

3. Pair of Linear Equations in Two Variables 2020

1. For what value(s) of 'a' will the equations  $2x + 3y = 13$  and  $3x + ay = 18$  have no solution?

(A) 2

(B) 4.5

(C)  $\leq 10$

(D) -4

2. A number consists of two digits whose sum is 8. If 36 is added to the number, the digits interchange their places. Find the number.

3. Solve for x and y:

$$\frac{x}{3} + \frac{y}{4} = 6, \frac{x}{6} + \frac{y}{2} = 6$$

4. The value of k for which the system of equations  $x + y - 4 = 0$  and  $2x + ky = 3$  has no solution, is

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

6. The value of k for which the system of linear equations  $x + 2y = 3$ ,  $5x + ky + 7 = 0$  is inconsistent is

7. If  $2x + y = 23$  and  $4x - y = 19$ , find the value of  $(5y - 2x)$  and  $\left(\frac{y}{x} - 2\right)$

8. 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?

9. The value of k, for which the pair of linear equations  $kx + y = k^2$  and  $x + ky = 1$  have infinitely many solutions is

10. A train covered a certain distance at a uniform speed. If the train would have been 6 km/hr. faster, it would have taken 4 hours less than the scheduled time and if the train were slower by 6 km/hr., it would have taken 6 hrs. more than the scheduled time. Find the length of the journey.

11. A fraction becomes  $\frac{1}{3}$  when 1 is subtracted from the numerator and it

becomes  $\frac{1}{4}$  when 8 is added to its denominator. Find the fraction.

12. If we add 1 to the numerator and subtract 1 from the denominator, a

fraction reduces to 1. It becomes  $\frac{1}{2}$  if we only add 1 to the denominator.

What is the fraction?

13. The pair of linear equations  $y = 0$  and  $y = -6$  has

(A) a unique solution (B) no solution (C) infinitely many solutions (D) only solution (0, 0)

14. Solve the pair of equations:

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

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

15. The pair of equations,  $x = 0$  and  $x = -4$  has

(A) a unique solution (B) no solution (C) infinitely many solutions (D) only solution  $(0, 0)$

16. Taxi charges in a city consist of fixed charges and the remainings charges depend upon the distance travelled. For a journey of 10 km, the charge paid is ₹ 75 and for a journey of 15 km, the charge paid is ₹ 110. Find the fixed charge and charges per km. Hence, find the charge of covering a distance of 35 km.

17. The pair of linear equations

$$\frac{3x}{2} + \frac{5y}{3} = 7 \text{ and } 9x + 10y = 14 \text{ is}$$

(a) consistent

(b) inconsistent

(c) consistent with one solution

(d) consistent with many solutions

18. 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.

19. For which value(s) of  $p$ , will the lines represented by the following pair of linear equations be parallel

$$3x - y - 5 = 0$$

$$6x - 2y - p = 0$$

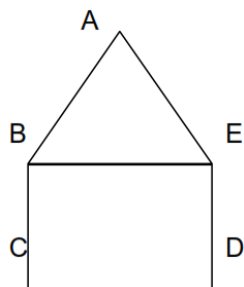
a) all real values except 10

b) 10

c)  $5/2$

d)  $1/2$

20. In the figure, ABCDE is a pentagon with  $BE \parallel CD$  and  $BC \parallel DE$ . BC is perpendicular to CD.  $AB = 5\text{cm}$ ,  $AE = 5\text{cm}$ ,  $BE = 7\text{cm}$ ,  $BC = x - y$  and  $CD = x + y$ . If the perimeter of ABCDE is 27cm. find the value of  $x$  and  $y$ , given  $x, y \neq 0$ .



21. Solve the following system of equations:

$$\frac{21}{x} + \frac{47}{y} = 110$$

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

KV BALAGHAT