



### Exercise 3E

Question 36:

Let the amounts invested at 12% and 10% be Rs x and Rs y respectively.

Then,

**First case:**

$$\text{S.I. on Rs } x \text{ at } 12\% \text{ p.a. for } 1 \text{ year} = \frac{x \times 12 \times 1}{100} = \frac{3x}{25}$$

$$\text{S.I. on Rs } y \text{ at } 10\% \text{ p.a. for } 1 \text{ year} = \frac{y \times 10 \times 1}{100} = \frac{y}{10}$$

Total S.I. = Rs. 1145

$$\Rightarrow \frac{3x}{25} + \frac{y}{10} = 1145$$

$$\Rightarrow \frac{6x + 5y}{50} = 1145$$

$$\Rightarrow 6x + 5y = 57250 \text{ --- (1)}$$

**Second case:**

$$\text{S.I. of Rs } x \text{ at } 10\% \text{ p.a. for } 1 \text{ year} = \text{Rs} \left( \frac{x \times 10 \times 1}{100} \right) = \text{Rs} \frac{x}{10}$$

$$\text{S.I. of Rs } y \text{ at } 12\% \text{ p.a. for } 1 \text{ year} = \text{Rs} \left( \frac{y \times 12 \times 1}{100} \right) = \text{Rs} \frac{3}{25} y$$

Total S.I. = Rs(1145 - 90) = 1055

$$\Rightarrow \frac{x}{10} + \frac{3}{25} y = 1055$$

$$\Rightarrow \frac{5x + 6y}{50} = 1055$$

$$\Rightarrow 5x + 6y = 52750 \text{ --- (2)}$$

Multiplying (1) by 6 and (2) by 5, we get

$$36x + 30y = 343500 \text{ --- (3)}$$

$$25x + 30y = 263750 \text{ --- (4)}$$

Subtracting (4) from (3), we get

$$\begin{aligned} 11x &= 79750 \\ x &= \frac{79750}{11} = 7250 \end{aligned}$$

Putting  $x = 7250$  in (1), we get

$$6 \times 7250 + 5y = 57250$$

$$43500 + 5y = 57250$$

$$5y = 13750$$

$$y = 2750$$

$$x = 7250, y = 2750$$

Hence, amount invested at 12% = Rs 7250

And amount invested at 10% = Rs 2750

Question 37:

Let the number of student in class room A and B be x and y respectively.

When 10 students are transferred from A to B:

$$x - 10 = y + 10$$

$$x - y = 20 \text{ ---(1)}$$

When 20 students are transferred from B to A:

$$2(y - 20) = x + 20$$

$$2y - 40 = x + 20$$

$$-x + 2y = 60 \text{ ---(2)}$$

Adding (1) and (2), we get

$$y = 80$$

Putting  $y = 80$  in (1), we get

$$x - 80 = 20$$

$$x = 100$$

Hence, number of students of A and B are 100 and 80 respectively.

\*\*\*\*\* END \*\*\*\*\*