



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,

$$5x - 7y = 3000 \text{ ---(1)}$$

$$4x - 5y = 3000 \text{ ---(2)}$$

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

$$25x - 35y = 15000 \text{ ---(3)}$$

$$28x - 35y = 21000 \text{ ---(4)}$$

Subtracting (3) from (4), we get

$$3x = 6000$$

$$x = 2000$$

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

$$5 \times 2000 - 7y = 3000$$

$$-7y = 3000 - 10000$$

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

$$x = 2000, y = 1000$$

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

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

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

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

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

$$\Rightarrow 25x + 22y = 15200 \text{ --- (1)}$$

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

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

SP of a chair and table = Rs. 767.50

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

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

$$\Rightarrow 22x + 25y = 15350 \text{ --- (2)}$$

Adding (1) and (2),

$$47(x + y) = 30550$$

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

Subtracting (2) from (1)

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

$$3(x - y) = -150$$

$$x - y = -50 \text{ --- (4)}$$

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.

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

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

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

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

Further,

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

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

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

$$2x - y = 30000 \quad \text{--- (2)}$$

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

$$4x - 2y = 60000 \quad \text{--- (3)}$$

$$x + 2y = 65000 \quad \text{--- (4)}$$

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

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