CLASS-X

WORKSHEET-1

CHAPTER-3

LINEAR EQUATIONS IN TWO VARIABLES

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

a) Find whether the point (3,4) lies on the graph.

b) Find whether $x=3$, $y=1$ is a solution of the equation .

c) Find the value of x, when $y=1$.

d) Find the point where the equation meets the x-axis .

Q2. Draw the graph using the followig 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 :

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

Q10. Solve the following pair of linear equations :

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

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

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

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

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

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

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

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

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

j) $\frac{b^2x}{a} - \frac{a^2y}{b} = ab(a + b)$ $b^2x - a^2y = 2a^2b^2$

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

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

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

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

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

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

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

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

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