



**PreAlgebraCoach.com**

# The Coordinate Plane

Unit 1 Lesson 12

# The Coordinate Plane

## Students will be able to:

Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane.

Find and position integers on a coordinate plane

Find and position pairs of integers on a coordinate plane.

## Key Vocabulary:

Axis

Quadrants

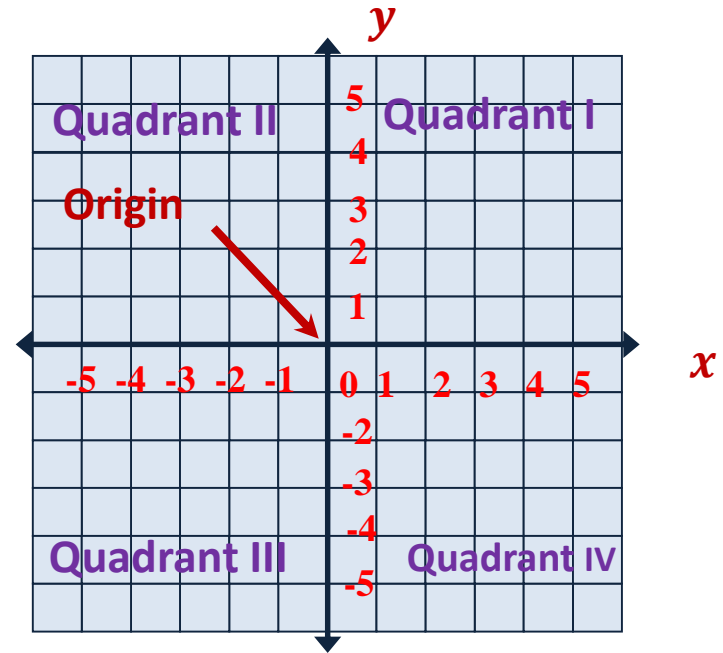
Coordinates

# The Coordinate Plane

A **coordinate plane** is formed by two number lines in a plane that intersect at right angles.

The point of intersection is the zero on each.

The two number lines are called the **axis**.



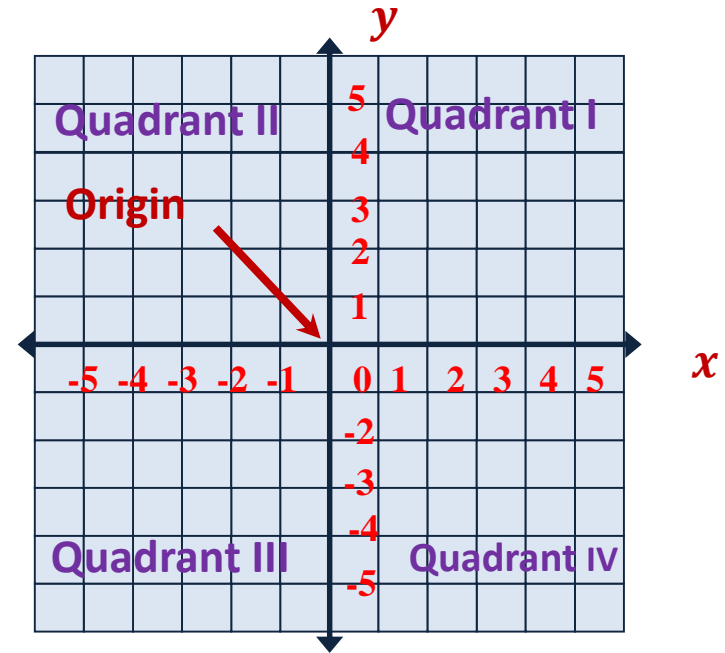
# The Coordinate Plane

The horizontal axis is called the **x-axis**.

The vertical axis is called the **y-axis**.

The two axes divide the coordinate plane into four **quadrants**.

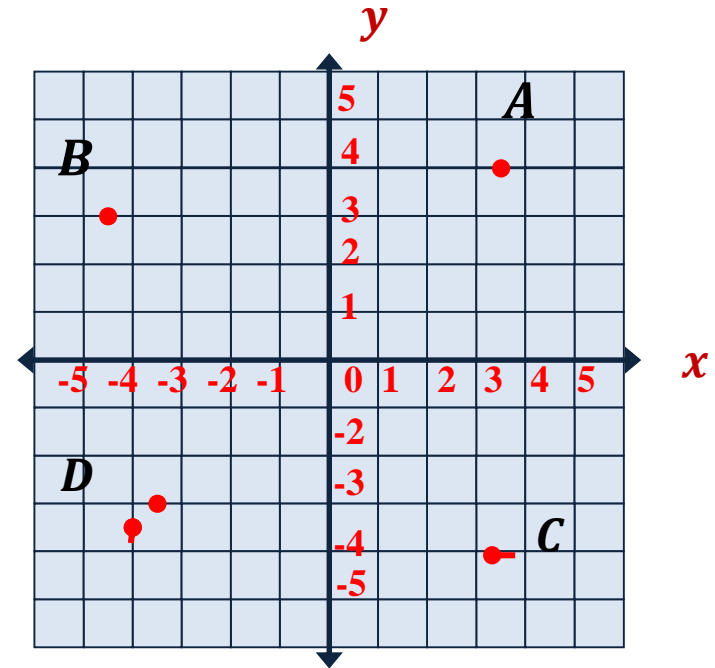
The point where the axes intersect is called the **origin**.



# The Coordinate Plane

**Sample Problem 1:** Name the quadrant where each point is located.

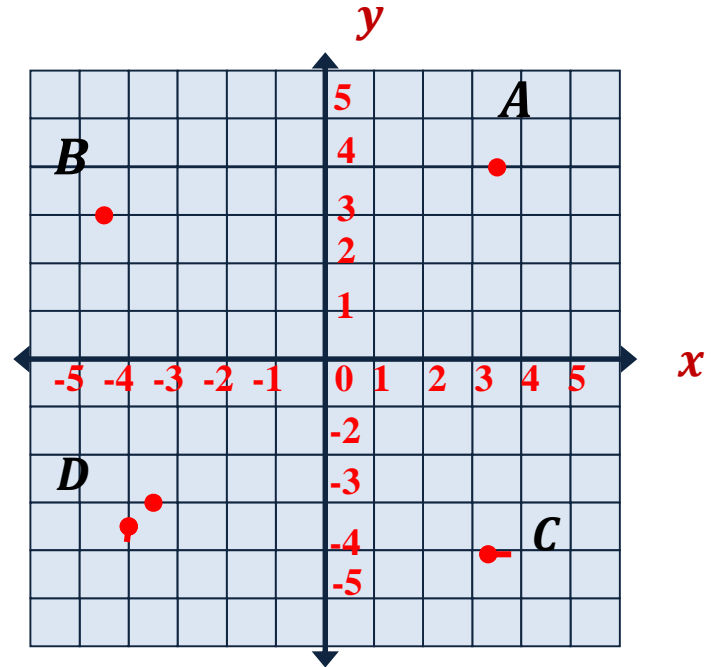
a.



# The Coordinate Plane

**Sample Problem 1:** Name the quadrant where each point is located.

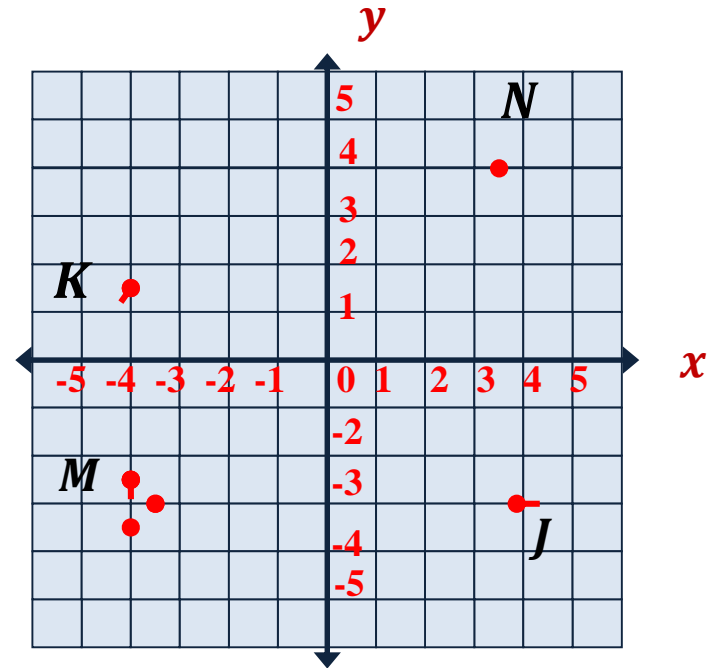
- a.  $A$  – Quadrant I  
 $B$  – Quadrant II  
 $C$  – Quadrant IV  
 $D$  – Quadrant III



# The Coordinate Plane

**Sample Problem 1:** Name the quadrant where each point is located.

b.



# The Coordinate Plane

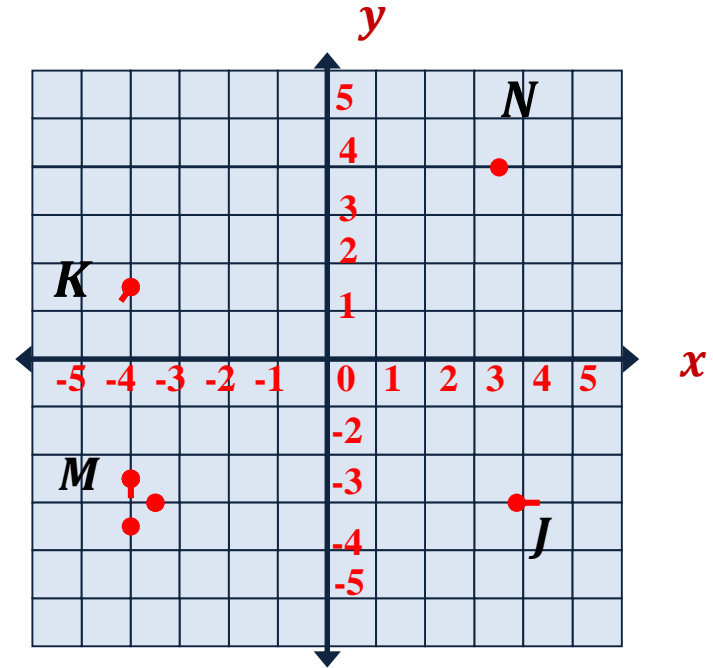
**Sample Problem 1:** Name the quadrant where each point is located.

b.  $M$  – Quadrant III

$N$  – Quadrant I

$K$  – Quadrant II

$J$  – Quadrant IV





## The Coordinate Plane

An ordered pair gives the location of a point on a coordinate plane.

**The first number** tells how far to move right (positive) or left (negative) from the origin.

**The second number** tells how far to move up (positive) or down (negative).

## The Coordinate Plane

The numbers in an ordered pair are called **coordinates**.

The first number is called the **x-coordinate**.

The second number is called the **y-coordinate**.

The ordered pair for the origin is **(0,0)**.

**Sample Problem 2:** Graph each point on a coordinate plane.

a.  $A (3, 4)$

$$B (-5, 3)$$

$$C (3, -4)$$

$$D (-4, -3)$$

$$E (0, -3)$$

$$F (-4, 0)$$

# The Coordinate Plane

**Sample Problem 2:** Graph each point on a coordinate plane.

a.  $A (3, 4)$

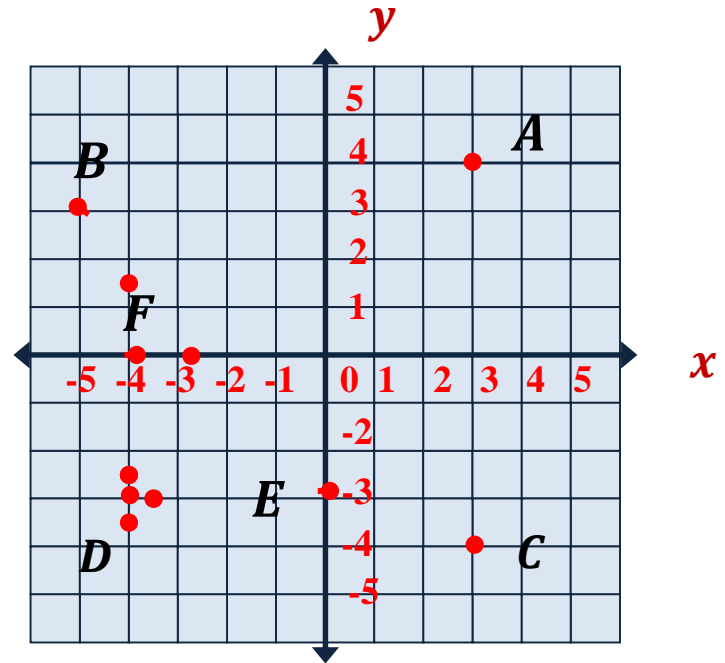
$B (-5, 3)$

$C (3, -4)$

$D (-4, -3)$

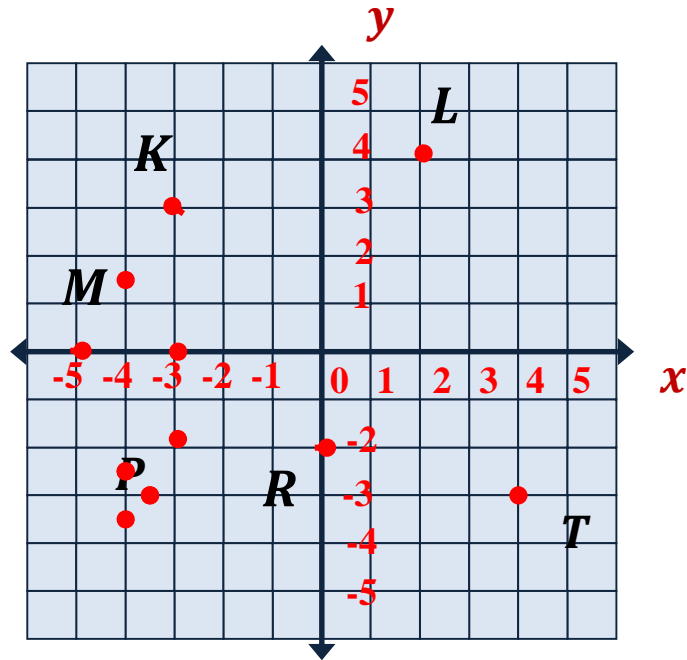
$E (0, -3)$

$F (-4, 0)$



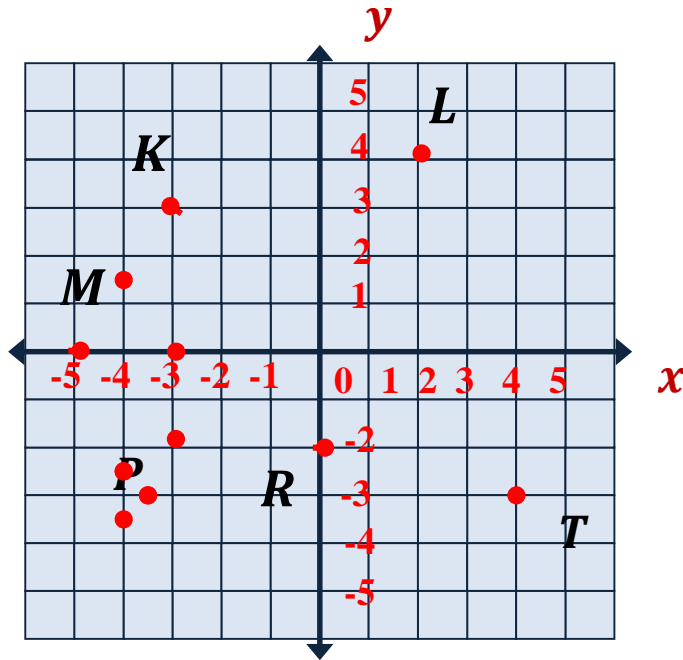
## Sample Problem 3: Give the coordinates of each point.

a.



## Sample Problem 3: Give the coordinates of each point.

a.



$$K (-3, 3)$$

$$L (2, 4)$$

$$M (-5, 0)$$

$$P (-3, -2)$$

$$R (0, -2)$$

$$T (4, -3)$$

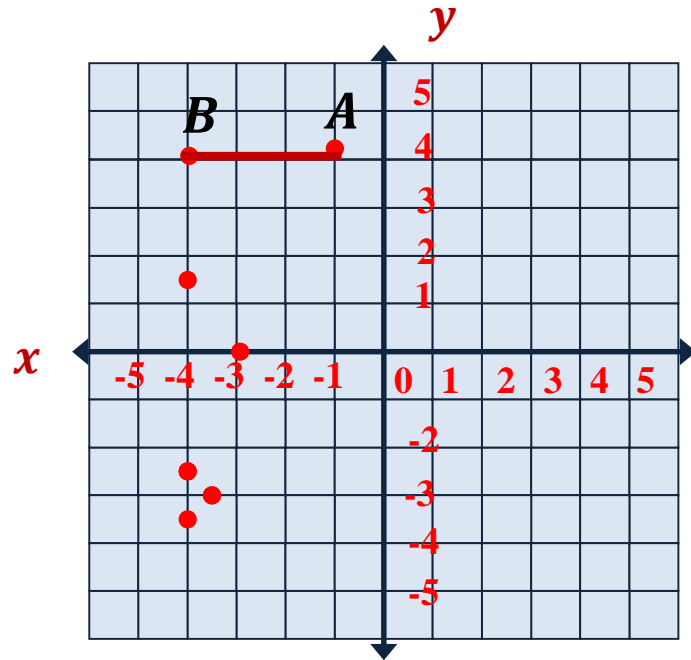
## Finding Segment Lengths and Area

**Sample Problem 4:** Graph each point on a coordinate plane and find the line segment lengths.

- a.  $A(-1, 4)$  and  $B(-4, 4)$   
 $G(3, 0)$  and  $T(3, -5)$   
 $C(-4, -5)$  and  $K(-4, -2)$

## Sample Problem 4: Graph each point on a coordinate plane and find the line segment lengths.

a.



$\overline{AB}$  is horizontal

$$\overline{AB} = |\text{difference of } x - \text{coordinates}|$$

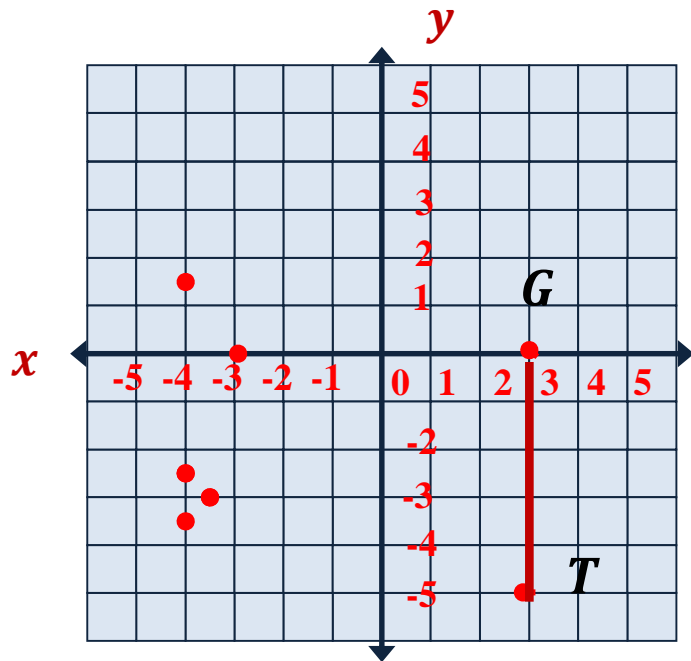
$$\overline{AB} = |-1 - (-4)| = |-1 + 4| = 3$$

$$\overline{AB} = 3 \text{ units}$$



## Sample Problem 4: Graph each point on a coordinate plane and find the line segment lengths.

a.



$\overline{GT}$  is vertical

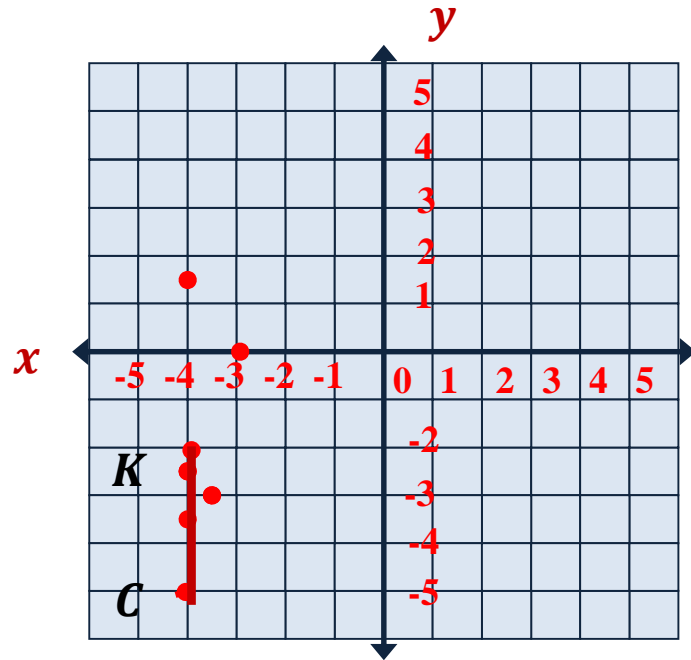
$$\overline{GT} = |\text{difference of } y - \text{coordinates}|$$

$$\overline{GT} = |0 - (-5)| = |0 + 5| = 5$$

$$\overline{GT} = 5 \text{ units}$$

## Sample Problem 4: Graph each point on a coordinate plane and find the line segment lengths.

a.



$\overline{KC}$  is vertical

$$\overline{KC} = |\text{difference of } y - \text{coordinates}|$$

$$\overline{KC} = |-5 - (-2)| = |-5 + 2| = 3$$

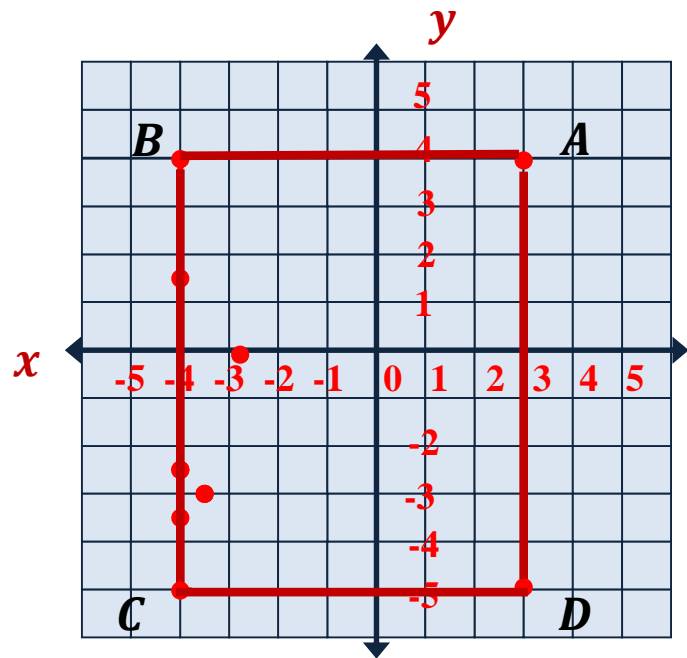
$$\overline{KC} = 3 \text{ units}$$

**Sample Problem 5:** Graph each point on a coordinate plane and find the area of the figure.

- a.  $A(3, 4)$ ,  $B(-4, 4)$ ,  $C(-4, -5)$  and  $D(3, -5)$

**Sample Problem 5:** Graph each point on a coordinate plane and find the area of the figure.

a.



$\overline{AB}$  horizontal

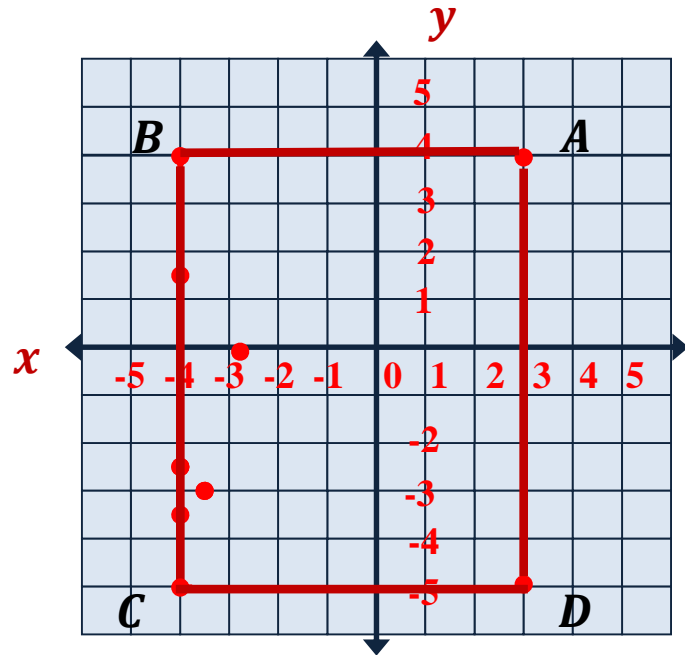
$$\overline{AB} = |\text{difference of } x - \text{coordinates}|$$

$$\overline{AB} = |3 - (-4)| = |3 + 4| = 7$$

$$\overline{AB} = 7 \text{ units}$$

**Sample Problem 5:** Graph each point on a coordinate plane and find the area of the figure.

a.



$\overline{BC}$  is vertical

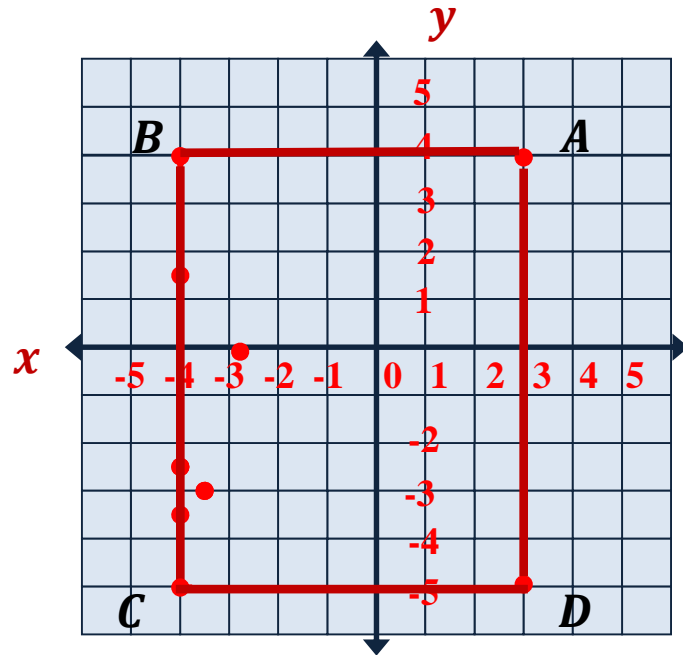
$$\overline{BC} = |\text{difference of } y - \text{coordinates}|$$

$$\overline{BC} = |4 - (-5)| = |4 + 5| = 9$$

$$\overline{BC} = 9 \text{ units}$$

**Sample Problem 5:** Graph each point on a coordinate plane and find the area of the figure.

a.



Rectangle

$$A = \overline{AB} * \overline{BC}$$

$$A = 7 \text{ units} * 9 \text{ units}$$

$$A = 63 \text{ units}^2$$