CSIR NET PYQ DISCUSSION

CH.10 CALENDER

"Odd days" 15th OCT, 2342

- Ifas aptitude.
- CSIR LECTURES Series /@ggg

What is the minimum number of days between one Friday the 13th and the next Friday the 13th? (Assume that the year is a leap year)

(1) 28 **(2) 56**

(3) 91 **(4) 84**

(CSIR NET/JRF DEC 2012)

Explanation:

Note: In a leap year, February has 29 days.

For better understanding, assume that January 13th of the given year falls on a Friday. We know that a day gets repeated after every 7 days.

So, the next Friday falls on 13th of another month if the number of days counted from January 13th till the 13th of that month is a multiple of 7.

Now, check in which month's 13th, the sum of days until then is a multiple of 7.

$\mathbf{Jan13^{th}\ to\ Feb13^{th} = 31}$

Not a multiple of 7

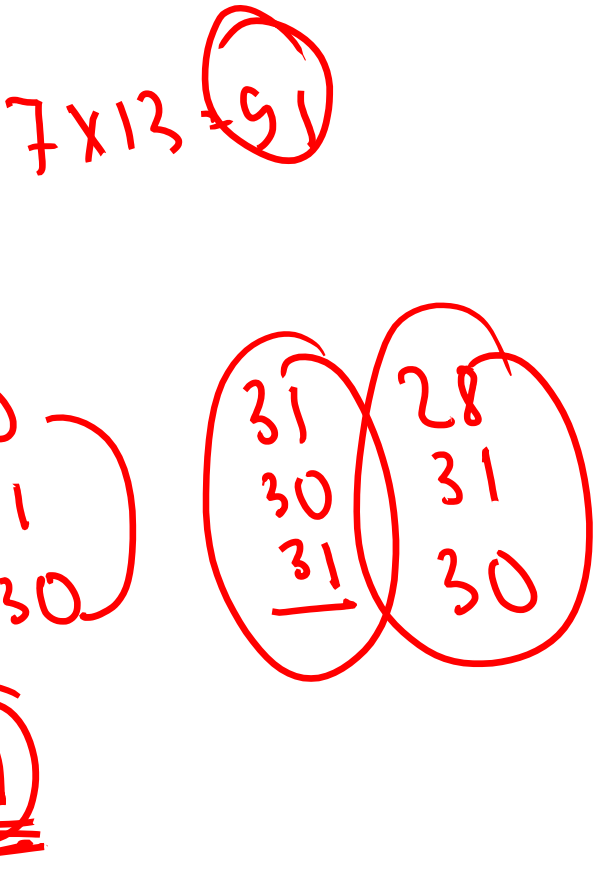
$\mathbf{Jan13^{th}\ to\ March13^{th} = 31 + 29 = 60}$

Not a multiple of 7

$\mathbf{Jan13^{th}\ to\ April13^{th} = 31 + 29 + 31 = 91}$

Multiple of 7

Answer (3)



In a museum there were old coins with their respective years engraved on them, as follows:

(A) 1837 AD **(B) 1907 AD**

(C) 1947 AD **(D) 200 BC**

Identify the fake coin(s)

(1) Coin A **(2) Coin D**

(3) Coin A and B **(4) Coin C**

(December 2012)

Explanation:

At the time of 200 BC , nobody knew that it was "BC" as the Calendar was not divied to BC (Before Christ) and AD (After Christ) before the birth of Christ . Thus, 200 BC is the fake coin.

Answer (2)

What is the maximum sum of the number of Saturdays and Sundays in a leap year?

(1) 104 **(2) 105**

(3) 106 **(4) 107**

(CSIR NET/JRF DEC 2013)

52 x 2 = 104 + 2

7 | 366 (52
35
16
14
2

Leap year

366 → 52 weeks + 2 days

Explanation:

Note: In a leap year, there are total 366 days, i.e. 52 complete weeks and 2 odd days. So, there are 52 Saturdays and 52 Sundays which sums to 104 days.

To maximize the sum of the number of Saturdays and Sundays, we can consider that the two odd days be Saturday and Sunday respectively.

So maximum sum of the number of Saturdays and Sundays = 104 + 2 = 106.

Answer (3)

November 9, 1994 was a Wednesday. Then which of the following is true?

(1) November 9, 1965 is a Wednesday and November 9, 1970 is a Wednesday.

(2) November 9, 1965 is not a Wednesday and November 9, 1970 is a Wednesday.

(3) November 9, 1965 is a Wednesday and November 9, 1970 is not a Wednesday.

(4) November 9, 1965 is not a Wednesday and November 9, 1970 is not a Wednesday.

(CSIR NET/JRF JUNE 2014)

Explanation:

Given: **November 9, 1994 was a Wednesday**

Hence we can consider this as reference day.

If we check four options provided, there are only two dates as below: November 9, 1965 and November 9, 1970. We have to determine the number of odd days between each of these days and the reference day. November 9, 1970: We have to determine the no of odd days between November 9, 1994 and November 9, 1970. There are 24 complete years between these two dates. Total No of leap years in these 24 years is the quotient when 24 is divided by 4. So there are total 6 leap years and 24 – 6 = 18 non-leap years. We know that, every *leap year* have 2 odd days and *non-leap year* has 1 odd day. So, total number of odd days in 24 years $= (\mathbf{6} \times \mathbf{2}) + (\mathbf{18} \times \mathbf{1}) = \mathbf{30}(\boldsymbol{mod}\mathbf{7}) \equiv \mathbf{2}\boldsymbol{odddays}$

The given reference day is a Wednesday. Thus, to find the day on which November 9, 1970 falls, we have to subtract 2 days from the reference day. So, November 9, 1970 is a Monday. November 9, 1965: We have to determine the number of odd days between November 9, 1994 and November 9, 1965. There are 29 complete years between these two dates. Total no of leap years in these 29 years is the quotient when 29 is divided by 4. So, there are total 7 leap years and 29 – 7 = 22 non-leap years. So total number of odd days in 29 years

$= (\mathbf{7} \times \mathbf{2}) + (\mathbf{22} \times \mathbf{1}) = \mathbf{36}(\boldsymbol{mod}\mathbf{7}) \equiv \mathbf{1}\boldsymbol{odddays}$

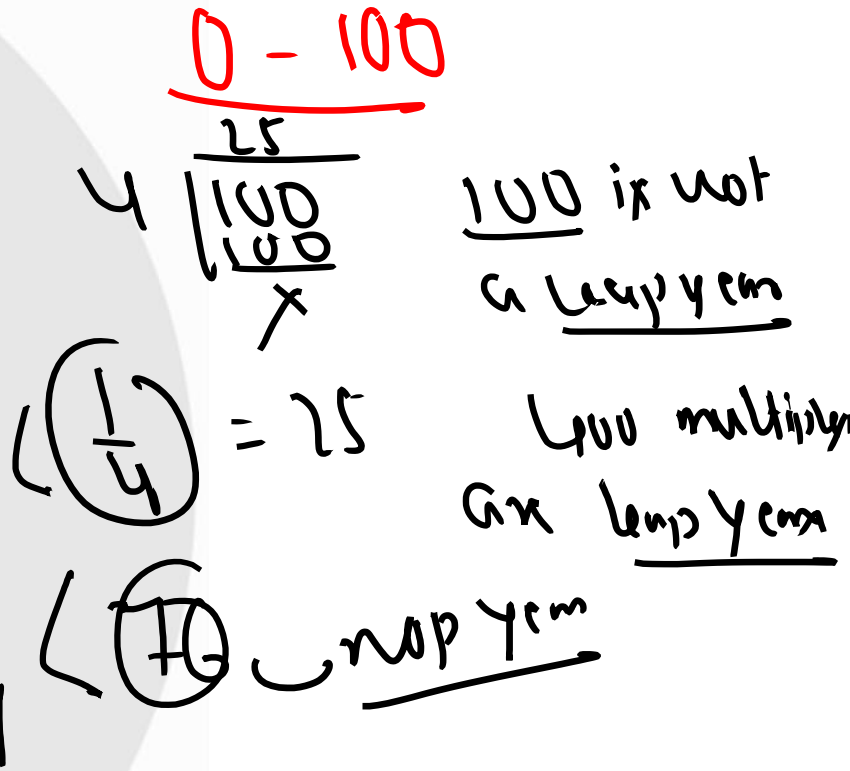
The given reference day is a Wednesday. Thus to find the day on which November 9, 1965 falls, we have to subtract 1 day from the reference day. So, November 9, 1965 is a Tuesday. Therefore, both the dates given in the answer options are not Wednesday. So, option (4) is correct.

Answer (4)

If a 4-digit year (e.g. 1927) is chosen randomly, what is the probability that it is NOT a leap year?

(1) ¾ **(2) ¼**

(3) < ¼ **(4) > ¾** **(CSIR NET/JRF JUNE 2014)**



Explanation:

We know that for a year to be leap year,there are two conditions as below:

1. It should be divisible by 4.
2. If it is divisible by 100, it should also be divisible by 400.

So in every 4 consecutive no's, there will be three numbers that are not divisible by 4.

On analyzing first condition: Chances for a randomly chosen year to be non-leap year is ¾

On analyzing second condition: More years become non-leap years. So our answer is > ¾.

For detail understanding, let's take a set of four consecutive years in which no leap years occurs.

Example: 1899, 1900, 1901, 1902.

So by the first condition itself: 1899, 1901, 1902 are non-leap years.

Again, by the second condition:

1900 is also a non-leap year.

So, in the above 4 years, the probability of non-leap years is 1; which is greater than ¾.

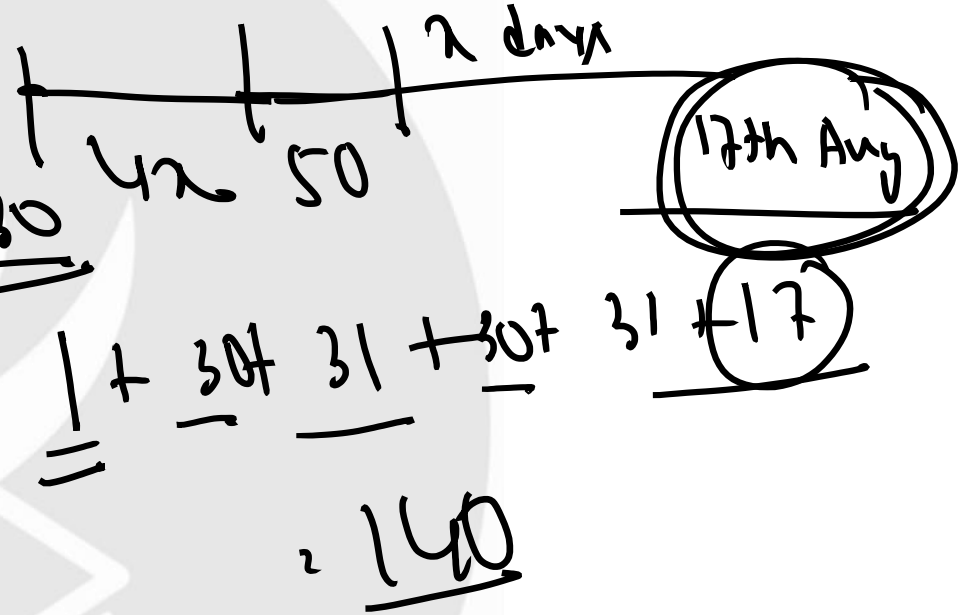
Answer (4)

A Certain Day Which Is X Days Before 17th August, Is Such That 50 Days Prior To That Day, It Was 4x Days Since March 30th Of The Same Year. What Is X?

(1) 18 **(2) 30**

(3) 22 **(4) 16**

(CSIR NET/JRF DEC 2014)



Explanation:

Given: Two dates, 30th March and 17th August are given and some dates in between these two dates are given in terms of an unknown variable *X*.

We need to find the value of *X*.

Step 1: Find the number of days from 30th March to 17th August as below:

31st March = 1 day.

1st April – 30th April = 30 days.

1st May – 31st May = 31 days.

1st June – 30th June = 30 days.

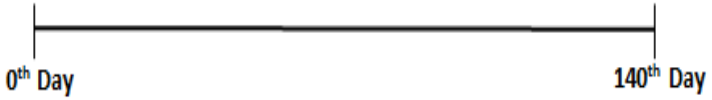
1st July – 31st July = 31 days.

1st August – 17th August = 17 days.

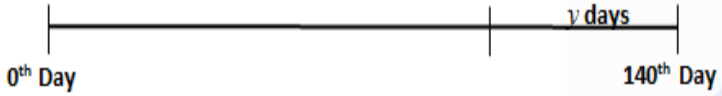
i.e. ,$1 + 30 + 31 + 30 + 31 + 17 = 140\ days$.

So, 17th August is the 140th day from 30th March.

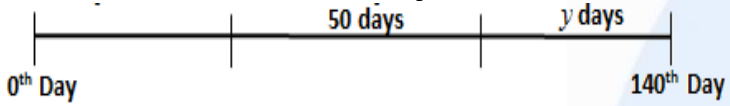
Thus, we can construct a timeline with 30th March as the 0th day and 17th August as the 140th day as below:



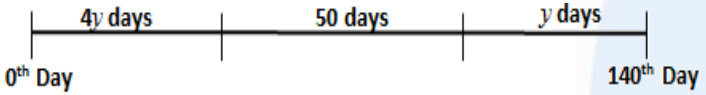
Now, Statement 1*: "***A certain day which is *X* days before 17th August."**



Statement 2*: "***50 days before that certain day."**



Statement 3*: "it was* **4X days since March 30th"**



So, by the given above conditions:

$4X + 50 + X = 140.$

$5X = 90$

$X = 18$

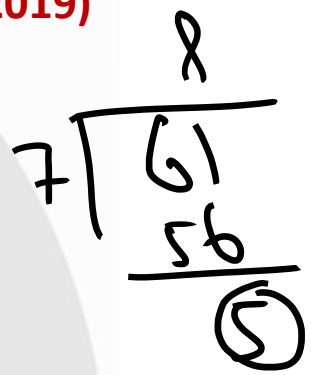
Answer (1)

What day of the week will it be 61 days from a Friday?

(1) Saturday **(2) Sunday**

(3) Friday **(4) Wednesday** **(CSIR NET/JRF DEC 2019)**





Explanation:

Each day of the week is repeated after 7 days.

So, after 61 days, 5 odd days will be there.

If today is Friday, after 5 days it will be Wednesday.

Answer (4)

If the day after tomorrow is NOT Friday then which of the following day CANNOT be the day before the day before yesterday?

(1) Sunday **(2) Monday**

(3) Tuesday **(4) Wednesday** **(CSIR NET/JRF NOV 2020)**



Explanation:

Let day after tomorrow is Friday.

Then today is Wednesday.

Yesterday was Tuesday.

Day before yesterday was Monday.

Day before the day before yesterday was Sunday.

Therefore, if tomorrow is NOT Friday, then day before the day before yesterday CANNOT be Sunday.

Answer (1)

Which of the following months in 2021 will have the same calendar (the same days and dates) as that in Sept 2020?

(1) March **(2) April**

(3) November **(4) June** **(CSIR NET JUNE 2021)**

Explanation:

Two months will have same calendar (the same days and dates) if number of odd days between them are 0(i.e. multiple of 7).

In september 2020 - 2 odd days

October 2020 – 3 odd days

November 2020 – 2 odd days

December 2020 – 3 odd days

January 2021 – 3 odd days

February 2021 – 0 odd days

March 2021 – 3 odd days

April 2021 – 2 odd days

May 2021 – 3 odd days

Here between September 2020 and December 2020 number of odd days are 0, but they have asked a month in year 2021.

Number of odd days between September 2020 and June 2021 are 0 (21 =multiple of 7).

Answer (4)

Sept, 20 — 2

Oct, 20 - 3

Nov, 20 — 2

Dec. 20 — 3

Jan. 21 — 3

Feb, 21 — 0

March — 3

April — 2

May — 3

21 → 0

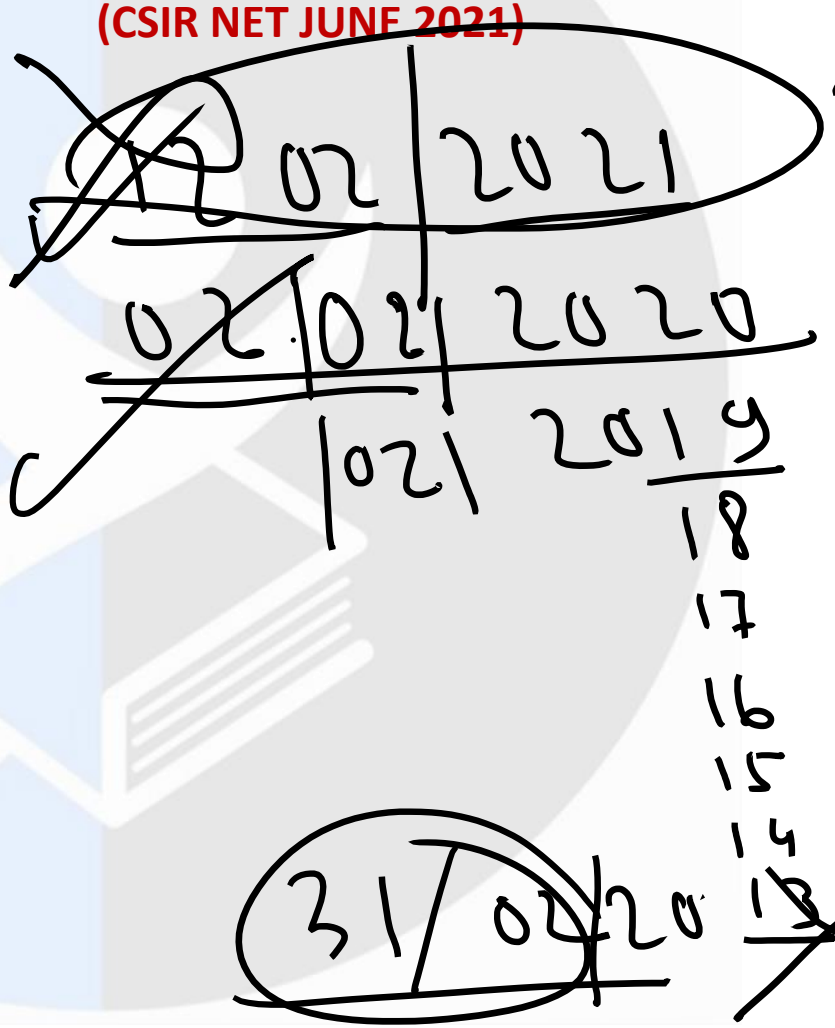
June 1st

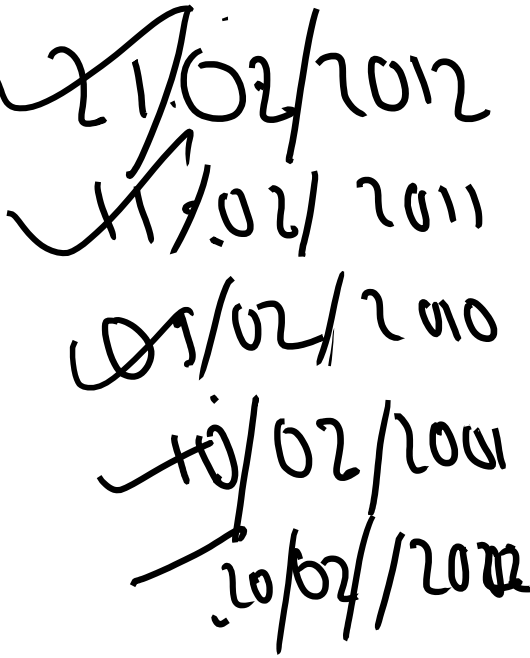
The number of dates between 1st January 2000 and 31st December 2020 when written in the format DDMMYYYY that read the same from left to right and right to left (e.g. 12th February 2021) is

(1) 6 **(2) 7**

(3) 20 **(4) 21**

(CSIR NET JUNE 2021)





Explanation:

Such dates are 10/02/2001, 20/02/2002, 02/02/2020,01/02/2010, 11/02/2011, 21/02/2012

Answer (1)



THANK YOU