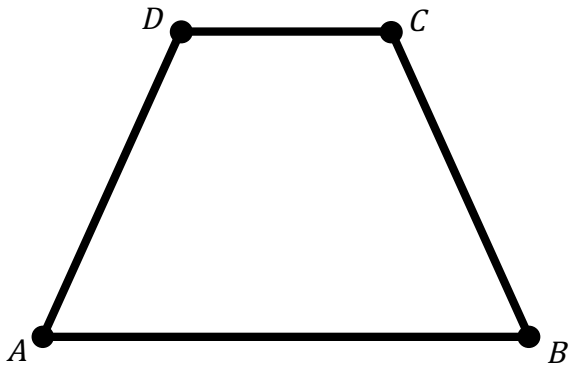
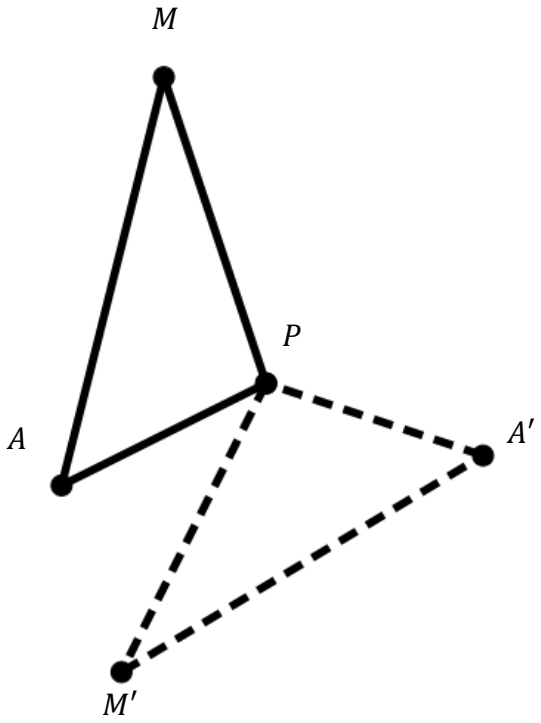
Name _____ Date_____

Introduction to Polygons – Part 1
Rotation of Polygons – Part 2
Independent Practice

1. Rotate polygon $ABCD$ 135° counterclockwise about B.



2. Consider the figure below.



Part A: Determine the point of rotation? Justify your answer.

Part B: Suppose the rotation is clockwise. Determine the degrees of rotation.

3. Consider the following standard.

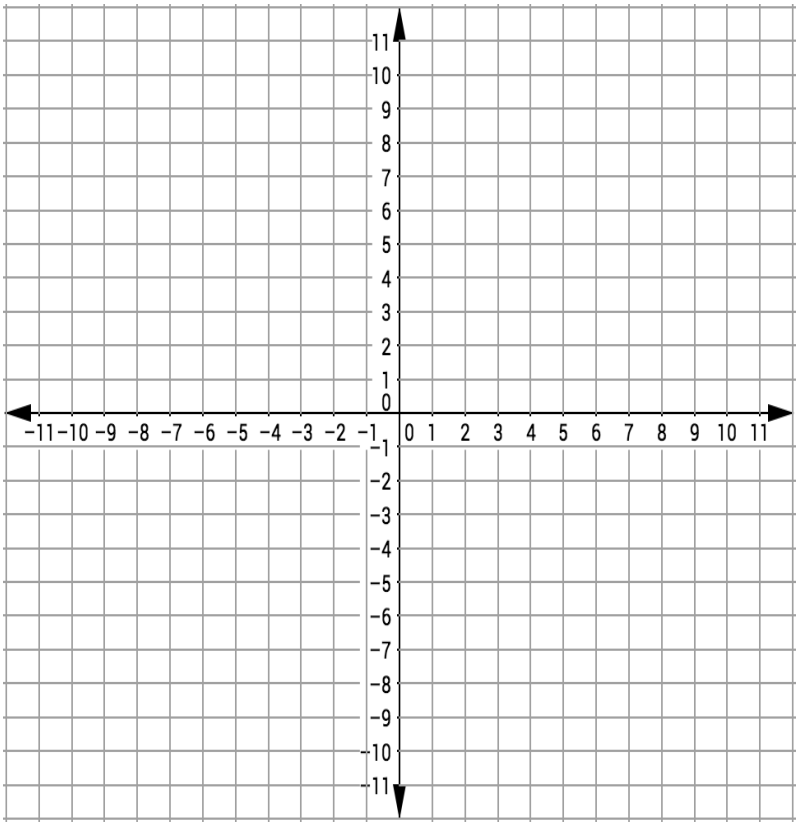
MAFS.912.G-CO.1.4.: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

Develop a definition of rotation in terms of any of the following: angles, circles, perpendicular lines, parallel lines, and line segments. Write your definition so that it can be used to define and perform any reflection.

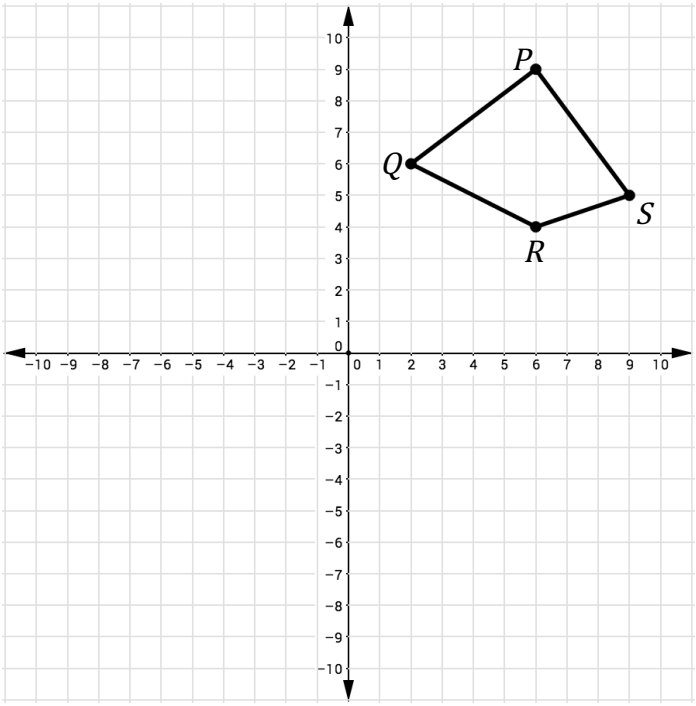
4. Consider the following statement.

   Reflecting a figure twice over intersecting lines yields the same result as a rotation $180°$ *about the point of intersection of the same lines.*

   Use the coordinate plane below to prove whether the statement is correct or incorrect.



5. Consider quadrilateral $PQRS$ on the coordinate plane below.

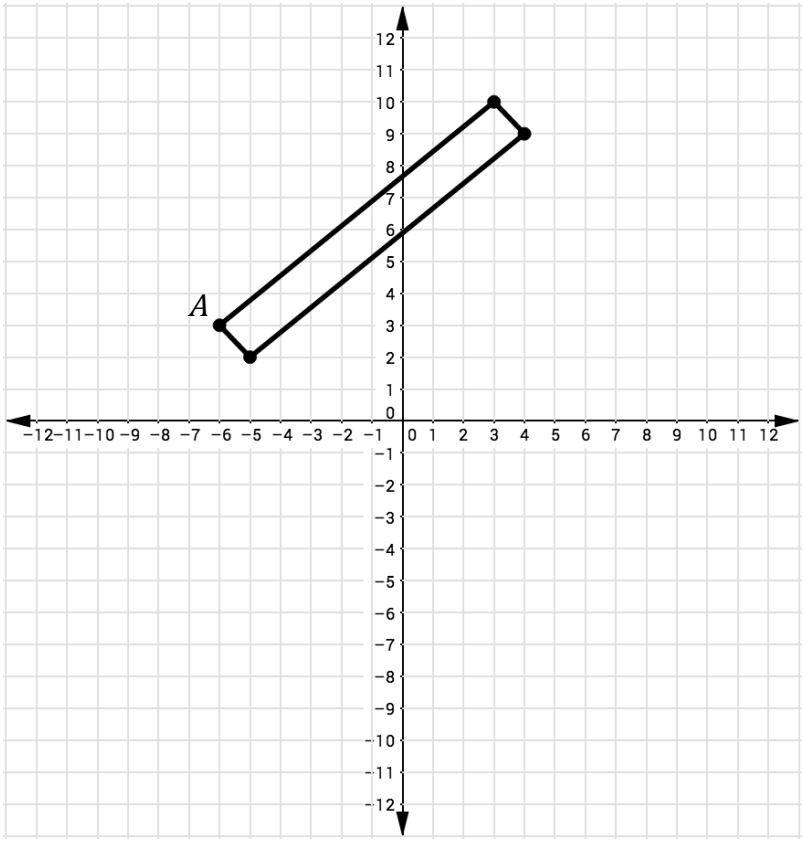


Suppose a rotation of $PQRS$ 45° counterclockwise about the origin to create $P'Q'R'S'$.

Part A: Determine which vertex or vertices will be on the second quadrant after the rotation. Justify your answer.

Part B: Consider the segment $\overline{Q'S'}$. Determine is the slope of $\overline{Q'S'}$ is positive, negative, zero or undefined.

6. Consider the quadrilateral below, in which A is the only vertex labeled.



Which of the following statements are correct about the quadrilateral in the above coordinate plane? Select all that apply.

- ☐ A rotation of $180°$ around A will place A' in the fourth quadrant.
- ☐ A counterclockwise rotation between $30°$ and $140°$ will completely fit the quadrilateral in the second quadrant.
- ☐ A clockwise rotation of $90°$ around the origin will place A' in the first quadrant.
- ☐ A counterclockwise rotation of $270°$ around the origin will place the quadrilateral between the third and fourth quadrants.
- ☐ A rotation of $180°$ around the origin will produce the same image as a reflection across the line $y = x$.