

Question 1

- 1) Sum of three consecutive prime numbers is 97 = find the numbers
let the prime numbers be $x, 3x, 5x$

$$x + 3x + 5x = 97$$

$$9x = 97$$

$$\Rightarrow \boxed{x = \frac{97}{9}}$$

$$\begin{array}{r} 397 \\ 5 \\ \hline 485 \end{array}$$

$$\Rightarrow 3x = 3 \left(\frac{97}{9} \right)$$

$$= \frac{97}{3}$$

$$\Rightarrow 5x = 5 \left(\frac{97}{9} \right)$$

$$\frac{485}{9}$$

- 2) Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle". How is the boy related to the girl?

The boy is the cousin of the girl.

- 3) Two dice are thrown simultaneously. What is the probability of getting

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2 numbers whose product is even.

Let the number of dice 1 and dice 2

Dice 1	Dice 2	Dice 1 and Dice 2
1 x 1	1 x 1 = 1	2 x 1 = 2
2 x 2	1 x 2 = 2	2 x 2 = 4
3 x 3	1 x 3 = 3	2 x 3 = 6
4 x 4	1 x 4 = 4	2 x 4 = 8
5 x 5	1 x 5 = 5	2 x 5 = 10
6 x 6	1 x 6 = 6	2 x 6 = 12

3 x 1 = 3	4 x 1 = 4	5 x 1 = 5
3 x 2 = 6	4 x 2 = 8	5 x 2 = 10
3 x 3 = 9	4 x 3 = 12	5 x 3 = 15
3 x 4 = 12	4 x 4 = 16	5 x 4 = 20
3 x 5 = 15	4 x 5 = 20	5 x 5 = 25
3 x 6 = 18	4 x 6 = 24	5 x 6 = 30

$$6 \times 1 = 6$$

$$6 \times 2 = 12$$

$$6 \times 3 = 18$$

$$6 \times 4 = 24$$

$$6 \times 5 = 30$$

$$6 \times 6 = 36$$

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$$\begin{aligned}
 \text{Probability} &= \frac{27 \cdot 3}{36 \cdot 4} \\
 &= \frac{3}{4} \\
 &= 75\%
 \end{aligned}$$

- 4) A library has an average of 510 visitors on sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a sunday is?

Average visitors of library on
sunday = 510 visitors

Other day of week = 240

If the month start from sunday
then the total sunday in
month = 5

Average = $\frac{\text{Sum of all numbers}}{\text{Total numbers}}$

$$\text{Average} = \frac{510 + 240}{30}$$

$$= \frac{750}{30} = 25$$

Average = 25 visitors

Hence, average visitor on per day
are 25

Section - B

Question = 2

- ① A can do work in 15 days and B in 20 days. If they work on it for 4 days, then the fraction of the work that is left is,

$$A = 15 \text{ days}$$

$$B = 20 \text{ days}$$

Total Work = ?

Taking LCM.

$$\begin{array}{r|l} 15 & 15, 20 \\ \hline 3 & 3, 4 \\ \hline 4 & 1, 4 \\ \hline 1 & 1, 1 \end{array}$$

Total work done = 60 units

Productivity of A = $\frac{60}{15}$

$$A = 4 \text{ units}$$

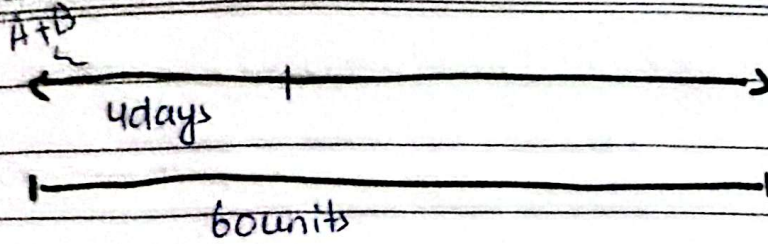
Productivity of B = $\frac{60}{20}$

$$= 3 \text{ units}$$

$$A + B = 7 \text{ units}$$

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$$\text{Productivity of A and B} \times \text{days} \\ 7 \times 4 = 28 \text{ units}$$

$$\text{Remaining Work} = 60 - 28 = 32 \\ = 32 \text{ units}$$

The 32 units work is left.

2) Find the missing number.

1) 2, 3, 6, 4, 5, 20 - 6 - 3, 18

$$2 \times 3 = 6$$

$$4 \times 5 = 20$$

$$6 \times 3 = 18$$

2) 1, 3, 9, 15, 25... 35 - 49

$$1 + 2 = 3$$

$$3 + 6 = 9$$

$$9 + 6 = 15$$

$$15 + 10 = 25$$

$$25 + 10 = 35$$

$$35 + 14 = 49$$

3) 5, 7, 11 - 13 - 17, 19.

$$5 + 2 = 7$$

$$13 + 4 = 17$$

$$7 + 4 = 11$$

$$17 + 2 = 19$$

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(4)

34, 7, 37, 14, 40, 28, 43, ...

7+7

14+14

28+28

(5)

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

(3)

The average weight of A, B and C is 45kg. If the average weight of A and B is 40kg and B and C is 43kg. Then the weight of B is?

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

$$A+B = 40\text{kg}$$

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

$$B = ?$$

$$\text{Average} = \frac{\text{Sum of all numbers}}{\text{Total No}}$$

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

$$45 \times 3 = A+B+C$$

$$A+B+C = 135$$

$$40 = \frac{A+B}{2}$$

$$40 \times 2 = A+B$$

$$A+B = 80$$

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

$$\cancel{B+C} = 43 \times 2$$

$$B+C = 86$$

$$A+B+C = 135$$

$$80 + C = 135$$

$$C = 135 - 80$$

$$C = 55$$

$$A+B+C = 135$$

$$A + 86 = 135$$

$$A = 135 - 86$$

$$A = 49$$

$$49 + B + 55 = 135$$

$$B = 135 - 55 - 49$$

$$B = 31$$

Hence weight of B is 31Kgs

- 2) Two numbers are in the ratio 3:5. If 9 is subtracted from each, the new numbers are in the ratio

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12:23. The smallest number is?

Two numbers ratio = 3:5

Let x is the number

If their ratios are

$$3x : 5x$$

9 is subtracting

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

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

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

$$69x - 207 = 60x - 108$$

$$69x - 60x = 207 - 108$$

$$9x = 99$$

$$x = 11$$

$$\begin{array}{r} 23 \\ \times 9 \\ \hline 207 \end{array}$$

$$\begin{array}{r} 12 \\ \times 23 \\ \hline 207 \\ 108 \\ \hline \end{array}$$