Coordinate Moves

Lesson 5

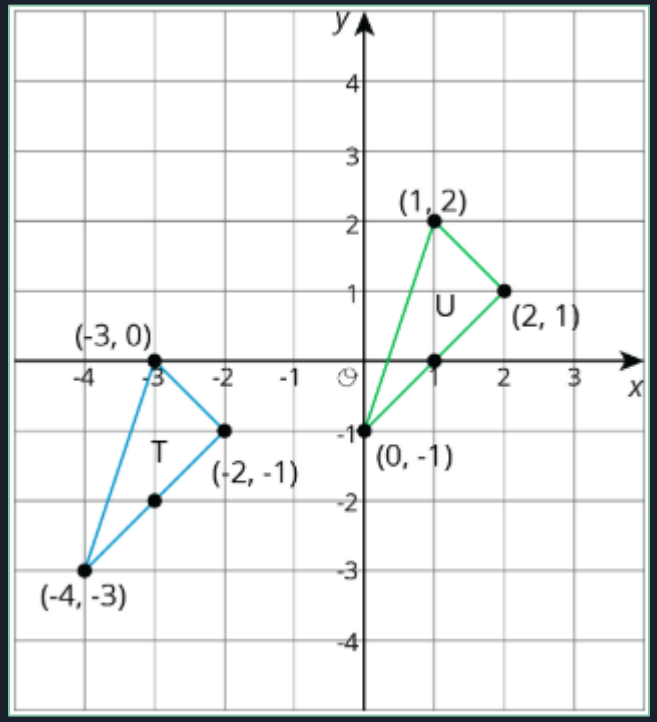
CCSS Standards: Addressing	• 8.G.A.3

Let's transform some figures and see what happens to the coordinates of points!

Translating Coordinates?

Warm Up 5.1

Begin working with Quiet Work time. (2 min)
Then we'll share our thinking as a class!



How do you describe a translation?

Is there more than one way to describe the same translation?

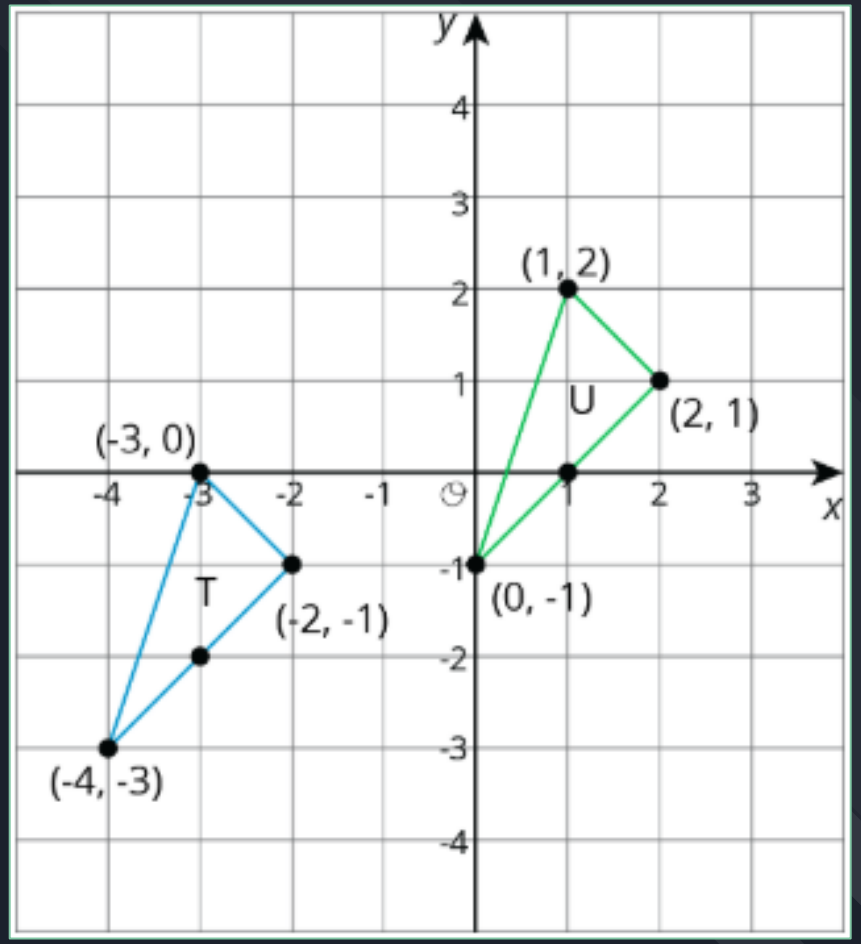
Select all of the translations that take Triangle T to Triangle U.

a. Translate (-3,0) to (1,2)

b. Translate (2,1) to (-2,-1)

c. Translate (-4,-3) to (0,-1)

d. Translate (1,2) to (2,1)

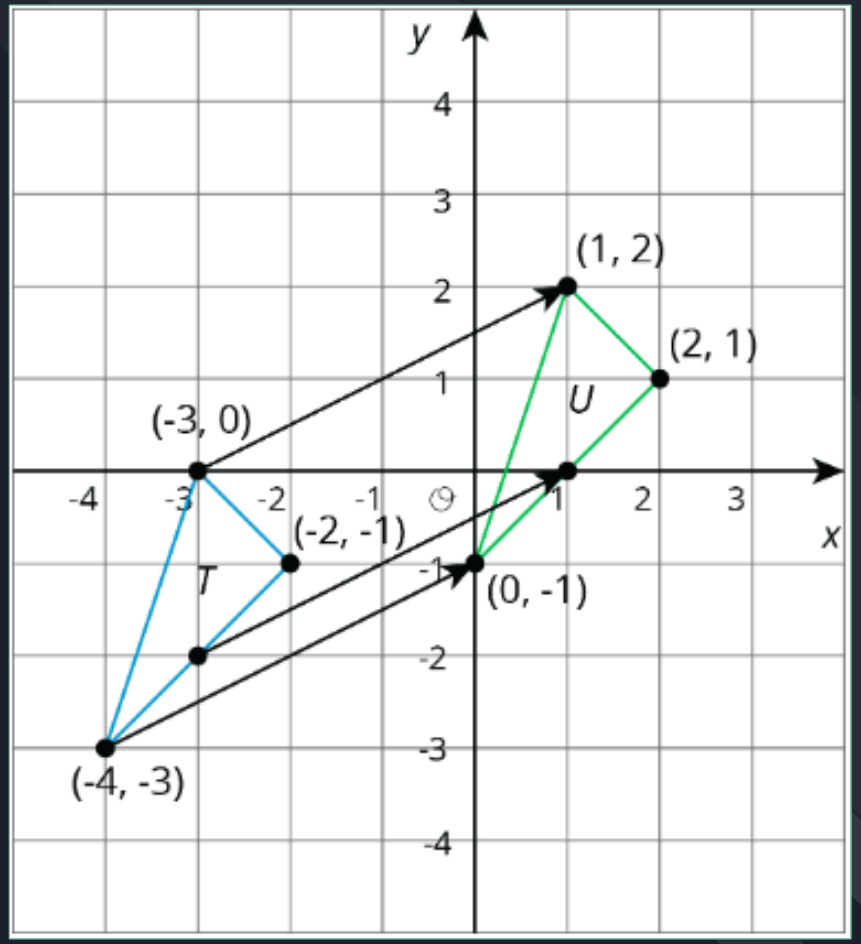


Remember:

Once you name a starting point and an ending point, that completely determines a translation!

It specifies a distance and direction for *all* points in the plane.

Each arrow goes up 2 and 4 to the right!



Reflecting Points on the Coordinate Plane

Activity 5.2

Begin working with Quiet Work time. (5 min)
Please stop after the second question.

What pattern do you notice?

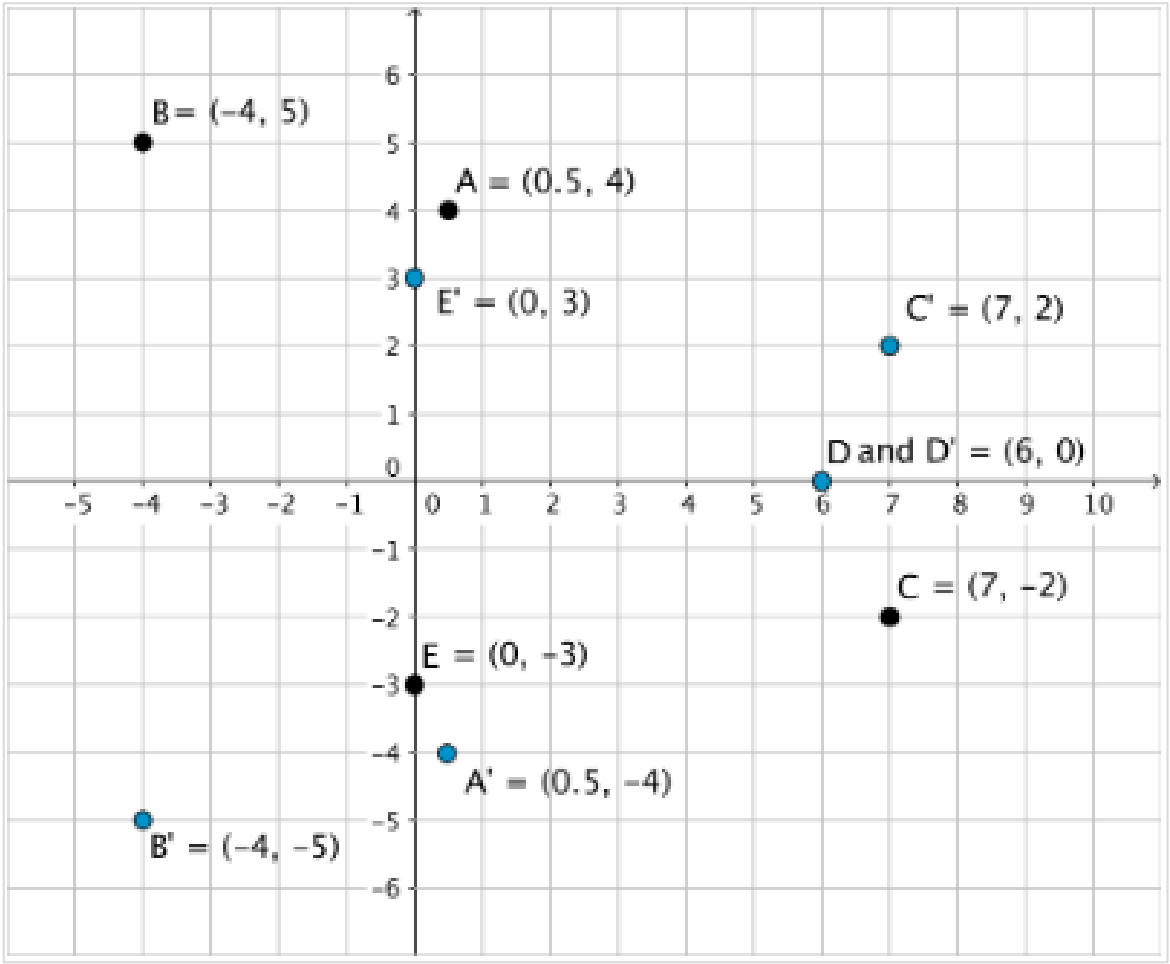
When reflecting over the x-axis:

(x, y) →

(13, 10) →

(13, -20) →

(13, 570) →



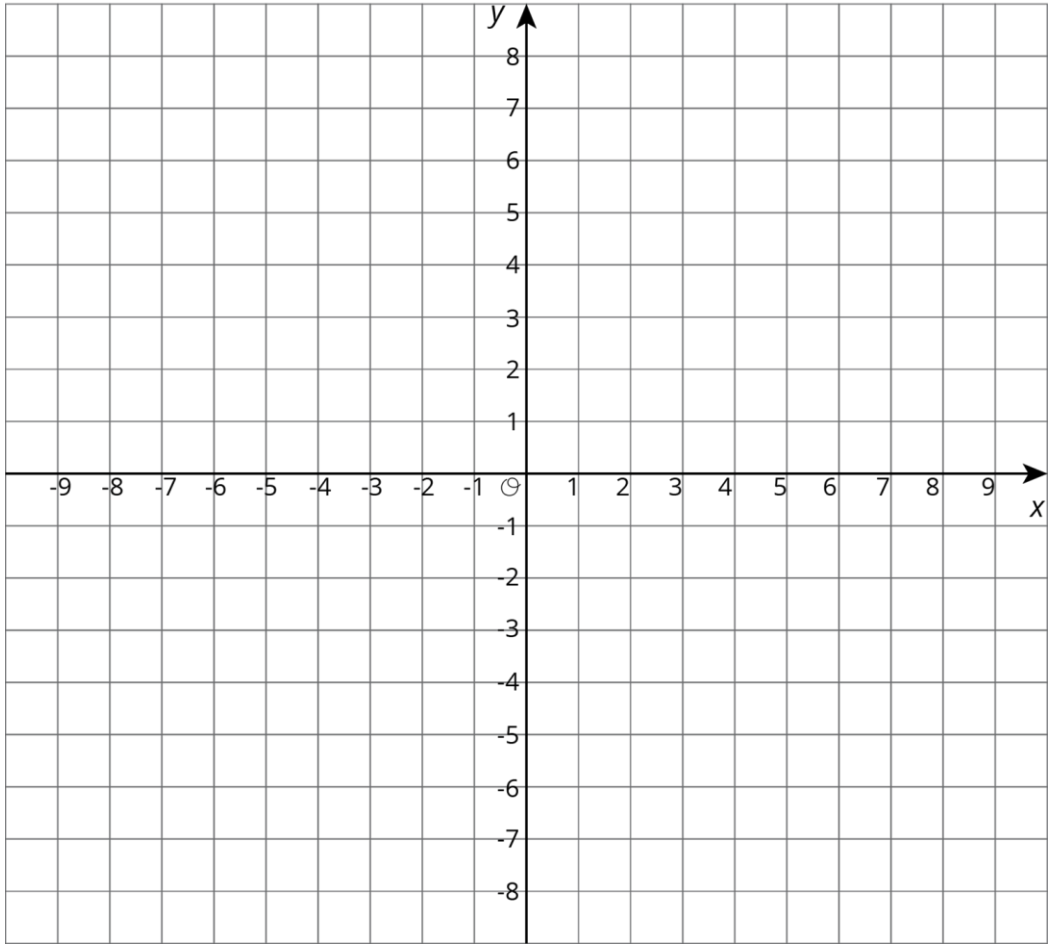
Continue working on Questions 3-4 on your own. (3 min)

When you have a point and an axis of reflection, how do you find the reflection of the point?

How can you use the coordinates of a point to help you find the reflection?

Are some points easier to reflect than others? Why?

What patterns have you seen in these reflections?



Transformations of a Segment?

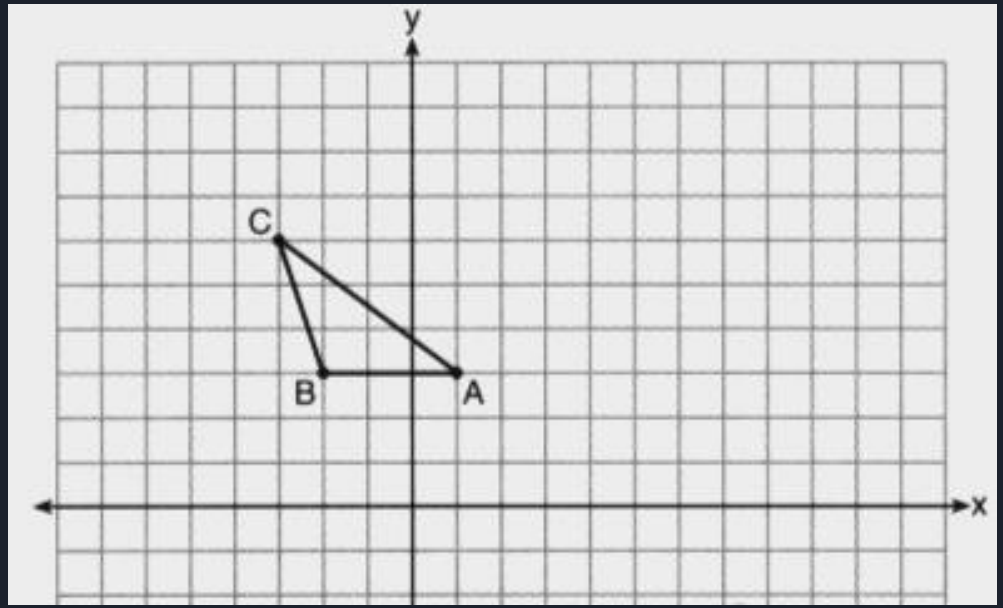
Activity 5.3

Using Patty Paper to Rotate

*Put your patty paper on top of triangle ABC and copy on patty paper.

Make a + at point A. This will be our point of rotation.

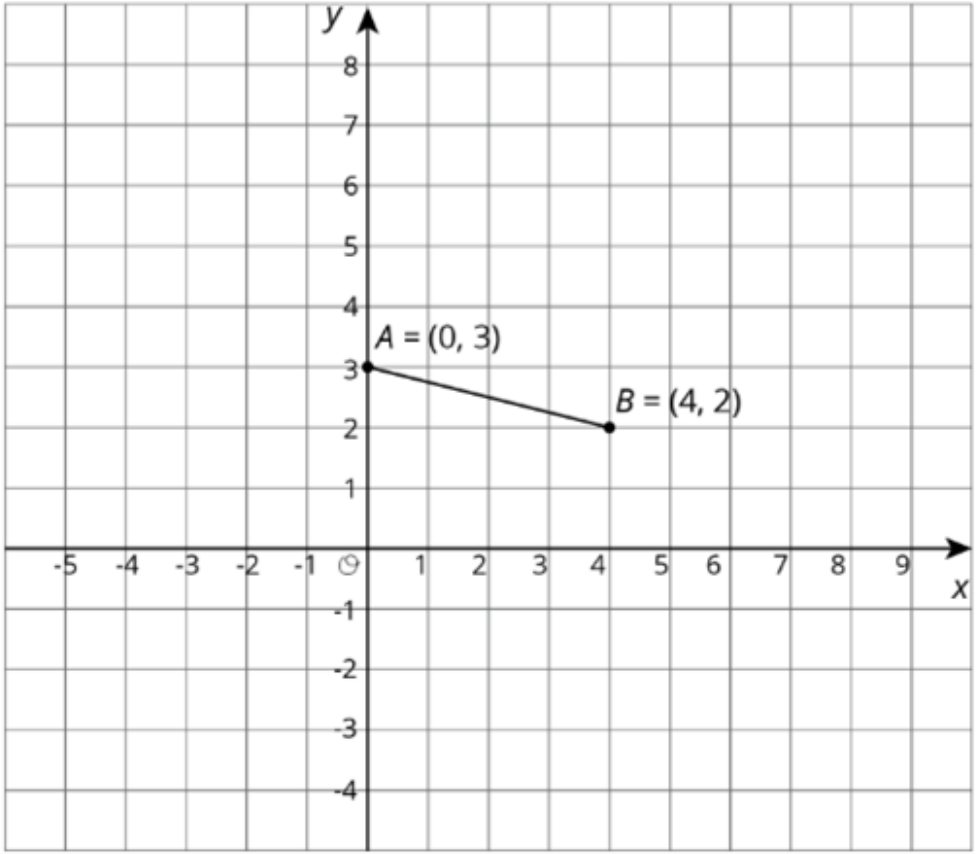
Turn the cross 90 degrees clockwise with your pencil on point A.



Complete Questions 1-4.

Check in with your team as you go!

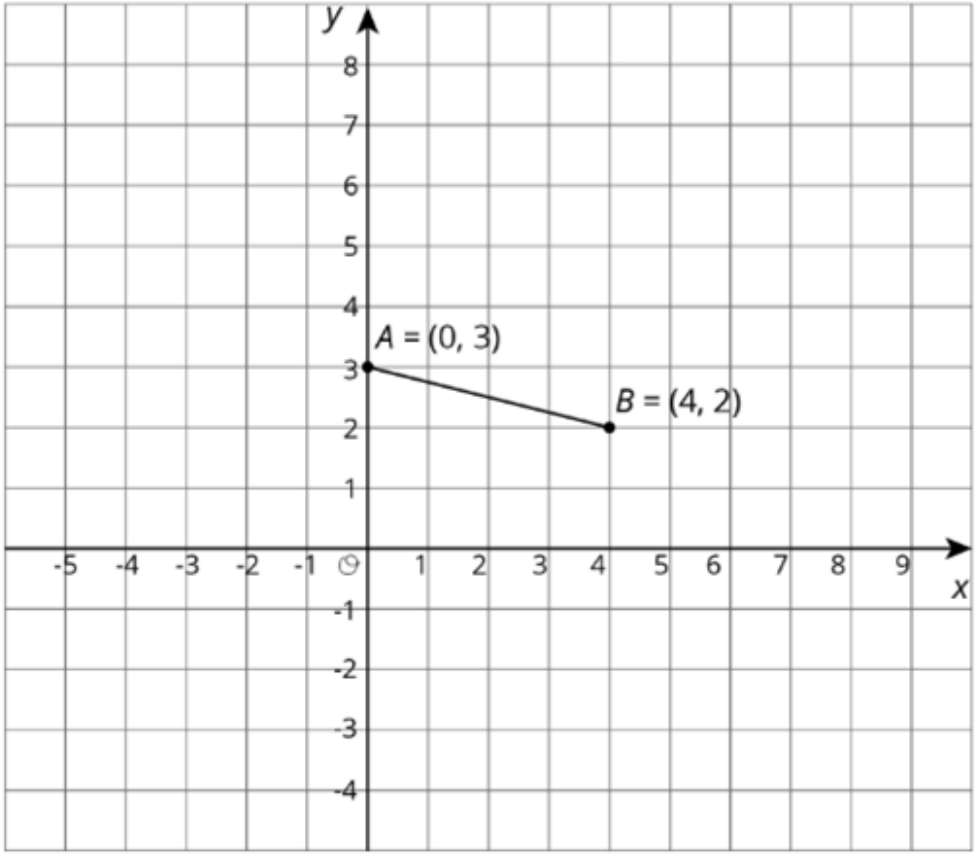
1. Rotate AB 90 degrees counterclockwise. What are the coordinates of C?
2. Rotate AB 90 degrees counterclockwise around center A. What are the coordinates of D?
3. Rotate AB 90 degrees clockwise around (0,0). What are the coordinates of B and F?



Compare the two 90-degree counterclockwise rotations of segment *AB*.

What is the same about the images of these rotations?

What is different?



“Are you ready for more?”

Suppose EF and GH are line segments of the same length.

Describe a sequence of transformations that moves EF to GH.

What are some advantages to knowing the coordinates of points when you are doing transformations?

How do you perform a 90 degree clockwise rotation of a point with center (0,0)?

Where does (1, 2) go when...

- reflected over the *x*-axis?

  (1, -2)

- reflected over the *y*-axis?

  (-1, 2)

- rotated 90 degrees clockwise with center (0,0)?

  (2, -1)

Today's Goals

- I can apply transformations to points on a grid if I know their coordinates.

What changes did we see when reflecting points over the *x*-axis? *y*-axis?

Rotation or Reflection

Cool Down 5.4