

Ch-3 Pair of Linear Equations in 2 Variables

1. What types of lines do the pair of equations $x = c$ and $y = c$ represent graphically?
2. A boat is moving at the rate of 5 km/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.
3. Find the value of m , when $(m + 1)x + 3ky + 15 = 0$ and $5x + ky + 5 = 0$ are coincident.
4. Write the pair of linear equations which have solutions $x = 2$, $y = -2$.
5. Solve it on a graph –
 $4x - 3y + 4 = 0$, and
 $4x + 3y - 24 = 0$.
6. 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 .
7. Find whether this pair of linear equations is consistent or not.
 $x - 2y = 6$, and
 $3x - 6y = 0$.
8. The addition of numerator and denominator of a fraction is three less than twice the denominator. If the numerator and denominator are decreased by 1, the numerator becomes half the denominator. Find the fraction.
9. 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 by one woman alone to finish the work.
10. 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 the speed of the stream.
11. 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.
12. A number, say z , is exactly the four times the sum of its digits and twice the product of the digits. Find the number.
13. Solve graphically –
 $4x - 3y + 4 = 0$, and
 $4x + 3y - 20 = 0$.
14. There are two points on a highway a and b . They are 70 km apart. An auto starts from A and another auto starts from B simultaneously. If they travel in the same direction, they meet in 7 hours, but if they travel towards each other they meet in 1 hour. Find how fast the two autos are.
15. A diver rowing at the rate of 5 km/h in still water takes double the time in going 40 km upstream as in going 40 km downstream. Find the speed of the stream.
16. The larger of two supplementary angles exceeds thrice the smaller by 20 degrees. Find them.
17. For what values of a and b does the following pair of equations have an infinite numbers of solutions.
 $2x + 3y = 7$, and
 $a(x + y) - b(x - y) = 3a + b - 2$.
18. For what value of k will the following equations have infinitely many solutions?
 $2x - 3y = 7$, and

$$(k + 1)x + (1 - 2k)y = 5k - 4.$$

19. The sum of denominator and numerator of a fraction is 3 less than twice the denominator. If each of the numerator and denominator is decreased by 1, the fraction becomes $\frac{1}{2}$. Find the fraction.
20. The sum of the digits of a two digit number is 12. The number obtained by interchanging the two digits exceeds the given number by 18. Find the number.
21. 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 or than by 1 boy alone.
22. A man travels 600km apart by train and partly by car. It takes 8 hours and 40 minutes if he travels 320 km by train and rest by car. It would take 30 minutes more if he travels 200 km by train and the rest by the car. Find the speed of the train and the speed of the car separately.
23. Solve the equations graphically.
 $2x + y = 2$, and
 $2y - x = 4$.
24. Also find the area of a triangle formed by the two lines and the line $y = 0$.
25. For what value of k will the pair of equations have no solution?
 $3x + y = 1$, and
 $(2k - 1)x + (k - 1)y = 2k + 1$.
26. Solve the following pair of equations graphically.
 $x + 3y = 6$, and
 $2x - 3y = 12$.
27. Also find the area of the triangle formed by the lines representing the given equations with y -axis.