Section 6.4 Extra Practice

1. Use a compass and protractor to rotate each point according to the instructions. State the new coordinates for each point.
   a) (−2, 6) 90° counterclockwise about the origin
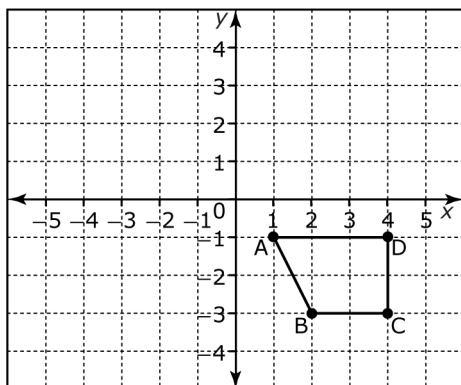   **b)** (−4, 3) 90° clockwise about the centre of rotation (−1, 2)

2. Use the rotation rule to rotate each point according to the instructions. State the new coordinates for each point.
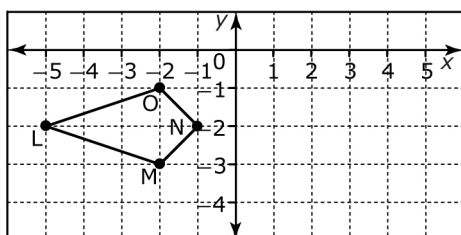   **a)** (3, 5) 180° about the origin
   b) (−1, −8) 270° counterclockwise about the origin

3. Use the rotation rule to rotate each shape according to the instructions.
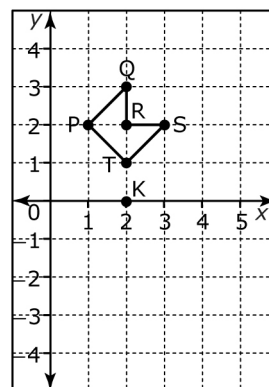   **a)** 180° about the origin

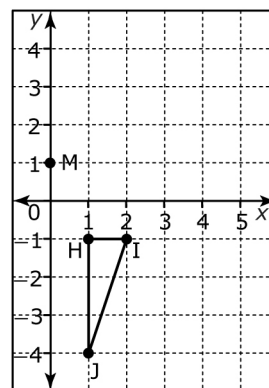   **b)** 90° counterclockwise about the origin

4. Use a compass and protractor to rotate each shape according to the instructions.
   a) 90° clockwise about the centre of rotation K

   b) 270° clockwise about the centre of rotation M

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5. On a coordinate grid, plot, rotate, and reflect each point as indicated. State the coordinates of the transformed point.
   a) (2, 5) Rotate 180° about the origin, and reflect over the x-axis.
   b) (−3, 4) Rotate 90° clockwise about the origin, and reflect over the y-axis.

6. On a coordinate grid, plot, rotate, and translate each point as indicated. State the coordinates of the transformed point.
   a) (−1, −6) Rotate 90° counterclockwise about the origin, and translate 6 units right.
   b) (3, −2) Rotate 180° about the origin, and translate 3 units down.
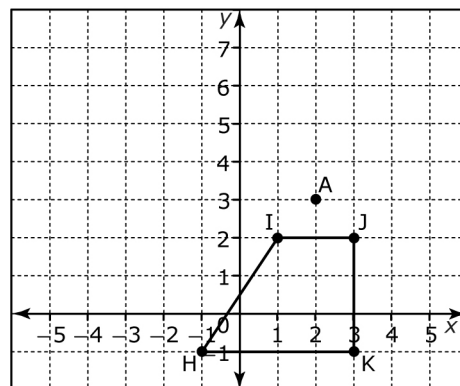
7. On a coordinate grid, plot, rotate, reflect, and translate each point as indicated. State the coordinates of the transformed point.
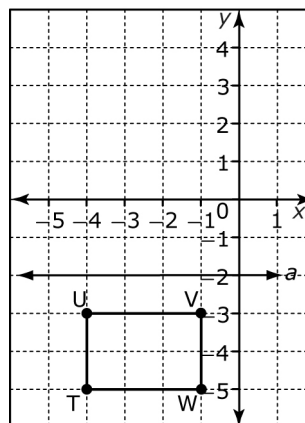   **a)** (2, 5) Rotate 90° clockwise about the origin, reflect over x = 1, and translate 2 units left.
   b) (−3, 4) Rotate 180°, reflect over y = −1, and translate 3 units up.

8. Transform each shape as instructed.
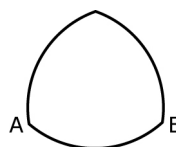   **a)** Rotate 180° about point A, and translate 2 units left.

   b) Rotate 90° clockwise about the origin, and reflect over line a.

9. a) Describe the angle of rotation if point A rotates clockwise to point B for each figure.
   b) How many lines of symmetry does each figure have?

   i)

   ii)