CBSE Test Paper 01

CH-4 Linear Equations in Two Variables

- 1. For what value of 'k', x = 2 and y = -1 is a solution of x + 3y k = 0?
 - a. 2
 - b. -2
 - **c.** -1
 - d. 1
- 2. If we divide both sides of a linear equation with a non-zero number, then the solution of the linear equation
 - a. changes
 - b. remains the same
 - c. none of these
 - d. gets divided by th<mark>e number</mark>
- 3. If the line represented by the equation 3x + ky = 9 passes through the points (2, 3), then the value of 'k' is
 - a. 2
 - b. 1
 - c. 3
 - d. 4
- 4. How many linear equations in 'x' and 'y' can be satisfied by x = 2, y = 3?
 - a. only one
 - b. none of these
 - c. many
 - d. two
- 5. The graph of the linear equation y = 3x passes through the point

a.
$$(0, -\frac{2}{3})$$

b. $(-\frac{2}{3}, 0)$
c. $(0, \frac{2}{3})$
d. $(\frac{2}{3}, 2)$

6. Fill in the blanks:

y + 7 is the equation of a line parallel to _____

7. Fill in the blanks:

The equation of X-axis is_____.

- 8. If x = 1, y = 2 is a solution of the equation $a^2x + ay = 3$, then find the values of a.
- 9. Arvind and Vinod have some erasers. Arvind said to Vinod, if you will give me 10 erasers, I will have twice the erasers left with you. Represent this situation as a linear equation in two variables.
- Express the following linear equation in the form ax + by + c = 0 and indicate the values of a, b and c.

5 = 2x

11. Find whether the given equation have x = 2, y = 1 as a solution:

2x - 3y = 1

- 12. If x = 1 and y = 6 is solution of the equation $8x ay + a^2 = 0$, find the values of a.
- 13. Find four solutions for the following equation: 12x + 5y = 0
- 14. Draw the graph of the following linear equation in two variables: 2y = -x + 1.
- 15. Draw the graph of the equation 3x + 4y = 12 and find the co-ordinates of the points of intersection of the equation with the co-ordinate axes.

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Solution

1. (c) -1

Explanation: For finding value of 'k', we put x = 2 and y = -1 iin a equation x + 3y - k = 0

x+3 y-k=0 2+3(-1)=k

2-3=k

k=-1

2. (b) remains the same

Explanation: If then for any non-zero c. We can divide both sides of an equation by a non-zero number c, without changing the equation.

3. (b) 1

Explanation: If the line represented by the equation 3x + ky = 9 passes through the points (2, 3) then (2,3) will satisy the equation 3x + ky = 9

- 3 (2) + 3k = 9 =>6 + 3k = 9 =>3k = 9-6 =>3k = 3 => k = 1
- 4. (c) many

Explanation: there are infinite many eqution which satisfy the given value x = 2, y = 3 for example

x + y = 5 x - y = -1 3x - 2y = 0etc..... 5. (d) $(\frac{2}{3}, 2)$

Explanation:

y = 3x $\frac{y}{3} = x$ For, y=2, the value of x will be $\frac{2}{3}$ So $(\frac{2}{3}, 2)$ 6. x-axis

7. y = 0

8. It is given that x = 1, y = 2 is a solution of $a^2x + ay = 3$.

 $\therefore a^{2} \times 1 + a \times 2 = 3$ $\Rightarrow a^{2} + 2a - 3 = 0$ $\Rightarrow a^{2} + 3a - a - 3 = 0$ $\Rightarrow a(a + 3) - 1(a + 3) = 0$ $\Rightarrow (a - 1) (a + 3) = 0$ $\Rightarrow a - 1 = 0 \text{ or, } a + 3 = 0 \Rightarrow a = 1, -3$

9. Let number of erasers Arvind have be x and number of erasers Vinod have be y

if Vinod gives 10 erasers to Arvind

Erasers with Arvind = x+10, Erasers left with Vinod = y-10

A.T.Q. Erasers with Arvind = 2 × Erasers left with Vinod $\Rightarrow x+10 = 2(y-10)$ $\Rightarrow x +10 = 2y-20$ $\Rightarrow x - 2y + 30 = 0$

10. 5 = 2x

$$\Rightarrow -2x + 5 = 0$$
$$\Rightarrow -2x + 0.y - 5 = 0$$

Comparing with ax + by + c = 0, we get

$$a = -2, b = 0, c = 5$$

- 11. For x = 2, y = 1L.H.S. = 2x - 3y = 2(2) - 3(1) = 4 - 3 = 1 = R.H.S. ∴ x = 2, y = 1 is a solution of 2x - 3y = 1.
- 12. We have,

$$8x - ay + a^2 = 0.....(i)$$

It is given that x = 1 and y = 6 is a solution of the equation $8x - ay + a^2 = 0$ On putting the corresponding value of x and y in (1), we get



13. 12x + 5y = 0

⇒ 5y = -12x
⇒
$$y = \frac{-12}{5}x$$

Put x = 0, then $y = \frac{-12}{5}(0) = 0$
Put x = 5, then $y = \frac{-12}{5}(5) = -12$
Put x = 10, then $y = \frac{-12}{5}(10) = -24$
Put x = 15, then $y = \frac{-12}{5}(15) = -36$
∴ (0, 0), (5, -12), (10, -24) and (15, -36)

: (0, 0), (5, -12), (10, -24) and (15, -36) are the four solutions of the equation 12x + 5y = 0

14. We have,

2y = -x + 1 $\Rightarrow y = \frac{1-x}{2}$(i) Putting x = 1 in eq. (i), we get $y = \frac{1-1}{2} = 0$ Putting x = -1in eq. (i), we get $y = \frac{1-(-1)}{2} = \frac{1+1}{2} = 1$ Putting x = 3 in eq. (i), we get $y = \frac{1-(3)}{2} = \frac{-2}{2} = -1$

Thus, we have the following table represent the equation 2y = -x + 1.

| X | 1 | -1 | 3 |
|---|---|----|----|
| у | 0 | 1 | -1 |

Graph of the equation 2y = -x + 1:



15. 3x + 4y = 12

Express y in terms of x.such that it is in the form of

y = mx + c
4y = 12-3x
y =..
$$\frac{12-3x}{4}$$
.....(i)
For graph,
Let x = 2, put in (i)
 $y = \frac{12-3(2)}{4} = \frac{12-6}{4} = \frac{6}{4} = \frac{3}{2} = 1.5$
Let x = 4, put in (i)
 $y = \frac{12-3(4)}{4} = \frac{12-12}{4} = \frac{0}{4} = 0$
When line meet x-axis,y = 0
 $\therefore 3x + 4(0) = 12$

$$3x = 12 \Rightarrow x = \frac{12}{3} = 4$$

When line meet y-axis, x = 0

Then 3 (0) + 4y = 12 therefore y = 3

: Point of intersection of x-axis is (4, 0).

| X | 2 | 4 | 0 |
|---|-----|---|---|
| У | 1.5 | 0 | 3 |
| | А | В | С |

... Point of intersection with x-axis is (4, 0) and point of intersection with y-axis is (0,3)

