Exercise 3.1 Page: 44

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.

Solutions: Let the present age of Aftab be 'x'.

And, the present age of his daughter be 'y'.

Now, we can write, seven years ago,

Age of Aftab = x - 7

Age of his daughter = y - 7

According to the question,

$x-7 = 7(y-7)$
$\Rightarrow x-7 = 7y-49$
$\Rightarrow x-7y = -42$ .....(i)

Also, three years from now or after three years,

Age of Aftab will become = x + 3.

Age of his daughter will become = y + 3

According to the situation given,

$x+3 = 3(y+3)$
$\Rightarrow x+3 = 3y+9$
$\Rightarrow x-3y = 6$ .....(ii)

Subtracting equation (i) from equation (ii) we have

$(x-3y)-(x-7y) = 6-(-42)$
$\Rightarrow -3y+7y=6+42$
$\Rightarrow 4y=48$
$\Rightarrow y=12$

The algebraic equation is represented by

$x-7y = -42$
$x-3y = 6$

For, $x-7y = -42$ or $x = -42+7y$

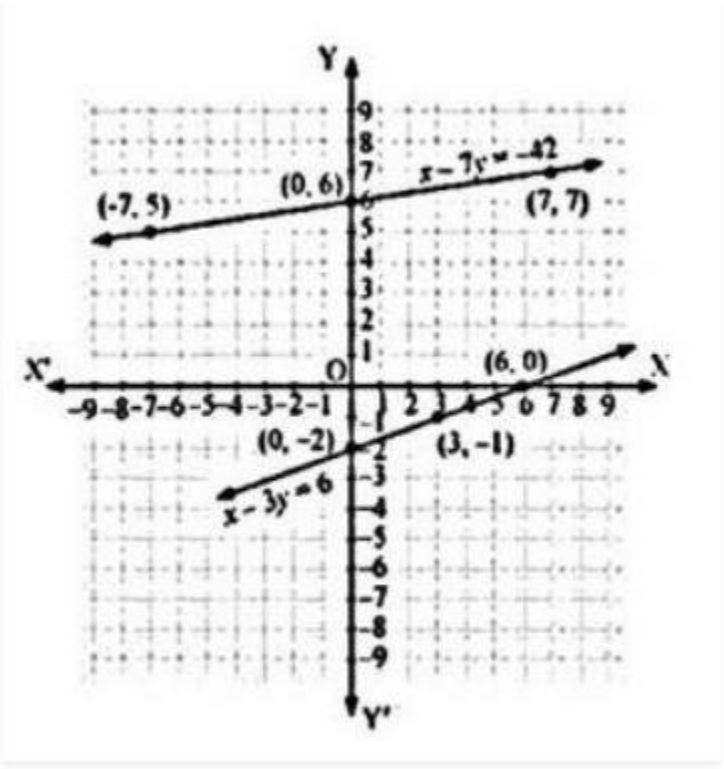
The solution table is

X	-7	0	7
Y	5	6	7

For, $x-3y=6$ or $x=6+3y$
The solution table is

X	6	4	0
Y	0	-1	-2

The graphical representation is:



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

Solutions: Let us assume that the cost of a bat be 'Rs x'

And,the cost of a ball be 'Rs y'

According to the question, the algebraic representation is

3x+6y=3900

and x+2y=1300

For, 3x+6y=3900

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

The solution table is

x	300	100	-100
y	500	600	700

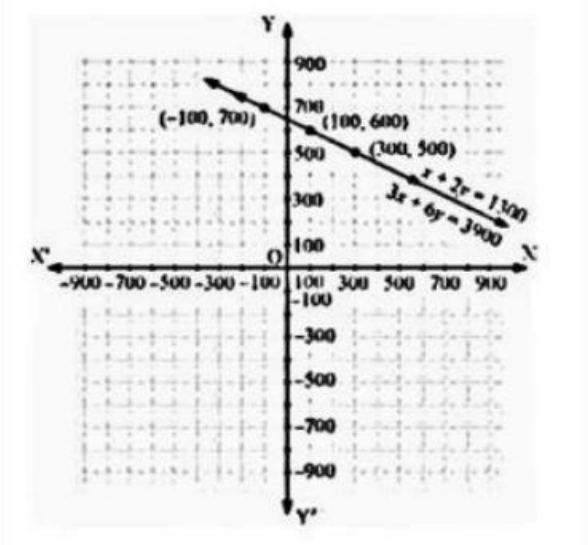
For, x+2y=1300

Or x=1300-2y

The solution table is

x	300	100	-100
y	500	600	700

The graphical representation is as follows.



3. The cost of 2 kg of apples and 1kg 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.

Solutions: Let the cost of 1 kg of apples be 'Rs. x'

And, cost of 1 kg of grapes be 'Rs. y'

According to the question, the algebraic representation is

$2x+y=160$
And $4x+2y=300$

For, $2x+y=160$ or $y=160-2x$, the solution table is;

x	50	60	70
y	60	40	20

For $4x+2y=300$ or $y = \frac{300-4x}{2}$, the solution table is;

x	70	80	75
y	10	-10	0

The graphical representation is as follows;