

Rotations on the Plane

Individually:

Draw a quadrilateral ABCD in the first quadrant of the coordinate plane so that one of the vertices is at the origin (0, 0).

This is your initial shape.

Using the origin as the point of rotation, rotate your shape 90° *counterclockwise* three times. After each 90° rotation, draw the new image and label its vertices (e.g., A'B'C'D').

Record the coordinates in the table below.

					Rotations on the Plane		
Coordinates of Original Vertices				90°	180°	270°	
				Counterclockwise	Counterclockwise	Counterclockwise	
A(,)				A'(,)			
B(,)				B'(,)			
C(,)				C'(,)			
D(,)				D'(,)			

Rotations on the Plane (cont'd)

Repeat the above, rotating your initial shape 90° *clockwise* each time. Draw each new image and label its vertices. Record the coordinates in the table below.

Rotations on the Plane			
Coordinates of Original Vertices	90° clockwise	180° clockwise	270° clockwise
A(,)	A'(,)		
B(,)	B'(,)		
C(,)	C'(,)		
D(,)	D'(,)		

How have the original coordinates changed?

Rotations on the Plane (cont'd)**As a group:**

Take turns showing each other your initial shape.

Try to predict what the coordinates of the vertices of the image will be for your group members' rotations.

- What patterns do you notice?
- Why do you think these patterns exist?
- Can you create any general rules about rotations around the origin?

