

## Discovering Patterns in Transformations

### Rotation $180^\circ$

Place the Geoboard Template under your Communicator.

Set up your geoboard for the four quadrants.

Draw a scalene triangle that is completely in Quadrant I. Name the vertices A, B, and C.

Record the coordinates of each vertex in the chart below.

<i>Coordinates of A</i>	<i>Coordinates of B</i>	<i>Coordinates of C</i>

Rotate the triangle  $180^\circ$ . Label the corresponding vertices of the new triangle A', B' and C'. Record their coordinates in the chart below.

<i>Coordinates of A'</i>	<i>Coordinates of B'</i>	<i>Coordinates of C'</i>

Study the change made in the coordinates to find a pattern.

Let's try it again.

Draw a triangle in Quadrant III. Name the vertices A, B, and C.

Record the coordinates of each vertex in the chart below.

<i>Coordinates of A</i>	<i>Coordinates of B</i>	<i>Coordinates of C</i>

Rotate the triangle  $180^\circ$ . Label the corresponding vertices of the new triangle A', B' and C'. Record their coordinates in the chart below.

<i>Coordinates of A'</i>	<i>Coordinates of B'</i>	<i>Coordinates of C'</i>

Study the change made in the coordinates to find a pattern.

If you started with a polygon that had a vertex  $(3,1)$  and you rotated the point  $180^\circ$  about the origin, what would the new coordinate be? \_\_\_\_\_

If you started with a polygon that had a vertex  $(x,y)$  and rotated the point  $180^\circ$  about the origin, its new coordinate would be \_\_\_\_\_