

CLASS-X

WORKSHEET-1

CHAPTER-3

LINEAR EQUATIONS IN TWO VARIABLES

- Q1. Draw the graph of the equation $2x+y=7$. From the graph:

- Find whether the point (3,4) lies on the graph.
- Find whether $x=3$, $y=1$ is a solution of the equation .
- Find the value of x , when $y=1$.
- Find the point where the equation meets the x-axis .

- Q2. Draw the graph using the following table :

x	0	1	2	b
y	1	3	a	-3

From the graph, find the values of 'a' and 'b' .

- Q3. Solve the following system of linear equations graphically

- a) $2x + 3y = 12$
 $2y - 1 = x$
- b) $3x - 4y - 12 = 0$
 $x + 2y - 4 = 0$

- Q4. Draw the graph of the system of equations $x+y=5$ and $2x-y+2=0$. Shade the region bounded by these lines and the x -axis. Find the area of the shaded region.

- Q5. Solve graphically the system

$$2x - 3y = 1$$

$$3x - 4y = 1$$

Does the point $(3,2)$ lie on any of the line ? Write its equation .

- Q6. Draw the graphs of $2x - y = 1$ and $x + 2y = 13$. Find the coordinates of the vertices of the triangle formed by the two lines and the y-axis ?

- Q7. By comparing the ratios a_1/a_2 , b_1/b_2 and c_1/c_2 , find out for what value (s) of α , the lines representing the following equations have a unique solution, no solution or infinitely many solution :

$$\alpha x + 3y = \alpha - 3$$

$$12x + \alpha y = \alpha$$

- Q8. Determine the value of k so that the following pairs of equations are inconsistent

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

$$(k^2 + 1)x + (k - 2)y - 5 = 0$$

Q9. Given below are three linear equations . Two of them have infinitely many solutions and two have a unique solution . State the pairs :

$$4x - 5y = 3, \quad 8x - 10y = 6, \quad 5x - 4y = 5$$

Q10. Solve the following pair of linear equations :

a) $\frac{x}{6} + \frac{y}{4} = 1, \quad \frac{3x}{4} - \frac{(x-y)}{2} = \frac{7}{4}$

b) $(a + 2b)x + (2a - b)y = 2 \quad (a - 2b)x + (2a + b)y = 3$

c) $(a - b)x + (a + b)y = a^2 - 2ab - b^2 \quad (a + b)(x + y) = a^2 + b^2$

d) $\frac{ax}{b} - \frac{by}{a} = a + b \quad ax - by = 2ab$

e) $\frac{5}{(x+1)} - \frac{2}{(y-1)} = \frac{1}{2} \quad \frac{10}{(x+1)} + \frac{2}{(y-1)} = \frac{5}{2}$

f) $\sqrt{7}x + \sqrt{11}y = 0 \quad \sqrt{3}x - \sqrt{5}y = 0$

g) $mx - ny = m^2 + n^2 \quad x - y = 2n$

h) $\frac{xy}{(x+y)} = \frac{6}{5} \quad \frac{xy}{(y-x)} = 6 \quad \{(x+y) \neq 0, (y-x) \neq 0\}$

i) $\frac{x}{a} - \frac{y}{b} = (a-b) \quad \frac{x}{a^2} - \frac{y}{b^2} = 0$

j) $b^2x/a - a^2y/b = ab(a+b) \quad b^2x - a^2y = 2a^2b^2$

ANSWERS:-

Ans. 7. Unique sol. : $\alpha \neq 6$ or -6 , No solution : $\alpha = -6$, Infinitely : $\alpha = 6$

Ans. 8. $k = -1$

Ans. 10. a) $x = 3, y = 2$

b) $x = \frac{(5b-2a)}{10ab}, \quad y = \frac{(a+10b)}{10ab}$

c) $x = a + b, \quad y = -2ab/(a + b)$

d) $x = b, \quad y = -a$

e) $x = 4, \quad y = 5$

f) $x = 0, \quad y = 0$

g) $x = m + n, \quad y = m - n$

h) $x = 2, \quad y = 3$

i) $x = a^2, \quad y = b^2$

j) $x = a^2, \quad y = -b^2$