DISCOVERING THE DEFINITION OF ROTATION

A Guided Investigation

Part 1. Exercises

Protocol

1. With your group members assume a student role (i.e., S1, S2, …) based upon the number of students at your table.
2. Reference the work-distribution guide (the second page of this document) to determine which rotation exercises you are responsible for performing.
3. Perform the specified rotations.
4. When everyone has performed their rotations—and before proceeding to Part 2—take the time to compare you results with one or more students within your group who completed the same rotation. If discrepancies occur, please talk them through to resolution. By all means, invite me into the discussion if you are unable to resolve the discrepancy on your own.

Work-Distribution Guide

Three-student table
>   S1: A, B1, B2, C2, C4, C5, C6
>   S2: A, B1, C1, C2, C3, C4, C5
>   S3: A, B1, B2, C1, C3, C4, C6

Four-student table
>   S1: A, B1, C1, C4, C6
>   S2: A, B2, C2, C3, C5
>   S3: A, B1, C2, C4, C6
>   S4: A, B2, C1, C3, C5

Five-student table
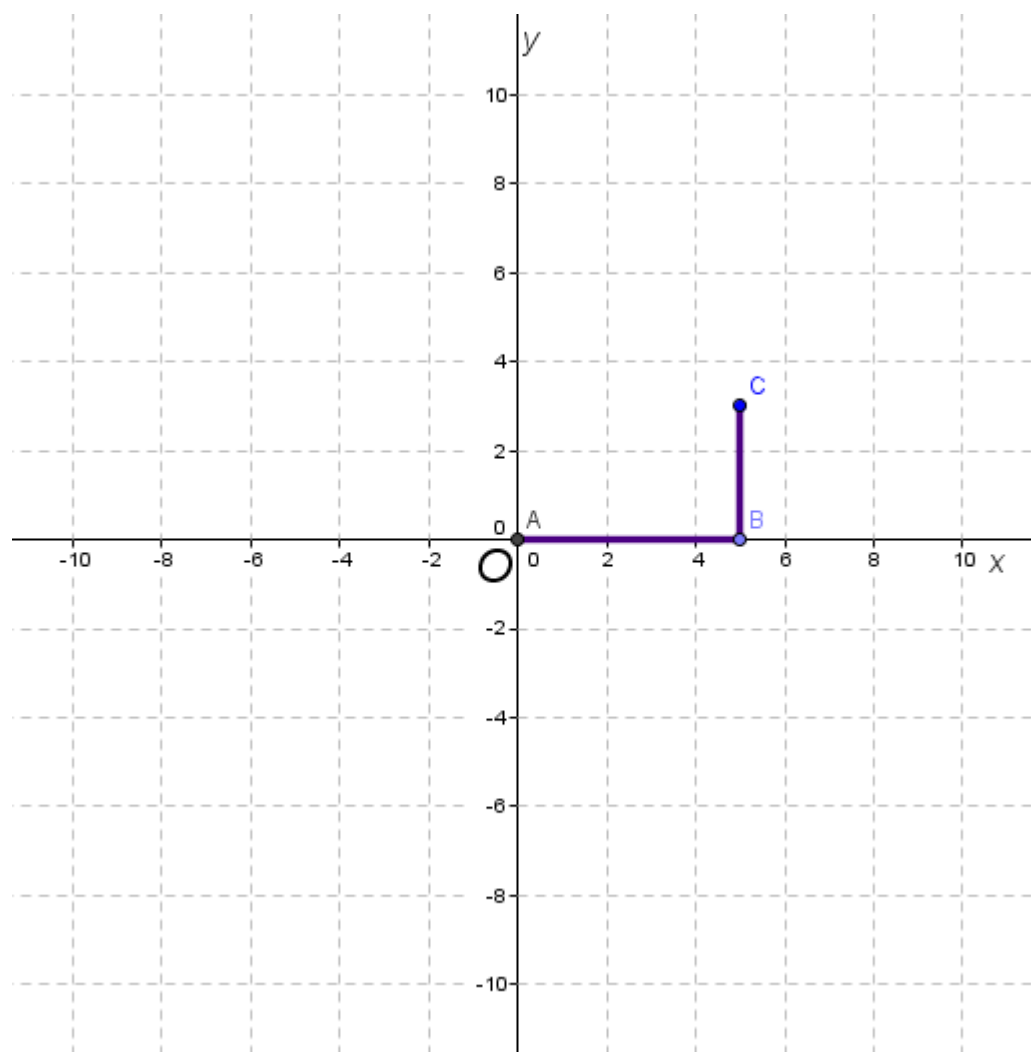>   S1: A, B1, C1, C3
>   S2: A, B1, C2, C4, C6
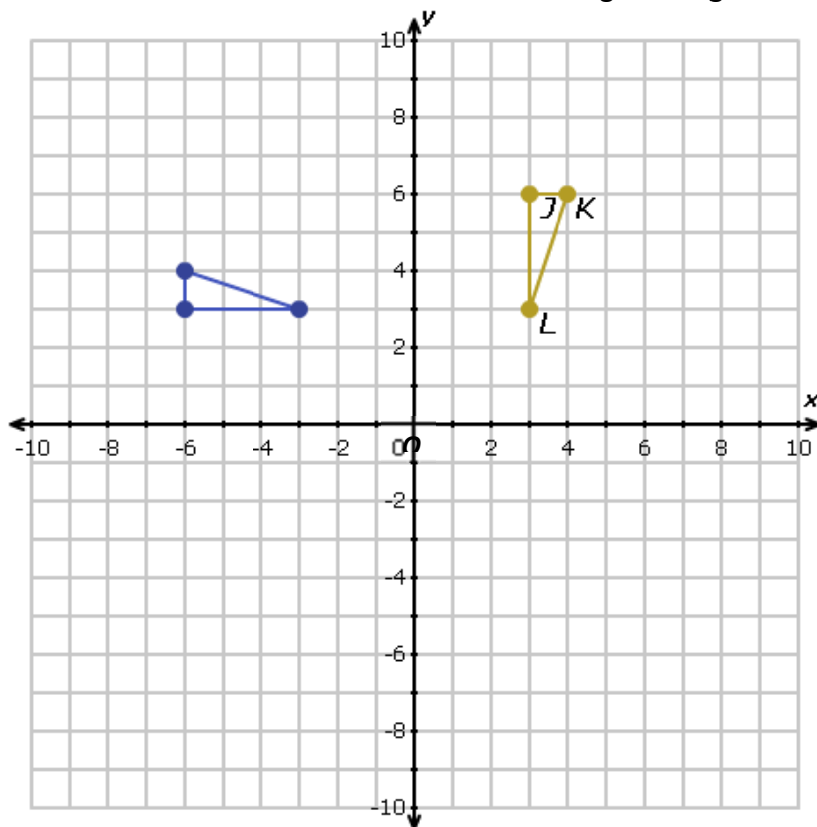>   S3: A, B1, C1, C5
>   S4: A, B2, C2, C4, C6
>   S5: A, B2, C3, C5

Exercise A. You Try It.

Directions. Sketch the image of the figure L after it is rotated $60°$ counterclockwise around point O (optionally denoted Ro$_{O, 60°}$).
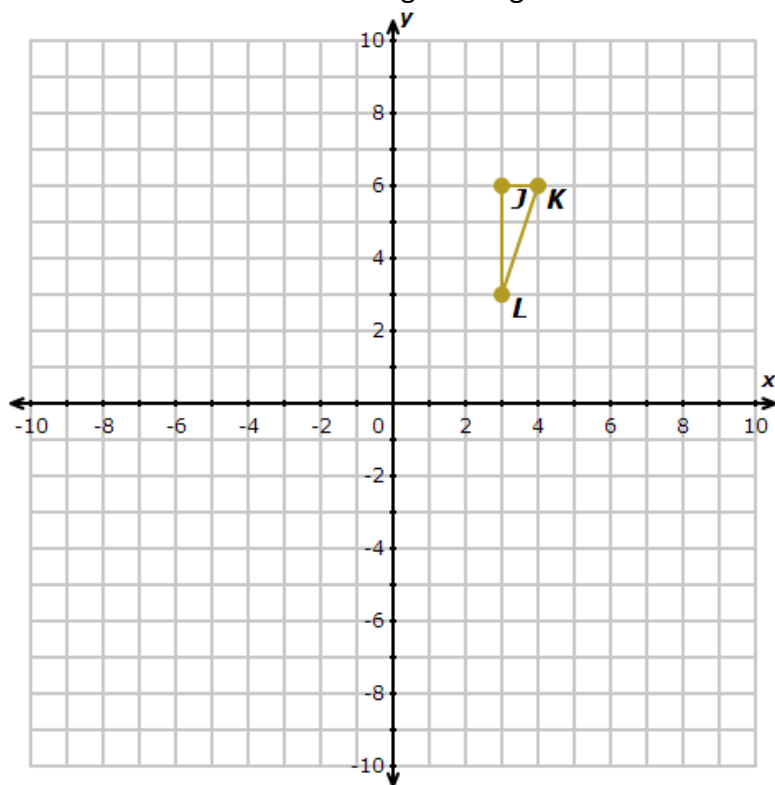
B.1. Directions. Use a protractor and compass to determine the placement of the image of △*JKL* after a 90° counterclockwise rotation using the origin as the center of rotation.
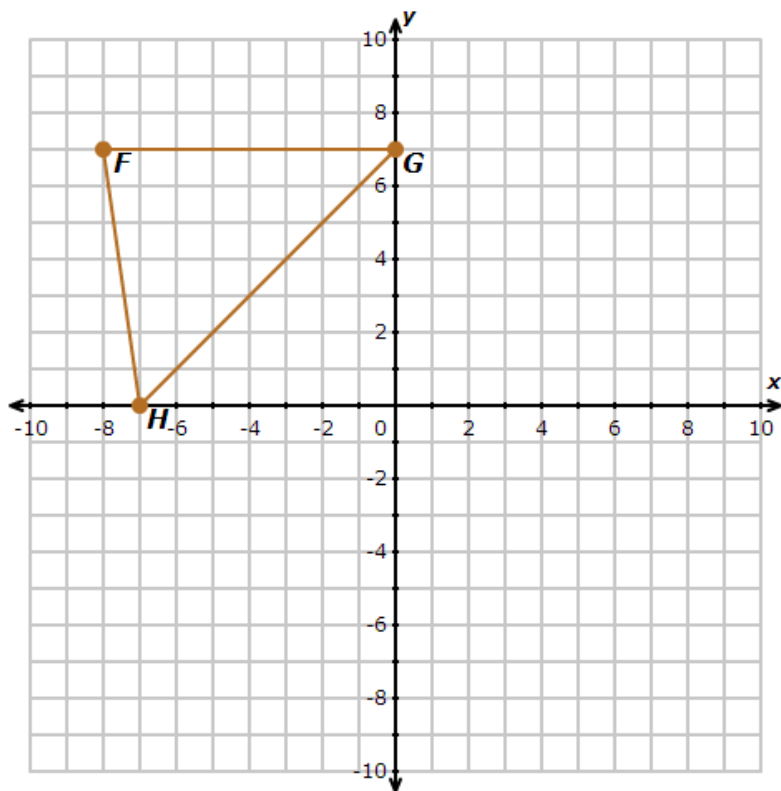

B.2. Directions. Use a protractor and compass to support the placement of the image of △*FGH* after a 180° rotation using the origin as the center of rotation.
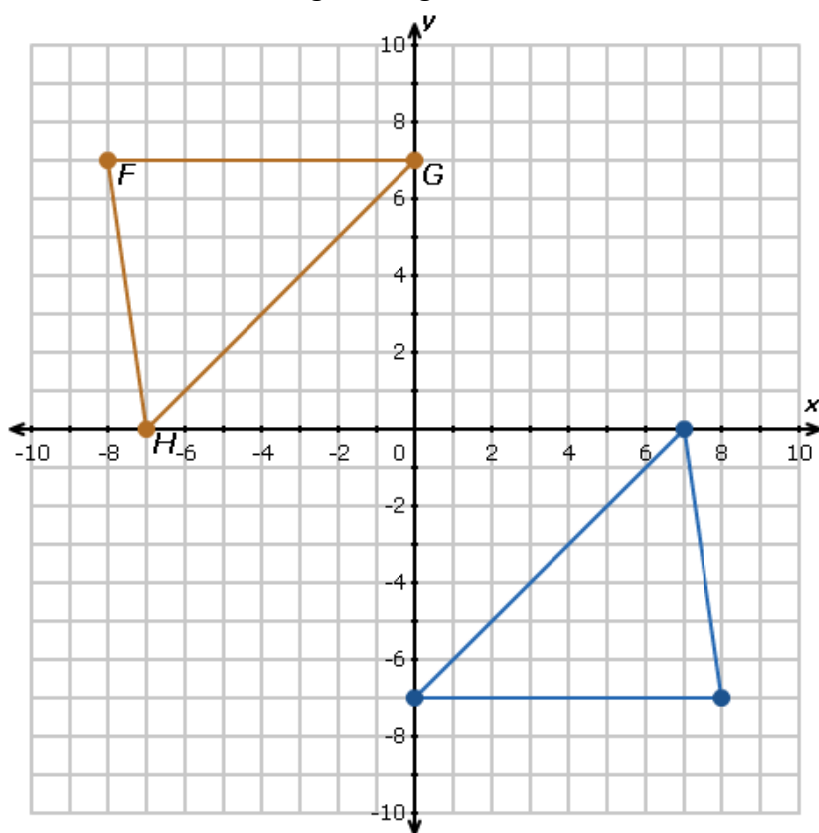
C.1. Directions. Use a protractor and compass to graph the image of △*JKL* after a 45°
counterclockwise rotation using the origin as the center of rotation.

C.2. Directions. Use a protractor and compass to graph the image of △*FGH* after a 180° rotation
using the origin as the center of rotation. Please record the coordinates of the vertices of the
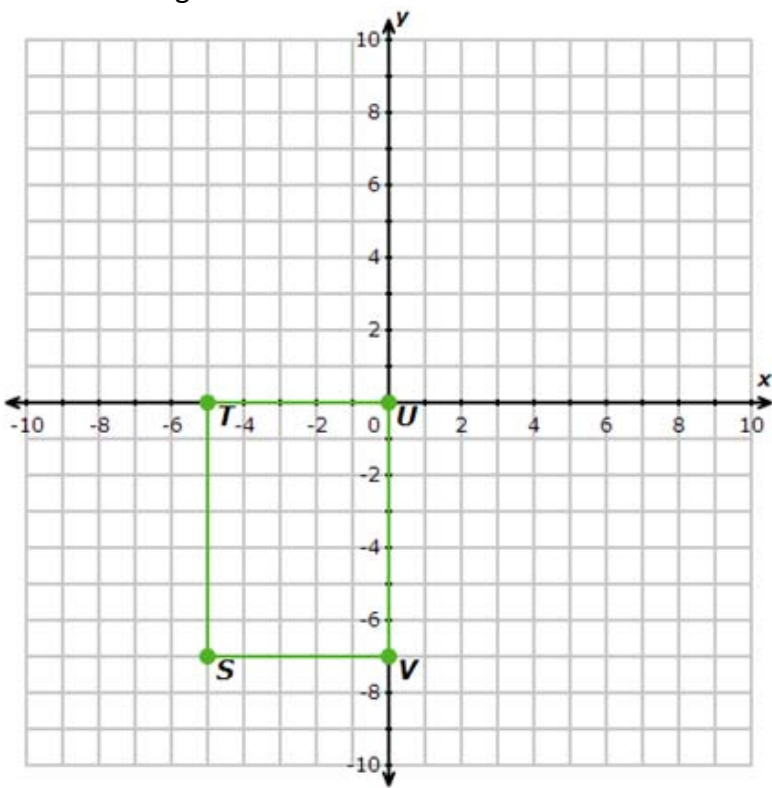resulting image.

$F(-8, 7)$ → $F'($____, ____$)$

$G(0, 7)$ → $G'($____, ____$)$

$H(-7, 0)$ → $H'($____, ____$)$

C.3. Directions. Use a protractor and compass to graph the image of *TUVS* after a 90° rotation around the origin. Record the coordinates of the vertices of the resulting image.

$T(-5, 0)$ → $T'($____, ____$)$

$U(0, 0)$ → $U'($____, ____$)$

$V(0, -7)$ → $V'($____, ____$)$

$S(-5, -7)$ → $S'($____, ____$)$

$E(1, 9)$ → $E'($____, ____$)$

C.4. Directions. Use a protractor and compass to graph the image of *EFGH* after a 0° rotation around the origin. Record the coordinates of the vertices of the resulting image.

C.5. Directions. Use a protractor and compass to graph the image of *SRQP* after a −90° rotation around the origin. Record the coordinates of the vertices of the resulting image.
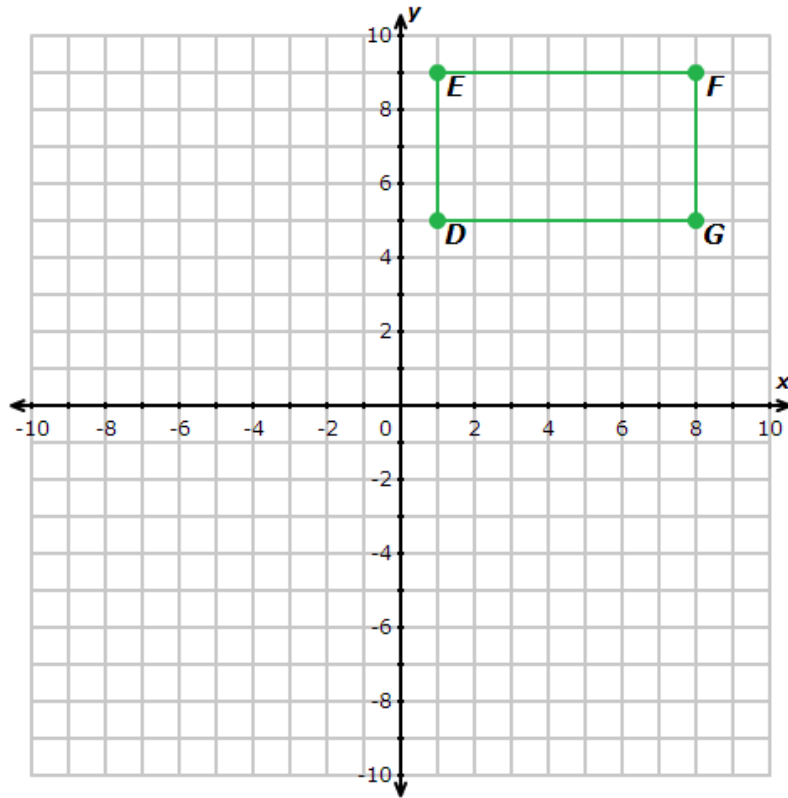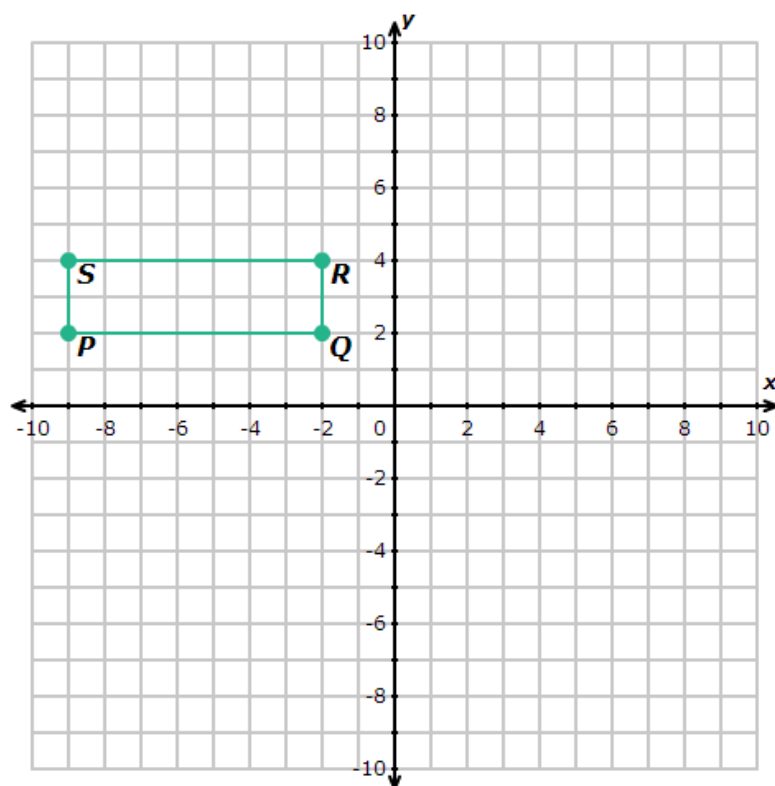
$S(-9, 4)$ → $S'(\underline{\quad}, \underline{\quad})$

$R(-2, 4)$ → $R'(\underline{\quad}, \underline{\quad})$

$Q(-2, 2)$ → $Q'(\underline{\quad}, \underline{\quad})$

$P(-9, 2)$ → $P'(\underline{\quad}, \underline{\quad})$

C.6. Directions. Use a protractor and compass to graph the image of $\triangle HGF$ after a 0° rotation around the origin. Record the coordinates of the vertices of the resulting image.
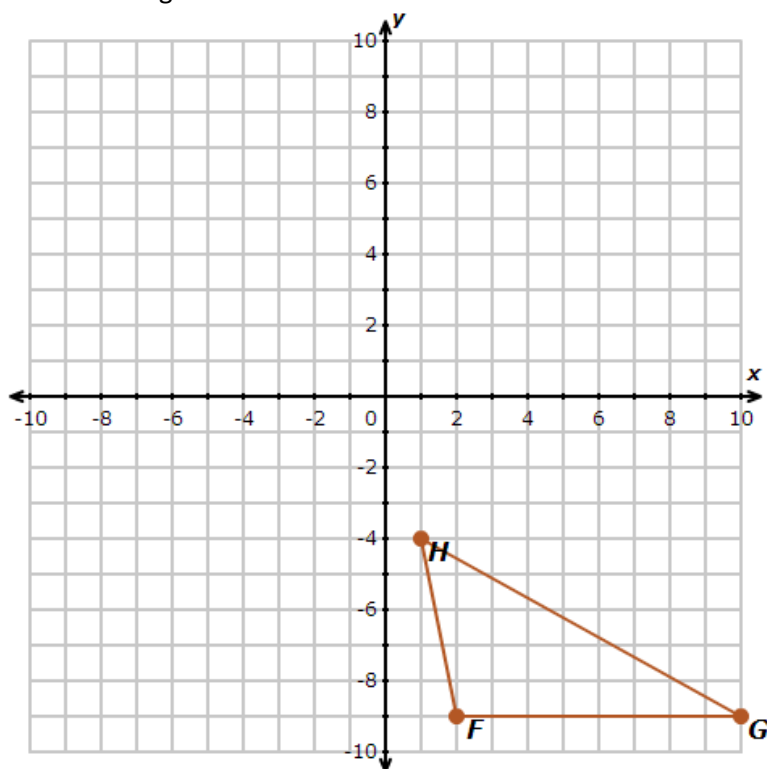

$H(1, -4)$ → $H'(\underline{\quad}, \underline{\quad})$

$G(10, -9)$ → $G'(\underline{\quad}, \underline{\quad})$

$F(2, -9)$ → $F'(\underline{\quad}, \underline{\quad})$

Images borrowed from: IXL http://www.ixl.com/math/geometry/rotations-graph-the-image