



NCERT Solutions for Class 10th Maths Chapter 3 Pair of Linear Equations in Two Variables Ex 3.1

Question-1

Aftab tells his daughter, "Seven years ago, I was seven times as old as you were then. Also, three years from now, I shall be three times as old as you will be,"(Isn't this interesting?) Represent this situation algebraically and graphically.

Solution:

Let the present age of Aftab be x years and her daughter age be y years
Seven years ago

Aftab's age = $(x - 7)$

His daughter's age = $(y - 7)$

$$(x - 7) = 7(y - 7) \dots\dots\dots (1)$$

Three years from now

Aftab's age = $x + 3$

His daughter age = $y + 3$

$$x + 3 = 3(y + 3) \dots\dots\dots (2)$$

(1) becomes,

$$x - 7 = 7(y - 7)$$

$$x - 7 = 7y - 49$$

$$x - 7y = -42 \dots\dots\dots (3)$$

(2) becomes

$$x + 3 = 3(y + 3)$$

$$= 3y + 9$$

$$x - 3y = 6 \dots\dots\dots (4)$$

Algebraically the two situations can be represented as follows:

$x - 7y + 42 = 0$, $x - 3y - 6 = 0$ where x and y are respectively the ages of Aftab and his daughter.

Graphic Representation :

$$x - 7y = -42 \dots\dots\dots(1)$$

$$x - 3y = 6 \dots\dots\dots(2)$$

$$\Rightarrow x - 7y = -42$$

$$-7y = -42 - x$$

$$y = \frac{-42 - x}{-7}$$

when $x = 0$,

$$y = \frac{-42 - 0}{-7} = \frac{-42}{-7} = 6$$

when $x = 7$,

$$y = \frac{-42 - 7}{-7} = \frac{-49}{-7} = 7$$

when $x = 14$,

$$y = \frac{-42 - 14}{-7} = \frac{-56}{-7} = 8$$

when $x = -7$,

$$y = \frac{-42 + 7}{-7} = \frac{-35}{-7} = 5$$

when $x = -14$,

$$y = \frac{-42 + 14}{-7} = \frac{-28}{-7} = 4$$

x	-14	-7	0	7	14
y	4	5	6	7	8

$$\Rightarrow x - 3y = 6$$

$$-3y = 6 - x$$

$$y = \frac{x-6}{3}$$

when $x = 0$,

$$y = \frac{x-6}{3} = \frac{-6}{3} = -2$$

when $x = 3$,

$$y = \frac{x-6}{3} = \frac{3-6}{3} = \frac{-3}{3} = -1$$

when $x = 6$,

$$y = \frac{x-6}{3} = \frac{6-6}{3} = 0$$

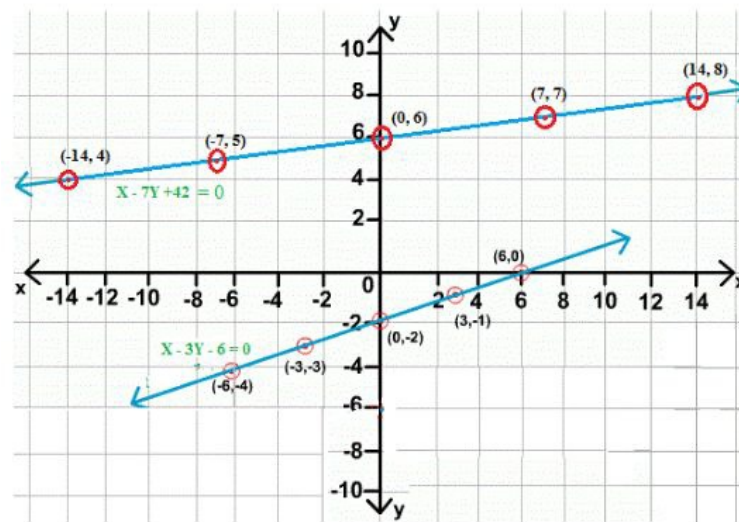
when $x = -3$,

$$y = \frac{x-6}{3} = \frac{-3-6}{3} = \frac{-9}{3} = -3$$

when $x = -6$,

$$y = \frac{x-6}{3} = \frac{-6-6}{3} = -4$$

x	-6	-3	0	3	6
y	-4	-3	-2	-1	0



Question-2

The coach of a cricket team buys 3 bats and 6 balls for ₹3900. Later, she buys another bat and 2 more balls of the same kind for ₹1300. Represent this situation algebraically and geometrically.

Solution:

Let the cost of each bat be ₹x

Let the cost of each ball be ₹y

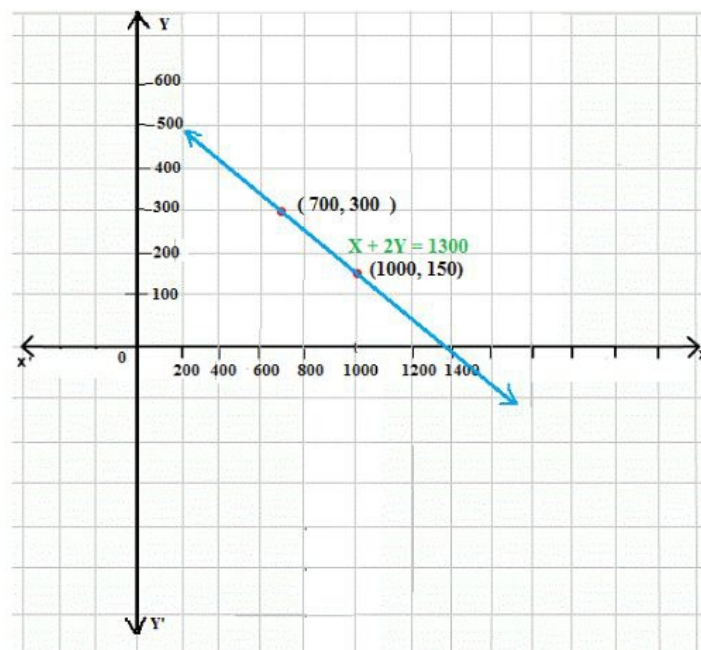
Algebraically

$$3x + 6y = 3900 \dots\dots\dots(1)$$

$$(1) \Rightarrow x + 2y = 1300$$

$$x + 2y = 1300 \dots\dots\dots(2)$$

X	1000	700
$y = \frac{1300 - x}{2}$	150	300



Question-3

The cost of 2 kg of apples and 1 kg of grapes on a day was found to be Rs. 160. After a month, the cost of 4 kg of apples and 2 kg of grapes is Rs. 300. Represent the situation algebraically and geometrically.

Solution:

Cost per kg of apple = Rs. x

Cost per kg of grapes = Rs. y

Algebraically $2x + y = 160$ (1)

$4x + 2y = 300$ or $2x + y = 150$ (2)

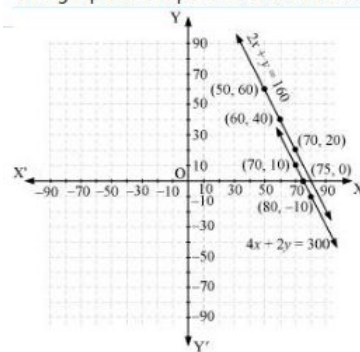
from (1) $y = 160 - 2x$

x	50	60
$Y = 160 - 2x$	60	40

From (2), $y = 150 - 2x$

x	50	60
$Y = 150 - 2x$	50	30

The graphical representation is as follows.



Comment

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