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PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

OBJECTIVE SECTION

[BASIC/STANDARD]

I. MULTIPLE CHOICE QUESTIONS

- The pair of equations $5x - 15y = 8$ and $3x - 9y = \frac{24}{5}$ has:
(a) one solutions (b) two solutions
(c) infinitely many solutions (d) no solution
- The sum of the digits of a two-digit number is 9. If 27 is added to it, the digits of the number get reversed. The number is:
(a) 25 (b) 72 (c) 63 (d) 36
- Graphically, the pair of equations: $6x - 3y + 10 = 0$; $2x - y + 9 = 0$ represents two lines which are :
(a) intersecting at exactly one point (b) intersecting at exactly two points
(c) coincident (d) parallel
- The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ have:
(a) a unique solution (b) exactly two solutions
(c) infinitely many solutions (d) no solution
- If a pair of linear equations is consistent, then the lines will be:
(a) parallel (b) always coincident
(c) intersecting or coincident (d) always intersecting
- The pair of equations $y = 0$ and $y = -7$ has :
(a) one solution (b) two solutions
(c) infinitely many solutions (d) no solution
- The pair of equations $x = a$ and $y = b$ graphically represents lines which are:
(a) parallel (b) intersecting at (b, a)
(c) coincident (d) intersecting at (a, b)
- For what value of k , do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ represent coincident lines?
(a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) 2 (d) -2

9. If the lines given by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is:
- (a) $\frac{-5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$
10. The value of c for which the pair of equations $cx - y = 2$ and $6x - 2y = 3$ will have infinitely many solutions is:
- (a) 3 (b) -3 (c) -12 (d) no value
11. One equation of a pair of dependent linear equations is $-5x + 7y = 2$. The second equation can be:
- (a) $10x + 14y + 4 = 0$ (b) $-10x - 14y + 4 = 0$
 (c) $-10x + 14y + 4 = 0$ (d) $10x - 14y = -4$
12. A pair of linear equations which has a unique solution $x = 2, y = -3$ is:
- (a) $x + y = 1, 2x - 3y = -5$ (b) $2x + 5y = -11, 4x + 10y = -22$
 (c) $2x - y = 1, 3x + 2y = 0$ (d) $x - 4y - 14 = 0, 5x - y - 13 = 0$
13. If $x = a, y = b$ is the solution of the equations $x - y = 2$ and $x + y = 4$, then values of a and b are, respectively :
- (a) 3 and 5 (b) 5 and 3 (c) 3 and 1 (d) -1 and -3
14. Aruna has only ₹ 1 and ₹ 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is ₹ 75, then the number of ₹ 1 and ₹ 2 coins are, respectively :
- (a) 35 and 15 (b) 35 and 20 (c) 15 and 35 (d) 25 and 25
15. The father's age is six times his son's age. Four years hence, the age of the father will be four times his son's age. The present ages, in years, of the son and the father are respectively:
- (a) 4 and 24 (b) 5 and 30 (c) 6 and 36 (d) 3 and 24
16. If $4x + 3y = 18xy$ and $2x - 5y + 4xy = 0$, then values of x and y are :
- (a) $\frac{1}{2}$ and $\frac{1}{3}$ (b) $\frac{1}{4}$ and $\frac{1}{3}$ (c) $-\frac{1}{2}$ and $-\frac{1}{3}$ (d) -1 and -3
17. If a pair of linear equations is inconsistent then the lines representing these will be :
- (a) parallel (b) coincident
 (c) intersecting or Concident (d) intersecting
18. The value of k , for which the pair of linear equations $4x + 6y - 1 = 0$ and $2x - ky = 7$ represents parallel lines is :
- (a) 2 (b) -3 (c) 4 (d) -2
19. If $ax + by = a^2 - b^2$ and $bx + ay = 0$, then the value of $(x + y)$ is :
- (a) $a^2 - b^2$ (b) $a + b$ (c) $a - b$ (d) $a^2 + b^2$
20. If $88x + 36y = -92$; $36x + 88y = -404$, then :
- (a) $x = 1, y = -5$ (b) $x = 1, y = 5$ (c) $x = 2, y = -5$ (d) $x = -1, y = 5$
21. If $\frac{2}{x} + \frac{3}{y} = 13$ and $\frac{5}{x} - \frac{4}{y} = -2$, then $x + y =$
- (a) $\frac{1}{6}$ (b) $\frac{-1}{6}$ (c) $\frac{5}{6}$ (d) $\frac{7}{9}$

22. If $\frac{x}{a} + \frac{y}{b} = 2$; $ax - by = a^2 - b^2$, then $\frac{x}{y} =$
- (a) $\frac{a^2}{b^2}$ (b) $\frac{a}{b^2}$ (c) $\frac{a}{b}$ (d) $\frac{-a}{b}$
23. The angles of a triangle are x , y and 40° . The difference between the two angles x and y is 30° . The value of $x + y$ is :
- (a) 110° (b) 130° (c) 140° (d) 150°
24. If the lines given by $3x + 2ky = 2$ and $2x + 5y = -1$ are parallel, then the value of $k =$
- (a) $\frac{13}{4}$ (b) $\frac{15}{4}$ (c) $\frac{17}{4}$ (d) $\frac{19}{4}$
25. If $x = a$, $y = b$ is the solution of the equations $x - y = 2$ and $x + y = 4$, then $a \div b =$
- (a) 1 (b) -2 (c) 2 (d) 3
26. A number consists of two digits. The sum of the digits is 12 and the unit digit when divided by the tens digit gives the result as 3. The number is :
- (a) 63 (b) 68 (c) 93 (d) 39
27. Manisha scored x marks in Mathematics and y marks in Physics. The value of x and y , if $x - y = 2$ and $xy = 2600$ is :
- (a) 50 and 52 (b) 68 and 26 (c) 51 and 54 (d) 36 and 52
28. The length and breadth of a field if its area is 540 m^2 and perimeter is 96 m are :
- (a) 36 m and 15 m (b) 18 m and 30 m (c) 9 m and 60 m (d) 25 m and 21.6 m
29. The values of x and y if $2x + y + 1 = 0$ and $2x - 3y + 8 = 0$, are :
- (a) $\frac{-11}{8}, \frac{7}{4}$ (b) $\frac{7}{3}, \frac{8}{3}$ (c) $\frac{15}{7}, \frac{9}{11}$ (d) $\frac{-11}{9}, \frac{5}{4}$
30. The values of x and y if $3x + 4y = 5$ and $2x - 3y = 9$ are :
- (a) 3, -1 (b) 2, -1 (c) -2, -1 (d) -2, 1
31. The values of x and y if $2x + 3y = 4$ and $3x - y = -5$, are :
- (a) -1, -2 (b) -1, 2 (c) 1, -2 (d) 1, 2
32. The values of x and y if $2x - 5y + 4 = 0$ and $2x + y - 8 = 0$, are :
- (a) 1, 2 (b) 3, 2 (c) 2, 1 (d) 2, 3
33. The values of x and y if $23x + 35y = 209$ and $35x + 23y = 197$, are :
- (a) 3 and 4 (b) 4 and 5 (c) -3 and 2 (d) 5 and 3
34. A fraction becomes $\frac{1}{3}$, if 2 is added to both numerator and denominator. If 3 is added to both numerator and denominator, it becomes $\frac{2}{5}$. The fraction is :
- (a) $\frac{2}{7}$ (b) $\frac{3}{5}$ (c) $\frac{1}{7}$ (d) $\frac{5}{7}$
35. For what value of b the point $(3, b)$ lies on the line represented by $2x - 3y = 5$?
- (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{5}$ (d) $\frac{1}{7}$

36. The values of x and y if $99x + 101y = 499$ and $101x + 99y = 501$ are :
 (a) 3 and 2 (b) 5, 6 (c) -3 and 2 (d) -3 and -2
37. For what value of k the system of linear equations $kx + 3y = k - 2$, $12x + ky = k$ has no solution?
 (a) ± 2 (b) ± 3 (c) $\frac{1}{5}$ (d) ± 6
38. What is the point of intersection of the lines $3x + 7y = 12$ and x -axis?
 (a) (3, 0) (b) (4, 0) (c) (5, 0) (d) (6, 0)
39. For what value of k graphs of $4x - ky = 9$ and $12x - 9y = 18$ will be parallel?
 (a) 1 (b) 2 (c) 3 (d) -3
40. For what value of k , $2x + 3y = 4$ and $(k + 2)x + 6y = 3k + 2$ will have infinitely many solutions?
 (a) 5 (b) -5 (c) 2 (d) -2
41. The values of x and y in $\frac{x + 2y - 4}{3} = \frac{x + y - 3}{2} = \frac{3x + y}{11}$ are :
 (a) 3 and 2 (b) 5 and 3 (c) 4 and 3 (d) 5 and -3
42. For what values of a and b does the following pair of equations have an infinite number of solutions? $2x + 3y = 7$; $a(x + y) - b(x - y) = 3a + b - 2$
 (a) 3 and 1 (b) 5 and 1 (c) 4 and 3 (d) 5 and -2
43. In a competitive examination, 1 mark is awarded for each correct answer, while $\frac{1}{2}$ mark is deducted for every wrong answer. Jayanti answered 120 questions and got 90 marks. Number of questions she attempted correctly is :
 (a) 96 (b) 98 (c) 100 (d) 105
44. Two numbers are in the ratio 5 : 6. If 8 is subtracted from each of the numbers, the ratio becomes 4 : 5, then the numbers are :
 (a) 25 and 30 (b) 40 and 48 (c) 30 and 36 (d) 45 and 54
45. For what values of p and q the system of equations, $2x + 3y = 7$; $(p + q + 1)x + (p + 2q + 2)y = 4(p + q) + 1$ will represent coincident lines ?
 (a) 1, 5 (b) 3, 5 (c) 4, 3 (d) 3, 2
46. The value of k for which the given system of equations $3x + y = 1$ and $(2k - 1)x + (k - 1)y = 5$ has no solution is :
 (a) 1 (b) 2 (c) 3 (d) 4
47. The value of α for which $\alpha x + 3y = \alpha - 3$ and $12x + \alpha y = \alpha$ has no solutions :
 (a) -5 (b) -6 (c) 6 (d) 7
48. The sum of two numbers is 15 and the sum of their reciprocals is $\frac{3}{10}$. The numbers are:
 (a) 9, 6 (b) 12, 3 (c) 11, 4 (d) 5, 10
49. The values of x and y in $\frac{4}{x} + 5y = 7$ and $\frac{3}{x} + 4y = 5$ are :
 (a) $\frac{1}{2}$, 1 (b) $\frac{1}{3}$, -1 (c) $\frac{1}{3}$, 2 (d) $\frac{5}{2}$, 3

50. The values for x and y in $\frac{4}{x} + 3y = 8$ and $\frac{6}{x} - 4y = -5$ are :
- (a) 2, 2 (b) 3, 3 (c) 1, 1 (d) 4, 4

II. FILL IN THE BLANKS

1. If the lines given by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is _____.
2. If $4x + 3y = 18xy$ and $2x - 5y + 4xy = 0$, then values of x and y will be respectively _____ and _____.
3. If $ax + by = a^2 - b^2$ and $bx + ay = 0$, then value of $(x + y) =$ _____.
4. The value of k , for which the pair of linear equations $4x + 6y - 1 = 0$ and $2x - ky = 7$ represents parallel lines is _____.
5. Values of a and b for which the pair of linear equations $x + 2y = 1$;
 $(a - b)x + (a + b)y = a + b - 2$, have infinitely many solutions are _____ and _____.
6. If $37x + 43y = 123$ and $43x + 37y = 117$ then $x + y =$ _____.
7. 15 years hence a man will be just 4 times as old as he was 15 years ago. His present age is _____.
8. The value of k for which the system of equations $kx + 2y = 5$, $3x + 4y = 1$, has no solution is _____.
9. A number consists of two digits whose sum is 15. If 9 is added to the number, then the digits change their places. The number is _____.
10. The difference between two numbers is 26 and one number is three times the other. The numbers are _____.
11. The larger of two supplementary angles exceeds the smaller by 18 degrees. The angles are _____.
12. The coach of a cricket team buys 7 bats and 6 balls for ₹ 3800. Later, she buys 3 bats and 5 balls for ₹ 1750. The cost of each bat and each ball is _____.
13. A fraction becomes $\frac{9}{11}$, if 2 is added to both the numerator and the denominator. If 3 is added to both numerator and denominator it becomes $\frac{5}{6}$. The fraction is _____.
14. If $\frac{4}{x} + 3y = 14$; $\frac{3}{x} - 4y = 23$, then $x \times y =$ _____.
15. In $\triangle ABC$, if $\angle C = 3 \angle B = 2 (\angle A + \angle B)$, then $\angle A =$ _____, $\angle B =$ _____, $\angle C =$ _____.

III. VERY SHORT ANSWER QUESTIONS

1. Write the standard form of an equation in two variables.
2. At most how many solutions can a linear equation in two variable have?

- The graphs of two linear equations in two variables intersect at a point. What does it mean?
- Write two equations of lines which are coincident with $2x + 3y = 9$.
- In the equations $a_1x + b_1y = c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then the equations with represent intersecting lines. Is it true?
- The graphical representation of the pair of equations $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$ represents intersecting lines. Is it true?
- For what value of k do the equations $3x - y + 8 = 0$ and $6x - ky = -16$ represent coincident lines?
- Find the value of k for which the pair of linear equations $4x + 6y = 1$ and $2x + ky - 7 = 0$ represent parallel lines.

ANSWERS

I. Multiple Choice Questions :

- (c)
- (d)
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- (d)
- (b)
- (a)

II. Fill in the Blanks :

- $\frac{15}{4}$
- $\frac{1}{2}, \frac{1}{3}$
- $a - b$
- 3
- $a = 3, b = 1$
- 3
- 25 years
- $\frac{3}{2}$
- 78
- 39, 13
- 99, 81
- 500, 50
- $\frac{7}{9}$
- $-\frac{2}{5}$
- $20^\circ, 40^\circ, 120$

III. Very Short Answer Questions :

- $ax + by + c = 0, a \neq 0, b \neq 0,$
- Infinite
- They have unique solution
- $4x + 6y = 18, 6x + 9y = 27$
- yes
- no
- $k = 2$
- $k = 3$