Board – ICSE	Class – 9th	Topic – Coordinate Geometry

1. For the equation given below, name the dependent and independent variables.

$$y = \frac{4}{3}x - 7$$

Solution :

$y = \frac{4}{3}x - 7$

Dependent variable is y

Independent variable is x.

2. Express the equation $3x + 5y + 15 = 0$ in the form such that:

a. x is subject to the formula

b. y is dependent variable and x is independent variable.

Solution :

a. $3x + 5y + 15 = 0$

$3x = -5y - 15$

$x = \frac{-5y - 15}{3}$

$x = \left(\frac{-5}{3}\right)y - 5$

b. $3x + 5y + 15 = 0$

$5y = -3x - 15$

$y = \frac{-3x - 15}{5}$

$y = \left(\frac{-3}{5}\right)x - 3$

3. Find the value of 'a' and 'b' if

a. $(a+2, 5+b) = (1,6)$

b. $(2a+b, a-2b) = (7,6)$

Solutions :

a. Given; two ordered pairs are equal. $a+2=1$ and $5+b=6$

$\therefore a=-1$ an $b=1$

b. Given; two ordered pairs are equal

$\therefore \quad 2a+b=7 \ldots\ldots (1)$
$\quad\quad a-2b=6 \ldots\ldots (2)$

On multiplying equation (1) with (2), we get :

$4a+2b=14$

Add equation (2) and (3),

$a-2b=6$

$4a+2b=6$

$5a=20$

$\therefore a=4$

Substituting a $=4$ in equation (1), we get:

$2(4)+b=7$
$\therefore b=-1$
$\therefore a=4$ and $b=-1$

4. In the following, find the coordinates of the point whose abscissa is the solution of the first equation and ordinate is the solution of the second equation:

$$3-2x=7; 2y+1=10-2\frac{1}{2}y$$

Solution :

$3-2x=7; 2y+1=10-2\frac{1}{2}y$

Now $3-2x=7\ 3-7=2x\ -4=2x\ -2=x$

Again

$2y+1=10-2\frac{1}{2}y$
$2y+1=10-\frac{5}{2}y$
$4y+2=20-5y$
$4y+5y=20-2$
$9y=18$
$y=2$

∴ The co-ordinates of the point $(-2,2)$

5. In the following, find the co-ordinates of the point whose abscissa is the solution of the first equation and ordinate is the solution of the second equation:

$$\frac{2a}{3}-1=\frac{a}{2}; \frac{15-4b}{7}=\frac{2b-1}{3}$$

Solution :

$\frac{2a}{3}-1=\frac{a}{2}; \frac{15-4b}{7}=\frac{2b-1}{3}$

Now, $\frac{2a}{3}-1=\frac{a}{2}\ \frac{2a}{3}-\frac{a}{2}=1\ \frac{4a-3a}{6}=1\ a=6$

Again

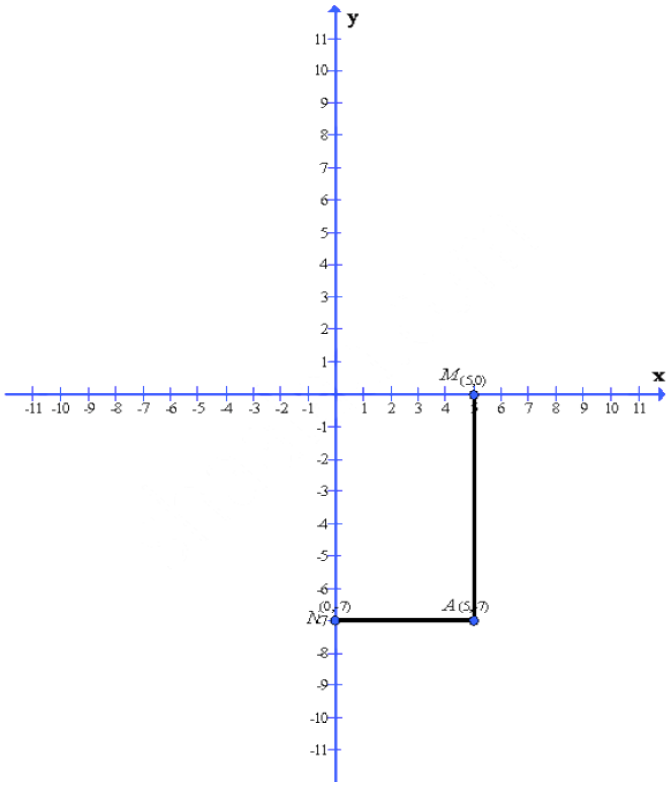
$$\frac{15-4b}{7}=\frac{2b-1}{3}$$
$$45-12b=14b-7$$
$$45+7=14b+12b$$
$$52=26b$$
$$2=b$$

$\therefore$ The co-ordinates of the point $(6,2)$

6. Plot point $A(5,-7)$. From point A, draw AM perpendicular to the x-axis and AN perpendicular to the y-axis. Write the coordinates of points M and N.

Solution :

Given $A(5,-7)$



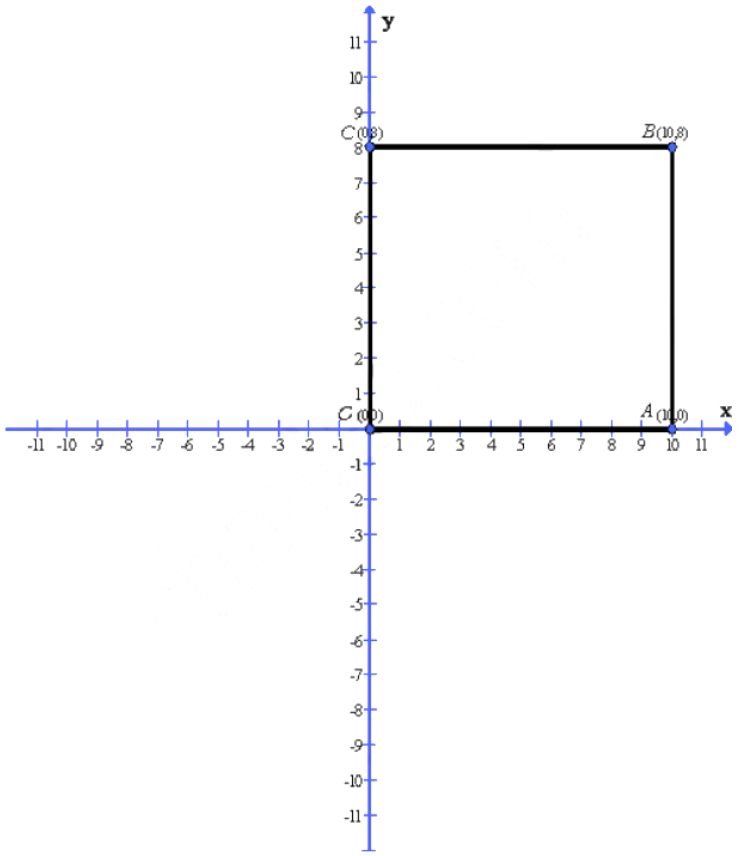
After plotting the given point $A(5,-7)$ on a graph paper. Now let us draw a perpendicular AM from the point $A(5,-7)$ on the x-axis and a perpendicular AN from the point $A(5,-7)$ on the y-axis.
As from the graph clearly, we get the co-ordinates of the points M and N

Co-ordinate of the point M is $(5,0)$

Co-ordinate of the point N is $(0,-7)$

7. In rectangle OABC; point O is the origin, OA $=$ 10 units along x-axis and AB $=$ 8 units. Find the co-ordinates of vertices A, B and C.

Solution :



Given that in rectangle OABC; point O is the origin and OA $=$ 10 units along x-axis therefore we get O(0,0) and A(0,0). Also, it is given that $AB = 8$ units. Therefore, we get $B(10,8)$ and $C(0,8)$

After plotting the points $O(0,0)$, $A(10,0)$, $B(10,8)$ and $C(0,8)$ on a graph paper; we get the above rectangle OABC, and the required co-ordinates of the vertices are $A(10,0)$, $B(10,8)$ and $C(0,8)$