



Exercise 14D

Question 9:

Let the given numbers be x_1, x_2, \dots, x_{15}

Then, the mean of these numbers =

$$\therefore \frac{(x_1 + x_2 + \dots + x_{15})}{15} = 27$$

$$\Rightarrow x_1 + x_2 + \dots + x_{15} = 405$$

The new numbers are $(x_1 \times 4) + (x_2 \times 4) \dots (x_{15} \times 4)$

$$\therefore \text{Mean of the new numbers} = \frac{(x_1 \times 4) + (x_2 \times 4) \dots (x_{15} \times 4)}{15}$$

$$= \frac{405 \times 4}{15} = \frac{1620}{15} = 108$$

\therefore The new mean = 108

Question 10:

Let the given number be x_1, x_2, \dots, x_{12}

Then the mean of these numbers = 40

$$\therefore \frac{(x_1 + x_2 + \dots + x_{12})}{12} = 40$$

$$\Rightarrow x_1 + x_2 + \dots + x_{12} = 480$$

$$\text{The new numbers} = \frac{(x_1 + 8) + (x_2 + 8) + \dots + (x_{12} + 8)}{12}$$

$$= \frac{480 + 8}{12} = \frac{488}{12} = 40.67$$

\therefore the new mean = 40.67

Question 11:

Let the given numbers be x_1, x_2, \dots, x_{20}

Let \bar{X} be the mean of these numbers

$$\therefore \bar{X} = \frac{x_1 + x_2 + \dots + x_{20}}{20} = 18$$

$$\Rightarrow x_1 + x_2 + \dots + x_{20} = 18 \times 20 = 360 \dots (1)$$

But it is given that 3 is added to each of the first ten numbers.

Therefore, the first new ten numbers are

$$(x_1 + 3), (x_2 + 3), \dots, (x_{10} + 3)$$

Let \bar{X}' be the mean of new numbers

$$(x_1 + 3), (x_2 + 3), \dots, (x_{10} + 3), x_{11}, \dots, x_{20}$$

$$\begin{aligned} \therefore \bar{X}' &= \frac{(x_1 + 3) + (x_2 + 3) + \dots + (x_{10} + 3) + x_{11} + \dots + x_{20}}{20} \\ &= \frac{(x_1 + x_2 + \dots + x_{20}) + 3 \times 10}{20} \end{aligned}$$

From (1), we know that $x_1 + x_2 + \dots + x_{20} = 360$

\therefore Mean of the new set of 20 numbers

$$= \frac{360 + 30}{20} = \frac{390}{20} = 19.5$$

\therefore Mean of the new set of 20 numbers = 19.5

***** END *****