Exercise 3E

Question 33:
Let the monthly income of A and B be Rs. 5x and Rs. 4x respectively and let their expenditures be Rs. 7y and Rs. 5y respectively.

Then,

$5x - 7y = 3000$ —(1)

$4x - 5y = 3000$ —(2)

Multiplying (1) by 5 and (2) by 7 we get

$25x - 35y = 15000$ —(3)

$28x - 35y = 21000$ —(4)

Subtracting (3) from (4), we get

$3x = 6000$

$x = 2000$

Putting $x = 2000$ in (1), we get

$5 \times 2000 - 7y = 3000$

$-7y = 3000 - 10000$

$$y = \frac{-7000}{-7} = 1000$$

$x = 2000$, $y = 1000$

Income of A = $5x = 5 \times 2000$ = Rs. 10000

Income of B = $4x = 4 \times 2000$ = Rs. 8000

Question 34:

Let Rs. x and Rs. y be the CP of a chair and table respectively

If profit is 25%, then SP of chair $= \text{Rs}\,\frac{100+25}{100}\times x = \text{Rs}\,\frac{125}{100}x$

If profit is 10%, then SP of the table $= \text{Rs}\,\frac{100+10}{100}\times y = \text{Rs}\,\frac{110}{100}y$

SP of a chair and table = Rs. 760

$\therefore \frac{125}{100}x+\frac{110}{100}y = 760$

$\Rightarrow \frac{25}{20}x+\frac{22}{20}y = 760$

$\Rightarrow 25x+22y = 15200 \quad ---(1)$

Further , If profit is 10%, then SP of a chair $= \text{Rs}\,\frac{100+10}{100}\times x = Rs\frac{110}{100}x$

If profit is 25%, then SP of a table $= \text{Rs}\,\frac{100+25}{100}\times y = Rs\frac{125}{100}y$

SP of a chair and table = Rs. 767.50

$\therefore \frac{110}{100}x+\frac{125}{100}y = 767.50$

$\Rightarrow \frac{22}{20}x+\frac{25}{20}y = 767.50$

$\Rightarrow 22x+25y = 15350 \quad ---(2)$

Adding (1) and (2),

$47(x+y) = 30550$

$\therefore \quad x+y = \frac{30550}{47} = 650 \quad ---(3)$

Subtracting (2) from (1)

$3(x-y) = 15200-15350$

$3(x-y) = -150$

$x-y = -50 \quad ---(4)$

Adding (3) and (4),

$2x = 640-50$

$2x = 600$

$\therefore x = \frac{600}{2} = 300$

Subtracting (4) from (3)

$2y = 650+50$

$2y = 700$

$\therefore y = \frac{700}{2} = 350$

Hence, CP of a chair is Rs 300 and CP of table is Rs 350.

Question 35:

Let the CP of TV and fridge be Rs x and Rs y respectively.

5% gain on TV = $\text{Rs}\frac{5}{100}x = \text{Rs}\frac{x}{20}$

10% of gain on fridge = $\text{Rs}\frac{10}{100}y = \text{Rs}\frac{2y}{20}$

Gain on TV and Fridge = $\text{Rs}\left(\frac{x}{20} + \frac{2y}{20}\right) = \text{Rs}.3250$

$\Rightarrow \frac{x}{20} + \frac{2y}{20} = 3250 \quad \text{or} \quad x + 2y = 65000 - - - (1)$

Further,

10% gain on TV = $\text{Rs}\frac{10}{100}x = \frac{2x}{20}$

5% loss on fridge = $\text{Rs}\frac{5}{100}y = \frac{y}{20}$

Total gain = $\text{Rs}\left(\frac{2x}{20} - \frac{y}{20}\right) = \text{Rs}1500$

$2x - y = 30000$ —(2)

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

$4x - 2y = 60000$ —(3)

$x + 2y = 65000$ —(4)

Adding (3) and (4), we get

$5x = 125000$

$x = 25000$

Putting $x = 25000$ in (1), we get

$25000 + 2y = 65000$

$2y = 40000$

$y = 20000$

The cost of TV = Rs. 25000 and cost of fridge = Rs. 20000

********** END **********