Calendar Problems

Introduction to Calendar problems

The calendar is a small chapter but an important chapter of the reasoning part. Questions in calendars come from time to time for you in your exams.
A calendar is a series of pages that contains days, weeks, and months of a particular year and gives information.

Normal year: Any year which contains 365 days is called a normal year.
Leap year: Any year which contains 366 days is called a leap year.
Odd days: those number of available days from which we can't complete a week are called odd days.

A normal year has 365 days. In which there are 52 complete weeks and the last day would be an odd day. It would shift the calendar ahead or behind by a certain day.

Suppose in a normal year you start 1st January of the year on Monday, then 30th Dec of that year would be a Sunday and 31st Dec being a Monday and hence, the 1st Jan of the next year will skip the calendar forward by one day.

A leap year has 366 days. If 1st Jan starts with Monday of leap year then 29th Dec would be the last Sunday of that year. 30th Dec will again Monday and 31th Dec will be Tuesday. Hence, 1st Jan of the next year will skip by 2 days.

The number of odd days in different months of a calendar

MONTHS	NUMBER OF ODD DAYS
JANUARY	3
FEBRUARY(normal/leap)	0/1
MARCH	3
APRIL	2
MAY	3
JUNE	2
JULY	3
AUGUST	3
SEPTEMBER	2
OCTOBER	3
NOVEMBER	2
DECEMBER	3

NOTE:

1. The number of odd days in the first 100 consecutive years is 5.
2. The number of odd days in the first 200 consecutive years is 3.
3. The number of odd days in the first 300 consecutive years is 1.
4. The number of odd days in the first 400 consecutive years is 0.

Example 1:
11 August 2019 is a Sunday, what day was on 11 August 1983?
Solution:
To find the day on 11 August 1983, you have to count the number of odd days.
From 1983 to 2019 there are 36 years. This means 36 odd days and now count how many leap years or 29th Feb will appear.

So, 29th Feb would appear in 1984,1988,1992,1996,2000,2004,2008,2012,2016. So, 9 leap years means 9 further odd days.

Hence, the total number of odd days = 36+9=45 days
45 days have 6 complete weeks and 3 odd days left out.
Going behind 3 odd days from Sunday. Hence, 11 August 1983 would be a Thursday.

Example 2: What was the day of the week on 13th April 1723?

(a) Monday
(b) Tuesday
(c) Wednesday
(d) Thursday

Answer:b)

Solution: No. of odd days in 1700=5(1600=0+ 100=5)
No of odd days in 22 years=5(leap years)*2+17(normal years)=27mod7=6
No. of odd days in Jan, Feb, and march=3+0(1723 is not a leap year)+3=6
No. of odd days in 13 days=6
Total odd days =23mod7=2
Thus 13th April 1723 is Tuesday

OR

No. of odd days in 1700 = 5 (1600 = 0 + 100 =5)
No of odd days in 22 year = 5(leap years) * 2 + 17 (normal years) = 27mod7 = 6
No. of odd days in Jan, Feb, March and 13 days of April = 31 + 28(not leap year) + 31 + 13 = 103mod7 = 5
Total odd days = 5+6+5 = 16mod7 = 2
Thus 13th April 1723 is Tuesday.