

"I Can Plot Rational Coordinates in all 4 Quadrants and Explain how the Signs in any Ordered Pair Change in each Quadrant of the Coordinate Graph."

"I Can Explain how Changing the Sign of the Numbers in an Ordered Pair Causes it to Reflect on One or Both Axes."

Graphing on the Coordinate Plane

Two number lines that intersect at right angles form a **coordinate plane**. The *horizontal axis* is the **x-axis** and the *vertical axis* is the **y-axis**. The axes intersect at the **origin** and divide the coordinate plane into four sections called **quadrants**.

An **ordered pair** of numbers identifies the location of a point.

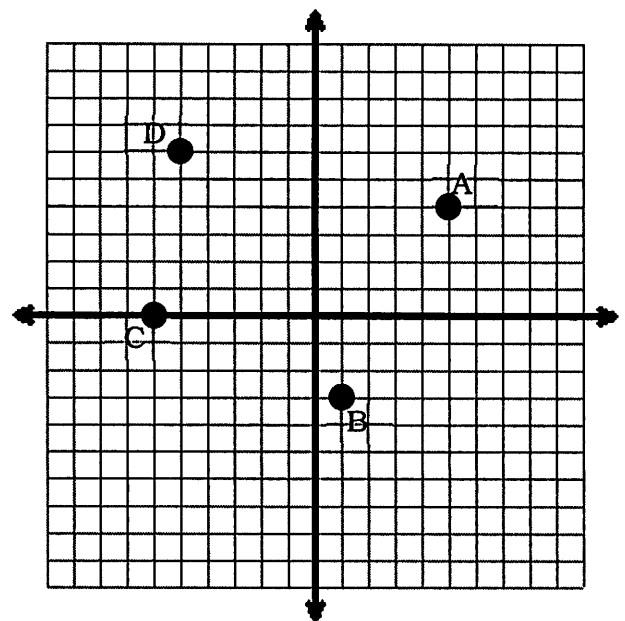
$(-4, 5)$

A (,) E $(-10, 3)$

B (,) F $(-3, -5)$

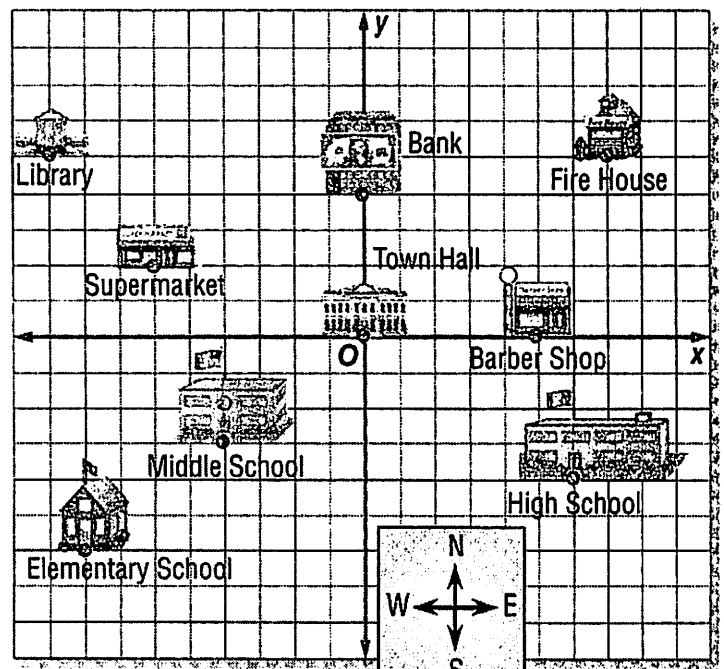
C (,) G $(7, -7)$

D (,) H $(0, 3)$



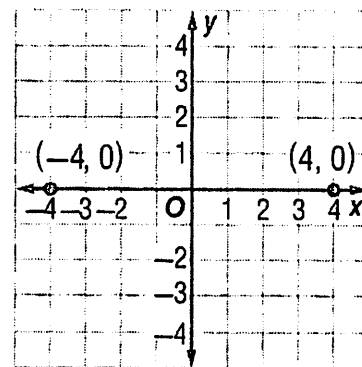
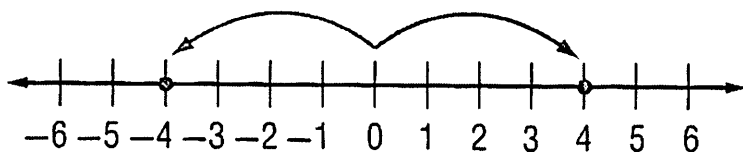
The map shows the layout of a small town. The locations of the buildings are described in respect to the town hall. Each unit on the grid represents one block.

1. Describe the location of the barber shop in relation to the town hall.
2. What building is located 7 blocks east and 5 blocks north of the town hall?
3. Violeta is at the library. Describe how many blocks and in what direction she should travel to get to the supermarket.



You can use what you know about number lines and opposites to compare locations on the coordinate plane. Consider the number line and coordinate plane below.

The number line shows that -4 and 4 are opposites.



The coordinate plane shows that the points $(-4, 0)$ and $(4, 0)$ are the same distance from the y -axis in opposite directions. So, they are *reflected* across the y -axis. Notice that the y -coordinates did not change and that the x -coordinates are opposites.

Name the ordered pair that is a reflection of each point across the x -axis.

$(1, -4)$

$(-2, 5)$

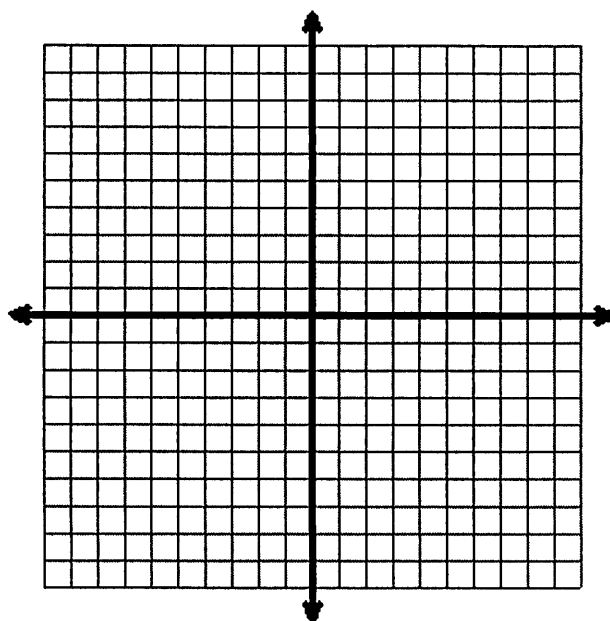
$(-3, -1)$

Name the ordered pair that is a reflection of each point across the y -axis.

$(1, -4)$

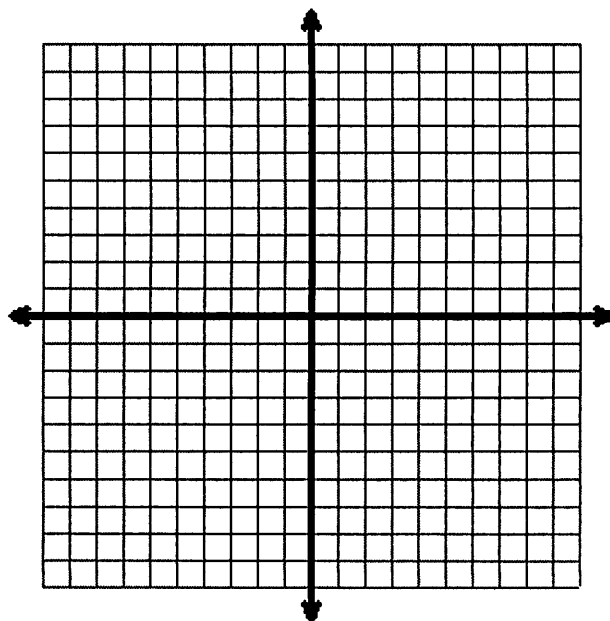
$(-2, 5)$

$(-3, -1)$



In each column, write the coordinates of the points that are related to the given point by the criteria listed in the first column of the table.

Given Point	$(5, 3)$	$(-2, 4)$	$(3, -2)$	$(-1, -5)$
Reflected across the y -axis				
Reflected across the x -axis				
Reflected first across the y -axis and then the x -axis				
Reflected first across the x -axis and then the y -axis				



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Graphing on the Coordinate Plane

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An **ordered pair** of numbers identifies the location of a point.

A (5 , 4)

E (-10 , 3)

B (1 , -3)

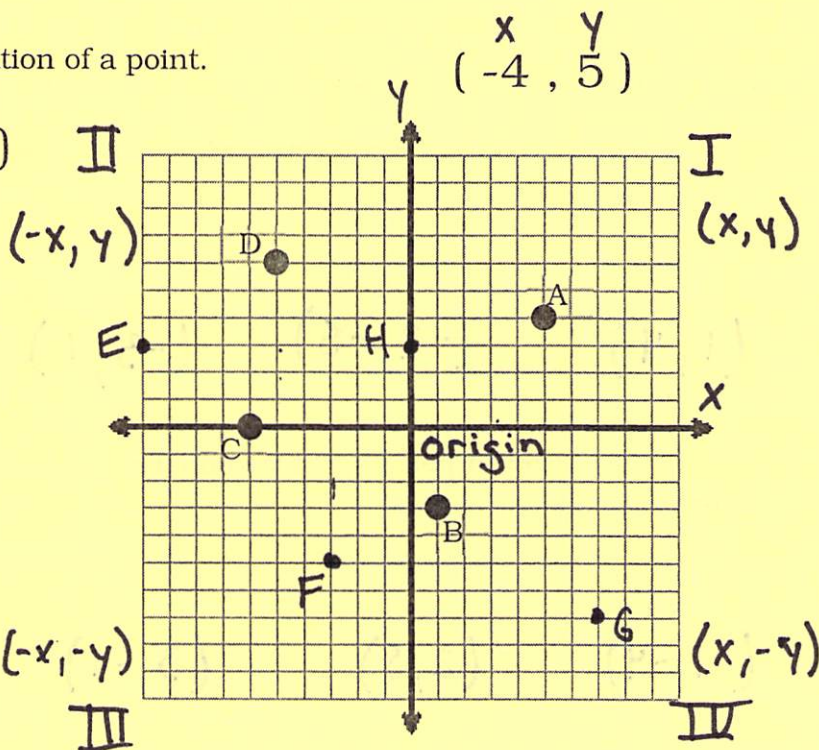
F (-3 , -5)

C (-6 , 0)

G (7 , -7)

D (-5 , 6)

H (0 , 3)



The map shows the layout of a small town. The locations of the buildings are described in respect to the town hall. Each unit on the grid represents one block.

1. Describe the location of the barber shop in relation to the town hall.

5 units east

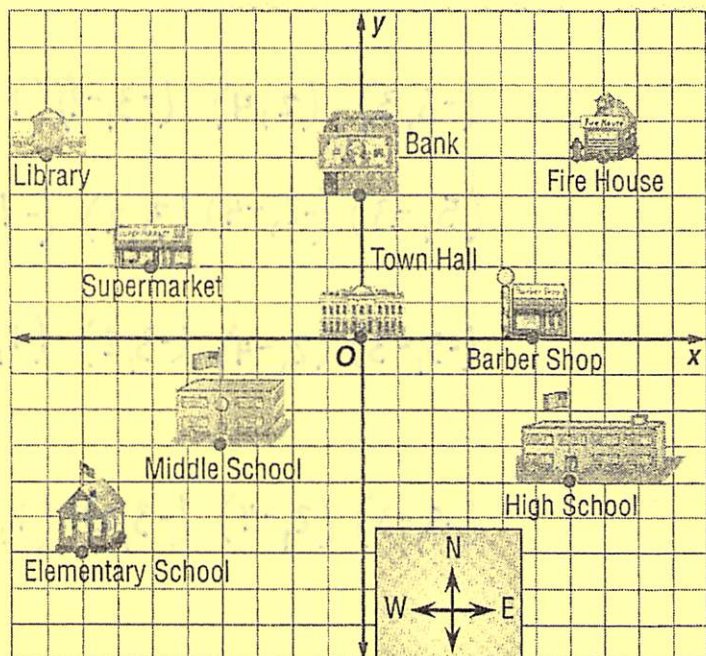
2. What building is located 7 blocks east and 5 blocks north of the town hall?

Fire House

3. Violeta is at the library. Describe how many blocks and in what direction she should travel to get to the supermarket.

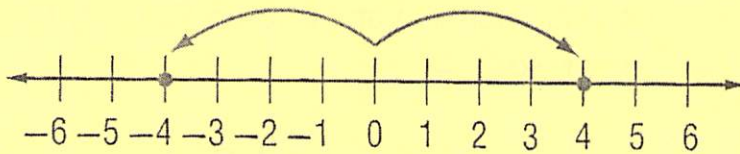
3 blocks south

3 blocks east

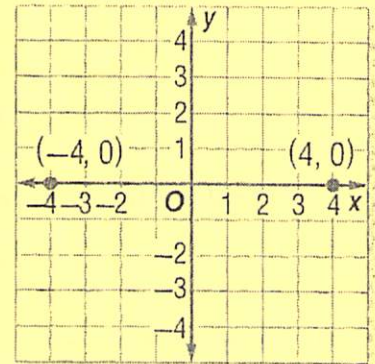


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Name the ordered pair that is a reflection of each point across the x -axis.

$(1, -4)$

$(-2, 5)$

$(-3, -1)$

$(1, 4)$

$(-2, -5)$

$(-3, 1)$

Name the ordered pair that is a reflection of each point across the y -axis.

$(1, -4)$

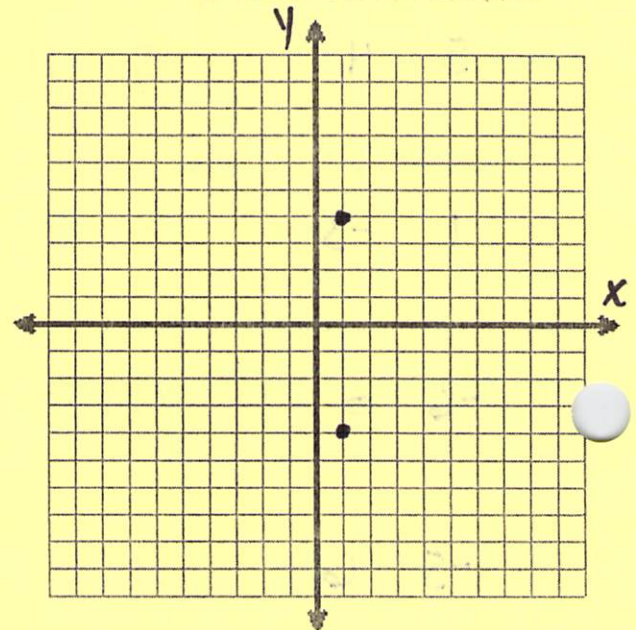
$(-2, 5)$

$(-3, -1)$

$(-1, -4)$

$(2, 5)$

$(3, -1)$



In each column, write the coordinates of the points that are related to the given point by the criteria listed in the first column of the table.

Given Point	$(5, 3)$	$(-2, 4)$	$(3, -2)$	$(-1, -5)$
Reflected across the y -axis	$(-5, 3)$	$(2, 4)$	$(-3, -2)$	$(1, -5)$
Reflected across the x -axis	$(5, -3)$	$(-2, -4)$	$(3, 2)$	$(-1, 5)$
Reflected first across the y -axis and then the x -axis	$(-5, -3)$	$(2, -4)$	$(-3, 2)$	$(1, 5)$
Reflected first across the x -axis and then the y -axis	$(-5, -3)$	$(2, -4)$	$(-3, 2)$	$(1, 5)$

