Remember, in Math the word rotate means to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a figure.

When peforming rotations, you should ask yourself 3 questions:

90° means: rotate to the

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

180° means rotate to the

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

**In What Direction?**



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



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

***OR***

**Around What Point?**

The origin?

**OR**

A point?

**How Far?**

**Example 1:** Rotating clockwise around the origin.

Draw the rotation of triangle GHI 180˚ clockwise.

Draw the rotation of figure ABCD 90˚ clockwise.



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**D**

**A**

**B**

**C**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**I**

**G**

**H**

**How To Perform**

**a ROTATION…**

**Step 5:** Count the same number of units from the finish line and plot the point.

**Step 1:** Identify and **mark** a starting line.

**Step 2:** Predict what quadrant your image will be in.

**Step 3:** Rotate the starting line the given degrees and **mark** a finish line.

**Step 4:** Pick a point and count from the starting line.

**Step 6:** Connect the dots and check your work!

**You Try 1!**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**Y**

**X**

**Z**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**V**

**T**

**U**

**Example 2:** Rotating counter-clockwise around the origin.

Draw the rotation of triangle XYZ 180˚ clockwise.

Draw the rotation of triangle TUV 90˚ clockwise.



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**A**

**B**

**C**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**C**

**A**

**B**

Draw the rotation of figure ABC 180˚ counter-clockwise.

Draw the rotation of triangle ABC 90˚ counter-clockwise.

**Think about it…**

If a figure is in quadrant 1 and rotated 180˚ clockwise, how much more must you rotate to get back to where you started? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If a figure is in quadrant 1 and rotated 90˚ clockwise, how much more must you rotate to get back to where you started? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**You Try 2!**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**C**

**A**

**B**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**V**

**T**

**U**

Draw the rotation of figure ABC 90˚ counter- clockwise.

Draw the rotation of triangle TUV 180˚ counter-clockwise.

**Example 3:** Rotating around a point.

Rotating around a point is like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in basketball.



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**A**

**B**

**C**

Draw the rotation of triangle ABC 180˚ clockwise around point A.

Draw the rotation of triangle XYZ 90˚ counterclockwise around point Y.



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**Y**

**X**

**Z**

**You Try 3!**

Draw the rotation of triangle XYZ 90˚ clockwise around point Z.



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**X**

**Y**

**Z**

**W**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

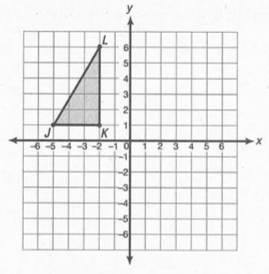
**X**

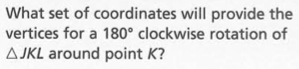
**Z**

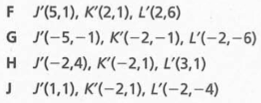
**Y**

Draw the rotation of rectangle WXYZ 180˚ counterclockwise around point X.

What are some common **BLUNDERS** on these types of problems?



**Sample Test Question:**



**Independent Practice**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**2)**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**1)**

Draw the rotation of figure ABC 90˚ clockwise.

Draw the rotation of triangle TUV 90˚ clockwise.

**C**

**A**

**B**

**V**

**T**

**U**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**4)**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**3)**

Draw the rotation of triangle ABC 180˚ clockwise.

Draw the rotation of triangle XYZ 180˚ clockwise.

**A**

**B**

**C**

**Y**

**X**

**Z**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**6)**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**5)**

Draw the rotation of figure ABC 90˚ counterclockwise.

Draw the rotation of triangle TUV 180˚ counterclockwise.

**C**

**A**

**B**

**V**

**T**

**U**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**8)**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**7)**

Draw the rotation of triangle ABC 90˚ counterclockwise.

Draw the rotation of quadrilateral WXYZ 180˚ counterclockwise.

**A**

**B**

**C**

**X**

**Y**

**Z**

**W**

**Homework:** WB pg. 116 all.

**Exit Ticket**



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**C**

**A**

**B**

Draw the rotation of figure ABC 90˚ clockwise.



**-1**

**-2**

**-3**

**-4**

**-5**

**-6**

**-7**

**-8**

**-9**

**-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9**

*y-axis*

*x-axis*

**V**

**T**

**U**

Draw the rotation of triangle TUV 180˚ counterclockwise.