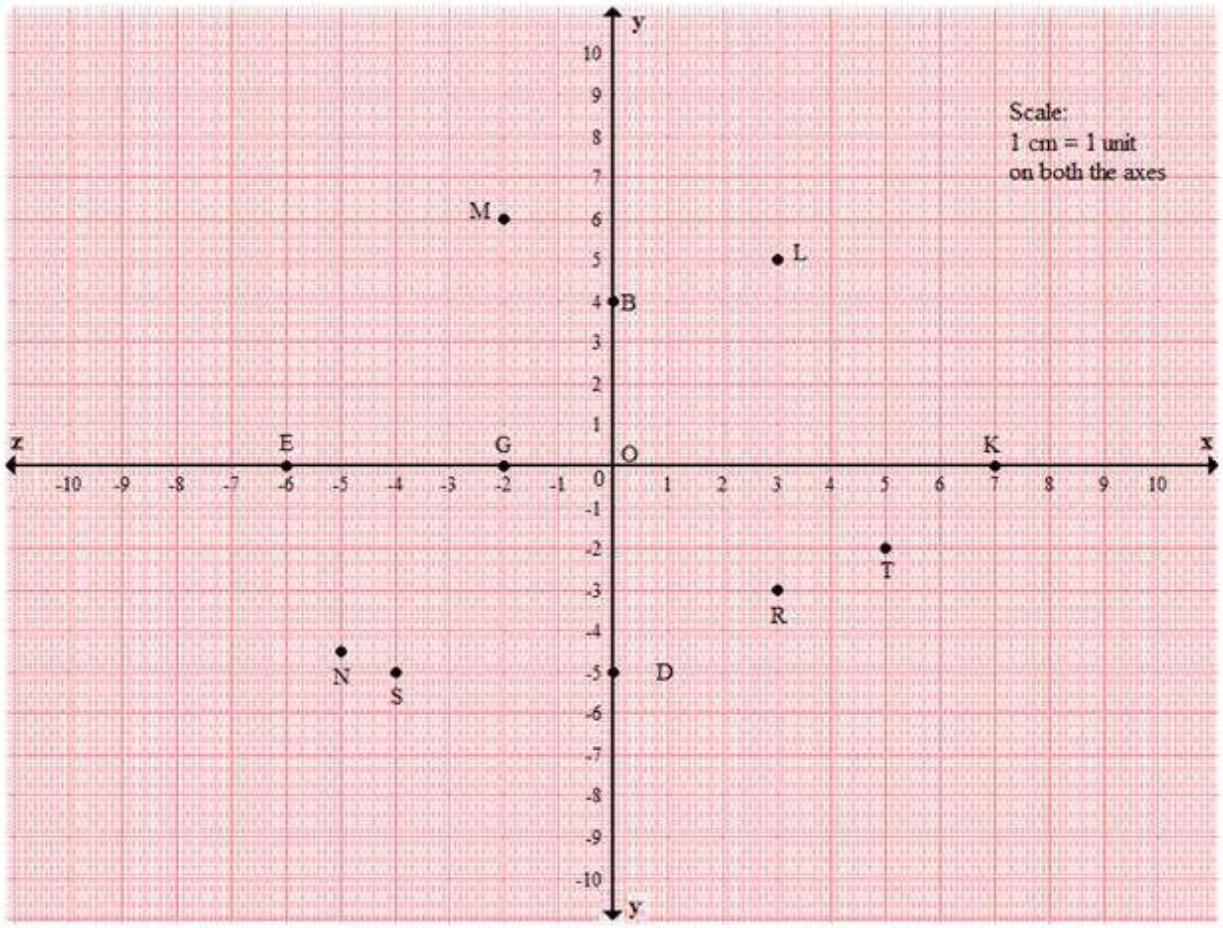
Graphs

Exercise – 5.1

Solution 1:



Points	Position
L	I quadrant
M	II quadrant
N	III quadrant
K	X-axis
G	X-axis
B	Y-axis
R	IV quadrant
T	IV quadrant
D	Y-axis

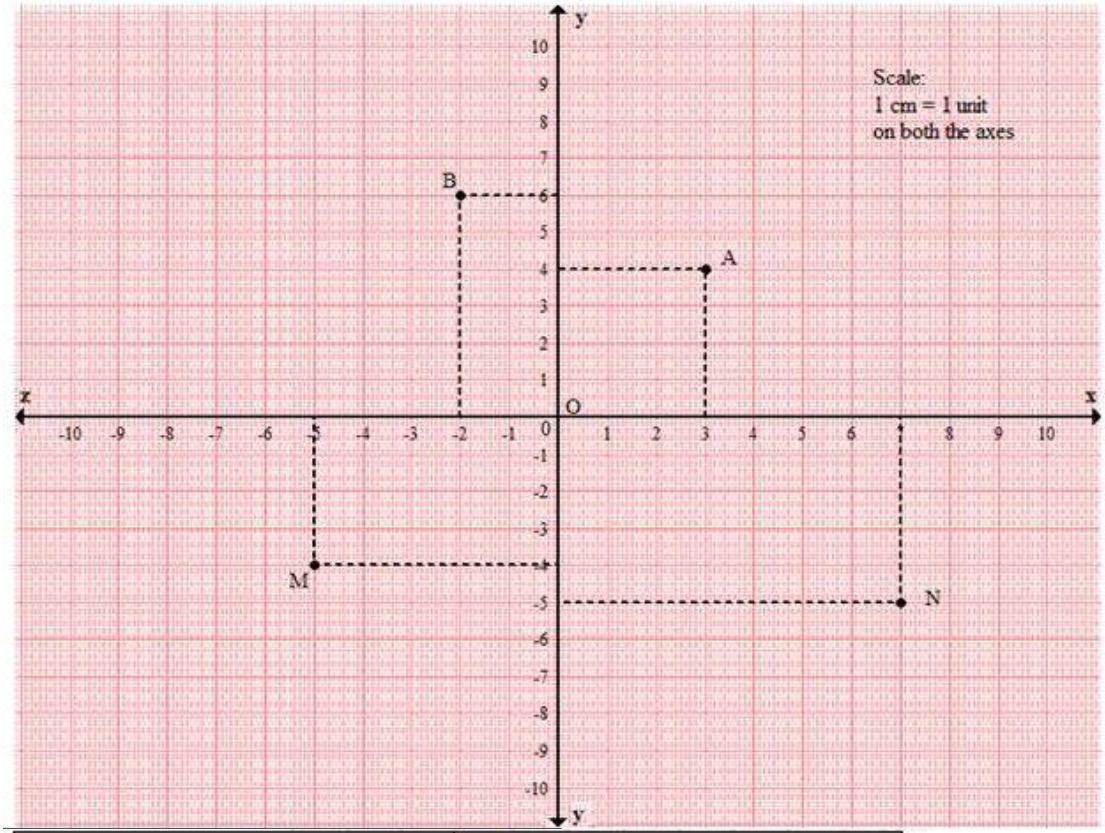
Solution 2:

1. The x-coordinate of point P is 4.
2. The y-coordinate of point Q is 2
3. The y-coordinate of point R is 1.
4. The x-coordinate of point S is 0.
5. The y-coordinate of point S is -4.

Solution 3:

A(4, 1), B(3, -5), C(4, 0), D(0, 6)

Solution 4:



Points	Co-ordinates
A	(3, 4)
N	(7, -5)
B	(-2, 6)
M	(-5, -4)

Solution 5:

Points	Position
A(2, 3)	I quadrant
D(-3, 2)	II quadrant
S(-4, 5)	II quadrant
Q(-5, -2)	III quadrant
$K\left(\frac{7}{2}, \frac{3}{2}\right)$	I quadrant
L(3, -7)	IV quadrant
M(-4, -1)	III quadrant
C(8, 9)	I quadrant
T(5, -8)	IV quadrant
U(-6.2, 4.3)	II quadrant

Solution 6:

Points	Position
M(-3, -5)	III quadrant
N(2, 0)	X-axis
S(0,-5)	Y-axis
K(-2, 3)	II quadrant
T(4, 0)	X-axis
E(7, 8)	I quadrant
F(0, 1)	Y-axis
O(0, 0)	Origin

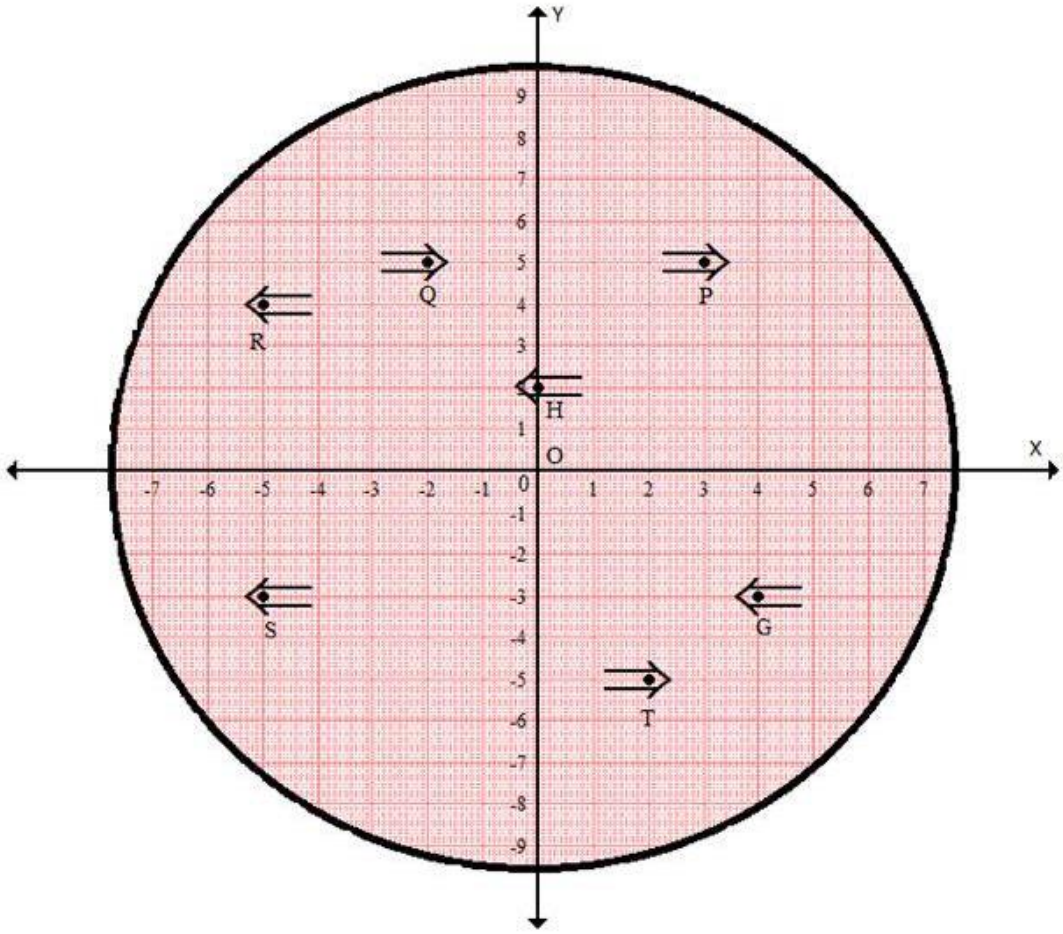
Solution 7:

1. If both the coordinates are positive, then the point lies in the Ist quadrant.
2. If both the coordinates are negative, then the point lies in the IIIrd quadrant.
3. If the X coordinate is negative and Y-co-ordinate is positive, then the point lies in the IInd quadrant.
4. If the X coordinate is positive and Y coordinate is negative, then the point lies in the IVth quadrant.

Solution 8:

1. The point (x, y) will lie in the IVth quadrant.
2. The point (x, y) will lie in the IInd quadrant.
3. The point (x, y) will lie in the Ist quadrant.
4. The point (x, y) will lie in the IIIrd quadrant.
5. The point (x, y) will lie on the Y-axis.
6. The point (x, y) will lie on the X-axis.

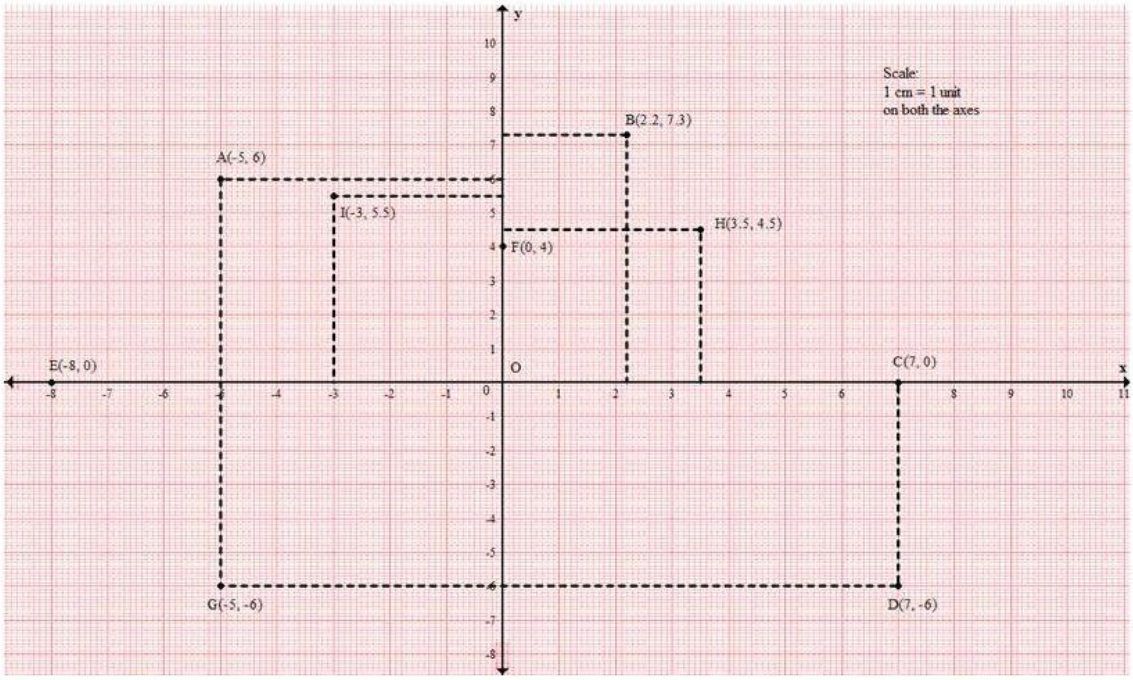
Solution 9:



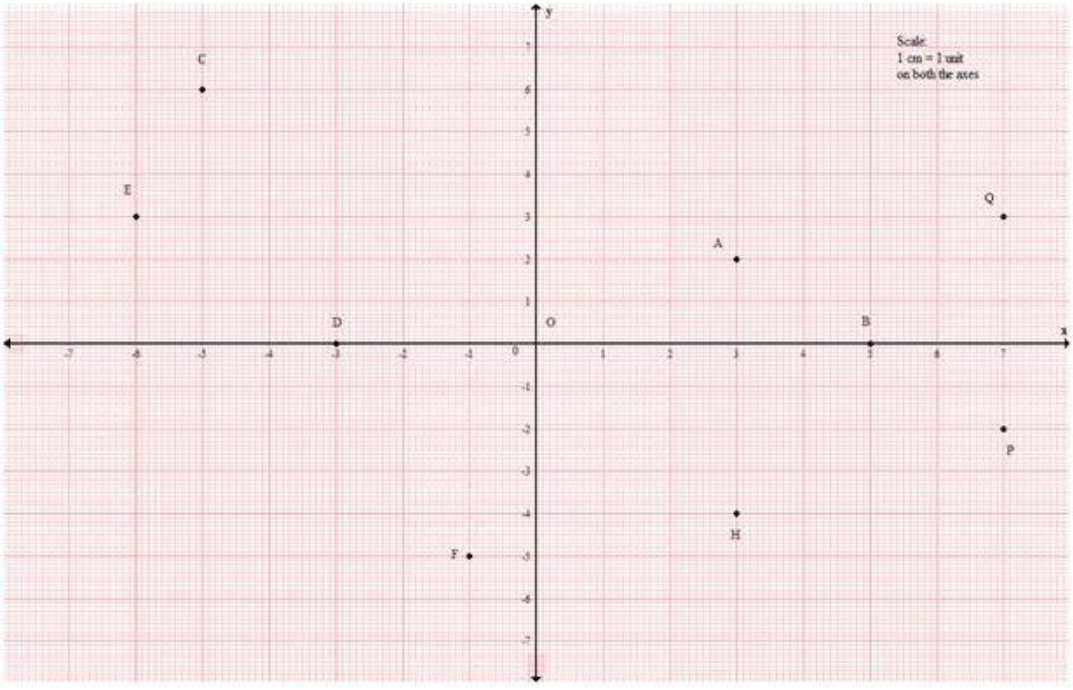
Points	Co-ordinates
P	(3, 5)
Q	(-2, 5)
R	(-5, 4)
S	(-5, -3)
T	(2, -5)
G	(4, -3)
H	(0, 2)

Exercise – 5.2

Solution 1:



Solution 2:

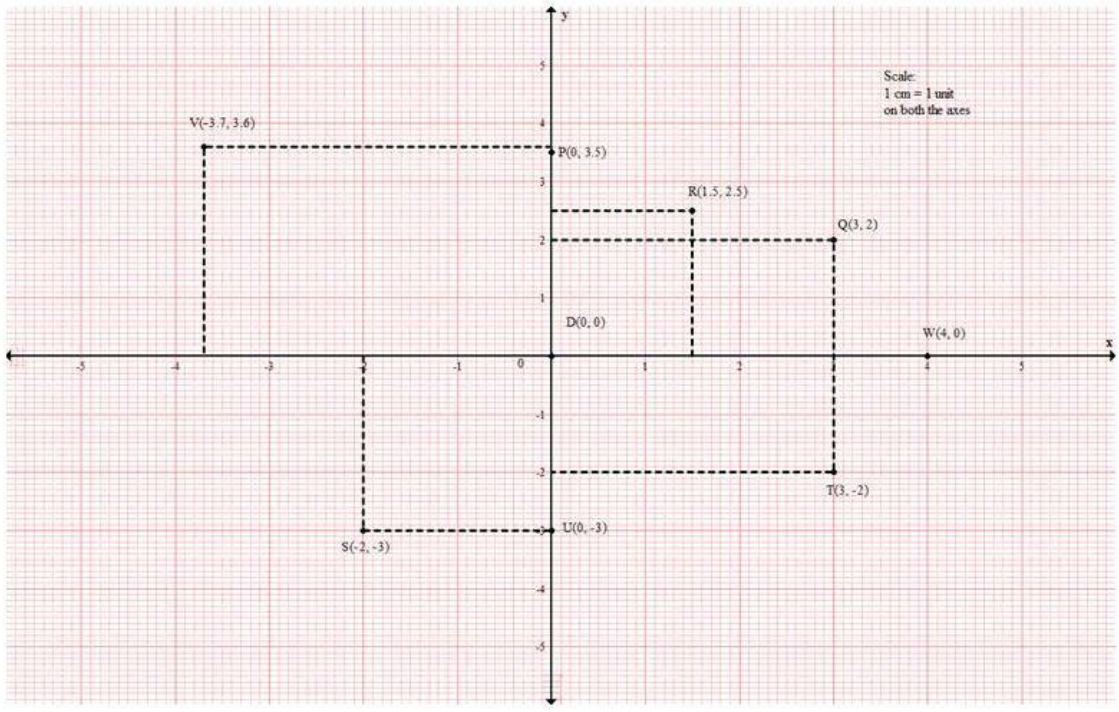


Points	Co-ordinates
A	(3, 2)
B	(5, 0)
C	(-5, 6)
D	(-3, 0)
E	(-6, 3)
F	(-1, -5)
Q	(7, 3)
P	(7, -2)
H	(3, -4)

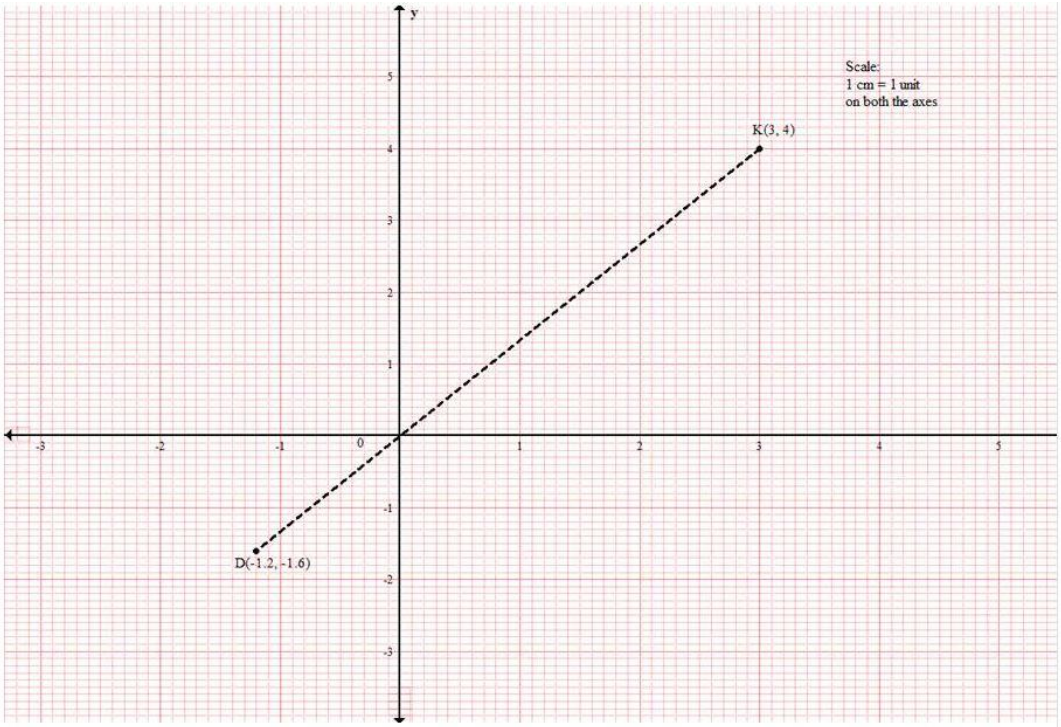
The x-coordinates of points are given below.

1. The y-coordinate of point B is zero.
2. Point F has coordinates (-1, -5) and point A has coordinates (3, 2).
3. The line AH is parallel to the Y-axis.
4. The x-coordinate of point P and Q is same.
5. The y-coordinate of point E is 3.
6. The line EQ is parallel to the X-axis.
7. The x-coordinate of point M on line AH is 3.

Solution 3:

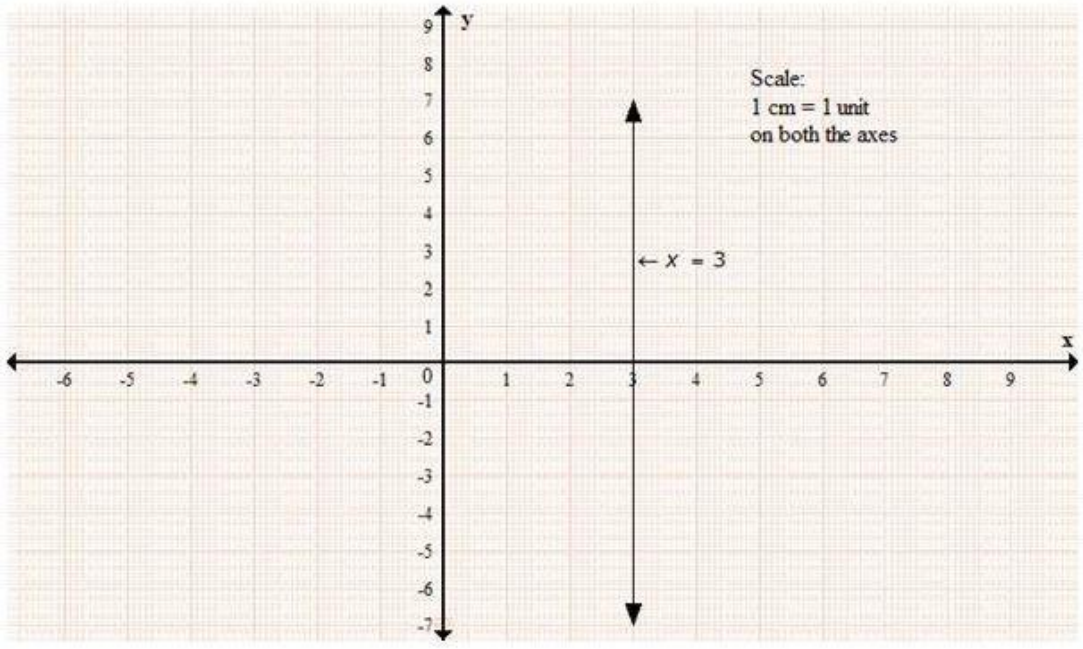


Solution 4:

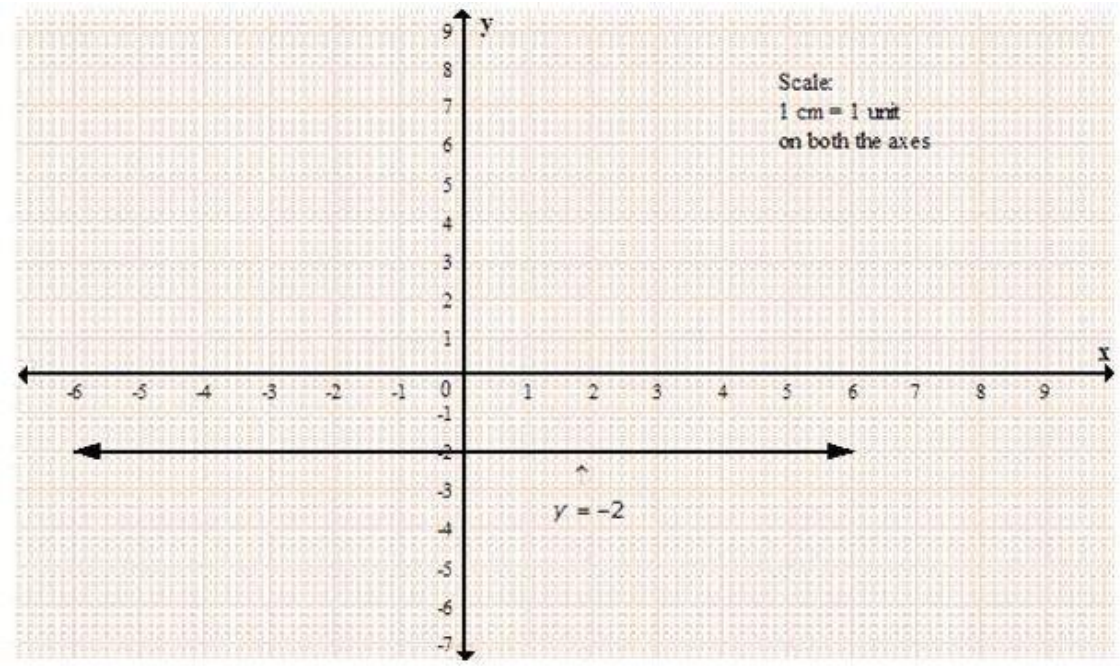


Exercise – 5.3

Solution 1(i):

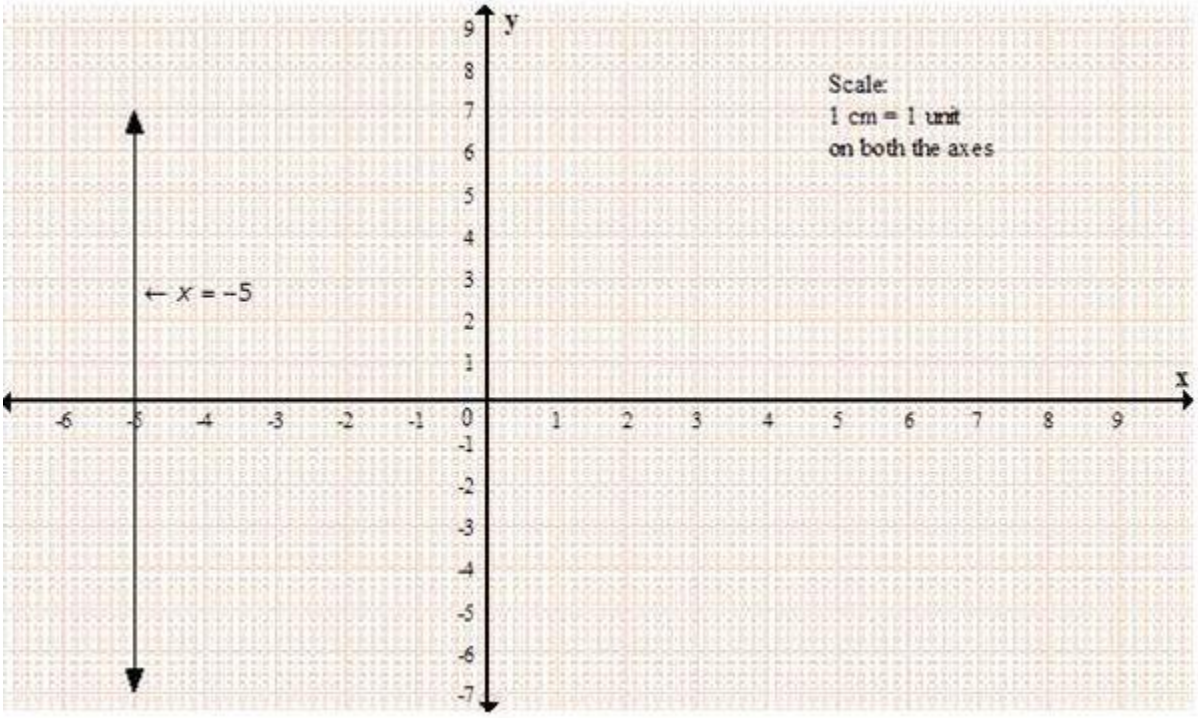


Solution 1(ii):

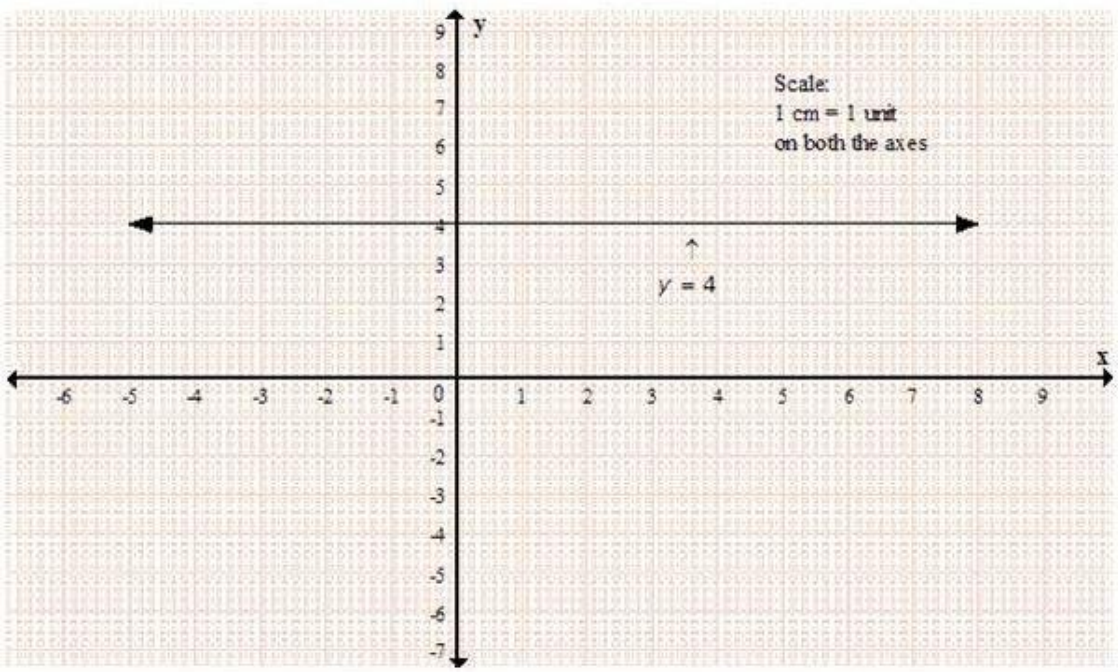


Solution 1(iii):

We have x + 5 = 0
i.e. x = -5

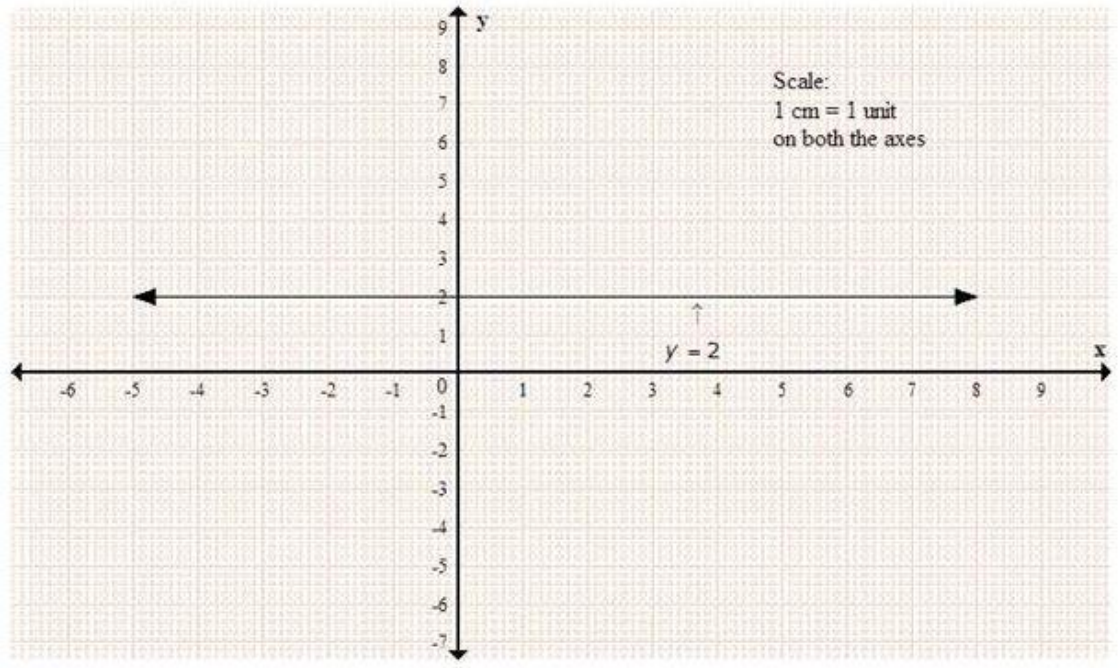


Solution 1(iv):



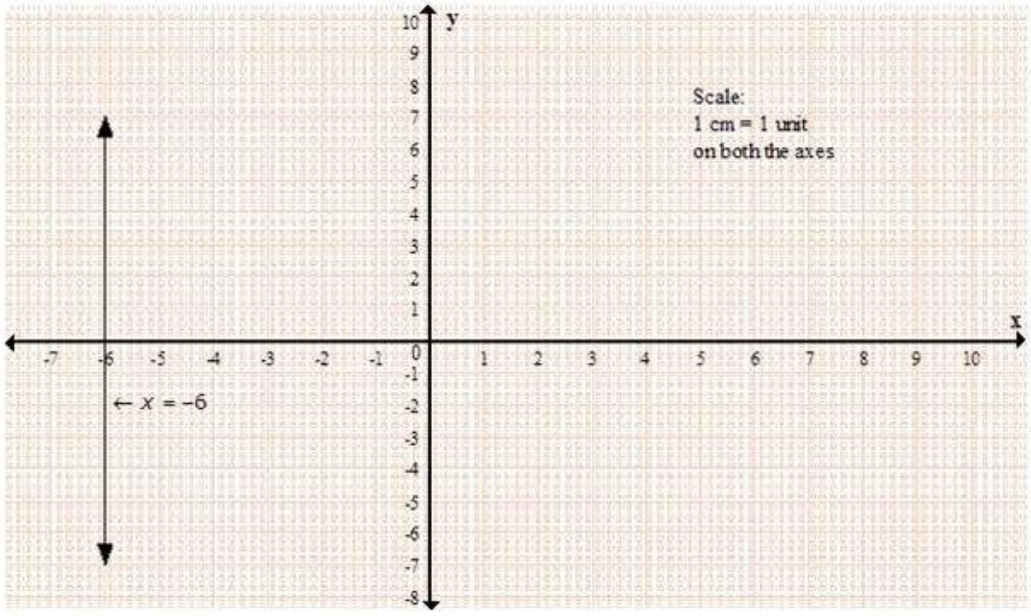
Solution 1(v):

We have 2y + 1 = y + 3
i.e. 2y – y = 3 – 1
i.e. y = 2



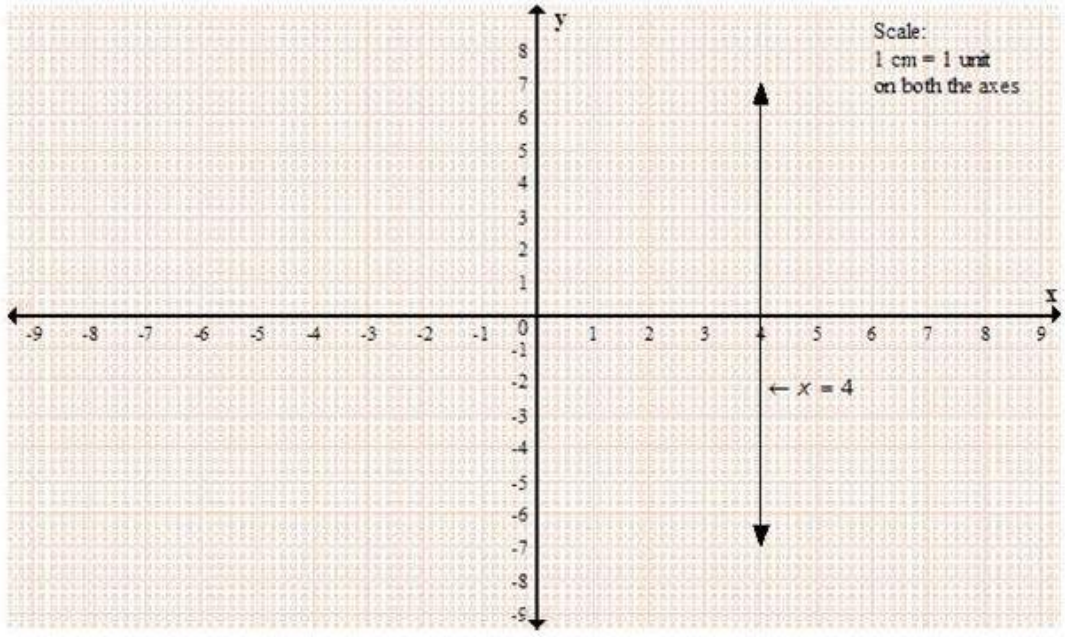
Solution 1(vi):

We have 3(x + 1) = 2x – 3
i.e. 3x + 3 = 2x – 3
i.e. 3x – 2x = -3 – 3
i.e. x = – 6



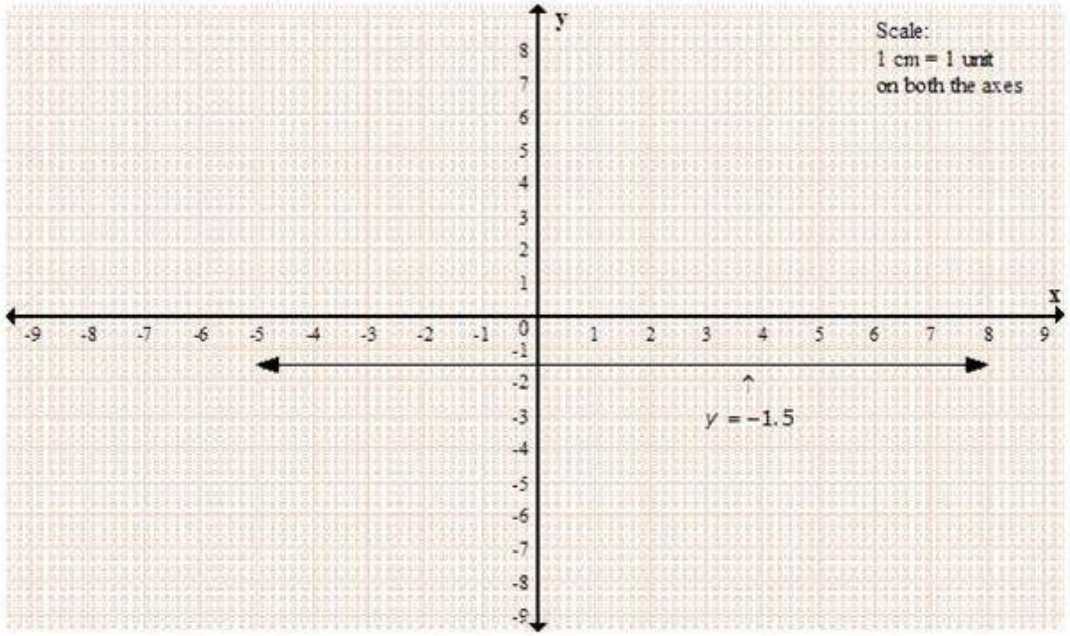
Solution 1(vii):

We have x – 4 = 0
i.e. x = 4



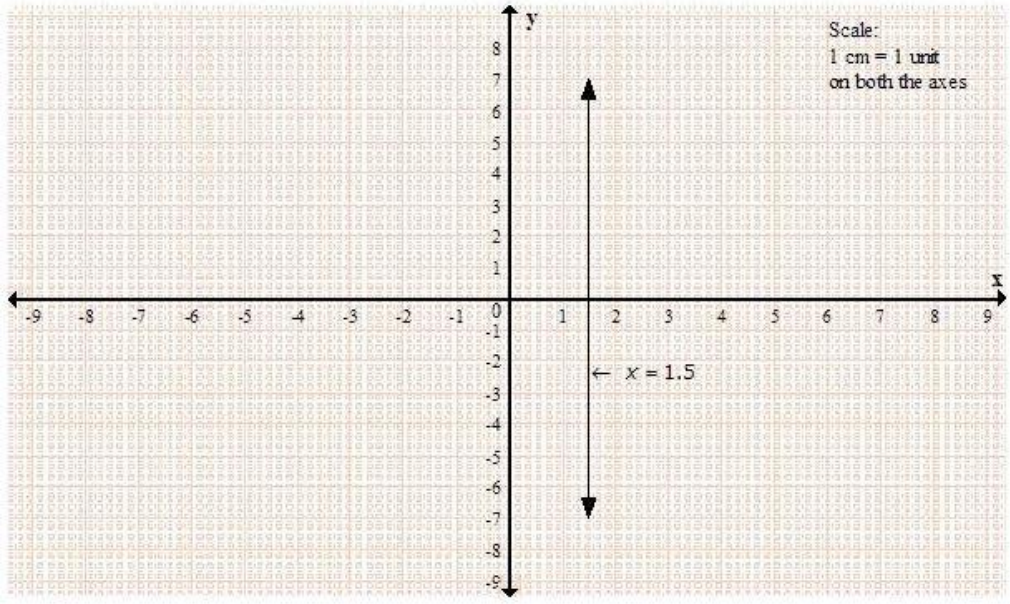
Solution 1(viii):

We have 2y + 3 = 0
i.e. 2y = -3
i.e. y = -1.5



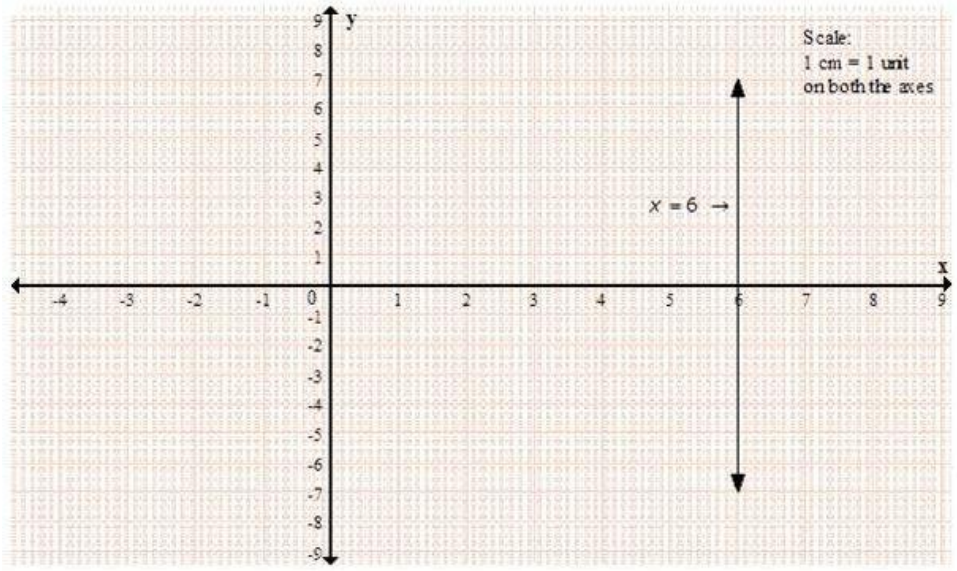
Solution 1(ix):

We have 4x – 6 = 0
i.e. 4x = 6
i.e. x = 1.5



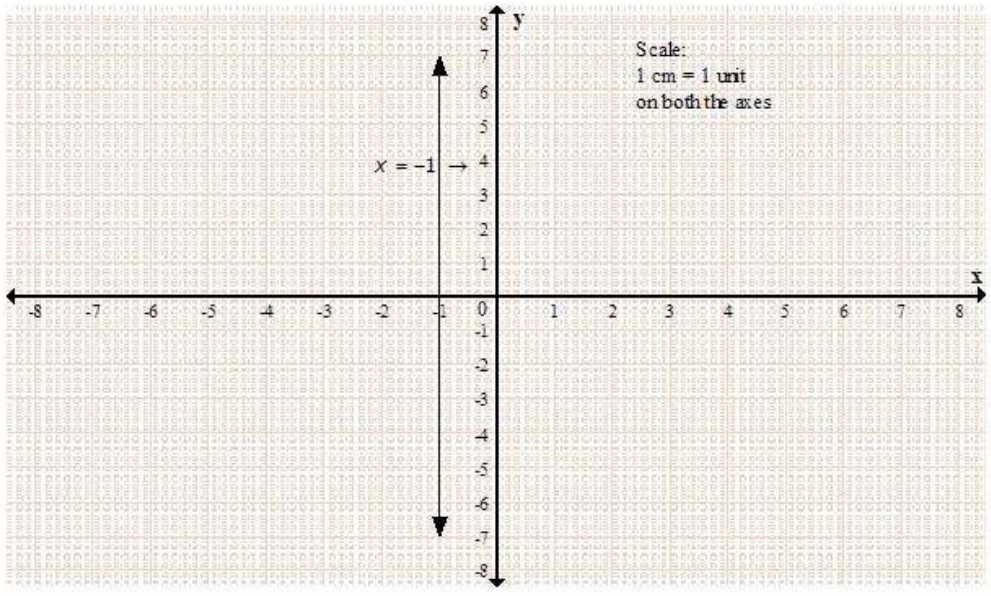
Solution 2(i):

We have 3x + 4 = 2(x + 5)
i.e. 3x + 4 = 2x + 10
i.e. 3x – 2x = 10 – 4
i.e. x = 6

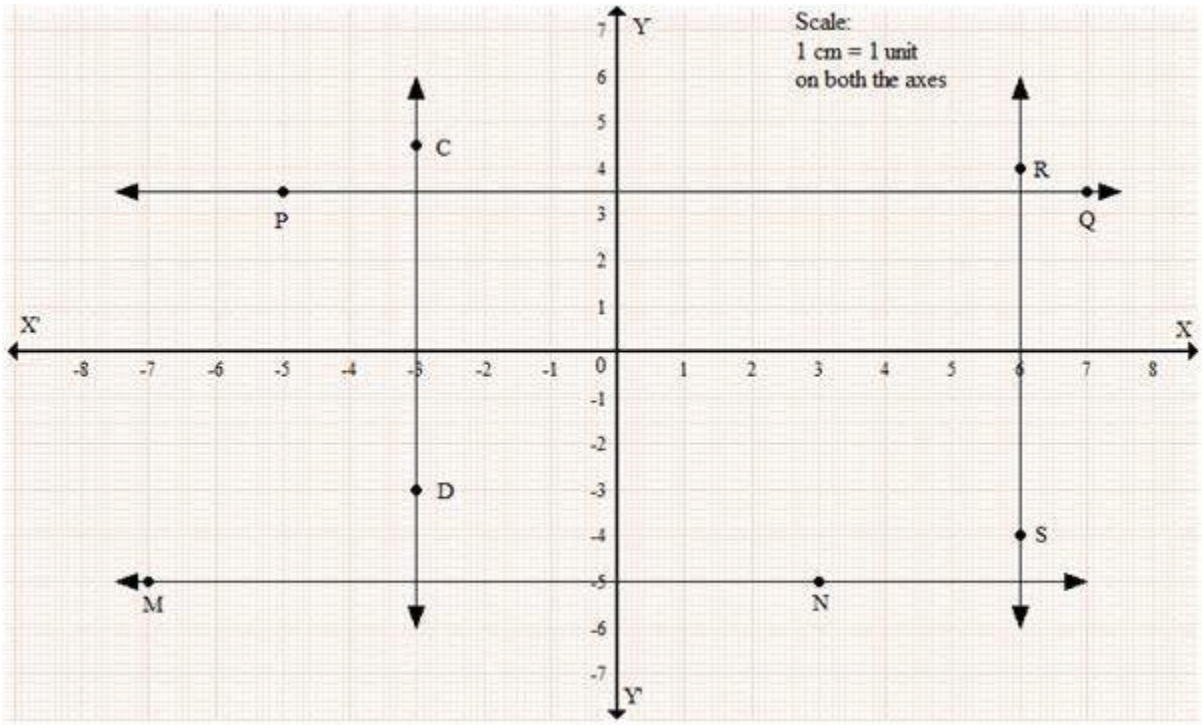


Solution 2(ii):

We have 2x – 7 = 3(x – 2)
i.e. 2x – 7 = 3x – 6
i.e. 3x – 2x = 6 – 7
i.e. x = -1



Solution 3:

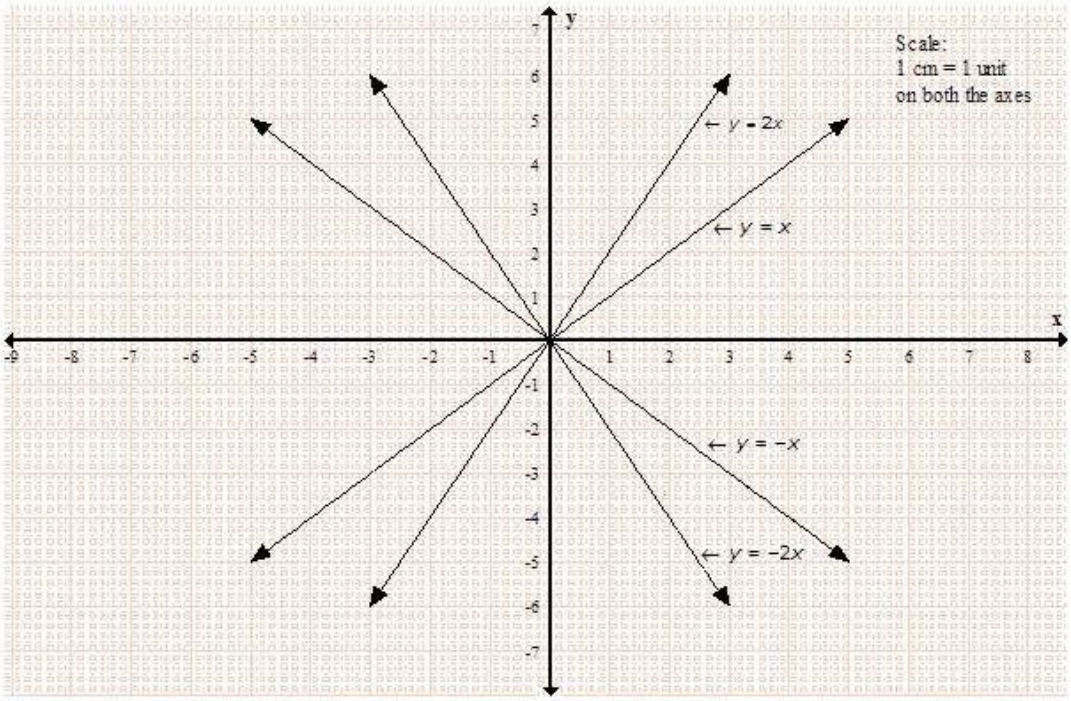


Writing the equation of the lines:

1. The equation of line PQ is y = 3.5.
2. The equation of line RS is x = 6.
3. The equation of line CD is x = -3.
4. The equation of line MN is y = -5.
5. The equation of line X'X is y = 0.
6. The equation of line YY' is x = 0.

Exercise – 5.4

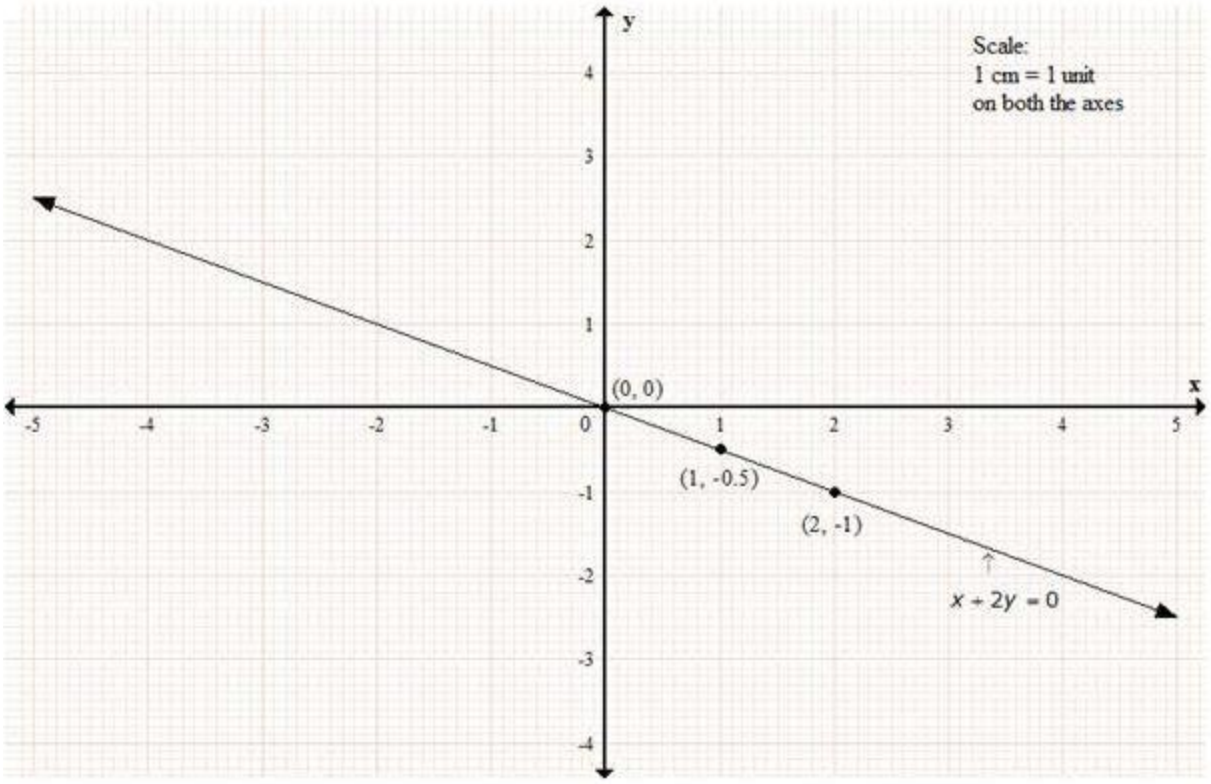
Solution 1:



Solution 2(i):

Given equation is x + 2y = 0.
Rewriting it we get,
2y = -x
i.e. y = -0.5x

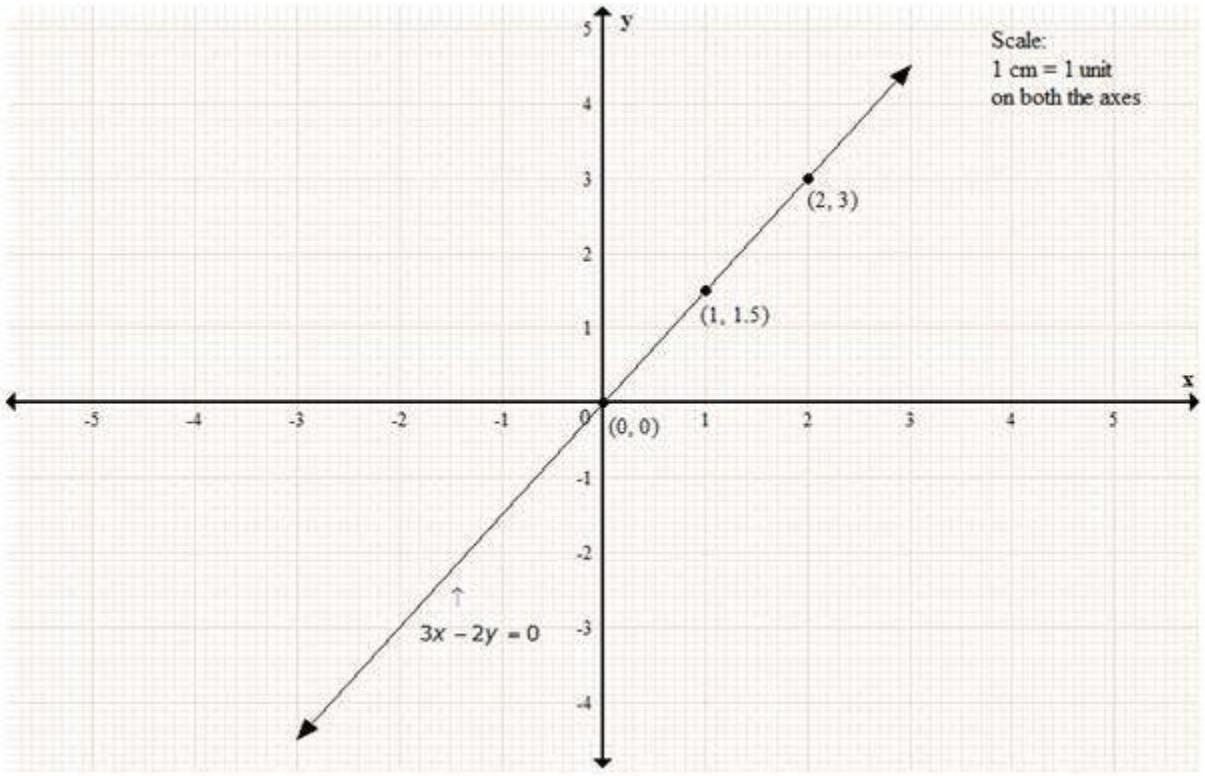
x	0	1	2
y	0	-0.5	-1
(x, y)	(0, 0)	(1, -0.5)	(2, -1)



Solution 2(ii):

Given equation is 3x – 2y = 0.
Rewriting it we get,
2y = 3x
i.e. y = 1.5x

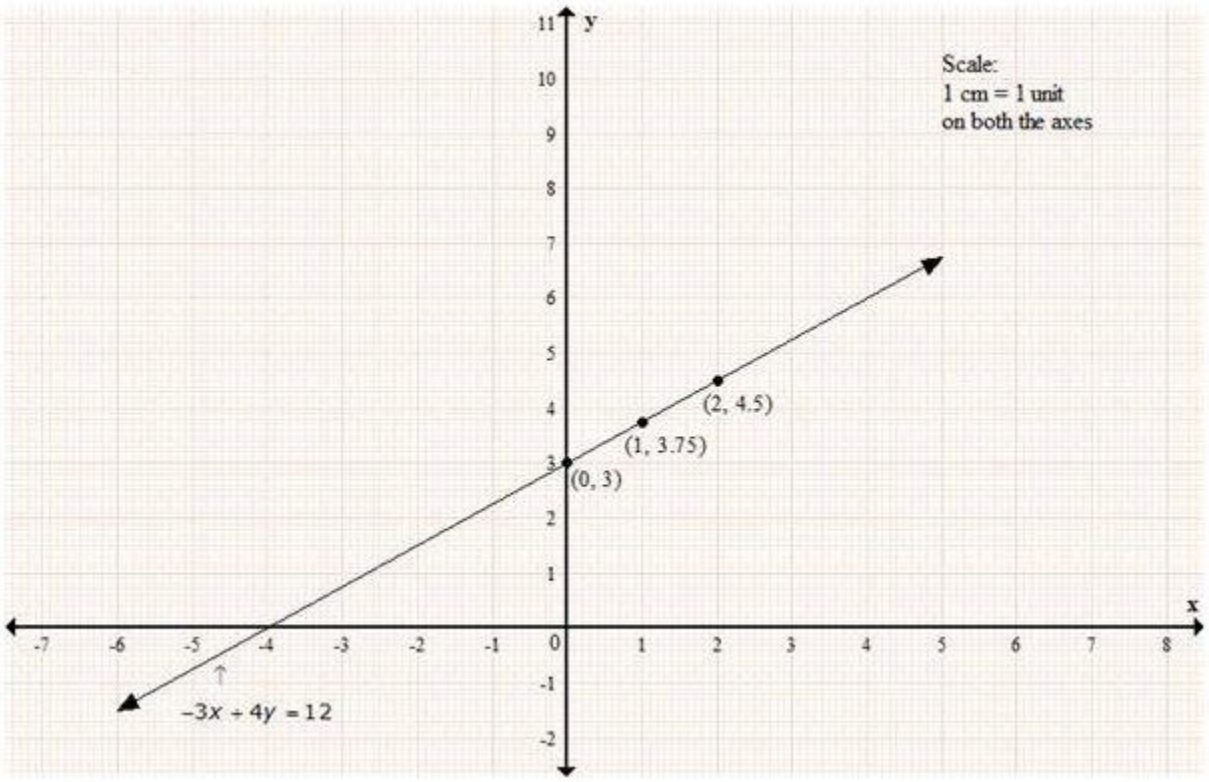
x	0	1	2
y	0	1.5	3
(x, y)	(0, 0)	(1, 1.5)	(2, 3)



Solution 2(iii):

Given equation is -3x + 4y = 12.
Rewriting it we get,
4y = 3x + 12
i.e. y = 0.75x + 3

x	0	1	2
y	3	3.75	4.5
(x, y)	(0, 3)	(1, 3.75)	(2, 4.5)



Solution 2(iv):

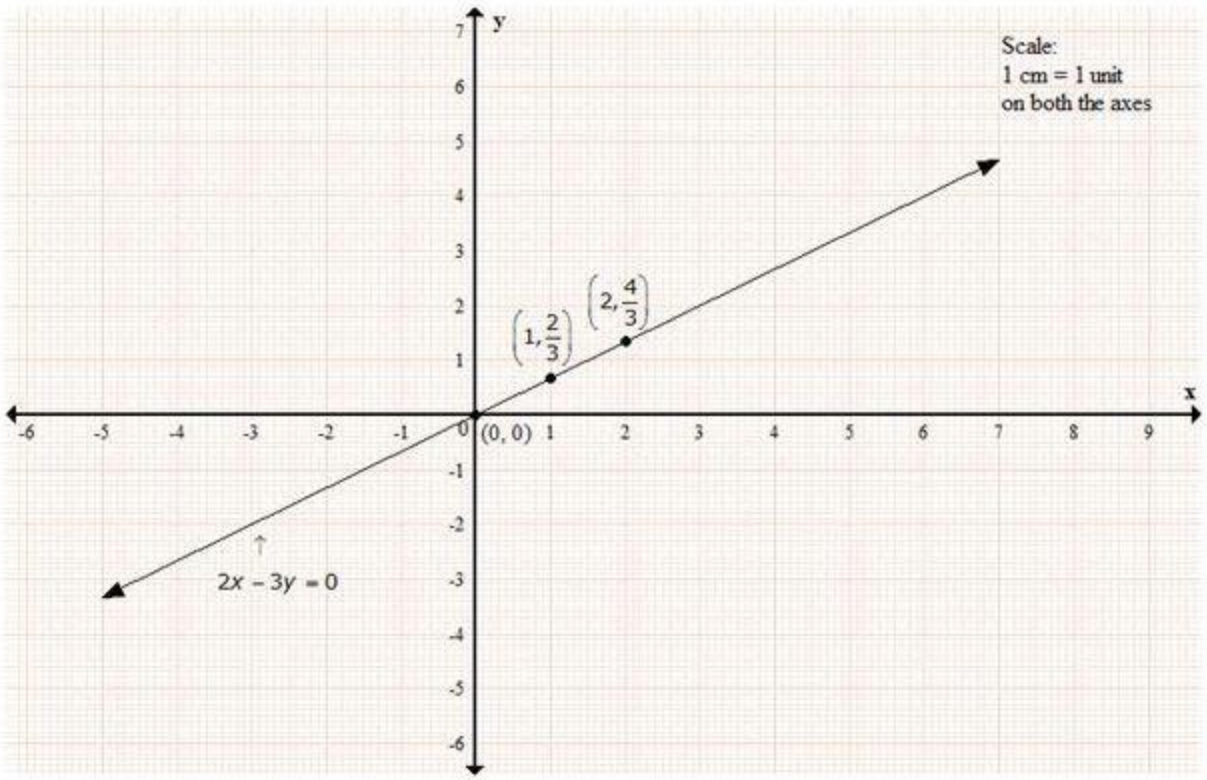
Given equation is 2x - 3y = 0.

Rewriting it we get,

3y = 2x

i.e. $y = \frac{2}{3}x$

x	0	1	2
y	0	$\frac{2}{3}$	$\frac{4}{3}$
(x, y)	(0, 0)	$\left(1, \frac{2}{3}\right)$	$\left(2, \frac{4}{3}\right)$



Solution 2(v):

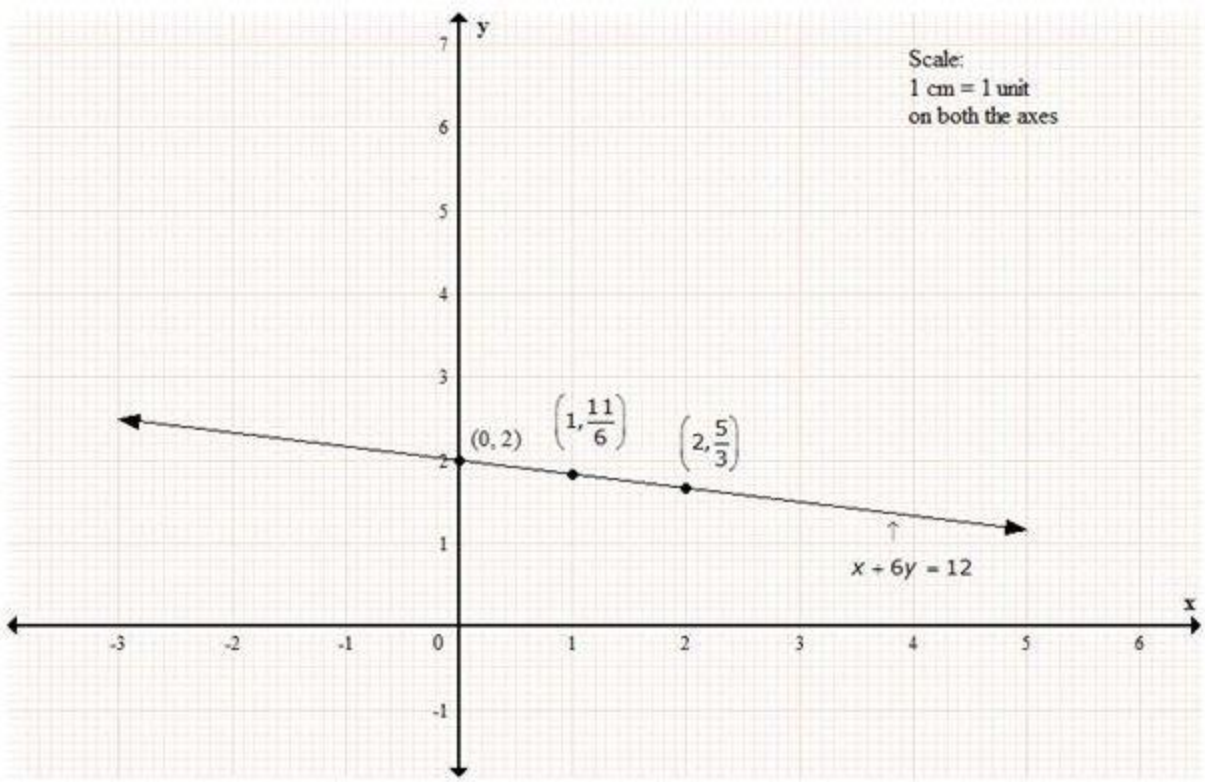
Given equation is $x + 6y = 12$.

Rewriting it we get,

$6y = -x + 12$

i.e. $y = -\frac{1}{6}x + 2$

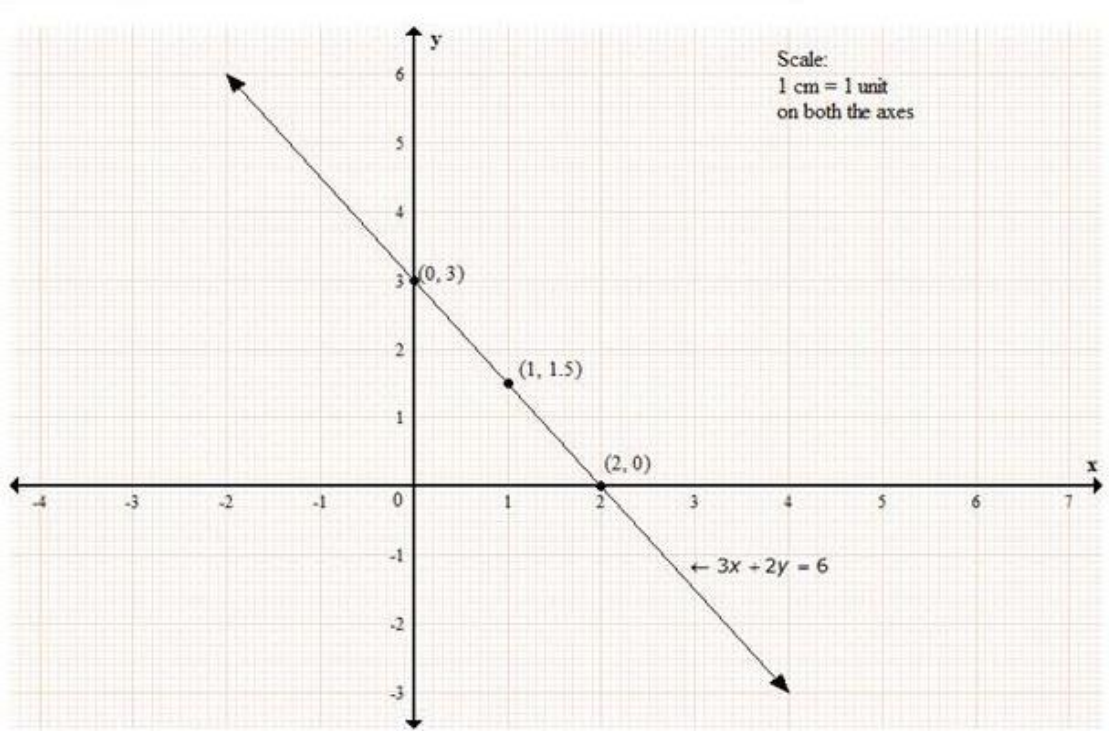
x	0	1	2
y	2	$\frac{11}{6}$	$\frac{5}{3}$
(x, y)	(0, 2)	$\left(1, \frac{11}{6}\right)$	$\left(2, \frac{5}{3}\right)$



Solution 3:

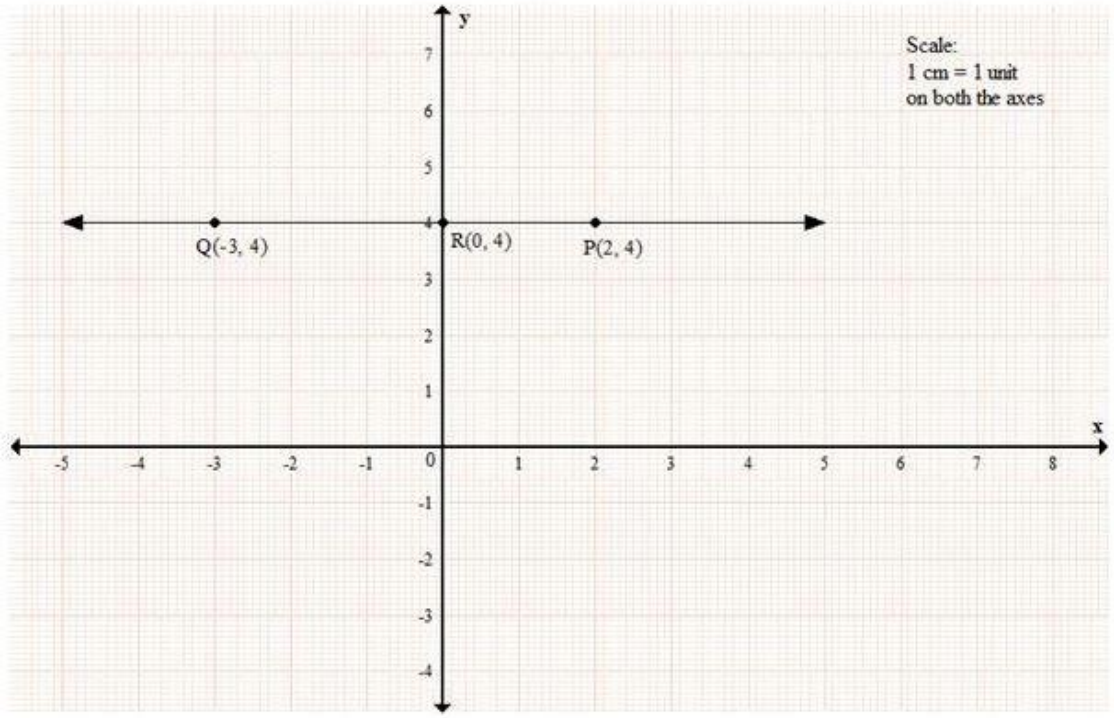
Given equation is 3x + 2y = 6.
Rewriting it we get,
2y = -3x + 6
i.e. y = -1.5x + 3

x	0	1	2
y	3	1.5	0
(x, y)	(0, 3)	(1, 1.5)	(2, 0)



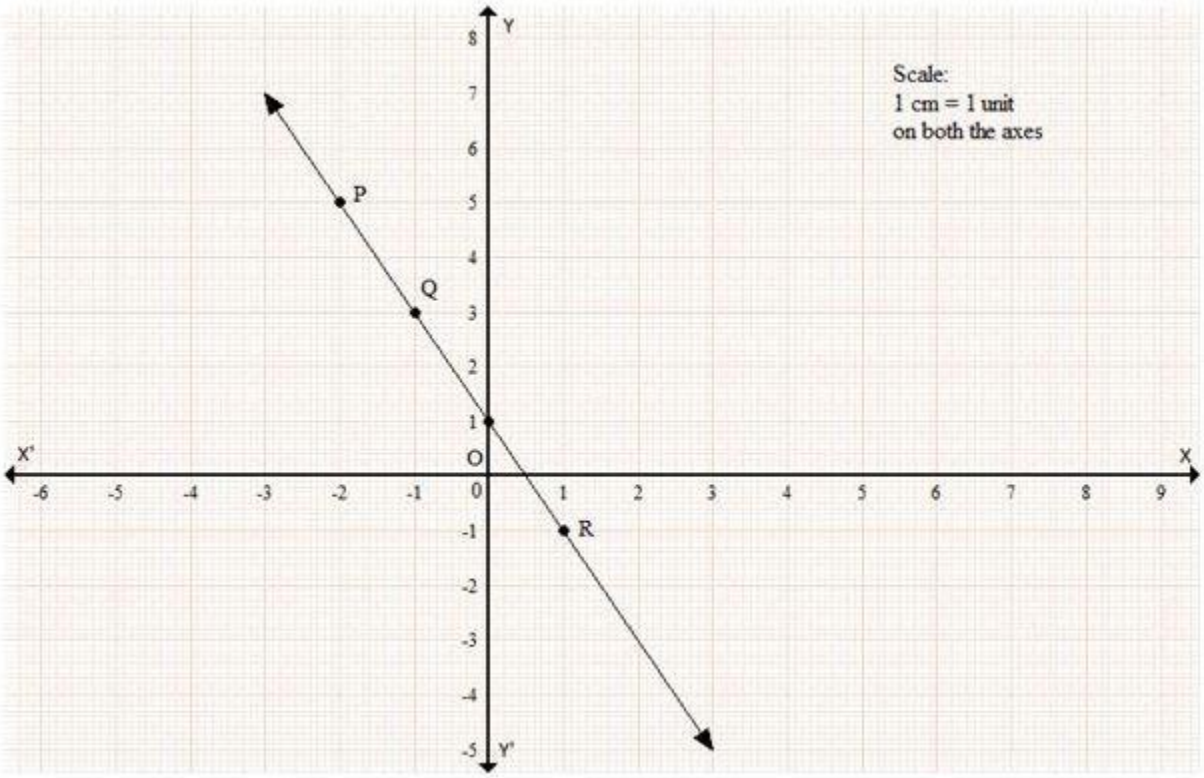
From the graph, it can be clearly seen that the equation 3x + 2y = 6 intersects the y-axis at (0, 3).

Solution 4:



From the graph, it can be clearly seen that the points P, R and Q are collinear. Also, the line passing through these lines is parallel to the x-axis.

Solution 5(i):



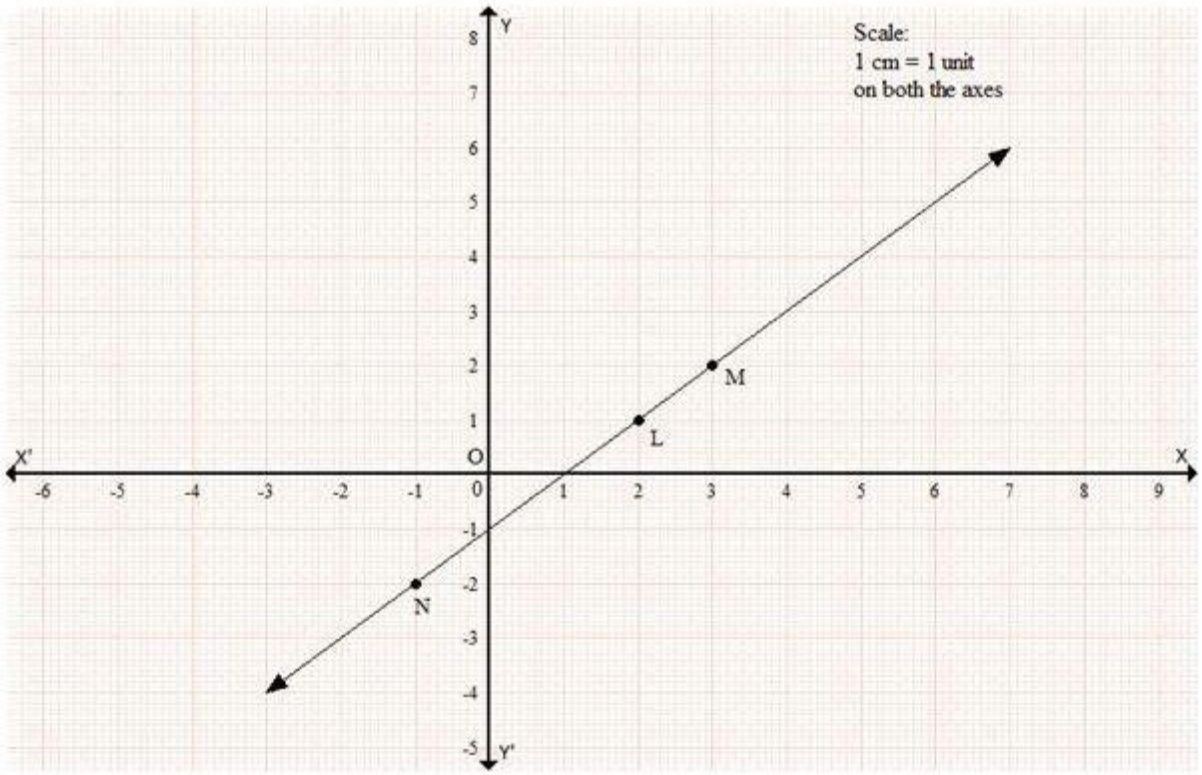
The coordinates of the points P, Q and R are as shown below.

	P	Q	R
x	-2	-1	1
y	5	3	-1
(x, y)	(-2, 5)	(-1, 3)	(1, -1)

From the above table,

$y = -2x + 1$

Solution 5(ii):



The co-ordinates of the points M, L and N are as shown below.

	M	L	N
x	3	2	-1
y	2	1	-2
(x, y)	(3, 2)	(2, 1)	(-1, 2)

From the above table,

$y = x - 1$