

PAIR OF LINEAR EQUATION IN TWO VARIABLE WS 1

Class 10 - Mathematics

Section A

1. Match the column: [2]

(a) If the point (1, 2) lies on the line $2x + ay = 8$, then a =	(i) 1
(b) The number of solutions of the equation $x + 5y = 11$, where x, y are natural number is (are)	(ii) 5
(c) The number of the line passing through (3, 4) and parallel to the x-axis is (are)	(iii) 2
(d) The value of b so that the point (5, b) lies on the line represent by $2x - 3y + 5 = 0$ is	(iv) 3

2. Match the column: [2]

(a) The equation representing y-axis	(i) 15
(b) The equation representing x-axis	(ii) $y = 0$
(c) The distance between the graph of the equation $y = -1$ and $y = 3$	(iii) $x = 0$
(d) If $p = 100r - t$, at $r = 0.25$ and $t = 10$, $p =$	(iv) 4 unit

3. Match the following: [2]

(a) The equation of a line which is parallel to $2x + 3y = 6$ is	(i) $4x + 6y = 12$
(b) The equation of a line which is intersecting to $2x + 3y = 6$ is	(ii) $12x + 13y = 12$
(c) The equation of a line which is coincident to $2x + 3y = 6$	(iii) $2x + 3y = 12$
(d) The equation of a line which is not coincident to $3x + 3y = 13$ is	(iv) $4x + 3y = 6$

Section B

4. Solve the system of equations graphically: [3]

$$3x - 4y = 7$$

$$5x + 2y = 3$$

Shade the region between the lines and the y-axis

5. Graphically, solve the following pair of equations: [3]

$$2x + y = 6$$

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

Find the ratio of the areas of the two triangles formed by the lines representing these equations with the x-axis and the lines with the y-axis.

6. Aditya is walking along the line joining points (1,4) and (0,6). Aditi is walking along the line joining points (3,4) and (1,0). Represent the graph and find the point where both cross each other. [3]

7. For what value of k, the following system of equations will represent the coincident lines? [3]

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

$$2x + ky + 14 = 0$$

8. Check graphically whether the pair of equations $x + 3y = 6$ and $2x - 3y = 12$ is consistent. If so, solve them graphically. [3]
9. Given the linear equation $2x + 3y - 8 = 0$, write another linear equation in two variables such that the geometrical representation of the pair so formed is: [3]
- intersecting lines
 - parallel lines
 - coincident lines
10. Solve the system of equation graphically: [3]
 $x - 2y = 5$ and $2x + 3y = 10$
 Also, find the points where the lines represented by the given equations intersect the x-axis.
11. Determine graphically the coordinates of the vertices of the triangle, the equation of whose sides are [3]
 $y = x$, $3y = x$ and $x + y = 8$.
12. Draw the graphs of the pair of linear equations $x - y + 2 = 0$ and $4x - y - 4 = 0$. Calculate the area of the triangle [3]
 formed by the lines so drawn and the x-axis.
13. Determine by drawing graphs, whether the following pair of linear equations has a unique solution or not: $3x +$ [3]
 $4y = 12$; $y = 2$.
14. Graph the following pairs of equations. State whether the equations are consistent, inconsistent or dependent. $3x$ [3]
 $+ y = 2$; $6x + 2y = 4$
15. Represent the following pair of linear equations graphically and hence comment on the condition of consistency [3]
 of this pair.
 $x - 5y = 6$, $2x - 10y = 12$
16. Determine by drawing the graphs, whether the system of linear equations has a unique solution or not: [3]
 $2x + 5y = 10$; $x - 3 = 0$
17. Determine whether the pair of equations $3x + y + 1 = 0$, $2x - 3y + 8 = 0$ is consistent. If so, solve them [3]
 graphically.
18. Champa went to a **Sale** to purchase some pants and skirts. When her friends asked her how many of each she [3]
 had bought, she answered, **The number of skirts is two less than twice the number of pants purchased. Also, the number of skirts is four less than four times the number of pants purchased.** Help her friends to find how many pants and skirts Champa bought.
19. Is the pair of linear equation consistent/inconsistent? If consistent, obtain the solution graphically: $x + y = 5$, $2x$ [3]
 $+ 2y = 10$
20. Determine graphically the coordinates of the vertices of a triangle, the equations of whose sides are: [3]
 $y = x$, $y = 2x$ and $y + x = 6$
21. Sangeeta has socks and Handkerchiefs which are together 40 in number. If she has 5 less handkerchiefs and 5 [3]
 more socks, the number of socks becomes four times the number of handkerchiefs. Represent this situation algebraically and graphically.
22. Graph the following pairs of equations. State whether the equations are consistent, inconsistent or dependent. $x +$ [3]
 $2y = 3$; $2x + 4y = 8$
23. Draw the Graphs of the equations $x = 3$, $x = 5$ and $2x - y - 4 = 0$. Also find the area of the quadrilateral formed [3]
 by the lines and the x-axis.

Section C

24. Use a single graph paper and draw the graph of the following equations: [5]

$$2y - x = 8; 5y - x = 14, y - 2x = 1$$

Obtain the vertices of the triangle so obtained.

25. Determine graphically the vertices of a trapezium, the equations of whose sides are: $x = 0$, $y = 0$, $y = 4$ and $2x + y = 6$ Also, determine its area. [5]
26. Solve graphically the pair of linear equations : [5]
 $4x - 3y = 6$ and $7x + 3y = 27$
Find the coordinates of the vertices of the triangular region formed by these lines and y-axis. Also, calculate the area of this triangle.
27. Solve the system of equation [5]
 $x + y = 4$,
 $2x - 3y = 3$ graphically.
28. Draw the graphs of the following equations: [5]
 $2x - 3y + 6 = 0$
 $2x + 3y - 18 = 0$
 $y - 2 = 0$
Find the vertices of the triangle so obtained. Also, find the area of the triangle.
29. Determine graphically whether the following pair of linear equations: [5]
 $3x - y = 7$
 $2x + 5y + 1 = 0$ has:
i. a unique solution
ii. infinitely many solutions or
iii. no solution.
30. Is the pair of linear equation consistent/inconsistent? If consistent, obtain the solution graphically: $2x + y - 6 = 0$; [5]
 $4x - 2y - 4 = 0$
31. Draw the graphs of the following equations: [5]
 $2x - y - 2 = 0$
 $4x + 3y - 24 = 0$
 $y + 4 = 0$
Obtain the vertices of the triangle so obtained. Also, determine its area.
32. Solve the system of equations $4x - y - 4 = 0$, $3x + 2y - 14 = 0$ graphically and find the vertices and area of the [5]
triangle formed by these lines and the y-axis.
33. Solve the system of equation $2x + y - 3 = 0$, $2x - 3y - 7 = 0$ graphically. [5]
34. Solve the system of equation [5]
 $2x - 3y + 13 = 0$,
 $3x - 2y + 12 = 0$ graphically.
35. Akhila went to a fair in her village. She wanted to enjoy rides on the Giant Wheel and play Hoopla (a game in [5]
which you throw a ring on the items kept in the stall, and if the ring covers any object completely, you get it).
The number of times she played Hoopla is half the number of rides she had on the Giant Wheel. Each ride costs
Rs.3, and a game of Hoopla costs Rs.4, how would you find out the number of rides she had and how many
times she played Hoopla if she spent Rs. 20 in the fair. Represent the situation algebraically and graphically.
36. Solve the pair of linear equations $x - 2y + 4 = 0$ and $x + y = 2$ graphically. [5]
37. Solve the system of equations $2x - 5y + 4 = 0$, $2x + y - 8 = 0$ graphically and find the vertices and area of the [5]

triangle formed by these lines and the y-axis.

38. For Uttarakhand flood victims two sections A and B of class X contributed Rs 1,500. If the contribution of X-A was Rs 100 less than that of X-B, find graphically the amounts contributed by both the sections. [5]
39. Show graphically that the given system of equations has infinitely many solutions. [5]
 $x - 2y = 5$
 $3x - 6y = 15$
40. Solve graphically the system of linear equation: [5]
 $4x - 3y + 4 = 0$
 $4x + 3y - 20 = 0$
Find the area bounded by these lines and x-axis.
41. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the x-axis, and shade the triangular region. [5]
42. Solve graphically the equations: [5]
 $x + 2y = 8, y - x = 1$
Find the coordinates of the points where the two lines meet the y-axis.
43. Draw the graphs of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the co-ordinates of the vertices of the triangle formed by these lines and the X-axis and shade the triangular region. [5]
44. Solve the following system of linear equations graphically: [5]
 $x - y = 1$
 $2x + y = 8$
Shade the area bounded by these two lines and y-axis. Also, determine this area.
45. Draw the graphs of $2x + y = 6$ and $2x - y + 2 = 0$. Shade the region bounded by these lines and x-axis. Find the area of the shaded region. [5]
46. Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m. find the dimensions of the garden. [5]
47. If we add 1 to the numerator of a fraction, it reduces to $\frac{1}{2}$. If we subtract 1 from the denominator, it reduces to $\frac{1}{3}$. Represents This situation algebraically and graphically. [5]
48. Solve the system of equations $x - 2y + 2 = 0, 2x + y - 6 = 0$ graphically and find the vertices and area of the triangle formed by these lines and the x-axis. [5]
49. Form a pair of linear equations in two variables using the following information and solve it graphically. Five years ago, sagar was twice as old as Tiru. Sagar's age will be ten years more than Tiru's age. Find their present age. [5]
50. Solve the system of linear equations graphically and shade the region between the two lines and x-axis: [5]
 $2x + 3y = 12$
 $x - y - 1 = 0$
51. Solve the system of equations graphically: [5]
 $x + y = 3$
 $3x - 2y = 4$
52. Draw the graphs of the pair of linear equations: [5]
 $x + 2y = 5$ and $2x - 3y = -4$
Also find the points where the lines meet the x-axis.
53. Form the pair of linear equations in the problem, and find it's solution graphically. [5]
10 students of class X took part in Mathematics quiz. If the number of girls is 4 more than the number of boys,

- find the number of boys and girls who took part in the quiz.
54. Determine whether the following system of linear equations is inconsistent or not: $3x - 5y = 20$; $6x - 10y = -40$. [5]
55. Solve the system of equations $x - y + 3 = 0$, $2x + 3y - 4 = 0$ graphically and find the vertices and area of the triangle formed by these lines and the x-axis. [5]
56. Solve the following system of linear equations graphically: [5]
 $2x - y - 4 = 0$
 $x + y + 1 = 0$
 Find the points where the lines meet y-axis.
57. Draw the graphs of the following equations: $2x - y = 1$, $x + 2y = 13$ Find the solution of the equations from the graph and shade the triangular region formed by the lines and the Y-axis. [5]
58. Solve the following pair of linear equations graphically: $2x + 3y = 12$ and $x - y = 1$. Find the area of the region bounded by the two lines representing the above equations and Y-axis. [5]
59. Solve the following pair of linear equations graphically : [5]
 $x - y = 1$
 $2x + y = 8$.
 Also find the co-ordinates of the points where the lines represented by the above equation intersect Y-axis.
60. Solve graphically system of linear equations. [5]
 $2x + y - 11 = 0$,
 $x - y - 1 = 0$
 Also find the coordinates of the points where the lines meet y-axis.
61. Show graphically that the system of equations [5]
 $3x - y = 2$
 $9x - 3y = 6$
 has infinitely many solutions.
62. Draw the graphs of the following equations on the same graph paper $2x + y = 2$; $2x + y = 6$ [5]
 Find the coordinates of the vertices of the trapezium formed by these lines. Also, find the area of the trapezium so formed.
63. Solve graphically system of linear equations. Also, find the coordinates of the points where the lines meet the axis of x in each system: [5]
 $2x + 3y = 8$
 $x - 2y = -3$
64. Draw graph of the equation $2x + y = 7$. From your graph [5]
 find
 i. whether the point (3, 4) lies on the graph.
 ii. if $x = 3$, $y = 1$ is a solution of the equation.
 iii. the value of x when $y = -1$.
 iv. the value of y when $x = -1$.
65. The path of a train A is given by the equation $x + 2y - 4 = 0$ and the path of another train B is given by the [5]
 equation $2x + 4y - 12 = 0$. Represent this situation graphically.
66. Solve graphically system of linear equations. Also find the coordinates of the points where the lines meet y-axis. [5]
 $2x - y - 5 = 0$

$$x - y - 3 = 0$$

67. Solve the following system of equations graphically

[5]

$$x + 3y = 6$$

$$2x - 3y = 12$$

and hence find the value of a, if $4x + 3y = a$.

Section D

68. **State True or False:**

[8]

- (a) The line represented by $x = 7$ is parallel to the x-axis. [1]
- (b) A system of linear equations in two variables has a unique solution, if their graphs do not intersect. [1]
- (c) The lines representing the pair of equations $6x - 3y + 10 = 0$ and $2x - y + 9 = 0$ are coincident. [1]
- (d) $2x + 6y = 12$ and $8x + 24y = 65$ are consistent pair of equation. [1]
- (e) Lines represented by $x - y = 0$ and $x + y = 0$ are perpendicular to each other. [1]
- (f) Pair of lines $117x + 14y = 30$, $65x + 11y = 19$ are consistent and have a unique solution. [1]
- (g) Line $4x + 5y = 0$ and $11x + 17y = 0$ both passes through origin. [1]
- (h) $x + 6y = 12$ and $4x + 24y = 64$ are inconsistent pair of equation. [1]