MATHEMATICS

CHAPTER NUMBER :~ 4
CHAPTER NAME :~LINEAR EQUATION IN TWO VARIABLES

LEARNING OUTCOME:-

1.Students will be able to learn to plot graph of Linear Equation In Two Variables.

Draw the graph of each of the following linear equations in two variables:

(i) x + y = 4

x + y = 4

To draw the graph, we need at least two solutions of the equation.

Putting x = 0 ,	**Putting y = 0 ,**
0 + y = 4	x + 0 = 4
y = 4	x = 4
So, (0,4) is a solution of the equation	So, (4,0) is a solution of the equation

x	0	4
y	4	0

Plotting points

x	0	4
y	4	0

Draw the graph of each of the following linear equations in two variables:

(ii) $x - y = 2$

$x - y = 2$

To draw the graph, we need at least two solutions of the equation.

Putting x = 0 ,

$0 - y = 2$

$-y = 2$

$y = -2$

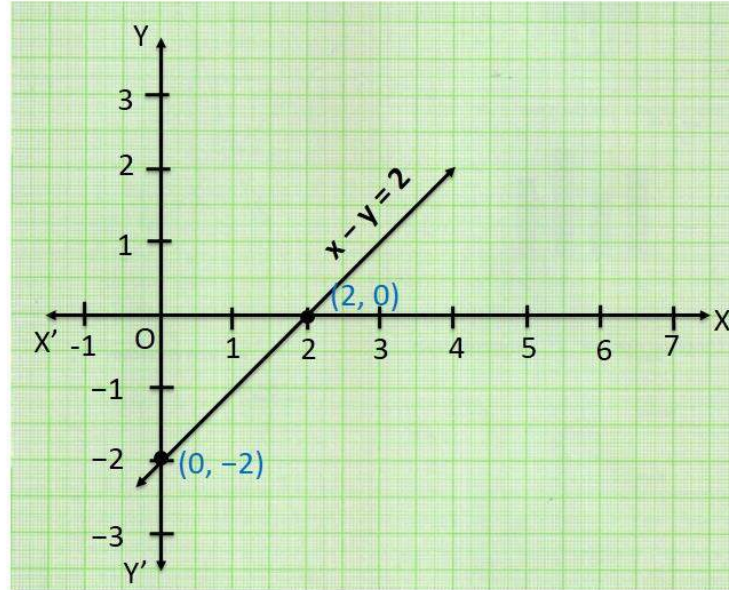So, (0, -2) is a solution of the equation

Putting y = 0 ,

$x - 0 = 2$

$x = 2$

So, (2, 0) is a solution of the equation

x	0	2
y	-2	0

ODM
EDUCATIONAL GROUP
Changing your Tomorrow

Plotting points

x	0	2
y	− 2	0

Draw the graph of each of the following linear equations in two variables:

(iii) y = 3x

y = 3x

To draw the graph, we need at least two solutions of the equation.

Putting x = 0 ,

$$y = 3(0)$$

$$y = 0$$

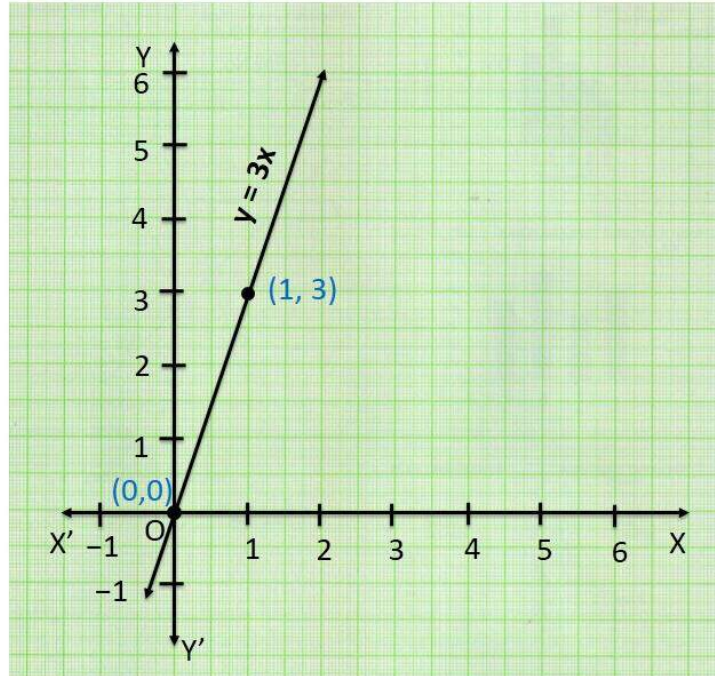So, (0,0) is a solution of the equation

Putting x = 1 ,

$$y = 3(1)$$

$$y = 3$$

So, (1,3) is a solution of the equation

x	0	1
y	0	3

Plotting points

x	0	1
y	0	3

Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?

There can be infinite number of lines as seen in figure, as infinitely many lines pass through a point
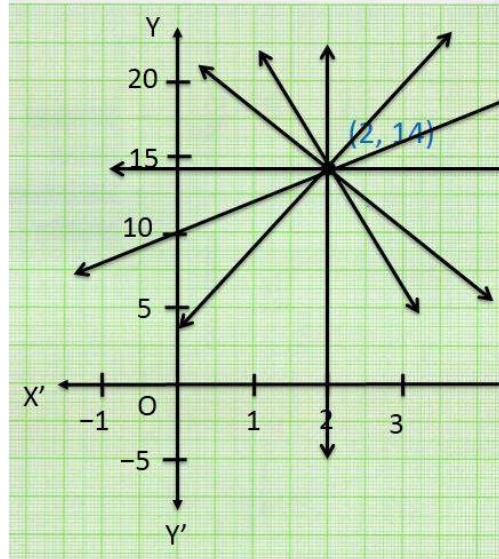
Point (2, 14)

Hence,

x = 2, y = 14

Eg:

y − x = 12   (14 − 2 = 12)

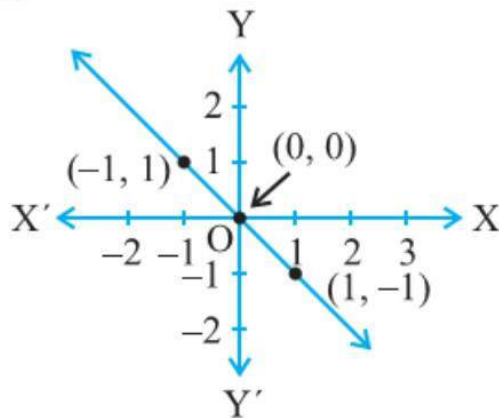x + y = 16   (2 + 14 = 16)

y = 7x   (14 = 2 × 7)

From the choices given below, choose the equation whose graphs are given in the given figures

(a) For (i),

(i)   y = x   (ii) x + y = 0

(iii) y = 2x   (iv) 2 + 3y = 7x

	(−1, 1) Putting x = −1, we have to prove y = 1	(0, 0) Putting x = 0, we have to prove y = 0	(1, −1) Putting x = 1, we have to prove y = −1
y = x	y = − 1 **Does not satisfy**	—	—

x + y = 0	−1 + y = 0 $y = 0 + 1 = 1$ Satisfies	0 + y = 0 $y = 0$ Satisfies	1 + y = 0 $y = 0 − 1 = −1$ Satisfies
y = 2x	$y = 2(−1)$ $y = −2$ Does not satisfy	–	–
2 + 3y = 7x	$2 + 3y = 7(−1)$ $3y = −7 − 2$ $y = \dfrac{−9}{3} = −3$ Does not satisfy	–	–

So, equation of line is (ii), i.e., **x + y = 0**

If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units.

Let the distance travelled by body be x

and the work done by the body be y

Given that work done is directly proportional to distance travelled by body

So, we write equation as

$$y = kx$$

here k is a constant force.

Given constant force = 5 units

i.e. k = 5.

So, our equation becomes y = 5x

We need to draw graph

Putting x = 0 ,

   y = 5(0)

   y = 0

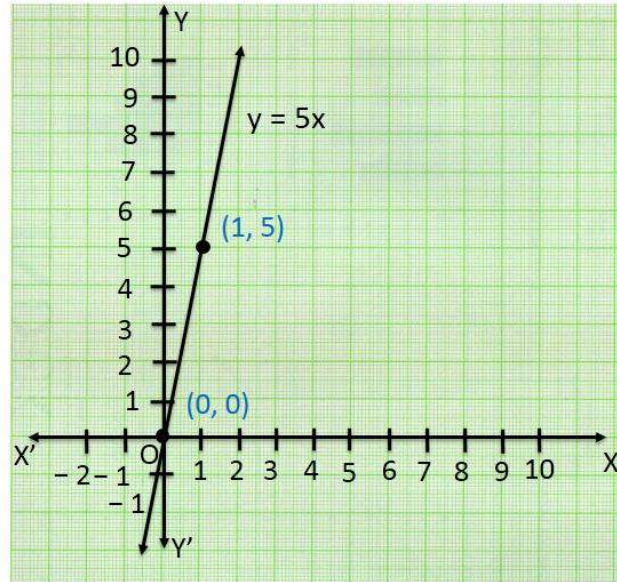So, (0,0) is a solution of the equation

Putting x = 1 ,

   y = 5(1)

   y = 5

So, (1,5) is a solution of the equation

x	0	1
y	0	5

Plotting points

x	0	1
y	0	5

In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius

: $F = \left(\frac{9}{5}\right) C + 32$.

(i) Draw the graph of the linear equation above using Celsius for *x*-axis and Fahrenheit for *y*-axis.

We need to graph of $F = \left(\frac{9}{5}\right) C + 32$

Finding solution

Putting C = 0 ,

$$F = \left(\frac{9}{5}\right) 0 + 32$$

$$F = 0 + 32$$

$$F = 32$$

So, (0,32) is a solution of the equation

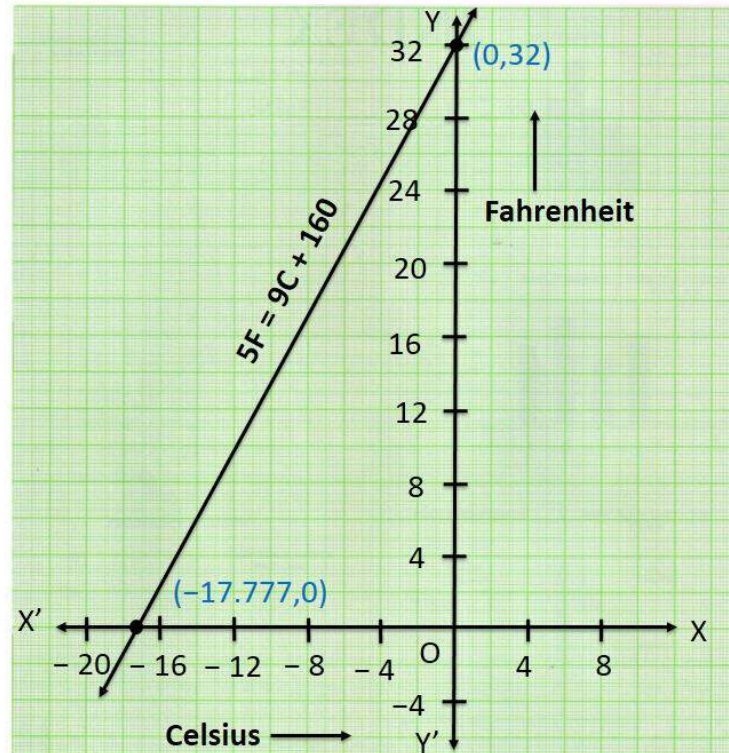**Putting F = 0** ,

$$0 = \left(\frac{9}{5}\right) C + 32$$

$$\left(\frac{9}{5}\right) C = -32$$

$$C = -32 \times \frac{5}{9} = -\frac{160}{9} = -17.777$$

So, $\left(-\frac{160}{9}, 0\right)$ is a solution of the equation

Plotting points

C	x	0	−17.777
F	y	32	0

HOMEWORK ASSIGNMENT

Exercise 4.3,4.4

AHA

1. The cost of a notebook is 5 times the cost of a pen.Write a linear equation in two variables to represent the statement.

THANKING YOU
ODM EDUCATIONAL GROUP