

Question #1:

(A) Let the three prime number be:

a, b, c

As per given data:

$$a+b+c = 97 \quad \text{--- (1)}$$

$$\text{Average} = \frac{a+b+c}{3}$$

$$\text{From eq. (1) } \text{Average} = \frac{97}{3}$$

$$\text{Average} \approx 32.23$$

The number will be approximately
32.

Prime number near to 32 are:

29, 31, 37, 41

$$\text{As } 29 + 31 + 37 = 97$$

So, three consecutive prime numbers
would be 29, 31, 37.

(B) As per given data:

The total # of visitors on Sunday = 510

The total # of visitors on other days = 240

And, since total days in a month = 30 days.

and the month begins with a Sunday.

→ Total Sundays in a month:

Sundays are 1, 8, 15, 22, 29

$$\boxed{\text{Total Sundays} = 5}$$

$$\begin{aligned} \rightarrow \text{Visitors on Sunday} &= 510 \times 5 \\ &= 2550 \text{ visitors.} \end{aligned}$$

$$\rightarrow \text{Visitors on other days} = 30 - 5 = 25 \text{ days.}$$

$$\begin{aligned} \rightarrow \text{Visitors on other days} &= 25 \times 240 \\ &= 6000 \text{ visitors.} \end{aligned}$$

$$\begin{aligned} \text{Total Visitors in a month} &= 2550 + 6000 \\ &= 8550 \text{ visitors.} \end{aligned}$$

→ Average Visitors Per Day:

$$\text{Average visitors} = \frac{\text{Total Visitors}}{\text{\# of days}} = \frac{8550}{30}$$

$$\boxed{\text{Average} = 285 \text{ visitors}}$$

So, on average, 285 visitors come

(4) Sample Space of 2 Dice will be:

Sample Space:

(1,1) (1,2) (1,3) (1,4) (1,5) (1,6)
(2,1) (2,2) (2,3) (2,4) (2,5) (2,6)
(3,1) (3,2) (3,3) (3,4) (3,5) (3,6)
(4,1) (4,2) (4,3) (4,4) (4,5) (4,6)
(5,1) (5,2) (5,3) (5,4) (5,5) (5,6)
(6,1) (6,2) (6,3) (6,4) (6,5) (6,6)

→ Total # of outcomes = 36

→ Sample Space = 27 (# with product of even)

$$\text{Probability} = \frac{\text{Sample Space}}{\text{Total Outcomes}}$$

$$\text{Probability} = \frac{27}{36} = \frac{3}{4}$$

So, probability of getting sample product of two numbers as even is $\frac{3}{4}$.

(B)

The father of Uncle means = Grandfather of girl.

As, Daughter of grandfather = Sister of father.

And the son of father's sister = Cousin

So, the boy is the cousin of girl.

Question #2:

(A)

As per data,

A can complete work in = 15 days

B can complete work in = 20 days.

Together, they worked for
4 days.

So,

The fraction of work = ?

Work of 'A' in 1 day = $\frac{1}{15}$

Work of 'B' in 1 day = $\frac{1}{20}$

Let, A and B work together = $\frac{1}{15} + \frac{1}{20}$

Then, one day work together

will be = $\frac{4+3}{60} = \frac{7}{60}$

As according to the question,

the 4 day data would be = $4 \times \frac{7}{60}$

= $\frac{7}{15}$

As, Total work = 1

$$\text{Work done} = \frac{7}{15}$$

$$\text{Work left} = 1 - \frac{7}{15}$$

$$= \frac{15-7}{15}$$

$$\boxed{\text{Work left} = \frac{8}{15}}$$

(6)

As given,

Two numbers are in ratio = 3:5 — (1)

So, numbers would be

$3x$ and $5x$

As, after subtracting '9' from the two numbers, their ratio would be:

$$\frac{3x-9}{5x-9} = \frac{12}{23}$$

$$23(3x-9) = 12(5x-9)$$

$$69x - 60x = 267 - 108$$

$$\boxed{x=11}$$

The original numbers be, $3x = 3 \times 11 = 33$

and $5x = 5 \times 11 = 55$

So, smaller number would be 33

(c) As per the question,

Average of A, B, C = 45 kg.

So,

$$\frac{A+B+C}{3} = 45 \text{ kg}$$

$$\boxed{A+B+C = 45 \times 3 = 135 \text{ kg}} \quad \text{--- (1)}$$

Now, the average of A and B is 40 kg.

So, $A+B = 40$

$$\boxed{A+B = 40 \times 2 = 80 \text{ kg}} \quad \text{--- (2)}$$

And, Average of B, C is 43 kg.

$$\frac{B+C}{2} = 43 \text{ kg}$$

$$\boxed{B+C = 86 \text{ kg}} \quad \text{--- (3)}$$

Solving (2) and (3)

$$\cancel{B+C} - \cancel{A+B} = 86 - 80$$

$$\boxed{C-A = 6 \text{ kg}} \quad \text{--- (4)}$$

Solving (2) and (3) $A+B+B+C = 80 + 86$

$$\boxed{A+2B+C = 166 \text{ kg}} \quad \text{--- (5)}$$

Solving (5) and (1)

$$A+2B+C = 166$$

$$\ominus \quad A+B+C = 135$$

$$B = 31$$

So, the weight of B is 31 kg.

(D) ① 2, 3, 6, 4, 5, 20, —, 3, 18

2, 3, 6, 4, 5, 20, 6, 3, 18

② 1, 3, 9, 15, 25, —, 49

1, 3, 9, 15, 25, 39, 49

③ 2, 7, 10, 22, 18, 37, 26, —

2, 7, 10, 22, 18, 37, 26, 52

④ 34, 7, 37, 14, 40, 20, 43, 56

⑤ 5, 7, 11, 13, 17, 19