

**ASSIGNMENTS CLASS X**  
**LINEAR EQUATIONS IN TWO VARIABLES**

**1 mark questions:**

1. For what value of  $k$  the equations  $2x + 6y - 1 = 0$  and  $4x + ky - 3 = 0$  are parallel?
2. If  $2x + 3y = 5$ , find an equation which is intersecting to this.
3. For what value of  $k$ , pair of linear equations  $kx + 3y + 2 = 0$ ,  $2x + y + 3 = 0$  have no solution?
4. For the equation  $2x - 3y = 5$  write an equation which is coincident.
- 5 Check whether the following system of equations is consistent or not.  
 $2x + 3y = -8$ ,                       $4x + 6y = 16$
6. Given  $2x - 7y = 12$ , write another line which is parallel to the line.
7. A pair of linear equations are given by  $3x + 4y = 5$ ,  $6x + 8y = 7$ . Find the nature of the lines.
8. Check whether  $x = 1$ ,  $y = -2$  is a solution of the system of simultaneous linear equations  $2x + y = 0$  and  $x - y = 3$
9. obtain the condition for the following pair of linear equations have a unique solution :  $ax + by = c$  and  $lx + my = n$
10. What types of lines do the pair of equations  $x=c$  and  $y=c$  represent graphically?
11. Write the pair of linear equations which have solutions  $x=2$ ,  $y=-2$ .
12. For what value of  $a$  the following pair of linear equations has infinitely many solutions ?  
 $2x + ay = 8$  and  $ax + 8y = a$
13. For which value of  $p$  the pair of equations given below has unique solution.  
 $4x + py + 8 = 0$  ;  $2x + 2y + 2 = 0$

**2 mark questions:**

1. If  $\alpha$  and  $\beta$  are the zeros of  $x^2 + 2x + 15$ , find the value of

$$\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$$

2. If the lines given by  $3x + 2ky = 2$  and  $2x + 5y + 1 = 0$  are inconsistent find  $k$ .

3. Solve for x and y:

$$24x + 23y = 117$$

$$23x + 24y = 118$$

4. One third of the perimeter of a rectangular garden, whose length is 6 m more than breadth is 28 m. Find the dimensions of the garden.

5. For what value of k, the following systems of equations have infinitely many solutions?

$$3x - 4y = 5$$

$$6x + (2k + 1)y = 10$$

6. Two numbers are in ratio of 4 : 5. If 8 is subtracted from each of the numbers the ratio becomes 3 : 4. Find the numbers.

9. Solve the following

$$2x + 3y = 7$$

$$3x - 5y = 1$$

7. If the sum of two consecutive odd integers is 20, find the numbers.

8. Solve the following system of equations by substitution method

$$3x - y = 7,$$

$$4x - 5y = 2$$

9. Solve for x and y:

$$29x + 32y = 26$$

$$32x + 29y = 35$$

10. Determine whether the following system of equation has a unique solution, no solutions or infinitely many solutions.

$$3x - 7y = 5, \quad 6x - 14y = 10$$

11. Solve for x and y using elimination method :

$$x + 8y = 36, \quad 3x - 2y = 4$$

12. Solve :  $3x - 2y = 4$ ,  $4x + y = 9$  using cross multiplication method

13. Solve by method of substitution :

$$2x + 3y = 10, \quad x + y = 4$$

14. For what value of k will the equations  $x + 3y + 5 = 0$ ,  $3x + ky + 15 = 0$  represent coincident lines?

15. Solve :  $\frac{4}{x} + 3y = 14$  ,  $\frac{3}{x} - 4y = 23$

16 Find a, if the line  $3x + ay = 8$  passes through the intersection of lines representing the equations :  $3x - 2y = 10$  and  $5x + y = 8$

17. Use elimination method to find all possible solutions of the following pair linear equations :  $ax + by - a + b = 0$  and  $bx - ay - a - b = 0$

18. Solve the following equations for x and y :

$$\begin{aligned} mx - ny &= m^2 + n^2 \\ x + y &= 2m \end{aligned}$$

### **3 mark questions:**

1. Solve for x & y

$$3x + \frac{y}{4} = \frac{7}{4} \quad \dots(1)$$

$$\frac{x}{6} + \frac{2y}{3} = -\frac{5}{3} \quad \dots(2)$$

2 The monthly incomes of A and B are in ratio of 6 : 4 & their monthly expenses are in ratio 4 : 2. If each saves Rs 20000/per month, find monthly income of each.

3. The sum of a two digit number and the number obtained by reversing the digits is 55. If the digits of a number differ by 1, find the number.

4. The sum of numerator & denominator of a fraction is 13. If 3 is added to numerator & 5 to denominator, the fraction becomes  $\frac{1}{2}$ . Find the fraction.

5. A man has 60 notes in all of Rs 10 and Rs 20 denomination. If the total worth of notes is Rs 800, find how many notes of each type?

6. 12. Solve the following equation  $2x + 5y = 11$  and  $4x - 3y = 9$ .

7. The denominator of a rational number is greater than its numerator by 8. If the denominator is decreased by 1 and numerator is increased by 17, the number obtained is  $\frac{3}{2}$ . Find the rational number.

8. For what values of  $k$  will the following pair of linear equations have infinitely many solutions?

$$kx + 3y - (k - 3) = 0; 12x + ky - k = 0$$

9. Solve the following system of linear equations:

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

$$(a + b)(x + y) = a^2 + b^2$$

10. Solve :  $\frac{7}{x+1} + \frac{1}{y-1} = 2$

$$\frac{14}{x+1} - \frac{4}{y-1} = -2$$

11. Two numbers are in ratio of 8 : 9. If 5 is subtracted from each, the ratio becomes 7 : 8. find the numbers.

12. Solve:  $\frac{x}{3} + y = 0.6$

$$\frac{4}{x - \frac{y}{2}} = 10$$

13. Solve:  $\sqrt{3}x - \sqrt{2}y = 0$

$$\sqrt{2}x - \sqrt{8}y = 0$$

14. The path of train A is given by  $2x + 3y - 6 = 0$  and the path of train B is given by  $4x + 6y - 12 = 0$ . Represent this situation graphically.

15. Solve graphically the system of equations :

$$2x + y = 5$$

$$3x - y = 5$$

16. Solve the following by method of cross multiplication :

$$3x + 2y = 11$$

$$2x + 3y = 4$$

17. Solve:  $\frac{1}{x} + \frac{1}{y} = \frac{5}{6}$  and  $\frac{2}{x} - \frac{3}{y} = -\frac{5}{6}$
18. A boat is moving at the rate of 5km/h in still water, takes thrice as much as time in going 40 km upstream as in going 40 km downstream. Find the speed of the stream.
19. If we have two variables x and y when x=a and y=b is the solution of equations :  
 $x - y = 2$  and  $x + y = 4$ , then what will be the value of a and b.
20. Use cross multiplication method to solve  $ax + bx = a - b$ ,  $bx - ay = a + b$ .
21. For what values of a and b does the following pair of equations have an infinite numbers of solutions.  
 $2x + 3y = 7$ ,  $a(x+y) - b(x-y) = 3a + b - 2$
22. Two persons P and Q are 12.5 Km apart. If they travel toward each other they meet after  $\frac{1}{2}$  hour and if they travel in the same direction, they meet after  $2\frac{1}{2}$  hours. If P travels faster than Q, What is his speed?
23. Solve the following pair of equations:  
 $\frac{5}{x-1} + \frac{1}{y-2} = 2$ ,  $\frac{6}{x-1} - \frac{3}{y-2} = 1$

#### **4 mark questions:**

- 6 men and 10 women can finish making pots in 8 days, while the 4 men and 6 women can finish it in 12 days. Find the time taken by the one man alone and that of one woman alone to finish the work.
- A boat covers 14 kms in upstream and 20 kms downstream in 7 hours. Also it covers 22 kms upstream and 34 kms downstream in 10 hours. Find the speed of the boat in still water and of that the stream.
- Draw the graph 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. Also find the vertices of the triangle.
- The sum of digits of a two digit number is 13. If the number is subtracted from one obtained by interchanging the digits, the result is 45. Find the number.

$$\frac{x}{b} + \frac{y}{a} = 2$$

5. Solve for x & y :

$$bx - ay = b^2 - a^2$$

6. A boat goes 12 km upstream and 14 km downstream in 3 hrs. It goes 15 km upstream & 10.5 km downstream in 3 hrs 15 mins. Find the speed of the boat in still water.

7. A fraction becomes  $\frac{4}{5}$  if 1 is added to both numerator and denominator. If, however, 5 is subtracted from both numerator and denominator, the fraction becomes  $\frac{1}{2}$ . Find the fraction.

8. In a fraction, the numerator is greater than the denominator by 4. If 3 is added to numerator, the fraction becomes 2. Find the fraction.

9. Joseph travelled 300 km by train & 200 km by taxi, it took him 5 hrs 30 mins. But if he travels 260 km by train and 240 km by taxi, he takes 6 mins longer. Find the speed of the train and that of taxi.

10. The taxi charges in a city comprise of a fixed charge together with the charge for the distance covered. For a journey of 20 km the charge paid is Rs. 170 and for a journey of 30 km the charge paid is Rs 250. Find the charge for travelling 70 km.

11. Find the area of a triangle whose three sides are having the equations

$$x + y = 2, \quad x - y = 0 \quad \text{and} \quad x + 2y - 6 = 0.$$

12. 4 men and 6 boys can finish a piece of work in 5 days while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone and by 1 boy alone.

$$\text{Solve: } \frac{66}{x+y} + \frac{50}{x-y} = 16$$

13.

$$\frac{55}{x+y} + \frac{40}{x-y} = 13$$

14. Solve for x & y :  $\frac{x}{b} + \frac{y}{a} = 2$

$$bx - ay = b^2 - a^2$$

15. The taxi charges in a city comprise of a fixed charge together with the charge for the distance covered. For a journey of 20 km the charge paid is Rs. 170 and for a journey of 30 km the charge paid is Rs. 250. Find the charge for travelling 70 km.

16. Solve graphically  $4x - 3y + 4 = 0$ ,  $4x + 3y - 20 = 0$

17. Solve the equations graphically.  $2x + y = 2$ ,  $2y - x = 4$ . Also find the area of a triangle formed by the two lines and the line  $y = 0$ .

18. Solve the following pair of equations graphically.  $x + 3y = 6$ ,  $2x - 3y = 12$ . Also find the area of the triangle formed by the lines representing the given equations with the y-axis.

19. Solve graphically the pair of linear equations  $x + 2y = 5$  and  $2x - 3y = -4$ . Also find the points where the two lines meet the x-axis.