Short Answer Type Questions – I

[2 marks]

Que 1. Write any two solutions of the linear equation $3x + 2y = 0$

Sol. Given equation is $3x + 2y = 9 \quad \Rightarrow y = \frac{9-3x}{2}$

When $x = 1, y = \frac{9-3}{2} = \frac{6}{2} = 3$

When $x = 1, y = \frac{9+3}{2} = \frac{12}{2} = 6$

$\therefore$ Two solutions of the given equation are $(1, 3), (-1, 6)$

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

Sol. Given $y = 2x$, putting $y = 2x$ in the equation $x + y = 6$, we get

$$x + 2x = 6 \quad \Rightarrow \quad 3x = 6$$

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

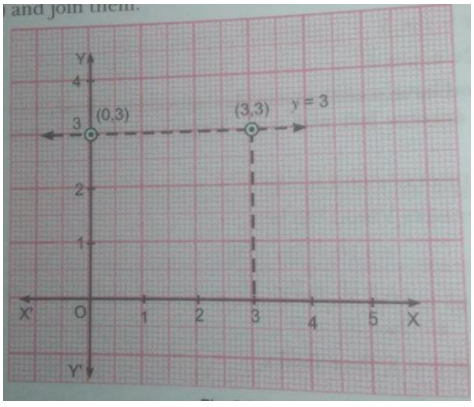
Putting $x = 2$ in the equation $y = 2x \; we \; get, y = 2 \times 2 = 4$

$\therefore$ The required point is $(2, 4)$.

Que 3. Draw the graph of the equation represented by the straight line which is parallel to the x-axis and 3 units above it.

Sol. Any straight line parallel to x-axis is given by $y = a$, where a is the distance of the line from the x-axis.

Here $a = 3$. Therefore the equation of the line is $y = 3$. To draw the graph of this equation plot the points $(0, 3)$ and (3, 3) and join them.



Que 4. For what value of c, the linear equation $2x + cy = 8$ has equal values of x and y as its solution?

Sol. $2x + cy = 8, here\ y = x$

$\therefore 2x + cx = 8 \quad \Rightarrow \quad cx = 8 - 2x \quad \Rightarrow c = \frac{8-2x}{x}, x \neq 0$

Que 5. If the point $(3, 4)$ lies on the graph of $3x = ay + 7$, then find the value of a.

Sol. $\therefore (3,4)$ lies on the graph of $3x = ay + 7$

$$\therefore 3(3) = a \times 4 + 7 \quad \Rightarrow 9 = 4a + 7$$

$$\Rightarrow 4a = 2 \quad \Rightarrow a = \frac{1}{2}$$

Que 6. Give the equations of two lines passing through (4,-2). How many more such lines are there, and why?

Sol. The equations of the lines passing through (4, -2) are

$$x + y = 2, \quad 2x + 3y = 2$$

Since, infinitely many lines pass through a point

$\therefore$ There are infinitely many such lines.

Que 7. If the point $(2k - 3, k + 2)$ lies on the graph of the equation $2x + 3y + 15 = 0$ Find the value of k.

Sol. (As $2k - 3, k + 2)$ lies on the line $2x + 3y + 15 = 0$

So, putting $x = 2k - 3$ and $y = k + 2$ in equation, we get

$$\Rightarrow \quad 2(2k - 3) + 3(k + 2) + 15 = 0$$

$$\Rightarrow \quad 4k - 6 + 3k + 6 + 15 = 0$$

$$\Rightarrow \quad 7k + 15 = 0$$

$$\Rightarrow \quad 7k = -15 \quad \Rightarrow k = -\frac{15}{7}$$

Que 8. Force applied on a body of mass 5 kg is directly proportional to the acceleration produced in the body. Represent this solution as a linear equation in two variable.

Sol. Let the force be x and acceleration due to farce be y.

$\therefore x = 5y$

Que 9. 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. Represent this situation as a linear equation in two variables.

Sol. Let the length be x and breadth be y.

∴ Area of the rectangle = xy

When length is $x-3$ and breadth is $y+4$

∴ $(x-3)(y+4) = xy+9$

Que 10. Express x in terms of y for the linear equation $\frac{2}{3}x + 4y = -7$.

Sol. $\frac{2}{3}x + 4y = -7 \Rightarrow \frac{2}{3}x = -7-4y$

$\Rightarrow 2x = 3(-7-4y) \Rightarrow x = \frac{-21-12y}{2}$

Que 11. Find the coordinate where the linear equation $3x - 4y = 11$ meets at x-axis.

Sol. The point where the given linear equation in two variables meets at x-axis, the y co-ordinate will be 0.

∴ $3x - 4y = 11 \Rightarrow 3x - 4(0) = 11$

$\Rightarrow 3x = 11 \Rightarrow x = \frac{11}{3}$

Hence, the required point is $\left(\frac{11}{3}, 0\right)$.

Que 12. Find the coordinate where the linear equation $4x - \frac{2}{3}y = 7$ meets at y-axis.

Sol. The point where the given linear equation in two variables meets at y-axis, the x co-ordinate will be 0.

∴ $4x - \frac{2}{3}y = 7 \Rightarrow 4(0) - \frac{2}{3}y = 7$

$\Rightarrow -\frac{2}{3}y = 7 \Rightarrow y = \frac{-21}{2}$

Hence, co-ordinate is $\left(0, \frac{-21}{2}\right)$.

Que 13. Write the linear equation represented by line AB and PQ. Also find the co-ordinate of intersection of line AB and PQ.

Sol. AB $\Rightarrow x = -2$

$PQ \Rightarrow y = -3$

∴ Point of intersection of AB and PQ is C (-2,-3).

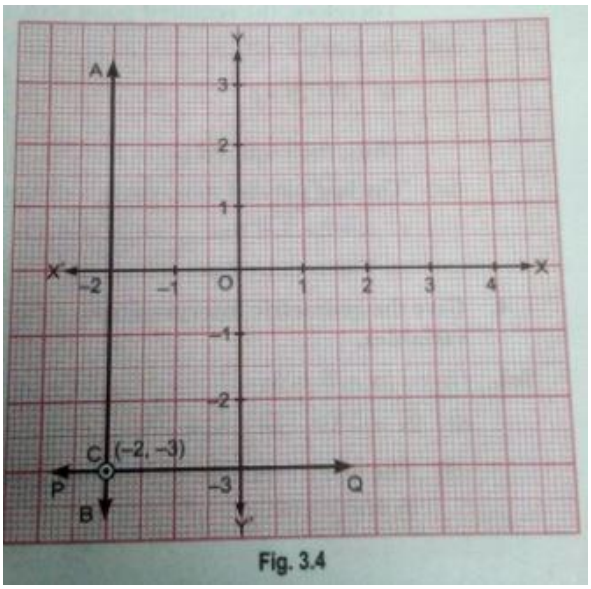


Fig. 3.4

Que 14. Solve for x: $5(4x + 3) = 3(x - 2)$

Sol. $5(4x + 3) = 3(x - 2)$

$\Rightarrow 20x + 15 = 3x - 6$ $\Rightarrow 20x - 3x = -6 - 15$

$\Rightarrow 17x = -21$ $\Rightarrow x = \frac{-21}{17}$