

## Linear Equations in Two Variables

- 1) Draw the graphs of linear equations  $y = x$  and  $y = -x$  on the same cartesian plane.  
What do you observe?
- 2) Determine the point on the graph of the linear equation  $2x + 5y = 19$ , whose ordinate is  $1\frac{1}{2}$  times its abscissa.
- 3) Draw the graph of the equation represented by a straight line which is parallel to the  $x$ -axis and at a distance 3 units below it.
- 4) Draw the graph of the linear equation whose solutions are represented by the points having the sum of the coordinates as 10 units.
- 5) Write the linear equation such that each point on its graph has an ordinate 3 times its abscissa.
- 6) If the point  $(3, 4)$  lies on the graph of  $3y = ax + 7$ , then find the value of  $a$ .
- 7) How many solution(s) of the equation  $2x + 1 = x - 3$  are there on the :
  - (i) Number line
  - (ii) Cartesian plane
- 8) Find the solution of the linear equation  $x + 2y = 8$  which represents a point on
  - (i)  $x$ -axis
  - (ii)  $y$ -axis
- 9) For what value of  $c$ , the linear equation  $2x + cy = 8$  has equal values of  $x$  and  $y$  for its solution.
- 10) Let  $y$  varies directly as  $x$ . If  $y = 12$  when  $x = 4$ , then write a linear equation. What is the value of  $y$  when  $x = 5$ ?

Write whether the following statements are True or False? Justify your answers :

- 11) The point  $(0, 3)$  lies on the graph of the linear equation  $3x + 4y = 12$ .
- 12) The graph of the linear equation  $x + 2y = 7$  passes through the point  $(0, 7)$ .
- 13) The graph given below represents the linear equation  $x + y = 0$ .

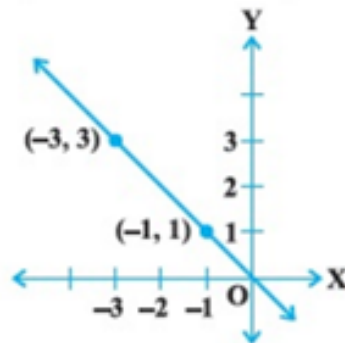


Fig. 4.1

- 14) The graph given below represents the linear equation  $x = 3$  (see Fig. 4.2).
- 15) The coordinates of points in the table:

$x$	0	1	2	3	4
$y$	2	3	4	-5	6

represent some of the solutions of the equation  $x - y + 2 = 0$ .

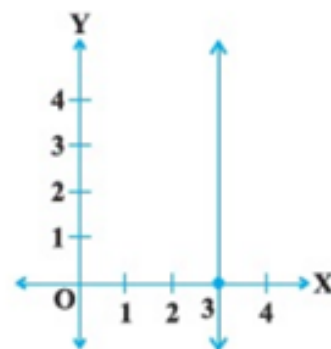


Fig. 4.2

- 16) Every point on the graph of a linear equation in two variables does not represent a solution of the linear equation.
- 17) The graph of every linear equation in two variables need not be a line.

- 18) Show that the points A (1, 2), B (-1, -16) and C (0, -7) lie on the graph of the linear equation  $y = 9x - 7$ .
- 19) The following observed values of  $x$  and  $y$  are thought to satisfy a linear equation. Write the linear equation :

$x$	6	-6
$y$	-2	6

Draw the graph using the values of  $x$ ,  $y$  as given in the above table.

At what points the graph of the linear equation

- (i) cuts the  $x$ -axis (ii) cuts the  $y$ -axis
- 20) Draw the graph of the linear equation  $3x + 4y = 6$ . At what points, the graph cuts the  $x$ -axis and the  $y$ -axis.
- 21) The linear equation that converts Fahrenheit (F) to Celsius (C) is given by the relation

$$C = \frac{5F - 160}{9}$$

- (i) If the temperature is  $86^\circ\text{F}$ , what is the temperature in Celsius?
- (ii) If the temperature is  $35^\circ\text{C}$ , what is the temperature in Fahrenheit?
- (iii) If the temperature is  $0^\circ\text{C}$  what is the temperature in Fahrenheit and if the temperature is  $0^\circ\text{F}$ , what is the temperature in Celsius?
- (iv) What is the numerical value of the temperature which is same in both the scales?
- 22) If the temperature of a liquid can be measured in Kelvin units as  $x^\circ\text{K}$  or in Fahrenheit units as  $y^\circ\text{F}$ , the relation between the two systems of measurement of temperature is given by the linear equation

$$y = \frac{9}{5}(x - 273) + 32$$

- (i) Find the temperature of the liquid in Fahrenheit if the temperature of the liquid is  $313^\circ\text{K}$ .
- (i) Find the temperature of the liquid in Fahrenheit if the temperature of the liquid is  $313^\circ\text{K}$ .
- (ii) If the temperature is  $158^\circ\text{F}$ , then find the temperature in Kelvin.
- 23) The force exerted to pull a cart is directly proportional to the acceleration produced in the body. Express the statement as a linear equation of two variables and draw the graph of the same by taking the constant mass equal to 6 kg. Read from the graph, the force required when the acceleration produced is (i)  $5 \text{ m/sec}^2$ , (ii)  $6 \text{ m/sec}^2$ .