

Mathematics

(www.tiwariacademy.com: Focus on free education)
(Chapter – 3) (Linear equations in two variables)

(Class – X)

Exercise 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.

Answer 1:

Let the present age of Aftab be x .

And, present age of his daughter = y

Seven years ago,

Age of Aftab = $x - 7$

Age of his daughter = $y - 7$

According to the question,

$$\begin{aligned}(x - 7) &= 7(y - 7) \\ \Rightarrow x - 7 &= 7y - 49 \\ \Rightarrow x - 7y &= -42 \dots\dots\dots (1)\end{aligned}$$

Three years hence,

Age of Aftab = $x + 3$ Age of

his daughter = $y + 3$

According to the question,

$$\begin{aligned}(x + 3) &= 3(y + 3) \\ x + 3 &= 3y + 9 \\ x - 3y &= 6 \qquad (2)\end{aligned}$$

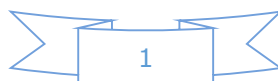
Therefore, the algebraic representation is

$$x - 7y = -42$$

$$x - 3y = 6$$

For $x - 7y = -42$

$$x = -42 + 7y$$



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The solution table is

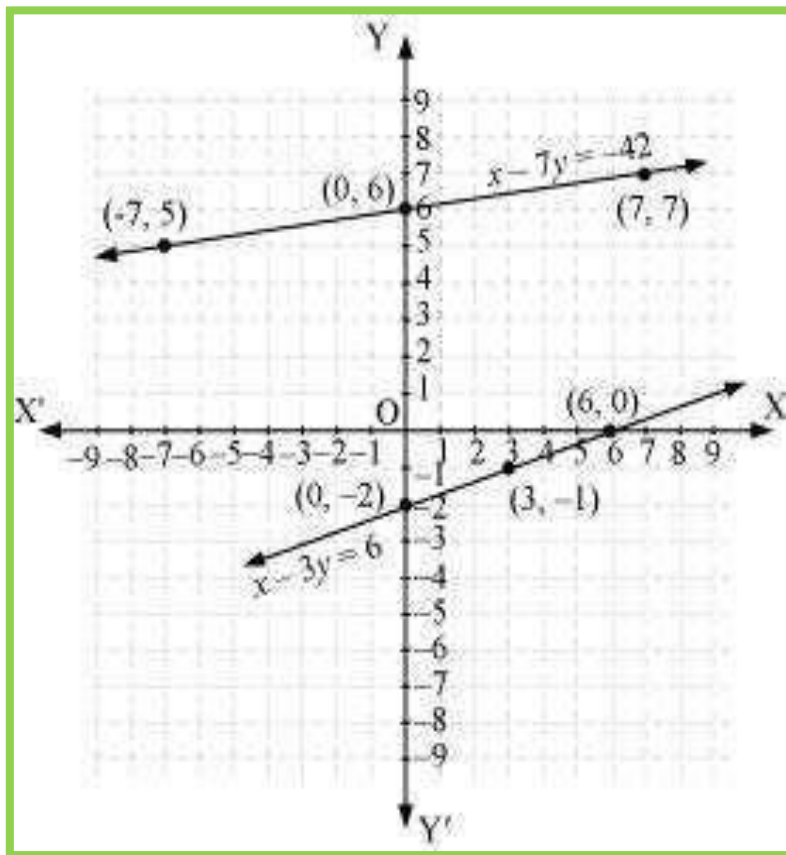
x	-7	0	7
y	5	6	7

For $x - 3y = 6$ or $x = 6 + 3y$

The solution table is

x	6	3	0
y	0	-1	-2

The graphical representation is as follows.



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Question 2:

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

Answer 1:

Let the cost of a bat be Rs x .

And, cost of a ball = Rs y

According to the question, the algebraic representation is

$$3x + 6y = 3900$$

$$x + 2y = 1300$$

For $3x + 6y = 3900$

$$x = \frac{3900 - 6y}{3}$$

The solution table is

x	300	100	- 100
y	500	600	700

For, $x + 2y = 1300$

$$x = 1300 - 2y$$

The solution table is

x	300	100	- 100
y	500	600	700

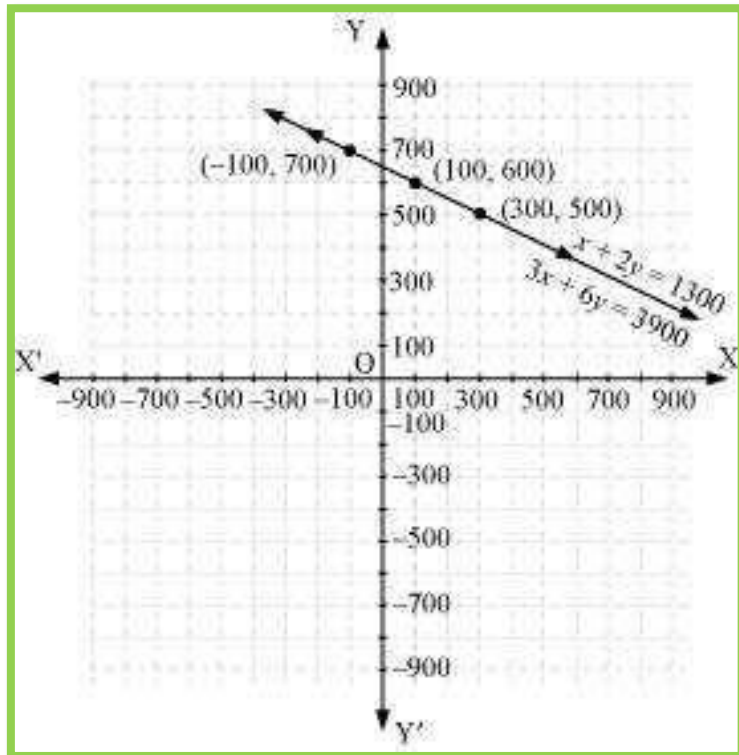
The graphical representation is as follows.



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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.

Answer 3:

Let the cost of 1 kg of apples be Rs x .

And, cost of 1 kg of grapes = Rs y

According to the question, the algebraic representation is

$$2x + y = 160$$

$$4x + 2y = 300$$

For $2x + y = 160$

$$y = 160 - 2x$$

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The solution table is

x	50	60	70
y	60	40	20

For $4x + 2y = 300$,

$$y = \frac{300 - 4x}{2}$$

The solution table is

x	70	80	75
y	10	-10	0

The graphical representation is as follows.

