**Rotation Activity**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period:\_\_\_\_\_

You will be exploring a **TRANSFORMATION** called a **ROTATION**.

A **ROTATION** is a movement of a figure that involves rotating in

90 degree increments around the origin.

The new prime points will be in the quadrant that is the given number of degrees clockwise or counterclockwise from the original figure.

The following activities will help you discover what happens when a point, line, or figure is rotated a given number of degrees.

In a rotation, the original shape does not change in size or shape but does move to a new position on the coordinate plane.

You will need to remember the names of the quadrants:



II

I

IV

IIII

**EXAMPLE #1:**

**STEP 1**: The following is a 900 clockwise rotation:

B

**STEP 2:** List the pre-image points and the image

points below.

C

A

**A(\_\_\_\_,\_\_\_\_) A’ (\_\_\_\_,\_\_\_\_)**

**B(\_\_\_\_,\_\_\_\_) B’ (\_\_\_\_,\_\_\_\_)**

B’

A’

**C(\_\_\_\_,\_\_\_\_) C’ (\_\_\_\_,\_\_\_\_)**

In what quadrant is the

Pre-Image?\_\_\_\_\_\_ ; Image?\_\_\_\_\_\_

C’

Compare each set of PRE-IMAGE coordinates with the IMAGE coordinates. What is the relationship between the

pre-image coordinates and the image coordinates?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**EXAMPLE #2:**

**STEP 1**: The following is a 900 clockwise rotation:

A’

**STEP 2:** List the pre-image points and the image

points below.

C’

**A(\_\_\_\_,\_\_\_\_) A’ (\_\_\_\_,\_\_\_\_)**

B’

**B(\_\_\_\_,\_\_\_\_) B’ (\_\_\_\_,\_\_\_\_)**

C

**C(\_\_\_\_,\_\_\_\_) C’ (\_\_\_\_,\_\_\_\_)**

In what quadrant is the

A

Pre-Image?\_\_\_\_\_\_ ; Image?\_\_\_\_\_\_

B

Compare each set of PRE-IMAGE coordinates with the IMAGE coordinates . What is the relationship between the

pre-image coordinates and the image coordinates?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Using the two examples above, describe what happens to the coordinates in**

**a 900 clockwise rotation?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the rule you have discovered, find the prime coordinates for a line with

pre-image points at (2, -6) (\_\_\_\_,\_\_\_\_)

 (7, -1) (\_\_\_\_,\_\_\_\_)

**EXAMPLE #3:**

**STEP 1**: The following is a 900 counter-clockwise rotation:

C’

B

**STEP 2:** List the pre-image points and the image

points below.

C

A

**A(\_\_\_\_,\_\_\_\_) A’ (\_\_\_\_,\_\_\_\_)**

B’

A’

**B(\_\_\_\_,\_\_\_\_) B’ (\_\_\_\_,\_\_\_\_)**

**C(\_\_\_\_,\_\_\_\_) C’ (\_\_\_\_,\_\_\_\_)**

In what quadrant is the

Pre-Image?\_\_\_\_\_\_ ; Image?\_\_\_\_\_\_

Compare each set of PRE-IMAGE coordinates with the IMAGE coordinates. What is the relationship between the

pre-image coordinates and the image coordinates?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**EXAMPLE #4:**

**STEP 1**: The following is a 900 counter-clockwise rotation:

**STEP 2:** List the pre-image points and the image

points below.

**A(\_\_\_\_,\_\_\_\_) A’ (\_\_\_\_,\_\_\_\_)**

C’

**B(\_\_\_\_,\_\_\_\_) B’ (\_\_\_\_,\_\_\_\_)**

B’

C

**C(\_\_\_\_,\_\_\_\_) C’ (\_\_\_\_,\_\_\_\_)**

In what quadrant is the

A’

A

Pre-Image?\_\_\_\_\_\_ ; Image?\_\_\_\_\_\_

B

Compare each set of PRE-IMAGE coordinates with the IMAGE coordinates . What is the relationship between the

pre-image coordinates and the image coordinates?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Using the two examples above, describe what happens to the coordinates in**

**a 900 counter-clockwise rotation?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the rule you have discovered, find the prime coordinates for a line with

pre-image points at (2, -6) (\_\_\_\_,\_\_\_\_)

 (7, -1) (\_\_\_\_,\_\_\_\_)

**EXAMPLE #5:**

**STEP 1**: The following is a 1800 rotation:

B

**STEP 2:** List the pre-image points and the image

points below.

C

A

**A(\_\_\_\_,\_\_\_\_) A’ (\_\_\_\_,\_\_\_\_)**

**B(\_\_\_\_,\_\_\_\_) B’ (\_\_\_\_,\_\_\_\_)**

C’

A’

**C(\_\_\_\_,\_\_\_\_) C’ (\_\_\_\_,\_\_\_\_)**

In what quadrant is the

B’

Pre-Image?\_\_\_\_\_\_ ; Image?\_\_\_\_\_\_

Compare each set of PRE-IMAGE coordinates with the IMAGE coordinates. What is the relationship between the

pre-image coordinates and the image coordinates?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**EXAMPLE #6:**

**STEP 1**: The following is a 1800 clockwise rotation:

A’

B’

**STEP 2:** List the pre-image points and the image

points below.

**A(\_\_\_\_,\_\_\_\_) A’ (\_\_\_\_,\_\_\_\_)**

C’

**B(\_\_\_\_,\_\_\_\_) B’ (\_\_\_\_,\_\_\_\_)**

C

**C(\_\_\_\_,\_\_\_\_) C’ (\_\_\_\_,\_\_\_\_)**

In what quadrant is the

A

Pre-Image?\_\_\_\_\_\_ ; Image?\_\_\_\_\_\_

B

Compare each set of PRE-IMAGE coordinates with the IMAGE coordinates . What is the relationship between the

pre-image coordinates and the image coordinates?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Using the two examples above, describe what happens to the coordinates in**

**a 1800 rotation?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Using the rule you have discovered, find the prime coordinates for a line with

pre-image points at (2, -6) (\_\_\_\_,\_\_\_\_)

 (7, -1) (\_\_\_\_,\_\_\_\_)