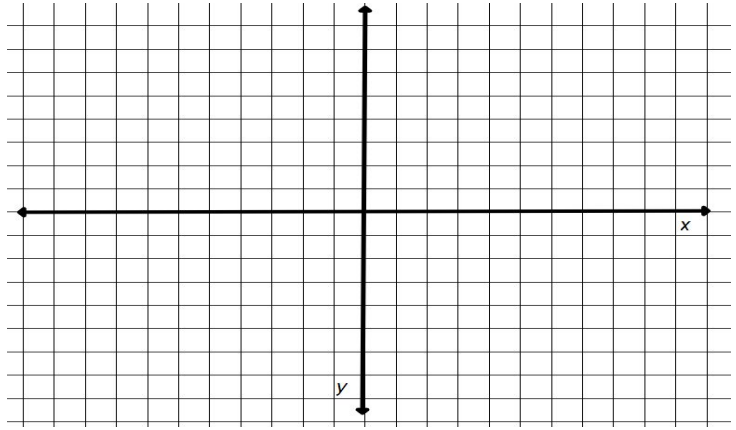
Coordinate Graphing Quadrants and Reading Ordered Pairs



Warm Up

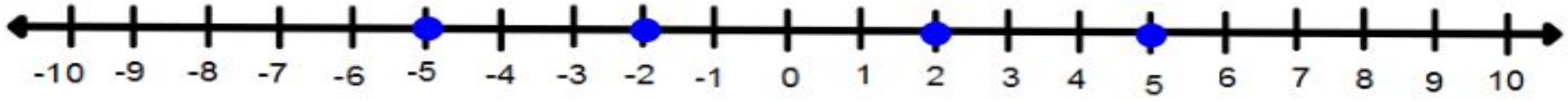
Graph the integers on a number line.

1. -5 , - 2, 5, 2
2. 0, -3, 7, -2
3. -4, 1, -6, 8
4. -1, 4, -7, 0
5. 6, -8, 5, -4

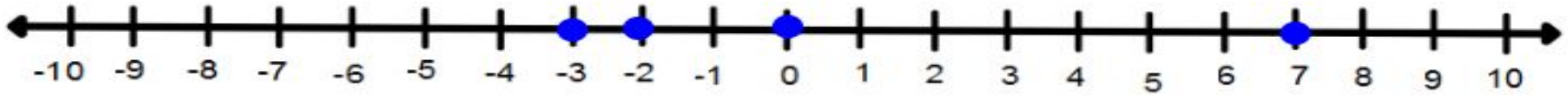
Warm Up

Graph the integers on a number line.

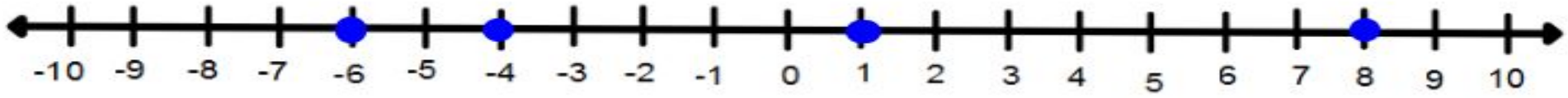
1.



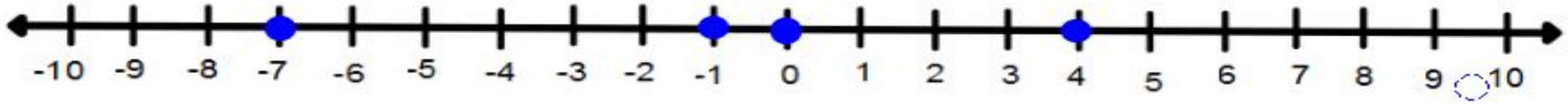
2.



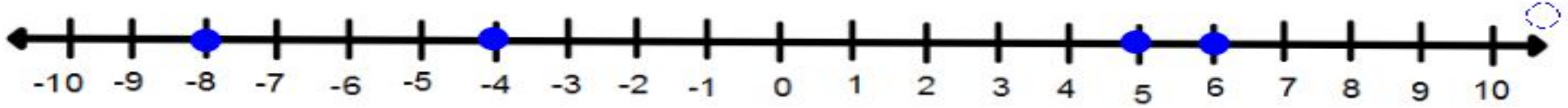
3.



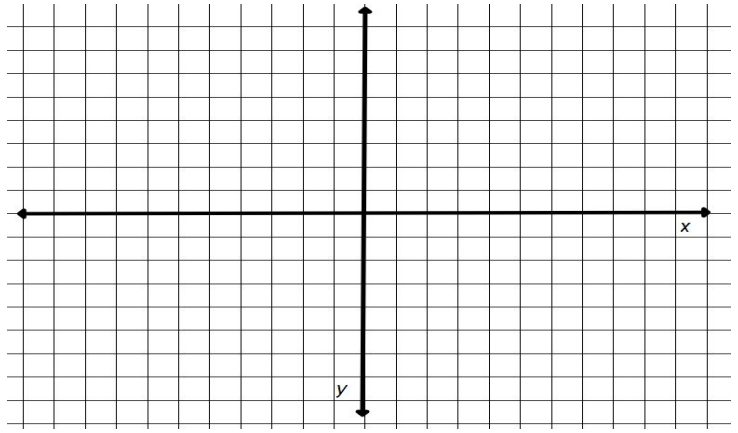
4.



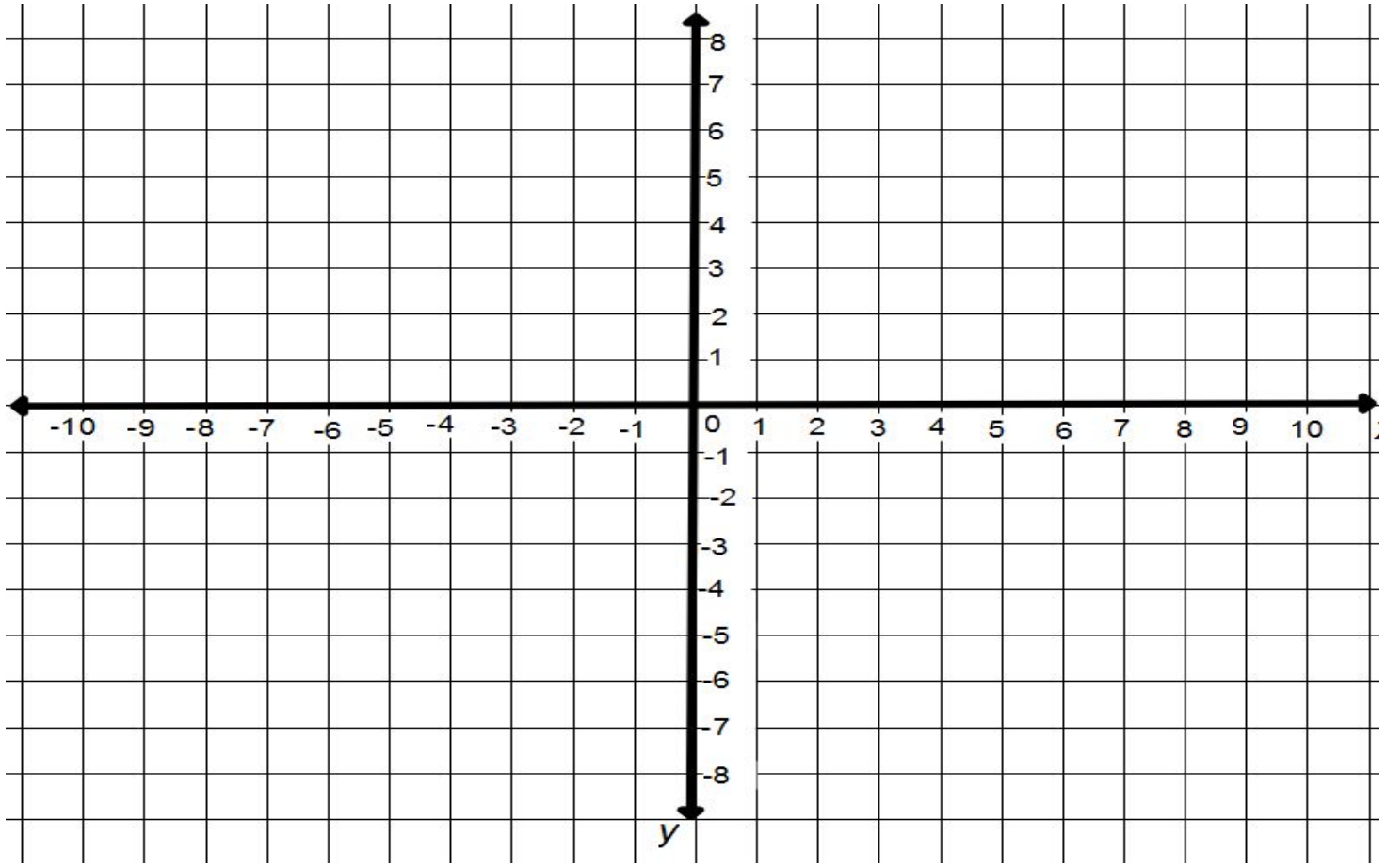
5.

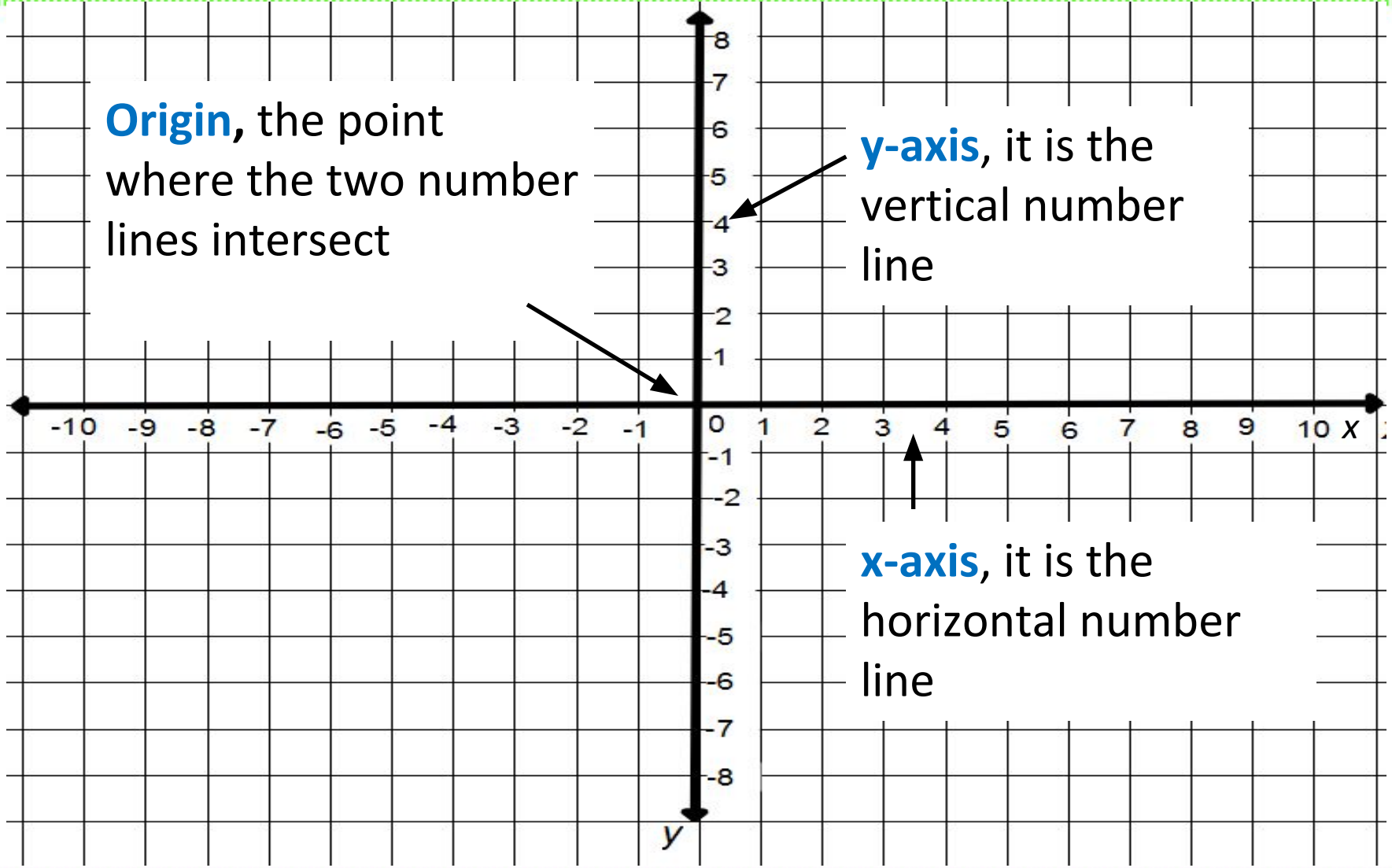


Coordinate Graphing Quadrants and Reading Ordered Pairs



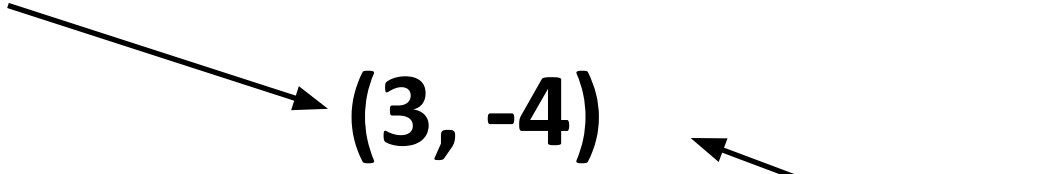
The coordinate plane is formed by the intersection of two number lines.




Origin, the point where the two number lines intersect
y-axis, it is the vertical number line
x-axis, it is the horizontal number line
x
y

You can graph points on the coordinate plane. A point has two coordinates which form an ordered pair.

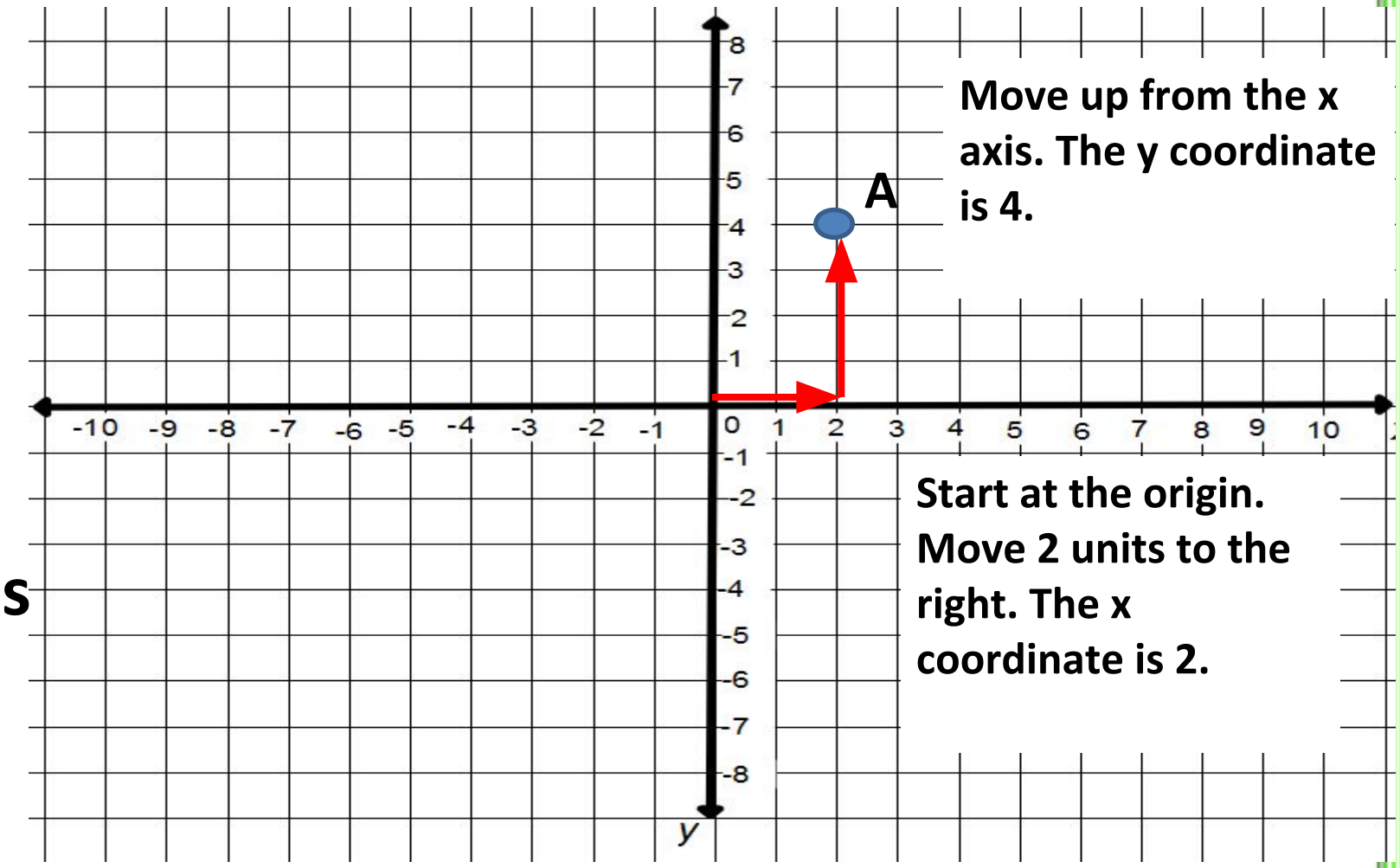
The x coordinate tells how far to move left or right along the x- axis.



The y coordinate tells how far to move up or down along the y-axis.

Example 1

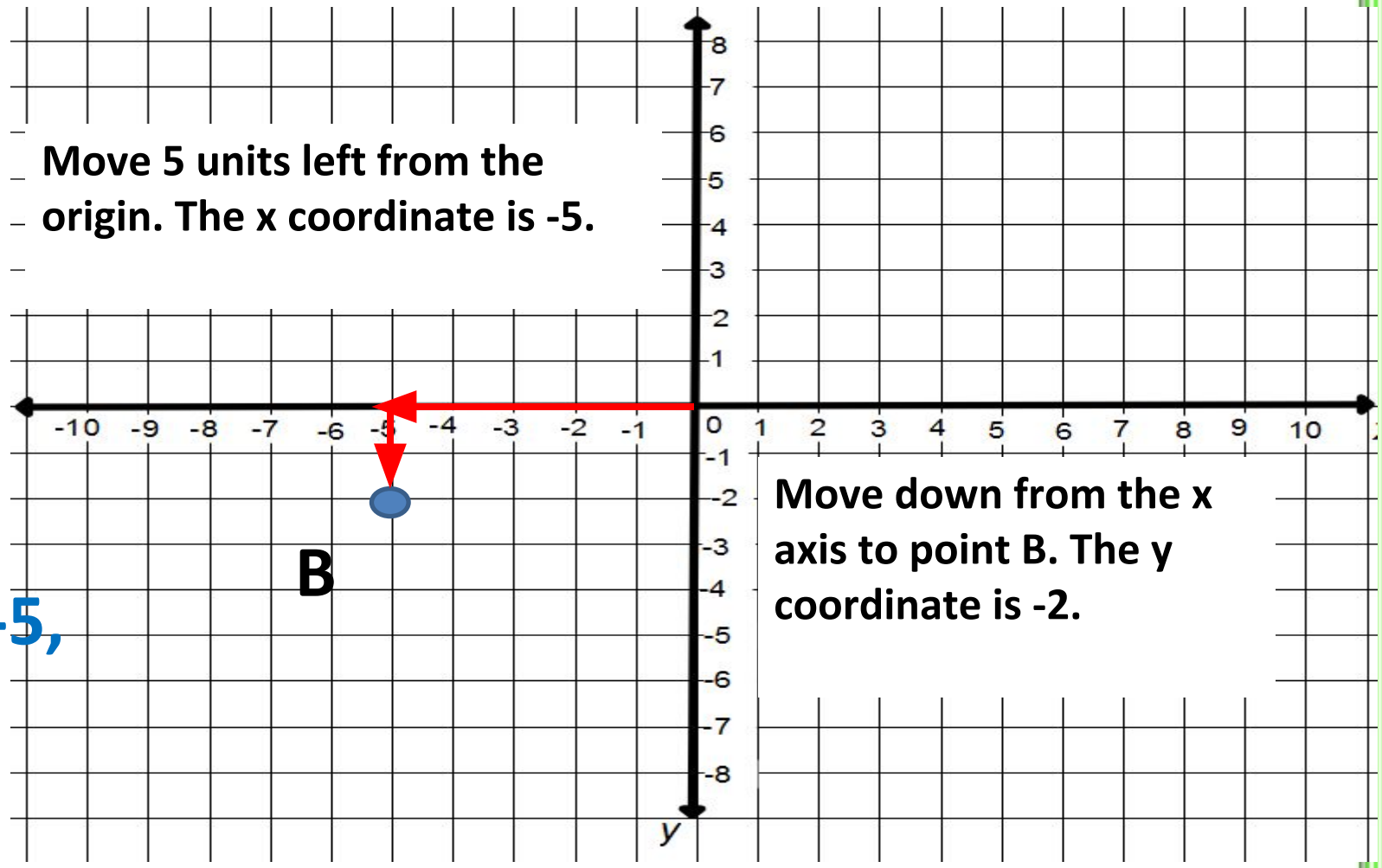
What are the coordinates of point A?



The coordinates for point A are (2, 4).

Example 2

What are the coordinates of point B?

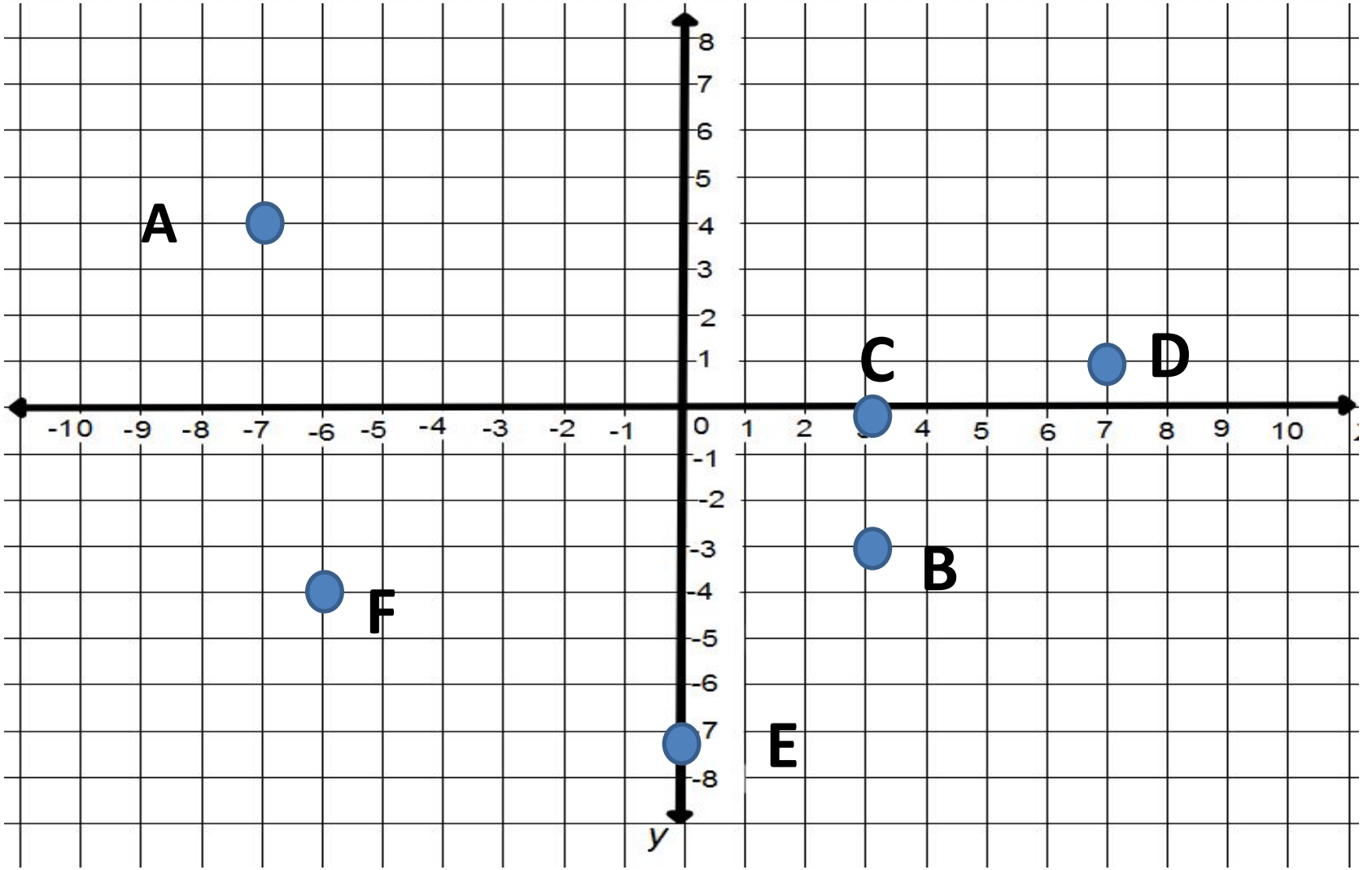


The coordinates for point B are (-5, -2).

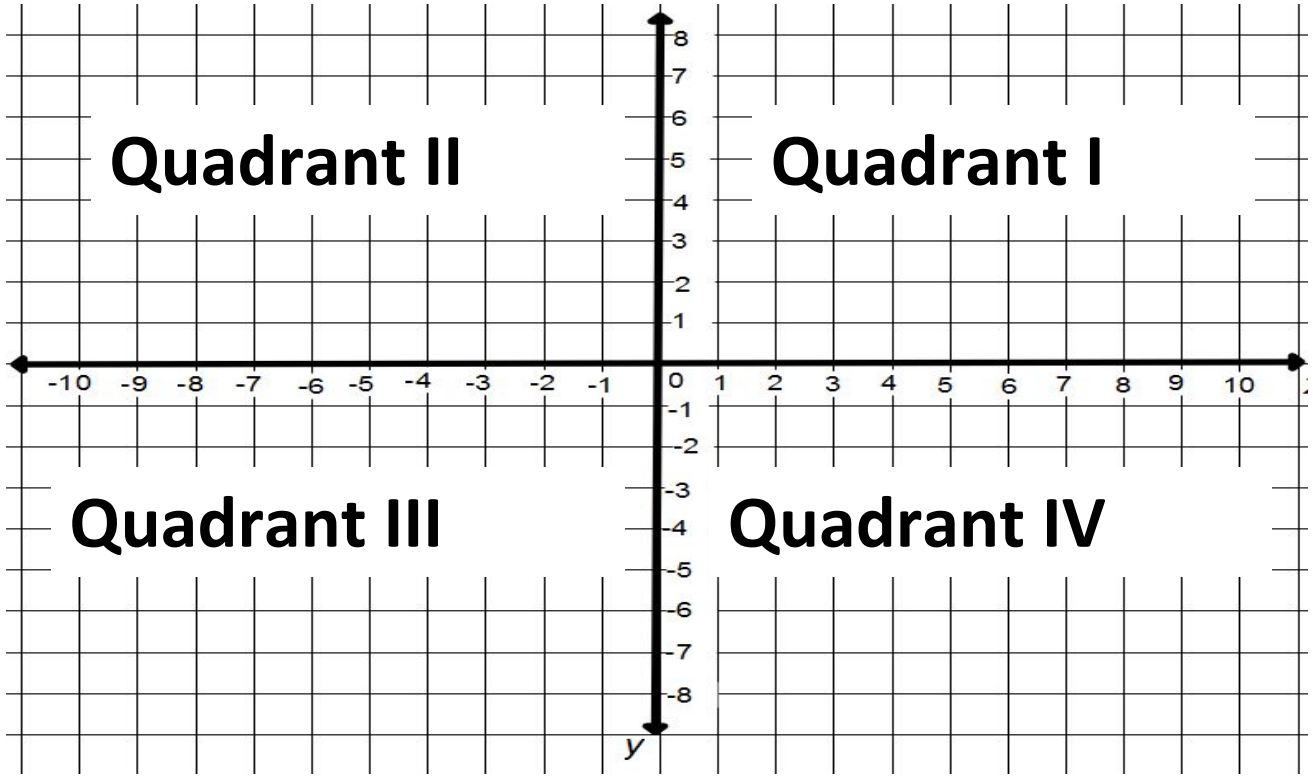
Practice

Write the ordered pair for each point.

A (-7, 4)
B (3, -3)
C (3, 0)
D (7, 1)
E (0, -7)
F (-6, -4)

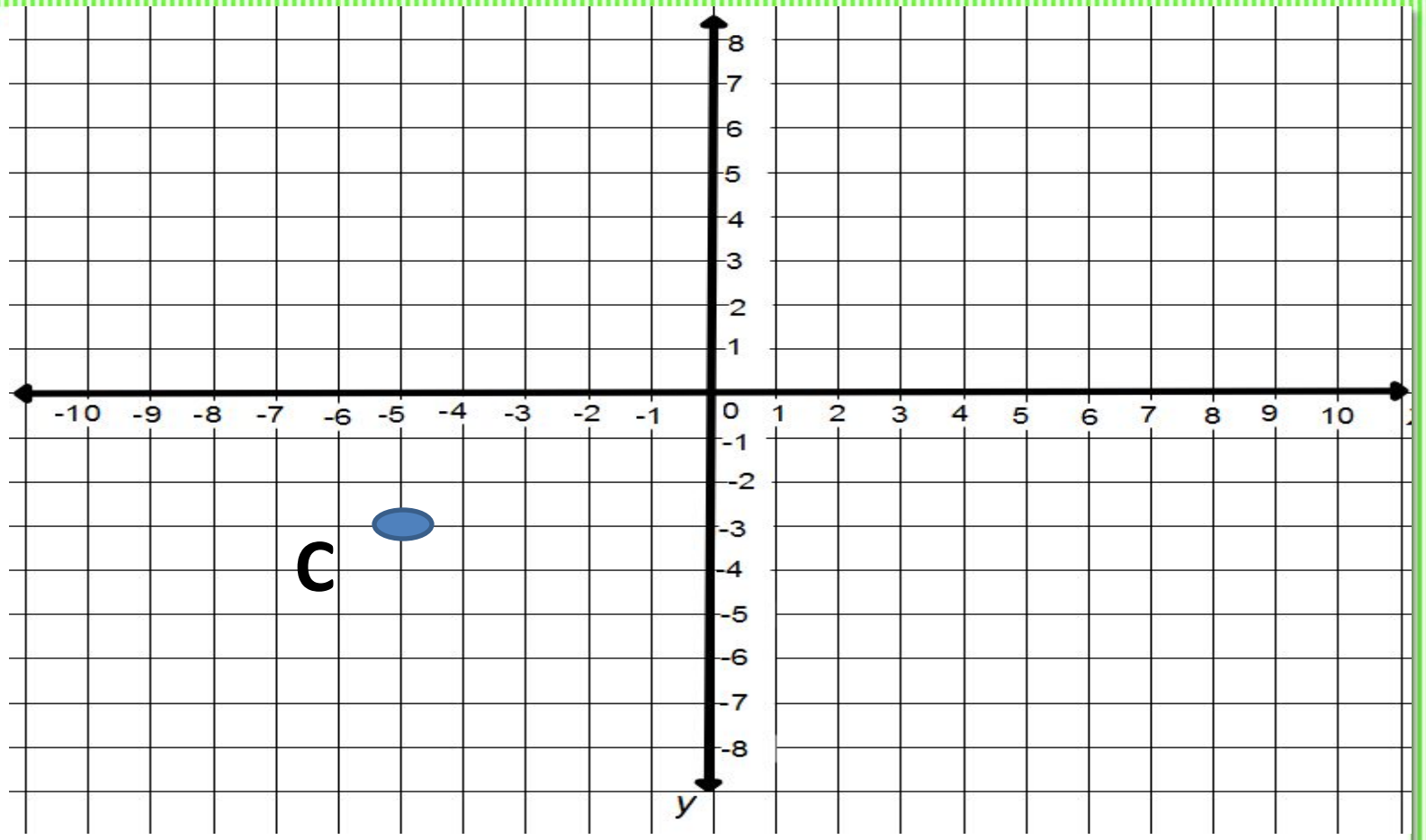


The coordinate plane is divided into four quadrants.



Example 3

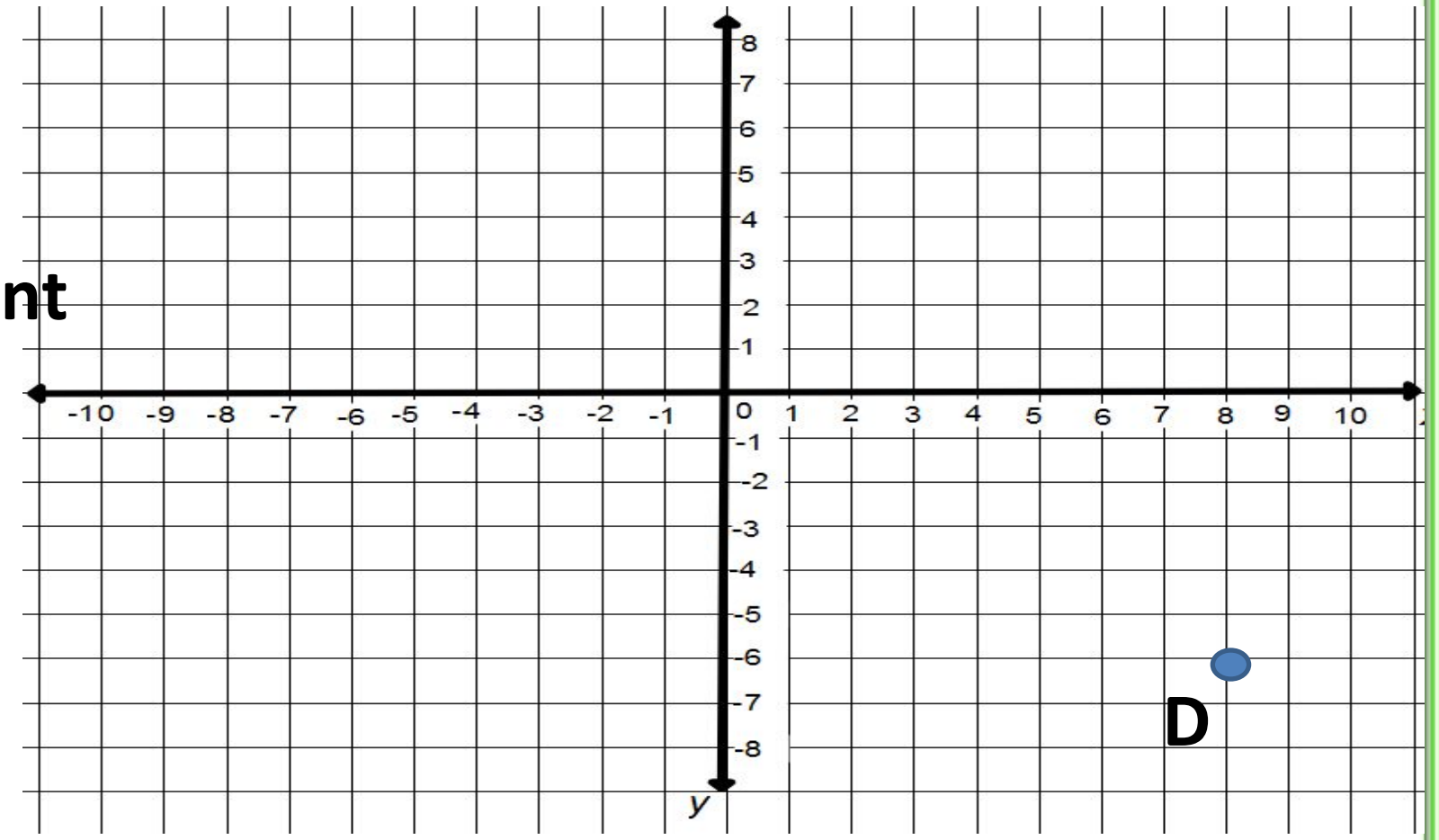
In which quadrant is point C located?



Quadrant III

Example 4

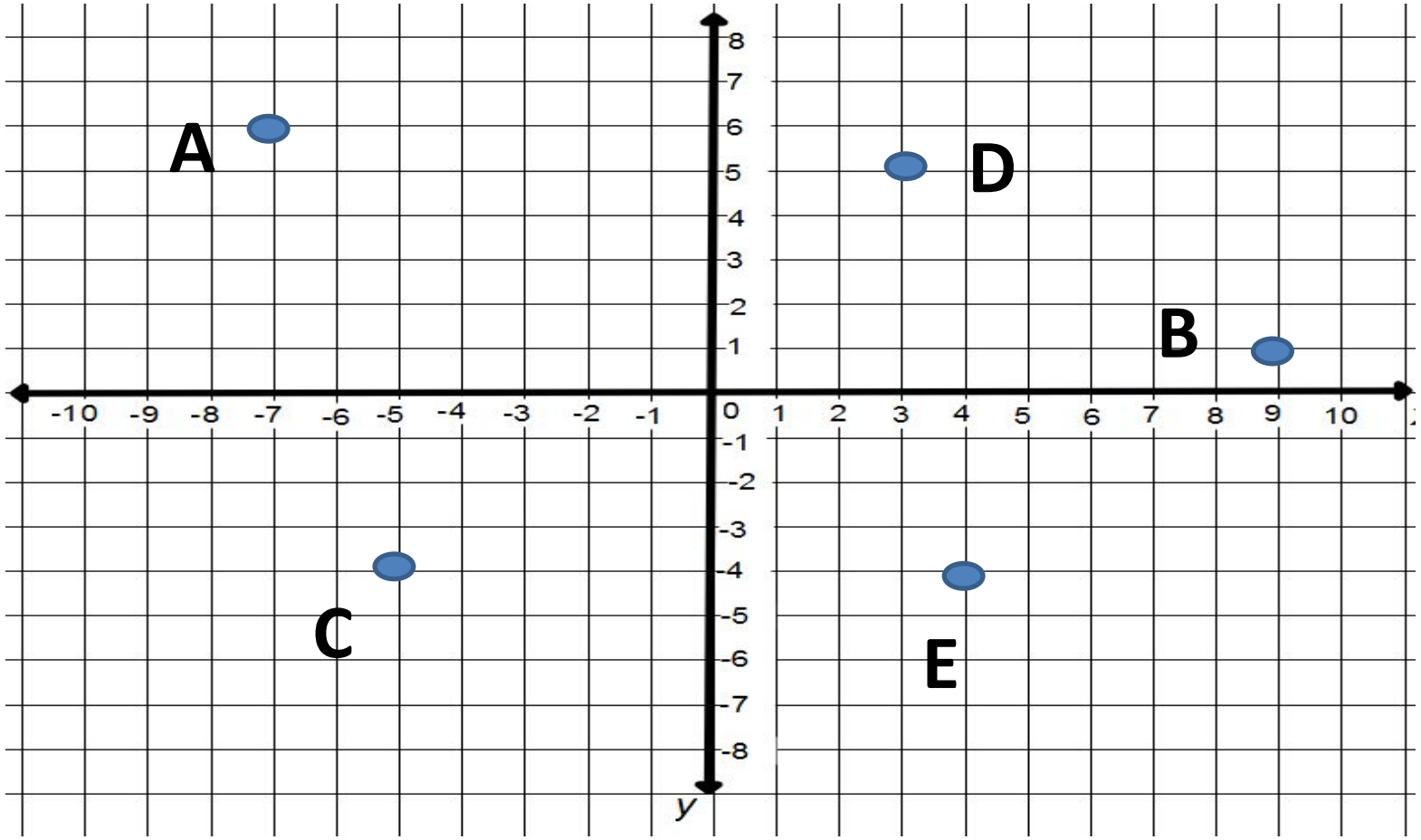
In which quadrant is point D located?



Quadrant IV

Identify the quadrant in which each point lies.

A	II
B	I
C	III
D	I
E	IV

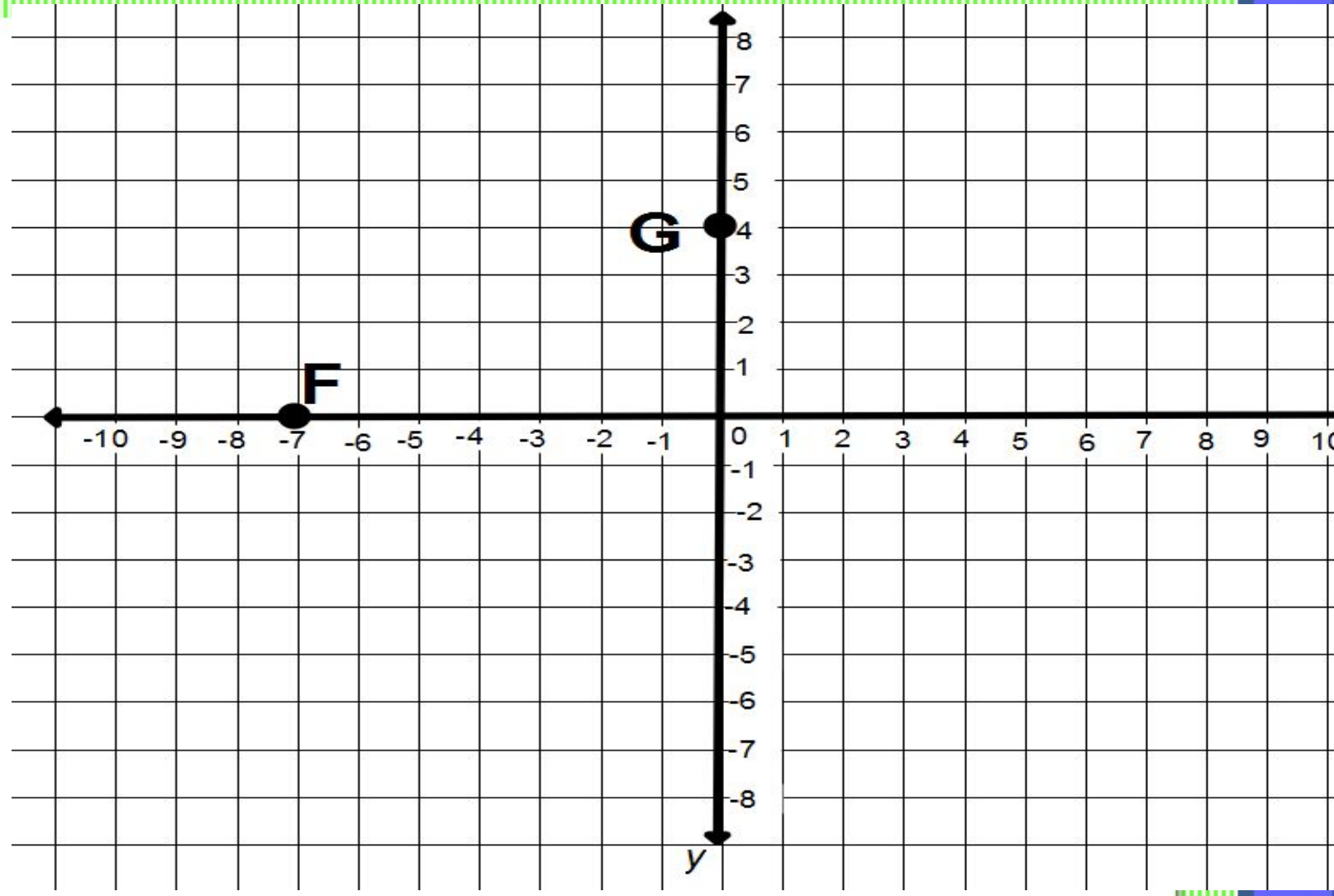


Where is ordered pair F located?

(-7, 0) on x axis

Where is ordered pair G located?

(0, 4) on y axis

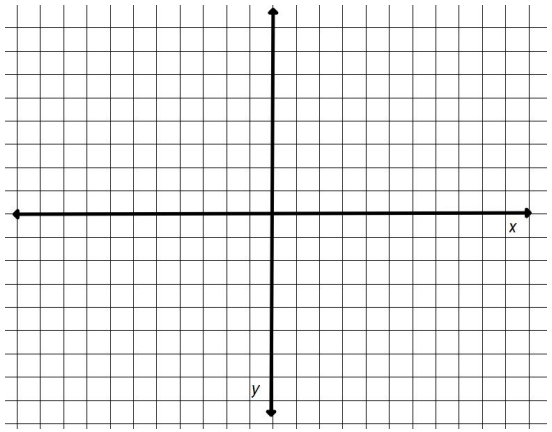


Closure

What are the signs for all of the x-coordinates and all of the y-coordinates of the ordered pairs in the second quadrant?

x negatives, y positives

Coordinate Plane
Plotting Points



Warm Up

Write the ordered pair and quadrant for each point.

A

B

C

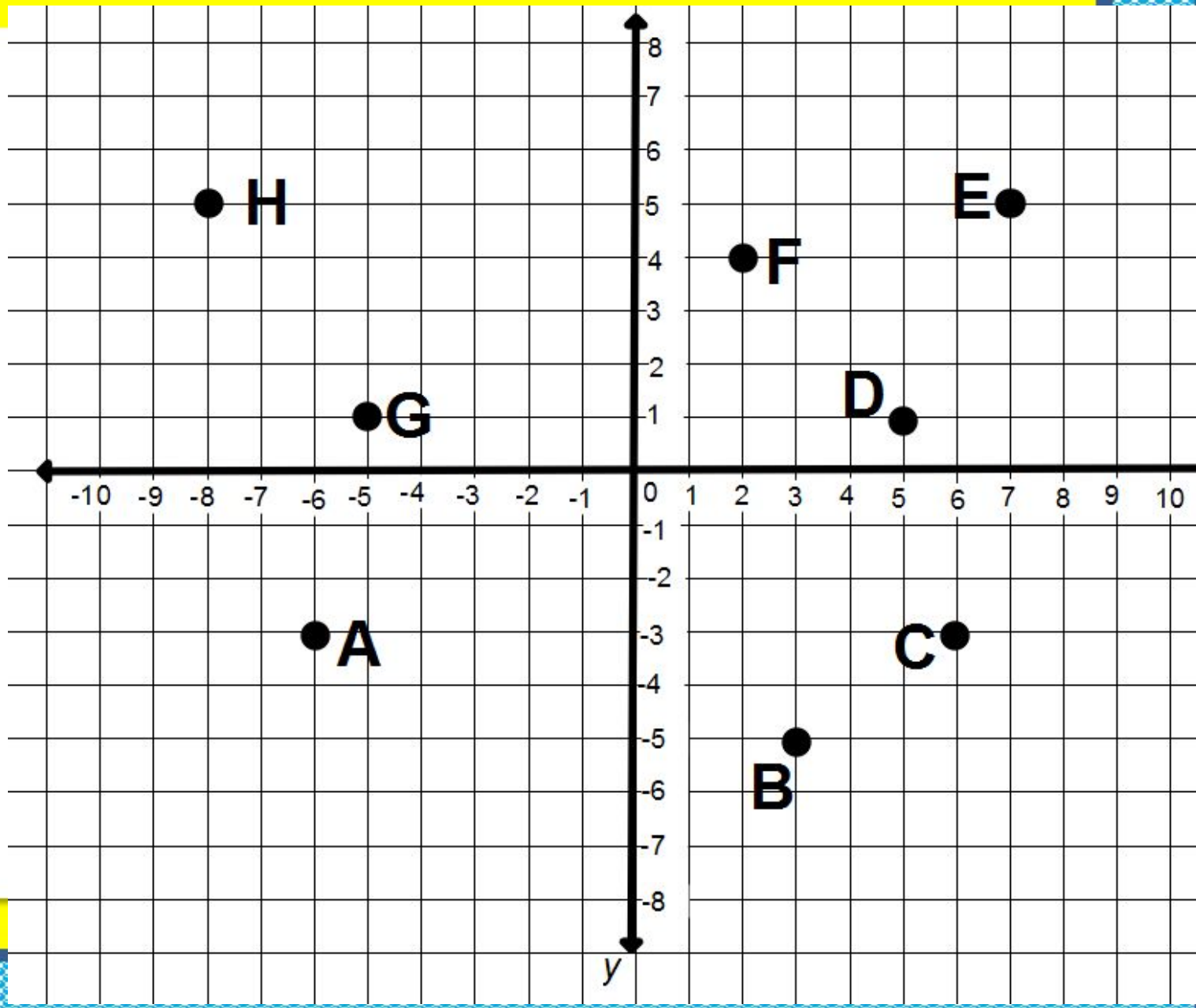
D

E

F

G

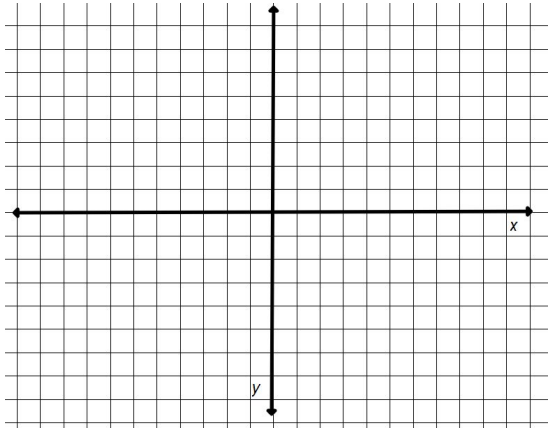
H



Warm Up Answers

A (-6,-3) Q III
B (3, -5) Q IV
C (6, -3) Q IV
D (5, 1) Q I
E (7, 5) Q I
F (2, 4) Q I
G (-5, 1) Q II
H (-8, 5) Q II

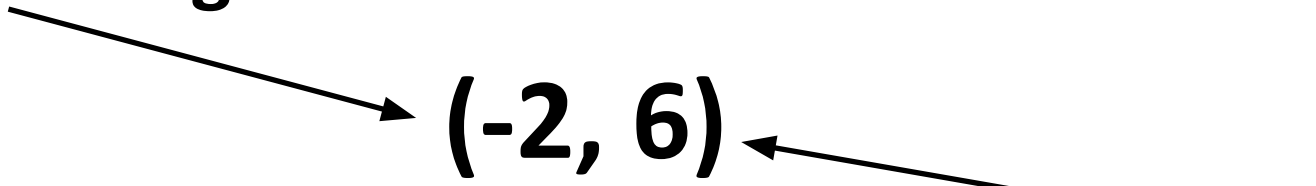
Coordinate Plane
Plotting Points



Remember

You can graph points on the coordinate plane. A point has two coordinates which form an ordered pair.

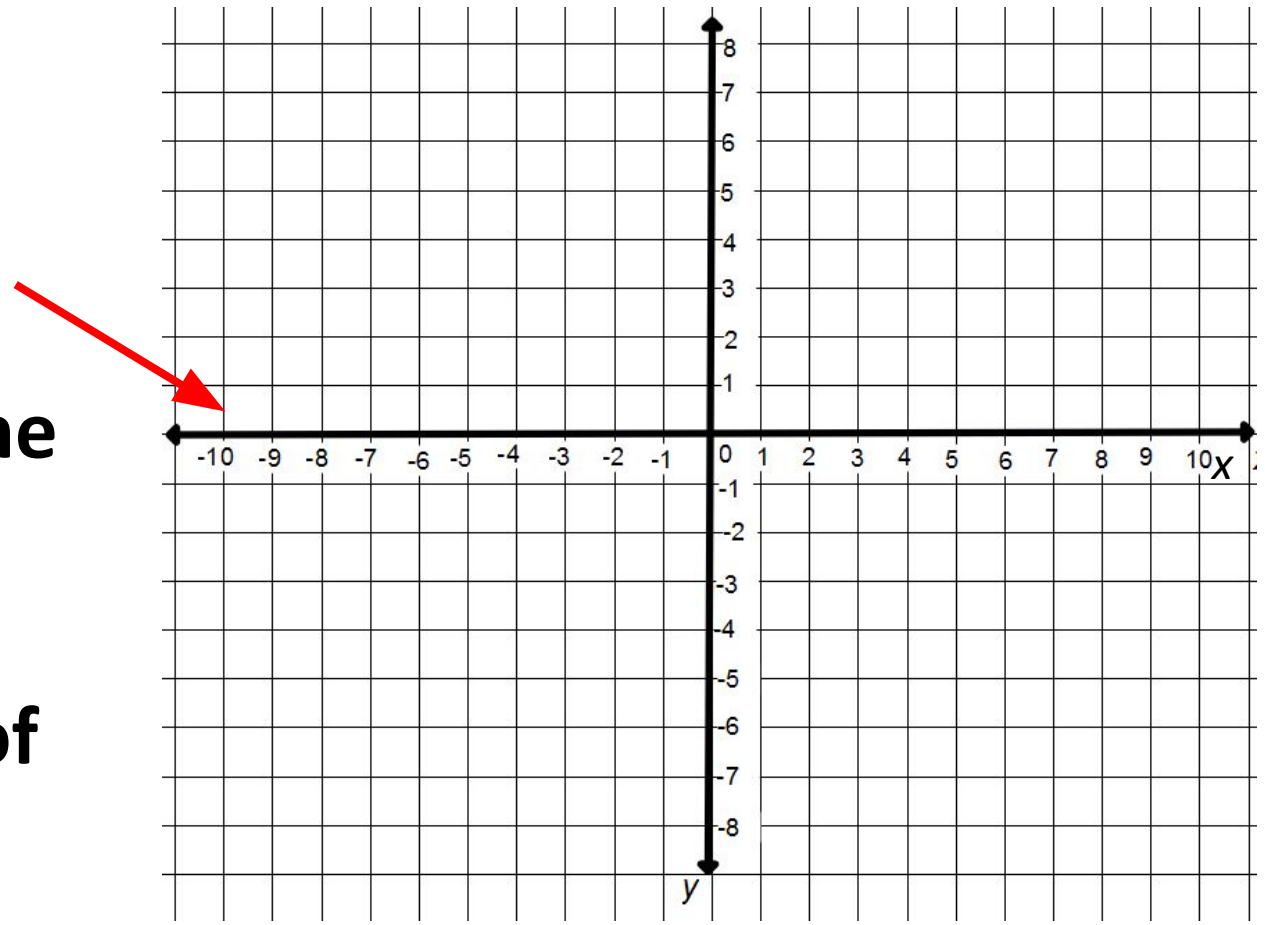
The x coordinate tells how far to move left or right along the x- axis.



The y coordinate tells how far to move up or down along the y-axis.

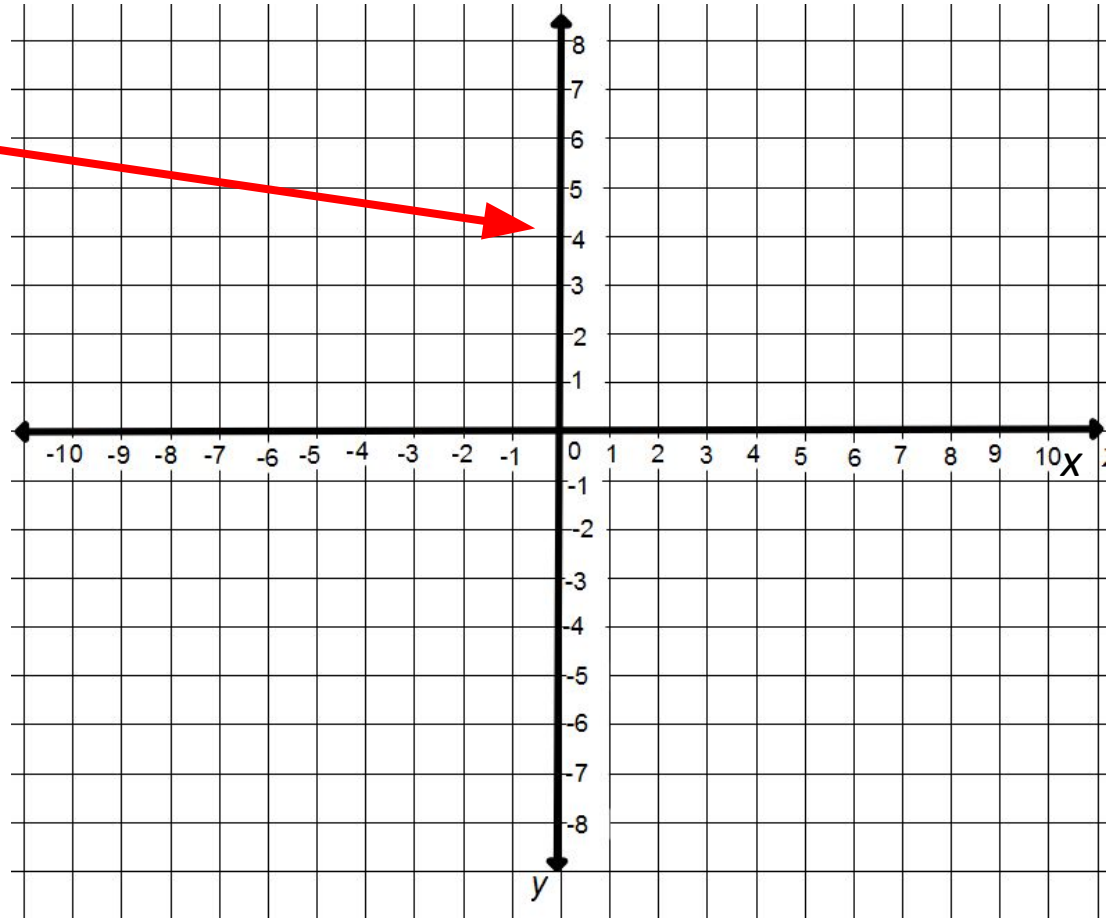
The x axis is the horizontal number line.

It is formed by a negative number line (left of the origin) and a positive number line (right of the origin).



The y axis is the vertical number line.

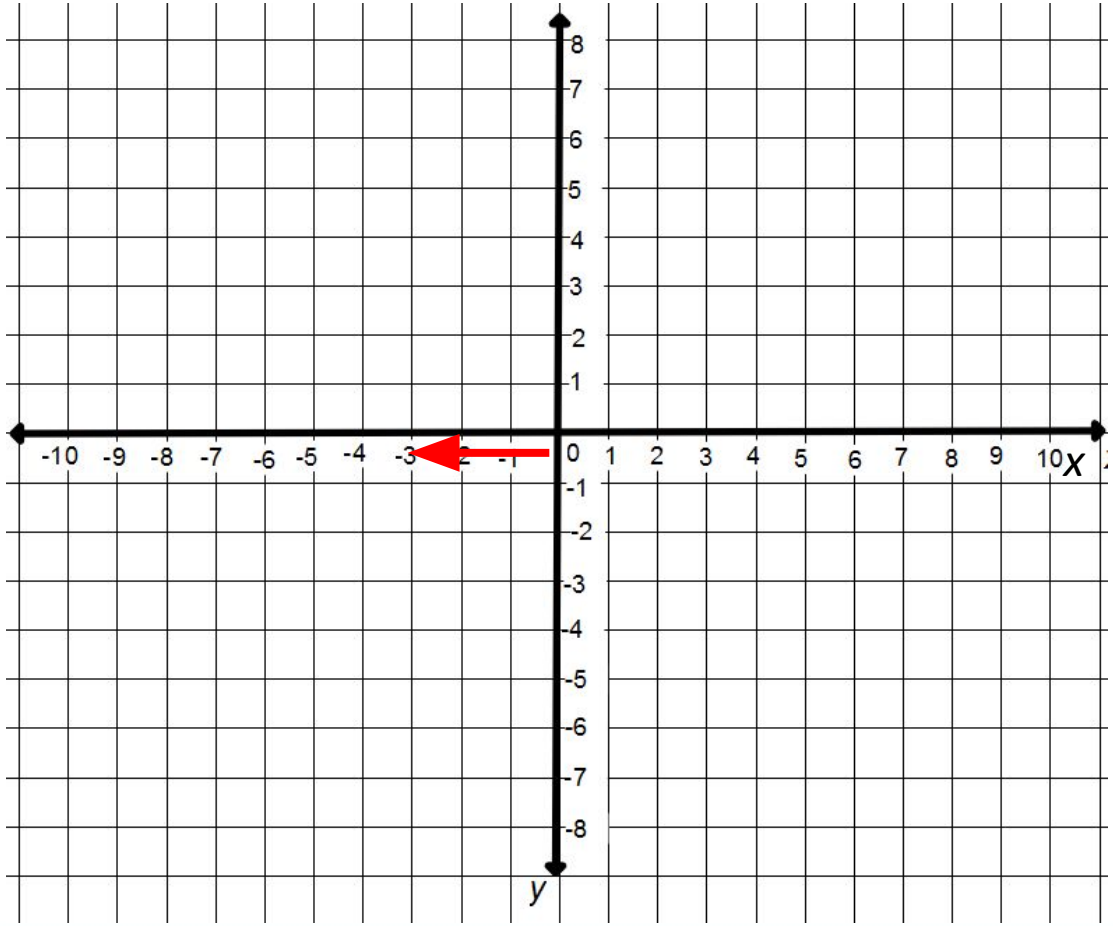
It is formed by a negative number line (below the origin) and a positive number line (above the origin).



Example 1

Plot (-3, 4) on a coordinate plane.

To plot (-3, 4), start at the origin (0, 0). The x coordinate is -3 so move 3 units left on the x axis.

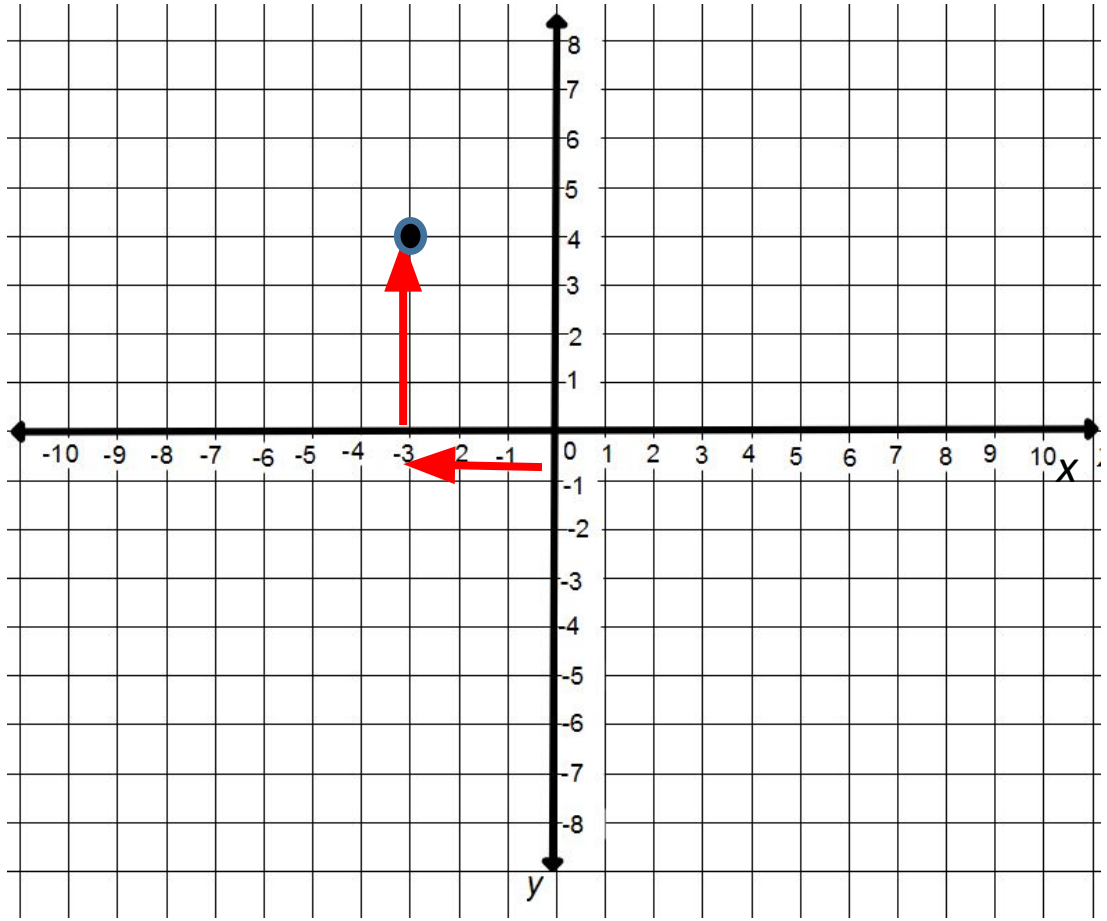


Example 1

Plot (-3, 4) on a coordinate plane.

The y coordinate is positive 4 so move 4 units up from the x coordinate (-3).

Plot the point.



Example 2

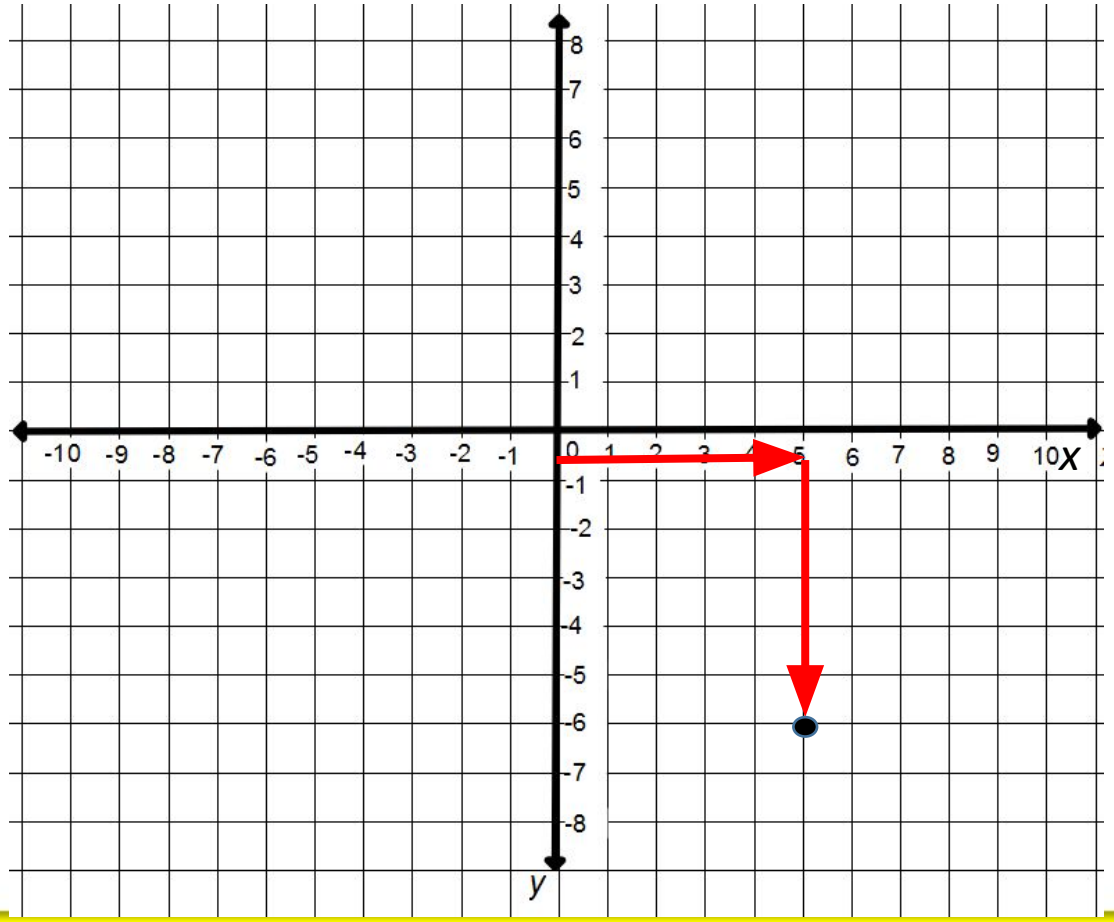
Plot (5, -6) on the coordinate plane.

Start at the origin.

Go over 5 places right.

Go down 6 places.

Plot the point.

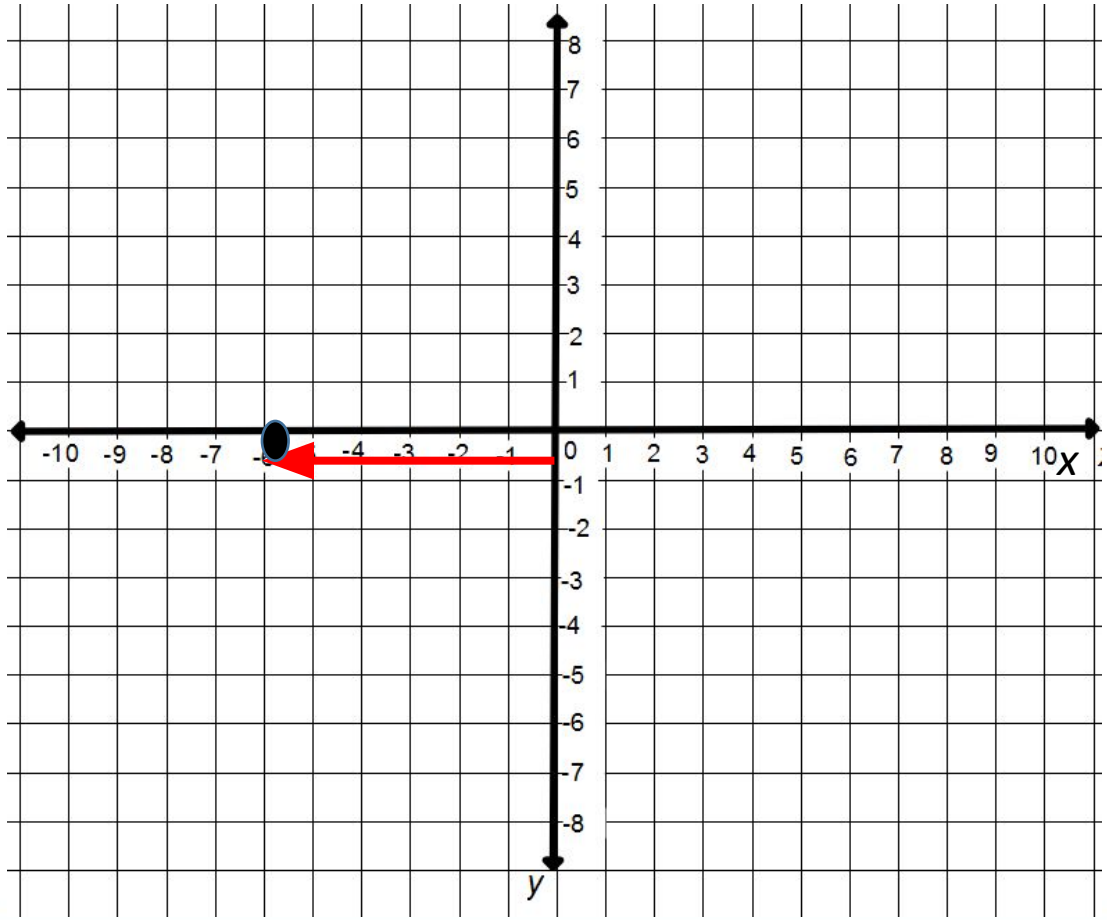


Example 3

Plot the point (-6, 0) on the coordinate plane.

Start at the origin.
Move 6 spaces left and then go up 0 spaces.

Plot the point.

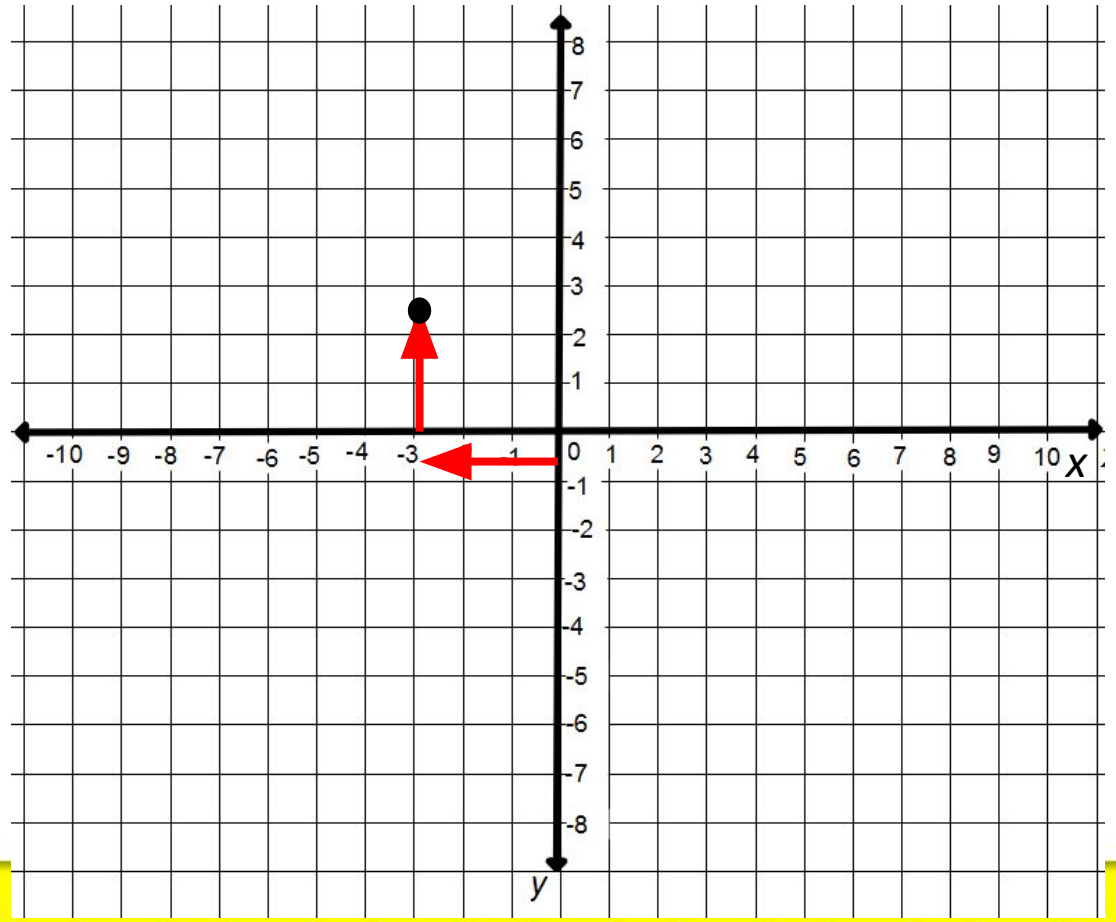


Example 4

Plot the point $(-3, 2\frac{1}{2})$ on the coordinate plane.

Start at the origin.
Move 3 places left
and then go up 2 and
a $\frac{1}{2}$ places.

Plot the point.



Practice

Plot the points on the coordinate plane.

A (5, 1)

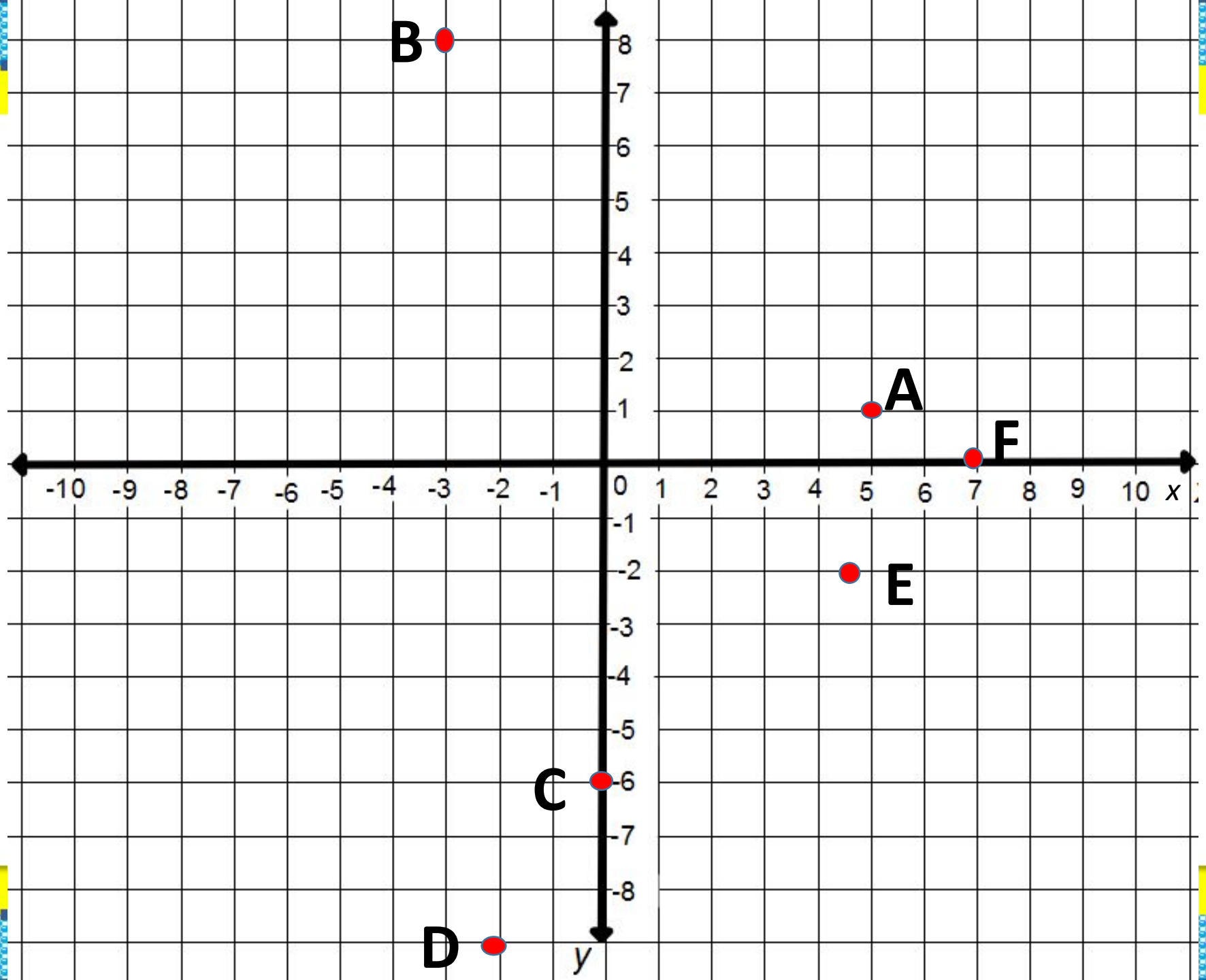
B (-3, 8)

C (0, -6)

D (-2, -9)

E ($4\frac{1}{2}$, -2)

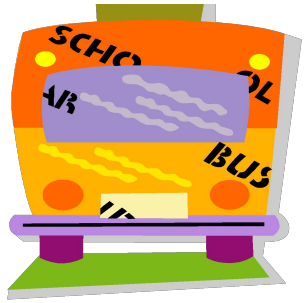
F (7, 0)


B
A
F
E
C
D
x
y

Closure

Explain to a student who was absent how to graph the ordered pair (-1, 6).

Finding the Distance Between Two Points



Warm Up

Graph the ordered pairs on the coordinate plane.

A (-9, 3)

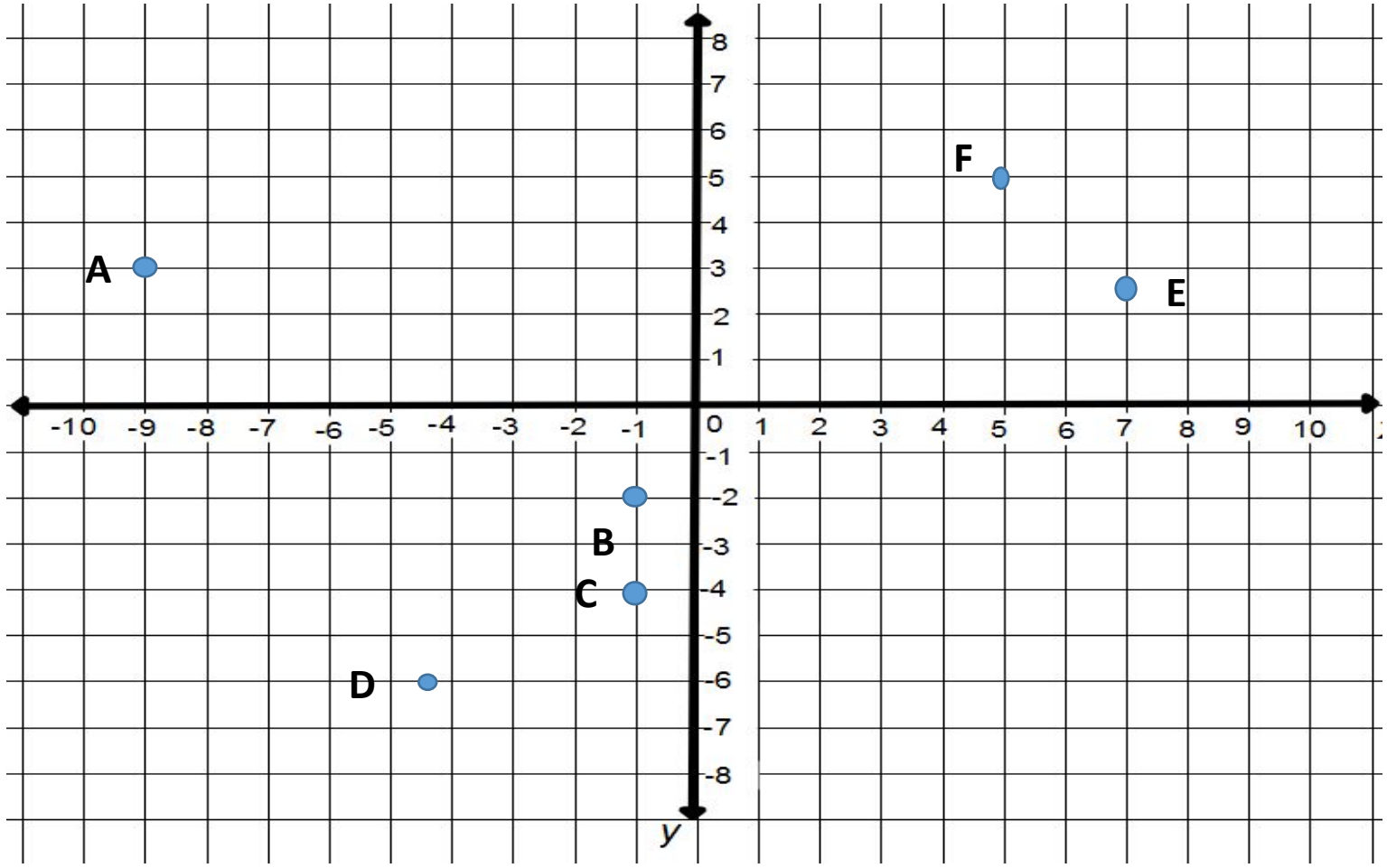
B (-1, -2)

C (-1, -4)

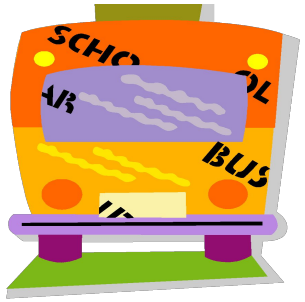
D $(-4\frac{1}{4}, -6)$

E $(7, 2\frac{1}{2})$

F (5, 5)

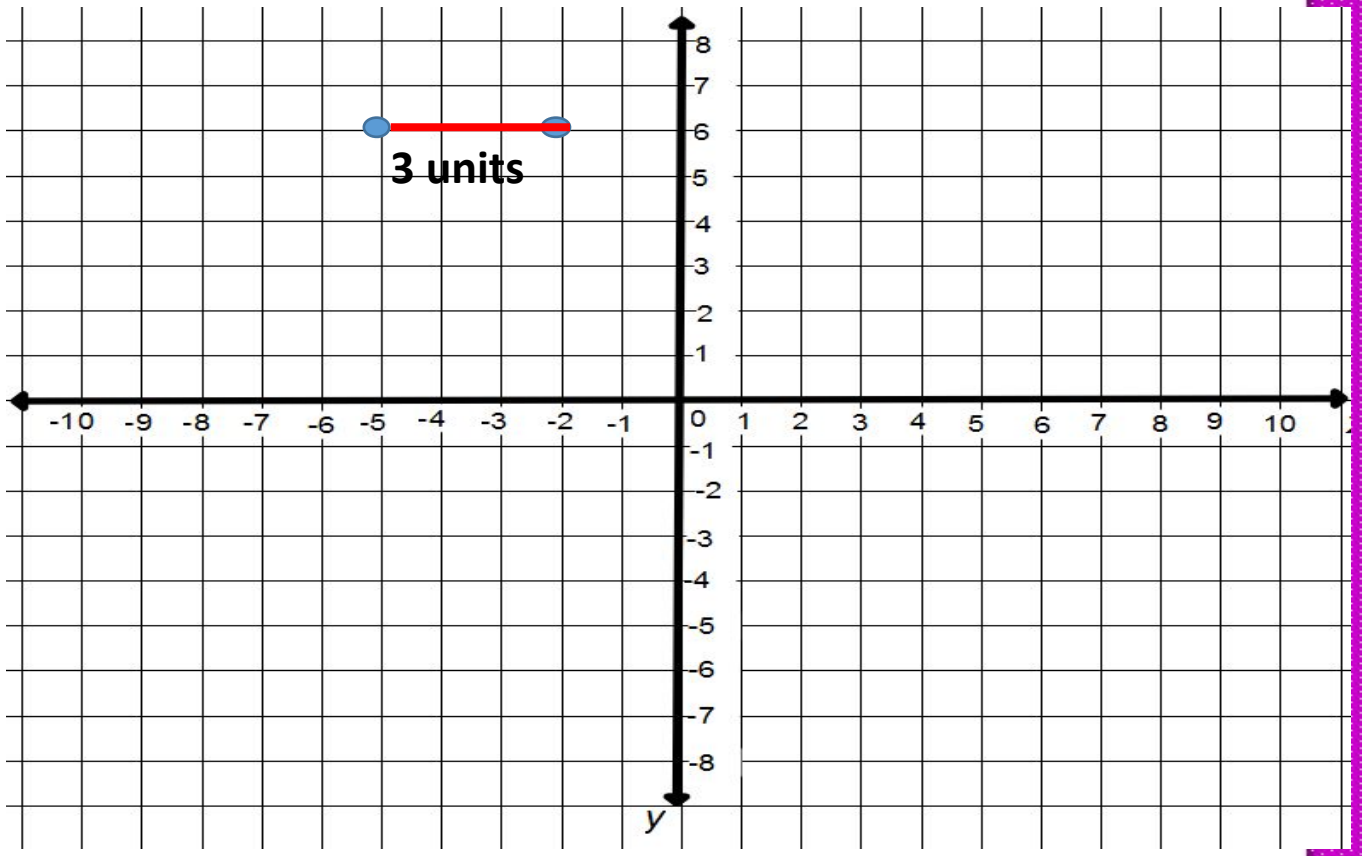

A
B
C
D
E
F
y

Finding the Distance Between Two Points



Example 1

What is the distance between (-5, 6) and (-2, 6)?

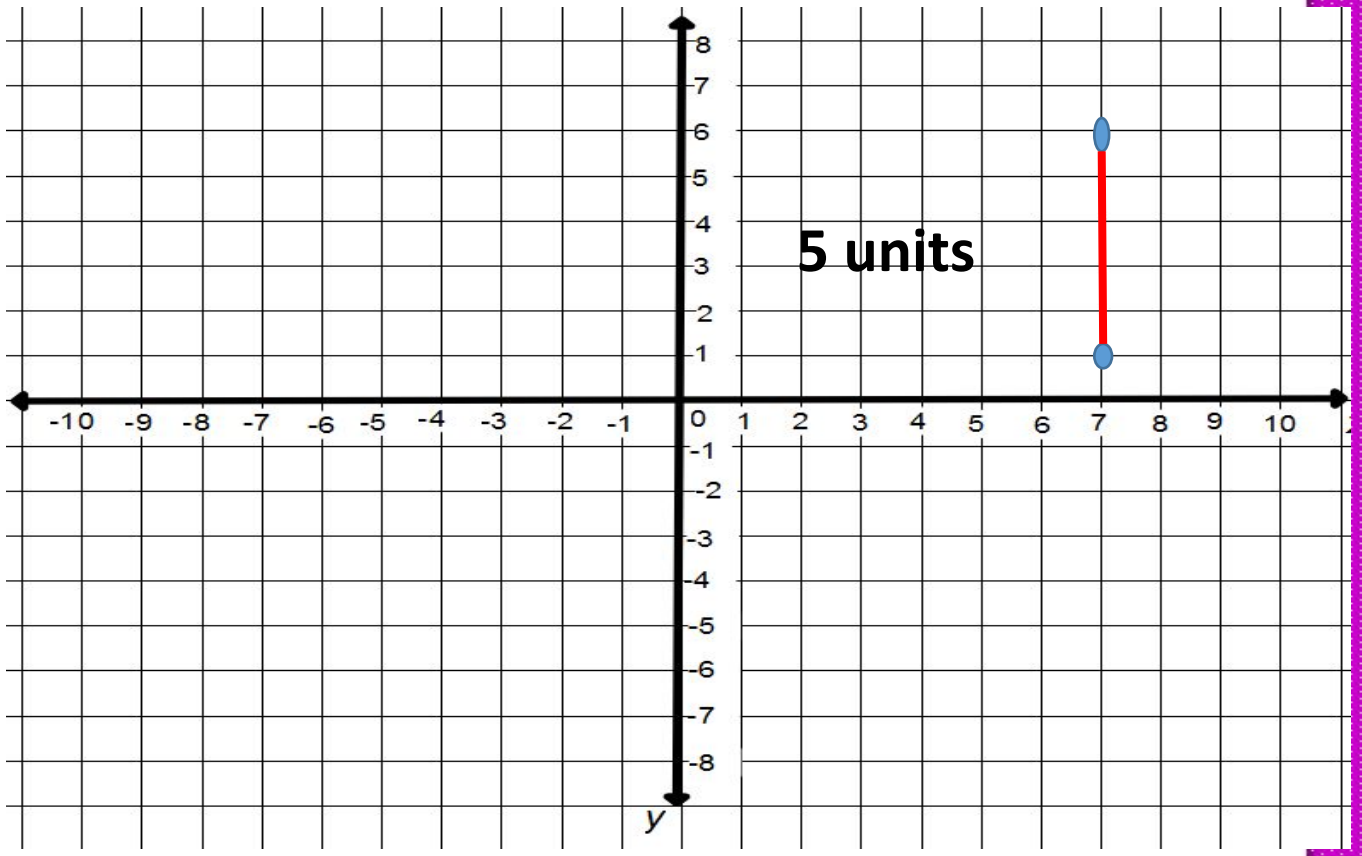


3 units

Example 2

What is the distance between (7, 1) and (7, 6)?

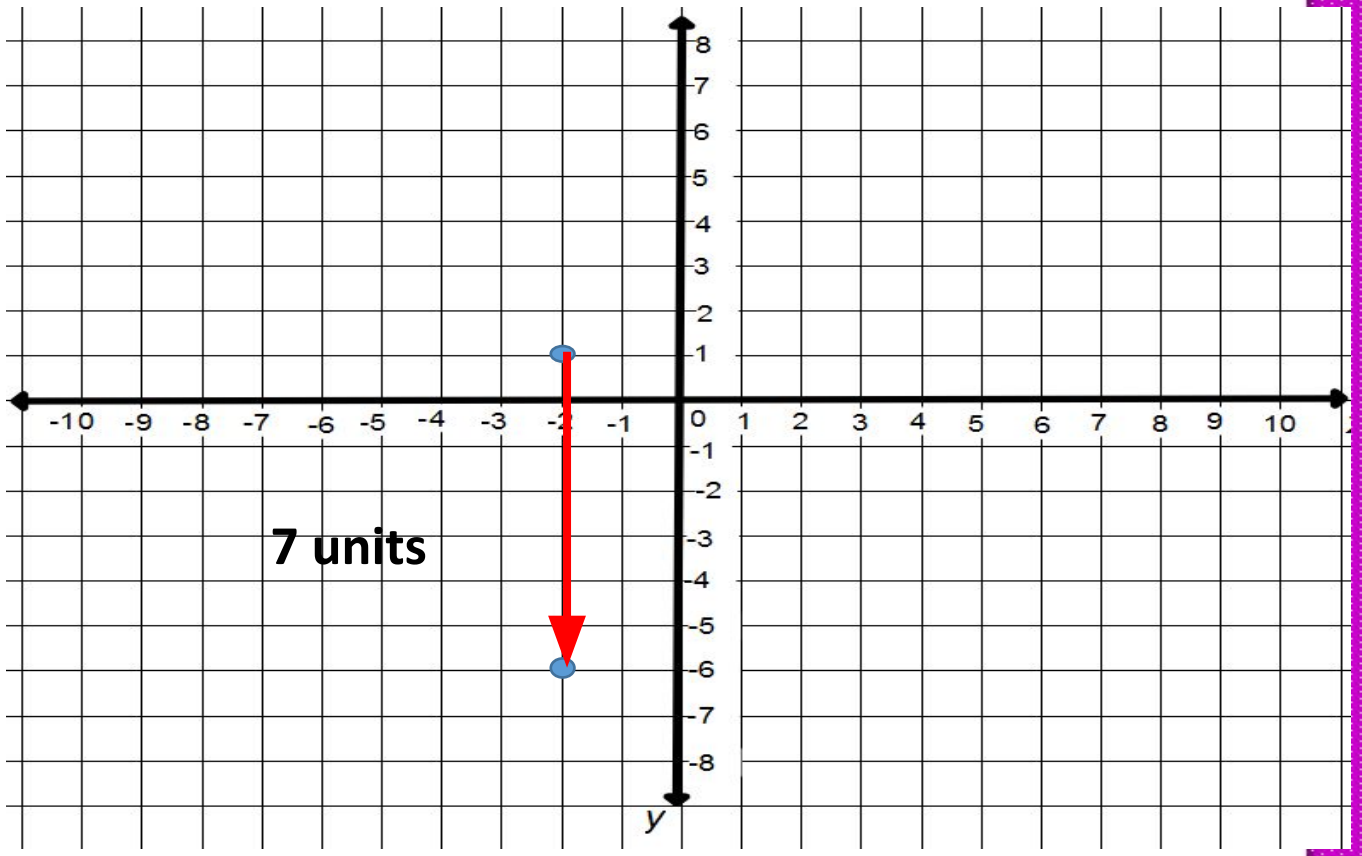
5 units



Example 3

What is the distance between (-2, 1) and (-2, -6)?

7 units



You can use absolute value to help you find the distance between two points.

Find the distance between
(-2, 1), (-2, -6)

You can find the distance of both points from the y-axis and add them.

1 is 1 unit above the y-axis -- 1 | |

-6 is 6 units below the y-axis -- -6 | |

|1 |+ -6 =|1 + 6 = 7

Practice

Find the distance between each pair of points.

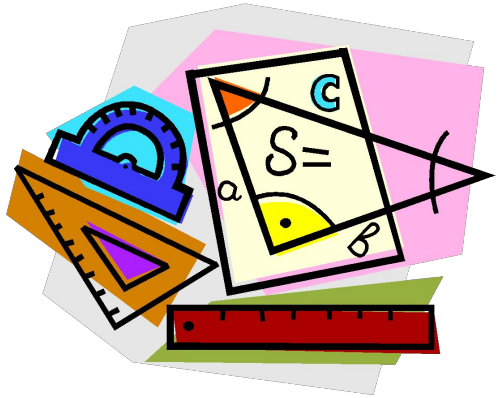
1. **(-5, 8), (-5, 2)** — **6 units**
2. **(0, 4), (5, 4)** — **5 units**
3. **(6, 7), (6, -4)** — **11 units**
4. **(-5, 5), (7, 5)** — **12 units**

Closure

Explain how to find the distance between points
(3, -9) and (3, 6) using absolute value.

$|-9| + |6| = |15|$

Finding Distances on the Coordinate Plane



Warm Up

Graph triangle ABC .

A (-2, 4), B (0, 6), C (3, -3)

Reflect triangle ABC across the x axis. Write the ordered pairs.

Reflect triangle ABC across the y axis. Write the ordered pairs.

Warm Up Answers

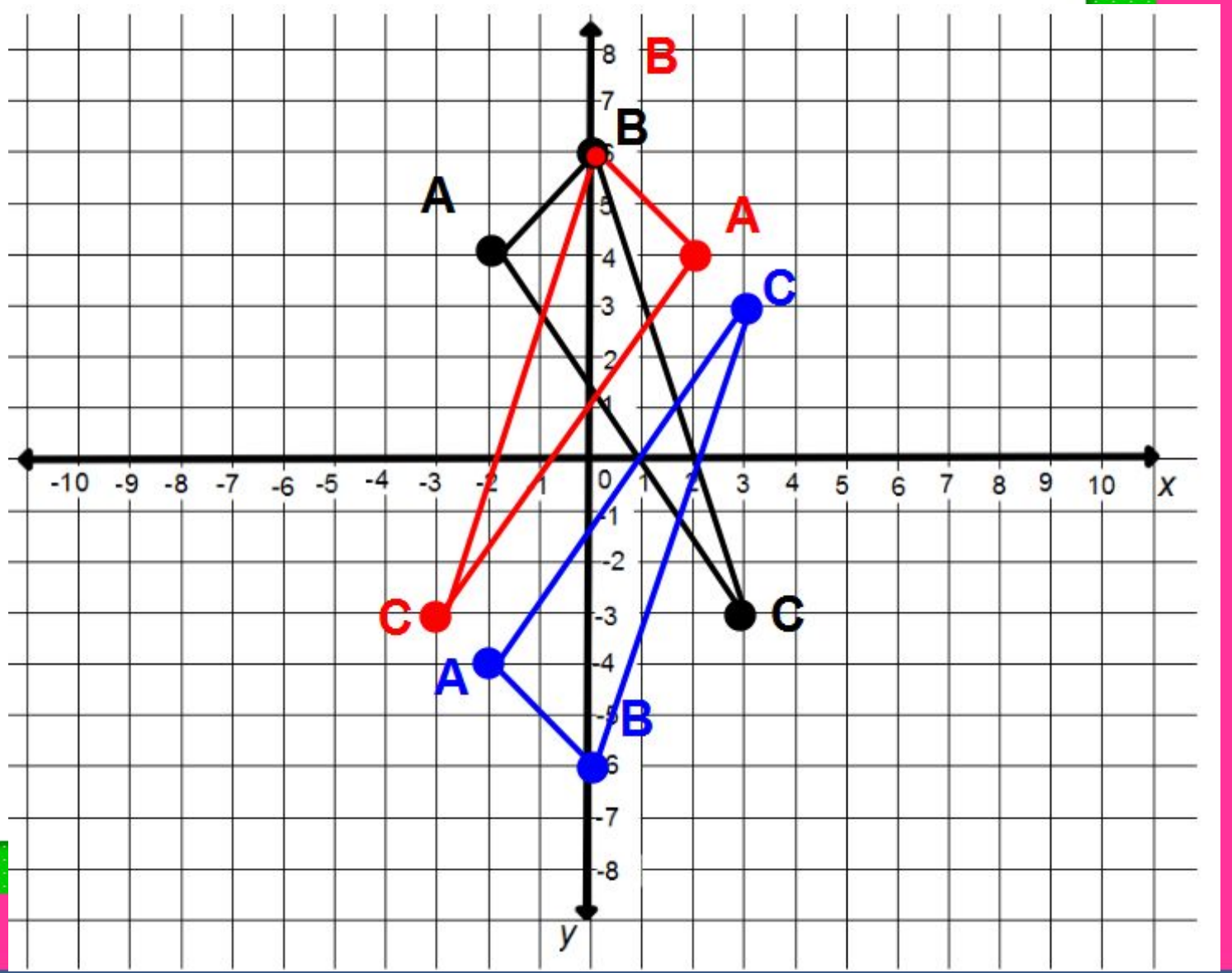
Original – Black

Reflection across the x-axis- blue

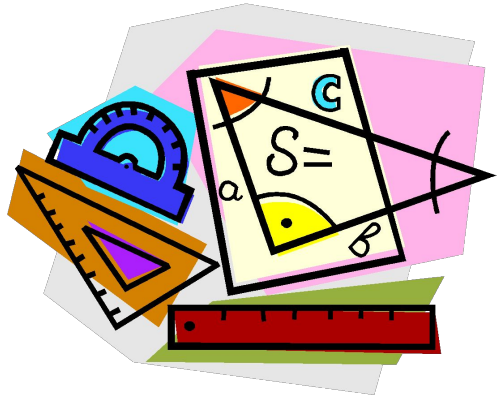
A’(-2, -4), B’(0, -6), C’ (3, 3)

Reflection across the y-axis - red

A(2, 4), B(0, 6), C’(-3, 3)



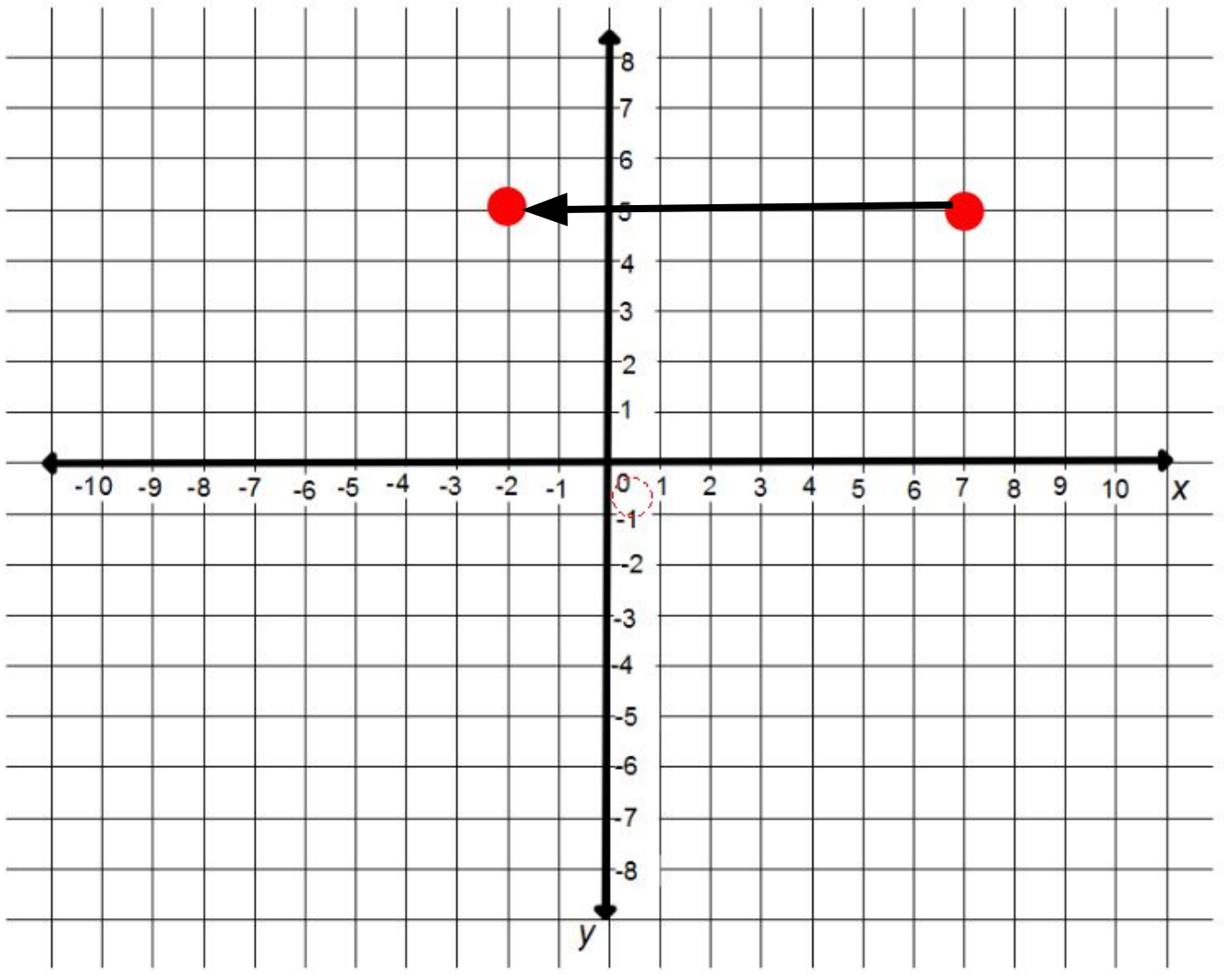
Finding Distances on the Coordinate Plane



On a coordinate plane map, the gym is located at (-2, 5). The middle school is located at (7, 5) If each unit represents one block, how far will Jim have to walk from the school to the gym?

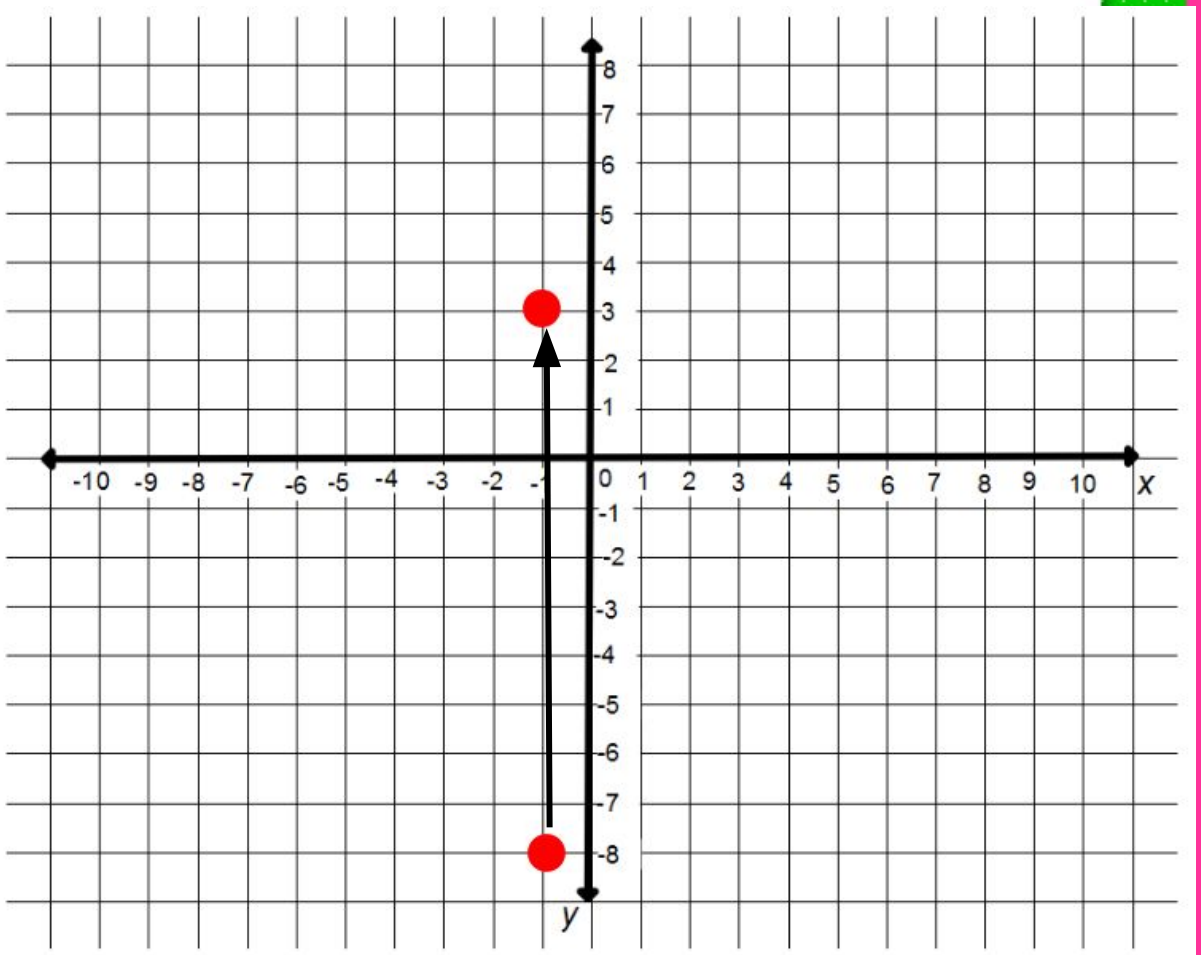
$|7| + |-2| = 7 + 2$

$= 9$ units



On a coordinate plane map, the park is located at (-1, 3). Joshua's house is located at (-1, -8). If each unit represents one block, how far will Joshua have to walk to go to the park?

$|3| + |-8| = 3 + 8 = 11$

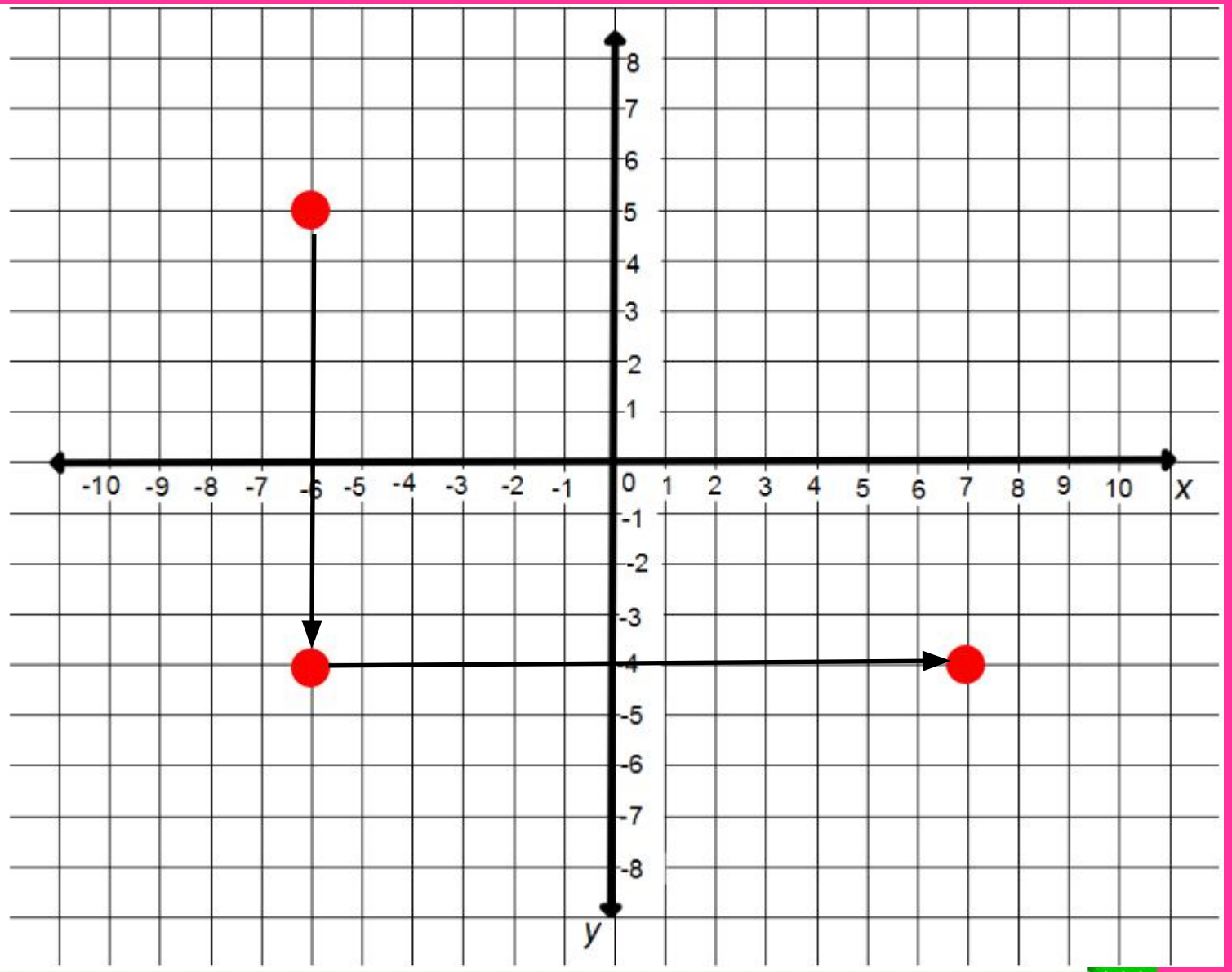


On a coordinate plane map, Kim's house is located at (-6, 5). Karen's house is located at (-6, -4). The shopping mall is located at (7, -4). How far will Kim travel if she leaves her house, picks up Karen and then goes to the mall?

$|5| + |-4| = 5 + 4 = 9$

$|-6| + |7| = 6 + 7 = 13$

$9 + 13 = 22$



Closure

On a coordinate plane Lily's house is located at (-3, 5). John's house is located at (3, 5). Lily and John are going to Caleb's house which is located at (3, -2). How far will Lily walk if she goes by to get John on the way to Caleb's house?

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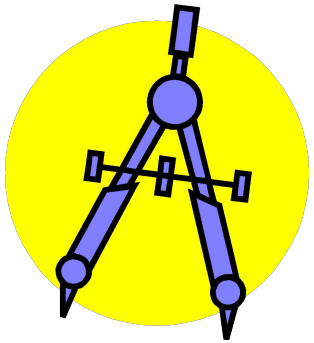
Reflections on the Coordinate Plane



Warm Up

Graph the ordered pairs on the coordinate plane.

A (-5, 5)

B (1, 2)

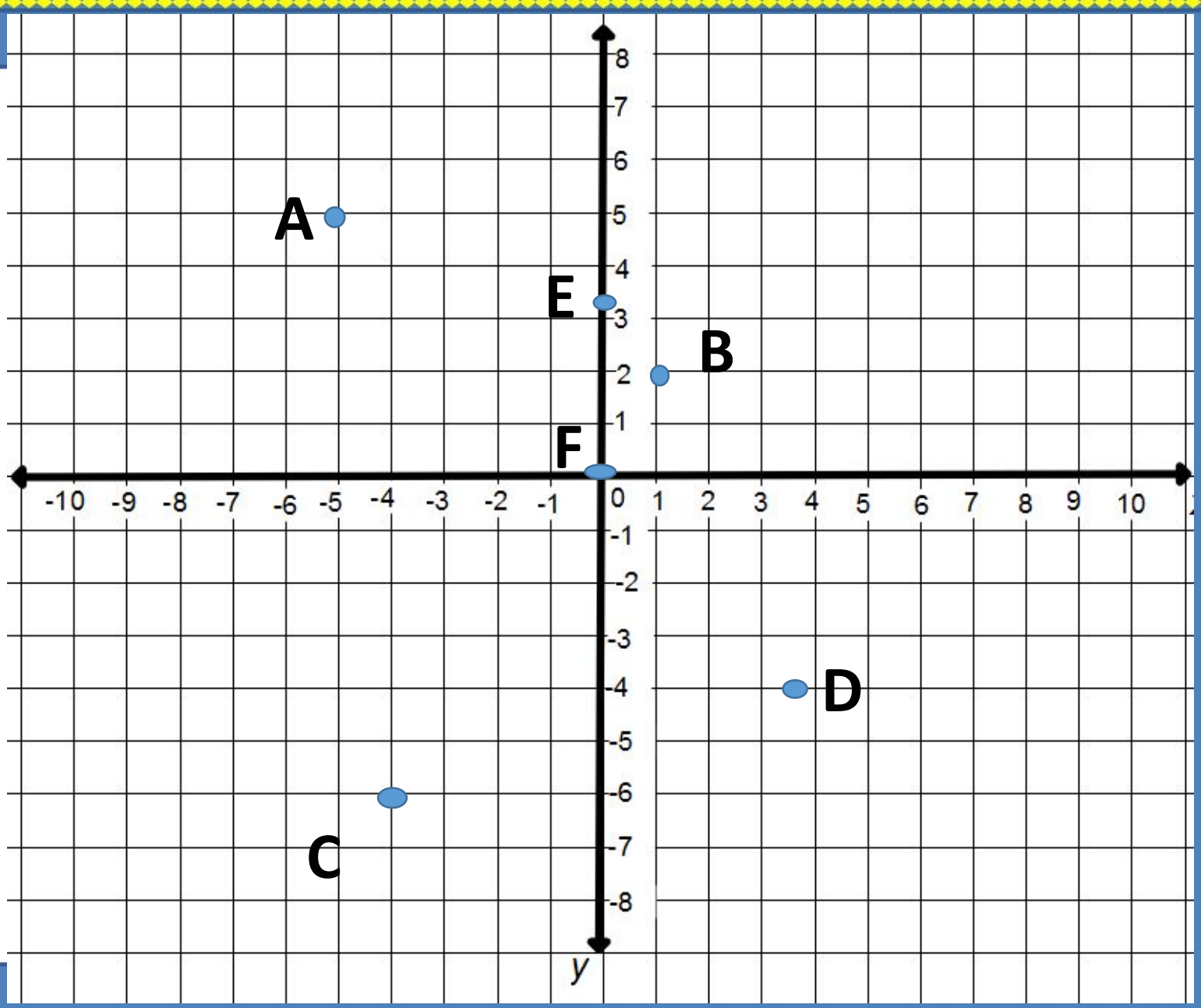
C (-4, -6)

D $(3\frac{1}{2}, -4)$

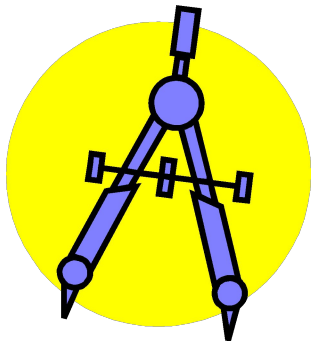
E $(0, 3\frac{1}{4})$

F (0, 0)

Warm Up Answers



Reflections on the Coordinate Plane

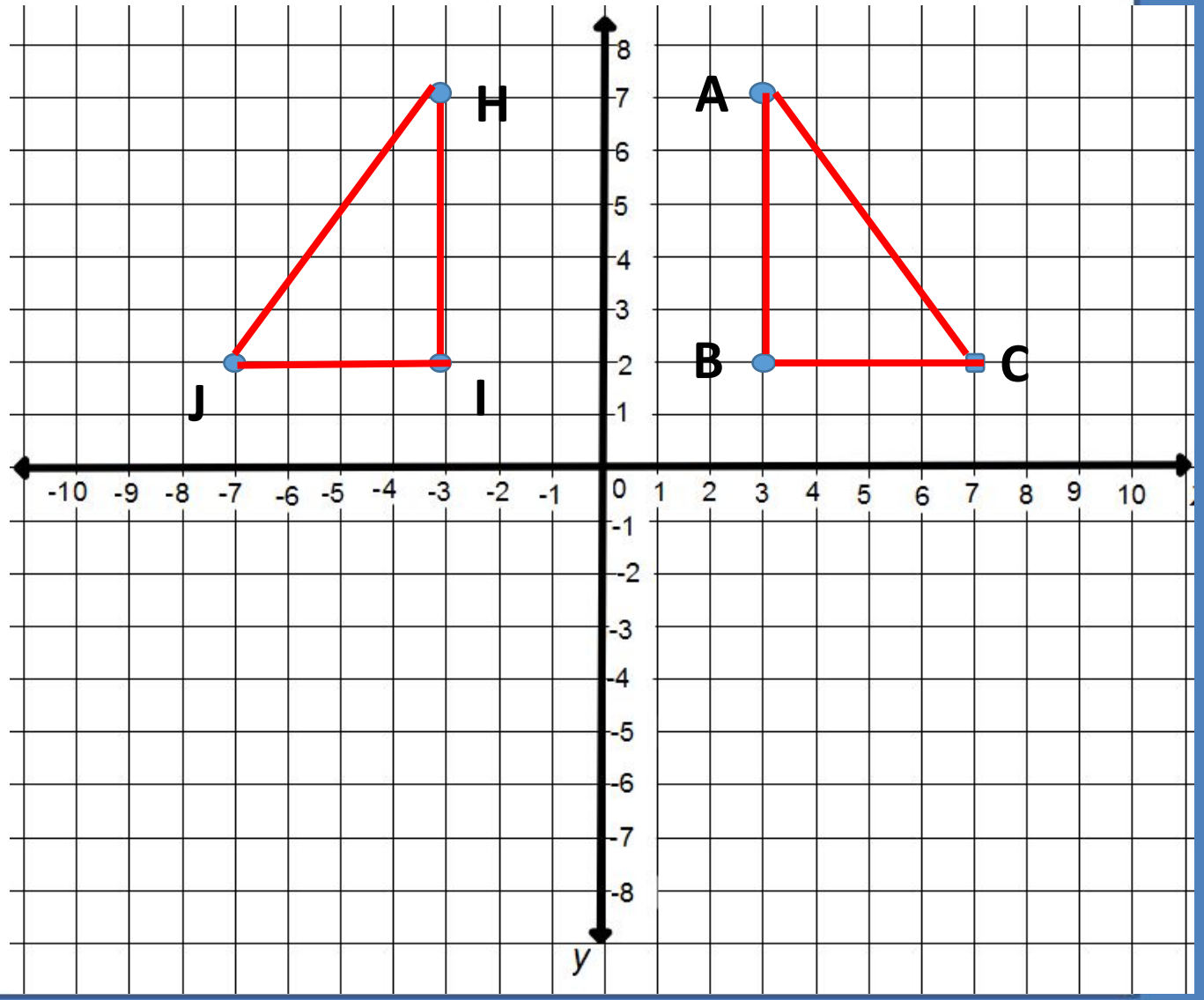


Graph triangle ABC on the coordinate plane.

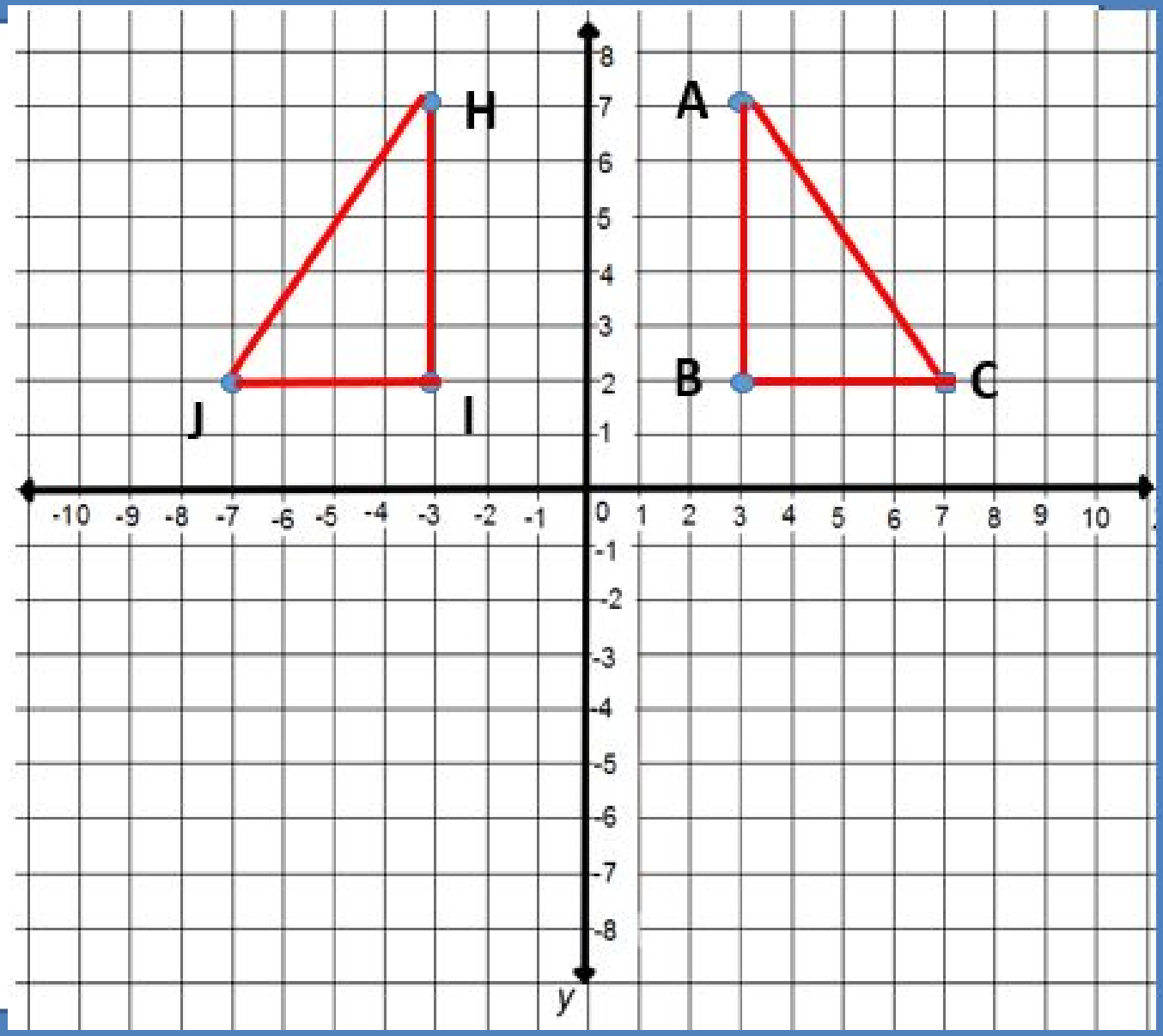
A (3, 7), B (3, 2), C (7, 2)

Graph triangle HIJ on the same coordinate plane.

H (-3, 7), I (-3, 2), J (-7, 2)



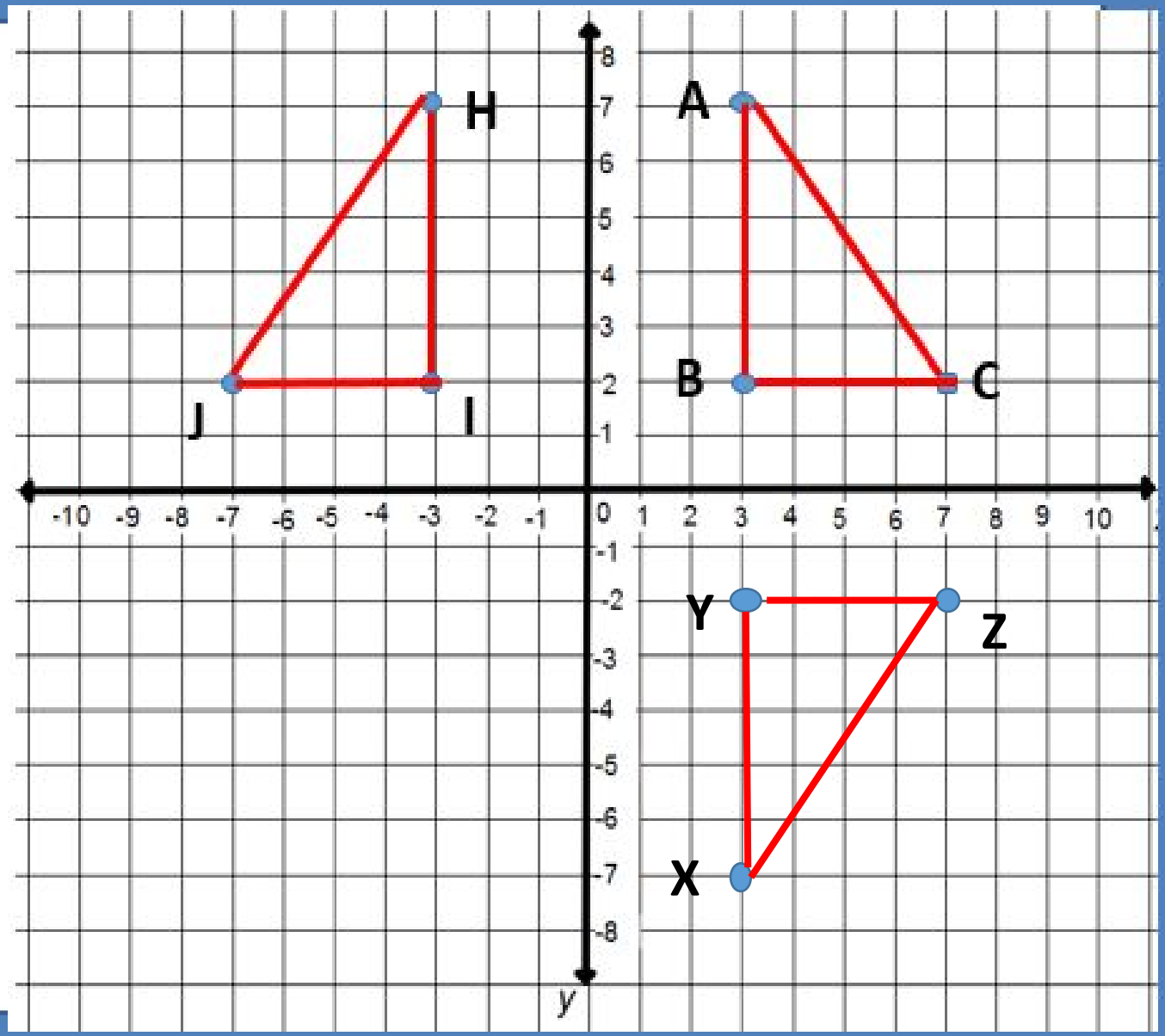
What is the relationship between triangle ABC and triangle HIJ?



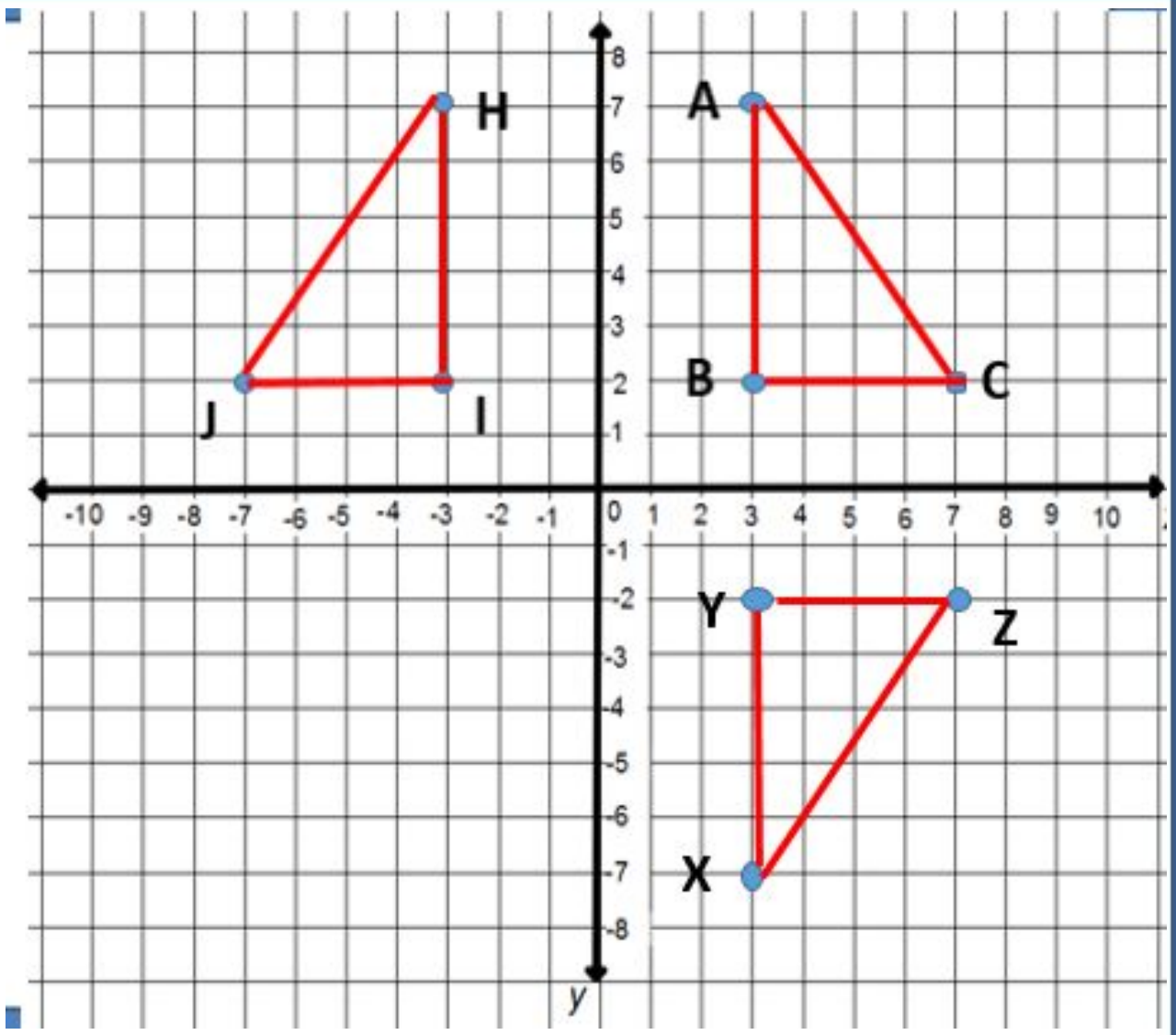
You should have noticed that all points on triangle ABC and triangle HIJ are equal units away from the y axis.

Graph triangle XYZ on the same coordinate plane.

X (3, -7), Y (3, -2), Z (7, -2)



What is the relationship between triangle ABC and triangle XYZ?



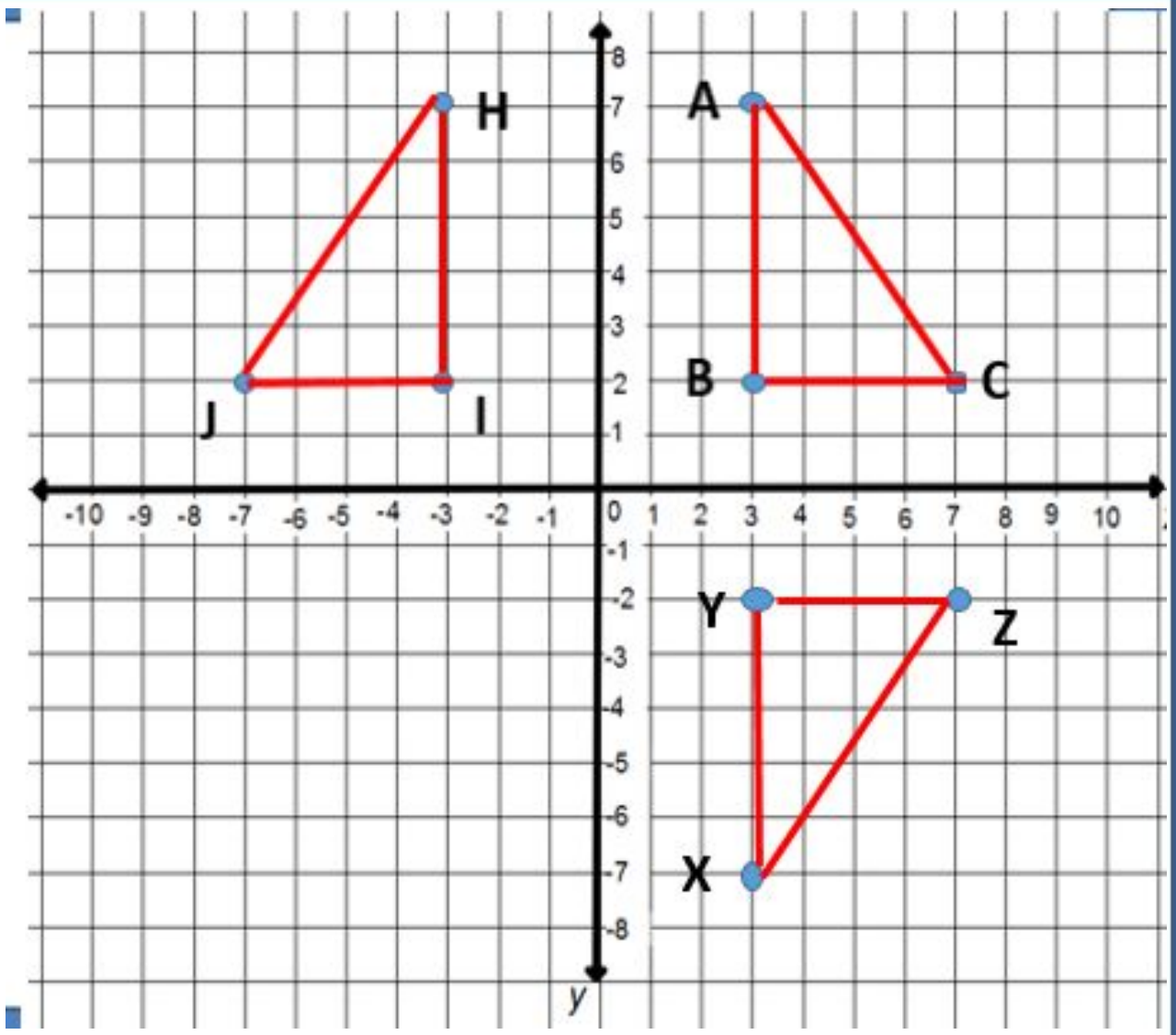
You should have noticed that all points on triangle ABC and triangle XYZ are equal units away from the x axis.

A reflection is a figure flipped across a line. The new figure that is created is a mirror image of the original figure.

The line that the figure is flipped across is called the line of reflection.

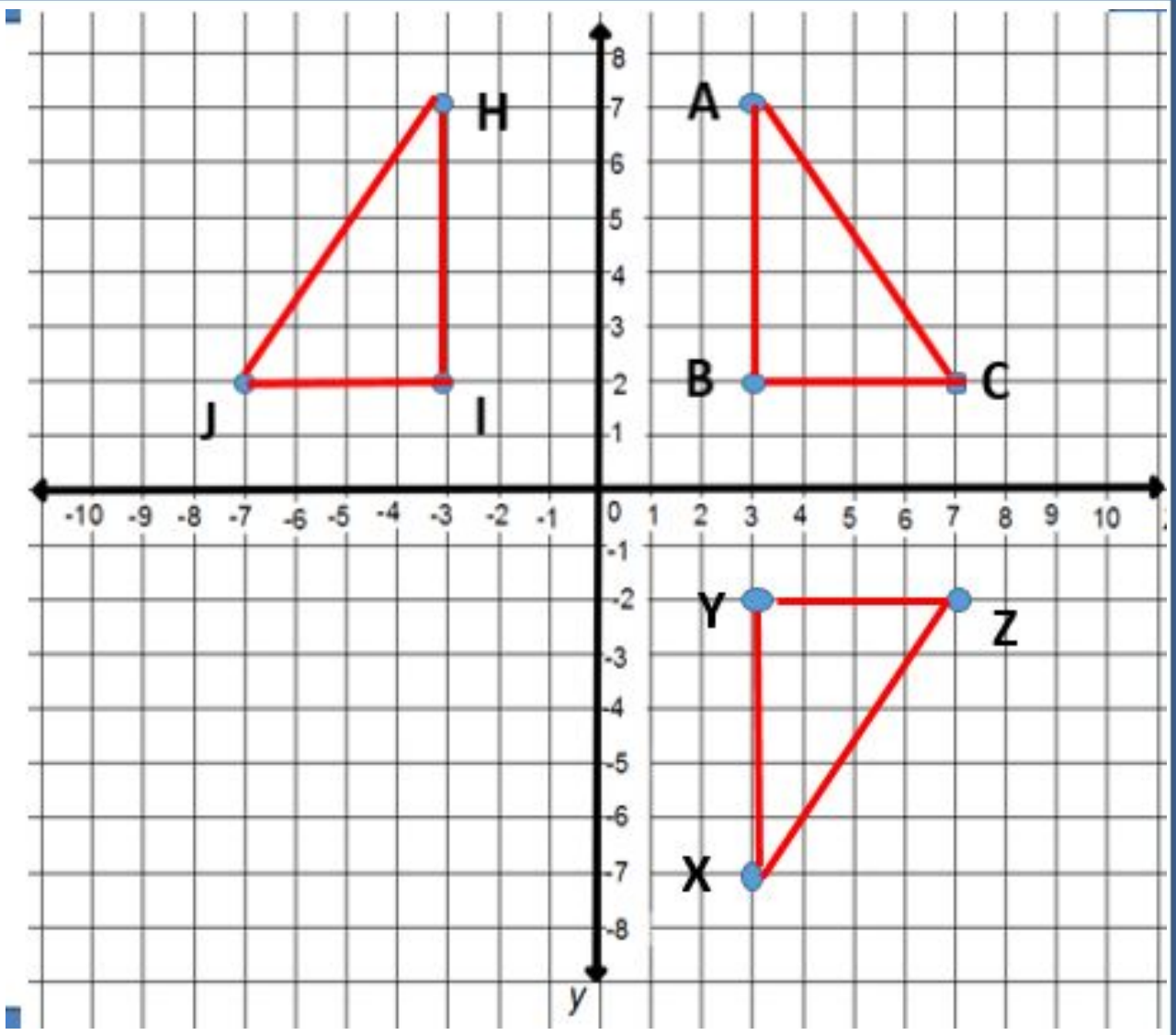
Across which line do you reflect triangle ABC to get triangle HIJ?

y axis



Across which line do you reflect triangle ABC to get triangle XYZ?

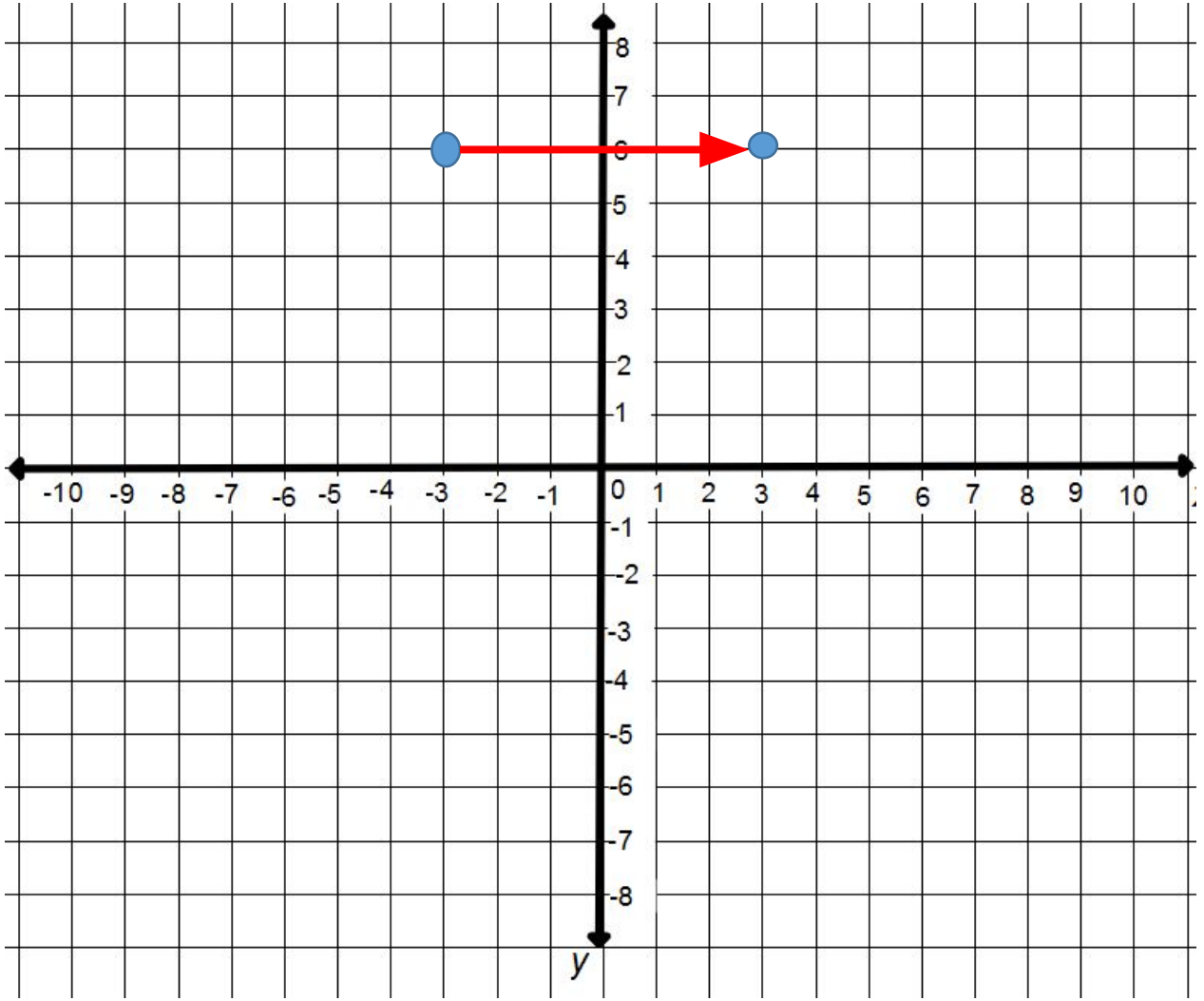
x axis



Example 1

What is the reflection of (-3, 6) across the y axis?

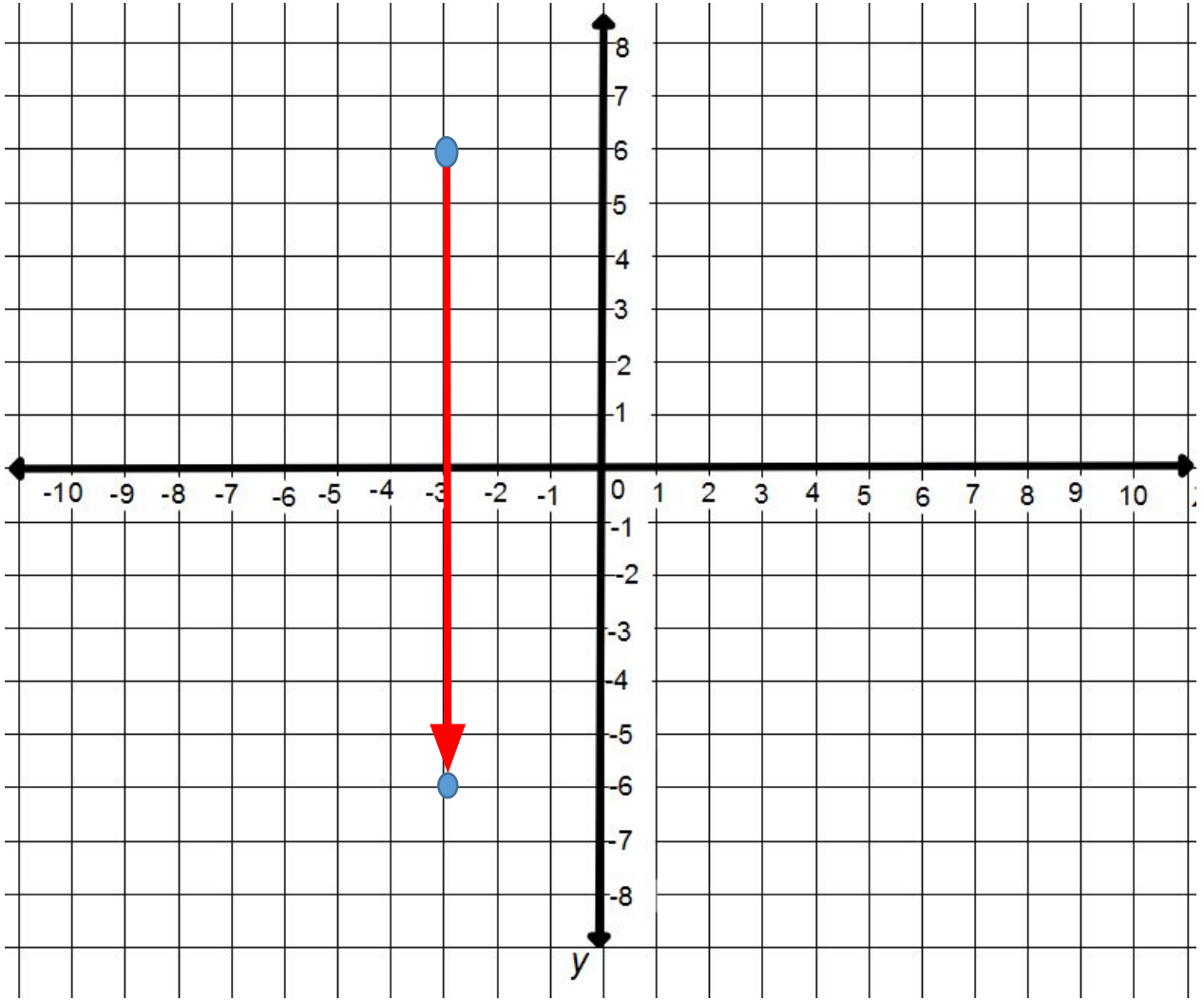
(3, 6)



Example 2

What is the reflection of (-3, 6) across the x axis?

(-3, -6)



Practice

You are given the points (3, 8), (0, 7), (-4, 2) and (-5, -1). What is the reflection of each point across the x-axis? Across the y-axis?

(3, -8), (0,-7), (-4, -2), (-5, 1)

(-3, 8), (0, 7), (4,2), (5, -1)

Closure

John draws a reflection of the point (-3, 5). He gets the point (-3, -5). Which axis did he reflect the point across? Explain how you know.

x axis- y value became opposite.