

## Activity 1: Reflection across the Axes

1. On quarter inch grid paper, plot these points to create the vertices of a segment:  
 A (-2,1), B (6, 5)
- a. Reflect the segment across both the  $x$ -axis and the  $y$ -axis. You should have a total of three segments drawn. Record the vertices of the reflected images in the table. Look for a possible pattern and record that in the last row of the table.

Point on Segment	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
A			
B			
any	$(x, y)$		

- b. Find the slope of the original image and the slope of the reflected images. Record the slopes in the table. Look for a possible pattern and record that in the last row of the table.

	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
slope			
any	$m$		

2. On quarter inch grid paper, plot these points to create the vertices of a segment:

A (2,1), B (4, -2)

- a. Reflect the segment across both the  $x$ -axis and the  $y$ -axis. You should have a total of three segments drawn. Record the vertices of the reflected images in the table. Look for a possible pattern and record that in the last row of the table.

Point on Segment	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
A			
B			
any	$(x, y)$		

- b. Find the slope of the original image and the slope of the reflected images. Record the slopes in the table. Look for a possible pattern and record that in the last row of the table.

	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
slope			
any	$m$		

3. On quarter inch grid paper, plot these points to create the vertices of a segment:

A (-2,-1), B (2, 5)

- a. Reflect the segment across both the  $x$ -axis and the  $y$ -axis. You should have a total of three segments drawn. Record the vertices of the reflected images in the table. Look for a possible pattern and record that in the last row of the table.

Point on Segment	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
A			
B			
any	$(x, y)$		

- b. Find the slope of the original image and the slope of the reflected images. Record the slopes in the table. Look for a possible pattern and record that in the last row of the table.

	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
slope			
any	$m$		

4. On quarter inch grid paper, plot these points to create the vertices of a segment:

A (2,1), B (4, 1)

- a. Reflect the segment across the  $x$ -axis. Reflect the new image across the  $y$ -axis. You should have a total of three segments drawn. Record the vertices of the reflected images in the table. Look for a possible pattern and record that in the last row of the table.

Point on Segment	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
A			
B			
any	$(x, y)$		

- b. Find the slope of the original image and the slope of the reflected images. Record the slopes in the table. Look for a possible pattern and record that in the last row of the table.

	Original Image	Reflected Image (across $x$ -axis)	Reflected Image (across $y$ -axis)
slope			
any	$m$		

5. How would the image of a segment compare to the original image after reflecting it across the  $x$ -axis 2 times? (i.e. Reflect the original image across the  $x$ -axis, then reflect the new image across the  $x$ -axis.)

3 times?

6. Describe any relationships you have noticed about the slopes of the original images, the reflected images, and the line of reflection.