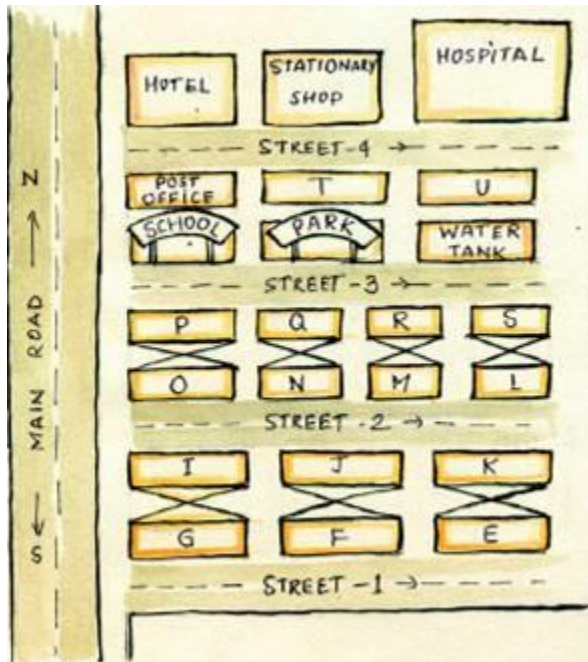


Co-Ordinate Geometry

Exercise 5.1

Q. 1. In a locality, there is a main road along North-South direction. The map is given below. With the help of the picture answer the following questions.



- (i) What is the 3rd object on the left side in street no. 3?
- (ii) Find the name of the 2nd house which is in right side of street 2.
- (iii) Locate the position of Mr. K's house.
- (iv) How do you describe the position of the post office?
- (v) How do you describe the location of the hospital?

Answer : (i) From the given figure, we can see that the 3rd object on the left side in street no. 3 is "Water Tank".

(ii) From the given figure, the name of the 2nd house which is in right side of street 2 is "Mr. J's" house.

(iii) From the figure given, we see that, Mr. K's house is the 3rd house on the right of street 2 going while towards east direction.

(iv) From the given figure, we see that the 1st building on the right side of the street 4 while going towards east is the post office.

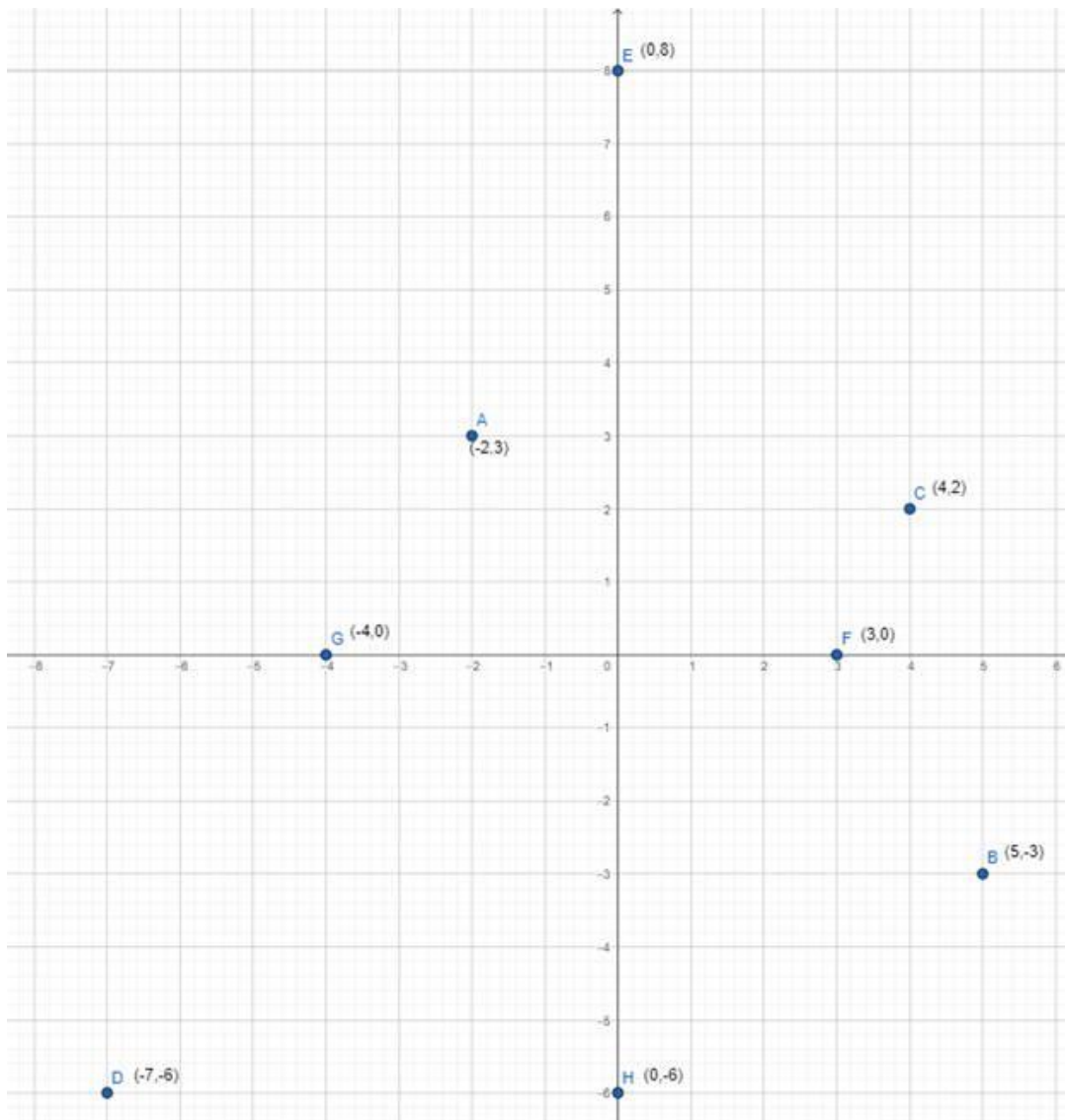
(v) From the given figure, we see that the 3rd building on the left side of street 4 while going in the easy direction is the hospital.

Exercise 5.2

Q. 1. Write the quadrant in which the following points lie?

- i) $(-2, 3)$
- ii) $(5, -3)$
- iii) $(4, 2)$
- iv) $(-7, -6)$
- v) $(0, 8)$
- vi) $(3, 0)$
- vii) $(-4, 0)$
- viii) $(0, -6)$

Answer : From the figure given below, we can tell the quadrants of the given points.



- (i) The point A(-2,3) lies in the II quadrant.
- (ii) The point B(5,-3) lies in the IV quadrant.
- (iii) The point C(4,2) lies in the I quadrant.
- (iv) The point D(-7,-6) lies in the III quadrant.
- (v) The point E(0,8) lies on the Y-axis.
- (vi) The point F(3,0) lies on the X-axis.
- (vii) The point G(-4,0) lies on the X-axis.
- (viii) The point H(0,-6) lies on the Y-axis.

Q. 2. Write the abscissae and ordinates of the following points.

- i) (4, -8)
- ii) (-5, 3)
- iii) (0, 0)
- iv) (5, 0)
- v) (0, -8)

Note : Plural of abscissa is abscissae.

Answer : As we know, the abscissa of a point is its x co-ordinate and ordinate of a point is its y co-ordinate {if a point $\equiv (x,y)$ }.

So,

(i) For the point (4,-8) :

abscissa : 4

ordinate : -8

(ii) For the point (-5,3) :

abscissa : -5

ordinate : 3

(iii) For the point (0,0) :

abscissa : 0

ordinate : 0

(iv) For the point (5,0) :

abscissa : 5

ordinate : 0

(v) For the point (0,-8) :

abscissa : 0

ordinate : -8

Q. 3. Which of the following points lie on the axes? Also name the axis.

i) (-5, -8)

ii) (0, 13)

iii) (4, -2)

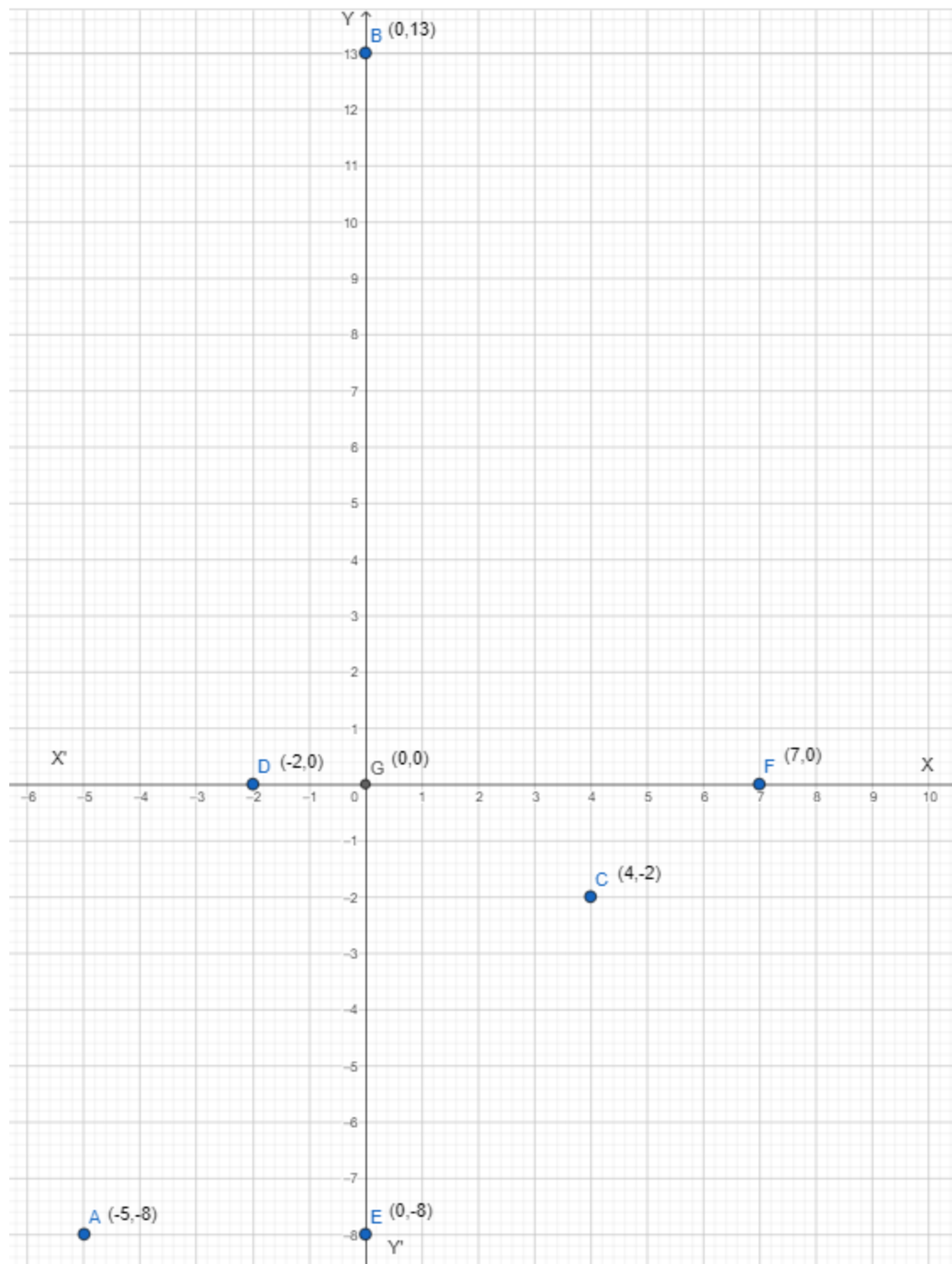
iv) (-2, 0)

v) (0, -8)

vi) (7, 0)

vii) (0, 0)

Answer :



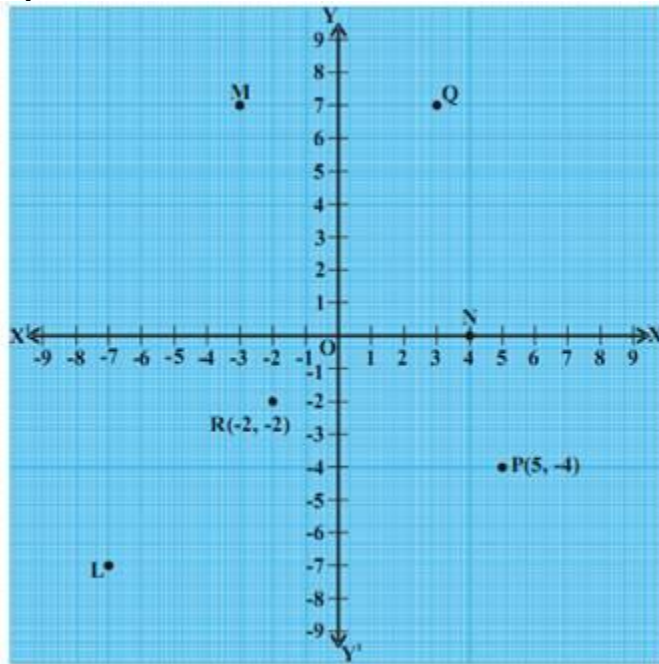
From the figure above, The points which lie on axes are :

(ii) $(0, 13)$ which lies on the Y -axis

- (iv) $(-2, 0)$ which lies on the X-axis
- (v) $(0, -8)$ which lies on the Y-axis
- (vi) $(7, 0)$ which lies on the X-axis
- (vii) $(0, 0)$ which lies on the on both the axis.

Q. 4. Write the following based on the graph.

- i) The ordinate of L
- ii) The ordinate of Q
- iii) The point denoted by $(-2, -2)$
- iv) The point denoted by $(5, 4)$
- v) The abscissa of N
- vi) The abscissa of M



Answer : From the above figure we can say that,

- (i) The ordinate of point L is -7.
- (ii) The ordinate of point Q is 7.
- (iii) The point denoted by $(-2, -2)$ is R.
- (iv) The point denoted by $(5, 4)$ is P.
- (v) The abscissa of point N is 4.

(vi) The abscissa of point M is -3.

Q. 5. State True or False and write correct statement.

i. In the Cartesian plane the horizontal line is called Y - axis.

ii. In the Cartesian plane, the vertical line is called Y - axis.

iii. The point which lies on both the axes is called origin.

iv. The point (2, -3) lies in the third quadrant.

v. (-5, -8) lies in the fourth quadrant.

vi. The point (-x, -y) lies in the first quadrant where $x < 0$, $y < 0$.

Answer : (i) The statement given is "False".

⇒ CORRECT STATEMENT : In the Cartesian plane the horizontal line is called X - axis.

(ii) The statement given is "True"

(iii) The statement given is "True"

(iv) The statement given is "False".

⇒ CORRECT STATEMENT : The point (2, -3) lies in the fourth quadrant.

(v) The statement given is "False".

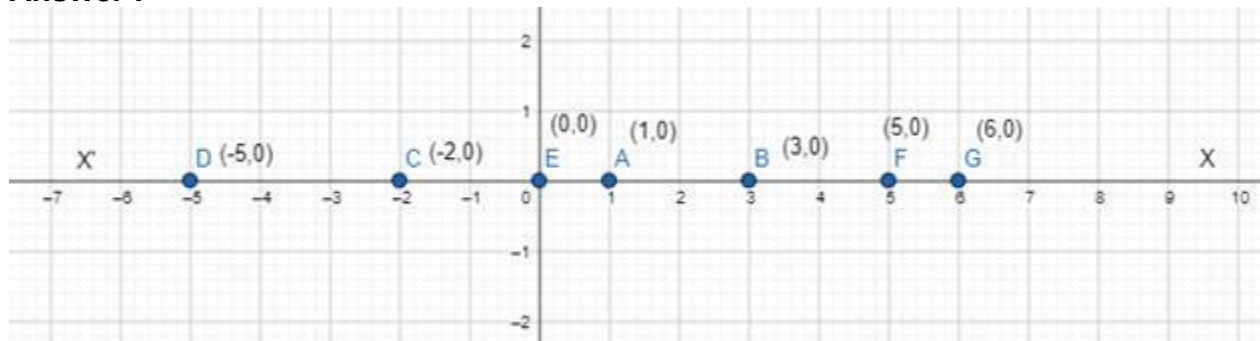
⇒ CORRECT STATEMENT : The point (-5, -8) lies in the third quadrant.

(vi) The statement given is "True".

Q. 6. A. Plot the following ordered pairs on a graph sheet. What do you observe?

(1, 0), (3, 0), (-2, 0), (-5, 0), (0, 0), (5, 0), (-6, 0)

Answer :

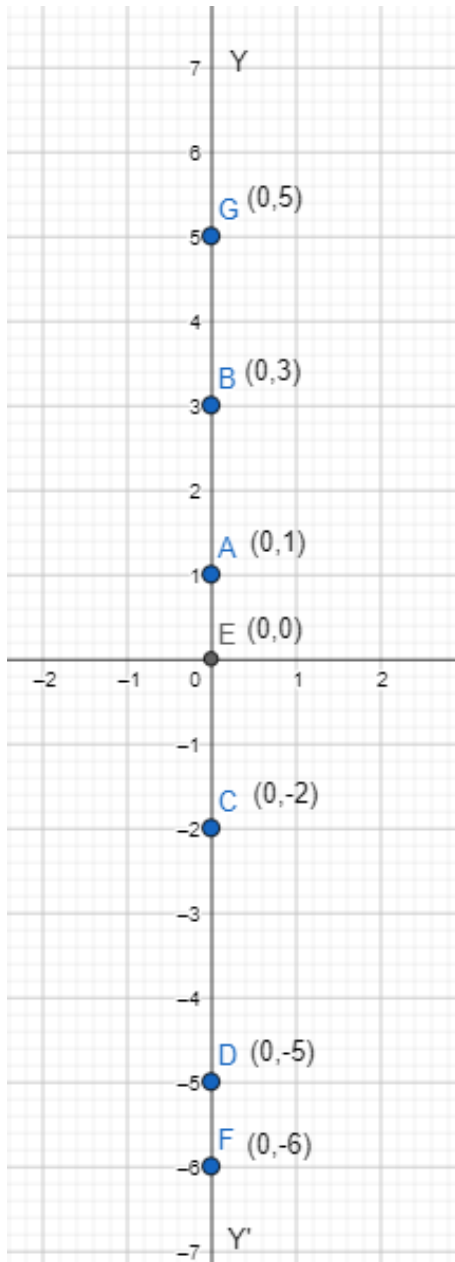


The above all points lie on the X-axis.

Q. 6. B. Plot the following ordered pairs on a graph sheet. What do you observe?

(0, 1), (0, 3), (0, -2), (0, -5), (0, 0), (0, 5), (0, -6)

Answer :



The above all points lie on the Y-axis.

We also saw that a point common to both the axes was (0,0) which is the origin.

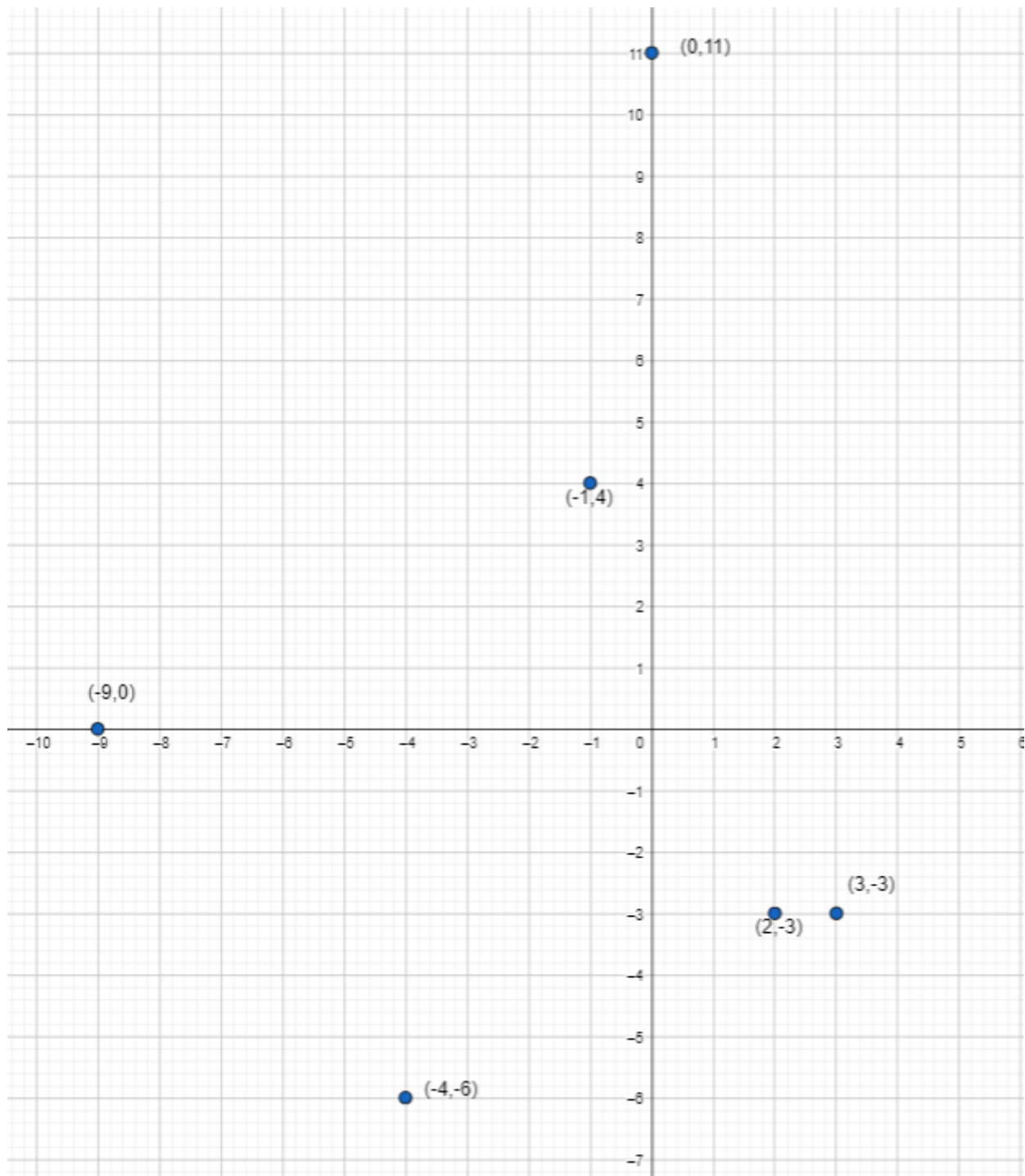
Exercise 5.3

Q. 1. Plot the following points in the Cartesian plane whose x, y co-ordinates are given.

x	2	3	-1	0	-9	-4
Y	-3	-3	4	11	0	-6
(x, y)						

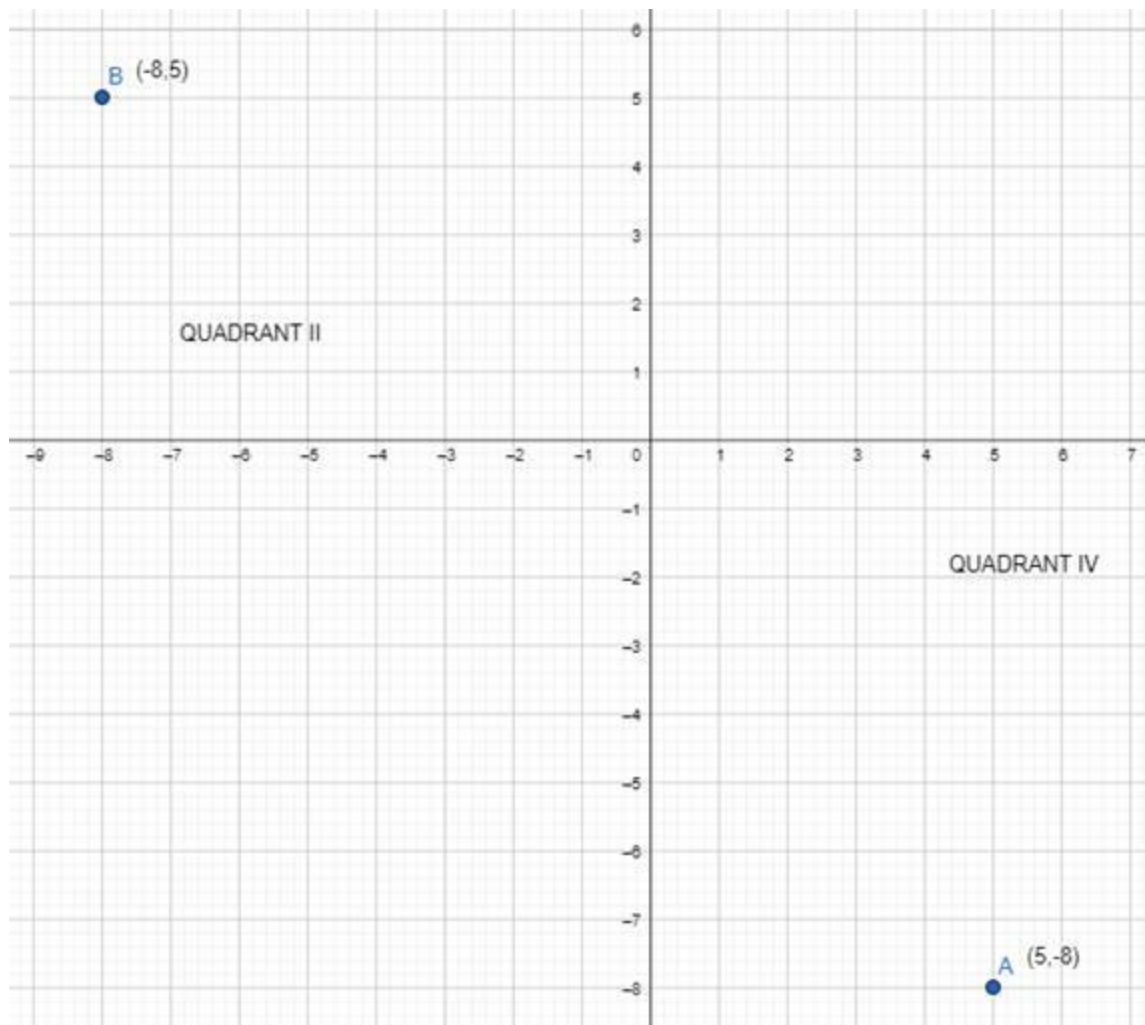
Answer :

x	2	3	-1	0	-9	-4
Y	-3	-3	4	11	0	-6
(x, y)	(2,-3)	(3,-3)	(-1,4)	(0,11)	(-9,0)	(-4,-6)



Q. 2. Are the positions of $(5, -8)$ and $(-8, 5)$ is same? Justify your answer.

Answer :



No, positions of $(5, -8)$ and $(-8, 5)$ is not same because $(5, -8)$ lies in IV quadrant and $(-8, 5)$ lies in II quadrant.

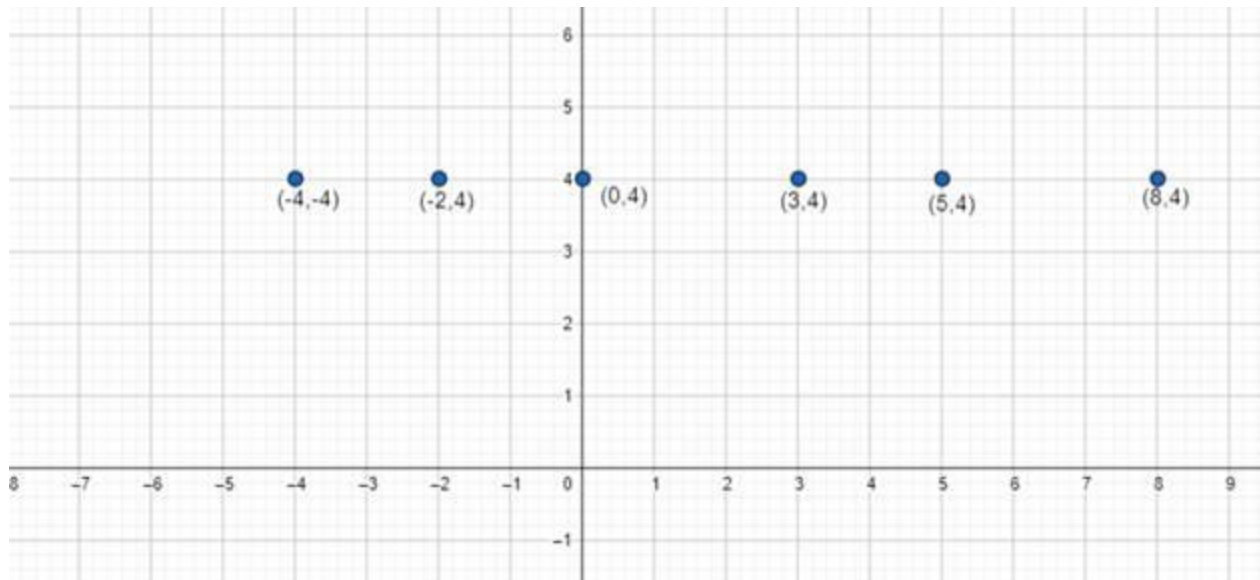
Q. 3. What can you say about the position of the points $(1, 2)$, $(1, 3)$, $(1, -4)$, $(1, 0)$, and $(1, 8)$. Locate on a graph sheet.

Answer : From the given points $(1, 2)$, $(1, 3)$, $(1, -4)$, $(1, 0)$, and $(1, 8)$, we can say that all these points lie on a line parallel to Y-axis at a distance of 1 unit.



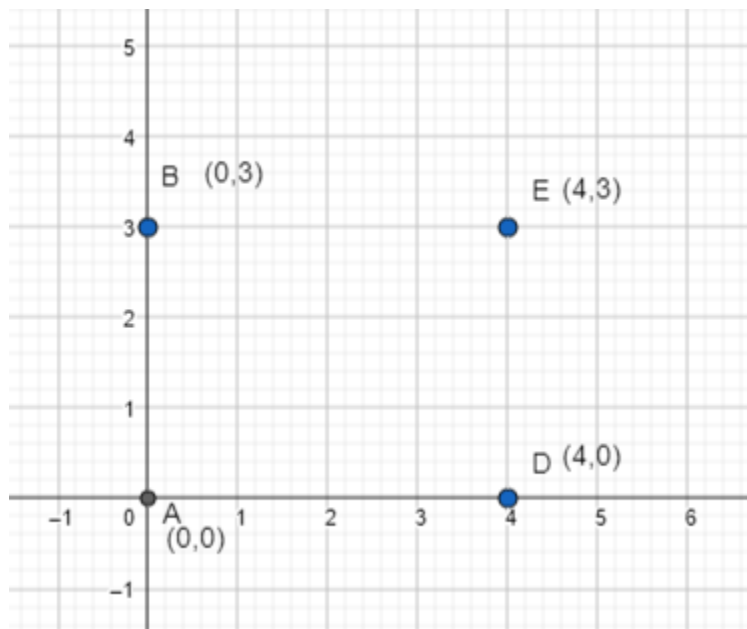
Q. 4. What can you say about the position of the points $(5, 4)$, $(8, 4)$, $(3, 4)$, $(0, 4)$, $(-4, 4)$, $(-2, 4)$? Locate the points on a graph sheet and justify your answer.

Answer : From the given points $(5, 4)$, $(8, 4)$, $(3, 4)$, $(0, 4)$, $(-4, 4)$, $(-2, 4)$, we can say that all these points lie on a line parallel to X-axis at a distance of 4 units.

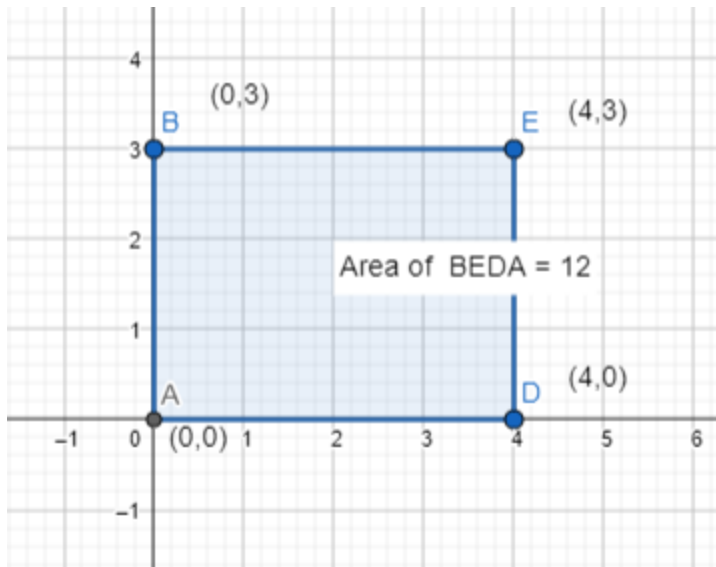


Q. 5. Plot the points $(0, 0)$, $(0, 3)$, $(3, 4)$, $(4, 0)$ in graph sheet. Join the points with straight lines to make a rectangle. Find the area of the rectangle.

Answer : Plotting the points :



Joining the lines to form a rectangle and finding its area :



Finding the area :

From the graph, we can see that,

$$L = AD = 4 \text{ units}$$

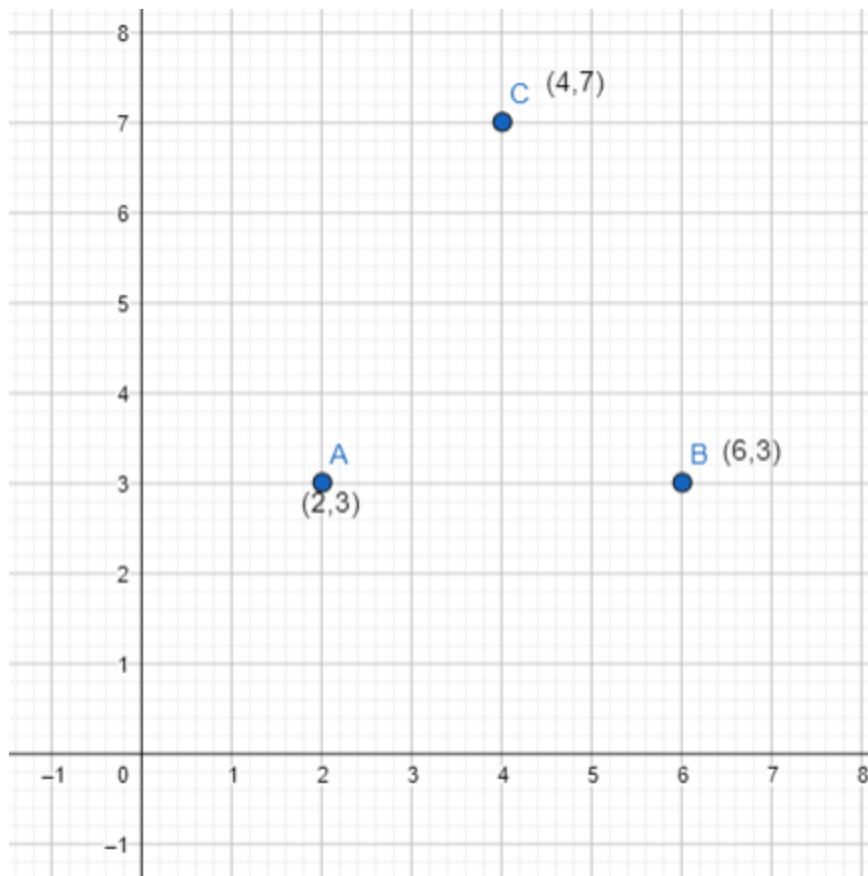
$$B = ED = 3 \text{ units}$$

Now, area of rectangle = $L \times B = 4 \times 3 = 12$ sq. unit.

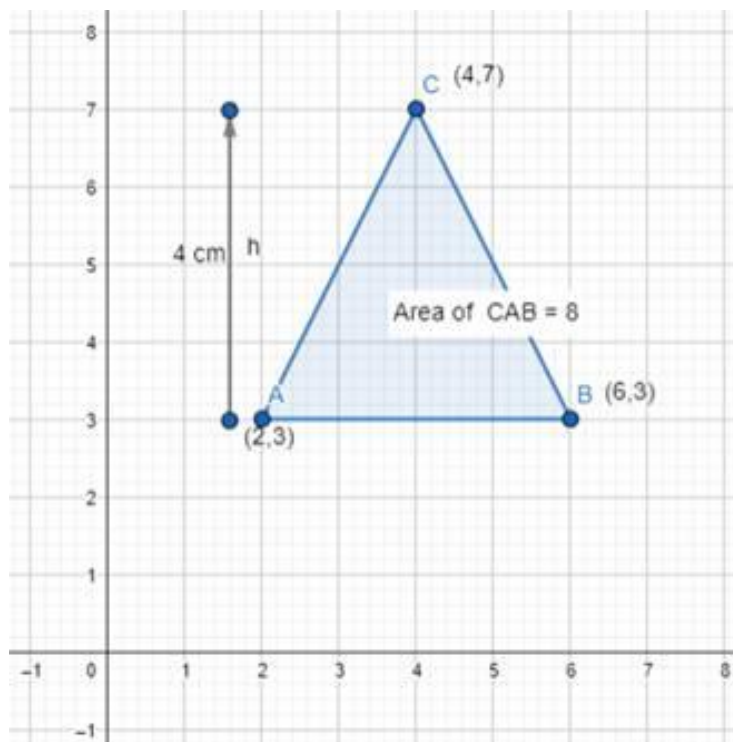
$\therefore$ Area of rectangle BEDA = 12 sq. unit.

Q. 6. Plot the points (2, 3), (6, 3) and (4, 7) in a graph sheet. Join them to make it a triangle. Find the area of the triangle.

Answer : Plotting the points :



Joining the points to form a triangle and finding its area :



Finding the area :

From the graph, we can see that,

$H = 4$ units

$B = AB = 4$ units

Area of the triangle = $\frac{1}{2} \times B \times H$

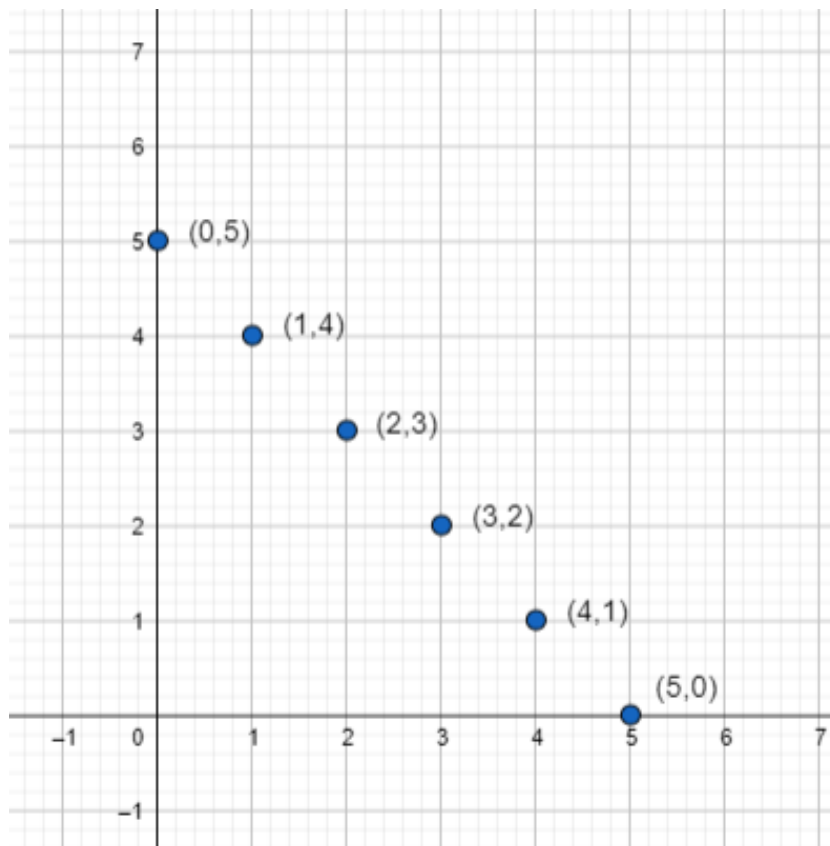
$$= \frac{1}{2} \times 4 \times 4 = 8 \text{ sq. unit.}$$

$\therefore$ Area of triangle CAB = 8 sq. unit.

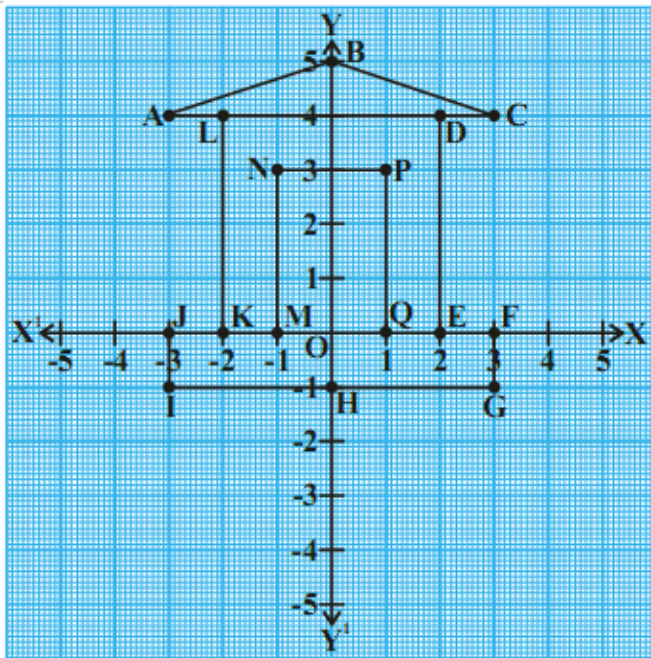
Q. 7. Plot at least six points in a graph sheet, each having the sum of its coordinates equal to 5. {Hint : (-2, 7) (1, 4)}

Answer : The points whose sum of co-ordinates is equal to 5 are :

(2,3), (3,2), (0,5), (5,0), (1,4), (4,1).



Q. 8. Look at the graph. Write the coordinates of the points A, B, C, D, E, F, G, H, I, J, K, L, M, N, P, O and Q.



Answer : From the graph, we can see that co-ordinates of the given points are :

Co-ordinates of point A are : (-3,4)

Co-ordinates of point B are : (0,5)

Co-ordinates of point C are : (3,4)

Co-ordinates of point D are : (2,4)

Co-ordinates of point E are : (2,0)

Co-ordinates of point F are : (3,0)

Co-ordinates of point G are : (3,-1)

Co-ordinates of point H are : (0,-1)

Co-ordinates of point I are : (-3,-1)

Co-ordinates of point J are : (-3,0)

Co-ordinates of point K are : (-2,0)

Co-ordinates of point L are : $(-2,4)$

Co-ordinates of point M are : $(-1,0)$

Co-ordinates of point N are : $(-1,3)$

Co-ordinates of point O are : $(0,0)$

Co-ordinates of point P are : $(1,3)$

Co-ordinates of point Q are : $(1,0)$

Q. 9. In a graph Sheet Plot each pair of points, join them by line segments

i. $(2, 5), (4, 7)$

ii. $(-3, 5), (-1, 7)$

iii. $(-3, -4), (2, -4)$

iv. $(-3, -5), (2, -5)$

v. $(4, -2), (4, -3)$

vi. $(-2, 4), (-2, 3)$

vii. $(-2, 1), (-2, 0)$

Now join the following pairs of points by straight line segments, in the same graph.

viii. $(-3, 5), (-3, 4)$

ix. $(2, 5), (2, -4)$

x. $(2, -4), (4, -2)$

xi. $(2, -4), (4, -3)$

xii. $(4, -2), (4, 7)$

xiii. $(4, 7), (-1, 7)$

xiv. $(-3, 2), (2, 2)$

Now you will get a surprise figure.

What is it?

Answer : Plotting the first set of points and forming their line segments :

i. $(2, 5), (4, 7) \rightarrow A,B$

ii. $(-3, 5), (-1, 7) \rightarrow C,D$

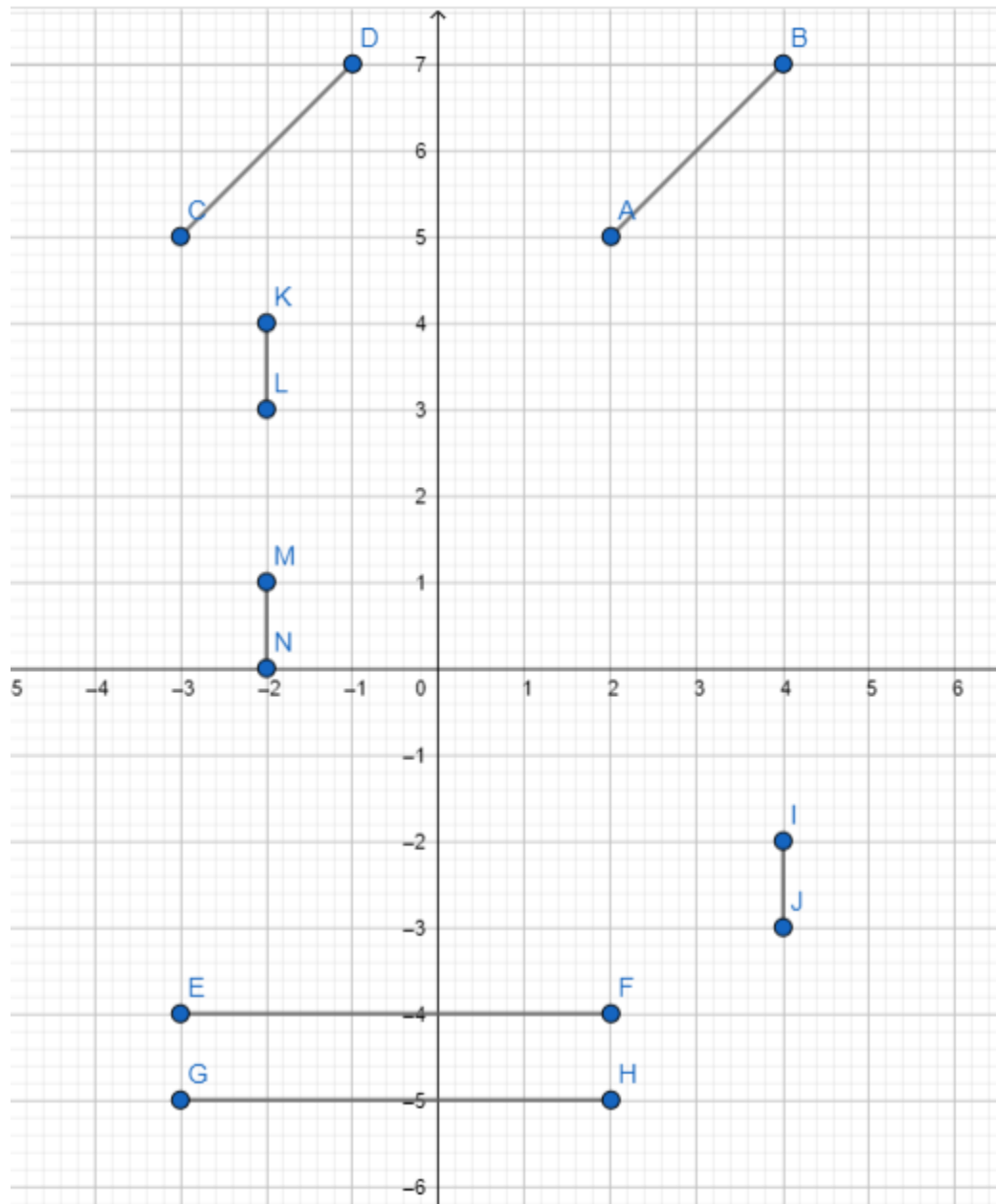
iii. $(-3, -4), (2, -4) \rightarrow E,F$

iv. $(-3, -5), (2, -5) \rightarrow G,H$

v. $(4, -2), (4, -3) \rightarrow I, J$

vi. $(-2, 4), (-2, 3) \rightarrow K, L$

vii. $(-2, 1), (-2, 0) \rightarrow M, N$



Plotting the second set of points and forming their line segments :

viii. $(-3, 5), (-3, 4) \rightarrow O, P$

ix. $(2, 5), (2, -4) \rightarrow Q, R$

x. $(2, -4), (4, -2) \rightarrow S, T$

xi. $(2, -4), (4, -3) \rightarrow U, V$

xii. $(4, -2), (4, 7) \rightarrow W, X$

xiii. $(4, 7), (-1, 7) \rightarrow Y, Z$

xiv. $(-3, 2), (2, 2) \rightarrow A1, B1$

