Exercise 3E

Question 36:
Let the amounts invested at 12% and 10% be Rs x and Rs y respectively.
Then,

First case:

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

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

Total S.I. = Rs. 1145

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

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

$\Rightarrow 6x + 5y = 57250 \quad ---(1)$

Second case:

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

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

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

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

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

$\Rightarrow 5x + 6y = 52750 \quad ---(2)$

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

$36x + 30y = 343500 \quad —(3)$

$25x + 30y = 263750 \quad —(4)$

Subtracting (4) from (3), we get

$11x = 79750$

$x = \frac{79750}{11} = 7250$

Putting x = 7250 in (1), we get
6 × 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 ---(1)
When 20 students are transferred from B to A:
2(y - 20) = x + 20
2y - 40 = x + 20
-x + 2y = 60 ---(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 **********