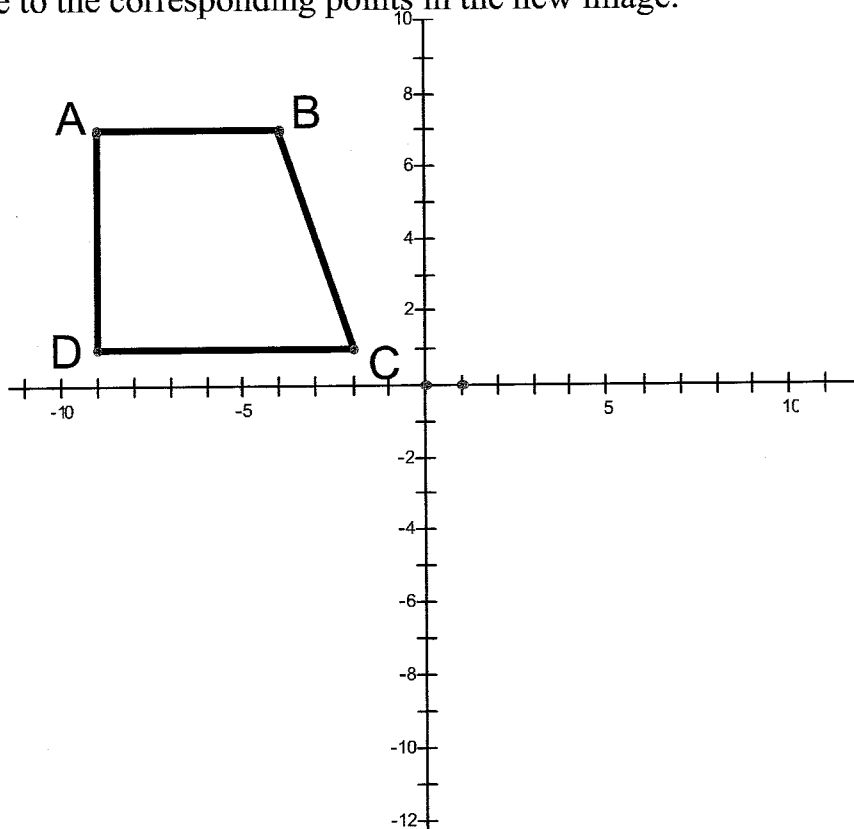## Student Activity: Reflections

1. Reflect the given figure across the *y*-axis.

   a. Complete the table to compare the coordinates of the points in the original image to the corresponding points in the new image.

Original image	New Image
A (-9, 7)	A' (____ , ____)
B (-4, 7)	B' (____ , ____)
C (-2, 1)	C' (____ , ____)
D (-9, 1)	D' (____ , ____)
(x, y)	(____ , ____)

b. Write a generalization in (x, y) form for points in the original image, compared to corresponding points in the new image.

c. Explore the characteristics of the original image and new image. How do they compare?
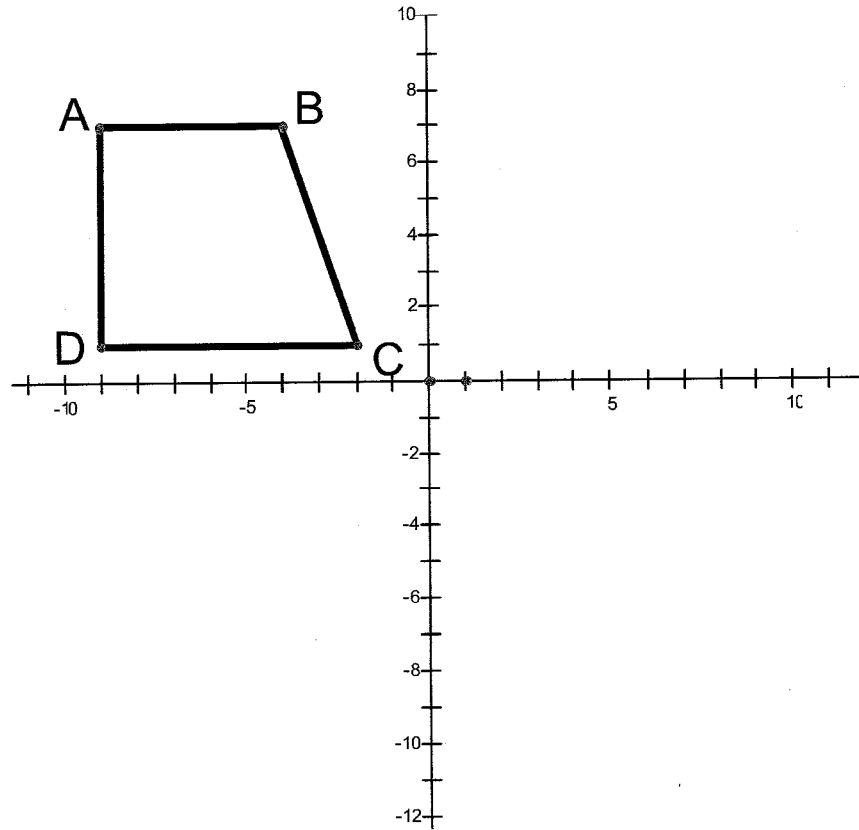
- Length of corresponding sides

- Corresponding angle measurements

- Perimeter

- Area

2. Reflect the given figure across the *x*-axis.

   a. Complete the table to compare the coordinates of the points in the new image to the corresponding points in the original image.

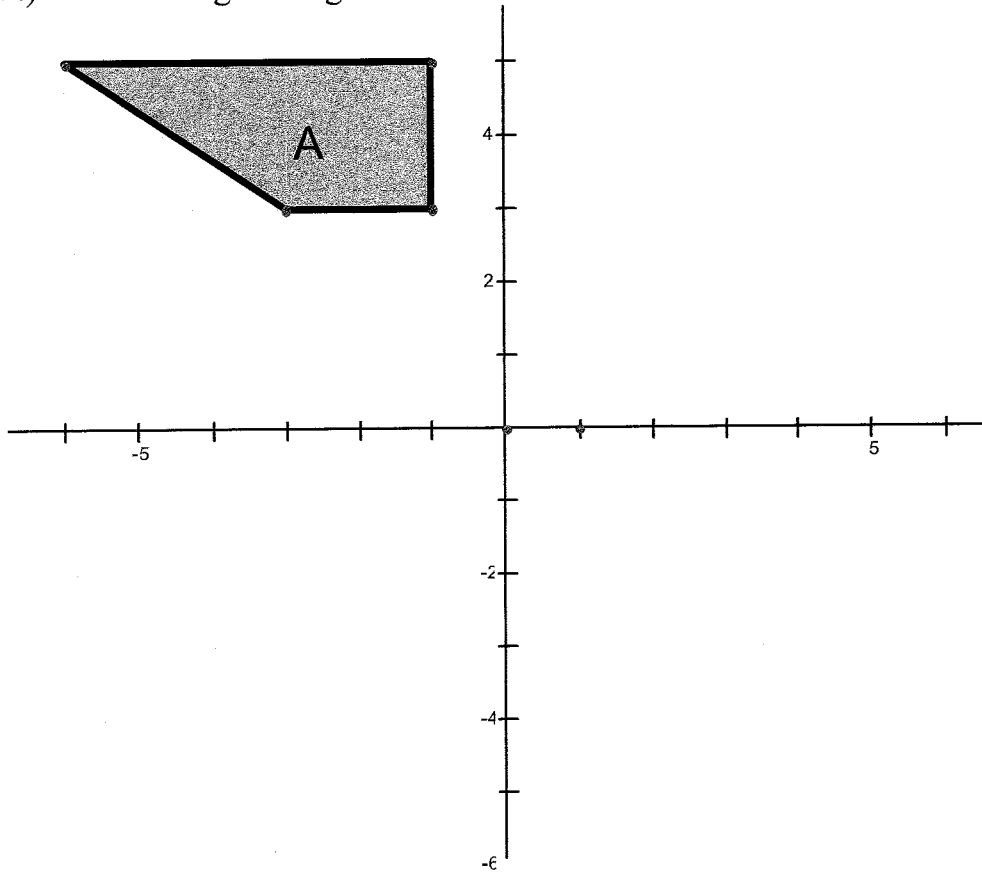| Original image	New Image
A (-9, 7)	A'(_____ , _____)
B (-4, 7)	B'(_____ , _____)
C (-2, 1)	C'(_____ , _____)
D (-9, 1)	D'(_____ , _____)
(*x*, *y*)	(_____ , _____)

b. Write a generalization in (x, y) form for points in the new image, compared to corresponding points in the original image.

c. Explore the characteristics of the original image and new image. How do they compare?

- Length of corresponding sides
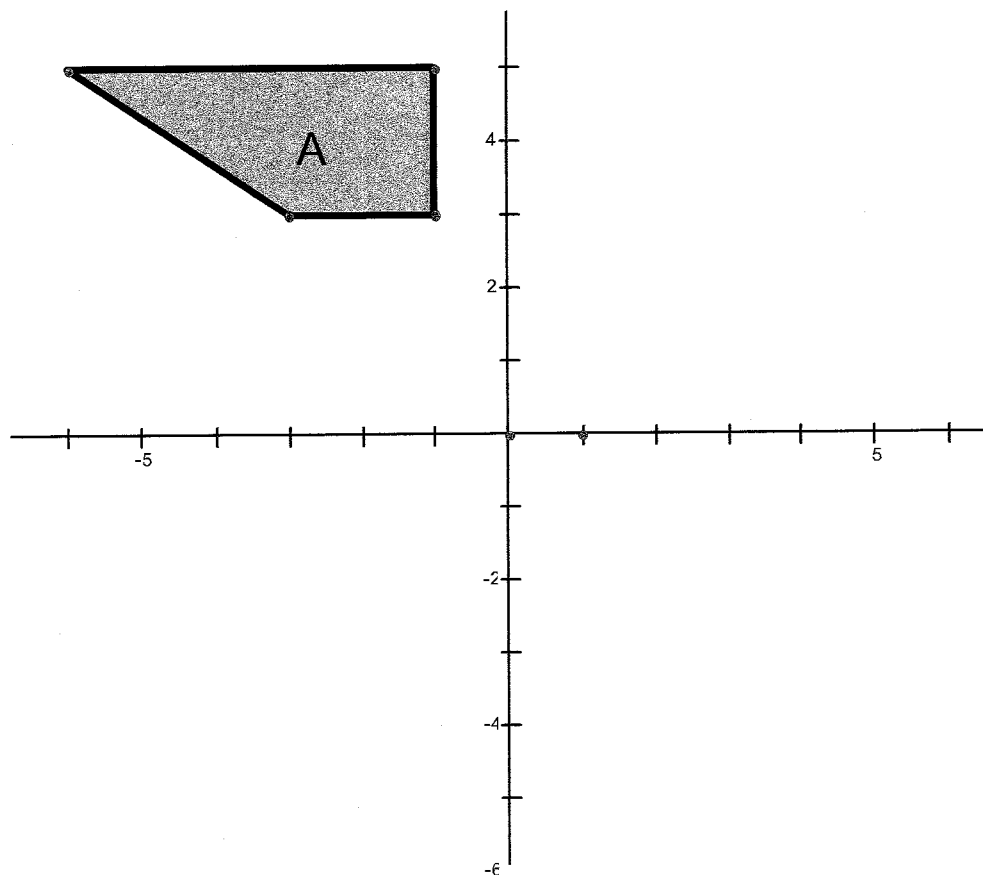
- Corresponding angle measurements

- Perimeter

- Area

(ii.) Reflect the given figure across the *x*-axis

Original image	New Image
(____ , ____)	(____ , ____)
(____ , ____)	(____ , ____)
(____ , ____)	(____ , ____)
(____ , ____)	(____ , ____)
(*x, y*)	(____ , ____)

(iii.) Reflect the given image across the *y*-axis and then across the *x*-axis.

Original image	New Image
(____, ____)	(____, ____)
(____, ____)	(____, ____)
(____, ____)	(____, ____)
(____, ____)	(____, ____)
(x, y)	(____, ____)

Reflect and Apply

1. Using these coordinates as the vertices for an image, answer the following questions.

Original Image		New Image	
x	y	x'	y'
1	1	-5	1
2	3	-4	3
4	3	-2	3
5	1	-1	1

- Are these images reflections or translations? How do you know?
- What is it about this image that makes your classification true?
- Describe and sketch an original image and a new image so that the new image could be either a reflection or a translation of the original image. What properties did you consider?

2. Given a polygon with the following vertices
   A(-3,1), B(-2,4), C(0,5), D(1,1)
   write a translation that would produce a new image that is entirely in Quadrant IV.

3. Given a polygon with the following vertices
   A(-6,-4), B(-6,-2), C(-5,-2), D(-5,-4)
   write a translation that would produce a new image that has the y-axis as a line of symmetry.