

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per. \_\_\_\_\_

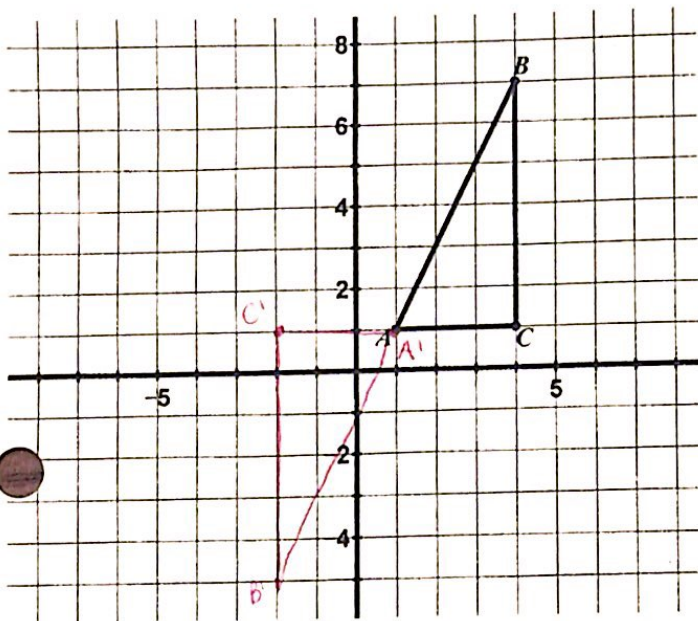
U10 CWK #5

Properties of Rotations Part II

In our prior work with rotations, the center of rotation was always at the origin. Today, we will look at rotations where the center may not be at the origin.

1. **Quiet Write:** In the space below, write everything you have learned about rotations so far.

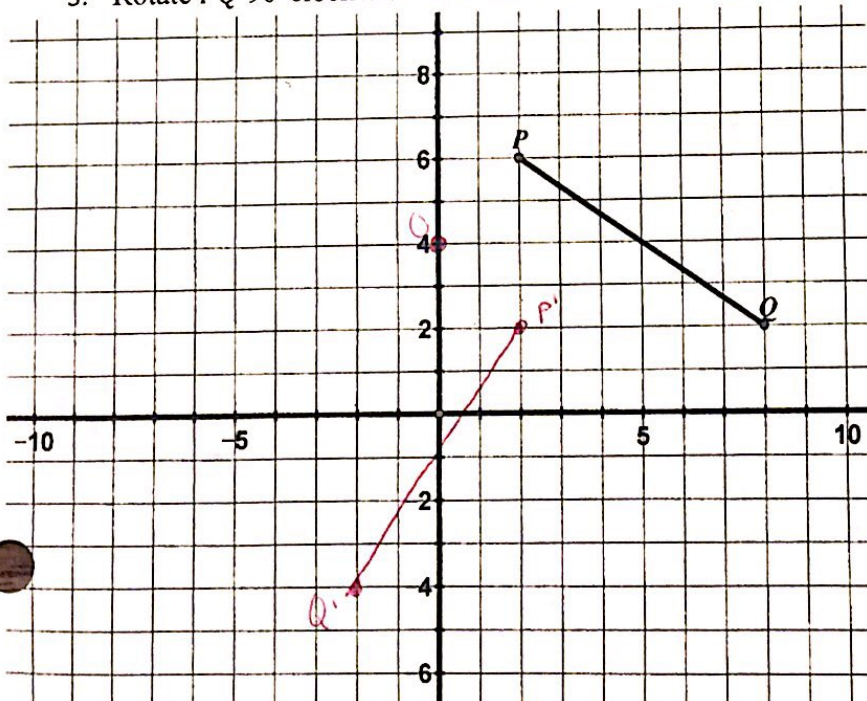
2. Rotate  $\triangle ABC$   $180^\circ$  counterclockwise with the center of rotation at  $(1, 1)$  and label the image.



a. How can you verify that your center of rotation is at  $(1, 1)$ ?

each corresponding point is the same distance away from center of rotation.

3. Rotate  $\overline{PQ}$   $90^\circ$  clockwise with the center of rotation at  $(0, 4)$ .



a. How can you verify using slope that your image is in fact a  $90^\circ$  rotation?

opposite reciprocals

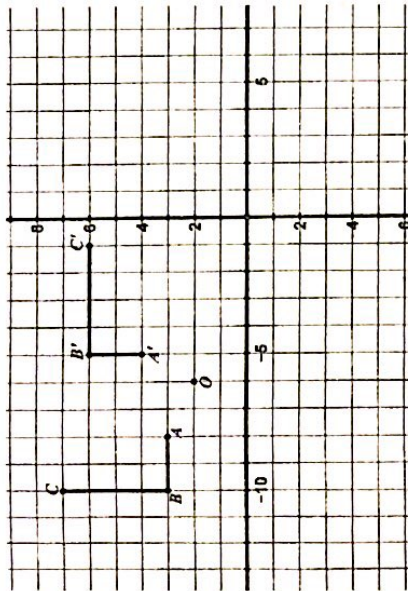
$$-\frac{4}{6} \Rightarrow \frac{6}{4}$$

b. How can you verify using distance that the center of rotation is at  $(0, 4)$ ?

opposite reciprocals

$$-\frac{2}{8} \Rightarrow \frac{8}{2}$$

4. A teacher asked her students to determine the center of rotation and angle of rotation for the rotation shown below.



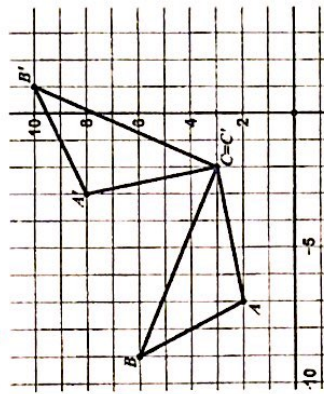
a. Aisha described the rotation as a rotation  $90^\circ$  clockwise with the center at  $O(-6, 2)$ . Do you agree with Aisha? Use the properties of rotations and numerical evidence to support your answer.

*A & A' are opposite reciprocals away from center of rotation. corresponding slopes are opposite reciprocals.*

Direction: For #5-7, find the angle of rotation (including the direction) and the center of rotation.

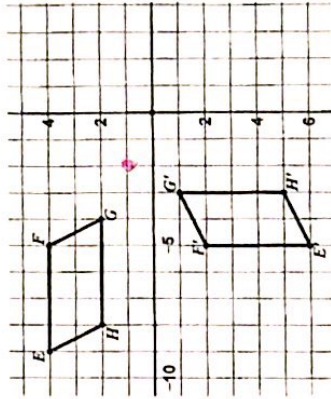
5. Angle of Rotation (including direction of rotation):  $90^\circ$  clockwise

Center of Rotation:  $(-2, 3)$



6. Angle of Rotation (including direction of rotation):  $90^\circ$  counterclockwise

Center of Rotation:  $(-2, 1)$



7. Angle of Rotation (including direction of rotation):  $180^\circ$  clockwise

Center of Rotation:  $(5, 0)$

