

Subject – Maths Class- 9 Topic – Ch. 4 Linear equations in two variables

Refer to Video #6 and solve the following exercise:

Practice Exercise 4.1

- The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.
- Express the following linear equations in the form $ax + by + c = 0$ and indicate the values of a , b and c in each case :
 - $2x + 3y = 9.35$
 - $x - \frac{y}{5} - 10 = 0$
 - $-2x + 3y = 6$
 - $x = 3y$
 - $2x = -5y$
 - $3x + 2 = 0$
 - $y - 2 = 0$
 - $5 = 2x$
- Write each of the following as an equation in two variables :
 - $3x + 9 = 0$
 - $4y = 13$
 - $25 = 6x$
 - $2y - 7 = 0$
- The total cost of a mobile and a computer is ₹ 24,400. Write a linear equation in two variables to represent this statement.
- Write a linear equation such that each point on its graph has an ordinate 3 times its abscissa. [NCERT Exemplar Problems]
- The ratio of hydrogen and oxygen in water is 2 : 1. Set up a linear equation in two variables between oxygen and water.
- Twice the cost of a mobile phone is equal to 5 times the cost of a computer. Write a linear equation in two variables to represent this statement.
- One pen costs ₹ 10 and one pencil costs ₹ 7. If Mohit purchases some pens and pencils and pays ₹ 85, then write a linear equation to represent this problem.
- The ratio between male and female employees in a factory is 2 : 3. Set up a linear equation between males and employees of the factory.

Practice Exercise 4.2

- Which one of the following options is true, and why ?
 $y = 3x + 5$ has :
 - a unique solution
 - only two solutions
 - infinitely many solutions
- Write four solutions for each of the following equations :
 - $2x + y = 7$
 - $\pi x + y = 9$
 - $x = 4y$
- Check which of the following are solutions of the equation $x - 2y = 4$ and which are not :
 - (0, 2)
 - (2, 0)
 - (4, 0)
 - $(\sqrt{2}, 4\sqrt{2})$
 - (1, 1)
- Find the value of k , if $x = 2, y = 1$ is a solution of the equation $2x + 3y = k$.
- Find three different solutions for each of the following equations :
 - $5x + 3y = 4$
 - $x + 4y = 6$
 - $3y - 5 = 0$
- Find out which of the following equations have $x = 2, y = -1$ as a solution :
 - $5x + 2y = 8$
 - $4x - 3y = 14$
 - $2y + 2 = 3x + 6$
 - $3y - 5 + 5x = 2$
 - $3y - 4 + x = 2$
 - $10x + 7y - 13 = 0$
- Find the value of k , if $x = 3, y = -2$ is a solution of the equation $4x - ky = 14$.
- Find the value of k , if $x = 3, y = -4$ is a solution of the equation $kx + 4y = 5$. Hence, find one more solution of this equation.
- Find four different solutions for each of the following equations :
 - $7x - 4y = 10$
 - $3x + 2y = 8$
 - $4x + y = 9$
 - $x + 3y = 6$
 - $x = 2y$
- Find out which of the following equation have $x = 3, y = -2$ as a solution :
 - $3x - y = 11$
 - $5x + 3y = 9$
 - $4x - 3 = 2y + 11$
 - $7x - 9 + 5y + 1 = 0$
 - $2y + 5 + x = 4$
 - $7x + 3y + 15 = 0$
- For what value of c , the linear equation $2x + cy = 8$ has equal values of x and y for its solution. [NCERT Exemplar Problems]
- If $x = 2k - 1$ and $y = 3k + 1$, then find the value of k in the linear equation $3x - 2y - 8 = 0$. Also, find the actual value of x and y .
- If the solution of linear equation $6x + 14y + 8 = 0$ is (k^2, k) , then find the value of k .
- If $x = 3k + 5$ and $y = 4k - 5$, then find the value of k on the basis of linear equation $5x - 4y = 7$.
- If $x = \frac{3}{2}$ and $y = -\frac{4}{3}$ is the solution of the linear equation $2x + 4y - k = 0$, then find the value of k .

Practice Exercise 4.3

- Draw the graph of each of the following linear equations in two variables :
 (i) $x + y = 4$ (ii) $x - y = 2$
 (iii) $y = 3x$ (iv) $3 = 2x + y$
- Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?
- If the point (3, 4) lies on the graph of the equation $3y = ax + 7$, find the value of a .
- The taxi fare in a city is as follows : For the first kilometre, the fare is ₹ 8 and for the subsequent distance it is ₹ 5 per km. Taking the distance covered as x km and total fare as ₹ y , write a linear equation for this information, and draw its graph.
- From the choices given below, choose the equation whose graphs are given in figure A and B :

For Fig. 4.10

- $y = x$
- $x + y = 0$
- $y = 2x$
- $2 + 3y = 7x$

For Fig. 4.11

- $y = x + 2$
- $y = x - 2$
- $y = -x + 2$
- $x + 2y = 6$

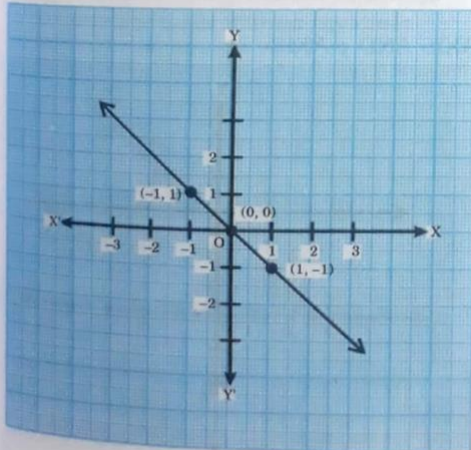


Fig. 4.10

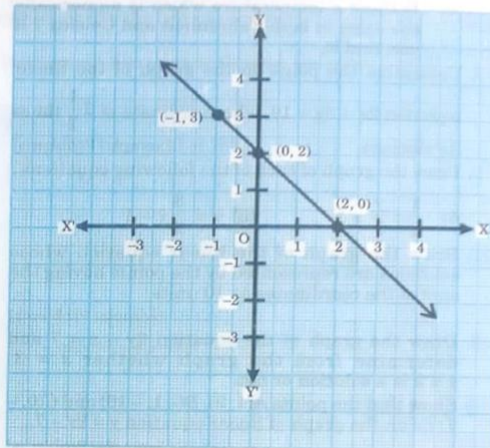


Fig. 4.11

- 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. Also read from the graph, the work done when the distance travelled by the body is :
 (i) 2 units (ii) 0 unit.
- Yamini and Fatima, two students of class IX of a school, together contributed ₹ 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. (You may take their contributions as ₹ x and ₹ y). Draw the graph of the same.
- 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 :

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

- Draw the graph of the linear equation above using Celsius for x -axis and Fahrenheit for y -axis.
- If the temperature is 30°C , what is the temperature in Fahrenheit?
- If the temperature is 95°F , what is the temperature in Celsius?