Worksheet

Problem – 1.

Determine the value of k for which the system of equations 2kx - y = 2 and 6x - 2y = 3 has a unique solution.

Problem – 2.

For what value of *k*, the system of equations 5x + 3y = 6 and 10x + ky = 12 has infinite number of solutions.

Problem – 3.

Find the value of *k* for which the system of equations 3x + 2y - 4 = 0 and 5x + ky + 8 = 0 has no solution.

Problem – 4.

If the system of equations 2x + 3y = 7 and (a + b)x + (2a - b)y = 21 has infinitely many solutions, then what are the values of 'a' and 'b'?

Problem – 5.

If the system of equations 4x + 3y = 7 and (k-1)x + (2k-1)y = 3k+1 is inconsistent, then find the value of k.

Problem – 6.

For the pair of equations $\lambda x + 3y + 7 = 0$ and 2x + 6y - 14 = 0. To have infinitely many solutions, the value of λ should be 1. Is this statement true? Give reasons.

Problem – 7.

How many solutions does the pair of equations x + 2y = 3 and $\frac{1}{2}x + y - \frac{3}{2} = 0$ have?

Problem – 8.

Write the number of solutions of the following pair of linear equations: 6x - 14y - 3 = 0and 3x - 7y - 1 = 0.

Problem – 9.

If 2x + y = 23 and 4x - y = 19, then find the value of 5y - 2x.

Problem – 10.

Solve using substitution method.

x + y = 14x - y = 4

Problem – 11.

For what value of *b*, the point (3, *b*) lies on the line represented by 2x - 3y = 5?

Problem – 12.

Two straight paths are represented by the equations x - 3y = 2 and -2x + 6y = 5. Check whether the paths cross each other or not.

Problem – 13.

Solve using elimination method.

x + y = 52x - 3y = 4

Problem – 14.

Find the relation between p and q if x = 3, y = 1 is a solution of a pair of lines x - 4y + p = 0 and 2x + y - q - 2 = 0.

Problem – 15.

Write the pair of linear equations which has the unique solutions x = 2, y = -3. How many such pairs can you write?

Problem – 16.

Is the pair of equations 3x - 5y = 6 and 4x - 6y = 7 consistent? Justify your answer.

Problem – 17.

Solve 2x + 3y = 11 and 2x - 4y = -24 and hence, find the value of 'm' for which y = mx + 3.

Problem – 18.

Solve for x and y:

 $\frac{4}{x} + 3y = 14$ $\frac{3}{x} - 4y = 23$ Sol.

Problem – 19.

If (x + 1) is a factor of $2x^3 + ax^2 + 2bx + 1$, than find the value of *a* and *b* given that 2a - 3b = 4.

Problem – 20.

The angles of a triangle are x, y and 40° . The difference between the two angles x and y is 30° . Find x and y.

Problem – 21.

The angles of a cyclic quadrilateral *ABCD* are $\angle A = (2x+4)^{\circ}, \angle B = (y+3)^{\circ}, \angle C = (2y+10)^{\circ}, \ \angle D = (4x-5)^{\circ}$. Find *x* and *y* and hence the values of the four angles.

Problem – 22.

If 3x + 7y = -1 and 4y - 5x + 14 = 0 then find the values of 3x - 8y and $\frac{y}{x} - 2$.

Problem – 23.

Two numbers are in the ratio of 1:3. If 5 is added to both the numbers, the ratio becomes 1:2. Find the numbers.

Problem – 24.

The larger of two supplementary angles exceeds thrice the smaller by 20 degrees. Find them.

Problem – 25.

The coach of a cricket team buys 3 bats and 6 balls for ₹ 3900. Later she buys another bat and more balls of the same kind for ₹ 1300. Represent this situation algebraically and geometrically.

Problem – 26.

Draw the graphs of the equations y = -1, y = 3 and 4x - y = 5. Also, find the area of the quadrilateral formed by the lines and the *y*-axis.

Problem – 27.

The cost of 4 pens and 4 pencil boxes is ₹ 100. Three times the cost of a pen is ₹ 5 more than the cost of a pencil box. Form the pair of linear equations for the above situation. Find the cost of a. pen and a pencil box.

Problem – 28.

The sum of a two–digit number and the number obtained by reversing the order of its digits is 165. If the digits differ by 3, find the number.

Problem – 29.

Solve graphically the system of linear equations:

4x - 3y + 4 = 0 and 4x + 3y - 20 = 0

Find the area bounded by these lines and x-axis.

Problem – 30.

Solve the following pairs of equations by reducing them to a pair of linear equations: $\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}$ $\frac{1}{2(3x+y)} + \frac{1}{2(3x-y)} = \frac{-1}{8}$

Problem – 31.

Ritu can row downstream 20 km in 2 hours, and upstream 4 km in 2 hours. Find her speed of rowing in still water and the speed of the current.

Problem – 32.

2 women and 5 men can together finish an embroidery work in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the work, and also that taken by 1 man alone.

Problem – 33.

The sum of the numerator and denominator of a fraction is 3 less than twice the denominator. If the numerator and denominator are decreased by 1, the numerator becomes half the denominator. Determine the fraction.

Problem – 34.

Rashmi invested certain amount of money in two schemes A and B, which offer interest at the rate of 8% per annum and 9% per annum respectively. She received ₹ 1860 as annual interest. However had she interchanged the amount of investment in the two schemes, she would have received ₹ 20 more as annual interest. How much money did she invest in each scheme?

Problem – 35.

A part of monthly hostel charges in a college are fixed and the remaining depend on the number of days one has taken food in the mess. When a student *A* takes food for 15 days, he has to pay ₹ 1200 as hostel charges whereas a student *B*, who takes food for 24 days, pays ₹ 1560 as hostel charges. Find the fixed charge and the cost of food per day.

Problem – 36.

A man travels 600 km partly by train and partly by car. If he covers 400 km by train and the rest by car, it takes him 6 hours and 30 minutes. But, if he travels 200 km by train and the rest by car, he takes half an hour longer. Find the speed of the train and that of the car.

Problem – 37.

Karan scored 35 marks in a test, getting 2 marks for each right answer and losing 1 mark for each wrong answer. Had 3 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Karan would have scored 50 marks. How many questions were there in the test?

Problem – 38.

A train covered a certain distance at a uniform speed. If the train would have been 10 km/h faster, it would have taken 2 hours less than the scheduled time. And/ if the train were slower by 10 km/h it would have taken 3 hours more than the scheduled time. Find the distance covered by the train.

