Pair of Linear Equations in Two varibles Ex 3.6 Q3

Answer :

Given:

(i) Total numbers of pens and pencils = 40.

(ii) If she has 5 more pencil and 5 less pens, the number of pencils would be 4 times the number of pen.

To find: Original number of pens and pencils.

Suppose original number of pencil = x

And original number of pen = y

According the given conditions, we have,

$$x + y = 40,$$

$$x + y - 40 = 0 \quad \ldots\ldots(1)$$

$$5 + x = 4(y - 5)$$

$$5 + x = 4y - 20$$

$$x - 4y + 5 + 20 = 0$$

$$x - 4y + 25 = 0 \quad \ldots\ldots(2)$$

Thus we got the following system of linear equations

$$x + y - 40 = 0 \quad \ldots\ldots(1)$$

$$x - 4y + 25 = 0 \quad \ldots\ldots(2)$$

Substituting the value of y from equation 1 in equation 2 we get

$$x - 4(40 - x) + 25 = 0 \quad [y = (40 - x) \text{ from equation } 1]$$

$$x - 160 + 4x + 25 = 0$$

$$5x - 135 = 0$$

$$x = \frac{135}{5}$$

$$\boxed{x = 27}$$

Substituting the value of y in equation 1 we get

$$27 + y = 40,$$

$$y = 40 - 27$$

$$\boxed{y = 13}$$

Hence we got the result number of pencils is $\boxed{x = 27}$ and number of pens are $\boxed{y = 13}$

Pair of Linear Equations in Two varibles Ex 3.6 Q4

Answer :

Given:

(i) Cost of 4 tables and 3 chairs = Rs 2250.

(ii) Cost of 3 tables and 4 chairs = Rs 1950.

To find: The cost of 2 chairs and 1 table.

Suppose, the cost of 1 table = Rs x.

The cost of 1 chair = Rs y.

According to the given conditions,

$4x + 3y = 2250$,

$4x + 3y - 2200 = 0$ ..... (1)

$3x + 4y = 1950$,

$3x + 4y - 1950 = 0$ ..... (2)

Solving eq. (1) and Eq. (2) by cross multiplication

$$\frac{x}{-5850+9000} = \frac{-y}{-7800+6750} = \frac{1}{16-9}$$

$$\frac{x}{3150} = \frac{-y}{-1050} = \frac{1}{7}$$

$$x = \frac{3150}{7}$$

$$= 450$$

$\therefore$ cost of 1 table = Rs. 450

$\boxed{\text{cost of 1 table} = \text{Rs. } 450.}$

$$y = \frac{1050}{7}$$

$$= 150$$

$\therefore$ cost of 1 chairs = Rs. 150.

$\boxed{\text{cost of 2 chairs} = \text{Rs. } 300.}$

Hence total cost of 2 chairs and 1 table = $\boxed{\text{Rs. } 750}$

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