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

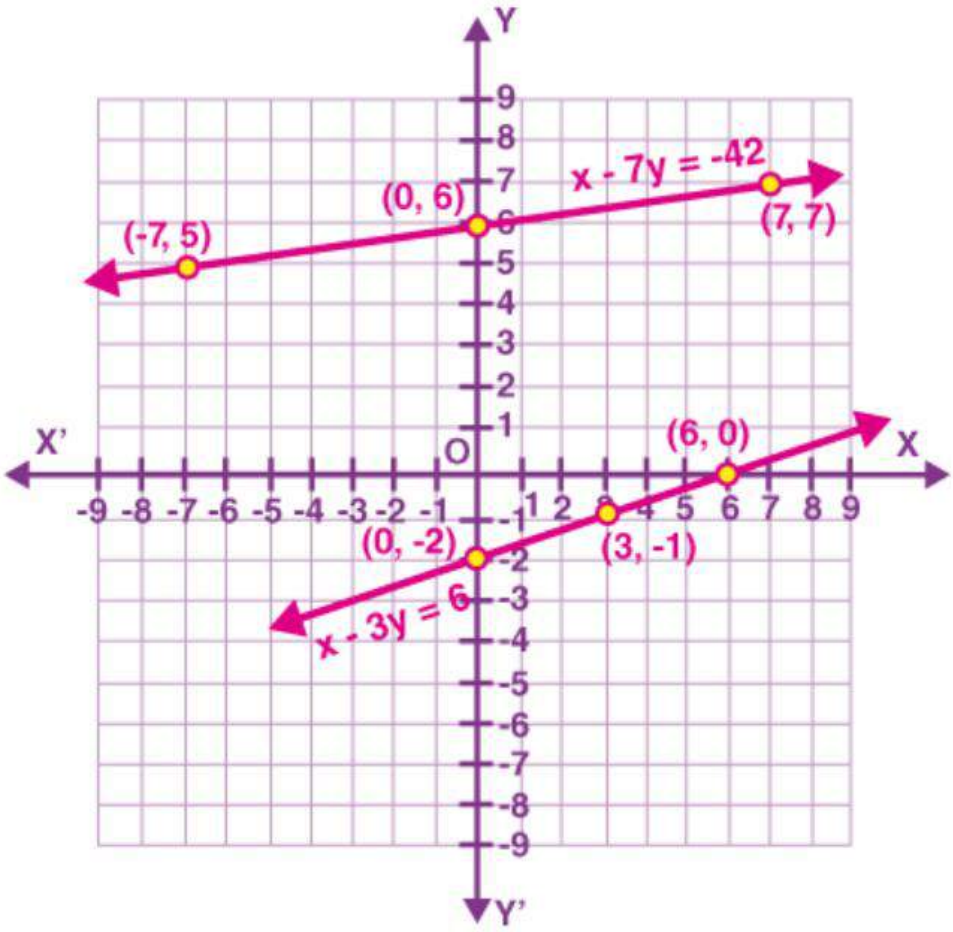
X	-7	0	7
Y	5	6	7

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

The solution table is

X	6	3	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+3y = 1300

For, 3x+6y = 3900

Or x = (3900-6y)/3

The solution table is

x	300	100	700
y	500	600	300

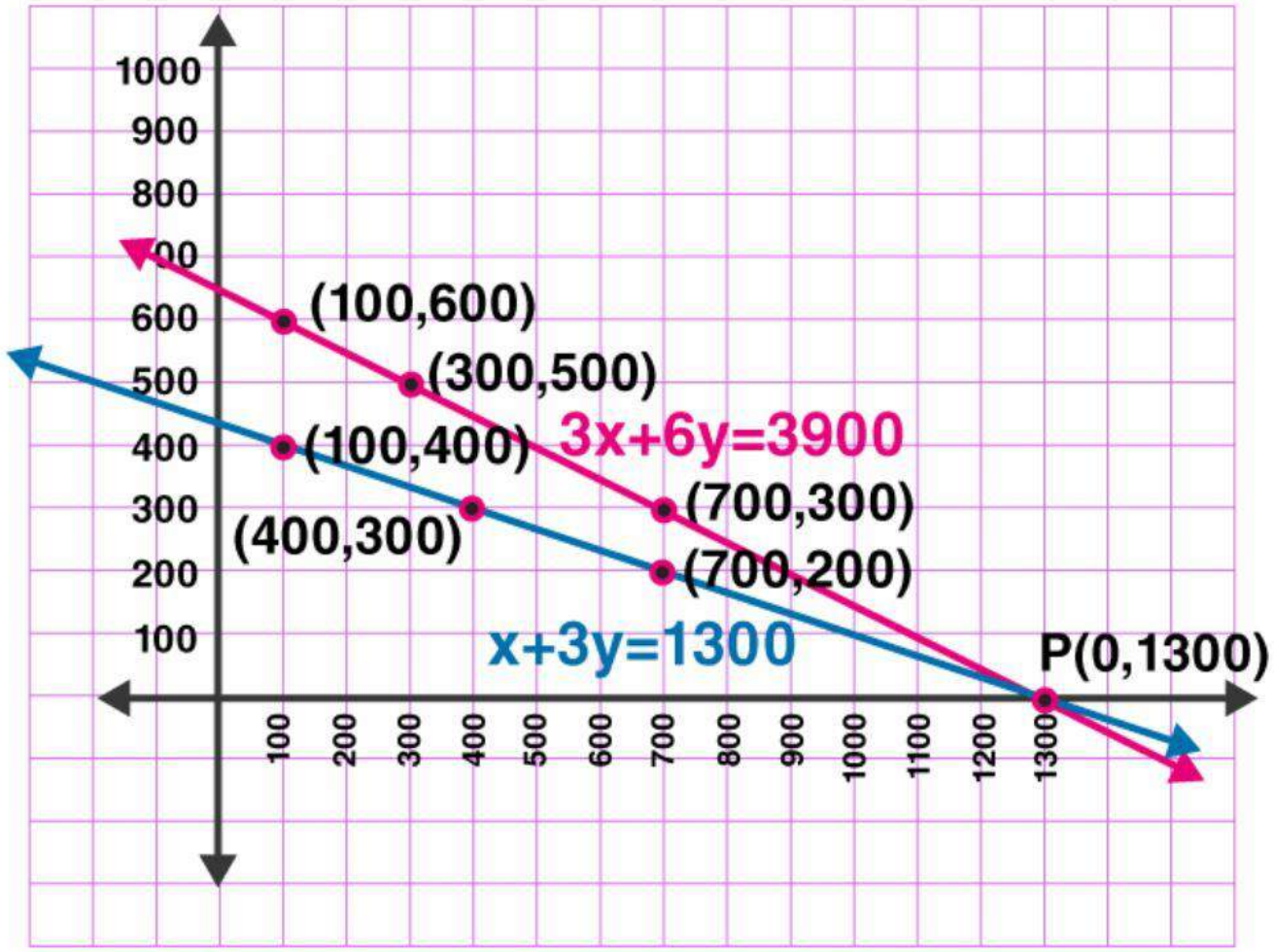
For, x+3y = 1300

Or x = 1300-3y

The solution table is

x	400	100	700
y	300	400	200

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 $y = (300-4x)/2$, the solution table is;

x	70	80	75
y	10	-10	0

The graphical representation is as follows;