

# LINEAR EQUATIONS IN TWO VARIABLES

## Class 09 - Mathematics

**Time Allowed: 3 hours**

**Maximum Marks: 135**

## Section A

1.  $ax + by + c = 0$  does not represent an equation of line, if \_\_\_\_\_. [1]
    - a)  $a = c = 0, b \neq 0$
    - b)  $a = b = 0$
    - c)  $b = c = 0, a \neq 0$
    - d)  $c = 0, a \neq 0, b \neq 0$
  2. The equation  $x = 7$  in two variables can be written as [1]
    - a)  $1.x + 1.y = 7$
    - b)  $1.x + 0.y = 7$
    - c)  $0.x + 1.y = 7$
    - d)  $0.x + 0.y = 7$
  3. Which of the following points lie on the line  $y = 3x - 4$ ? [1]
    - a) (2, 2)
    - b) (4, 12)
    - c) (5, 15)
    - d) (3, 9)
  4. How many lines pass through one point? [1]
    - a) one
    - b) three
    - c) two
    - d) many
  5. How many lines pass through two points? [1]
    - a) many
    - b) three
    - c) two
    - d) only one
  6. The linear equation  $2x - 5y = 7$  has [1]
    - a) No solution
    - b) Infinitely many solutions
    - c) A unique solution
    - d) Two solutions
  7. How many linear equations in 'x' and 'y' can be satisfied by  $x = 1, y = 2$ ? [1]
    - a) Infinitely many
    - b) Two
    - c) Only one
    - d) Three
  8. The force applied on a body is directly proportional to the acceleration produced on it. The equation to represent the above statement is [1]
    - a)  $y = kx$
    - b)  $y = x$
    - c)  $y + x = 0$
    - d)  $y - x = 0$
  9. The taxi fare in a city is as follows: For the first kilometer, the fare is ₹8 and for the subsequent distance it is ₹5 per kilometer. Taking the distance covered as  $x$  km and total fare as ₹ $y$ , write a linear equation for this [1]

information.

a)  $y = 5x + 3$

b)  $y = 5x - 3$

c)  $x = 5y - 3$

d)  $x = 5y + 3$

10. The linear equation  $3x - y = x - 1$  has : [1]

a) A unique solution

b) Two solutions

c) No solution

d) Infinitely many solutions

11. Write the linear equation such that each point on its graph has an ordinate 5 times its abscissa. [1]

a)  $y = 5x$

b)  $x + 5y = 2$

c)  $5x + y = 2$

d)  $x = 5y$

12. The equation of x-axis is [1]

a)  $y = 0$

b)  $x = 0$

c)  $y = k$

d)  $x = k$

13. If  $(-2, 5)$  is a solution of  $2x + my = 11$ , then the value of 'm' is [1]

a) -2

b) 2

c) 3

d) -3

14. The equation  $y = 2x - 7$  has [1]

a) no solution

b) two solutions

c) one solution

d) many solutions

15. The graph of the linear equation  $y = x$  passes through the point [1]

a)  $\left(\frac{3}{2}, -\frac{3}{2}\right)$

b)  $\left(0, \frac{3}{2}\right)$

c)  $\left(-\frac{1}{2}, \frac{1}{2}\right)$

d)  $(1, 1)$

16. The cost of 2 kg of apples and 1 kg of grapes on a day was found to be ₹160. A linear equation in two variables to represent the above data is [1]

a)  $x - 2y = 160$

b)  $2x + y = 160$

c)  $x + y = 160$

d)  $2x - y = 160$

17. The system of linear equations  $ax + by = 0$ ,  $cx + dy = 0$  has a non-trivial solution if [1]

a)  $ad - bc = 0$

b)  $ad - bc < 0$

c)  $ad - bc = 0$

d)  $ac + bd = 0$

18. If  $(4, 19)$  is a solution of the equation  $y = ax + 3$ , then  $a =$  [1]

a) 4

b) 6

c) 3

d) 5

19. The equation  $2x + 5y = 7$  has a unique solution, if  $x, y$  are : [1]

a) Rational numbers

b) Real numbers

c) Natural numbers

d) Positive real numbers

20. The graph of the linear equation  $4x + y = 12$  is a line which meets the y-axis at the point \_\_\_\_\_. [1]  
 a) (12, 0) b) (4, 0)  
 c) (0, 12) d) (0, 4)
21. How many linear equations can be satisfied by  $x = 2$  and  $y = 3$ ? [1]  
 a) only one b) three  
 c) many d) two
22. The graph of the linear equation  $2x + 3y = 6$  is a line which meets the x-axis at the point [1]  
 a) (0,3) b) (3,0)  
 c) (2, 0) d) (0 ,2)
23. The positive solutions of the equation  $ax + by + c = 0$  always lie in the [1]  
 a) 3rd quadrant b) 4th quadrant  
 c) 2nd quadrant d) 1st quadrant
24. Which of the following is a linear equation in two variables? [1]  
 a)  $2x - 5y = 0$  b)  $x + 5 = 8$   
 c)  $x^2 = 5x + 3$  d)  $5x = y^2 + 3$
25. If a pair of linear equations is consistent, then the lines represented by them are [1]  
 a) intersecting or coincident b) parallel  
 c) always coincident d) always intersecting
26. Which of the following pair is a solution of the equation  $3x - 2y = 7$ ? [1]  
 a) (-2, 1) b) (1, -2)  
 c) (5, 1) d) (1, 5)
27. Express y in terms of x in the equation  $5y - 3x - 10 = 0$ . [1]  
 a)  $y = \frac{3-10x}{5}$  b)  $y = \frac{3+10x}{5}$   
 c)  $y = \frac{3x-10}{5}$  d)  $y = \frac{3x+10}{5}$
28. A linear equation in two variables is of the form  $ax + by + c = 0$ , where [1]  
 a)  $a \neq 0$  and  $b = 0$  b)  $a = 0$  and  $b = 0$   
 c)  $a \neq 0$  and  $b \neq 0$  d)  $a = 0$  and  $b \neq 0$
29.  $x = 5$  and  $y = -2$  is the solution of the linear equation. [1]  
 a)  $x + 3y = 1$  b)  $2x + y = 9$   
 c)  $3x + y = 0$  d)  $2x - y = 12$
30. Express 'x' in terms of 'y' in the equation  $2x - 3y - 5 = 0$ . [1]  
 a)  $x = \frac{3y-5}{2}$  b)  $x = \frac{3y+5}{2}$   
 c)  $x = \frac{5-3y}{2}$  d)  $x = \frac{3+5y}{2}$
31. **Assertion (A):** For all values of k,  $(-\frac{3}{2}, k)$  is a solution of the linear equation  $2x + 3 = 0$ . [1]  
**Reason (R):** The linear equation  $ax + b = 0$  can be expressed as a linear equation in two variables as  $ax + y + b = 0$

= 0.

- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

32. **Assertion (A):** The equation of  $2x + 5 = 0$  and  $3x + y = 5$  both have degree 1. [1]

**Reason (R):** The degree of a linear equation in two variables is 2.

- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

33. **Assertion (A):** The point (1, 1) is the solution of  $x + y = 2$ . [1]

**Reason (R):** Every point which satisfy the linear equation is a solution of the equation.

- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

34. **Assertion (A):** The point (0, 3) lies on the graph of the linear equation  $3x + 4y = 12$ . [1]

**Reason (R):** (0, 3) satisfies the equation  $3x + 4y = 12$ .

- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

35. **Assertion (A):** The graph of the linear equation  $x - 2y = 1$  passes through the point (3, 1). [1]

**Reason (R):** Every point lying on graph is not a solution of  $x - 2y = 1$ .

- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

36. **Assertion (A):** There are infinite number of lines which passes through (2, 14). [1]

**Reason (R):** A linear equation in two variables has infinitely many solutions.

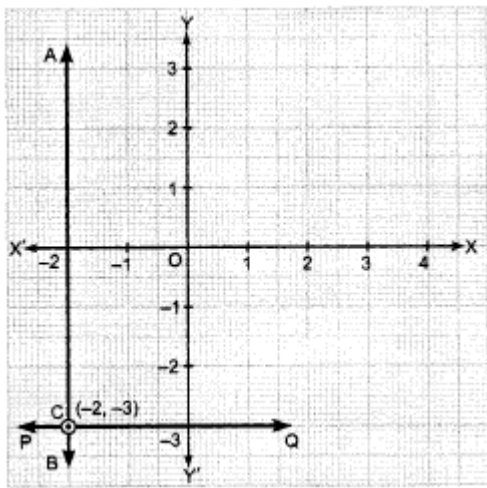
- a) Both A and R are true and R is the correct explanation of A.      b) Both A and R are true but R is not the correct explanation of A.  
c) A is true but R is false.      d) A is false but R is true.

### Section B

37. Write four solutions of the equation:  $\pi x + y = 9$  [2]

38. Express the linear equation  $x - \frac{y}{5} - 10 = 0$  in the form  $ax + by + c = 0$  and indicate the value of a, b and c in case. [2]

39. Write the linear equation represented by line AB and PQ. Also find the co-ordinate of intersection of line AB and PQ. [2]



40. Find four solutions for the following equation :  $2(x - 1) + 3y = 4$  [2]
41. Express the linear equation  $2x = -5y$  in the form  $ax + by + c = 0$  and indicate the value of a, b and c in case. [2]
42. Find whether the given equation have  $x = 2, y = 1$  as a solution: [2]  
 $2x - 3y + 7 = 8$
43. Express the linear equation  $2x + 3y = 9.3\bar{5}$  in the form  $ax + by + c = 0$  and indicate the value of a, b and c in case. [2]
44. Find whether the given equation have  $x = 2, y = 1$  as a solution: [2]  
 $2x + 3y = 7$
45. If the length of a rectangle is decreased by 3 units and breadth increased by 4 unit, then the area will increase by 9 sq. units. Represent this situation as a linear equation in two variables. [2]
46. Find whether (1, 1) is the solution of the equation  $x - 2y = 4$  or not? [2]
47. Find whether the given equation have  $x = 2, y = 1$  as a solution: [2]  
 $5x + 3y = 14$
48. Express the linear equation  $5 = 2x$  in the form  $ax + by + c = 0$  and indicate the value of a, b and c in case. [2]
49. The following values of x and y are thought to satisfy a linear equation : [2]
- |   |   |   |
|---|---|---|
| x | 1 | 2 |
| y | 1 | 3 |
50. Cost of pen is two half times the cost of a pencil. Express this situation as a linear equation in two variable. [2]
51. Find whether the given equation have  $x = 2, y = 1$  as a solution:  $x + y + 4 = 0$ . [2]
52. Find whether the given equation have  $x = 2, y = 1$  as a solution: [2]  
 $x + y + 4 = 0$
53. Write two solutions of the form  $x = 0, y = a$  and  $x = b, y = 0$  :  $-4x + 3y = 12$  [2]
54. Express the linear equation  $-2x + 3y = 6$  in the form  $ax + by + c = 0$  and indicate the value of a, b and c in case. [2]
55. Find four solutions for the following equation :  $x - y = 0$  [2]
56. If  $x = 3k + 2$  and  $y = 2k - 1$  is a solution of the equation  $4x - 3y + 1 = 0$ , find the value of k. [2]
57. Find whether the given equation have  $x = 2, y = 1$  as a solution: [2]  
 $2x + 5y = 9$
58. Express x in terms of y for the linear equation  $\frac{2}{3}x + 4y = -7$ . [2]

### Section C

59. Find solutions of the form  $x = a, y = 0$  and  $x = 0, y = b$  for the following pairs of equations. Do they have any common such solution? [3]  
 $3x + 2y = 6$  and  $5x + 2y = 10$

60. Find at least 3 solutions for the following linear equation in two variables: [3]  
 $2x + 3y = 4$
61. Find four solutions for the following equation:  $12x + 5y = 0$  [3]
62. Write linear equation  $3x + 2y = 18$  in the form of  $ax + by + c = 0$ . Also write the values of a, b and c. Are (4, 3) and (1, 2) solution of this equation? [3]
63. For what value of c, the linear equation  $2x + cy = 8$  has equal values of x and y for its solution? [3]
64. Let y varies directly as x. If  $y = 12$  when  $x = 4$ , then write a linear equation. What is the value of y when  $x = 5$ ? [3]
65. Find at least 3 solutions for the following linear equation in two variables: [3]  
 $2x + 5y = 13$
66. Find at least 3 solutions for the following linear equation in two variables:  $2x - 3y + 7 = 0$  [3]
67. Find at least 3 solutions for the following linear equation in two variables:  $x + y - 4 = 0$  [3]
68. Find the solution of the linear equation  $x + 2y = 8$  which represents a point on [3]  
 i. The x-axis  
 ii. The y-axis
69. Find at least 3 solutions for the following linear equation in two variables:  $5x + 3y = 4$ . [3]
70. Find at least 3 solutions for the linear equation  $2x - 3y + 7 = 0$ . [3]
71. Find solutions of the form  $x = a, y = 0$  and  $x = 0, y = b$  for the following pairs of equations. Do they have any common such solution for equations  $9x + 7y = 63$  and  $x + y = 10$  [3]
72. Find solutions of the form  $x = a, y = 0$  and  $x = 0, y = b$  for the following pairs of equations. Do they have any common such solution? [3]  
 $5x + 3y = 15$  and  $5x + 2y = 10$
73. A family spends Rs. 500 monthly as a fixed amount on milk and extra milk costs Rs.20 per kg. Taking quantity of extra milk as x and total expenditure on milk as y. Write a linear equation and fill the table. [3]

x	0	-	2
y	-	1000	-

#### Section D

74. Solve for x:  $\frac{3x+2}{7} + \frac{4(x+1)}{5} = \frac{2}{3}(2x+1)$  [5]
75. Find five different solutions of the equation:  $3y = 4x$  [5]