

Dr. Huson

10th Grade Geometry

12 March 2019

Overlapping Similar Triangles: A Reflection and Dilation

A common configuration for similar triangles is to share a common vertex but be mirror images of each other. Such a situation was constructed in Geogebra by reflecting triangle ABC across the angle bisector of angle A and then dilating the resulting triangle by a scale factor of 1.5, yielding triangle $A''B''C''$, shown below in Figure 1.

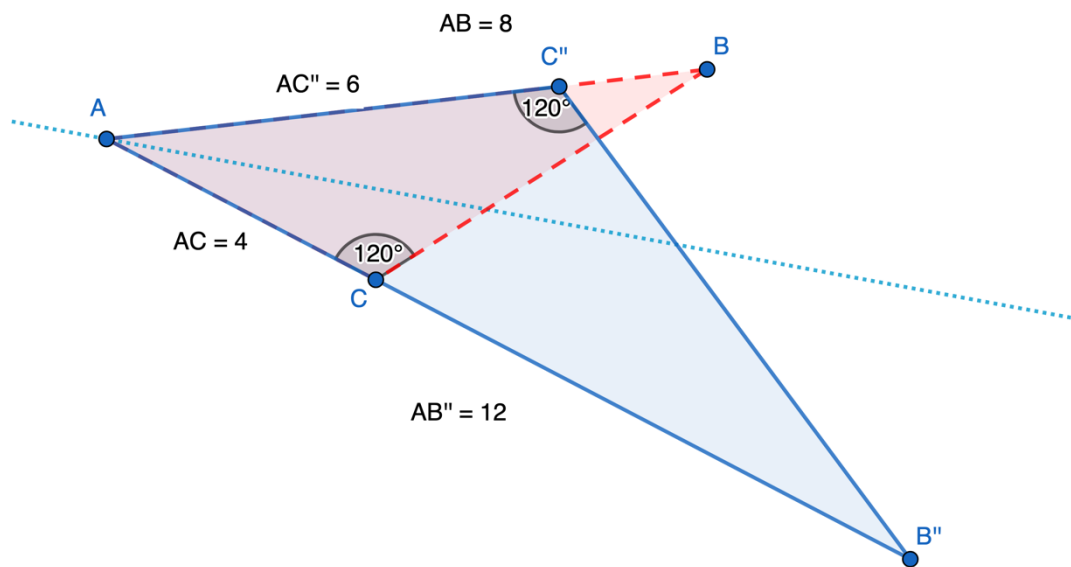


Figure 1: Two overlapping similar triangles showing the lengths of corresponding sides

Corresponding angles are congruent, $\angle ACB \cong \angle A''C''B''$, and $\angle A \cong \angle A$, by the reflexive property, so the two triangles are similar by AA Similarity, $\triangle ABC \cong \triangle A''B''C''$. The scale factor can be calculated from the ratios of the corresponding sides. $\frac{A'B''}{AB} = \frac{12}{8} = 1.5$ and $\frac{A'C''}{AC} = \frac{6}{4} = 1.5$.