



Pair of Linear Equations in Two variables Ex 3.11 Q3

Answer :

Let the length and breadth of the rectangle be x and y units respectively

Then, area of rectangle = xy square units

If the length is increased by 3 meters and breadth is reduced each by 4 square meters the area is reduced by 67 square units

Therefore,

$$xy - 67 = (x + 3)(y - 4)$$

$$xy - 67 = xy + 3y - 4x - 12$$

$$\cancel{xy} - 67 = \cancel{xy} + 3y - 4x - 12$$

$$4x - 3y - 67 + 12 = 0$$

$$4x - 3y - 55 = 0 \dots (i)$$

Then the length is reduced by 1 meter and breadth is increased by 4 meter then the area is increased by 89 square units

Therefore, $0 = 4x - y - 93 \dots (ii)$

Thus, we get the following system of linear equation

$$4x - 3y - 55 = 0$$

$$4x - y - 93 = 0$$

By using cross multiplication we have

$$\frac{x}{(-3 \times -93) - (-1 \times -55)} = \frac{-y}{(4 \times -93) - (4 \times -55)} = \frac{1}{(4 \times -1) - (4 \times -3)}$$

$$\frac{x}{279 - 55} = \frac{-y}{-372 + 220} = \frac{1}{-4 + 12}$$

$$\frac{x}{224} = \frac{\cancel{-y}}{\cancel{-152}} = \frac{1}{8}$$

$$x = \frac{224}{8}$$

$$x = 28$$

and

$$y = \frac{152}{8}$$

$$y = 19$$

Hence, the length of rectangle is **28** meter,

The breath of rectangle is **19** meter.

Pair of Linear Equations in Two variables Ex 3.11 Q4

Answer :

Let the income of X be Rs $8x$ and the income of Y be Rs $7x$. further let the expenditure of X be $19y$ and the expenditure of Y be $16y$ respectively then,

Saving of $x = 8x - 19y$

Saving of $y = 7x - 16y$

$$8x - 19y = 1250$$

$$7x - 16y = 1250$$

$$8x - 19y - 1250 = 0 \dots (i)$$

$$7x - 16y - 1250 = 0 \dots (ii)$$

Solving equation (i) and (ii) by cross- multiplication, we have

$$\frac{x}{(-19 \times -1250) - (-16 \times -1250)} = \frac{-y}{(8 \times -1250) - (7 \times -1250)} = \frac{1}{(8 \times -16) - (7 \times -19)}$$
$$\frac{x}{23750 - 20000} = \frac{-y}{-10000 + 8750} = \frac{1}{-128 + 133}$$
$$\frac{x}{3750} = \frac{y}{1250} = \frac{1}{5}$$
$$x = \frac{3750}{5}$$

The monthly income of $X = 8x$

$$= 8 \times 750$$

$$= 6000$$

The monthly income of $Y = 7x$

$$= 7 \times 750$$

$$= 5250$$

Hence the monthly income of X is Rs $Rs. 6000$

The monthly income of Y is Rs $Rs. 5250$

***** END *****