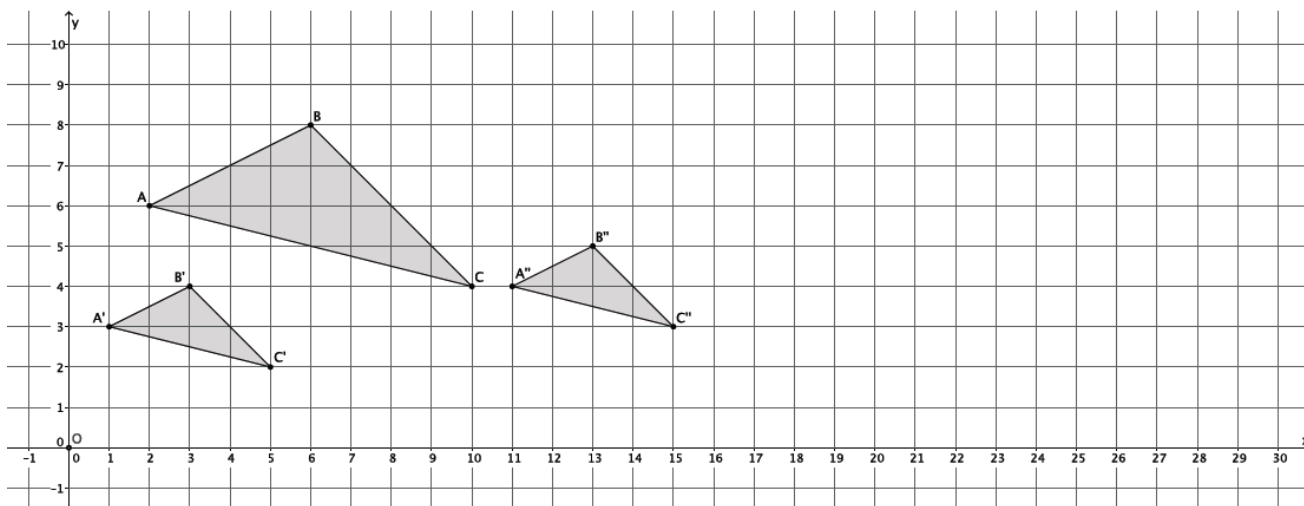


## Lesson 8: Similarity

### Classwork

#### Example 1

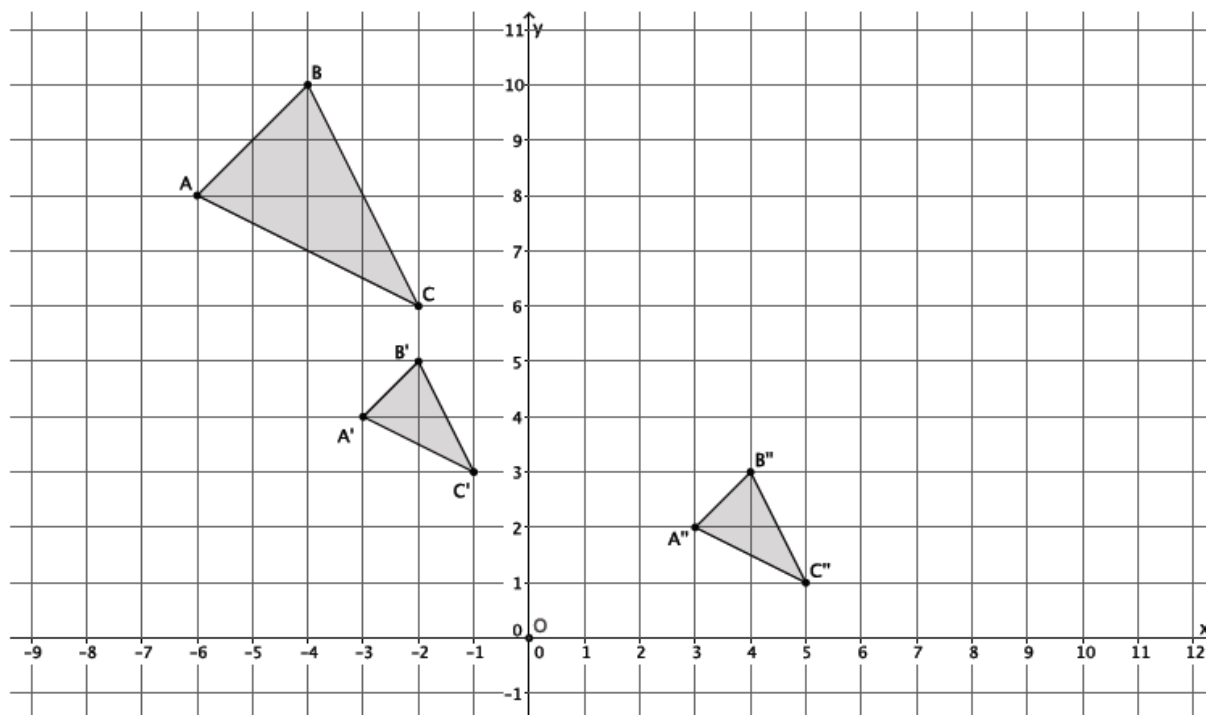
In the picture below, we have a triangle  $ABC$  that has been dilated from center  $O$  by a scale factor of  $r = \frac{1}{2}$ . It is noted by  $A'B'C'$ . We also have triangle  $A''B''C''$ , which is congruent to triangle  $A'B'C'$  (i.e.,  $\triangle A'B'C' \cong \triangle A''B''C''$ ).



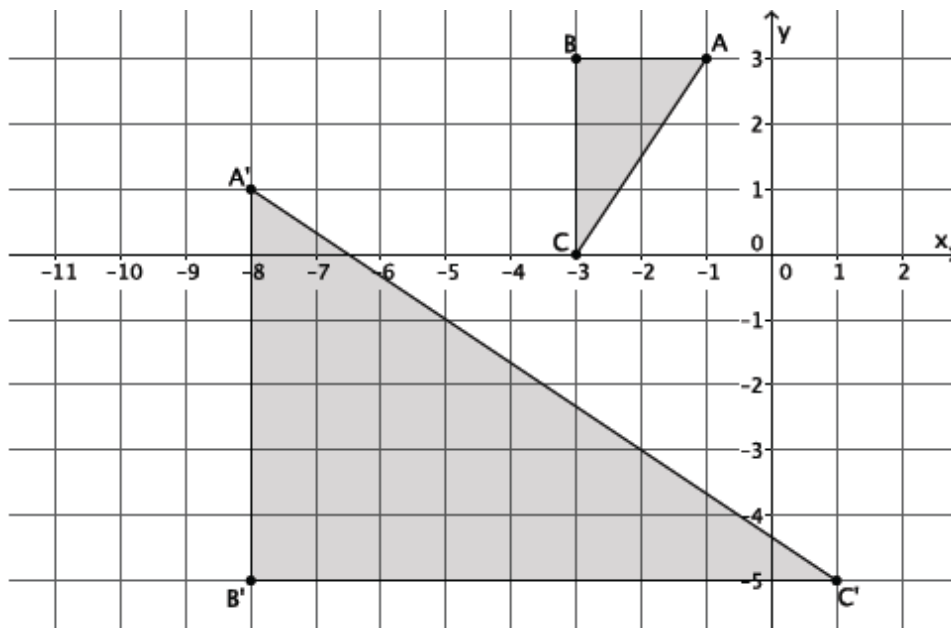
Describe the sequence that would map triangle  $A''B''C''$  onto triangle  $ABC$ .

## Exercises

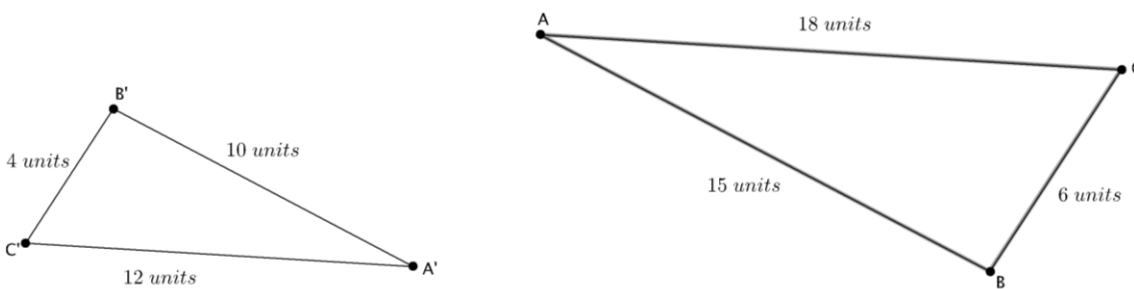
1. Triangle  $ABC$  was dilated from center  $O$  by scale factor  $r = \frac{1}{2}$ . The dilated triangle is noted by  $A'B'C'$ . Another triangle  $A''B''C''$  is congruent to triangle  $A'B'C'$  (i.e.,  $\triangle A''B''C'' \cong \triangle A'B'C'$ ). Describe a dilation followed by the basic rigid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



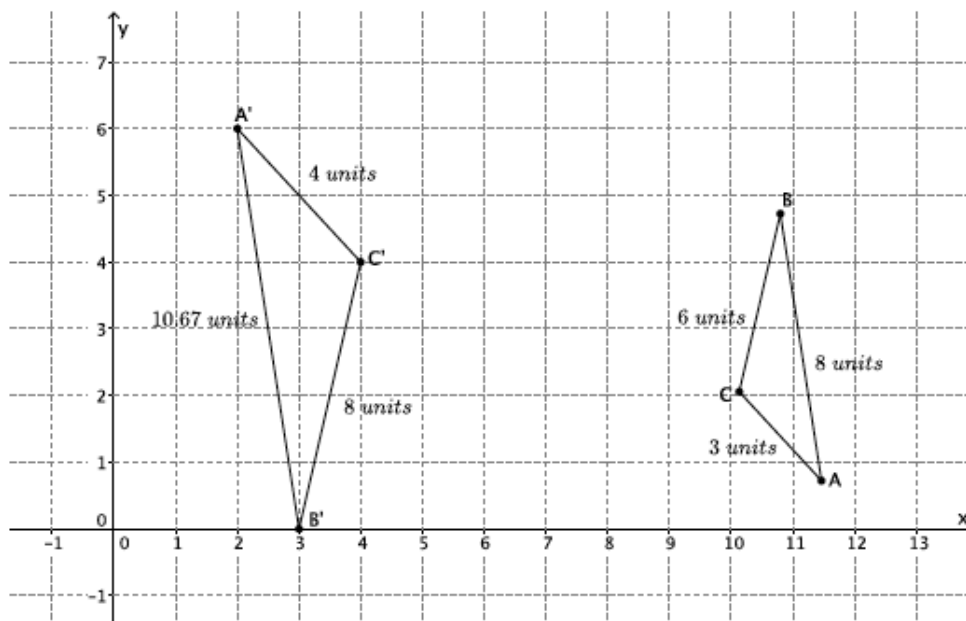
2. Describe a sequence that would show  $\triangle ABC \sim \triangle A'B'C'$ .



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.



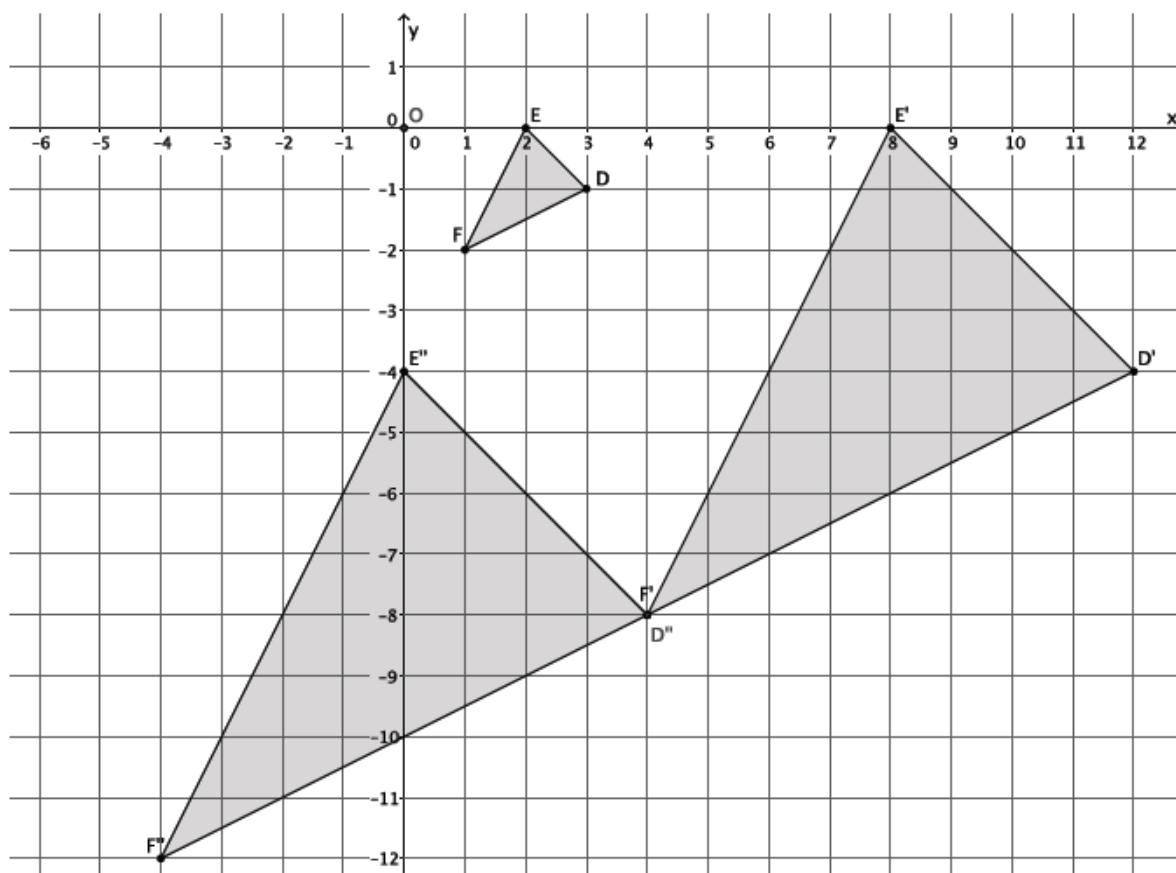
## Lesson Summary

A *similarity transformation* (or a *similarity*) is a sequence of a finite number of dilations or basic rigid motions. Two figures are *similar* if there is a similarity transformation taking one figure onto the other figure. Every similarity can be represented as a dilation followed by a congruence.

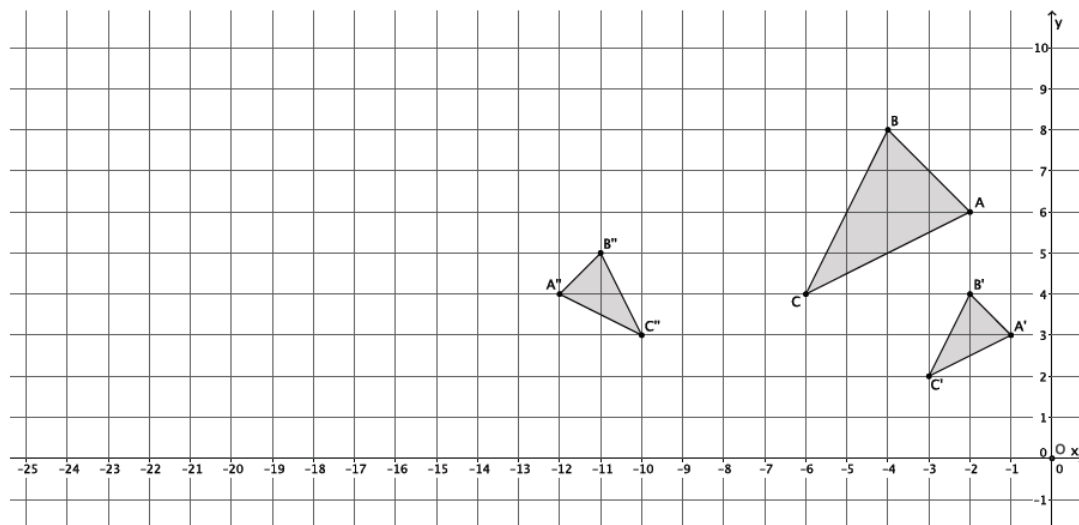
The notation  $\triangle ABC \sim \triangle A'B'C'$  means that  $\triangle ABC$  is similar to  $\triangle A'B'C'$ .

## Problem Set

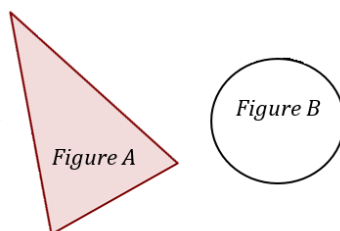
- In the picture below, we have triangle  $DEF$  that has been dilated from center  $O$  by scale factor  $r = 4$ . It is noted by  $D'E'F'$ . We also have triangle  $D''E''F''$ , which is congruent to triangle  $D'E'F'$  (i.e.,  $\triangle D'E'F' \cong \triangle D''E''F''$ ). Describe the sequence of a dilation, followed by a congruence (of one or more rigid motions), that would map triangle  $D''E''F''$  onto triangle  $DEF$ .



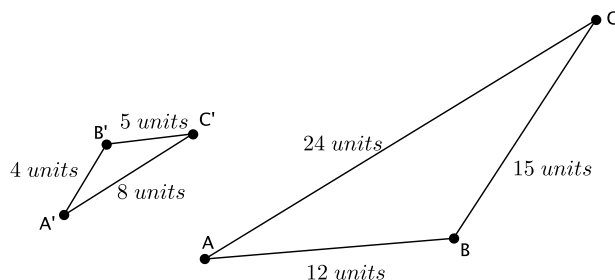
2. Triangle  $ABC$  was dilated from center  $O$  by scale factor  $r = \frac{1}{2}$ . The dilated triangle is noted by  $A'B'C'$ . Another triangle  $A''B''C''$  is congruent to triangle  $A'B'C'$  (i.e.,  $\triangle A''B''C'' \cong \triangle A'B'C'$ ). Describe the dilation followed by the basic rigid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



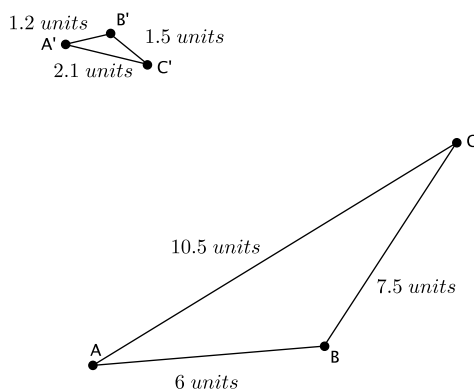
3. Are the two figures shown below similar? If so, describe a sequence that would prove the similarity. If not, state how you know they are not similar.



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  $\triangle ABC \sim \triangle A'B'C'$ .

