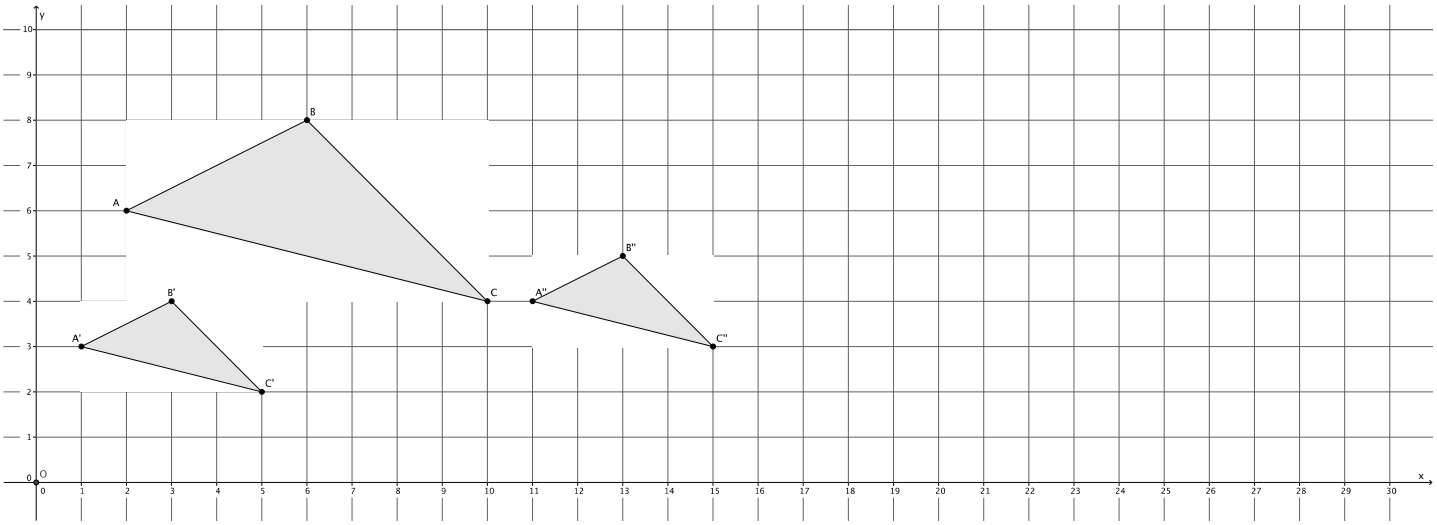
Lesson 8: Similarity

Classwork

Example 1

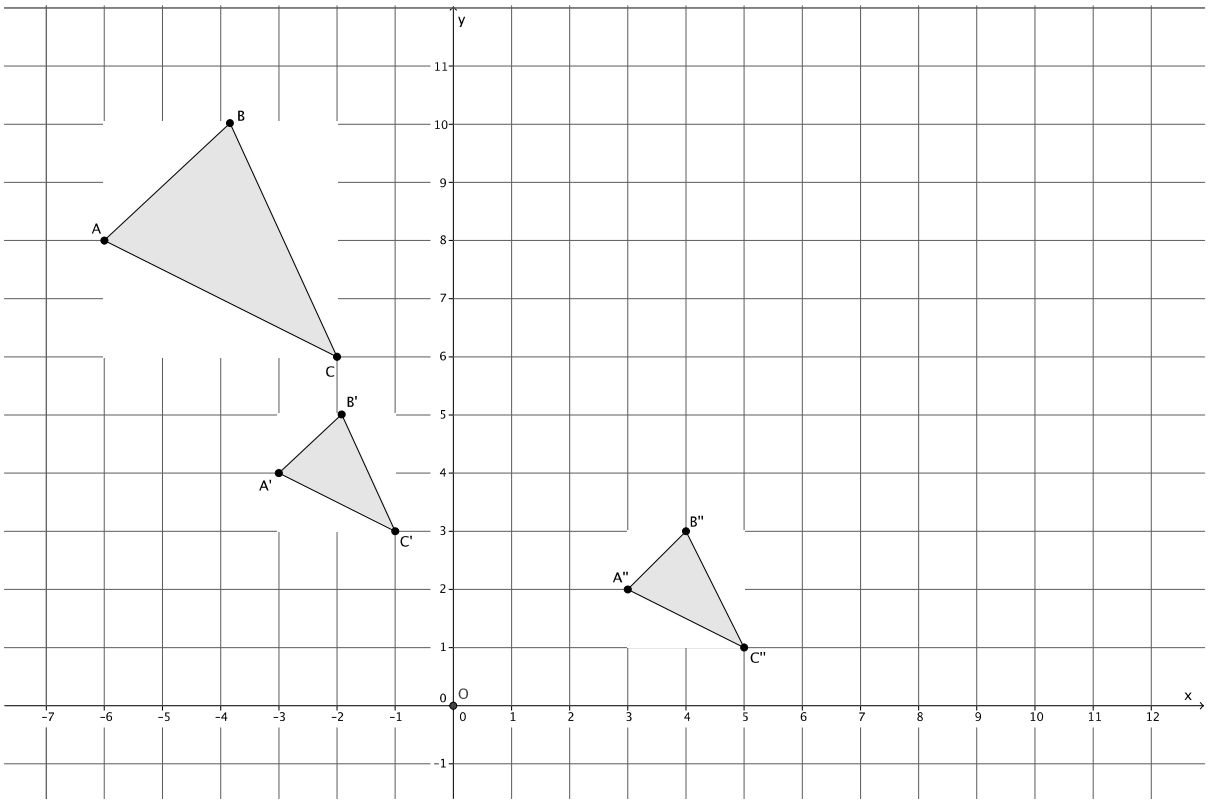
In the picture below we have a triangle ABC, that has been dilated from center O, by a scale factor of $r = \frac{1}{2}$. It is noted by $A'B'C'$. We also have triangle $A''B''C''$, which is congruent to triangle $A'B'C'$ (i.e., $\Delta A'B'C' \cong \Delta A''B''C''$).



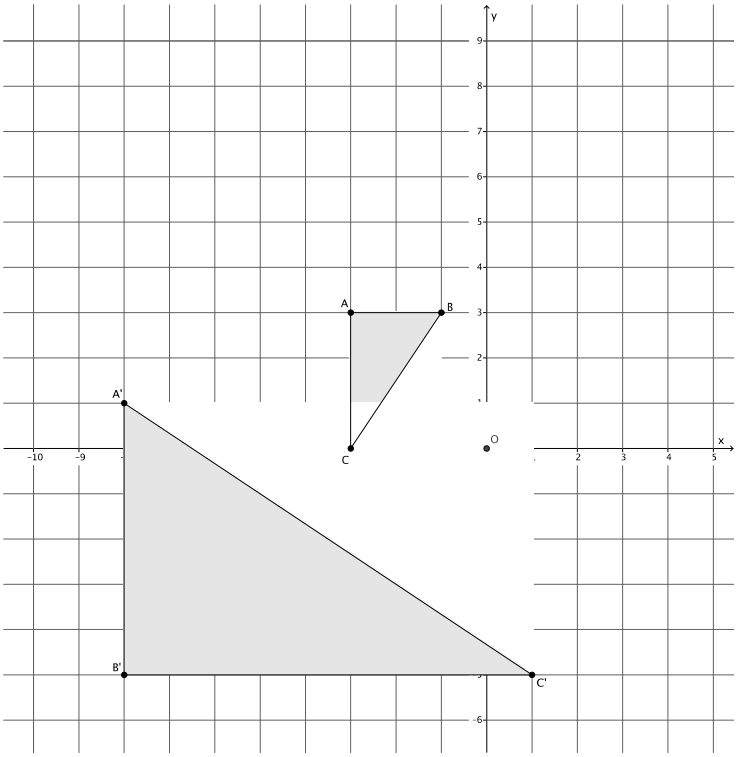
Describe the sequence that would map triangle $A''B''C''$ onto triangle ABC.

Exercises

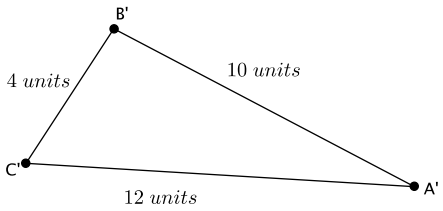
1. Triangle ABC was dilated from center O by scale factor $r = \frac{1}{2}$. The dilated triangle is noted by $A'B'C'$. Another triangle $A''B''C''$ is congruent to triangle $A'B'C'$ (i.e., $\Delta A''B''C'' \cong \Delta A'B'C'$). Describe the dilation followed by the basic rigid motion that would map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

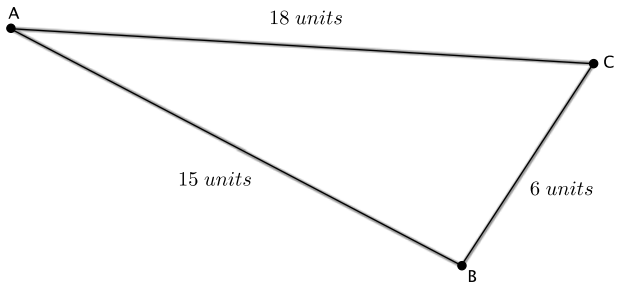


2. Describe the sequence that would show $\Delta ABC \sim \Delta A'B'C'$.

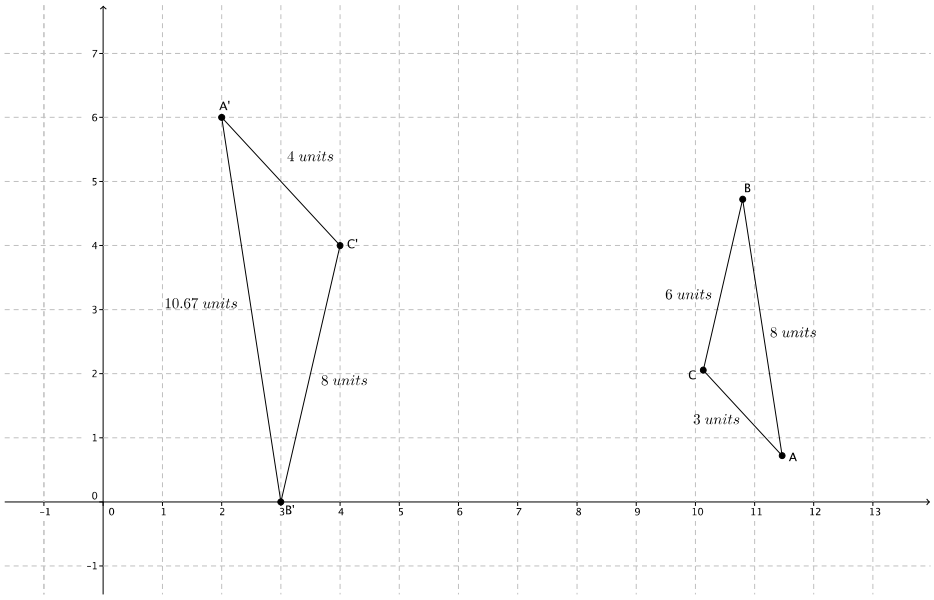


3. Are the two triangles shown below similar? If so, describe the sequence that would prove $\Delta ABC \sim \Delta A'B'C'$. If not, state how you know they are not similar.





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



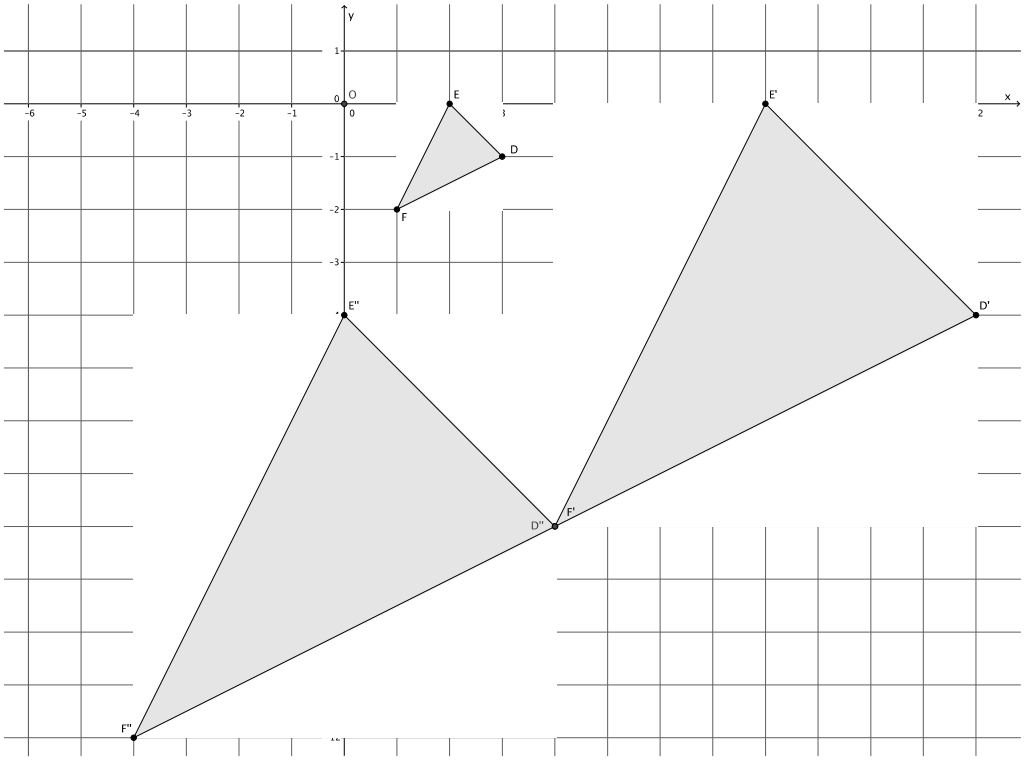
Lesson Summary

Similarity is defined as mapping one figure onto another as a sequence of a dilation followed by a congruence (a sequence of rigid motions).

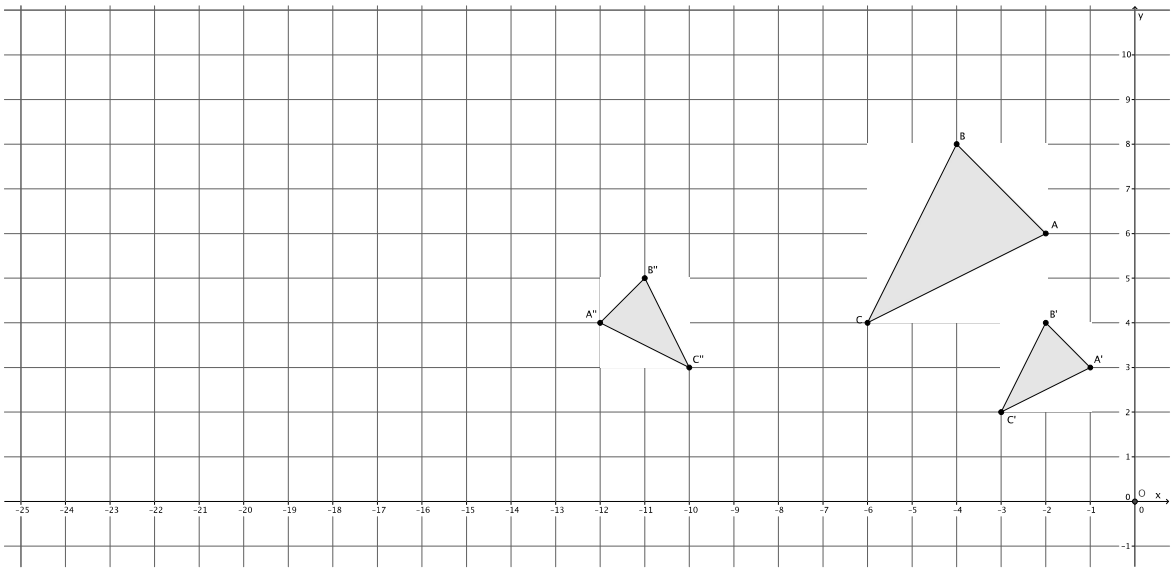
The notation, $\Delta ABC \sim \Delta A'B'C'$, means that ΔABC is similar to $\Delta A'B'C'$.

Problem Set

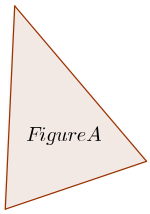
1. In the picture below, we have a triangle DEF, that has been dilated from center O, by scale factor $r = 4$. It is noted by $D'E'F'$. We also have a triangle $D''E''F''$, which is congruent to triangle $D'E'F'$ (i.e., $\Delta D'E'F' \cong \Delta D''E''F''$). Describe the sequence of a dilation, followed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

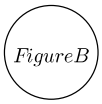


2. Triangle ABC was dilated from center O by scale factor $r = \frac{1}{2}$. The dilated triangle is noted by $A'B'C'$. Another triangle $A''B''C''$ is congruent to triangle $A'B'C'$ (i.e., $\Delta A''B''C'' \cong \Delta A'B'C'$). Describe the dilation followed by the basic rigid motion that would map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

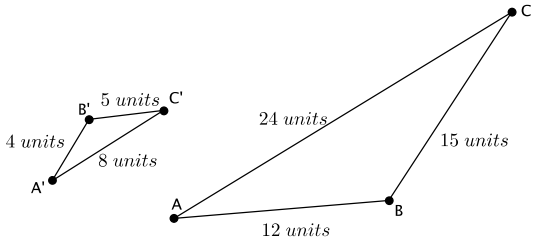


3. Are the two figures shown below similar? If so, describe the sequence that would prove the similarity. If not, state how you know they are not similar.

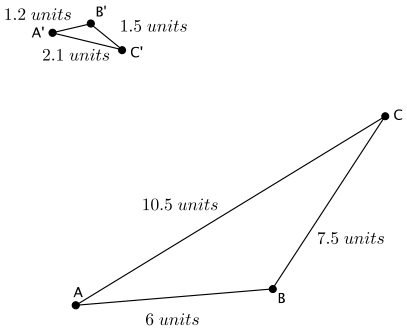




4. Triangle ABC is similar to triangle $A'B'C'$, (i.e, $\Delta ABC \sim \Delta A'B'C'$). Prove the similarity by describing the sequence that would map triangle $A'B'C'$



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



6. Describe the sequence that would show $\Delta ABC \sim \Delta A'B'C'$.