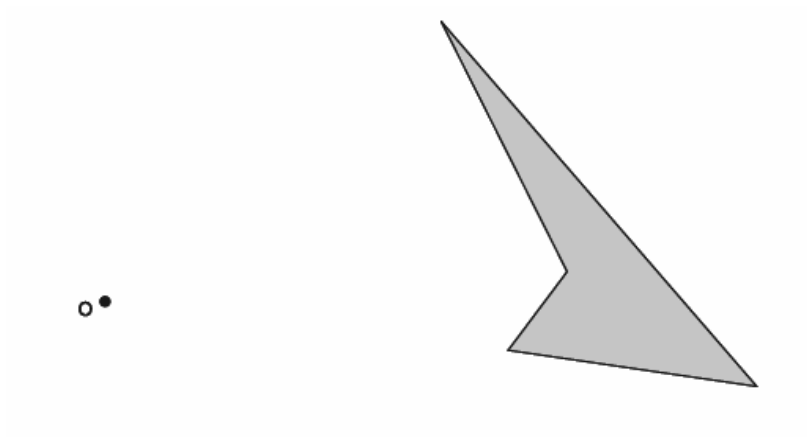Name _____   Date _____

1. Use the figure below to complete parts (a) and (b).

    a.   Use a compass and ruler to produce an image of the figure with center O and scale factor $r = 2$.

   b.   Use a ruler to produce an image of the figure with center O and scale factor $r = \frac{1}{2}$.

2. Use the diagram below to answer the questions that follow.

Let D be the dilation with center O and scale factor $r > 0$ so that $Dilation(P) = P'$ and $Dilation(Q) = Q'$.
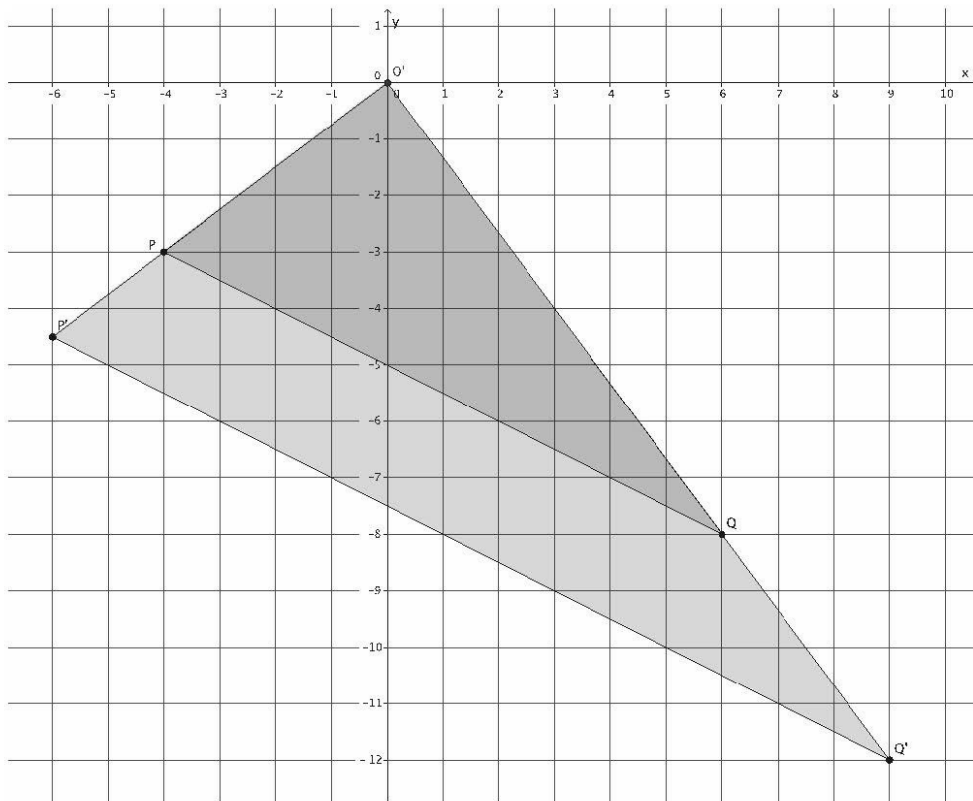

a. Use lengths $|OQ| = 10$ units and $|OQ'| = 15$ units to determine the scale factor r of dilation D. Describe how to determine the coordinates of P' using the coordinates of P.

b. If $|OQ| = 10$ units, $|OQ'| = 15$ units, and $|P'Q'| = 11.2$ units, determine $|PQ|$. Round your answer to the tenths place, if necessary.

3. Use a ruler and compass, as needed, to answer parts (a) and (b).

   a. Is there a dilation D with center O that would map figure $PQRS$ to figure $P'Q'R'S'$? Explain in terms of scale factor, center, and coordinates of corresponding points.
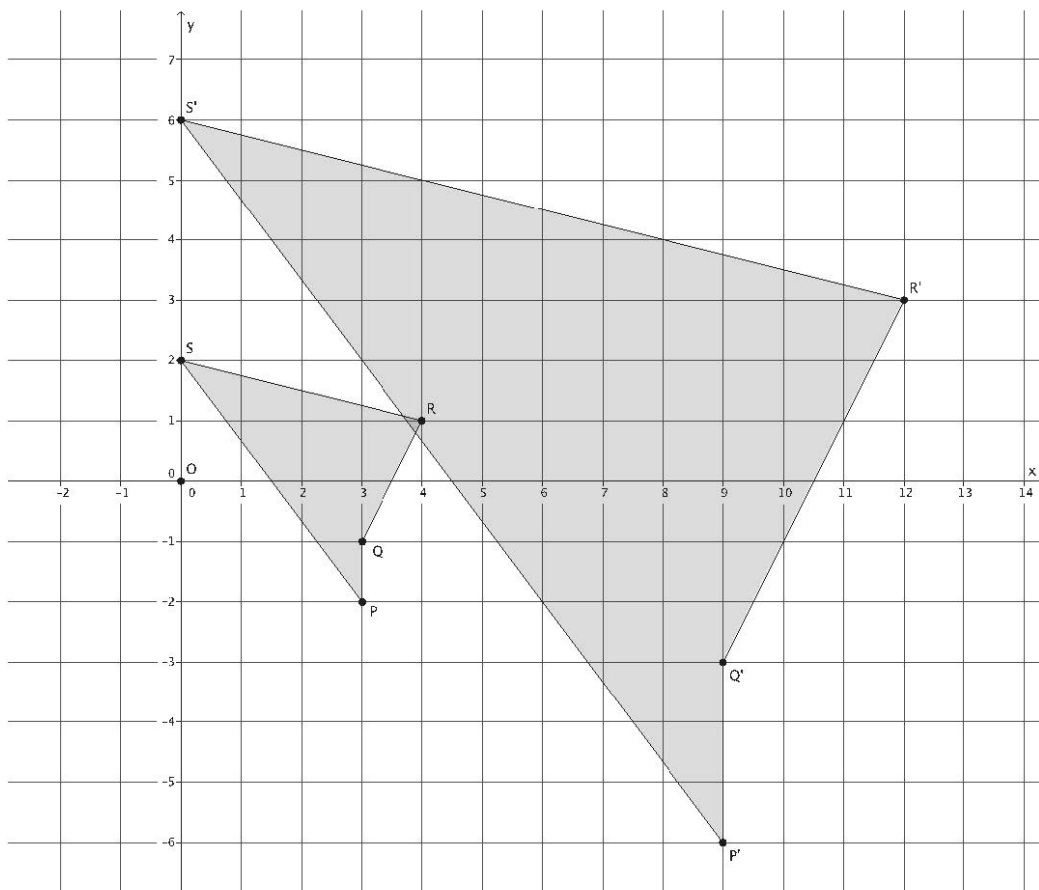
b. Is there a dilation D with center O that would map figure $PQRS$ to figure $P'Q'R'S'$? Explain in terms of scale factor, center, and coordinates of corresponding points.
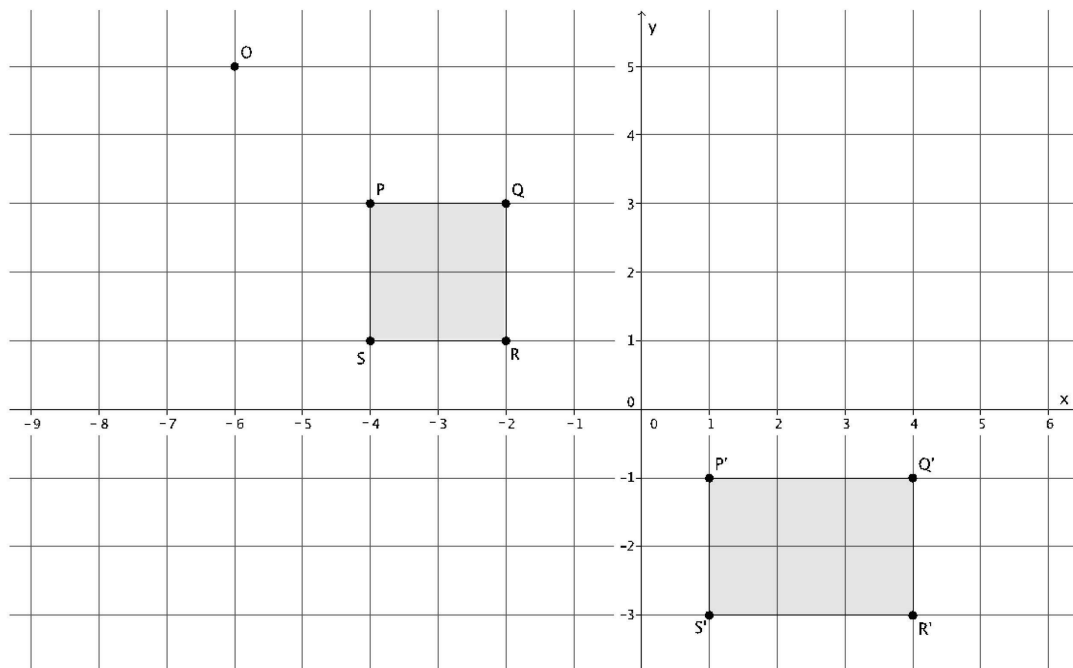
c.   Triangle ABC is located at points $A(-4, 3)$, $B(3, 3)$, and $C(2, -1)$ and has been dilated from the origin by a scale factor of 3. Draw and label the vertices of triangle ABC. Determine the coordinates of the dilated triangle $A'B'C'$, and draw and label it on the coordinate plane.