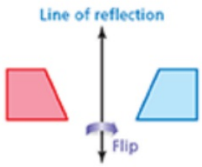
Today: **Happy Friday!**

- Staple Graphs in hall
  (Make sure your name is on the front!)
- Check 2.2 HW
- Pick up Guided Notes Lesson 2.3
  (Reflections)

Lesson 2.3



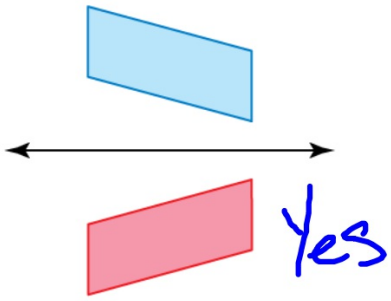
Learning Target:

- **Identify Reflections**
- **Reflect Figures in a Coordinate Plane**

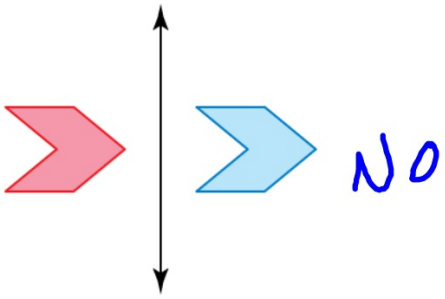
- A **reflection** is a *flip*.
- A figure is reflected in a line called the line of reflection.
- A reflection creates a **MIRROR** image of the original figure.

Tell whether the blue figure is a reflection of the red figure.

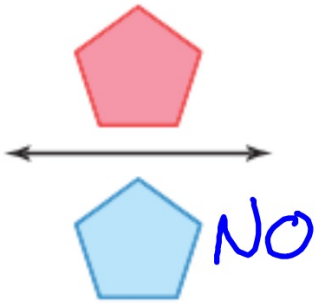
a.



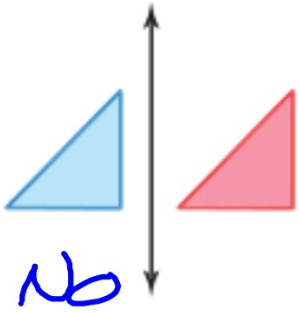
b.



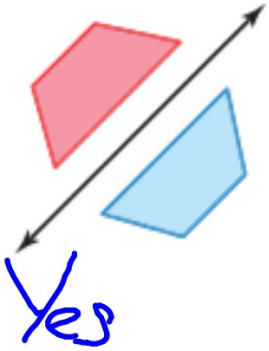
1.



2.



3.



MOM
MOM

Key Idea

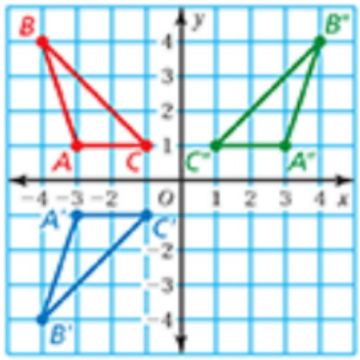
Reflections in the Coordinate Plane

Words To reflect a figure in the x-axis, take the opposite of the y-coordinate.

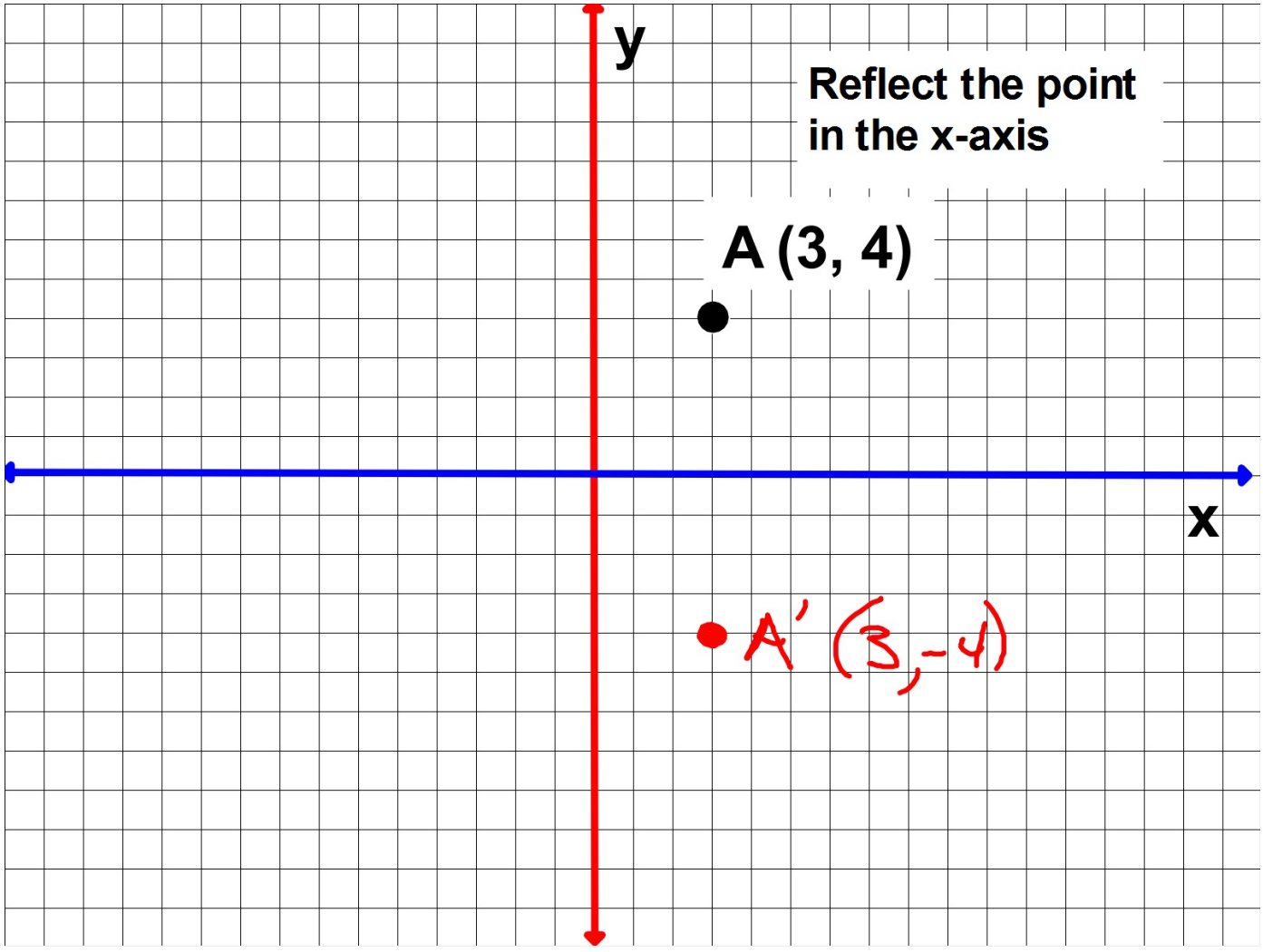
To reflect a figure in the y-axis, take the opposite of the x-coordinate.

Algebra Reflection in x-axis: $(x, y) \rightarrow (x, -y)$

Reflection in y-axis: $(x, y) \rightarrow (-x, y)$



In a reflection, the original figure and its image are congruent.


y
Reflect the point
in the x-axis
A (3, 4)
x
A' (3, -4)

Reflections in the Coordinate Plane

Change Coordinate Points

To **reflect a figure in the x-axis**, take the opposite of the y-coordinate

(x, y) ⟶	(x, -y)
(3, 4) ⟶	(3, -4)
(-2, -5) ⟶	(-2, 5)
(7, -6) ⟶	(7, 6)

The vertices of a triangle are $A(-1, 1)$, $B(-1, 3)$, and $C(6, 3)$. Draw the figure and its reflection in the x-axis. What are the coordinates of the image?

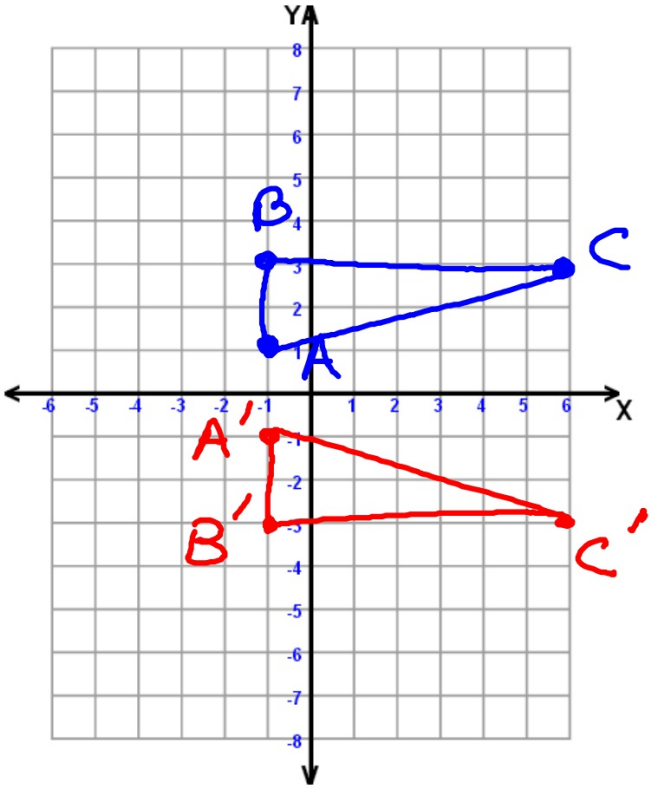
A (-1, 1) ⟶ A' (-1, -1)

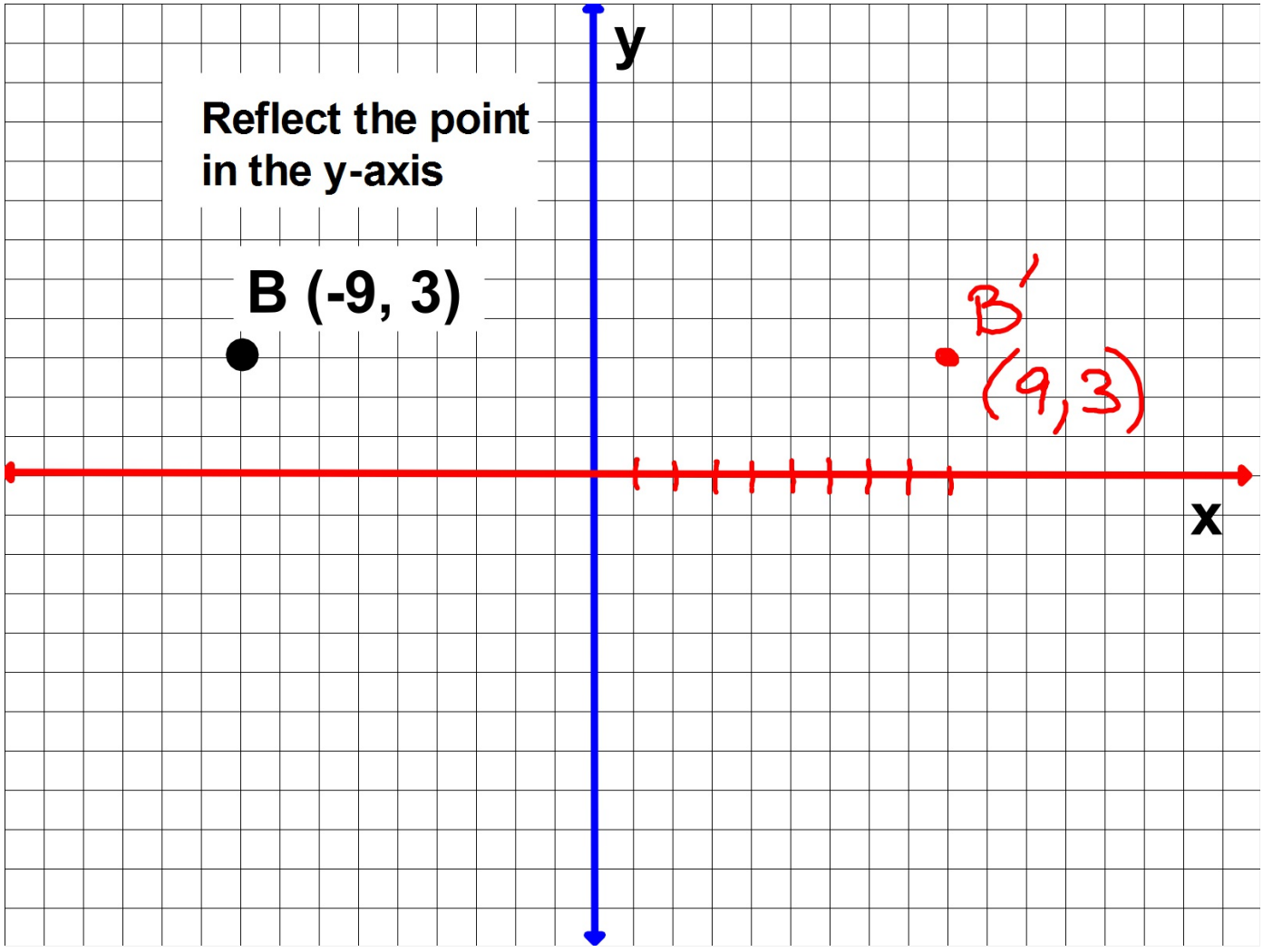
B(-1, 3) ⟶ B' (-1, -3)

C (6, 3) ⟶ C'(6, -3)

Rule

$(x, -y)$



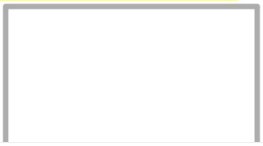

Reflect the point
in the y-axis
B (-9, 3)
y
x
B'
(9,3)

Reflections in the Coordinate Plane

Change Coordinate Points

To **reflect a figure in the y-axis**, take the opposite of the x-coordinate

(x, y)	$\longrightarrow$	$(-x, y)$
(-9, 3)	$\longrightarrow$	(9, 3)
(4, -8)	$\longrightarrow$	(-4, -8)
(-1, -6)	$\longrightarrow$	(1, -6)



The vertices of a quadrilateral are $P(-2, 5)$, $Q(-1, -1)$, $R(-4, 2)$, and $S(-4, 4)$. Draw the figure and its reflection in the y-axis.

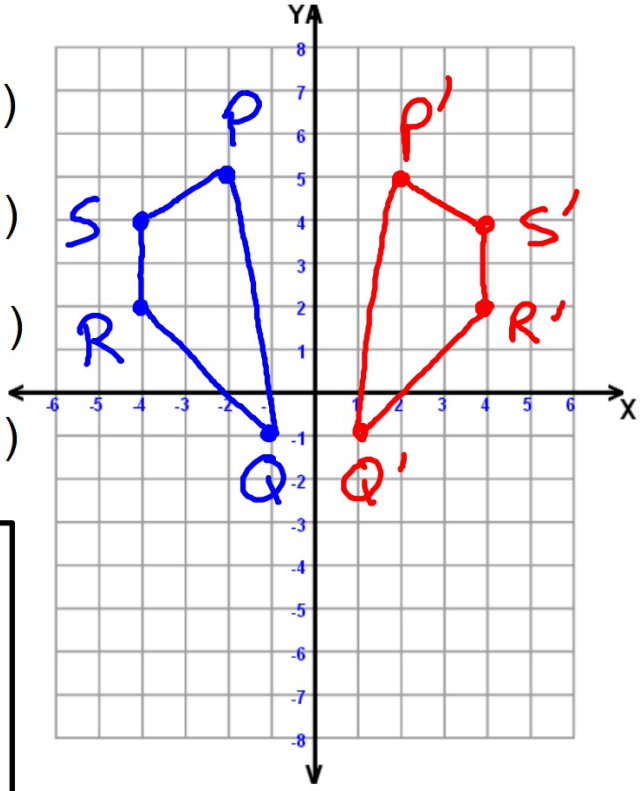
P (-2, 5) ⟶ P' (2, 5)

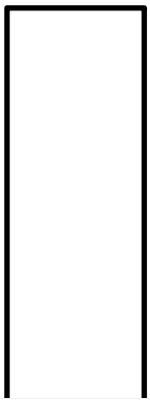
Q(-1, -1) ⟶ Q' (1, -1)

R(-4, 2) ⟶ R'(4, 2)

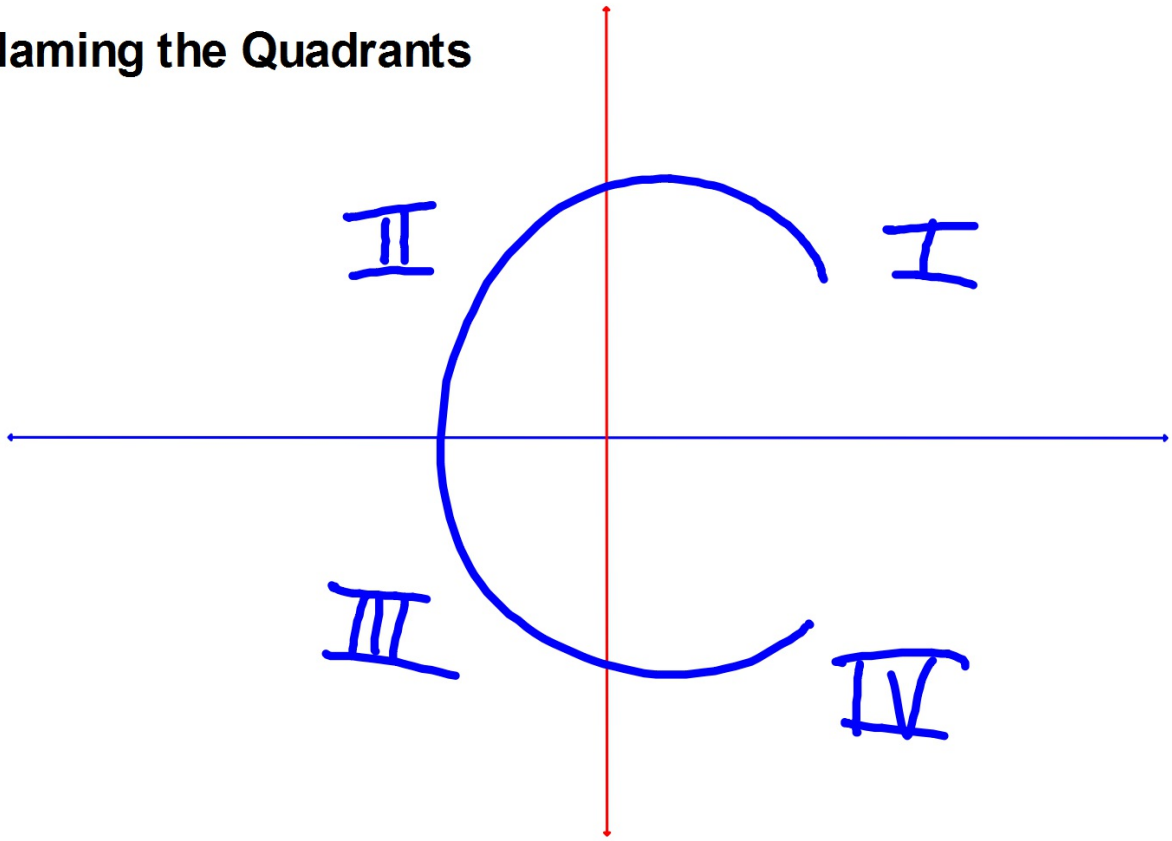
S(-4, 4) ⟶ S'(4, 4)

$(-x, y)$





Naming the Quadrants



Multiple Tranformations

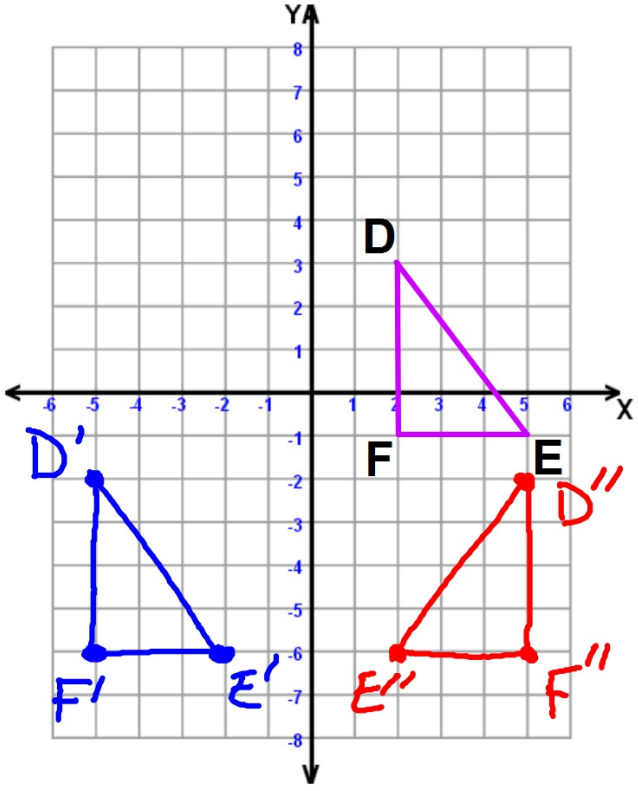
Translate the figure 7 units left and 5 units down.
Then **reflect** it in the y-axix.

Rule $(x-7, y-5)$

D(2, 3) ⟶ D' (-5,-2)
E(5, -1) ⟶ E' (-2,-6)
F(2, -1) ⟶ F' (-5,-6)

Rule $(-x, y)$

D'(-5,-2) ⟶ D''(5,-2)
E' (-2, -6) ⟶ E''(2,-6)
F'(-5, -6) ⟶ F''(5,-6)



Homework
pg. 58 #1, 3,
4-24 evens