

Introducing the **Symmetry454** Calendar

A simple perpetual solar calendar that is symmetrical across and between equal quarters, having **4+5+4 weeks** per quarter, yet conserves the traditional 7-day week.

Home Page on the Web: <<http://www.sym454.org/>>

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Overview of the Symmetry454 Calendar

<<http://www.sym454.org/>>

4:5:4 Weeks per Month

Days	4 ↓	5 ↓	4 ↓	Weeks
91 →	Monday January	Monday February	Monday March	← 13
+91 →	Monday April	Monday May	Monday June	← +13
+91 →	Monday July	Monday August	Monday September	← +13
+91 →	Monday October	Monday November	Monday December	← +13

= 364 ← Total in Non-Leap Years → = 52

+7 → In a **Leap Year** append a **Leap Week** to December.
Leap years occur at symmetrically arranged intervals of 6 or 5 years. ← +1

= 371 ← Total in Leap Years → = 53

Symmetry454 Calendar — 3 by 4 design

<<http://www.sym454.org/>>

Note: 18 denotes the Mid-Quarter Day

January

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	2	3	4	5	6	7
2	8	9	10	11	12	13	14
3	15	16	17	18	19	20	21
4	22	23	24	25	26	27	28

February

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
5	1	2	3	4	5	6	7
6	8	9	10	11	12	13	14
7	15	16	17	18	19	20	21
8	22	23	24	25	26	27	28
9	29	30	31	32	33	34	35

March

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
10	1	2	3	4	5	6	7
11	8	9	10	11	12	13	14
12	15	16	17	18	19	20	21
13	22	23	24	25	26	27	28

April

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
14	1	2	3	4	5	6	7
15	8	9	10	11	12	13	14
16	15	16	17	18	19	20	21
17	22	23	24	25	26	27	28

May

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
18	1	2	3	4	5	6	7
19	8	9	10	11	12	13	14
20	15	16	17	18	19	20	21
21	22	23	24	25	26	27	28
22	29	30	31	32	33	34	35

June

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
23	1	2	3	4	5	6	7
24	8	9	10	11	12	13	14
25	15	16	17	18	19	20	21
26	22	23	24	25	26	27	28

July

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
27	1	2	3	4	5	6	7
28	8	9	10	11	12	13	14
29	15	16	17	18	19	20	21
30	22	23	24	25	26	27	28

August

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
31	1	2	3	4	5	6	7
32	8	9	10	11	12	13	14
33	15	16	17	18	19	20	21
34	22	23	24	25	26	27	28
35	29	30	31	32	33	34	35

September

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
36	1	2	3	4	5	6	7
37	8	9	10	11	12	13	14
38	15	16	17	18	19	20	21
39	22	23	24	25	26	27	28

October

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
40	1	2	3	4	5	6	7
41	8	9	10	11	12	13	14
42	15	16	17	18	19	20	21
43	22	23	24	25	26	27	28

November

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
44	1	2	3	4	5	6	7
45	8	9	10	11	12	13	14
46	15	16	17	18	19	20	21
47	22	23	24	25	26	27	28
48	29	30	31	32	33	34	35

December

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
49	1	2	3	4	5	6	7
50	8	9	10	11	12	13	14
51	15	16	17	18	19	20	21
52	22	23	24	25	26	27	28
53	29	30	31	32	33	34	35

In a **Leap Year**, append a **Leap Week** to December, making it a 5-week month.
Leap years occur at symmetrically arranged intervals of 6 or 5 years.

Symmetry454 Calendar

<http://www.sym454.org/>

quad "stack" design, ordinal day numbers

Note: **18** denotes the Mid-Quarter Day

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
January	1 1	2 2	3 3	4 4	5 5	6 6	7 7
	8 8	9 9	10 10	11 11	12 12	13 13	14 14
	15 15	16 16	17 17	18 18	19 19	20 20	21 21
	22 22	23 23	24 24	25 25	26 26	27 27	28 28
February	29 1	30 2	31 3	32 4	33 5	34 6	35 7
	36 8	37 9	38 10	39 11	40 12	41 13	42 14
	43 15	44 16	45 17	46 18	47 19	48 20	49 21
	50 22	51 23	52 24	53 25	54 26	55 27	56 28
	57 29	58 30	59 31	60 32	61 33	62 34	63 35
March	64 1	65 2	66 3	67 4	68 5	69 6	70 7
	71 8	72 9	73 10	74 11	75 12	76 13	77 14
	78 15	79 16	80 17	81 18	82 19	83 20	84 21
	85 22	86 23	87 24	88 25	89 26	90 27	91 28

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
July	27 183 1	28 184 2	29 185 3	30 186 4	31 187 5	32 188 6	33 189 7
	34 190 8	35 191 9	36 192 10	37 193 11	38 194 12	39 195 13	40 196 14
	41 197 15	42 198 16	43 199 17	44 200 18	45 201 19	46 202 20	47 203 21
	48 204 22	49 205 23	50 206 24	51 207 25	52 208 26	53 209 27	54 210 28
August	55 211 1	56 212 2	57 213 3	58 214 4	59 215 5	60 216 6	61 217 7
	62 218 8	63 219 9	64 220 10	65 221 11	66 222 12	67 223 13	68 224 14
	69 225 15	70 226 16	71 227 17	72 228 18	73 229 19	74 230 20	75 231 21
	76 232 22	77 233 23	78 234 24	79 235 25	80 236 26	81 237 27	82 238 28
	83 239 29	84 240 30	85 241 31	86 242 32	87 243 33	88 244 34	89 245 35
September	90 246 1	91 247 2	92 248 3	93 249 4	94 250 5	95 251 6	96 252 7
	97 253 8	98 254 9	99 255 10	100 256 11	101 257 12	102 258 13	103 259 14
	104 260 15	105 261 16	106 262 17	107 263 18	108 264 19	109 265 20	110 266 21
	111 267 22	112 268 23	113 269 24	114 270 25	115 271 26	116 272 27	117 273 28

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
April	14 92 1	15 93 2	16 94 3	17 95 4	18 96 5	19 97 6	20 98 7
	21 99 8	22 100 9	23 101 10	24 102 11	25 103 12	26 104 13	27 105 14
	28 106 15	29 107 16	30 108 17	31 109 18	32 110 19	33 111 20	34 112 21
	35 113 22	36 114 23	37 115 24	38 116 25	39 117 26	40 118 27	41 119 28
May	42 120 1	43 121 2	44 122 3	45 123 4	46 124 5	47 125 6	48 126 7
	49 127 8	50 128 9	51 129 10	52 130 11	53 131 12	54 132 13	55 133 14
	56 134 15	57 135 16	58 136 17	59 137 18	60 138 19	61 139 20	62 140 21
	63 141 22	64 142 23	65 143 24	66 144 25	67 145 26	68 146 27	69 147 28
	70 148 29	71 149 30	72 150 31	73 151 32	74 152 33	75 153 34	76 154 35
June	77 155 1	78 156 2	79 157 3	80 158 4	81 159 5	82 160 6	83 161 7
	84 162 8	85 163 9	86 164 10	87 165 11	88 166 12	89 167 13	90 168 14
	91 169 15	92 170 16	93 171 17	94 172 18	95 173 19	96 174 20	97 175 21
	98 176 22	99 177 23	100 178 24	101 179 25	102 180 26	103 181 27	104 182 28

week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
October	40 274 1	41 275 2	42 276 3	43 277 4	44 278 5	45 279 6	46 280 7
	47 281 8	48 282 9	49 283 10	50 284 11	51 285 12	52 286 13	53 287 14
	54 288 15	55 289 16	56 290 17	57 291 18	58 292 19	59 293 20	60 294 21
	61 295 22	62 296 23	63 297 24	64 298 25	65 299 26	66 300 27	67 301 28
November	68 302 1	69 303 2	70 304 3	71 305 4	72 306 5	73 307 6	74 308 7
	75 309 8	76 310 9	77 311 10	78 312 11	79 313 12	80 314 13	81 315 14
	82 316 15	83 317 16	84 318 17	85 319 18	86 320 19	87 321 20	88 322 21
	89 323 22	90 324 23	91 325 24	92 326 25	93 327 26	94 328 27	95 329 28
	96 330 29	97 331 30	98 332 31	99 333 32	100 334 33	101 335 34	102 336 35
December	103 337 1	104 338 2	105 339 3	106 340 4	107 341 5	108 342 6	109 343 7
	110 344 8	111 345 9	112 346 10	113 347 11	114 348 12	115 349 13	116 350 14
	117 351 15	118 352 16	119 353 17	120 354 18	121 355 19	122 356 20	123 357 21
	124 358 22	125 359 23	126 360 24	127 361 25	128 362 26	129 363 27	130 364 28

In a Leap Year, append a Leap Week to December, making it a 5-week month.
Leap years occur at symmetrically arranged intervals of 6 or 5 years.

53	365 29	366 30	367 31	368 32	369 33	370 34	371 35
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Benefits of the Symmetry454 Calendar

<<http://www.sym454.org/>>

- The Symmetry454 calendar is perpetual — a permanent copy can be reused every year.
- It conserves the 7-day week.
There are no intercalated or “null” or leap days outside of the traditional 7-day weekly cycle.
- Its symmetrical structure paves the way to simpler, aesthetically pleasing calendar designs.
- Its **superior symmetrical leap rule** ensures excellent long-term astronomical accuracy:
 - The simple fixed arithmetic **52/293** leap rule has 52 leap years that are automatically and inherently symmetrically spread as smoothly as possible within each repeating cycle of 293 years:
 - **It is a Leap Year only if the Remainder of (52 × Year + 146) / 293 is less than 52.**
 - With this simple single-step leap rule, leap year intervals occur in groups of either 6 + 6 + 5 = 17 years or 6 + 5 = 11 years, which symmetrically group into sub-cycles of 17 + **11** + 17 = 45 years or sub-cycles of 17 + 17 + **11** + 17 + 17 = **79** years. In each full calendar cycle these sub-cycles inherently occur symmetrically in the sequence 45 + **79** + 45 + **79** + 45 = 293 years.
 - With 52 leap weeks in the cycle, and 52 weeks in a regular year, the fixed cycle length equals exactly 294 regular years, and the average interval between leap weeks is exactly 294 weeks.
 - The calendar mean year $\equiv 365 + \frac{71}{293}$ days $\equiv 365\text{d } 5\text{h } 48\text{m } 56 + \frac{152}{293}\text{s}$, which is intentionally slightly shorter than the present era northward equinoctial mean year of 365d 5h 49m 0s, ensuring essentially drift-free performance for more than 4 future millennia.
 - Due to the symmetrical arrangement of leap years, the timing of the mean northward equinox moment always falls at the cycle average in the first year of every 293-year cycle. **This feature simplifies astronomical performance evaluations.**
- **Every Symmetry454 year, quarter, month and week starts on Monday and ends on Sunday.**
- **Every day number within each Symmetry454 month is always on the same weekday in every month.**
- $\text{Weekday} = \text{DayInMonth} \text{ MOD } 7$, where 0=Sunday, 1=Monday, 2=Tuesday, *etc.*
- Monthly meetings on a fixed weekday are always on the same day number in every month, simplifying scheduling, for example the 3rd Thursday is always the 18th day of every month.
- Its symmetrical 13-week quarters are always identical.
Every quarter has the same count of weekdays and weekend days.
- Every date has permanently fixed week-in-year and day-in-year numbers, facilitating administrative, academic, commercial and industrial applications, and simplifying calendar arithmetic.
- There is always a whole number of weeks in every year (non-leap year = 52 weeks, leap year = 53 weeks), in every quarter (13 weeks), and in every month (short month = 4 weeks, long month = 5 weeks).
- **Every secular holiday, event, anniversary, birthday, and memorial day has a permanently fixed weekday and date, because the calendar is perpetual.**
- Holiday and/or special day overlaps are less likely to occur and are easy to predict and avoid.
- Sunday, April 7th is proposed as a permanently fixed Symmetry454 date for Easter, based on the median date of the Sunday after the day of the astronomical lunar opposition that is on or after the day of the astronomical northward equinox, calculated for the meridian of Jerusalem.
 - Fixing Easter also fixes all Easter-related ecclesiastical calendar dates (counted before or after Easter).
 - See “**Appendix**: A Declaration of the Second Ecumenical Council of the Vatican on Revision of the Calendar” at the end of the archive “[Constitution on the sacred liturgy Sacrosanctum Concilium solemnly promulgated by His Holiness Pope Paul VI on December 4, 1963](http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_const_19631204_sacrosanctum-concilium_en.html)” at <http://www.vatican.va/archive/hist_councils/ii_vatican_council/documents/vat-ii_const_19631204_sacrosanctum-concilium_en.html>.
- The first 4 weeks of every Symmetry454 month are identical.
Note: It is likely that some regular monthly payments will become two-tiered, with 25% more payable for long months. For monthly comparisons increase short month statistics by 25% to match long months, or reduce the long month statistics by 20%.
- The coherent structure of the calendar enables simple arithmetic expressions in calculating the following for statistical or business purposes: weekday; day number of year, quarter or month; week number of year, quarter or month; month number of year or quarter.
- **Symmetry454 calendar arithmetic is in the public domain**, allowing **royalty-free** computer implementation.
- The **freeware** *Kalendis* computer program demonstrates the calendar and inter-converts dates, and is freely available at <<http://www.sym454.org/kalendis/>>.
- “Friday the 13th” never happens.