



Pair of Linear Equations in Two variables Ex 3.11 Q16

Answer :

1 women alone can finish the work in x days and 1 man alone can finish it in y days .then

$$\text{One woman one day work} = \frac{1}{x}$$

$$\text{One man one days work} = \frac{1}{y}$$

$$2 \text{ women's one days work} = \frac{2}{x}$$

$$5 \text{ man's one days work} = \frac{5}{y}$$

Since 2 women and 5 men can finish the work in 4 days

$$4\left(\frac{2}{x} + \frac{5}{y}\right) = 1$$

$$\frac{8}{x} + \frac{20}{y} = 1 \dots (i)$$

3 women and 6 men can finish the work in 3 days

$$3\left(\frac{3}{x} + \frac{6}{y}\right) = 1$$

$$\frac{9}{x} + \frac{18}{y} = 1 \dots (ii)$$

Putting $\frac{1}{x} = u$ and $\frac{1}{y} = v$ in equation (i) and (ii) we get

$$8u + 20v - 1 = 0 \dots (iii)$$

$$9u + 18v - 1 = 0 \dots (iv)$$

By using cross multiplication we have

$$\frac{u}{(20 \times -1) - (18 \times -1)} = \frac{-v}{(8 \times -1) - (9 \times -1)} = \frac{1}{(8 \times 18) - (9 \times 20)}$$

$$\frac{u}{-20 + 18} = \frac{-v}{-8 + 9} = \frac{1}{144 - 180}$$

$$\frac{u}{-2} = \frac{-v}{1} = \frac{1}{-36}$$

$$u = \frac{\cancel{2}}{\cancel{36}}$$

$$u = \frac{1}{18}$$

$$v = \frac{\cancel{1}}{\cancel{36}}$$

$$v = \frac{1}{36}$$

Now ,

$$u = \frac{1}{18}$$

$$\frac{1}{x} = \frac{1}{18}$$

$$x = 18$$

$$v = \frac{1}{60}$$

$$\frac{1}{y} = \frac{1}{60}$$

$$y = 60$$

Hence, the time taken by 1 woman alone to finish the embroidery is **36 days** ,

The time taken by 1 man alone to finish the embroidery is **18 days** .

Pair of Linear Equations in Two variables Ex 3.11 Q17

Answer :

Let the strike money of first cock-owner be $Rs. x$ and of second cock-owner be $Rs. y$ respectively.

Then we have,

$$x - \frac{3}{4}y = 12,$$

$$\frac{4x - 3y}{4} = 12$$

$$4x - 3y = 12 \times 4$$

$$4x - 3y = 48 \dots (i)$$

For second cock-owner according to given condition we have,

$$y - \frac{2}{3}x = 12$$

$$\frac{3y - 2x}{3} = 12$$

$$3y - 2x = 12 \times 3$$

$$3y - 2x = 36 \dots (ii)$$

By subtracting (ii) from (i) , we have,

$$4x - \cancel{3y} = 48$$

$$\frac{-2x + \cancel{3y}}{2x} = \frac{36}{84}$$

$$2x = 84$$

$$x = \frac{84}{2}$$

$$x = 42$$

Putting $x = 42$ in equation (ii) we get,

$$3y - 2x = 36$$

$$3y - 2 \times 42 = 36$$

$$3y - 84 = 36$$

$$3y = 36 + 84$$

$$3y = 120$$

$$y = \frac{120}{3}$$

$$y = 40$$

Hence the stake of money first cock-owner is **Rs. 42** and of second cock-owner is **Rs. 40** respectively.

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