	-7 38.1	3.8	37 49.8	-2 59.4	3.9	26 39.4	1 38.4	3.8
40	94 17.8	-18 50.9		80 4.5	-15 52.0		66 46.3	-11 59.3		54 21.4	-7 34.3		42 40.3	-2 55.5		31 30.3	1 42.2	
20 0	99 5.6	-18 48.9		84 53.0	-15 49.1		71 35.6	-11 55.8		59 11.4	-7 30.5		47 30.8	-2 51.6		36 21.1	1 46.0	
20	103 53.4	-18 46.8	2.1	89 41.5	-15 46.1	2.9	76 24.9	-11 52.3	3.5	64 1.4	-7 26.6	3.8	52 21.3	-2 47.7	3.9	41 12.0	1 49.8	3.8
40	108 41.2	-18 44.8		94 30.1	-15 43.2		81 14.3	-11 48.7		68 51.4	-7 22.8		57 11.8	-2 43.9		46 2.8	1 53.6	
21 0	113 29.1	-18 42.7		99 18.7	-15 40.3		86 3.6	-11 45.2		73 41.4	-7 19.0		62 2.4	-2 40.0		50 53.7	1 57.3	
20	118 16.9	-18 40.6	2.1	104 7.2	-15 37.3	3.0	90 53.0	-11 41.7	3.5	78 31.4	-7 15.2	3.8	66 52.9	-2 36.1	3.9	55 44.5	2 1.1	3.8
40	123 4.8	-18 38.6		108 55.8	-15 34.3		95 42.3	-11 38.2		83 21.5	-7 11.3		71 43.4	-2 32.2		60 35.4	2 4.9	
22 0	127 52.6	-18 36.5		113 44.4	-15 31.4		100 31.7	-11 34.6		88 11.5	-7 7.5		76 34.0	-2 28.3		65 26.3	2 8.7	
20	132 40.5	-18 34.3	2.1	118 33.0	-15 28.4	3.0	105 21.1	-11 31.1	3.6	93 1.6	-7 3.7	3.8	81 24.5	-2 24.4	3.9	70 17.2	2 12.5	3.8
40	137 28.3	-18 32.2		123 21.6	-15 25.4		110 10.4	-11 27.5		97 51.6	-6 59.8		86 15.1	-2 20.5		75 8.0	2 16.2	
23 0	142 16.2	-18 30.1		128 10.3	-15 22.4		114 59.8	-11 23.9		102 41.7	-6 56.0		91 5.7	-2 16.6		79 58.9	2 20.0	
20	147 4.1	-18 27.9	2.2	132 58.9	-15 19.4	3.0	119 49.2	-11 20.4	3.6	107 31.8	-6 52.2	3.8	95 56.2	-2 12.7	3.9	84 49.8	2 23.8	3.8
40	151 52.0	-18 25.7		137 47.5	-15 16.3		124 38.7	-11 16.8		112 21.8	-6 48.3		100 46.8	-2 8.8		89 40.7	2 27.5	

h m	20 Dec GHA	20 Dec Dec	d	21 Dec GHA	21 Dec Dec	d	22 Dec GHA	22 Dec Dec	d	23 Dec GHA	23 Dec Dec	d	24 Dec GHA	24 Dec Dec	d	25 Dec GHA	25 Dec Dec	d
0 0	94 31.6	2 31.3		83 41.6	6 53.3		72 55.9	10 52.4		62 5.0	14 20.7		51 2.3	17 11.3		39 44.9	19 17.5	
20	99 22.5	2 35.1	290.9 3.8	88 32.6	6 56.8	291.0 3.5	77 46.9	10 55.5	291.0 3.1	66 55.8	14 23.4	290.9 2.6	55 53.0	17 13.3	290.7 2.1	44 35.4	19 18.9	290.5 1.4
40	104 13.4	2 38.8		93 23.7	7 0.3		82 37.9	10 58.6		71 46.7	14 26.0		60 43.7	17 15.4		49 25.9	19 20.3	
1 0	109 4.3	2 42.6		98 14.7	7 3.8		87 28.9	11 1.7		76 37.6	14 28.6		65 34.4	17 17.5		54 16.3	19 21.7	
20	113 55.2	2 46.3	290.9 3.7	103 5.7	7 7.3	291.0 3.5	92 19.9	11 4.8	291.0 3.1	81 28.5	14 31.2	290.9 2.6	70 25.1	17 19.5	290.7 2.0	59 6.8	19 23.1	290.5 1.4
40	118 46.1	2 50.1		107 56.8	7 10.8		97 10.9	11 7.9		86 19.4	14 33.9		75 15.8	17 21.5		63 57.3	19 24.4	
2 0	123 37.0	2 53.8		112 47.8	7 14.3		102 1.9	11 11.0		91 10.3	14 36.5		80 6.4	17 23.6		68 47.8	19 25.8	
20	128 27.9	2 57.6	290.9 3.7	117 38.8	7 17.7	291.0 3.5	106 52.9	11 14.1	291.0 3.1	96 1.1	14 39.1	290.9 2.6	84 57.1	17 25.6	290.7 2.0	73 38.2	19 27.1	290.5 1.3
40	133 18.8	3 1.3		122 29.8	7 21.2		111 44.0	11 17.2		100 52.0	14 41.7		89 47.8	17 27.6		78 28.7	19 28.5	
3 0	138 9.7	3 5.0		127 20.9	7 24.7		116 35.0	11 20.2		105 42.9	14 44.2		94 38.5	17 29.6		83 19.2	19 29.8	
20	143 0.6	3 8.8	290.9 3.7	132 11.9	7 28.1	291.0 3.4	121 26.0	11 23.3	291.0 3.1	110 33.7	14 46.8	290.9 2.6	99 29.1	17 31.6	290.7 2.0	88 9.6	19 31.1	290.5 1.3
40	147 51.6	3 12.5		137 2.9	7 31.6		126 17.0	11 26.4		115 24.6	14 49.4		104 19.8	17 33.6		93 0.1	19 32.5	
4 0	152 42.5	3 16.2		141 54.0	7 35.0		131 8.0	11 29.4		120 15.5	14 52.0		109 10.5	17 35.6		97 50.5	19 33.8	
20	157 33.4	3 19.9	290.9 3.7	146 45.0	7 38.4	291.0 3.4	135 59.0	11 32.5	291.0 3.1	125 6.3	14 54.5	290.9 2.5	114 1.1	17 37.5	290.7 1.9	102 41.0	19 35.1	290.5 1.3
40	162 24.3	3 23.7		151 36.0	7 41.9		140 50.0	11 35.5		129 57.2	14 57.1		118 51.8	17 39.5		107 31.4	19 36.3	
5 0	167 15.3	3 27.4		156 27.1	7 45.3		145 41.0	11 38.6		134 48.0	14 59.6		123 42.4	17 41.4		112 21.9	19 37.6	
20	172 6.2	3 31.1	290.9 3.7	161 18.1	7 48.7	291.0 3.4	150 32.0	11 41.6	291.0 3.0	139 38.9	15 2.1	290.8 2.5	128 33.1	17 43.4	290.6 1.9	117 12.3	19 38.9	290.4 1.3
40	176 57.1	3 34.8		166 9.2	7 52.2		155 22.9	11 44.6		144 29.7	15 4.6		133 23.7	17 45.3		122 2.8	19 40.1	
6 0	181 48.1	3 38.5		171 0.2	7 55.6		160 13.9	11 47.6		149 20.6	15 7.2		138 14.4	17 47.2		126 53.2	19 41.4	
20	186 39.0	3 42.2	290.9 3.7	175 51.2	7 59.0	291.0 3.4	165 4.9	11 50.6	291.0 3.0	154 11.4	15 9.7	290.8 2.5	143 5.0	17 49.1	290.6 1.9	131 43.7	19 42.6	290.4 1.2
40	191 30.0	3 45.9		180 42.3	8 2.4		169 55.9	11 53.6		159 2.3	15 12.2		147 55.7	17 51.0		136 34.1	19 43.8	
7 0	196 20.9	3 49.6		185 33.3	8 5.8		174 46.9	11 56.6		163 53.1	15 14.7		152 46.3	17 52.9		141 24.5	19 45.1	
20	201 11.9	3 53.3	291.0 3.7	190 24.3	8 9.2	291.0 3.4	179 37.9	11 59.6	291.0 3.0	168 43.9	15 17.2	290.8 2.5	157 36.9	17 54.8	290.6 1.9	146 15.0	19 46.3	290.4 1.2
40	206 2.8	3 57.0		195 15.4	8 12.6		184 28.9	12 2.6		173 34.8	15 19.6		162 27.6	17 56.7		151 5.4	19 47.5	
8 0	210 53.8	4 0.7		200 6.4	8 16.0		189 19.9	12 5.6		178 25.6	15 22.1		167 18.2	17 58.6		155 55.8	19 48.6	
20	215 44.7	4 4.4	291.0 3.7	204 57.4	8 19.4	291.0 3.4	194 10.8	12 8.6	291.0 3.0	183 16.4	15 24.6	290.8 2.5	172 8.8	18 0.4	290.6 1.8	160 46.2	19 49.8	290.4 1.2
40	220 35.7	4 8.1		209 48.5	8 22.7		199 1.8	12 11.5		188 7.3	15 27.0		176 59.4	18 2.3		165 36.7	19 51.0	
9 0	225 26.6	4 11.7		214 39.5	8 26.1		203 52.8	12 14.5		192 58.1	15 29.5		181 50.1	18 4.1		170 27.1	19 52.1	
20	230 17.6	4 15.4	291.0 3.7	219 30.6	8 29.5	291.0 3.4	208 43.8	12 17.4	291.0 2.9	197 48.9	15 31.9	290.8 2.4	186 40.7	18 6.0	290.6 1.8	175 17.5	19 53.3	290.4 1.1
40	235 8.6	4 19.1		224 21.6	8 32.8		213 34.8	12 20.4		202 39.7	15 34.3		191 31.3	18 7.8		180 7.9	19 54.4	
10 0	239 59.5	4 22.8		229 12.6	8 36.2		218 25.7	12 23.3		207 30.5	15 36.8		196 21.9	18 9.6		184 58.3	19 55.5	
20	244 50.5	4 26.4	291.0 3.6	234 3.7	8 39.6	291.0 3.3	223 16.7	12 26.3	291.0 2.9	212 21.4	15 39.2	290.8 2.4	201 12.5	18 11.4	290.6 1.8	189 48.7	19 56.7	290.4 1.1
40	249 41.5	4 30.1		238 54.7	8 42.9		228 7.7	12 29.2		217 12.2	15 41.6		206 3.1	18 13.2		194 39.1	19 57.8	
11 0	254 32.5	4 33.7		243 45.7	8 46.2		232 58.7	12 32.1		222 3.0	15 44.0		210 53.7	18 15.0		199 29.5	19 58.9	
20	259 23.4	4 37.4	291.0 3.7	248 36.8	8 49.6	291.0 3.3	237 49.6	12 35.0	291.0 2.9	226 53.8	15 46.4	290.8 2.4	215 44.3	18 16.8	290.6 1.8	204 19.9	19 59.9	290.4 1.1
40	264 14.4	4 41.0		253 27.8	8 52.9		242 40.6	12 37.9		231 44.6	15 48.8		220 34.9	18 18.5		209 10.3	20 1.0	
12 0	269 5.4	4 44.7		258 18.9	8 56.2		247 31.5	12 40.8		236 35.4	15 51.1		225 25.5	18 20.3		214 0.7	20 2.1	
20	273 56.4	4 48.3	291.0 3.6	263 9.9	8 59.6	291.0 3.3	252 22.5	12 43.7	291.0 2.9	241 26.2	15 53.5	290.8 2.4	230 16.1	18 22.1	290.6 1.7	218 51.1	20 3.1	290.4 1.0
40	278 47.3	4 52.0		268 0.9	9 2.9		257 13.5	12 46.6		246 17.0	15 55.9		235 6.7	18 23.8		223 41.5	20 4.2	
13 0	283 38.3	4 55.6		272 52.0	9 6.2		262 4.4	12 49.5		251 7.8	15 58.2		239 57.3	18 25.5		228 31.9	20 5.2	
20	288 29.3	4 59.2	291.0 3.6	277 43.0	9 9.5	291.0 3.3	266 55.4	12 52.4	291.0 2.9	255 58.6	16 0.6	290.8 2.3	244 47.8	18 27.3	290.6 1.7	233 22.3	20 6.2	290.4 1.0
40	293 20.3	5 2.9		282 34.0	9 12.8		271 46.3	12 55.2		260 49.3	16 2.9		249 38.4	18 29.0		238 12.7	20 7.3	
14 0	298 11.3	5 6.5		287 25.1	9 16.1		276 37.3	12 58.1		265 40.1	16 5.2		254 29.0	18 30.7		243 3.0	20 8.3	
20	303 2.3	5 10.1	291.0 3.6	292 16.1	9 19.4	291.0 3.3	281 28.2	13 1.0	290.9 2.8	270 30.9	16 7.6	290.8 2.3	259 19.6	18 32.4	290.6 1.7	247 53.4	20 9.2	290.4 1.0
40	307 53.3	5 13.7		297 7.1	9 22.7		286 19.2	13 3.8		275 21.7	16 9.9		264 10.1	18 34.1		252 43.8	20 10.2	
15 0	312 44.3	5 17.3		301 58.2	9 25.9		291 10.1	13 6.6		280 12.5	16 12.2		269 0.7	18 35.7		257 34.2	20 11.2	
20	317 35.3	5 20.9	291.0 3.6	306 49.2	9 29.2	291.0 3.3	296 1.1	13 9.5	290.9 2.8	285 3.2	16 14.5	290.8 2.3	273 51.3	18 37.4	290.6 1.7	262 24.5	20 12.2	290.4 1.0
40	322 26.3	5 24.6		311 40.2	9 32.5		300 52.0	13 12.3		289 54.0	16 16.8		278 41.8	18 39.1		267 14.9	20 13.1	
16 0	327 17.3	5 28.2		316 31.3	9 35.7		305 43.0	13 15.1		294 44.8	16 19.0		283 32.4	18 40.7		272 5.3	20 14.1	
20	332 8.3	5 31.8	291.0 3.6	321 22.3	9 39.0	291.0 3.3	310 33.9	13 17.9	290.9 2.8	299 35.5	16 21.3	290.8 2.3	288 22.9	18 42.4	290.6 1.6	276 55.6	20 15.0	290.4 0.9
40	336 59.3	5 35.3		326 13.3	9 42.3		315 24.9	13 20.7		304 26.3	16 23.6		293 13.5	18 44.0		281 46.0	20 15.9	
17 0	341 50.3	5 38.9		331 4.4	9 45.5		320 15.8	13 23.5		309 17.1	16 25.8		298 4.0	18 45.6		286 36.4	20 16.8	
20	346 41.3	5 42.5	291.0 3.6	335 55.4	9 48.7	291.0 3.2	325 6.7	13 26.3	290.9 2.8	314 7.8	16 28.1	290.8 2.2	302 54.6	18 47.2	290.5 1.6	291 26.7	20 17.7	290.4 0.9
40	351 32.3	5 46.1		340 46.4	9 52.0		329 57.7	13 29.1		318 58.6	16 30.3		307 45.1	18 48.8		296 17.1	20 18.6	
18 0	356 23.3	5 49.7		345 37.5	9 55.2		334 48.6	13 31.9		323 49.3	16 32.5		312 35.7	18 50.4		301 7.4	20 19.5	
20	1 14.3	5 53.2	291.0 3.6	350 28.5	9 58.4	291.0 3.2	339 39.5	13 34.7	290.9 2.8	328 40.1	16 34.8	290.7 2.2	317 26.2	18 52.0	290.5 1.6	305 57.8	20 20.4	290.4 0.9
40	6 5.3	5 56.8		355 19.5	10 1.7		344 30.4	13 37.4		333 30.8	16 37.0		322 16.7	18 53.6		310 48.1	20 21.2	
19 0	10 56.3	6 0.4		0 10.6	10 4.9		349 21.4	13 40.2		338 21.5	16 39.2		327 7.3	18 55.1		315 38.5	20 22.1	
20	15 47.3	6 3.9	291.0 3.6	5 1.6	10 8.1	291.0 3.2	354 12.3	13 43.0	290.9 2.7	343 12.3	16 41.4	290.7 2.2	331 57.8	18 56.7	290.5 1.6	320 28.8	20 22.9	290.3 0.8
40	20 38.3	6 7.5		9 52.6	10 11.3		359 3.2	13 45.7		348 3.0	16 43.6		336 48.3	18 58.2		325 19.2	20 23.7	
20 0	25 29.4	6 11.1		14 43.6	10 14.5		3 54.1	13 48.4		352 53.8	16 45.8		341 38.8	18 59.8		330 9.5	20 24.6	
20	30 20.4	6 14.6	291.0 3.5	19 34.7	10 17.7	291.0 3.2	8 45.0	13 51.2	290.9 2.7	357 44.5	16 47.9	290.7 2.2	346 29.4	19 1.3	290.5 1.5	334 59.9	20 25.4	290.3 0.8
40	35 11.4	6 18.1		24 25.7	10 20.8		13 36.0	13 53.9		2 35.2	16 50.1		351 19.9	19 2.8		339 50.2	20 26.2	
21 0	40 2.4	6 21.7		29 16.7	10 24.0		18 26.9	13 56.6		7 25.9	16 52.3		356 10.4	19 4.3		344 40.5	20 27.0	
20	44 53.4	6 25.2	291.0 3.5	34 7.7	10 27.2	291.0 3.2	23 17.8	13 59.3	290.9 2.7	12 16.7	16 54.4	290.7 2.1	1 0.9	19 5.8	290.5 1.5	349 30.9	20 27.7	290.3 0.7
40	49 44.4	6 28.8		38 58.7	10 30.4		28 8.7	14 2.0		17 7.4	16 56.5		5 51.4	19 7.3		354 21.2	20 28.5	
22 0	54 35.5	6 32.3		43 49.8	10 33.5		32 59.6	14 4.7		21 58.1	16 58.7		10 41.9	19 8.8		359 11.5	20 29.2	
20	59 26.5	6 35.8	291.0 3.5	48 40.8	10 36.7	291.0 3.2	37 50.5	14 7.4	290.9 2.7	26 48.8	17 0.8	290.7 2.1	15 32.4	19 10.3	290.5 1.5	4 1.8	20 30.0	290.3 0.8
40	64 17.5	6 39.3		53 31.8	10 39.8		42 41.4	14 10.1		31 39.5	17 2.9		20 22.9	19 11.7		8 52.2	20 30.7	
23 0	69 8.5	6 42.8		58 22.8	10 43.0		47 32.3	14 12.7		36 30.2	17 5.0		25 13.4	19 13.2		13 42.5	20 31.5	
20	73 59.6	6 46.3	291.0 3.5	63 13.8	10 46.1	291.0 3.1	52 23.2	14 15.4	290.9 2.7	41 20.9	17 7.1	290.7 2.1	30 3.9	19 14.6	290.5 1.4	18 32.8	20 32.2	290.3 0.7
40	78 50.6	6 49.8		68 4.9	10 49.3		57 14.1	14 18.1		46 11.6	17 9.2		34 54.4	19 16.0		23 23.1	20 32.9	

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h m	26 Dec GHA	26 Dec Dec	d	27 Dec GHA	27 Dec Dec	d	28 Dec GHA	28 Dec Dec	d	29 Dec GHA	29 Dec Dec	d	30 Dec GHA	30 Dec Dec	d	31 Dec GHA	31 Dec Dec	d
0 0	28 13.5	20 33.6		16 32.4	20 55.4		4 48.6	20 21.2		353 9.2	18 51.9		341 40.1	16 31.3		330 23.6	13 25.5	
20	33 3.8	290.3	20 34.2	0.7	21 22.6	290.2	20 55.3	-0.1	9 38.8	290.2	20 20.3	-0.9	357 59.6	290.4	18 50.2	-1.6	346 30.6	290.5	16 29.0	-2.3	335 14.3	290.7	13 22.7	-2.9
40	37 54.1		20 34.9		26 12.9		20 55.2		14 29.0		20 19.4		2 49.9		18 48.6		351 21.1		16 26.7		340 5.0		13 19.8	
1 0	42 44.4	20 35.6		31 3.1	20 55.1		19 19.3	20 18.5		7 40.3	18 47.0		356 11.6	16 24.4		344 55.7	13 16.9	
20	47 34.7	290.3	20 36.2	0.6	35 53.3	290.2	20 55.0	-0.1	24 9.5	290.2	20 17.6	-0.9	12 30.6	290.4	18 45.3	-1.7	1 2.2	290.5	16 22.1	-2.3	349 46.4	290.7	13 14.1	-2.9
40	52 25.0		20 36.9		40 43.5		20 54.8		28 59.8		20 16.7		17 21.0		18 43.7		5 52.7		16 19.7		354 37.1		13 11.2	
2 0	57 15.3	20 37.5		45 33.8	20 54.7		33 50.0	20 15.8		22 11.4	18 42.0		10 43.2	16 17.4		359 27.8	13 8.3	
20	62 5.6	290.3	20 38.1	0.6	50 24.0	290.2	20 54.5	-0.2	38 40.3	290.2	20 14.9	-0.9	27 1.7	290.4	18 40.4	-1.7	15 33.7	290.5	16 15.1	-2.3	4 18.5	290.7	13 5.4	-2.9
40	66 55.9		20 38.7		55 14.2		20 54.4		43 30.5		20 13.9		31 52.1		18 38.7		20 24.3		16 12.7		9 9.2		13 2.4	
3 0	71 46.2	20 39.3		60 4.4	20 54.2		48 20.8	20 13.0		36 42.4	18 37.0		25 14.8	16 10.4		13 59.9	12 59.5	
20	76 36.5	290.3	20 39.9	0.6	64 54.6	290.2	20 54.0	-0.2	53 11.0	290.3	20 12.0	-1.0	41 32.8	290.4	18 35.3	-1.7	30 5.4	290.5	16 8.0	-2.4	18 50.6	290.7	12 56.6	-2.9
40	81 26.8		20 40.5		69 44.9		20 53.8		58 1.3		20 11.0		46 23.2		18 33.6		34 55.9		16 5.6		23 41.3		12 53.7	
4 0	86 17.1	20 41.1		74 35.1	20 53.6		62 51.5	20 10.0		51 13.6	18 31.8		39 46.4	16 3.3		28 32.0	12 50.7	
20	91 7.4	290.3	20 41.6	0.5	79 25.3	290.2	20 53.4	-0.2	67 41.8	290.3	20 9.0	-1.0	56 3.9	290.4	18 30.1	-1.7	44 37.0	290.5	16 0.9	-2.4	33 22.7	290.7	12 47.8	-2.9
40	95 57.7		20 42.2		84 15.5		20 53.2		72 32.0		20 8.0		60 54.3		18 28.4		49 27.5		15 58.5		38 13.4		12 44.8	
5 0	100 48.0	20 42.7		89 5.8	20 52.9		77 22.3	20 7.0		65 44.7	18 26.6		54 18.1	15 56.1		43 4.2	12 41.9	
20	105 38.3	290.3	20 43.2	0.5	93 56.0	290.2	20 52.7	-0.3	82 12.5	290.3	20 6.0	-1.0	70 35.1	290.4	18 24.9	-1.8	59 8.6	290.6	15 53.6	-2.4	47 54.9	290.7	12 38.9	-3.0
40	110 28.6		20 43.7		98 46.2		20 52.4		87 2.8		20 5.0		75 25.4		18 23.1		63 59.2		15 51.2		52 45.6		12 35.9	
6 0	115 18.9	20 44.2		103 36.4	20 52.1		91 53.0	20 3.9		80 15.8	18 21.3		68 49.8	15 48.8		57 36.3	12 32.9	
20	120 9.1	290.3	20 44.7	0.5	108 26.6	290.2	20 51.8	-0.3	96 43.3	290.3	20 2.8	-1.1	85 6.2	290.4	18 19.5	-1.8	73 40.3	290.6	15 46.3	-2.5	62 27.1	290.7	12 30.0	-3.0
40	124 59.4		20 45.2		113 16.9		20 51.5		101 33.6		20 1.8		89 56.6		18 17.7		78 30.9		15 43.9		67 17.8		12 27.0	
7 0	129 49.7	20 45.7		118 7.1	20 51.2		106 23.8	20 0.7		94 47.0	18 15.9		83 21.5	15 41.4		72 8.5	12 24.0	
20	134 40.0	290.3	20 46.1	0.4	122 57.3	290.2	20 50.9	-0.3	111 14.1	290.3	19 59.6	-1.1	99 37.4	290.4	18 14.1	-1.8	88 12.0	290.6	15 39.0	-2.5	76 59.3	290.7	12 21.0	-3.0
40	139 30.3		20 46.6		127 47.5		20 50.6		116 4.4		19 58.5		104 27.8		18 12.3		93 2.6		15 36.5		81 50.0		12 17.9	
8 0	144 20.5	20 47.0		132 37.7	20 50.2		120 54.6	19 57.4		109 18.2	18 10.4		97 53.2	15 34.0		86 40.8	12 14.9	
20	149 10.8	290.3	20 47.4	0.4	137 27.9	290.2	20 49.9	-0.3	125 44.9	290.3	19 56.3	-1.1	114 8.6	290.4	18 8.6	-1.8	102 43.7	290.6	15 31.5	-2.5	91 31.5	290.7	12 11.9	-3.0
40	154 1.1		20 47.9		142 18.2		20 49.5		130 35.2		19 55.1		118 59.0		18 6.7		107 34.3		15 29.0		96 22.2		12 8.9	
9 0	158 51.4	20 48.3		147 8.4	20 49.2		135 25.4	19 54.0		123 49.4	18 4.9		112 24.9	15 26.5		101 13.0	12 5.8	
20	163 41.6	290.3	20 48.7	0.4	151 58.6	290.2	20 48.8	-0.4	140 15.7	290.3	19 52.8	-1.2	128 39.8	290.4	18 3.0	-1.9	117 15.5	290.6	15 24.0	-2.5	106 3.7	290.7	12 2.8	-3.0
40	168 31.9		20 49.0		156 48.8		20 48.4		145 6.0		19 51.7		133 30.2		18 1.1		122 6.1		15 21.5		110 54.5		11 59.7	
10 0	173 22.2	20 49.4		161 39.0	20 48.0		149 56.2	19 50.5		138 20.6	17 59.2		126 56.7	15 18.9		115 45.2	11 56.7	
20	178 12.4	290.3	20 49.8	0.4	166 29.3	290.2	20 47.6	-0.4	154 46.5	290.3	19 49.3	-1.2	143 11.0	290.4	17 57.3	-1.9	131 47.3	290.6	15 16.4	-2.5	120 36.0	290.8	11 53.6	-3.1
40	183 2.7		20 50.1		171 19.5		20 47.1		159 36.8		19 48.1		148 1.5		17 55.4		136 37.8		15 13.9		125 26.7		11 50.5	
11 0	187 53.0	20 50.5		176 9.7	20 46.7		164 27.1	19 46.9		152 51.9	17 53.5		141 28.4	15 11.3		130 17.5	11 47.4	
20	192 43.2	290.3	20 50.8	0.3	180 59.9	290.2	20 46.2	-0.5	169 17.4	290.3	19 45.7	-1.2	157 42.3	290.4	17 51.5	-2.0	146 19.0	290.6	15 8.7	-2.6	135 8.3	290.8	11 44.3	-3.1
40	197 33.5		20 51.1		185 50.1		20 45.8		174 7.6		19 44.5		162 32.7		17 49.6		151 9.6		15 6.2		139 59.0		11 41.3	
12 0	202 23.7	20 51.4		190 40.4	20 45.3		178 57.9	19 43.2		167 23.1	17 47.6		156 0.2	15 3.6		144 49.8	11 38.2	
20	207 14.0	290.3	20 51.7	0.3	195 30.6	290.2	20 44.8	-0.5	183 48.2	290.3	19 42.0	-1.2	172 13.6	290.4	17 45.7	-2.0	160 50.9	290.6	15 1.0	-2.6	149 40.5	290.8	11 35.0	-3.1
40	212 4.3		20 52.0		200 20.8		20 44.3		188 38.5		19 40.7		177 4.0		17 43.7		165 41.5		14 58.4		154 31.3		11 31.9	
13 0	216 54.5	20 52.3		205 11.0	20 43.8		193 28.8	19 39.5		181 54.4	17 41.7		170 32.1	14 55.8		159 22.1	11 28.8	
20	221 44.8	290.3	20 52.6	0.3	210 1.2	290.2	20 43.3	-0.5	198 19.1	290.3	19 38.2	-1.3	186 44.9	290.4	17 39.7	-2.0	175 22.7	290.6	14 53.2	-2.6	164 12.8	290.8	11 25.7	-3.1
40	226 35.0		20 52.8		214 51.5		20 42.8		203 9.4		19 36.9		191 35.3		17 37.7		180 13.3		14 50.6		169 3.6		11 22.6	
14 0	231 25.3	20 53.1		219 41.7	20 42.3		207 59.6	19 35.6		196 25.7	17 35.7		185 3.9	14 47.9		173 54.4	11 19.4	
20	236 15.5	290.3	20 53.3	0.2	224 31.9	290.2	20 41.7	-0.6	212 49.9	290.3	19 34.3	-1.3	201 16.2	290.4	17 33.7	-2.0	189 54.5	290.6	14 45.3	-2.6	178 45.2	290.8	11 16.3	-3.1
40	241 5.8		20 53.5		229 22.1		20 41.2		217 40.2		19 33.0		206 6.6		17 31.7		194 45.2		14 42.7		183 35.9		11 13.1	
15 0	245 56.0	20 53.7		234 12.4	20 40.6		222 30.5	19 31.6		210 57.1	17 29.6		199 35.8	14 40.0		188 26.7	11 10.0	
20	250 46.3	290.2	20 53.9	0.2	239 2.6	290.2	20 40.0	-0.6	227 20.8	290.3	19 30.3	-1.3	215 47.5	290.5	17 27.6	-2.0	204 26.4	290.6	14 37.3	-2.7	193 17.5	290.8	11 6.8	-3.2
40	255 36.5		20 54.1		243 52.8		20 39.4		232 11.1		19 28.9		220 38.0		17 25.6		209 17.0		14 34.7		198 8.3		11 3.6	
16 0	260 26.8	20 54.3		248 43.0	20 38.8		237 1.4	19 27.6		225 28.4	17 23.5		214 7.7	14 32.0		202 59.1	11 0.5	
20	265 17.0	290.2	20 54.5	0.2	253 33.2	290.2	20 38.2	-0.6	241 51.7	290.3	19 26.2	-1.4	230 18.9	290.5	17 21.4	-2.1	218 58.3	290.6	14 29.3	-2.7	207 49.8	290.8	10 57.3	-3.2
40	270 7.3		20 54.6		258 23.5		20 37.6		246 42.0		19 24.8		235 9.4		17 19.3		223 49.0		14 26.6		212 40.6		10 54.1	
17 0	274 57.5	20 54.8		263 13.7	20 36.9		251 32.4	19 23.4		239 59.8	17 17.2		228 39.6	14 23.9		217 31.4	10 50.9	
20	279 47.7	290.2	20 54.9	0.1	268 3.9	290.2	20 36.3	-0.6	256 22.7	290.3	19 22.0	-1.4	244 50.3	290.5	17 15.1	-2.1	233 30.2	290.6	14 21.2	-2.7	222 22.2	290.8	10 47.7	-3.2
40	284 38.0		20 55.1		272 54.1		20 35.7		261 13.0		19 20.6		249 40.7		17 13.0		238 20.9		14 18.5		227 13.0		10 44.5	
18 0	289 28.2	20 55.2		277 44.4	20 35.0		266 3.3	19 19.2		254 31.2	17 10.9		243 11.5	14 15.8		232 3.8	10 41.3	
20	294 18.5	290.2	20 55.3	0.1	282 34.6	290.2	20 34.3	-0.7	270 53.6	290.3	19 17.8	-1.4	259 21.7	290.5	17 8.8	-2.1	248 2.2	290.7	14 13.1	-2.7	236 54.6	290.8	10 38.1	-3.2
40	299 8.7		20 55.4		287 24.8		20 33.6		275 43.9		19 16.3		264 12.2		17 6.7		252 52.8		14 10.3		241 45.4		10 34.9	
19 0	303 58.9	20 55.5		292 15.1	20 32.9		280 34.2	19 14.9		269 2.6	17 4.5		257 43.5	14 7.6		246 36.2	10 31.6	
20	308 49.2	290.2	20 55.5	0.0	297 5.3	290.2	20 32.2	-0.7	285 24.6	290.3	19 13.4	-1.5	273 53.1	290.5	17 2.4	-2.2	262 34.1	290.7	14 4.8	-2.8	251 27.0	290.8	10 28.4	-3.2
40	313 39.4		20 55.6		301 55.5		20 31.5		290 14.9		19 11.9		278 43.6		17 0.2		267 24.8		14 2.1		256 17.8		10 25.1	
20 0	318 29.6	20 55.6		306 45.7	20 30.8		295 5.2	19 10.4		283 34.1	16 58.0		272 15.5	13 59.3		261 8.6	10 21.9	
20	323 19.9	290.2	20 55.7	0.0	311 36.0	290.2	20 30.0	-0.8	299 55.5	290.3	19 8.9	-1.5	288 24.6	290.5	16 55.8	-2.2	277 6.1	290.7	13 56.5	-2.8	265 59.4	290.8	10 18.7	-3.3
40	328 10.1		20 55.7		316 26.2		20 29.3		304 45.9		19 7.4		293 15.1		16 53.6		281 56.8		13 53.8		270 50.2		10 15.4	
21 0	333 0.3	20 55.7		321 16.4	20 28.5		309 36.2	19 5.9		298 5.5	16 51.5		286 47.5	13 51.0		275 41.0	10 12.1	
20	337 50.6	290.2	20 55.7	0.0	326 6.7	290.2	20 27.7	-0.8	314 26.5	290.3	19 4.4	-1.5	302 56.0	290.5	16 49.2	-2.2	291 38.1	290.7	13 48.2	-2.8	280 31.8	290.8	10 8.9	-3.3
40	342 40.8		20 55.7		330 56.9		20 27.0		319 16.8		19 2.9		307 46.5		16 47.0		296 28.8		13 45.4		285 22.6		10 5.6	
22 0	347 31.0	20 55.7		335 47.1	20 26.2		324 7.2	19 1.3		312 37.0	16 44.8		301 19.5	13 42.6		290 13.4	10 2.3	
20	352 21.3	290.2	20 55.7	0.0	340 37.4	290.2	20 25.4	-0.8	328 57.5	290.3	18 59.8	-1.6	317 27.5	290.5	16 42.6	-2.2	306 10.2	290.7	13 39.7	-2.8	295 4.2	290.8	9 59.0	-3.3
40	357 11.5		20 55.7		345 27.6		20 24.5		333 47.9		18 58.2		322 18.0		16 40.3		311 0.8		13 36.9		299 55.0		9 55.7	
23 0	2 1.7	20 55.6		350 17.8	20 23.7		338 38.2	18 56.6		327 8.5	16 38.1		315 51.5	13 34.1		304 45.8	9 52.4	
20	6 52.0	290.2	20 55.6	-0.1	355 8.1	290.2	20 22.9	-0.8	343 28.5	290.3	18 55.1	-1.6	331 59.1	290.5	16 35.8	-2.3	320 42.2	290.7	13 31.2	-2.9	309 36.7	290.8	9 49.1	-3.3
40	11 42.2		20 55.5		359 58.3		20 22.0		348 18.9		18 53.5		336 49.6		16 33.5		325 32.9		13 28.4		314 27.5		9 45.8	