CHAPTER-4

Linear Equation in Two Variables

QUESTION BANK

(1) A linear equation in two variables is of the form ax + by + c =0, where
(a) a ≠0, b≠0 (b) a =0, b≠0
(c) a ≠0, b=0 (d) a =0, b=0

(2) The linear equation 2x – 5y =7 has
(a) a unique solution
(b) two solution
(c) infinitely many solutions
(d) no solution

(3) The equation 2x + 5y =7 has a unique solution, if x, y are
(a) natural numbers (b) positive real numbers
(c) real numbers (d) rational numbers

(4) The equation x =7, in two variables, can be written as
(a) 1.x + 1. Y =7 (b) 1.x + 0.y = 7
(c) 0.x +1.y=7 (d) 0.x +0.y =7

(5) 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

(6) Any solution of the linear equation 2x + 0y +9 =0 in two variables is of the form.
(a) $\left(-\frac{9}{2}, m\right)$ (b) $\left(n, -\frac{9}{2}\right)$
(b) $\left(0, -\frac{9}{2}\right)$ (d) (–9,0)

(7) The graph of the linear equation 2x +3y =6 cuts the y-axis at the points.
(a) (2,0) (b) (0, 3)
(c) (3, 0) (d) (0, 2)

(8) Any point on the x-axis is of the form
(a) (x, y) (b) (0, y)
(c) (x, 0) (d) (x, x)

(9) Any point of the line y =x is of the form
(a) (a, a) (b) (0, a) (c) (a, 0) (d) (a, –a)

(10) The equation of x-axis is of the form
(a) x =0 (b) y=0 (c) x+y=0 (d) x = y

(11) The graph of y =6 is a line

(a) parallel to x-axis at a distance 6 units from the origin.
(b) parallel to y-axis at a distance 6 units from the origin.
(c) making an intercept 6 on the x-axis
(d) making an intercept 6 on both the axes

(12) The correct solution of the equation $x - y = 12$ is
(a) (4, 3) (b) (0, 12)
(c) (12, 0) (d) (12, 12)

(13) Which of the following is not a solution of $2x + 3y = 12$?
(a) $x = 4, y = 3$ (b) $x = 3, y = 4$
(c) $x = 1, y = 5$ (d) $x = 7, y = 1$

(14) The cost of a network is twice the cost of a pen. Then the linear equation for this statement is
(a) $x - 2y = 0$ (b) $x + 2y = 0$
(c) $2x - y = 0$ (d) $2x + y = 0$

(15) Which of the following is not a linear equation?
(a) $3(x + 8) = 2x + 7$ (b) $x(x + 3) = -x(3 - x) + 8$
(c) $x(x - 8) = -x(3 - x) + 8$ (d) $x(x - 8) = -3x(x - 5)$

(16) Which of the following is a solution of the equation $x - 2y = 4$?
(a) (0, 2) (b) (2, 0) (c) $(\sqrt{2}, 4\sqrt{2})$ (d) (4, 0)

(17) $x = 5, y = 2$ is a solution of the linear equation
(a) $x + 2y = 7$ (b) $5x + 2y = 7$ (c) $x + y = 7$ (d) $5x + y = 7$

(18) If a linear equation has solutions (–2, 2), (0,0) and (2, –2), then it is of the form.
(a) $y - x = 0$ (b) $x + y = 0$ (c) $-2x + y = 0$ (d) $-x + 2y = 0$

(19) The positive solutions of the equation $ax + by + c = 0$ always lie in the
(a) 1st quadrant (b) 2nd quadrant
(c) 3rd quadrant (d) 4th quadrant

(20) The graph of the linear equation $2x + 3y = 6$ is a line which meets the x-axis at the point
(a) (0, 2) (b) (2, 0) (c) (3, 0) (d) (0, 3)

(21) The graph of the linear equation $y = x$ passes through the point

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

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

(22) 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) changes in case of multiplication only

(d) changes in case of division only.

(23) How many linear equations in x and y can be satisfied by x =1 and y =2?

(a) only one (b) two

(c) infinitely (d) three

(24) The point of the form (a, a) always lies on

(a) x-axis (b) y-axis

(c) on the line y =x (d) on the line x + y =0

(25) The point of the form (a, –a) always lies in the line

(a) x =a (b) y =–a (c) y =x (d) x + y =0

(26) The graph of x =a, a positive real number, is a straight line

(a) parallel to x-axis at a distance a units above the origin.

(b) parallel to x-axis at a distance a units below the origin.

(c) parallel to y-axis at a distance a units right of the origin

(27) An equation of the form ax+by+c=0 is called a linear equation in two variables if _____.

(28) A linear equation in two variables has _____solutions.

(29) The graph of every linear equation in two variables is a _____.

(30) x=0 is equation of the _____ and y=0 is the equation of _____.

(31) The graph of y =b is a straight line _____ to the x-axis.

(32) y=mx is a straight line passing through the _____.

(33) Every point on the graph of a linear equation is a _____ of the linear equation.

(34) If x =2, y=1 is a solution of the equation 2x + 3y =k, then k=_____.

(35) The solution of a linear equation is _____ when we multiply or divide both sides of the equation by the same non-zero number.

(36) The equation y =3x +5 has _____ solutions.

(37) Verify that x =10 is the solution of the linear equation: $\frac{1}{3}(x-1)-\frac{1}{4}(x-2)=1$

(38) Solve the linear equation : $2x-1=\frac{x+1}{2}$

(39) Solve the equation for x: $\frac{2x-1}{2x-3}=\frac{3x+1}{3x-1}$

(40) Solve for x : $\frac{2x-3}{5}+\frac{x+3}{4}=\frac{2x+3}{4}$

(41) Solve for x: $\frac{4}{x+1}+\frac{5}{x+3}=\frac{9}{x+2}$, where $x \neq -1, -2, -3$.

(42) Solve for x : $\frac{x-b-c}{a}+\frac{x-c-a}{b}+\frac{x-a-b}{c}=3$.

(43) Solve for x : $1+x=\sqrt{3}(1-x)$.

(44) The present age of a man is double the age of his son. Aftr 8 years, the ratio of their age will be 7 : 4. Assuming the present age of the son to be x years, write a linear relation and find their present ages.

(45) Write each of the following as an equation in two variables:

(i) x = –5 (ii) y =1

(46) Write each of the following equation in the form ax + by + c=0 and indicate the values of a, b and c in each case :

(i) $\sqrt{2}x-7y=3$ (ii) $\pi x+5y=9$ (iii) $\frac{x}{2}-\frac{y}{3}=7$

(47) The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.

(48) In five day cricket test match between India and Pakistan played, in Lahore two Indian batsman together scored 247 runs. Express this information in the form of an equation.

(49) For the first kilometer, the auto fare is ₹12 and the subsequent distance is ₹ 7per km. Taking the distance covered as x km and the total fare as Rs.y, write a linear equation for this information.

(50) Verify that x = –15 is a solution of linear equation : $\frac{x}{5} + 2 = \frac{x}{3} + 4$.

(51) Solve the following linear equation :

(x–1) (x+4) = (x–2) (x+8)

(52) Solve the following linear equation:

$1+x = \sqrt{2}\,(1-x)$

(53) Divide ₹ 450 in three parts such that half of the first part, one-third of the second part and one-fourth of the third part are all equal.

(54) Sonu and Monu together contributed ₹1800 towards Earthquake Fund. Express this statement as a linear equation in two vriables.

(55) Five years hence a man's age will be three times his son's age. Assuming their present ages to be x years and y years respectively, write a linear equation in terms of x and y.

(56) For the first kilometer, the auto fare is ₹8 and for the subsequent distance is ₹3.5 per km. Taking distance covered as x km and the total fare ₹y, write a linear equation for this information.

(57) A two-digit number is 4 more than 6 times the sum of its digits. Write linear equation in two variables to represent this statement.

(58) The ratio of a two-digit number and the number obtained by interchanging the digits is 4 : 7. Write a linear equation for this statement.

(59) Write four solutions for each of the following equations:

(i) 2x + y=7 (ii) πx + y=9 (iii) x = 4y

(60) Find four different solutions of the equation x + 2y =6.

(61) Check which of the following are solutions of the equation x –2y=4 and which are not :

(i) (0,2) (ii) (2, 0) (iii) (4,0) (iv) $(\sqrt{2}, 4\sqrt{2}$

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

(63) Express x in the terms of y given $\frac{x}{3}$ +2y =5. Check whether x =3, y=2 is the solution of this equation.

(64) Find the value of a so that each of the following equation may have x =1, y=1 as a solution.

(i) 3x + ay = 6 (ii) ax –2y =10

(65) For what value of k, the linear equation 2x + ky = 8 has equal values of x and y for its solution?

(66) If x = 2k + 1 and y = k–1 is a solution of the equation 2x – 3y + 5=0, find the value of k.

(67) If x =2, y =5 is a solution of the equation a^2x + ay + 3=0, then find the value of a.

(68) If $x = k^2$ and y =k is a solution of the equation x – 3y =10, find the values of k.

(69) Find solutions of the form x =a, y =0 and x =0, y =b for each the following pairs of equations. Do they have any common solution out of these solutions?

(70) Draw the graph of each of the following linear equations in two variables:

(i) x +y =4 (ii) x –y=2 (iii) y =3x (iv) 3 = 2x +y

(71) Draw the graph of the linear equation 2x + 3y =12. At what points, the graph of the equation cuts the x-axis and the y-axis?

(72) Give the equation of two lines passing through (2, 14). How many more such lines are there, and why?

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

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

(75) Draw the graph of the linear equation whose solutions are represented by the points having the sum of the coordinate as 10 units.

(76) The following values of x and y are thought to satisfy a linear equation:

x	1	2
y	1	3

Draw the graph, using the values of x, y, as given in the above table. At what point the graph of the linear equation.

(i) cuts the x-axis. (ii) cuts the y-axis.

(77) The following observed values of x and y are thought to satisfy a linear equation. Write the linear equation.

x	6	–6
y	–2	6

Draw the graph using the values of x, y as given in the above table. At what points the graph of the linear equation.

(i) cuts the x-axis (ii) cuts the y-axis.

(78) Show that the points A (1, 2), B (–1, –16) and C (0, –7) lie on the graph of the linear equation y = 9x – 7.

(79) Yamini and Fatima, two students of class IX of a school, together contributed ₹100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which this data satisfies. (You may take their contribution as ₹x and ₹y). Draw the graph of the same.

(80) 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 km. Taking the distance covered as x km and total fare ₹y, write a linear equation for this information, and draw its graph. From the graph, calculate the fare for 5 km.

(81) Let y vary directly as x. If y=12 when x =4, then write a linear equation. What is the value of y when x =5?

(82) The force exerted to pull a cart is directly proportional to the acceleration produced in the body. Express the statement as a linear of two variables and draw the graph of the same by taking the constant mass equal to 6 kg. Read from the graph, the force required when the acceleration produced is (i) 5 m/sec^2, (ii) 6 m/sec^2.

(83) Draw the graphs of $3x - 2y = 1$ and $2x + y = -4$ and write the coordinates of the point where the graphs intersect.

(84) Sketch the graph of the equation $3x + 5y = 15$. Find the area of the figure formed by this line and the two axes.

(85) Draw the graph of the linear equation $3x + 4y = 6$. At what points, the graph cuts the x-axis and the y-axis? Also shade the region enclosed by the line and the two axes.

(86) Draw the graphs of $2x + y = 6$ and $2x - y + 2 = 0$. Shade the region bounded by these two lines and the x-axis. Find the area of the shaded region.

(87) Draw the graph of the line $y = |x|$.

(88) Draw the graph of $3x + 4y = 14$

(89) Express y in terms of x, given that $2y - 4x = 7$. Check whether $(-1, -1)$ is a point on the given line.

(90) 4 years before the age of a mother was three times the age of her daughter. Write a linear equation to represent this situation and draw its graph.

(91) Shade the triangle formed by the graphs of $2x - y = 4$, $x + y = 2$ and the y –axis. Write the coordinates of the vertices of the triangle formed.

(92) Draw the graph of the equation represented by the straight line which is parallel to the x-axis and is 4 units above it.

(93) Give the geometric represented of $y = 3$ as an equation

(i) in one variable (ii) in two variables

(94) Give the geometric representation of $2x + 9 = 0$ as an equation

(i) in one variable (ii) in two variables

(95) Give the geometric representation of $3x + 1 = 2x - 4$ as an equation

(i) in one variable (ii) in two variable

(96) Write the equations of the lines drawn in the following graph. Also, find the area enclosed between them.

(97) Draw the graph of $3x + 2 = 0$ and $2y - 1 = 0$. Do these lines intersect? What relationship do you observe between these lines?

(98) Draw the graph of $y=3$ as an equation in two variables. What does the graph represent?

(99) Write the equation of a line parallel to y-axis.

(100) Is $(3, -2)$ a solution of linear equation $x - y = 1$?

(101) The age of Joseph is one and half time the age of John. Express this statement as a linear equation in two variables.

(102) The graph of a linear equation in two variables is always a straight line. True or false?

(103) Express the linear equation n the form $ax + by + c = 0$ and indicate the values of a, b, c: $y - 2 = 0$.

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

(105) Determine the point on the graph of the linear equation $x + y = 6$, whose ordinate is 2 times its abscissa.

(106) Find the points $(-1, -5)$, lies on the graph of $3x = ay + 7$, then find the value of a.

(107) Find the points where the graph of the equation $3x + 4y = 12$ cuts the x-axis and the y-axis.

(108) Determine the point on the graph of the equation $2x + 5y = 20$ whose x-coordinate is $\frac{5}{2}$ times its ordinate.

(109) Find any four different solutions of the equation $2x - 5y = 10$.

(110) If $x = 2$ and $y = 3$ is a solution of $2x + 3y = k$, find the value of k.

(111) Write the coordinates of any four points which lie on the graph of 2x + y=4. How many such points exist?

(112) The cost of a toy horse is same as that of cost of 3 balls. Express this statement as a linear equation in two variables. Also draw its graph.

(113) Identify the points whose coordinates are given in the following table which lie on the graph of 2x– y=0.

x	–1	0	1	4	3
y	–2	0	–2	2	6

Draw the graph of the equation.

(114) For what value of k, the linear equation 2x + ky = 8 has equal values of x and y for its solution?

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

(116) The ratio of a two-digit number and the number obtained by interchanging the digits is 6 : 9. Write a linear equation for this statement.

(117) Five years hence a man's age will be three times his son's age. Assuming their present ages to be x years and y years respectively, write a linear equation in terms of x and y.

(118) A two-digit number is 4 more than 6 times the sum of its digits. Write linear equation in two variables to represent this statement.

(119) Draw the graphs of 3x – 2y =1 and 2x + y= –4 and write the coordinates of the point where the graphs intersect.

(120) Find four different solutions of the equation x + 4y =8.

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