Imp Facts

Friday, June 11, 2021 1:21 PM

Calendar

↓

year = (1)

months = 12

weeks = 52 weeks + 1 odd day.

days = 365 / 7 , 366 / 7

1st → 365 + 6 hours

2nd → " "

3rd → " "

4th → " 6 hours

365 + 24 hours

1 day.

52 weeks + 2 odd days

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

→ Every 4th century is a leap year and other is not leap year.

Ex (i) 1948, 2004, 1676 etc is a leap year

(ii) Each of the years 400, 800, 1200, 1600, 2000 is a leap year it should ~~not~~ divisible by 400.

(iii) 2001, 2002, 2003, 1800, 2100 is not leap year.

→ Counting the odd days

(i) 1 ordinary year = 365 = (52 weeks + 1 odd day)

1 ordinary year has only 1 odd day.

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

1 leap year has 2 odd days.

(iii) 100 years = 24 leap years + 76 ordinary years.

$= (24 * 2) + (76 \times 1)$

$= 48 + 76 = 124$ odd days

$= 17$ weeks + 5 days $= 5$ odd days

No. of odd days in 100 years = 5 odd

" " " 200 years = $5 * 2 = \frac{10}{7} = 3$ odd

" " " 300 years = $5 * 3 = \frac{15}{7} = 1$ odd

" " " 400 years = $(5 * 4 + 1) = 20 + 1$
$= \frac{21}{7} = 0$ odd

" " " 500 years = $(5 * 5 + 1) = \frac{25}{7} = 4 + 5$
$= 5$ odd.

400 = 0 odd day

⋮

1200 =

1600 : 0 odd

2000 : 0 odd :--

No. of days	0	1	2	3	4	5	6	7
Day	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun

Ex: What was the day of the week on

16th July, 1776?

No. of odd days in 1600 years = 0.

No. of odd days in 100 years = 5

75 years = 18 leap yrs + 57 ordinary yrs

= (18 × 2) + (57 × 1)

= 36 + 57 = 93 odd days

= $\frac{93}{7}$ = 2 odd days.

Sum of 0 odd days = $\frac{7}{7}$ = 0 odd days = (0 + 5 + 2)

Jan Feb March April May June July

31 + 29 + 31 + 30 + 31 + 30 + 16

= 198 day = 28 weeks + 2 odd days = 2 odd.

Total no. of odd days = 0 + 2 = 2 odd dy.

On 16th July 1776 is Tuesday.

Sol 3rd Jan. 2002 ?

No. of odd days = 2002 = 0 odd days.

1 ordinary year = 1 odd day

0 + 1 + 3 = 4 = Thursday // ∴

∴ 15th August, 1947

$\equiv$ 15th August, 1947}

$\Rightarrow$ 15th August, 1947 = 1946 year + 1.1.47 to 15.8.47

odd days 1600 years = 0 odd day

odd days 30 years = 5 x 3 = 15 = 1 odd day.

46 years = 11 years leap + 35 ordinary years

= (11 x 2) + (35 x 1) = 22 + 35 = 57 = 1 odd day.

Jan	Feb	March	April	May	June	July	Aug
31	28	31	30	31	30	31	15

= 227 days = (32 week + 3 days)

= 3 odd days.

(0 + 1 + 1 + 3) = 5 odd days =

15th Aug, 1947 is on Friday.//

Ex on. What dates of march 2005 did Friday fall?

→ March 2005 = 2004 + 1.1.05 to 1.3.05

odd day of 2000 years = 0 odd days.

'11 11 4 years = (1 leap year + 3 ordinary)

= 2 + 3 = 5 odd days.

Jan Feb March

31 28 1 = 60 days = 4 + 11 days.

(0 + 5 + 4) = 9 odd days = 2 odd days.

Tuesday is on 1st march 2005.

~~Wed~~	2	
Thurs	3	4th, 11th, 18th, 25th,
Friday.	4	~~2nd~~

Ex Prove that the calendar for years 2003 will serve for the year 2014.

→ We must have same days in 1.1.03 & 1.1.14.

→ so. no. of odd days left in 31.12.02 to 31.12.13 must be 0.

11 years = 3 leap year + 8 ordinary

= 6 + 8 = 14 days = 0 odd days.

hence proved.

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

7 × 9 = 63 → Monday

62 → Sunday

61 → Saturday.

Ex The last day of a century cannot be Monday Wednesday Tuesday Friday.

→ 100 years contains 5 odd days

Last day of the century is Friday.

200 years contains 3 odd days

Wednesday.

300 years contains 1 odd day

Monday.

400 years contains 0 odd days.

Sunday.

500 years → Friday.

Friday — Wednesday — Sunday — Monday.

Tuesday Thursday Saturday.

Ex If was Sunday on Jan 1, 2006, what was the day of the week on Jan 1, 2040?

→ Am. Friday..