CALENDAR

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Leap Year:

✓Every year divisible by 4 is a leap year, if it is not a century.

✓Every 4^{th} century is a leap year and no other century is a leap year.eg 400 is leap year , 200 is not leap year

✓A leap year has 366 days.

Ordinary Year:

✓The year which is not a leap year is called an *ordinary Years*.

✓An ordinary year has 365 days.(52 complete Weeks)

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Examples:

✓Each of the years 1948, 2004, 1676 etc. is a leap year.(because they are divisible by 4)

✓Each of the years 400, 800, 1200, 1600, 2000 etc. is a leap year.(because they are divisible by 400)

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

Odd Days:

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

Counting of Odd Days

- ✓ 1 ordinary year = 365 days = 52 weeks(i.e 52 X 7=364 days) + 1 day.

  So, 1 ordinary year has 1 odd day.
- ✓ 1 leap year = 366 days = (52 weeks + 2 days)

  So, 1 leap year has 2 odd days.
- ✓ 100 years = 76 ordinary years + 24 leap years

  = (76 x 1 + 24 x 2) odd days = 124 odd days.

  = (17 weeks + 5days)

  So, Number of odd days in 100 years = 5.

Counting of Odd Days

- ✓ Number of odd days in 200 years = 3 odd days.
- ✓ Number of odd days in 300 years = 1 odd day.
- ✓ Number of odd days in 400 years = (5 x 4 + 1)
  = 0 odd day.

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

Year	Odd Days
Ordinary Year	1
Leap Year	2
100 Years	5
200 Years	5+5=10%7=3 odd Days
300 Years	5+5+5=15%7=1 odd Day
400 Years	0 odd day
800 Years	0 Odd day
1200 Years	0 Odd day
1600 Years	0 Odd day
Every Leap Year Century	0 Odd day

Day of the Week Related to Odd Days

No. of Days:	0	1	2	3	4	5	6
Days:	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.

When we proceed forward by one year, then 1 day is gained and vice-versa.
Example,9th August 2013 was Friday, therefore 9th August 2014 has to be Friday+1=Saturday.
Reverse is also true.

When we proceed forward by one leap year, then 2 days are gained and vice-versa.
Example If it was Wednesday on 10th august 2011 … then it has to be Friday (Wednesday +2) on 10th august 2012 [because 2012 is a leap year]

Important point
If 26th January 2011 is Wednesday … then 26th January 2012 would be Thursday (even if 2012 is leap year we have added +1 day, because 29th of February is not crossed).
If 23rd March 2011 is Wednesday … then 23rd march 2012 would be Friday (+2 days. As 29th February of leap year is crossed).

Non leap year i.e ordinary year has First day of year = last day of year
Eg 1 jan 2019 = Tuesday then 31 Dec 2019 was also Tuesday

Leap year has last day = starting day + 1
Eg 1 Jan 2020 = Wednesday then 31 Dec 2020 will be Wednesday + 1 = Thursday

Question

January 1,2007 was Monday. What day of the week was on January 1,2008?

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

Answer: Option **B**

Explanation:

The year 2007 is an ordinary year.

So, It has 1 odd day.

1st day of year 2007 was Monday.

So, 1st day of the year 2008 will be a day after Monday.

This day will be Tuesday.

Question

January 1,2008 was Tuesday. What day of the week was on January 1,2009?

A. Monday
B. Wednesday
C. Thursday
D. Sunday

Answer: Option **C**

Explanation:

The year 2008 is a leap year.

So, It has 2 odd day.

1st day of year 2008 was Tuesday.

So, 1st day of the year 2009 will be 2 days after Tuesday.

This day will be Thursday.

Question

What was the day of week on 15th August, 1947 ?

A. Monday
B. Tuesday
C. Friday
D. Sunday

Answer

15^{th} Aug 1947 = 1946 years + Period from 1.1.1947 to 15.8.1947

Odd days in 1600 years = 0

Odd days in next 300 years(1601-1900) = 5*3 = 15 = 1

46 years = 11 leap years + 35 ordinary years

= (11 * 2) + (35 * 1) = 57 = 1

Odd days is 1946 years = 0 + 1 + 1 = 2

Jan + Feb + Mar + Apr + May + Jun + July + Aug =

31 + 28 + 31 + 30 + 31 + 30 + 31 + 15 = 227 days

227 days = 32 weeks + 3 days = 3 odd days

Total odd days = 2 + 3 = 5

So, the day on 15^{th} Aug 1947 was **Friday**.

Shortcut to find day on given date (1901-1999)

What was the day on 15th August 1947 Ans Friday

Follow the instructions

Date	15
Last two digits of year	47
No of Leap Year since 1901	11 (because 47 divide by 4 quotient is 11)
Month Key for Aug	2
Add all numbers	75
Divide by 7 take remainder	75 % 7 = 5 i.e Friday Ans

because

Sun	Mon	Tue	Wed	Thur	Fri	Sat
0	1	2	3	4	5	6

Month Key is 033 614 625 035 i.e

Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov	Dec
0	3	3	6	1	4	6	2	5	0	3	5

Question

How many days are there in x weeks x days?

A. $7x^2$

B. $8x$

C. $14x$

D. 7

Answer: Option **B**

Explanation:

x weeks x days = $(7x + x)$ days = $8x$ days.

Question

Today is Monday. After 61 days, it will be:

A. Wednesday
B. Saturday
C. Tuesday
D. Thursday

Answer: Option **B**

Explanation:

Each day of the week is repeated after 7 days.

So, after 63 days, it will be Monday.

After 61 days, it will be Saturday.

Question

The last day of a century cannot be

A. Monday
B. Wednesday
C. Tuesday
D. Friday

Answer: Option **C**

Explanation:

100 years contain 5 odd days.

Last day of 1st century is Friday.

200 years contain (5 x 2) 3 odd days.

Last day of 2nd century is Wednesday.

300 years contain (5 x 3) = 15 1 odd day.

Last day of 3rd century is Monday.

400 years contain 0 odd day.

Last day of 4th century is Sunday.

This cycle is repeated.

Last day of a century cannot be Tuesday or Thursday or Saturday.

Question

The calendar for the year 2003 will be the same for the year.

A. 2008
B. 2012
C. 2014
D. 2016

Answer : Option C

2003 is ordinary year. So odd day = 1
2004 is leap year. So odd day = 2
2005 is ordinary year. So odd day = 1
2006 is ordinary year. So odd day = 1
2007 is ordinary year. So odd day = 1
2008 is leap year. So odd day = 2
2009 is ordinary year. So odd day = 1
2010 is ordinary year. So odd day = 1
2011 is ordinary year. So odd day = 1
2012 is leap year. So odd day = 2
2013 is ordinary year. So odd day = 1

In 2013, no of odd days are zero.

So, calendar for the year 2003 will be the same for 2014.

Thank you