CBSE Test Paper 05

CH-4 Linear Equations in Two Variables

1. The graph of the linear equation x + y = 0 passes through the point
   a. (1, -1)
   b. (1, 1)
   c. (1, 0)
   d. (0, 1)
2. The equation of a line parallel to y-axis and 4 units to the right of origin is
   a. x = 4
   b. x = -4
   c. y = -4
   d. y = 4
3. If the point (3, 4) lies on the graph of 3y = ax + 6, then the value of 'a' is
   a. 0
   b. 3
   c. 1
   d. 2
4. The graph of a linear equation $y = \frac{9}{5}x + 32$ cuts the y-axis at the point
   a. (0 , 32)
   b. (-32 , 0)
   c. (0 , -32)
   d. (32 , 0)
5. Which of the following is a linear equation in two variables?
   a. 2x – 5y = 0
   b. x + 5 = 8
   c. $x^2 = 5x + 3$
   d. $5x = y^2 + 3$
6. Fill in the blanks:

   The equation 2x + 5y = 7 has a unique solution, if x and y are_____.

7. Fill in the blanks:

If πx + 3y = 25 and y = 1, then the value of x will be_____.

8. Check whether the graph of the equation y = 3x + 5 passes through the origin or not.

9. Find the value of λ, if x = -λ and y = $\frac{5}{2}$ is a solution of the equation x + 4y - 7 = 0.

10. Express the following linear equations in the form ax + by + c = 0 and indicate the values of a, b and c in:
$x - \frac{y}{5} - 10 = 0$

11. Express y in terms of x, given that 2y – 4x = 7. Check whether (–1, –1) is a point on the given line.

12. Find whether (2, 0) is the solution of the equation x – 2y = 4 or not ?

13. Draw the graph of the following equation and check whether :

    i. x = 2, y = 5

    ii. x = –1, y = 3 are the solutions for 2x + 3y = 4

14. Write two solutions for the following equation: x = 6y.

15. 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 from the graph read the work done when the distance travelled by the body is:

    i. 2 units

    ii. 0 units

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Solution

1. (a) (1, -1)

   Explanation: The graph of the linear equation x + y = 0 passes through the point (1,-1) because the co-ordinate of x and y axis satisfy the given equation

   x + y =0

   1 - 1 = 0

   so we can say (1,-1) is a solution of above equation

2. (a) x = 4

   Explanation: The equation of a line parallel to y-axis at a distance of 4 units from it, to its right from the origin.

   x = 4

   because when a line parallel to y axis in that case equation of line is x = 4

   so required equation is x = 4

3. (d) 2

   Explanation:

   the point (3, 4) lies on the graph of 3y = ax + 6

   so it will satisfy the equation

   3 y=a x+6

   3 (y)=a x+6

   12=3 a+6

   12-6=3 a

   3 a=6

   $a = \frac{6}{3}$

   a=2

4. (a) (0 , 32)

   Explanation:

   when the graph cut at y axis in that case the value of x- coordinate is 0

$y = \frac{9}{5}x + 32$
$y = \frac{9}{5} \cdot 0 + 32$
y=32

so the co-ordinates are (32,0)

5. (a) 2x – 5y = 0

   Explanation: In linear equation power of variable x and y should be 1 and here, the given linear equation has two variable x and y.

6. natural numbers

7. 7

8. Substituting $(0, 0)$ in the given equation, we get

   $0 = 3 \times 0 + 5$, which is not true.
   $\therefore$ it does not pass through the origin.

9. We have,
   x + 4y - 7 = 0
   It is given that x = -λ and y = $\frac{5}{2}$ is a solution of the equation x + 4y - 7 = 0.
   $\therefore$ -λ + 4 $\times$ $\frac{5}{2}$ - 7 = 0
   $\Rightarrow$ -λ + 10 - 7 = 0
   $\Rightarrow$ -λ = -3
   $\Rightarrow \lambda$ = 3

10. We need to express the linear equation $x - \frac{y}{5} - 10 = 0$ in the form ax + by + c = 0 and indicate the values of a, b and c.

    $x - \frac{y}{5} - 10 = 0$ can also be written as $1 \cdot x - \frac{y}{5} - 10 = 0.$

    We need to compare the equation $1 \cdot x - \frac{y}{5} - 10 = 0$ with the general equation ax + by + c = 0, to get the values of a, b and c.

    Therefore, we can conclude that $a = 1, b = -\frac{1}{5}$ and $c = -10$

11. 2y – 4x = 7

$\Rightarrow$ 2y = 4x + 7

$\Rightarrow$ y = $\frac{4x+7}{2}$ ...(1)

(1) express y in terms of x

Put x = –1 in equation (1), we get

y = $\frac{4(-1)+7}{2}$ = $\frac{3}{2} \neq$ -1

$\therefore$ (–1, –1) is not a point on the given line.

12. x-2y=4

Put x = 2 and y = 0 in given equation, we get

x – 2y = 2 – 2(0) = 2 – 0 = 2, which is not 4.

$\therefore$ (2, 0) is not a solution of given equation.

13. 2x + 3y = 4

$\Rightarrow$ 3y = 4– 2x

$\Rightarrow y = \frac{4-2x}{3}$

x	2	–1
y	0	2

We plot the points (2, 0) and (–1, 2) on the graph paper and join the same by a ruler to get the line which is the graph of the equation 2x + 3y = 4.

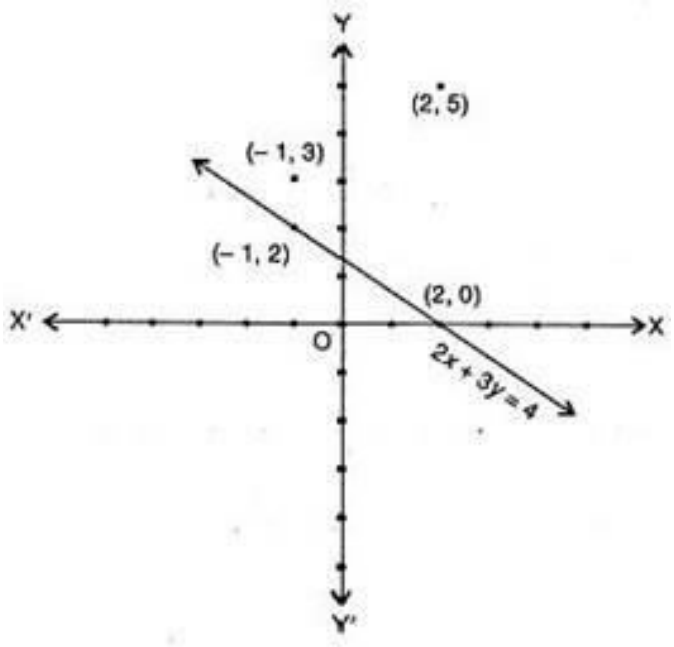
i. The point (2, 5) does not lie on the graph

$\therefore$ x = 2, y = 5 is not a solution.

ii. $\because$The point (–1, 3) does not lie on the graph

$\therefore$ x = –1, y = 3 is not a solution.

iii.



14. We can pick two arbitrary values for x and put them into the equation to find the corresponding y

We have,

x = 6y ...(i)

Substituting y = 0 in this equation,

x = 6(0)

x = 0

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

Again put y = 1 in eq (i),

x = 6(1) = 6

So, (6,1) is a solution of the given equation.

∴ We obtain (0, 0) and (6,1) as two solutions to the given equation.

15. We are given that the work done by a body on application of a constant force is directly proportional to the distance traveled by the body.

Let the work done be W and let constant force be F.

Let distance traveled by the body be D.

According to the question,

$W \propto D \Rightarrow W = F \cdot D$

We need to draw the graph of the linear equation $W = F \cdot D$ when the force is constant as 5 units,

i.e.,$W = 5D$

We can conclude that
$D = 0 \Rightarrow W = 0; D = 2 \Rightarrow W = 10$ and $D = 1 \Rightarrow W = 5$ are the solutions of the linear equation $W = 5D$

D	0	2	1
W	0	10	5