KD EDUCATION ACADEMY [9582701166]

Time : 4 hour | STD 9 Maths | Total Marks : 200

kd sir 90+ questions chapter - linear equations in two variable

*** Choose the right answer from the given options. [1 Marks Each]** **[55]**

1. If the graph of the equation 4x + 3y = 12 cuts the coordinate axes at A and B, then hypotenuse of right triangle AOB is of length:
   (A) 4 units. (B) 3 units. (C) 5 units. (D) None of these.
2. If x = 3 and y = -2 satisfies 5x - y = k, then the value of k is:
   (A) 3 (B) -2 (C) 17 (D) 12
3. If the line represented by the equation 3x + ky = 9 passes through the points (2, 3), then the value of k is:
   (A) 2 (B) 4 (C) 3 (D) 1
4. Find the value of k, if x = 1, y = 2 is a solution of the equation 2x + 3y = k.
   (A) 5 (B) 6 (C) 7 (D) 8
5. If the point (3, 4) lies on the graph of 3y = ax + 7 then the value of a is:
   (A) $\frac{2}{7}$ (B) $\frac{2}{5}$ (C) $\frac{5}{3}$ (D) $\frac{3}{5}$
6. The cost of 2kg of apples and 1kg of grapes on a day was found to be ₹ 160. A linear equation in two variables to represent the above data is:
   (A) x + y = 160 (B) 2x - y = 160 (C) x - 2y = 160 (D) 2x + y = 160
7. The force applied on a body is directly proportional to the acceleration produced on it. The equation to represent the above statement is:
   (A) y = kx (B) y + x = 0 (C) None of these (D) y = x
8. Point (3, 4) lies on the graph of the equation 3y = kx + 7. The value of k is:
   (A) $\frac{4}{3}$ (B) $\frac{5}{3}$ (C) 3 (D) $\frac{7}{3}$
9. The value of k if x = 2, y = 1 is a solution of equation 2x - k = -3y is:
   (A) 6 (B) 5 (C) 7 (D) -7
10. The graph of the linear equation 2x - 3y = 6, cuts the y-axis at the point:
    (A) (2, 0) (B) (0, 2) (C) (0, -2) (D) (-2, 0)
11. The linear equation 2x + 3y = 6 has:
    (A) Infinitely many solutions. (B) Two solutions. (C) A unique solution. (D) Three solutions.
12. The graph of the linear equation 3x - 2y = 6, cuts the x-axis at the point:
    (A) (2, 0) (B) (0, 2) (C) (0, -2) (D) (-2, 0)
13. If (2, 0) is a solution of the linear equation 2x +3y = k, then the value of k is:
    (A) 4 (B) 6 (C) 5 (D) 2
14. Equation of a line passing through origin is:
    (A) x + y = 1 (B) x = 2y - 4 (C) x + y = 0 (D) y = x - 1
15. If (2, 0) is a solution of the linear equation 2x + 3y = k, then the value of k is:
    (A) 5 (B) 2 (C) 4 (D) 6

16. If (k, -3) lies on the line 3x - y = 6, then the value of 'k' is:

(A) 0 (B) 3 (C) 1 (D) 2

17. Which of the following pair is a solution of the equation 3x - 2y = 7?

(A) (-2, 1) (B) (5, 1) (C) (1, -2) (D) (1, 5)

18. The solution of equation x - 2y = 4 is:

(A) (0, 2) (B) (2, 0) (C) (4, 0) (D) (1, 1)

19. If (a, 4) lies on the graph of 3x + y = 10, then the value of a is:

(A) 4 (B) 1 (C) 3 (D) 2

20. 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 information.

(A) x = 5y - 3 (B) y = 5x + 3 (C) x = 5y + 3 (D) y = 5x - 3

21. Point (3, 4) lies on the graph of the equation 3y = kx + 7. The value of k is:

(A) $\frac{4}{3}$ (B) $\frac{5}{3}$ (C) 3 (D) $\frac{6}{3}$

22. If (2, 0) is a solution of the linear equation 2x + 3y = k then the value of k is:

(A) 6 (B) 5 (C) 2 (D) 4

23. The area of the triangle formed by the line 3x + 4y = 12 and the co-ordinate axis is:

(A) 6 sq. units. (B) 12 sq. units. (C) 4 sq. units. (D) 3 sq. units.

24. If we multiply or divide both sides of a linear equation with a non-zero number, then the solution of the linear equation:

(A) Changes. (B) Remains the same. (C) Only changes in case of multiplication. (D) Only changes in case of division.

25. If the point (3, 4) lies on the graph of 3y = ax + 6, then the value of 'a' is:

(A) 0 (B) 3 (C) 1 (D) 2

26. The graph of the linear equation 3x - 5y = 15, cuts the y-axis at the point:

(A) (2, 0) (B) (-2, 0) (C) (0, 3) (D) (0, -3)

27. x = 3 and y = -2 is a solution of the equation 4px - 3y = 12, then the value of p is:

(A) 0 (B) $\frac{1}{2}$ (C) 2 (D) 3

28. The line represented by the equation x + y = 16 passes through (2, 14). How many more lines pass through the point (2, 14).

(A) 2 (B) 100 (C) Many (D) 10

29. The graph of the linear equation y = 3x passes through the point.

(A) $\left(0, -\frac{2}{3}\right)$ (B) $\left(-\frac{2}{3}, 0\right)$ (C) $\left(0, \frac{2}{3}\right)$ (D) $\left(\frac{2}{3}, 2\right)$

30. If (4, 19) is a solution of the equation y = ax + 3, then a =

(A) 3 (B) 6 (C) 4 (D) 5

31. The graph of the linear equation 2x + 3y = 6 meets the y-axis at the point.

(A) (0, 3) (B) (2, 0) (C) (3, 0) (D) (0, 2)

32. The area of the triangle formed by the line 2x + 5y = 10 and the co-ordinate axis is:

(A) 4 sq. units. (B) 10 sq. units. (C) 3 sq. units. (D) 5 sq. units.

33. If (2k - 1, k) is a solution of the equation 10x - 9y = 12, then k =

(A) 1 (B) 2 (C) 3 (D) 4

34. If the graph of the equation 4x + 3y = 12 cuts the coordinate axes at A and B, then hypotenuse of right triangle AOB is of length.

(A) 3 units. (B) 4 units. (C) 5 units. (D) None of these.

35. For the equation 5x + 8y = 50, if y = 10, then the value of x is:

(A) -6 (B) -12 (C) 6 (D) 12

36. The point on the graph of the linear equation 2x + 5y = 19, whose ordinate is $1\frac{1}{2}$ times its abscissa is:

(A) (-2, -3) (B) (2, 3) (C) (4, 6) (D) None of these.

37. The equation of a line parallel to y-axis and 7 units to the left of origin is:

(A) x = -7 (B) y = 7 (C) y = -7 (D) x = 7

38. Find the value of k, if x = 1, y = 2 is a solution of the equation 2x + 3y = k.

(A) 5 (B) 6 (C) 7 (D) 8

39. The distance between the graph of the equations x = -3 and x = 2 is:

(A) 5 (B) 2 (C) 1 (D) 3

40. If the line represented by the equation 3x + ky = 9 passes through the points (2, 3), then the value of 'k' is:

(A) 2 (B) 1 (C) 3 (D) 4

41. The cost of a notebook is twice the cost of a pen. The equation to represent this statement is:

(A) x = 3y (B) x - 2y = 0 (C) 2x = 3y (D) None of these

42. How many lines pass through two points?

(A) Two. (B) Only one. (C) Many. (D) Three.

43. The graph of the linear equation 2x + 5y = 10 meets the x-axis at the point.

(A) (0, 5) (B) (5, 0) (C) (0, 2) (D) (2, 0)

44. x = 2, y = -1 is a solution of the linear equation:

(A) x + 2y = 0 (B) x + 2y = 4 (C) 2x + y = 0 (D) 2x + y = 5

45. How many linear equations are satisfied by x = 2 and y = -3?

(A) Only one. (B) Two. (C) Three. (D) Infinitely many.

46. The equation 2x + 5y = 7 has a unique solution, if x, y are:

(A) Rational numbers (B) Real numbers (C) Natural numbers (D) Positive real numbers

47. y = 0 is the equation of:

(A) A line parallel to x - axis (B) A line parallel to y - axis (C) x - axis (D) y - axis

48. If (-2, 5) is a solution of 2x + my = 11, then the value of 'm' is:

(A) -2 (B) 2 (C) 3 (D) -3

49. If (3, 2) is the solution 3x - ky = 5, then k equals of the equation.

(A) 2 (B) 4 (C) 3 (D) $\frac{1}{2}$

50. The equation of a line parallel to x-axis and 5 units below the origin is:

(A) y = -5 (B) x = 5 (C) y = 5 (D) x = -5

51. How many linear equations are satisfied by x = 2 and y = -3?
    a. Only one.
    b. Two.
    c. Three.
    d. Infinitely many.

52. If (4, 19) is a solution of the equation y = ax + 3, then a =
    a. 3
    b. 4
    c. 5
    d. 6

53. The graph of the line x - y = 0 passes through the point:
    a. $\left(\frac{-1}{2}, \frac{1}{2}\right)$
    b. $\left(\frac{3}{2}, \frac{-3}{2}\right)$
    c. $(0, -1)$
    d. $(1, 1)$

54. If the point (3, 4) lies on the graph of 3y = ax + 7 then the value of a is:
    a. $\frac{2}{5}$
    b. $\frac{5}{3}$
    c. $\frac{3}{5}$
    d. $\frac{2}{7}$

55. The linear equation 3x - 5y = 15 has:
    a. A unique solution.
    b. Two solutions.
    c. Infinitely many solutions.
    d. No solution.

*** A statement of Assertion (A) is followed by a statement of Reason (R). [5]**
Choose the correct option.

56. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:
    Assertion: The graph of the equation 3x + y = 0 is a line passing through the origin.
    Reason: An equation of the form ax + by + c = 0, where a, b, c are real numbers is called a linear equation in x and y.
    a. Both assertion and reason are true and reason is the correct explanation of assertion.
    b. Both assertion and reason are true but reason is not the correct explanation of assertion.
    c. Assertion is true but reason is false.
    d. Assertion is false but reason is true.

57. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The linear equation 2x - 5y = 7 has no solution.

Reason: The linear equation 3x - y = x - 1 has unique solution.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

58. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: $\frac{1}{x} + \frac{1}{y} = \frac{1}{6}$ is the not linear equation in two variable.

Reason: 6x + 6y = xy is not form of the y = mx + c, hence it is not linear equation.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

59. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The system of equations ax + by = c, lx + my = n, has a unique solution.

Reason: Graphically, the pair of equations 7x - y = 5; 21x - 3y = 10 represents two lines which are parallel.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

60. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: If $\left(\frac{1}{5}\right)$-x $= \frac{-4}{5}$ then x is 1.

Reason: $\frac{p}{4} + \frac{p}{3} = 55 - \frac{(p+40)}{50}$ then the value of p is 89.834.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

*** Answer the following questions in one sentence. [1 Marks Each]** **[8]**

61. The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.
(Take the cost of a notebook to be ₹ x and that of a pen to be ₹ y).

62. Express the linear equation in the form ax + by + c = 0 and indicate the values of a, b and c in $x - \frac{y}{5} - 10 = 0$

63. Find whether (2, 0) is the solution of the equation x − 2y = 4 or not?

64. Find the value of k, if x = 2, y = 1 is a solution of the equation 2x + 3y =k.

65. Write the equation in the form ax + by + c = 0 and indicate the values of a, b and c : 4 = 5x – 3y

66. Write an equation in two variables: x = −5

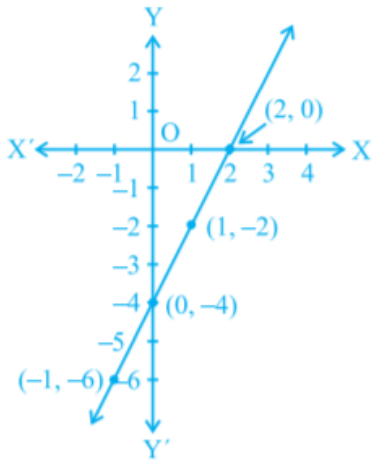
67. Write the equation of the line that is parallel to y-axis and passing through the point: (4, 0)

68. A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Aarushi paid ₹ 27 for a book kept for seven days. If fixed charges are ₹ x and per day charges are ₹ y. Write the linear equation representing the abvoe information.

*** Answer the following short questions. [2 Marks Each]** **[34]**

69. Find four different solutions of the equation x + 2y = 6

70. The graphs given in Fig. select the equation whose graph it is from the choices given below:



71. Find the solution of the linear equation x+2y = 8 which represents a point on:
    i. x-axis
    ii. y-axis

72. The linear equation that converts Fahrenheit (F) to Celsius (C) is given by the relation, $C = \frac{5F-160}{9}$
    If the temperature is 0°C, what is the temperature in Fahrenheit and if the temperature is 0°F, what is the temperature in Celsius?

73. The linear equation that converts Fahrenheit (F) to Celsius (C) is given by the relation, $C = \frac{5F-160}{9}$
    If the temperature is 86°F, what is the temperature in Celsius?

74. For what value of c, the linear equation 2x + cy = 8 has equal values of x and y for its solution.

75. The linear equation that converts Fahrenheit (F) to Celsius (C) is given by the relation,
$C = \frac{5F-160}{9}$
What is the numerical value of the temperature which is same in both the scales?

76. Solve the equation 3x - 2 = 2x + 3 and represent the solulion on the number line.

77. The cost of ball pen is Rs. 5 less than half of the cost of fountain pen. Write this statement as a linear equation in two variables.

78. Solve the equation 3x + 2 = x - 8, and represent the solution on:
The number line.

79. A number is 27 more than the number obtained by reversing its digits. If its unit's and ten's digit are x and y respectively, write the linear equation representing the above statement.

80. The sum of a two digit number and the number obtained by reversing the order of its digits is 121. If units and ten's digit of the number are x ard y respectively, then write the linear equation representing the above statement.

81. Check the following are the solution of the equation 5x - 4y = 20.
$\left(-2, \frac{5}{2}\right)$

82. The cost of 5 pencils is equal of the cost of 2 ballpoints. Write a linear equation in two variables to represent this statement. (Take the cost of a pencil to be Rs. x and that of a ballpoint to be Rs. y).

83. Express the following equation in the form ax + by + c = 0 and indicate the values of a, b, c in case.
2x + 9 = 0

84. Express the following equation in the form ax + by + c = 0 and indicate the values of a, b, c in case.
$2x - \frac{y}{5} + 6 = 0$

85. Express the following equation in the form ax + by + c = 0 and indicate the values of a, b, c in case.
$\frac{x}{5} - \frac{y}{6} = 1$

* Answer the following questions. [3 Marks Each] [21]

86. Draw the graph of x + y = 7

87. Determine the point on the graph of the linear equation 2x + 5y = 19 whose ordinate is $1\frac{1}{2}$ times its abscissa.

88. If the point (3, 4) lies on the graph of 3y = ax + 7, then find the value of a.

89. If x = 1 and y = 6 is a solution of the equation 8x - ay + a^2 = 0, find the values of a.

90. Find the value of k for which the point (1, -2) lies on the graph of the linear equation x - 2y + k = 0.

91. If x = 2a + 1 and y = a -1 is a solution of the equation 2x - 3y + 5 = 0, find the value of a.

92. Draw the graph of the following equation.
y + 5 = 0

* Questions with calculation. [4 Marks Each] [24]

93. Write the linear equation such that each point on its graph has an ordinate 3 times its abscissa.

94. Draw the graph of the linear equation whose solutions are represented by the points having the sum of the coordinates as 10 units.

95. Draw the graph of the equations given below. Also, find the coordinates of the points where the graph cuts the coordinate axes:

    -x + 4y = 8

96. Draw the graph of the following linear equations in two variables:

    $\frac{x}{2} - \frac{y}{3} = 2$

97. Draw the graphs of the following linear equations on the same graph paper:

    2x + 3y = 12, x - y = 1

    Find the coordinates of the vertices of the triangle formed by the two straight lines and the y-axis. Also, find the area of the triangle.

98. Draw the graph of the following linear equations in two variables:

    $\frac{x-2}{3} = y - 3$

* Answer the following questions. [5 Marks Each] [45]

99. The path of a train A is given by th equation 3x + 4y - 12 = 0 and the path or another train B is given by the equation 6x + 8y - 48 = 0. Represent this situation graphically.

100. Ravish tells his doughter Aarushi, "Seven years ago, I was seven times as old as you were then. Also, three years from now, I shall be three times as old as you will be".. If present ages of Aarushi and Ravish are x and y years respectively, represent this situation algebraically as well as graphically.

101. Aarushi was driving a car with uniform speed of 60km/ h. Draw distance-time graph. From the graph, find the distance travelled by Aarushi in:

    i. $2\frac{1}{2}$ Hours

    ii. $\frac{1}{2}$ Hour

102. Draw the graph for each of the equations x + y = 6 and x - y = 2 on the same graph paper and find the coordinates of the point where the two straight lines intersect.

103. Draw the graphs of the lines x - y = 1 and 2x + y = 8. Shade the area formed by these two and the y-axis. Also, find this area.

104. Draw the graph of the equation 2x - 3y - 3 = 5.

    From your graph, Find:

    i. The value of y when x = 4

    ii. The value of x when y = 3.

105. Draw the graph of the equation, 3x - 2y = 4 and x + y - 3 = 0.

    On the same graph paper find the coordinates of the point where the two graph lines intersect.

106. Draw the graph of the line 4x + 3y = 24.

    i. Write the coordinates of the point where this line interects the x-axis and the y-axis.

ii. Use this graph to find the area of the triangle formed by the graph line and the coordinate axes.

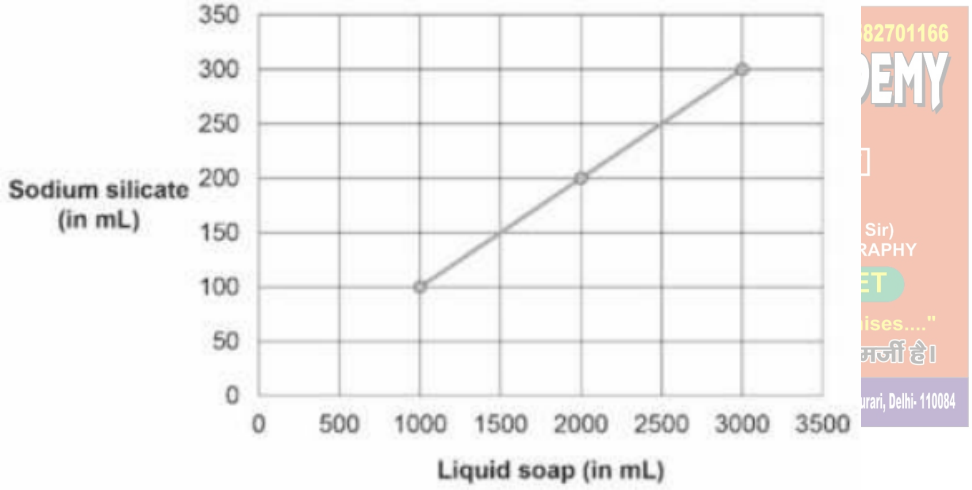
107. Two students A and B contributed Rs. 100 towards the prime Minister's Relief Fund to help the earthquake victims. Write a linear equation to satisfy the above data and draw its graph.

*** Case study based questions.** **[8]**

108. 1. A soap manufacturer makes fragrant and non-fragrant liquid soaps. The liquid soaps are illed in plastic bottles and packed in equal size cartons for transportation. Each carton contains 50 bottles. The mass of a full bottle of soap is 220 gm and that of a half-illed bottle is 120 gm. What will be the mass (gm) of the empty bottle?

A. 10
B. 20
C. 100
D. 110

109. Sodium silicate is one of the constituents in liquid soap. The graph shows the amount of sodium
silicate in liquid soap.



5. How much sodium silicate (ml) is used for making 10 L of soap?

A. 100
B. 110
C. 1000
D. 10000

6. Write an equation to show the relation between quantities of sodium silicate and liquid soap.

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