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LINEAR EQUATIONS IN TWO VARIABLES

Class :- IX	Subject :- Math

General Instructions

QNo.	Questions
1	Express the following linear equation in the form $ax + by + c = 0$ and indicate the values of a, b and c in each case,

(i) $3x + \sqrt{5}y = 6$ (ii) $5y = 4$

(iii) $3x + 5y = \sqrt{3}$ (vi) $\sqrt{2}x + \sqrt{3}y = 2$

(i) $3x + \sqrt{5}y(-6) = 0$ $a = 3, = \sqrt{5}, c = -6$

(ii) $0x + 5y + (-4) = 0$ $a = 0, b = 5, c = -4.$

(iii) $3x + oy + (5 - \sqrt{3}) = 0$ $a = 3, b = 0, c = 5 - \sqrt{3}.$

(iv) $\sqrt{2}x + \sqrt{3}y + (-2) = 0$ $a = \sqrt{2}, b = \sqrt{3}, c = -2$

QNo.	Questions
2	Draw the graph of $3x - 6 = 0$ in one variable
3	Draw the graph of $5y = 4$ in two variables.
4	Draw the graph of $y = -2x$. Show that the point $(2, -5)$ is not on the graph.
5	Draw the graph of $y = x$ show that the point $(-3, -3)$ is on the graph.
6	Find the value of k, if line represented by the equation $2x - ky = 9$ passes through the point $(-1, -1)$.
	$k = 11$
7	Draw the graph of (i) $5 + 3x = 0$ (ii) $2y - 7 = 0$ in two variable
8	Which of the following is a solution of the equation $3x + 2y = 10$. (i) (2, 2) (ii) (0, 5) (iii) (1, 3)
	(i) (2, 2) is a solution (ii) (0, 5) is a solution. (iii) (1, 3) is not a solution.
9	Check whether $x = 2$ and $y = 6$ is a solution of $3(x - 2) + 2(y + 3) = 6$. Find one more solution. How many more solution can you find.
	No $x = 2$ and $y = 6$ is not a solution (0, 3) is a solution. Infinite solutions can be find.
10	Express x in terms of y given $\frac{x}{3} + 2y = 5$ Check whether $x = 3$, $y = 2$ is the solution of this equation.
	$x = 3(5 - 2y)$ yes $x = 3$, $y = 2$ is the solution of this equation.
11	Give the equations of two lines passing through $(-1, 3)$. How many more such lines are there and why?
	$x + y = 2$, $x - y = -4$ are two equation passing through $(-1, 3)$ Infinite lines are there (through a

point infinite lines can pass.)

12 Find solutions of the form x = a, y = 0 and x = 0, y = b for each of the following pairs of equations. Do they have any common solution. (i) $3x + 2y = 6$ and $5x – 2y = 10$ (ii) $5x + 3y = 15$ and $5x + 2y = 10$ (iii) $9x + 7y = 63$ and $x – y = 10$.

(i) (2, 0), (2, 0) and (0, 3), (0, – 5) yes they have common sol. (2, 0). (ii) (3, 0), (2, 0) and (0, 5), (0, 5) yes they have common sol. (0, 5) (iii) (7, 0), (10, 0) and (0, 9), (0 – 10) No they do not have any common sol.

13 Draw the graph of each of the following equations. Read a few solution from the graph and verify the same by actual substitution. In each case, find the points where the line meets the two axes. (i) $2(x–1) + 3y = 4$ (ii) $x –2y = 4$. (iii) $2 (x + 3) – 3(y + 1) = 0$ (iv) $(x – 4) – y + 4 = 0$.

(i) The line meeds x-axis at (3, 0) and y-axis at (0, 2) (ii) The line meets x-axis at (4, 0) and y-axis at (0, – 2) (iii) The line meets x-axis at (–3/2, 0) and y-axis at (0, 1) (iv) The line meets both axis at (0, 0)

14 Draw the graph of $y – 2x = – 3$ and check if (2, 3) is on the graph.

(2, 3) is not graph.

15 Express y interms of x, given that $2x – 5y = 7$. check whether the point (–3, – 2) is on the given line.

$y = \frac{2x-7}{5}$, No (–3, –2) is not on line

16 Find the point of intersection of the line represented by the equation $7x + y = – 2$ with y-axis. Check whether the point (1, 5) is a solution of the given equation.

The point of intersection of the line with y-axis is (0, –2). (1, 5) is not a solution given line.

17 Draw the graph of $\frac{3}{2}x + \frac{5}{4}y = \frac{17}{4}$ Also find the points where the graph of the equations meets the two axes.

x-axis at $\left(\frac{17}{6}, 0\right)$ y-axis at $\left(0, \frac{17}{6}\right)$

18 Draw the graph of the equation $2x + 3y = 6$. From the graph read the value of x when $y = 4$.

$x = – 3$

19 Find four solutions of the following equation in two variables: $2 (x + 3) – 3(y +1) = 0$.

20 Draw the graph of the equations $x – y = 0$ Find the points where the line meets both axis

(0, 0)

21 MTNL charges a fixed rent which includes 75 free calls, thereafter each call is to be paid@ of a fixed cost. If a person paid Rs 500 for the month of August which includes 325 calls. Write a linear equation in two variables to represent this.

$x + 250y = 500$

22 In a hostel there is some fix rent and remaining depends upon the number of days food taken by the student in mess. If a student took food for 25 days and paid Rs 500, write this statement in linear equation of two variables and also draw the graph of the same.

$x + 25y = 500$,

23 A person starts his job with certain monthly salary and earns a fixed increment every year. If his salary was Rs 1500 after 4 years. Write this statement in linear equation in two variables and

draw the graph also.

x + 4y = 1500

24 Write the following statements in linear equations in two variables and also draw the graph. (i) Perimeter of a rectangle is 36m. (ii) Cost of 2 variables and 3 strawberry is Rs 110. (iii) Cost of 2 tables and 3chairs is Rs 250 (iv) Cost of a pen is twice the cost of pencil. (v) Cost of a table is Rs 50 more than cost of 2 chairs.

(i) x + y = 18; (ii) 2x + 3y = 110; (iii) 2x + 3y = 250; (iv) x = 2y; (v) x = 2y + 50

25

Write each of the following in the form ax + by + c = 0:

(i) x = – 2

(ii) y = 6

26 Write each of the following in the form ax + by + c = 0.

(i) 3x = 5

(ii) 5y = 4

27 The total runs scored by two batsmen in a one-day cricket match is 215. Express this information in the form of a linear equation in two variables.

28 The weight of a book is three times the weight of a note book. Express this fact in the form of an equation in two variables.

29 Check which of the following are solutions of the equation 2x – 3y = 6.

(i) (3, 0)

(ii) (0, 2)

(iii) (2, 6)

(iv) (6, 2)

30 Find the value of k, if x = 3, y = 1 is a solution of the equation 2x + 5y = k.

31 Find four different solutions of 2x + y = 6.

32

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

33 Show that (3, 1) as well as (2, –2) are the solutions of the equation 3x – y = 8. Find two more solutions. How many solutions can we find?

34 For the equation 6x – 5y = 8, verify that

(i) (3, 2) is a solution

(ii) (2, 3) is not a solution.

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

36 Find two solutions for each of the following:
(i) $3x + 4y = 12$
(ii) $3x + 5y = 0$
(iii) $4y + 5 = 0$

37 Draw the graph of the equation $3x + 5y - 15 = 0$ and show that $x = 1$, $y = 2$ is not a solution of the given equation.

38 Give the geometrical representation of $x = 3$ as an equation in
(i) one variable
(ii) in two variables

39 For the line $2x + 3y = 6$, we have
(i) x-intercept = ...
(ii) y-intercept = ...

40 Draw the graph of the line $y = x$ and show that the point $(2, 3)$ does not lie on it.

41 Draw the graph of $2x - 3y = 4$. From the graph , find whether $x = -1$, $y = -2$ is a solution or not.

42 Draw the graph of the equation $3x + 2y = 12$. At what points does the graph cut the x-axis and y-axis.

43 Draw the graph of the equation $x - 2y = 6$. Verify that each of the points $P(2, -2)$, $Q(4, -1)$ and $R(-2, -4)$ lies on the straight line.

44 There are two scales of measuring temperature, namely, Fahrenheit(F) and Celsius (C). The relation between the two sclaes is given by

$$F = \frac{9}{5}C + 32$$

(i) Draw the graph of the given linear equation taking C along x-axis and F along y-axis.
Fill in the blanks given below:
(ii) $0^0C = (.........)^0F$
(iii) $95^0F = (...........)^0C$
(iv) $0^0F = (...........)^0C$
(v) Find the temperature which is numerically the same in both (F) and (C).

45 A taxi charges Rs 20 for the first km and @ Rs 12 per km for subsequent distance covered. Taking the distance covered as x km and total fare Rs y, write a linear equation depicting the relation in x and y.
Draw the graph between x and y.
From your graph find the taxi charges for covering 16 km.

46 If the work done by a body on applying a constant force is directly proportional to the distance travelled by the body, then express this in the form of an equation in two variables by taking the constant force as 4 units. From the graph, find the work done when the distance travelled is (i) 2 units (ii) 0 unit (iii) 5 units.