

SECTION - II

Q-5(a) Data:

Sum of three consecutive

Prime number is 187

Three prime numbers = ?

Soln-

62.33

Firstly to find nearest numbers = $\frac{187}{3}$

= 62.33

So, the nearest prime numbers are

59, 61, 67 that are consecutive

Checking if their sum is 187

$$59 + 61 + 67 = 187$$

So, the numbers are 59, 61, and 67

Q5- (b) Data:

~~Find~~ Positive number + 17 = $60 \times \frac{1}{\text{Positive number}}$
Sol:- let the number = x

So, According to the given Condition

$$x + 17 = 60 \times \frac{1}{x}$$

$$x \times x + 17 \times x = 60$$

$$x^2 + 17x = 60$$

$$x^2 + 17x - 60 = 0$$

Solving by factorization

$$x^2 + 20x - 3x - 60 = 0$$

$$x(x + 20) - 3(x + 20)$$

$$(n+20)(n-3)$$

So,

$$n+20=0$$

$$n = -20 \quad \text{+ neglecting this}$$

as question demands a positive no.

$$n-3=0$$

$$n = 3$$

So the number is 3

Q5 (c) Data:

population of town increased
from 1,75,000 to 2,62,500 in
decade or 10 years

Average percent increase/year = ?

Sol:-

Net increase in population

$$\text{in 10 years} = 262500 - 175000 \\ = 87500$$

Percent increase per decade

$$= \frac{87500}{175000} \times 100$$

$$= 50\%$$

In 10 years the percent increase (ave)

$$\text{in population} = \frac{50}{10}$$

$$= 5\%$$

So, the average percent increase
per year = 5%

Q5 (d) Data:

Salman purchased eggs = 20 dozens

Cost of 20 dozen egg = 375 / dozen

Salman sold each dozen egg = 33 PKR

Profit percentage = ?

Sol:- Cost of 20 dozen eggs = Rs 375

Cost of 1 dozen egg = $375 / 20$
= Rs. 18.75

So, Cost price of 1 dozen egg = Rs 18.75

Sale price of 1 dozen egg = Rs. 33

profit of 1 dozen egg =

Sale price - Cost price

33 - 18.75

= 14.25 PKR

profit percentage per dozen eggs =

$\frac{\text{Profit}}{\text{Cost Price}} \times 100$

Cost Price

= $\frac{14.25}{18.75} \times 100$

= $\frac{1425}{1875} \times 100$

= $\frac{285}{375} \times 100$

= $\frac{57}{75} \times 100$

= $\frac{5700}{75}$

76 1140/151

Profit percentage = 76%.

Q-6 (a) Data:

product of two numbers = 120

Sum of their square ~~was~~ = 289

Sum of these numbers = ?

Sol:-

Let the numbers are x and y

So, according to Condition

$$x \cdot y = 120$$

$$x^2 + y^2 = 289$$

$$x + y = ?$$

We know

$$\begin{aligned}(x+y)^2 &= x^2 + y^2 + 2xy \\ &= 289 + 2(120) \\ &= 289 + 240\end{aligned}$$

$$(x+y)^2 = 529$$

$$\sqrt{(x+y)^2} = \sqrt{529}$$

$$x+y = \sqrt{(23)^2}$$

$$x+y = 23$$

Q-6 (b) Data:

before 6 years ratio of the

age of Karan and Salman = 6:5

After 4 years from now their

ages has ratio = 11:10

age (present) of Salman = ?

Sol:- let Kanhan = x

Salman = y

According to Condition 1

$$\frac{(x-6)}{(y-6)} = \frac{6}{5} \quad \text{--- (1)}$$

According to Condition - 2

$$\frac{x+4}{y+4} = \frac{11}{10} \quad \text{--- (2)}$$

$$x+4 = \frac{11y+44}{10}$$

$$x = \frac{11y+44}{10} - 4$$

$$x = \frac{11y+44-40}{10}$$

$$x = \frac{11y+4}{10} \quad \text{put in eq (1)}$$

$$\frac{(x-6)}{(y-6)} = \frac{6}{5}$$

$$x-6 = \frac{(y-6) \times 6}{5}$$

$$x = \frac{(y-6) \times 6}{5} + 6$$

$$\frac{11y+4}{10} = \frac{6y-36+30}{5}$$

$$\frac{11y+4}{10} = \frac{6y-6}{5}$$

$$11y+4 = \frac{60y-60}{5}$$

$$11y = \frac{60y-60}{5} - 4$$

$$11y = \frac{60y - 60 - 120}{5}$$

$$55y = 60y - 60 - 120$$

$$55y - 60y = -60 - 120$$

$$-5y = -180$$

$$5y = 180$$

$$y = 36$$

$y = \text{Saman's age (Present)} = 36 \text{ years}$

Q. (c) Data: Sum of 3 numbers = 98

Ratio of first to second = 2:3

Ratio of second to third = 5:8

Second number = ?

Sol:-

Let numbers are

1st x

2nd y

3rd z

Acc to Condition

$$x + y + z = 98 \quad \text{--- (1)}$$

$$\frac{x}{y} = \frac{2}{3} \quad \text{--- (2)}$$

$$\frac{y}{z} = \frac{5}{8} \quad \text{--- (3)}$$

From eq (2)

$$\frac{x}{y} = \frac{2}{3}$$

$$\boxed{x = \frac{2y}{3}}$$

From eq ③

$$\frac{y}{2} = \frac{5}{8}$$

$$5z = 8y$$

$$z = \frac{8y}{5}$$

Putting values of y and z in eq 1

$$x + y + z = 98$$

$$\frac{24}{3} + y + \frac{8y}{5} = 98$$

$$\frac{10y + 15y + 24y}{15} = 98$$

$$49y = 1470$$

$$y = \frac{1470}{49} = 30$$

$$y = 30$$

So, Second number = $y = 30$

Q6 (d) Data:

Shopkeeper expects gain of 22.5%
on his Cost price

Sale in one week = Rs 392

Profit = ?

Soln- Cost Price = ?

$$\text{Cost Price} + 0.225 \text{ Cost Price} = 392$$

$$1.225 \text{ Cost Price} = 392$$

$$\begin{aligned} \text{Cost price} &= \frac{392}{1.225} \\ &= \frac{392000}{1225} \end{aligned}$$

~~78400~~ 15680

~~245~~ 49

$$\begin{aligned} &\frac{15680}{49} \\ &= 320 \end{aligned}$$

$$\text{Cost price} = 320$$

$$\begin{aligned} \text{profit} &= \text{Cost price} - \text{Selling price} \\ &= 320 - 392 \end{aligned}$$

$$\text{profit} = \text{Rs. } 72$$