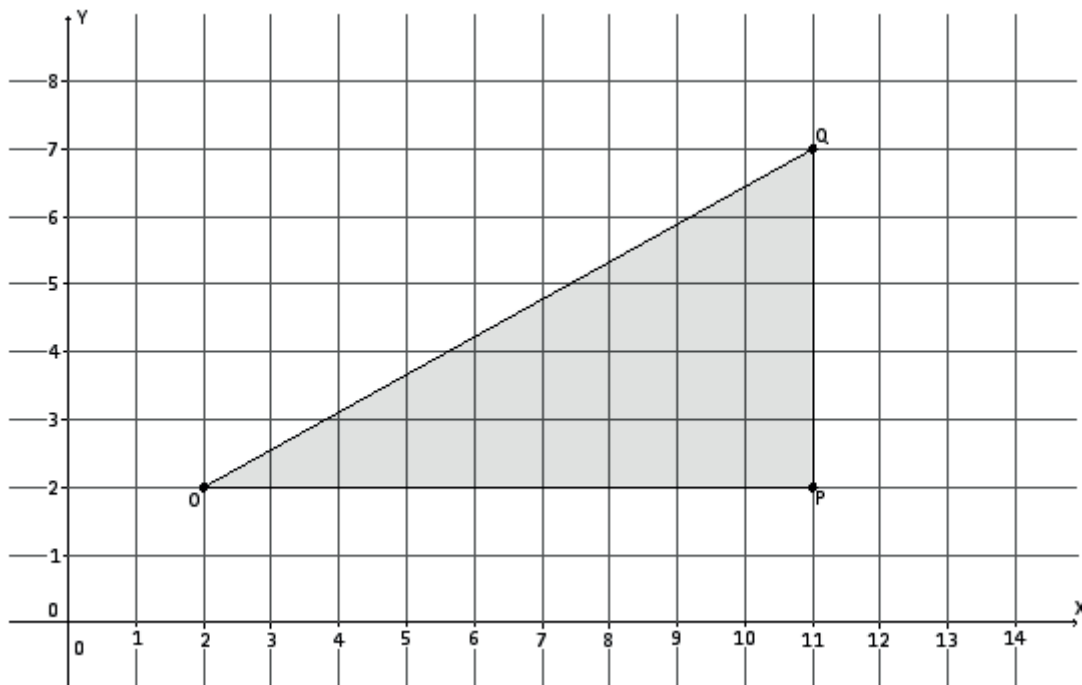Name _____   Date _____

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

a. Dilate $\triangle OPQ$ from center O and scale factor $r = \frac{4}{9}$. Label the image $\triangle OP'Q'$.

b. Find the coordinates of points P' and Q'.

c.   Are $\angle OQP$ and $\angle OQ'P'$ equal in measure? Explain.

d.   What is the relationship between the segments PQ and $P'Q'$? Explain in terms of similar triangles.

e.   If the length of segment OQ is 9.8 units, what is the length of segment OQ'? Explain in terms of similar triangles.

2. Use the diagram below to answer the questions that follow. The length of each segment is as follows:
    segment OX is 5 units, segment OY is 7 units, segment XY is 3 units, and segment $X'Y'$ is 12.6 units.
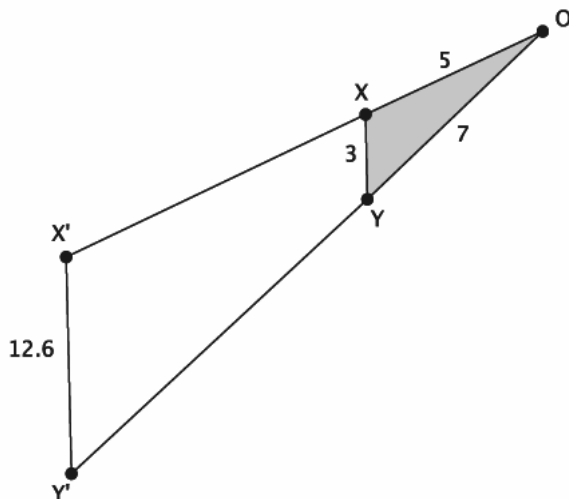
a. Suppose segment XY is parallel to segment $X'Y'$. Is $\triangle OXY$ similar to $\triangle OX'Y'$? Explain.

b. What is the length of segment OX'? Show your work.

c. What is the length of segment OY'? Show your work.

3. Given △ $ABC \sim$ △ $A'B'C'$ and △ $ABC \sim$ △ $A''B''C''$ in the diagram below, answer parts (a)–(c).
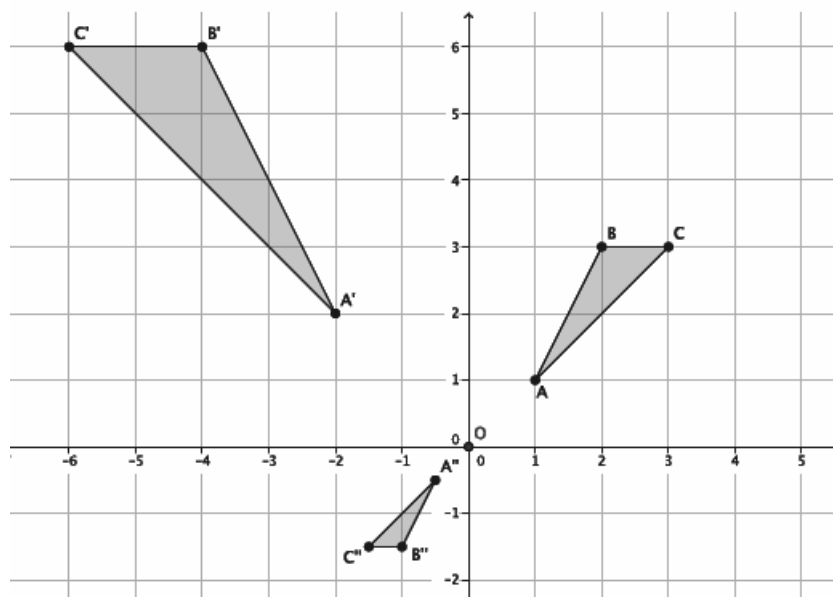
a. Describe the sequence that shows the similarity for △ ABC and △ $A'B'C'$.

b. Describe the sequence that shows the similarity for △ ABC and △ $A''B''C''$.

c. Is △ $A'B'C'$ similar to △ $A''B''C''$? How do you know?