LINEAR EQUATIONS IN TWO VARIABLES

CLASS IX *SUJITHKUMAR KP*

1 Tell whether the equation $x(x + 2) – x^2 + y(y – 3) – y^2 = 0$ is an equation of linear equation in 2 variables or not.

ANS: $x(x + 2) – x^2 + y(y – 3) – y^2 = 0$

or $x^2 + 2x – x^2 + y^2 – 3y – y^2 = 0$

$\Rightarrow 2x – 3y = 0 \Rightarrow 2x – 3y + 0 = 0$

This equation is in the form $ax + by + c = 0$, where $a = 2$, $b = –3$, $c = 0$. Hence, this is a linear equation in two variables.

2 Express the following linear equations in the form $ax + by + c = 0$ and indicate the value of a, b and c in each case:

(i) $3x + 4y = 5$ (ii) $3x = \frac{8}{3}y + 10$ (iii) $5y = 10x – 7$

(iv) $2x + 8 = 11y$ (v) $x = 5y$ (vi) $\frac{3}{5}x = 2y$

(vii) $8x = 7$ (viii) $4y = \frac{8}{3}$ (ix) $5 = 6y$ (x) $12 = \frac{5}{2}x$

ANS: (i) $3x + 4y = 5 \Rightarrow 3x + 4y – 5 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 3$, $b = 4$, $c = –5$

(ii) $3x = \frac{8}{3}y + 10 \Rightarrow 3x – \frac{8}{3}y – 10 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 3$, $b = –\frac{8}{3}$, $c = –10$

(iii) $5y = 10x – 7 \Rightarrow -10x + 5y + 7 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = – 10$, $b = 5$, $c = 7$

(iv) $2x + 8 = 11y \Rightarrow 2x – 11y + 8 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 2$, $b = –11$, $c = 8$

(v) $x = 5y \Rightarrow x – 5y = 0 \Rightarrow 1.x – 5y + 0 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 1$, $b = –5$, $c = 0$

(vi) $\frac{3}{5}x = 2y \Rightarrow \frac{3}{5}x – 2y = 0 \Rightarrow \frac{3}{5}.x – 2y + 0 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = \frac{3}{5}$, $b = -2$, $c = 0$

(vii) $8x = 7 \Rightarrow \quad 8x - 7 = 0 \Rightarrow \quad 8.x + 0.y - 7 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 8$, $b = 0$, $c = -7$

(viii) $4y = \frac{8}{3} \Rightarrow \quad 4y - \frac{8}{3} = 0 \Rightarrow \quad 0.x + 4y - \frac{8}{3} = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 0$, $b = 4$, $c = -\frac{8}{3}$

(ix) $5 = 6y \Rightarrow \quad -6y + 5 = 0 \Rightarrow \quad 0.x - 6y + 5 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = 0$, $b = -6$, $c = 5$

(x) $12 = \frac{5}{2}x \Rightarrow \quad -\frac{5}{2}x + 12 = 0$

$\Rightarrow \quad -\frac{5}{2}x + 0.y - 12 = 0$

This equation is in the form $ax + by + c = 0$

Now, on comparing, we have

$a = -\frac{5}{2}$, $b = 0$, $c = -12$

3 Find a, if linear equation $3x - ay = 6$ has one solution as (4, 3).

ANS: On putting $x = 4$ and $y = 3$ in the equation $3x - ay = 6$, we have

$3 \times 4 - a \times 3 = 6$

$\Rightarrow \quad 12 - 3a = 6 \Rightarrow \quad 12 - 6 = 3a \Rightarrow \quad 3a = 6$

$\Rightarrow \quad a = \frac{6}{3} \Rightarrow \quad a = 2$

Hence, $a = 2$.

4 Find the value of b, if $x = 5$, $y = 0$ is a solution of the equation $3x + 5y = b$.

ANS: On putting $x = 5$ and $y = 0$ in the equation $3x + 5y = b$, we have

$3 \times 5 + 5 \times 0 = b$

$\Rightarrow \quad 15 + 0 = b \Rightarrow \quad b = 15$

Hence, $b = 15$.

5 For what value of k, $x = 2$ and $y = -1$ is a solution of $x + 3y - k = 0$.

ANS: On putting $x = 2$ and $y = -1$ in the equation $x + 3y - k = 0$, we have

$2 + 3 \times (-1) - k = 0$

$\Rightarrow \quad 2 - 3 - k = 0 \Rightarrow \quad -1 - k = 0$

$\Rightarrow \quad k = -1$

6 If a line represented by the equation $3x + \alpha y = 8$ passes through (1, 1), then find the value of α.

ANS: $3x + \alpha y = 8$ ...(i)

On putting $x = 1$ and $y = 1$ in (i), we have

$3 \times 1 + \alpha \times 1 = 8 \Rightarrow \quad 3 + \alpha = 8$

$\Rightarrow \quad \alpha = 8 - 3 \Rightarrow \quad \alpha = 5$

7 Find the value of α, so that $x = 1$ and $y = 1$ is a solution of the equation $5\alpha x + 30\alpha y = 70$.

ANS: On putting $x = 1$ and $y = 1$ in equation $5\alpha x + 30\alpha y = 70$, we have

$5\alpha \times 1 + 30\alpha \times 1 = 70 \Rightarrow 5\alpha + 30\alpha = 70$

$\Rightarrow 35\alpha = 70 \Rightarrow \alpha = \frac{70}{35} \Rightarrow \alpha = 2$

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

ANS: On putting $x = 2$ and $y = 0$ in the equation $2x + 3y = k$, we have

$2 \times 2 + 3 \times 0 = k$

$4 + 0 = k \Rightarrow k = 4$

9 Is the point (0, 3) lie on the graph of the linear equation $3x + 4y = 12$?

ANS: $3x + 4y = 12$

On putting $x = 0$ and $y = 3$ in the given linear equation, we have

$3 \times 0 + 4 \times 3 = 12 \Rightarrow 0 + 12 = 12 \Rightarrow 12 = 12$, true

So, the point (0, 3) lies on the graph of the linear equation $3x + 4y = 12$.

10 At what point the graph of the linear equation $x + y = 5$ cuts the x-axis?

ANS: At x-axis, $y = 0$

On putting $y = 0$ in $x + y = 5$, we have

$x + 0 = 5 \Rightarrow x = 5$

Therefore, the graph of the linear equation $x + y = 5$ cuts the x-axis at (5, 0).

11 At what point the graph of the linear equation $2x – y = 7$ cuts the y-axis.

ANS: At y-axis, $x = 0$

On putting $x = 0$ in $2x – y = 7$, we have

$2 \times 0 – y = 7$

$\Rightarrow 0 – y = 7$

$\Rightarrow y = –7$

Therefore, the graph of the linear equation $2x – y = 7$ cuts the y-axis at (0, –7).

12 Express $2x = 5y$ in the form $ax + by + c = 0$

ANS: $2x – 5y = 0$

$\Rightarrow 2x – 5y + 0 = 0$ …(i)

From (i), we notice, it is an equation of the form

$ax + by + c = 0$

where $a = 2$, $b = – 5$, $c = 0$

13 Tell whether the equation $y(y + 3) – y^2 + 4x + 8 = 0$ is an equation of linear equation in 2 variables or not

ANS: $y(y + 3) – y^2 + 4x + 8 = 0$

$\Rightarrow y^2 + 3y – y^2 + 4x + 8 = 0$

$\Rightarrow 4x + 3y + 8 = 0$ …(i)

From (i), we notice, it is an equation of the form $ax + by + c = 0$, where $a = 4$, $b = 3$ and $c = 8$.

So, it is a linear equation of two variables.

14 Express $–5y = 8x + 2$ in the form $ax + by + c = 0$ also find a, b and c.

ANS: $–5y = 8x + 2 \Rightarrow 8x + 5y + 2 = 0$ …(i)

From (i), we notice, it is an equation of the form

$ax + by + c = 0$

where, $a = 8$, $b = 5$, $c = 2$

15 Find b, if linear equation $3bx – y = 9$ has one solution as (3, 3).

ANS: $3bx – y = 9$ ...(i)

On putting (3, 3) in (i), we have

$3b \times 3 - 3 = 9 \Rightarrow 9b - 3 = 9 \Rightarrow 9b = 12$

$\Rightarrow \quad b = \frac{12}{9} \Rightarrow \quad b = \frac{4}{3}$

16 How many solution(s) of the linear equation $2x + 3y = 18$ has?

ANS: $2x + 3y = 18$

$2x + 3y = 18$ is a linear equation in two variables. So, it has infinite solutions.

17 Find the value of k, if the line $3kx = 5 + 2y$, will pass through: (i) (1, 1) (ii) (1, 2) (iii) (2, 1)

ANS: $3kx = 5 + 2y$ ...(i)

(i) On putting (1, 1) in (i), we have

$3k \times 1 = 5 + 2 \times 1$

$\Rightarrow \quad 3k = 5 + 2 \Rightarrow \quad k = \frac{7}{3}$

(ii) On putting (1, 2) in (i), we have

$3k \times 1 = 5 + 2 \times 2$

$\Rightarrow \quad 3k = 5 + 4 \Rightarrow \quad k = 3$

(iii) On putting (2, 1) in (i), we have

$3k \times 2 = 5 + 2 \times 1$

$\Rightarrow \quad 6k = 5 + 2 \Rightarrow \quad k = \frac{7}{6}$

18 Side of an equilateral triangle is x. If the perimeter is 30 cm, find the value of x.

ANS: $x + x + x = 30$

$3x = 30 \Rightarrow \quad x = 10$

19 Is the point (2, 1) lie on the graph of the linear equation $5x + 15y = 19$?

ANS: $5x + 15y = 19$ ...(i)

On putting (2, 1) in (i), we have

$5 \times 2 + 15 \times 1 = 19$

$\Rightarrow \quad 10 + 15 = 19$

$25 = 19$, false Hence, the point (2, 1) is not lie on the graph of the given linear equation $5x + 15y = 19$.

20 Is the point (3, 0) lie on the graph of the linear equation $5x - y = 15$?

ANS: $5x - y = 15$ ...(i)

On putting (3, 0) in (i), we have

$5 \times 3 - 0 = 15$

$15 = 15$, true

Hence, the point (3, 0) lie on the graph of the linear equation $5x - y = 15$.

21 The cost of a pen is three times the cost of a pencil. Write a linear equation in two variables to represent this statement.

(Take the cost of a pen to be Rs. x and that of a pencil to be Rs y)

ANS: Let the cost of a pen be Rs x and that of a pencil be Rs y.

According to question,

$x = 3y \Rightarrow \quad x - 3y = 0$

Hence, this is required equation

22 Age of x is more than the age of y by 10 years. Express this statement in linear equation.

ANS: According to question,

$x = y + 10$

$\Rightarrow \quad x - y - 10 = 0 \Rightarrow \quad 1.x - 1.y - 10 = 0$

This equation is in the form $ax + by + c = 0$,

where $a = 1$, $b = -1$, $c = -10$

Hence, this is required linear equation.

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

ANS: Let x be the abscissa and y be the ordinate
According to question,
$y = 3x \Rightarrow y - 3x = 0$
Hence, this is required linear equation.

24 When a number is divided by another number, the quotient and remainder obtained are 9 and 1 respectively. Express this information in linear equation.
ANS: Let the dividend be y and the divisor be x
We know that,
Dividend = Divisor × Quotient + Remainder
According to question, $y = 9x + 1$

25 The sum of a two-digit number and the number obtained by reversing the order of its digits is 88. Express this information in linear equation.
ANS: Let unit's digit be x and ten's digit be y.
then original number be $(10y + x)$
after reversing the order of digits new number be $(10x + y)$
According to question,
$10y + x + 10x + y = 88$
$11x + 11y = 88$
$x + y = 8$ (dividing both sides by 11)

26 Write a linear equation on which the point of the form $(a, -a)$ always lies.
ANS: Here, $x = a$, $y = -a$
That means for $x = a$, we get $y = -a$ and vice versa.
Therefore, $x + y = 0$ and $-x - y = 0$ are equations for which the point of the form $(a, -a)$ always lies.

27 Find two solutions for the equation $4x + 3y = 24$. How many solutions of this equation are possible?
ANS: $4x + 3y = 24$
On putting $x = 0$, we have $4 \times 0 + 3y = 24 \Rightarrow 0 + 3y = 24 \Rightarrow 3y = 24$
$\Rightarrow y = \frac{24}{3} \Rightarrow y = 8$
On putting $y = 0$, we have
$4x + 3 \times 0 = 24 \Rightarrow 4x + 0 = 24 \Rightarrow 4x = 24$
$\Rightarrow x = \frac{24}{4} \Rightarrow x = 6$
Therefore, two solutions are (0, 8) and (6, 0).
Given equation is a linear equation in two variables. Therefore, it has infinitely many solutions

28 . Write $3x + 2y = 18$ in the form of $y = mx + c$. Find the value of m and c. Is (4, 3) lies on this linear equation?
Given: $3x + 2y = 18$
$\Rightarrow y = \frac{18-3x}{2} = -\frac{3}{2}x + 9$
On comparing, we get $m = -\frac{3}{2}$ and $c = 9$
Substitute $x = 4$ in (i), we get $y = -\frac{3}{2} \times 4 + 9 = -6 + 9 = 3$
Hence, point (4, 3) lies on $3x + 2y = 18$.

29 Find the value of a and b, if the line $6bx + ay = 24$ passes through (2, 0) and (0, 2).
ANS: $6bx + ay = 24$ ...(i)
On putting $x = 2$ and $y = 0$ in (i), we have
$6b \times 2 + a \times 0 = 24 \Rightarrow 12b + 0 = 24 \Rightarrow 12b = 24$
$\Rightarrow b = \frac{24}{12} \Rightarrow b = 2$
On putting $x = 0$ and $y = 2$ in (i), we have
$6b \times 0 + a \times 2 = 24 \Rightarrow 0 + 2a = 24 \Rightarrow 2a = 24$

$\Rightarrow \quad a = \frac{24}{2} \Rightarrow \quad a = 12$

Hence, value of a and b are 12 and 2 respectively.

30 Check whether the equation $(x - 5)x + 6y - x^2 = 0$ is an equation of the form $ax + by + c = 0$ or not.

ANS: $(x - 5)x + 6y - x^2 = 0 \Rightarrow x^2 - 5x + 6y - x^2 = 0$

$\Rightarrow \quad -5x + 6y + 0 = 0 \quad \ldots(i)$

From (i), we notice, it is an equation, of the form

$ax + by + c = 0$ where, $a = -5$, $b = 6$, $c = 0$

31 Age of x is less than the age of y by 5 years. Express this statement in linear equation.

ANS: According to question, $x + 5 = y \Rightarrow x - y + 5 = 0$

This is the required linear equation.

32 The cost of a notebook is 5 times the cost of a calendar. Write a linear equation in two variables to represent this statement.

ANS: Let x be cost of a notebook and y be cost of a calendar.

According to question, $x = 5y$

33 Write the linear equation if each point on its graph has an abscissa 2 times its ordinate

ANS: Let x be the abscissa and y be the ordinate

According to the question, $x = 2y$

34 Write a linear equation on which the point of the form $(-b, b)$ always lies.

ANS: $x + y = 0 \quad \ldots(i)$

On putting $(-b, b)$ in (i), we have

$-b + b = 0$, True

Hence, $x + y = 0$ is a linear equation, on which point $(-b, b)$ lies.

35 If x years represents the present age of the father and y years represents the present age of the son, then find the equation of the statement "present age of the father is 5 more than 6 times age of the son".

ANS: According to the question,

$x = 6y + 5$

36 Find the two solutions for the equation $3x - 4y = 12$. How many solutions of this equation are possible?

ANS: $3x - 4y = 12 \quad \ldots(i)$

On putting $x = 0$ in (i), we have

$3 \times 0 - 4y = 12 \Rightarrow 0 - 4y = 12 \Rightarrow y = -3$

On putting $y = 0$ in (i), we have

$3x - 4 \times 0 = 12 \Rightarrow 3x = 12 \Rightarrow x = 4$

Hence, $(0, -3)$ and $(4, 0)$ are two solutions of the equation $3x - 4y = 12$.

Given equation $3x - 4y = 12$ is a linear equation in two variables. Hence, it has infinite solutions

37 Find the value of a and b, if the lines $2ax + 7by = 14$ and $3ax - 7by = 6$ pass through (2, 1).

ANS: $2ax + 7by = 14 \quad \ldots(i)$

$3ax - 7by = 6 \quad \ldots(ii)$

On putting (2, 1) in (i), we have

$2a \times 2 + 7b \times 1 = 14$

$\Rightarrow \quad 4a + 7b = 14 \quad \ldots(iii)$

On putting (2, 1) in (ii), we have

$3a \times 2 - 7b \times 1 = 6$

$\Rightarrow \quad 6a - 7b = 6 \quad \ldots(iv)$

On adding (iii) and (iv), we have

$10a = 20 \Rightarrow a = 2$

On putting $a = 2$ in (iii), we have

$4 \times 2 + 7b = 14 \Rightarrow 8 + 7b = 14$

$\Rightarrow\ 7b = 6\ \Rightarrow\ b = \frac{6}{7}$

38 Find the value of a, if the line $3y = ax + 7$, will pass through:
(i) (3, 4), (ii) (1, 2), (iii) (2, –3)
ANS: $3y = ax + 7$
(i) Putting $x = 3$ and $y = 4$ in the given equation of line, we have
$3 \times 4 = a \times 3 + 7\ \Rightarrow\ 12 = 3a + 7\ \Rightarrow\ 3a = 12 - 7$
$\Rightarrow\ 3a = 5\ \Rightarrow\ a = \frac{5}{3}$
(ii) Putting $x = 1$ and $y = 2$ in the given equation of line, we have
$3 \times 2 = a \times 1 + 7\ \Rightarrow\ 6 = a + 7\ \Rightarrow\ a = 6 - 7\ \Rightarrow\ a = -1$
(iii) Putting $x = 2$ and $y = -3$ in the given equation, we have
$3 \times (-3) = a \times 2 + 7\ \Rightarrow\ -9 = 2a + 7\ \Rightarrow\ 2a = -9 - 7$
$\Rightarrow\ 2a = -16\ \Rightarrow\ a = -8$

39 Show that the points A (1, 2), B (–1, –16) and C (0, –7) lie on the graph of the linear equation $y = 9x - 7$.
ANS: $y = 9x - 7$
or $9x - y = 7$ ...(i)
On putting $x = 1$, $y = 2$ in (i), we have
$9 \times 1 - 2 = 7\ \Rightarrow\ 9 - 2 = 7$
$\Rightarrow\ 7 = 7$, true.
Therefore, (1, 2) is a solution of linear equation $y = 9x - 7$.
On putting $x = -1$, $y = -16$ in (i), we have
$9 \times (-1) - (-16) = 7\ \Rightarrow\ -9 + 16 = 7$
$\Rightarrow\ 7 = 7$, true.
Therefore, (– 1, – 16) is a solution of linear equation $y = 9x - 7$.
On putting $x = 0$, $y = -7$ in (i), we have
$9 \times 0 - (-7) = 7\ \Rightarrow\ 0 + 7 = 7$
$\Rightarrow\ 7 = 7$, true.
Therefore, (0, –7) is a solution of linear equation $y = 9x - 7$.

40 Determine the point on the line of linear equation $2x + 5y = 20$ whose x-coordinate is $\frac{5}{2}$ times its ordinate.
ANS: Given: The x-coordinate of the point is $\frac{5}{2}$ times its y-coordinate $\quad x = \frac{5y}{2}$
Now, putting $x = \frac{5y}{2}$ in the given line $2x + 5y = 20$, we get
$2 \times \frac{5y}{2} + 5y = 20\ \Rightarrow\ 10y = 20\ \Rightarrow\ y = 2$
$x = \frac{5}{2}\ \times\ 2 = 5$
Thus, the required co-ordinate of the point is (5, 2)

41 For what value of p; $x = 2$, $y = 3$ is a solution of $(p + 1)x - (2p + 3)y - 1 = 0$?
(i) Write the equation.
(ii) How many solutions of this equation are possible?
(iii) Is this line passes through the point (–2, 3)? Give justification.
ANS: Given: $(p + 1)x - (2p + 3)y - 1 = 0$ ...(i)
Put $x = 2$ and $y = 3$ in (i), we get
$(p + 1)2 - (2p + 3)3 - 1 = 0$
$\Rightarrow 2p + 2 - 6p - 9 - 1 = 0$
$\Rightarrow -4p + 2 - 10 = 0$
$\Rightarrow -4p = 8\quad \Rightarrow p = -2$
(i) Substitute the value of p in (i), we get
$(-2 + 1)x - [2(-1) + 3]y - 1 = 0$
$\Rightarrow -x - y - 1 = 0$

$\Rightarrow x + y + 1 = 0$ ...(ii)
(ii) Since the given equation is a linear equation in two variables. Therefore, it has infinitely many solutions.
(iii) Substitute $x = -2$ and $y = 3$ in L.H.S. of (ii), we have
L.H.S. $= -2 + 3 + 1 = 2 \neq$ R.H.S.
Hence, the line $x + y + 1 = 0$ will not pass through the point (–2, 3).

42 (i) If the point (4, 3) lies on the linear equation $3x - ay = 6$, find whether (–2, –6) also lies on the same line? (ii) Find the coordinate of the point lies on above line
(a) abscissa is zero (b) ordinate is zero
ANS: (i) If point (4, 3) lies on $3x - ay = 6$, then
$3 \times 4 - a \times 3 = 6$
$\Rightarrow 12 - 3a = 6$
$\Rightarrow -3a = 6 - 12 = -6$
$\Rightarrow 3a = 6 \quad \Rightarrow a = 2$
So, linear equation became $3x - 2y = 6$ ...(i)
Substitute $x = -2$ and $y = -6$ in L.H.S. of (i), we get
L.H.S. $= 3 \times (-2) - 2 \times (-6) = -6 + 12 = 6 =$ R.H.S.
Hence, (–2, –6) lies on the line $3x - 2y = 6$
(ii) (a) When abscissa is zero, it means $x = 0$.
From (i), we get
$3 \times 0 - 2 \times y = 6$
$\Rightarrow -2y = 6$
$\Rightarrow y = -3$ Required point is (0, –3)
(b) When ordinate is zero. i.e. $y = 0$
From (i), we get $3x - 2 \times 0 = 6 \Rightarrow x = 2$ Required point is (2, 0)

43 The equation x = 5 in two variables can be written as
(A) 1.x + 1.y = 5 (B) 0.x + 1.y = 5 (C) 0.x + 0.y = 5 (D) 1.x + 0.y = 5
ANS: (D)

44 The linear equation 3y – 5 = 0, represented as ax + by + c = 0, has (a) a unique solution (b) infinitely many solutions (c) two solutions (d) no solution
ANS: (B)

45 x = 5, y = –2 is a solution of the linear equation
(A) 2x + y = 9 (B) 2x – y = 12 (C) x + 3y = 1 (D) x + 3y = 0
ANS: Substituting x = 5 and y = –2 in LHS of 2x – y = 12,
we have
LHS = 2 × 5 – (–2) = 10 + 2 = 12 = RHS Correct option is (B).

46 Let y varies directly as x. If y = 24, when x = 8, then the linear equation is
(A) 3y = x (B) y = x (C) y = 4x (D) y = 3x
ANS: (D)

47 If the linear equation has solutions (– 3, 3), (0, 0), (3, – 3), then equation is
(A) x – y = 0 (B) x + y = 0 (C) 2x – y = 0 (D) x + 2y = 0
ANS: (B)

48 If point (3, 0) lies on the graph of the equation 2x + 3y = k, then the value of k is
(A) 6 (B) 3 (C) 2 (D) 5
ANS: On putting x = 3 and y = 0 in the equation 2x + 3y = k, we have $2 \times 3 + 3 \times 0 = k \Rightarrow 6 + 0 = k \Rightarrow$ k = 6 Correct option is (A).

49 The graph of the linear equation 3x + 5y = 15 cuts the x-axis at the point
(A) (5, 0) (B) (3, 0) (C) (0, 5) (D) (0, 3)
ANS: At x-axis, y = 0

On putting y = 0 in 3x + 5y = 15, we have
⇒ 3x + 5 × 0 = 15 ⇒ 3x = 15 ⇒ x = 5 Correct option is (A).

50 For one of the solutions of the equation ax + by + c = 0, x is negative and y is positive then surely a portion of line lies in the
(A) first quadrant (B) second quadrant (C) third quadrant (D) fourth quadrant
ANS: (B)

51 How many linear equations in x and y can be satisfied by x = 1 and y = 2?
(A) Only one (B) Two (C) Infinitely many (D) Three
ANS: As point (1, 2) lies on graph and through one point, infinite lines can pass. So, we get infinitely many linear equations. Correct option is (c).

52 Any point on the line y = x is of the form
(A) (a, a) (B) (0, a) (C) (a, 0) (D) (a, – a)
ANS: (A)

53 The graph of the equation y = 4x – 3 passes through the origin.
(A) False (B) True
ANS: (A) False

54 The graph of x = ± a is a straight line parallel to the (a) x-axis (b) y-axis (c) line y = x (d) line x + y = 0
ANS: For whatever be the value of y, x remains equal to a. So, the graph of x = ± a is straight line parallel to the y-axis. Correct option is (b).

55 Any solution of the linear equation 2x + 0y = 9 in two variables, is of the form _____
A) $\left(\frac{5}{2}, 0\right)$ B) $\left(\frac{9}{2}, n\right)$ C) $\left(n . \frac{9}{2}\right)$ D) $\left(0 . \frac{9}{2}\right)$
ANS: (B)

56 The equation of x-axis is of the form
(A) x = 0 (B) y = 0 (C) x + y = 0 (D) x = y
ANS: (B)

57 The point on the graph of the equation 2x + 5y = 20, where x-coordinate is $\frac{5}{2}$, is ____
A) $\left(3 . \frac{5}{2}\right)$ B) $\left(\frac{5}{2} . \frac{5}{2}\right)$ C) $\left(\frac{5}{2} . 0\right)$ D) $\left(\frac{5}{2} . 3\right)$
ANS: (D)

58 The solution of the linear equation x + 2y = 8 which represents a point on x-axis is (0, 4).
(A) True (B) False
ANS: (B)

59 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
ANS: (A)

60 The graph of the linear equation y = 2x passes through the point
(A) (2, 1) (B) (2, – 1) (C) $\left(\frac{3}{2}, -3\right)$ (D) $\left(\frac{3}{2}, 3\right)$
ANS: (D)