

Ratio & Proportion

- **Ratio** : Ratio is a comparison of two numbers (quantities) by division.
 - The ratio of a to b is written as
 - $a : b = a/b = a \div b$.
- * Ratio is defined only for two values of same units
ratio between 20 kg & 50 kg is 2:5



Ratio & Proportion

- Some Useful Results

- If $a:b = c:d$ or $a/b = c/d$

1. $a \times d = b \times c$

2. $b/a = d/c$ (Invertendo)

3. $a/c = b/d$ (Alternando)

4. $a+b/b = c+d/d$ (By Componendo)

5. $a-b/b = c-d/d$ (By Dividendo)

6. $(a+b)/(a-b) = (c+d)/(c-d)$ (By Componendo & Dividendo)



Ratio & Proportion

- **Proportion** : A proportion is an expression that states that two ratios are equal.

i.e. $a : b = c : d$ e.g $2 : 3 = 4 : 6$ or $2 : 3 :: 4 : 6$

a, b, c & d are called the 1st, 2nd, 3rd & 4th proportional.

1st & 4th proportionals are called extreme terms &

2nd & 3rd proportionals are called mean terms.

Product of means = Product of extremes. $bc = ad$

Continued Proportion

Three quantities are said to be in continued proportion if

$$a : b = b : c \text{ or } a/b = b/c$$

If $a : b :: b : c$ then $b^2 = ac$ (b is the mean proportion of a & c)

$$a : b = b : c = c : d \text{ or } a/b = b/c = c/d$$



Ratio & Proportion(Assignment)

Q. If $A : B = 2 : 3$, $B : C = 4 : 5$ and $C : D = 5 : 9$ then $A : D$ is equal to:

- A. 11 : 17 B. 8 : 27 C. 5 : 9 D. 2 : 9

Soln:

$$\frac{A}{D} = \frac{A}{B} \times \frac{B}{C} \times \frac{C}{D}$$

$$\frac{A}{D} = \frac{2}{3} \times \frac{4}{5} \times \frac{5}{9}$$

$$\frac{A}{D} = \frac{8}{27}$$

Ans : B



Ratio & Proportion(Assignment)

Q. What is the value of $A+B / A-B$, if $A/B = 7$

- A. $4/3$ B. $2/3$ C. $2/6$ D. $7/8$

Ans : A

$$A/B = 7/1$$

$$A+B/A-B = 7+1/7-1 = 8/6 = 4/3$$



Ratio & Proportion

If $X : Y = 3 : 4$ and $Y : Z = 8 : 9$ then $X : Z$ is

A. $3 : 4$

B. $5 : 4$

C. $2 : 3$

D. $8 : 9$

Soln:

$$X : Y = 3 : 4$$

$$Y : Z = 8 : 9 \quad (\text{Inverted N})$$

$$= 3 \times 8 : 8 \times 4 : 4 \times 9$$

$$= 24 : 32 : 36$$

$$= 6 : 8 : 9$$

Now, $X : Z$

$$6 : 9$$

$$2 : 3$$

Ans: C

$$\frac{X}{Z} = \frac{X}{Y} \times \frac{Y}{Z}$$

$$\frac{X}{Z} = \frac{3}{4} \times \frac{8}{9}$$

$$\frac{X}{Z} = \frac{2}{3}$$



Ratio & Proportion(Assignment)

If $A : B = 2 : 3$ and $B : C = 4 : 5$ then $A : B : C$ is

A. $2 : 3 : 5$

B. $5 : 4 : 6$

C. $8 : 12 : 15$

D. $6 : 4 : 5$

Ans : C

- $\frac{A}{B} = \frac{2}{3}$

- $\frac{B}{C} = \frac{4}{5}$

$$A : B : C$$

$$\begin{matrix} 2 & : & 3 \\ & \searrow & \downarrow & \swarrow \\ & 4 & & 5 \end{matrix}$$

- $A : B : C = 2 \times 4 : 3 \times 4 : 3 \times 5$
 $= 8 : 12 : 15$



Ratio & Proportion

Q. A sum of Rs. 1240 is distributed among A, B and C such that the ratio of amount received by A and B is 6 : 5 and that of B and C is 10 : 9 respectively. Find the share of C ?

A.Rs. 480

B.Rs. 360

C.Rs. 400

D.Rs. 630

• Soln:

• Given, $A : B = 6 : 5$, $B : C = 10 : 9$

• $A : B : C$

• $6 : 5$

$10 : 9$

 $60 : 50 : 45$

$12 : 10 : 9$

Ans : B

$$A : B : C = 12 : 10 : 9$$

$$12x + 10x + 9x = 1240$$

$$x = 40$$

$$C's \text{ share} = 9 \times 40 = \text{Rs. } 360$$



Ratio & Proportion

If $A : B = 2 : 3$, $B : C = 4 : 5$ and $C : D = 6 : 7$. Find A:B:C:D

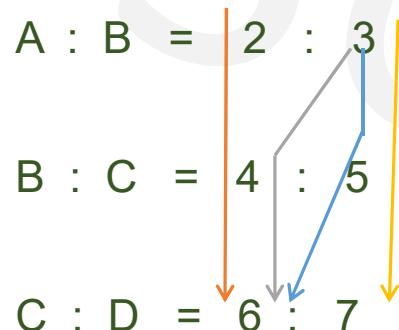
A. $2 : 3 : 4 : 5$

B. $2 : 12 : 30 : 7$

C. $16 : 24 : 30 : 35$

D. $4 : 5 : 6 : 7$

Soln:

$$\begin{aligned}A : B &= 2 : 3 \\B : C &= 4 : 5 \\C : D &= 6 : 7\end{aligned}$$


$$\begin{aligned}A &: B : C : D \\&= ABC : BBC : BCC : BCD \\&= 2 \times 4 \times 6 : 3 \times 4 \times 6 : 3 \times 5 \times 6 : 3 \times 5 \times 7 \\&= 48 : 72 : 90 : 105 \\&= 16 : 24 : 30 : 35\end{aligned}$$

Ans: C



Ratio & Proportion

Dividing a given number in the given Ratio :

Let T be the Total Amount . Let the given ratio be a:b:c

This means A is divided into three parts such that

$$\text{First Part} = T \times a/(a+b+c)$$

$$\text{Second Part} = T \times b/(a+b+c)$$

$$\text{Third Part} = T \times c/(a+b+c)$$

And First Part + Second Part + Third Part = T

Any Part = Total Amount x (Its related ratio term / Sum of Ratio Terms)



Ratio & Proportion

Q. Find B's share in Rs 6,300 if A:B = 2:3, B:C = 4:5, C:D = 3:7

A.Rs 1080

B. Rs 1800

C. Rs 810

D. Rs 1200

Soln:

$$A/B$$

$$2/3$$

$$B/C$$

$$4/5$$

$$C/D$$

$$3/7$$

$$A : B = 2 : 3$$

$$B : C = 4 : 5$$

$$C : D = 3 : 7$$

$$A : B : C : D$$

$$8 : 12 : 15 : 35$$

$$\text{So B's share} = 6300 \times \frac{12}{70} = 1080$$

Ans : A



Ratio & Proportion

Q. Which of the following is a ratio between a number and the number obtained by adding one-fifth of that number to it?

- A. 4:5
- B. 5:4
- C. 5:6
- D. 6:5

Ans: C



Ratio & Proportion

Q. Two numbers are in the ratio 7 : 11. If their HCF is 28, then sum of the two numbers is:

- A. 112 B. 308 C. 504 D. 196

Soln:

Ans: C

- Let the numbers be $7x$ and $11x$
- HCF of $7x$ and $11x$ is x
- $HCF = x = 28$
- The numbers will be 7×28 and 11×28
- The numbers will be 196 and 308
- Sum of numbers = $196 + 308$
- Sum of numbers = 504
- Sum of numbers is 504

- Let the numbers be $7x$ and $11x$.
- $7x + 11x = 18x$
- the final number must be the multiple of 18,
- Going by options only 504 is multiple of 18.
- The sum of two number is 504.



Ratio & Proportion

Q. The HCF and LCM of two numbers are 24 and 168 and the numbers are in the ratio 1 : 7. Find the greater of the two numbers.

- A. 168 B. 144 C. 108 D. 72

Ans: A

Soln:

- Product of numbers = LCM × HCF
- Let numbers be x and $7x$.
- $x \times 7x = 24 \times 168$
- $x^2 = 24 \times 24$
- $x = 24$
- greatest number = $7x = 24 \times 7 = 168$.



Ratio & Proportion(Assignment)

Q. If A:B =2:3, B:C= 4:5 and C:D =6:7 Find A:D is equal to:

- A. 16 : 35 B. 8 : 25 C. 4 : 15 D. 2 : 10

Ans : A



Ratio & Proportion(Assignment)

Q. The difference between two positive numbers is 10 and the ratio between them is 5 : 3. Find the product of the two numbers.

- A.375 B.175 C.275 D.125 E.250

Ans : A



Ratio & Proportion(Assignment)

Q. Two numbers are in ratio 4 : 5 and their LCM is 180. The smaller number is

- A.9
- B.15
- C.36
- D.45

Ans : C



Ratio & Proportion(Assignment)

Q. The average income of all employees is Rs. 20000. The average salary of male employees is Rs. 22000. The average salary of female employees is Rs. 15000. What is the ratio of male employees to female employees?

- A. 2 : 5
- B. 3 : 4
- C. 5 : 2
- D. 3 : 5

Ans: C



Ratio & Proportion(Assignment)

Q. The sum of 3 numbers is 98. If ratio between first and second numbers be 2 : 3 and between second and third be 5 : 8, then the second number is?

- A. 30
- B. 40
- C. 50
- D. 60

Ans: A



Ratio & Proportion(Assignment)

Two numbers are in ratio 7 : 11. If 7 is added to each of the numbers, the ratio becomes 2 : 3. The smaller number is?

- A. 39 B. 49 C. 66 D. 77

Ans: B

Let the numbers be $7x$ and $11x$.

$$(7x+7)/(11x+7)=2/3$$

$$22x+14=21x+21$$

$$x=7$$

$$\text{Smaller number} = 7x = 7 \times 7 = 49$$



Ratio & Proportion(Assignment)

Q. What must be added to each of the numbers 7, 11 and 19, so that the resulting numbers may be in continued proportion?

- A. -3
- B. -4
- C. 3
- D. 4

Ans: A



Ratio & Proportion(Assignment)

- Q. The incomes of A & B are in the ratio 3:2. Their respective expenditures are in the ratio 5:3. If each of them saves Rs. 2000, what is the income of B?
- A. Rs 12,000 B. Rs 8,000 C. Rs 16,000 D. Rs 6,000

Ans : B



Ratio & Proportion(Assignment)

Q. When a particular number is subtracted from each of 7, 9, 11 and 15, the resulting numbers are in proportion. The number to be subtracted is -

- A. 1 B. 2 C. 3 D. 5

Ans: C

Sol:

- Let the required number be x
- $\frac{7-x}{9-x} = \frac{11-x}{15-x}$
- $(7 - x)(15 - x) = (11 - x)(9 - x)$
- $105 - 22x + x^2 = 99 - 20x + x^2$
- $2x = 6$
- $x = 3$



Ratio & Proportion(Assignment)

Q. Average age of three boys is 22 years. If the ratio of their ages is 6 : 9 : 7, then the age of the youngest boy is-

- A. 1.8 years
- B. 9 years
- C. 18 years
- D. 16 years

Ans: C



Percentage

- Percentage is a fraction whose denominator is 100(per 100)

Frac tion $\times 100$	% $\div 100$	Frac tion	%	Frac tion	%	Frac tion	%	Frac tion	%
$\frac{3}{4}$	75%	$\frac{5}{4}$	125%	$\frac{1}{1}$	100%	$\frac{1}{6}$	16.66%	$\frac{1}{11}$	9.09%
$\frac{4}{5}$	80%	$\frac{3}{2}$	150%	$\frac{1}{2}$	50%	$\frac{1}{7}$	14.28%	$\frac{1}{12}$	8.33%
$\frac{2}{3}$	66.66%	$\frac{1}{16}$	6.25%	$\frac{1}{3}$	33.33%	$\frac{1}{8}$	12.5%	$\frac{1}{13}$	7.69%
$\frac{5}{6}$	83.33%			$\frac{1}{4}$	25%	$\frac{1}{9}$	11.11%	$\frac{1}{14}$	7.14%
$\frac{6}{5}$	120%			$\frac{1}{5}$	20%	$\frac{1}{10}$	10%	$\frac{1}{15}$	6.66%



Percentage

Q. x is 83.33% of y. So y is _____ % of x

Solution:

$$x = 83.33y$$

$$x = \frac{5}{6} y$$

$$\text{So, } y = \frac{6}{5} x$$

$$y = 120\% \text{ (from chart)}$$

Fraction $\times 100$	%	Fraction	%
$3/4$	75%	$5/4$	125%
$4/5$	80%	$3/2$	150%
$2/3$	66.66 %	$1/16$	6.25%
$5/6$	83.33 %		
$6/5$	120%		



Percentage

Q. x is 80% of y. So y is ____% of x

Solution:

$$x = 80y$$

$$x = \frac{4}{5} y$$

$$\text{So, } y = \frac{5}{4} x$$

$$y = 125\%$$



Percentage

Q. A number x is increased by 20% then the number is decreased by 20%. Find the net % change.

• Soln :

- If a number is increased / decreased by $x\%$ then there is always a loss of $-(x/10)^2$
- Net % Change = $-(20/10)^2 = -(400/100) = - 4\%$ (loss)

• OR

- Let the number be 100
- $100 \uparrow$ by 20% = 120
- So $20\% \downarrow$ of 120 = 96

• 100 120 96

$-4\% = \text{net change}$



Percentage

Q. A number x is increased by 50% then the number is increased by 20% and again by 10%. Find the net % change

Soln:

- Let the number be 100
- $100 \uparrow$ by 50% = 150
- Again, $150 \uparrow$ by 20% = 30, So $150 + 30 = 180$
- $10\% \uparrow$ of 180 = 18, So, $180 + 18 = 198$

100 150 180 198

98% = net change



Percentage

- **Two Step change of Percentage**

In first step if number is changed by $a\%$ and the result is again changed by $b\%$ the net percentage change of original number is given by

$$\text{Net \% Change in Number} = a + b + ab/100 \quad (+ve \text{ or } -ve)$$



Percentage

Q. If a number is increased by 12 % & then decreased by 18% then the net % change in number is

Soln:

Net % Change in Number = $a + b + ab/100$ (+ve or -ve)

$$\begin{aligned}\% \text{ Change} &= 12 - 18 + (12 \times -18)/100 \\ &= -6 - 2.16 \\ &= -8.16\%\end{aligned}$$



Percentage

- Expenditure = Price x Consumption
- $P \propto \frac{1}{\text{Consumption}}$
- So, for expenditure to remain constant, when one quantity increases the other quantity should decrease proportionally.
- **Eg:** If the price of a commodity is decreased by 20% and its consumption is increased by 20%, what will be the increase or decrease in expenditure on the commodity?
- Soln:

Net % Change = $a + b + ab/100$ (+ve or -ve)

$$\begin{aligned}\% \text{ Change} &= -20 + 20 + (-20 \times 20)/100 \\ &= 0 - 4 = -4\%\end{aligned}$$

OR

100 === 20%↓(Decrease in Price) ===> 80 === 20%↑(Increase in Consumption) ===> 96.

| Thus, there is a decrement of 4%



Percentage

Q. Two numbers are respectively 40% and 60% more than a third number. The ratio of the two numbers is:

- A. 7:8 B. 3 : 5 C. 4 : 5 D. 6 : 7

Soln:-

- Let the third number be 100
- First number = 40% more than 100 = $100 + 40\% \text{ of } 100 = 100 + 40 = 140$
- Second number = 60% more than 100 = $100 + 60\% \text{ of } 100 = 100 + 60 = 160$
- Ratio = $\frac{\text{first number}}{\text{second number}} = \frac{140}{160} = \frac{7}{8} = 7 : 8$

Ans: A



Percentage using x

Q. Two numbers are respectively 40% and 60% more than a third number. The ratio of the two numbers is:

- A. 7:8 B. 3 : 5 C. 4 : 5 D. 6 : 7

Soln:-

- Let the third number be x .
- First number = 40% more than x = $x + 40\% \text{ of } x = x + \frac{40}{100}x = \frac{100x+40x}{100} = \frac{140x}{100}$
- Second number = 60% more than x = $x + 60\% \text{ of } x = x + \frac{60}{100}x = \frac{100x+60x}{100} = \frac{160x}{100}$
- Ratio = $\frac{\text{first number}}{\text{second number}} = \frac{\frac{7x}{5}}{\frac{8x}{5}} = \frac{7}{8} = 7 : 8$

Ans: A



Percentage(Assignment)

Q. If the price of sugar increases by 25%, by what percent will a housewife have to reduce her consumption to leave total expenditure on sugar unchanged?

- A. 25%
- B. 35%
- C. 20%
- D. 15%

Ans: C



Percentage(Assignment)

Q. If the radius of a circle is decreased by 50%, find the percentage decrease in its area.

- A. 55% B. 65% C. 75% D. 85%

• **Soln:**

- Area of a circle = πr^2 where r is the radius
=> Area is directly proportional to r^2
- Assume the old radius is = $r_1=100$
- $A_1 = \pi \times 100^2 = 10000\pi$

Assume the new radius is = $r_2=50$

$$A_2 = \pi \times 50^2 = 2500\pi$$

$$\text{Decrease in area} = 10000\pi - 2500\pi = 7500\pi$$

$$\text{Percentage decrease in area} = \frac{\text{difference}}{\text{old}} \times 100 = \frac{7500\pi}{10000} \times 100 = 75\%$$

• **Ans : C**



Percentage(Assignment)

Q. 1.14 expressed as a per cent of 1.9 is:

- A. 6%
- B. 10%
- C. 60%
- D. 90%

Ans: C



Percentage(Assignment)

Q. A number x is increased by 20% then the number is increased by 10% and again by 50%. Find the net % change.

- A. 77% B. 75% C. 88% D. 98% E. 99%

Ans : D



Percentage(Assignment)

Q. If the altitude of a triangle increases by 5% and the base of the triangle increases by 7%, by what percent will the area of the triangle increase?

- A. 12.25%
- B. 12.35%
- C. 6.00%
- D. 5.25%

Ans B



Percentage(Assignment)

Q. The length and breadth of a room are increased by 25% and 40% respectively. While the height is decreased by 20%.Find % change.

- A. 16%
- B. 40%
- C. 60%
- D. 30%

Ans B



Percentage(Assignment)

Q. If the length of a rectangle is increased by 37.5% and its breadth is decreased by 20%, find the change in its area.

- A. 15% increase B. 13% decrease C. 10% increase D. 10% decrease

Ans: C



Percentage(Assignment)

Q. The ratio 5 : 4 expressed as a percent equals :

- A. 125%
- B. 80%
- C. 40%
- D. 12.5%

Ans: A

$$\text{Required \%} = \frac{5}{4} \times 100 = 125\%$$



Percentage(Assignment)

Q. 12% of 5000 = ?

A. 600

B. 620

C. 680

D. 720

Ans: A



Percentage(Assignment)

Q. 280% of 3940 = ?

- A. 10132
- B. 11032
- C. 11230
- D. 11320

Ans: B



Percentage(Assignment)

Q. 15% of 578 + 22.5% of 644 = ?

- A. 231.4
- B. 231.6
- C. 231.8
- D. 233.6

Ans: B



Calendar

- In Non Leap year –
 - 365 days
 - 1 year = 52 weeks + 1 odd day(extra day)
 - 28th February
- In Leap year –
 - 366 days
 - 1 year = 52 weeks + 2 odd days
 - 29th February
- A **century leap year** is a **year** that is exactly divisible by 400
 - **years** 1600 and 2000 were **century leap years**; (400,800,1200,1600,2000 – century leap years till date)
 - **years** 1700, 1800, and 1900 were not **century leap years**.
- To find the day of a week on a given date we use the concept of “**odd days**”.
- 01/01/0001 A.D(Anno Domini) was a Monday and 1st day of week so 1st January 0001 was a Monday.



Calendar

- In a century,
 - 24 leap year
 - 76 non leap years

$$\begin{array}{ccc}
 \text{Leap year} & & \text{non leap year} \\
 \downarrow & & \downarrow \\
 24 \times 2 & + & 76 \times 1 \\
 = \frac{48}{7} & & = \frac{76}{7} \\
 \downarrow & & \downarrow \\
 6 & + & 6
 \end{array}$$

remainder

$= 12 \div 7 = 5 \leftarrow \text{remainder}$

5 extra(odd) days in a century (100 years)
100 years = 5 odd days ← remainder
200 years = $10 \div 7 = 3$ odd days
300 years = $15 \div 7 = 1$ odd days
400 years = 0 odd days (as century leap year)



Calendar

Years	No. of odd
Ordinary year	1
Leap year	2
100 years	5
200 years	3
300 years	1
400 years	0

BEAM



Calendar

Day of week	No. of odd
Sunday	0
Monday	1
Tuesday	2
Wednesday	3
Thursday	4
Friday	5
Saturday	6

BEAM



Calendar

Month		Reminder
January	$31 \div 7$	3
February	$28 \div 7$ or $29 \div 7$	0(non leap) or 1(leap)
March	$31 \div 7$	3
April	$30 \div 7$	2
May	$31 \div 7$	3
June	$30 \div 7$	2
July	$31 \div 7$	3
August	$31 \div 7$	3
September	$30 \div 7$	2
October	$31 \div 7$	3
November	$30 \div 7$	2
December	$31 \div 7$	3



Calendar

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

Soln:

Completed till 1946

$$\begin{array}{ccc} 1946 & & \\ \swarrow & \searrow & \\ \frac{1900}{400} = 300 & \frac{46}{4} = 11 \text{(quotient)} & \\ \downarrow & & \\ 1 \text{ odd day} & 46 + 11 = 57 & \frac{57}{7} = 1 \text{(remainder)} \end{array}$$

In 1946, odd days are,

1900 46

$$1 + 1 = 2 \text{ odd days}$$

1946 month date

$$\text{Total odd days} = 2 + 2 + 1 = 5 \text{ odd days}$$

As per table for days of a week , 5 \longleftrightarrow Friday

As month is August, go till July as per table,

$$\begin{array}{ccccccccc} J & F & M & A & M & J & J \\ 3 + 0 + 3 + 2 + 3 + 2 + 3 = 16 \end{array}$$

$$\text{Now, } \frac{16}{7} = 2 \text{ (remainder)}$$

For date ,

$$\frac{15}{7} = 1 \text{ (remainder)}$$



Calendar

For Months -

J	F	M	A	M	J	J	A	S	O	N	D
0	3	3	6	1	4	6	2	5	0	3	5

For years -

1600 – 1699	6
1700 – 1799	4
1800 – 1899	2
1900 – 1999	0
2000 – 2099	6



Calendar

Q. What day of the week was 29 June 2010 ?

• Soln

1. Last 2 digits of the year → 10
2. Divide by 4 ($10 \div 4$) = 2(quotient)
3. Take the date → 29
4. Take the no. of month → 4(from table)
5. Take the no. of year → 6 (from table)
—————
51 (add)
6. Divide by 7 → $\frac{51}{7} = 2$ (remainder)

Check table for day of the week

2 \longleftrightarrow Tuesday



Calendar

Q. What was the day of the week on 29th February, 2012?

Soln:

1. Last 2 digits of the year → 12
2. Divide by 4 ($12 \div 4$) = 03 (quotient)
3. Take the date → 29
4. Take the no. of month → 03 (from table)
5. Take the no. of year → 06 (from table)

53 (add)

6. Divide by 7 → $\frac{53}{7} = 4$ (remainder)

subtract 1 from remainder

In this case for all dates of **January & February** in a leap year , $4 - 1 = 3$

Check table for day of the week

3 \longleftrightarrow Wednesday



Calendar

It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

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

Ans: C

On 31st December, 2005 it was Saturday.

Number of odd days from the year 2006 to the year 2009 = $(1 + 1 + 2 + 1) = 5$ days.

On 31st December 2009, it was Thursday.

on 1st Jan, 2010 it is Friday.



Calendar

Q. If we have preserved the calendar of 2017. Find the next immediate year in which we can reuse.

- A. 2027 B. 2023 C. 2025 D. 2029

Soln:

$$x/4 \text{ (} x = \text{given year})$$

$$\frac{2017}{4} = 1 \text{ (remainder)}$$

For any year divide by 4, the possibility of remainder is 0,1,2,3

If remainder = 0 $\rightarrow x + 28$

If remainder = 1 $\rightarrow x + 6$

If remainder = 2/3 $\rightarrow x + 11$

$$\text{So, } \frac{2017}{4} = 1 \text{ (remainder)}$$

$$2017 + 6 = 2023$$

Ans: B



Calendar

Q. Which of the following days can never be the last day of a century?

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

• **Soln:**

- The last day of century can be only
- 1 odd day(Monday)
- 3 odd days (Wednesday)
- 5 odd days (Friday)
- 7 or 0 odd days (Sunday)
- So, century can never end in **Tuesday , Thursday or Saturday.**

• **Ans: C**



Calendar(Assignment)

Q. What was the day of the week on 26th January, 1947?

Soln:

1. Last 2 digits of the year → 47
 2. Divide by 4 ($47 \div 4$) = 11 (quotient)
 3. Take the date → 26
 4. Take the no. of month → 0 (from table)
 5. Take the no. of year → 0 (from table)
-
- 84 (add)
6. Divide by 7 → $\frac{84}{7} = 0$ (remainder)

Check table for day of the week

0 ←→ Sunday



Calendar(Assignment)

- Q. The day on 5th April of a year will be the same day on 5th of which month of the same year?
- A. 5th July B. 5th August C. 5th June D. 5th October

• **Ans A**

- April & July for all years have the same calendar. So, a day on any date of April will be the same day on the corresponding date in July.
- The same day will fall on 5th July of the same year.



Calendar(Assignment)

Q. What was the day of the week on your birthdate?

Q. 13th October 2019 is a Sunday. Find the day on 13th October 1989?

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

Ans: C

Q. 1st March 2006 falls on a Wednesday .What day does 1st March 2010 fall on?

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

Ans: B

Q. Today is Monday. Which day will be after 64 days?

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

Ans: A

Q. Today is Monday. After 30 days it will be?

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

B. Ans: D



Calendar(Assignment)

Q. 15th August 1947 was a Friday. Find the day on 15th August 1977?

- Soln:

$$\begin{array}{r} 1977 \\ - 1947 \\ \hline 30 \text{ years} \end{array}$$

Leap years between 1947 to 1977

1948	1964
1952	1968
1956	1972
1960	1976

{ 8 years

$$30 + 8 = 38$$

total years leap

$$\frac{38}{7} = 3 \text{ (remainder)}$$

As 15th August 1947 was a Friday ,

So, Friday + 3 days = **Monday**



Calendar(Assignment)

Q. 4th January 2016 falls on Monday. What day of the week does 4th January 2017 lies?

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

Soln:

Normal year = 1 odd day

Leap year = 2 odd days

$$\begin{array}{r} \text{Jan 4, 2016} \rightarrow \text{Monday} \\ + \quad 2 \quad (\text{as leap year}) \\ \hline \text{Jan 4, 2017} \rightarrow \text{Wednesday} \end{array}$$

Ans: A



Calendar(Assignment)

Q. Wednesday falls on 5th of a month .So which day will fall 5 days after 22nd of the same month?

A. Tuesday

B. Friday

C. Thursday

D. Wednesday

Ans: B

5th = Wednesday

+7

12th = Wednesday

+7

19th = Wednesday

+5

22nd = Saturday

27th = Thursday
5 days after 22nd will be **Friday**



Calendar(Assignment)

Q. What dates of May 2002 did Monday fall on?

Soln:

Lets take date = 1st May 2002

1. Last 2 digits of the year → 02
2. Divide by 4 ($02 \div 4$) = 00 (quotient)
3. Take the date → 01
4. Take the no. of month → 01 (from table)
5. Take the no. of year → 06 (from table)
—————
10 (add)
6. Divide by 7 → $\frac{10}{7} = 3$ (remainder)

Check table for day of the week

3 ←→ Wednesday

1st May 2002 falls on Wednesday

1	2	3	4	5	6
W	Th	F	Sa	Su	M

↑
first Monday

Now add 7 to it to find remaining Mondays

Dates on which Monday falls are -
6, 13, 20, 27



Calendar(Assignment)

Q. On what dates of April, 2001 did Wednesday fall?

- A. 1st, 8th, 15th, 22nd, 29th
- B. 2nd, 9th, 16th, 23rd, 30th
- C. 3rd, 10th, 17th, 24th
- D. 4th, 11th, 18th, 25th

Ans: D



Calendar(Assignment)

Q. What is the day on 22 April 2222?

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

Ans: A



Calendar(Assignment)

Which of the following is not a leap year?

- A. 700
- B. 800
- C. 1200
- D. 2000

Ans: A

The century divisible by 400 is a leap year.

The year 700 is not a leap year.



Calendar(Assignment)

Q. Today is Monday. Which day will be on 61st day?

Soln:

1 week = 7 days. Taking the multiple of 7

56 - Monday or 63 - Monday

57 – Tuesday 62 - Sunday

58 – Wednesday 61 - Saturday

59 – Thursday

60 – Friday

61 - Saturday

$56 + 5 = 61$ days $63 - 61 = 2$ days

(add 5 days) or (subtract 2 days)



Calendar(Assignment)

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

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

Ans: B





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