

FUN WITH CALENDARS

Look at a calendar and find out which months of the year begin on the same day of the week.

Let us give numbers to the days of the week as follows: Sunday (0), Monday (1), Tuesday (2), Wednesday (3), Thursday (4), Friday (5), Saturday (6)

Look at the general pattern that every month follows relative to 01 January of the corresponding year. For example, if 01 January of a particular year falls on a Sunday (0), then rest of the months in that year follow this pattern:

A Leap Year (2016) Calender

January	February	March
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
April	May	June
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
July	August	September
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
October	November	December
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

A Non-leap Year (2014) Calender

January	February	March
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
April	May	June
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
July	August	September
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
October	November	December
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Leap Years

January, April, July (+0)

October (+1)

May & following year's January(+2)

February, August (+3)

March, November (+4)

June (+5)

September, December (+6)

Non-leap years

- January, October (+0)

- May & following year's January (+1)

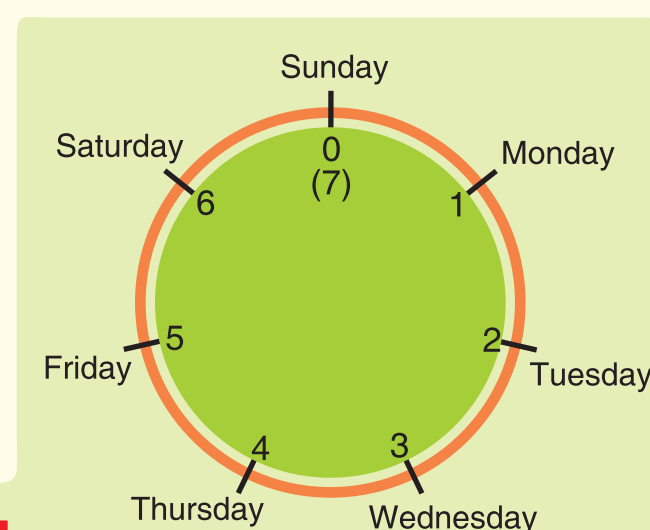
- August (+2)

- February, March, November (+3)

- June (+4)

- September, December (+5)

- April, July (+6)



A week clock

We can do addition with these numbers as if they were on a clock. When we cross '7', the clock resets to zero. So $3 + 5 = 8 = 7 + 1$, which is the same as 1.

In other words, we do these additions modulo 7.

When we move to different Century-year, we need to keep in mind that

I The first of Jan on consecutive Leap years occurs in the following sequence:

0, 5, 3, 1, 6, 4, 2, 0, 5 OR

Sunday, Friday, Wednesday, Monday, Saturday, Thursday, Tuesday, Sunday, Friday, . . .

Notice that each number in the sequence is obtained by adding 5 to the previous number and taking the sum modulo 7 (addiing on the clock).

II Every block of consecutive 28 years repeats itself after in a particular century, i.e. the corresponding dates fall on the same day.

III A non-leap year either repeats itself after 6 years, or after 11 years depending upon the number of leap years occuring in between.

IV A particular date in a year (leap or non-leap) falls on the same day after 5, 6 or 11 years in the following cycle: 5, 6, 11, 6, 5, 6, 11, 6, 5 . .

I A century year happens to be a leap year after 400 years.

II 1600, 2000, 2400, are leap years, while 1700, 1800, 1900, 2100, 2200, 2300 are non-leap years.

III The first days of the following century-years are:

1900 – Monday (1)

2000 – Saturday (6 = 1 + 5, mod 7)

2100 – Friday (5 = 6 + 5 + 1, mod 7)

2200 – Wednesday (3 = 5 + 5, mod 7)

2300 – Monday (1 = 3 + 5, mod 7)

2400 – Saturday (6 = 1 + 5, mod 7)

Therefore, a block of 400 years repeats itself. (Think why!)

Try to find the days of the week for these dates: 15 August 1947, 26 January 1950, 02 October 1869