



# Knowledge Card

Aptitude | Calendar



# Calendar

In general terms, calendar is a series or chart of pages showing the days, weeks, and months of a particular year, or gives specific seasonal information. A calendar is a system of organizing the days in a year.

## Calendar Formulas

### **Odd Days:**

We are supposed to find the day of the week on a given date.

For this, we use the concept of 'odd days'.

In a given period, the number of days more than the complete weeks are called odd days.

### **Leap Year:**

(i). Every year divisible by 4 is a leap year, if it is not a century.

(ii). Every 4th century is a leap year and no other century is a leap year.

Note: A leap year has 366 days.

### **Examples:**

Each of the years 1948, 2004, 1676 etc. is a leap year.

Each of the years 400, 800, 1200, 1600, 2000 etc. is a leap year.

None of the years 2001, 2002, 2003, 2005, 1800, 2100 is a leap year.

### **Ordinary Year:**

The year which is not a leap year is called an ordinary year. An ordinary year has 365 days.

### **Counting of Odd Days:**

1 ordinary year = 365 days = (52 weeks + 1 day.)

1 ordinary year has 1 odd day.

1 leap year = 366 days = (52 weeks + 2 days)

1 leap year has 2 odd days.

100 years = 76 ordinary years + 24 leap years



=  $(76 \times 1 + 24 \times 2)$  odd days = 124 odd days.

=  $(17 \text{ weeks} + \text{days}) = 5$  odd days.

Number of odd days in 100 years = 5.

Number of odd days in 200 years =  $(5 \times 2) = 0$  odd days.

Number of odd days in 300 years =  $(5 \times 3) = 1$  odd day.

Number of odd days in 400 years =  $(5 \times 4 + 1) = 0$  odd day.

Similarly, each one of 800 years, 1200 years, 1600 years, 2000 years etc. has 0 odd days.

### Day of the Week Related to Odd Days:

Days	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Number of odd days	0	1	2	3	4	5	6

## How To Solve Calendar Questions Quickly

### Type 1: How to Solve Calendar questions Quickly

Question 1.

What was the day on 10th November, 1581?

- A. Thursday
- B. Monday
- C. Wednesday
- D. Tuesday

Solution:

10 November 1581 =  $(1580 \text{ years} + \text{Period from 1.1.1581 to 10.11.1581})$

To calculate number of odd days till 1580, we need



Number of odd days in 1200 years = 0

Number of odd days in 300 years = 1

Number of odd days in 80 years = 20 leap years + 60 ordinary years = 2 odd days

Therefore, 1580 years had  $0 + 1 + 2 = 3$  odd days

Now, for calculating odd days for 1.1.1581 to 10.11.1581,

January (31 days) + February (28 days) + March (31 days) + (April 30 days) + May (31 days) + June (30 days) + July (31 days) + August (31 days) + September (30 days) + October (31 days) + November (10 days) = 314 days

Total number of odd days in 314 days =  $(314/7) = 6$  odd days

Total Number of odd days corresponding to the given date =  $3 + 6 = 9$  days =  $9/7 = 2$  odd days

As per the table, on 10 November 1581 the day was Tuesday.

Days	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Number of odd days	0	1	2	3	4	5	6

Correct option: D

Question 2.

Suppose today is Monday. Now find out what will be the day after 62 days?

- A. Sunday
- B. Monday
- C. Wednesday
- D. Tuesday

Solution:

Each day to the week is repeated after 7 days.

Therefore, after 63 days, it will be Monday.

Which means that on 62nd day, it will be Sunday.



Correct option: A

Question 3.

Which year will have the same calendar as that of the year 2019?

- A. 2029
- B. 2030
- C. 2031
- D. 2024

Solution

Count the number of odd days from the year 2019 onwards to get the sum equal to 0 odd day.

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Number of Odd days	1	2	1	1	1	2	1	1	1	2	1

Sum = 14 odd days = 0 odd days

Therefore, calendar of the year 2030 will have the same calendar as that of the year 2019.

## Calendar- Tips and Tricks and Shortcuts

The tricks and shortcuts mentioned below will help you solve problems based on them easily.

### Type 1: Calendars Tips and Tricks

Question 1.

Find the day for a given date, what was the day on 26th May 2006?

- A. Monday
- B. Friday
- C. Wednesday
- D. Saturday



Correct Option: B

Solution:

26 May 2006 = (2005 years + time period from 1/1/2006 to 26/5/2006)

To calculate number of odd days till the year 2000, we require

Number of odd days in 1600 years = 0

Number of odd days in 400 years = 0

In the next step, for calculating odd days in the next five years,

5 years = (4 ordinary years + 1 leap year)

= 4 + 2

= 6 odd days

Now, we have to calculate the number of odd days from 1st January 2006 to 26th May 2006.

January (31 days) + February (28 days because 2006 is not a leap year) + March (31 days) + April (30 days) + May 26 days = 146 days

Total number of odd days in 146 days =  $(146/7) = 20 \text{ weeks} + 1 \text{ odd day}$

Total number of odd days in the entire period = 0 (1600 years) + 0 (400 years) + 5 (5 years) + 0 (time from 1/1/2006 to 2/2/2006) = 5 odd days

According to the table, on 26th May 2006, the day was Friday.

Days	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Number of odd days	0	1	2	3	4	5	6

## Type 2: Calendar Tips and Shortcuts

Question 2.

Find out a day when some other day is given, It was Friday on 7th December 2007. What was the day on 7th December 2006?

- A. Tuesday
- B. Monday
- C. Friday
- D. Thursday



Correct option: D

Solution:

2006 was not a leap year

Hence, the number of odd days is 1

Now 7th December 2007 will be 1 day beyond the day on 7th December 2006 due to one odd day.

Since, 7th December 2007 was a Friday, hence, 7th December 2006 was a Thursday.

### Type 3: Tips and Tricks for Calendar

Question 3.

Which year after 2005 will have the same calendar as of 2005?

- A. 2011
- B. 2022
- C. 2015
- D. 2054

Solution:

The given year is 2005 which is not a leap year

We add 11 years to the given year and get  $(2005 + 11) = 2016$  which is a leap year

Also add 6 years to the given year  $(2005 + 6) = 2011$

Hence, the calendar for 2005 will be same as for the year 2011.