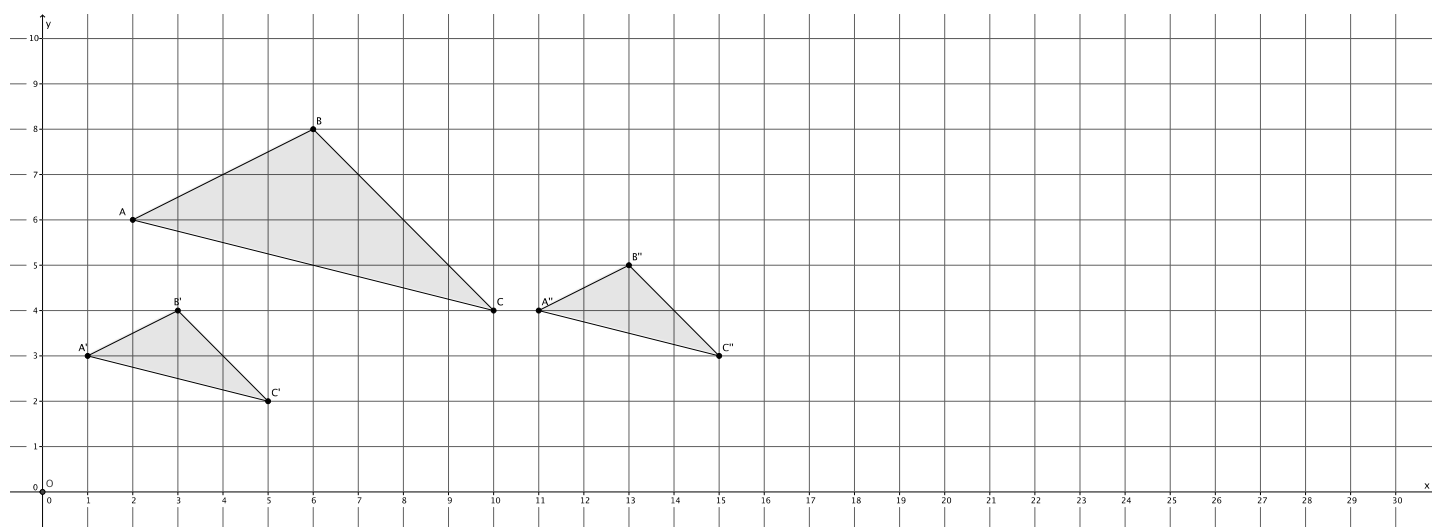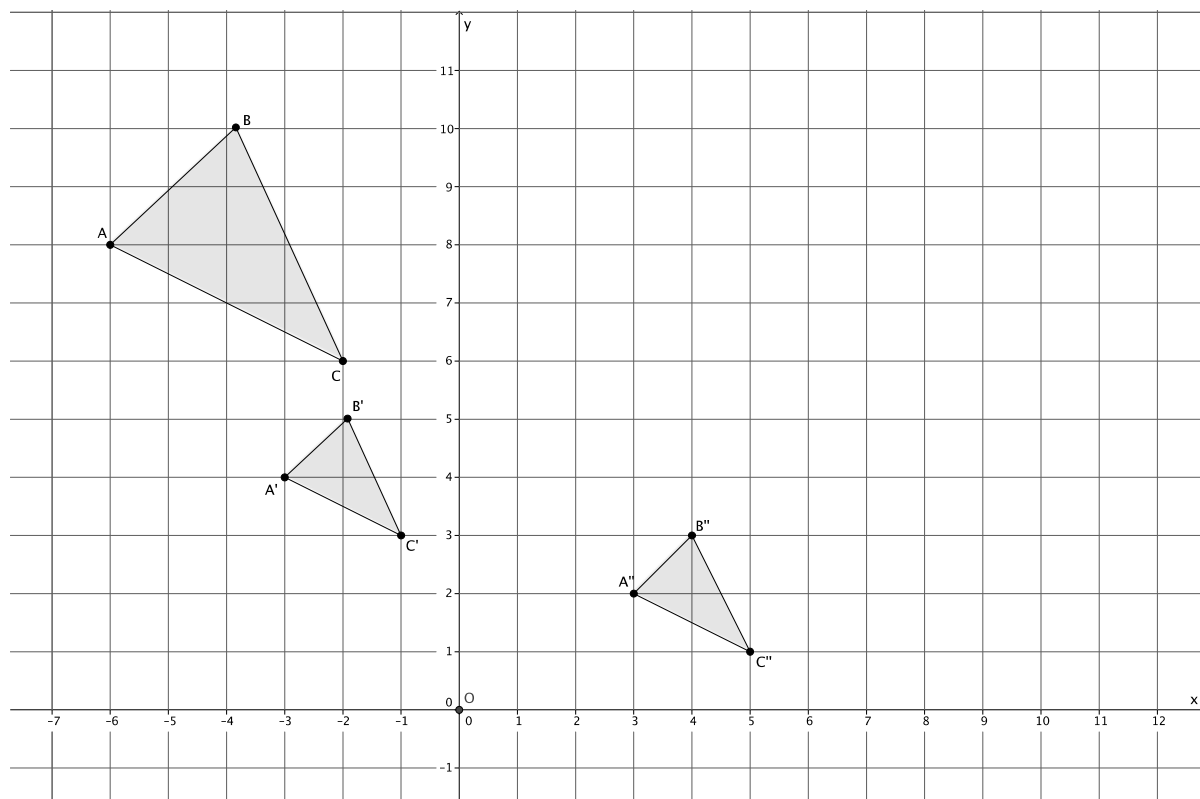# Lesson 8:  Similarity

## Classwork

### Example 1

In the picture below, we have a triangle $ABC$ that has been dilated from center $O$ by a scale factor of $r = \frac{1}{2}$.  It is noted by $A'B'C'$.  We also have triangle $A''B''C''$, which is congruent to triangle $A'B'C'$ (i.e., $\triangle A'B'C' \cong \triangle A''B''C''$).
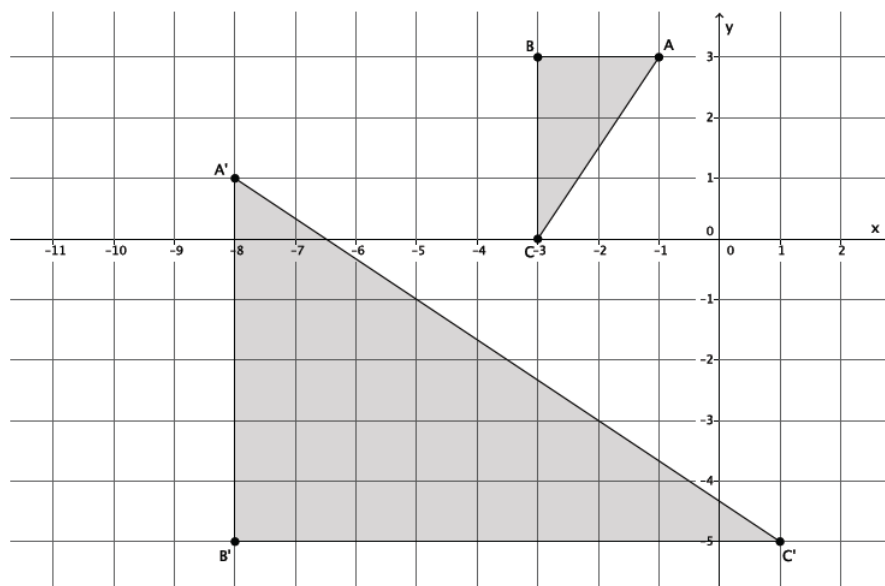


Describe the sequence that would map triangle $A''B''C''$ onto triangle $ABC$.
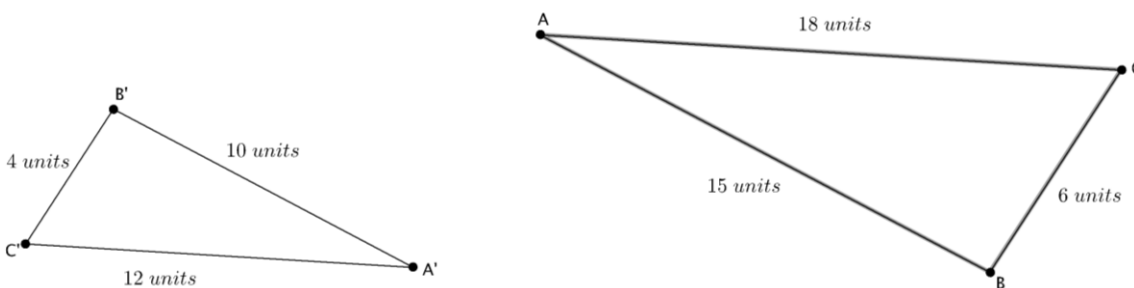
**Exercises 1–4**

1. Triangle $ABC$ was dilated from center $O$ by scale factor $r = \frac{1}{2}$. The dilated triangle is noted by $A'B'C'$. Another triangle $A''B''C''$ is congruent to triangle $A'B'C'$ (i.e., $\triangle A''B''C'' \cong \triangle A'B'C'$). Describe a dilation followed by the basic rigid motion that would map triangle $A''B''C''$ onto triangle $ABC$.
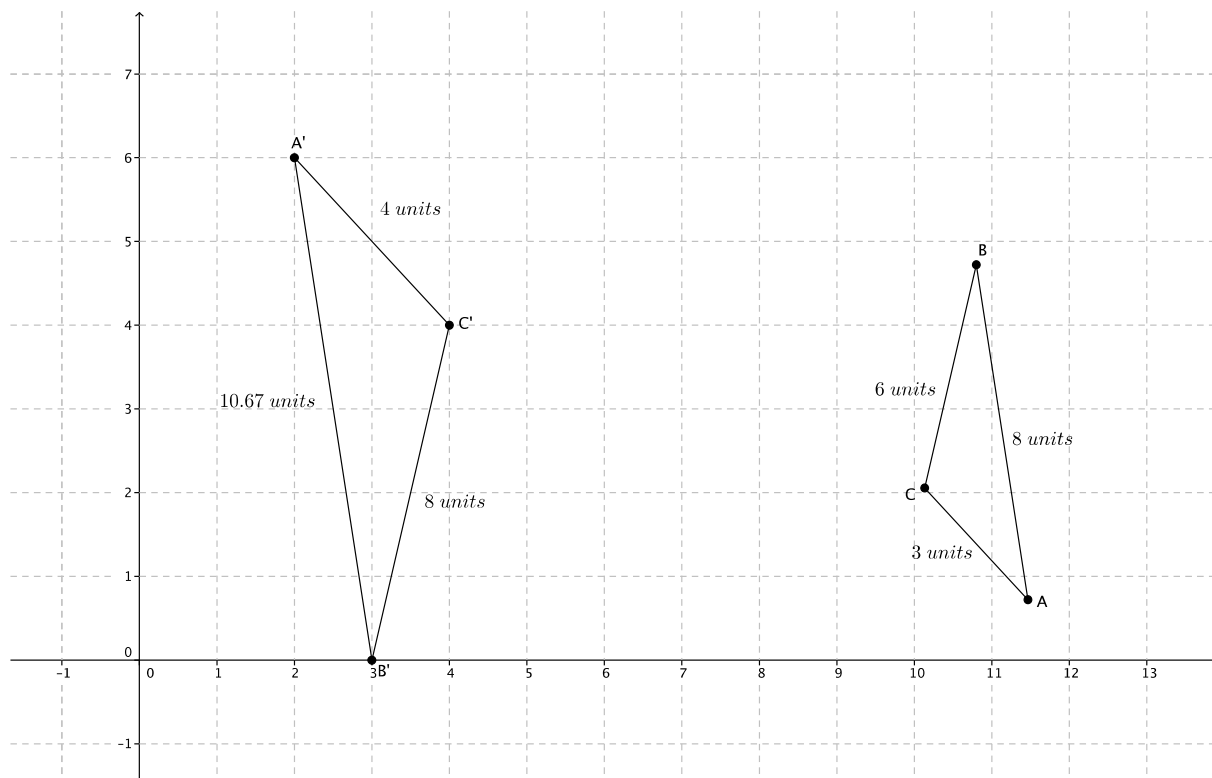
2.  Describe a sequence that would show $\triangle\,ABC \sim \triangle\,A'B'C'$.



3.  Are the two triangles shown below similar?  If so, describe a sequence that would prove $\triangle\,ABC \sim \triangle\,A'B'C'$.  If not, state how you know they are not similar.

4.  Are the two triangles shown below similar?  If so, describe a sequence that would prove $\triangle ABC \sim \triangle A'B'C'$.  If not, state how you know they are not similar.
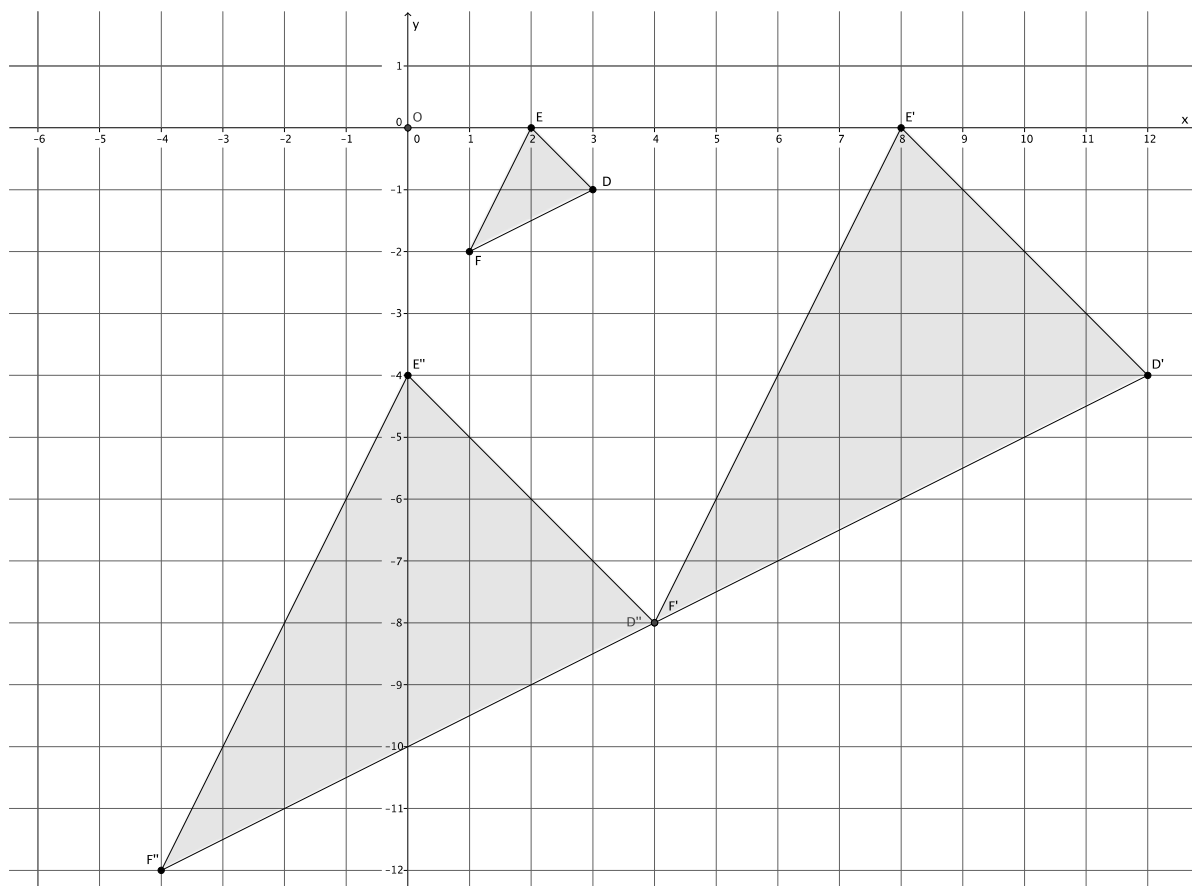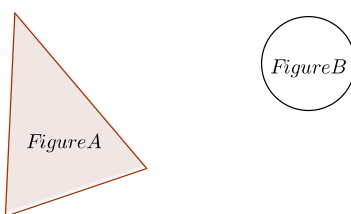
## Problem Set

1. In the picture below, we have a triangle $DEF$ that has been dilated from center $O$ by scale factor $r = 4$. It is noted by $D'E'F'$. We also have a triangle $D''E''F''$, which is congruent to triangle $D'E'F'$ (i.e., $\triangle D'E'F' \cong \triangle D''E''F''$). Describe the sequence of a dilation, followed by a congruence (of one or more rigid motions ) that would map triangle $D''E''F''$ onto triangle $DEF$.
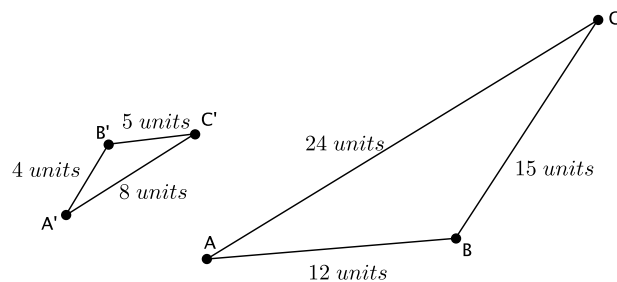
2.  Triangle $ABC$ was dilated from center $O$ by scale factor $r = \frac{1}{2}$.  The dilated triangle is noted by $A'B'C'$.  Another triangle $A''B''C''$ is congruent to triangle $A'B'C'$ (i.e., $\triangle A''B''C'' \cong \triangle A'B'C'$).  Describe the dilation followed by the basic rigid motions that would map triangle $A''B''C''$ onto triangle $ABC$.
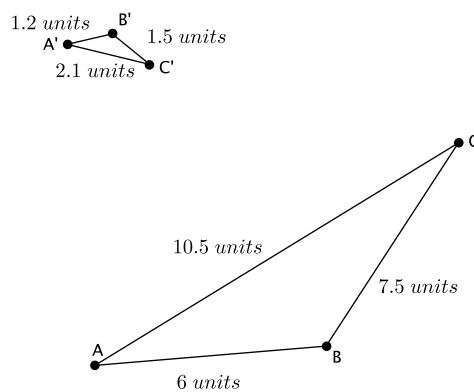


3.  Are the two figures shown below similar?  If so, describe a sequence that would prove the similarity.  If not, state how you know they are not similar.

4.  Triangle $ABC$ is similar to triangle $A'B'C'$ (i.e., $\triangle ABC \sim \triangle A'B'C'$).  Prove the similarity by describing a sequence that would map triangle $A'B'C'$ onto triangle $ABC$.



5.  Are the two figures shown below similar?  If so, describe a sequence that would prove $\triangle ABC \sim \triangle A'B'C'$.  If not, state how you know they are not similar.

6.  Describe a sequence that would show $\triangle ABC \sim \triangle A'B'C'$.