MATHS

BOOKS - AGRAWAL PUBLICATION

PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

Example

1. For all real values of c, the pair of equation

$x-2y=8$

$5x-10y=c$

Have a unique solution. Justify whether it is true or false.

Watch Video Solution

2. Write the relationship between the coefficients, if the following pair of equations are inconsistent.

Watch Video Solution

3. The line represented by $x=7$ is paralle to the x-axis.justify whether the statement is true or not.

Watch Video Solution

4. When will the system $kx-y=2$ and $6x-2y=3$ has a unique solution only?

Watch Video Solution

5. Find the solution of $x+y=3$ and $7x + 6y =2$.

Watch Video Solution

6. Find the value (s) of k for which the pair of equation $\{kx + 2y = 3, 3x + 6y = 10\}$ ha sa unique solution.

Watch Video Solution

7. The larger of two supplementary angles exceeds the smaller by 18° . Find the angles.

Watch Video Solution

8. In $\triangle ABC, \angle A = x^\circ, \angle B = 3\& \circ$ and $\angle C = y^\circ$. If $3y^\circ - 5x^\circ = 30^\circ$ prove that the triangle is right angled.

Watch Video Solution

9. Find c if the system of equations cx + 3y + (3-c) = 0, 12x +cy - c=0 has infinitely many solutions?

Watch Video Solution

10. For what value of k, does the system of linear equations

2x+3y =7

(k+1)x + (k+2)y = 3k

have an infinite number of solutions?

Watch Video Solution

11. If 2x +y = 23 and 4x - y=19, find the values of 5u-2x and $\frac{y}{x} - 2$.

Watch Video Solution

12. Write an equation for a line passing through the point representing solution of the pair of linear equations x+y=2 and 2x - y =1. How many such lines can we find?

Watch Video Solution

13. A fraction becomes $\frac{1}{4}$ when 1 is subtracted from the numerator and it becomes $\frac{1}{4}$ when 8 added to its denominator. Find the fraction.

Watch Video Solution

14. In the figure, ABCD is a pentagon with BE||CD and BC||CD, BC is perpendicular to CD, AB= 5cm, AE = 5cm, BE = 7cm, BC = x-y and CD = x + y. If the perimeter of ABCDE is 27cm. Find the value of x and y, given x,y $\neq$ 0.

Watch Video Solution

15. For which value(s) of λ do the pair of linear equations $\lambda x + y = \lambda^2$ and x+ lambda y = 1` have :

no solution?

Watch Video Solution

16. For which value(s) of λ do the pair of linear equations $\lambda x + y = \lambda^2$

and x+ lambda y = 1` have :

infinitely many solutions?

Watch Video Solution

17. For which value(s) of λ do the pair of linear equations $\lambda x + y = \lambda^2$

and x+ lambda y = 1` have :

a unique solution?

Watch Video Solution

18. For which values of a and b will the following pair of linear equations

have infinitely many solutions?

x+2y=1

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

Watch Video Solution

19. Write a pair of linear equations which has the unique solution solution x= -1, y=3. How many such pairs can you write?

Watch Video Solution

20. Solve the pair of equations:

$$\frac{2}{x}+\frac{3}{y}=11, \frac{5}{x}-\frac{4}{y}=7$$

Hence , find the value of 5x - 3y.

Watch Video Solution

21. Find the solution of the pair of equations $\frac{x}{10}+\frac{y}{5}-1=0$ and $\frac{5}{4}=15$. Hence, find `lambda, if y = lambda x +5.

Watch Video Solution

22. By the graphical method, find whether the following pairs of equations are consistent , solve them.

$3x + y + 4 = 0$ and $6x - 2y + 4 = 0$

Watch Video Solution

23. By the graphical method, find whether the following pairs of equations are consistent , solve them.

$x - 2y = 6$ and $3x - 6y = 0$

Watch Video Solution

24. By the graphical method, find whether the following pairs of equations are consistent , solve them.

$x + y = 3$ and $3x + 3y = 9$

Watch Video Solution

25. The present age of a father is three years more than three times the age of his son. Three years hence the father's age will be 10 years more than twice the age of the son. Determine their present ages.

Watch Video Solution

26. Taxi charges in a city consist of fixed charges and the remaining charges depend upon the distance travelled. For a journey of 10 km, the charge paid is Rs. 75 and for a journey of 15 km, the charge paid id Rs. 110. Find the fixed charge and charges per km. Also, find the charges of convering a distance of 35 km.

Watch Video Solution

27. A man can row a boat downstrean 20 km I 2 hours and upstream 4 km in 2 hours. Find his speed of rowing in still water. Also find the speed of the stream.

Watch Video Solution

28. 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.

Watch Video Solution

29. Determine graphically the coordinates of the verticles of a triangle, the equations of whose sides are given by 2y- x=8, 5y- x=14 and y - 2y =1.

Watch Video Solution

30. A part of monthly hostel charges in a college hostel are fixed and the remaining depends on the number of days one has their meals in the mess. When a student A takes food for 25 days, he has to pay Rs. 4,500, whereas a student B who takes food for 30 days has to pay Rs. 5,200. Find the fixed charges per month and the cost of food per day.

Watch Video Solution

31. There are some students in two examination halls, 10 students are sent from A to B. But, if 20 students are sent from B to A, the number of students in A becomes double the number of students in B. Find the number of students in the two halls.

Watch Video Solution

32. In a competitive examination, one mark is awarded for each correct answer, while $\frac{1}{2}$ mark is deducted for every wrong answer. Rahul answered 120 questions and got 90 marks, How many questions did he answer correctly?

Watch Video Solution

33. A father's age is three times the sum of the ages of his children. After 5 years, his age will be two tims the sum of their ages. Find the

present age of the father.

Watch Video Solution

34. Solve the following system of equations:

$$\frac{21}{x} + \frac{47}{y} = 110$$
$$\frac{47}{x} + \frac{21}{y} = 162, x, y \neq 0$$

Watch Video Solution

35. The sum of reciprocals of a child's age (inyears) 3years ago and 5 years from now is $\frac{1}{3}$. Find his present age.

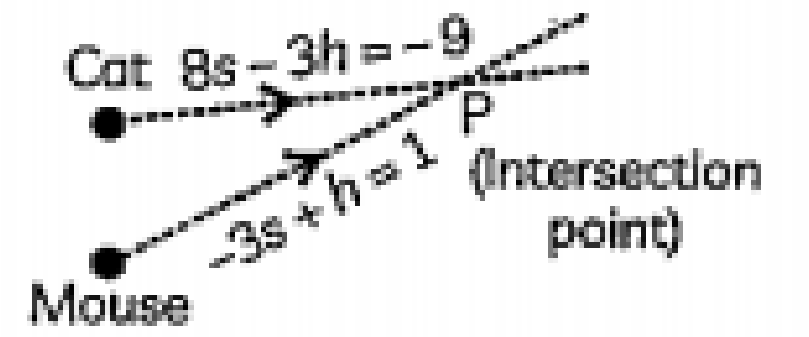
Watch Video Solution

36. A man wished to give Rs. 12 to each person and found that he fell short of Rs. 6 when he wanted to give to all the persons present. He, therefore, distributed Rs. 9 to each person and found that Rs. 9 were

left over. How much money did he have and how many persons were there?

Watch Video Solution

37. A computer animation below shown a cat moving in a straight line. Its height, h metres above the ground, is given by 8s - 3h = -9, where s is the time in seconds after it starts moving. In the same animation, a mouse starts to move at the same time as the cat and its movement is given by -3s +h =1.

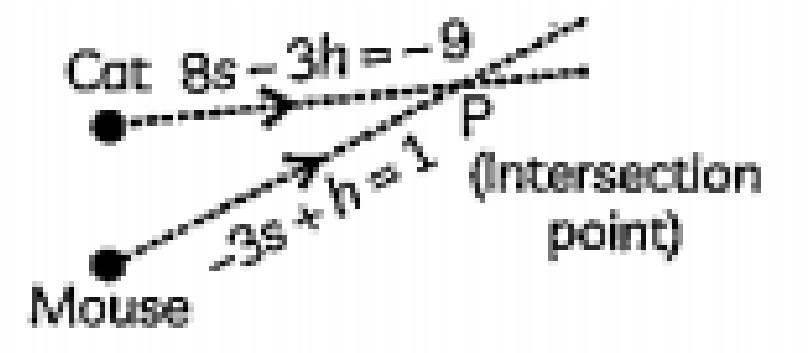


Draw the graph of the two equations on the same sheet of graph paper,

Watch Video Solution

38. moving in a straight line.

Its height, h metres above the ground, is given by 8s - 3h = -9, where s is the time in seconds after it starts moving. In the same animation, a mouse starts to move at the same time as the cat and its movement is given by -3s +h =1.

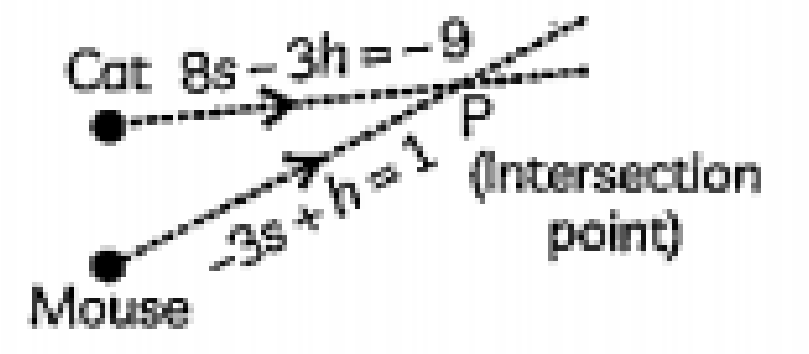


Will the mouse be able to catch the cat?

Watch Video Solution

39. moving in a straight line.

Its height, h metres above the ground, is given by 8s - 3h = -9, where s is the time in seconds after it starts moving. In the same animation, a mouse starts to move at the same time as the cat and its movement is given by -3s +h =1.



If yes, after how much time and at what height?

Watch Video Solution

40. Find the solution of the pair of equation:

$$\frac{3}{x}+\frac{8}{y}=-1, \frac{1}{x}-\frac{2}{y}=2, x, y \neq 0$$

Watch Video Solution

41. Ratio between the girls and boys in a class of 40 students is 2:3 .Five new students joined the class. How many of tem must be boys so that the ratio between girls and boys becomes 4:5?

Watch Video Solution

42. Sumit is 3 times as old as his son. Five years later, he shall be two and a half times as old as his son. How old is Sumit at present?

Watch Video Solution

43. A two digit number is 4 times the sum of the digits. It is also equal to 3 times the product of the digits. Find the number.

Watch Video Solution

44. A and B each has a certain number of mangoes A say to B, "If you give 30 of your mangoes, I will have twice as many as left with you". B replies "if you give me 10, I will have thrice as many left with you". How many mangoes does each have?

Watch Video Solution

45. Determine, algebraically, the verticles of the triangle formed by the lines

$3x-y=3$,

$2x-3y=2$ and

$x+2y=8$

Watch Video Solution

46. it can take 12 hours to fill a swimming pool using two pipes. If the pipe of larger diameter is used for four hours and the pipe of smaller diameter for 9 hours only half of the pool can be filled. How long would it take for each pipe to fill the pool separately?

Watch Video Solution

47. Draw the graphs of the equations $x= 3$, $x=5$ and $2x-y-4=0$. Also find the area of the quadrillaterial formed by the lines and the x-axis.

Watch Video Solution

Watch Video Solution

48. Ankita travels 14 km to her'home partly by rickshaw and partly by bus. She takes half an hour if she travels 2 km by rickshaw and the remaining distance by bus. On the other hand, if she travels 4 km by rickshaw and the remaining distance by bus, she takes 9 minutes longer.Findthe speedofthe rickshaw and of the bus.

Watch Video Solution

49. A motorboat can travel 30 km upstream and 28 km downstream in 7 hrs. It can travel 21 km upstream and return in 5 hrs. Find the speed of the boat in Stillwater and the speed of the stream.

Watch Video Solution

50. A shopkeeper sells a sares at a profit of 8% and a sweater at a discount of 10%, thereby getting a sum Rs. 1008. If she had sold the

saree at a profit of 10% and the sweater at a discount of 8%, she would have got Rs. 1028. Find the cost of the saree and the list price (price before discount) of the sweater.

Watch Video Solution

51. Ruhi invested a certain amount od money in two schemes A and B, which offer interset at the rate of 8% per annum and 9% per annual interest. However, had she interchanged the amount of inestments in the two schemes, she would have reccived Rs. 20 more as annual interset. How much money did she invest in each scheme?

Watch Video Solution

52. Two water taps together can fill a tank in $1\frac{7}{8}$ hours. The tap with a larger diameter takes 2 hours less than the tap with the smaller one to fill the tank separately. Find the time in which each tap can fill the tank .

Watch Video Solution

53. Rahul has some banans and h divided them into two lots A and B. He sold the first lot at the rate of Rs. 2 for 3 bananas and the second lot at the rate of Rs. 1 per banana and got a total of Rs. 400. If he had sold the first lot at the rate Rs. 1 per banana and the second lot at the rate of Rs. 4 for 5 bananas, his total collection would have been Rs. 460. Find the total number of bananas he had.

Watch Video Solution

54. The angles of a cyclic quadrilateral ABCD are $\angle A = (6x + 10)^\circ, \angle B = (5x)^\circ, \angle C = (x + y)^\circ$ and $\angle C = (3y - 10)^\circ$

.

Find x anf y and hence the values of the four angles.

Watch Video Solution