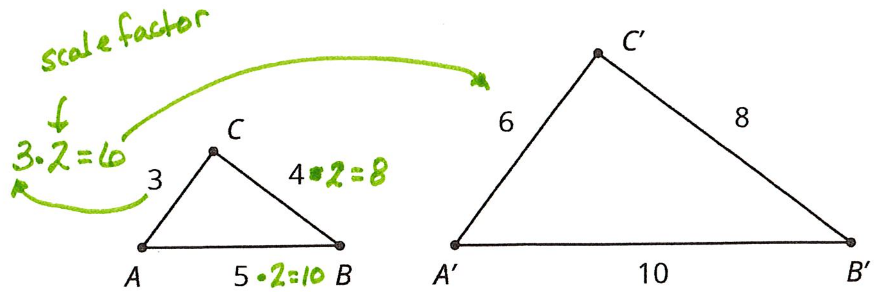
Unit 2

Lesson 9 Summary

If two polygons are similar, then the side lengths in one polygon are multiplied by the same scale factor to give the corresponding side lengths in the other polygon. For these triangles the scale factor is 2:



Here is a table that shows relationships between the short and medium length sides of the small and large triangle.

	small triangle	**large triangle**
medium side	4	8
short side	3	6
(medium side) ÷ (short side)	$\frac{4}{3}$	$\frac{8}{6} = \frac{4}{3}$

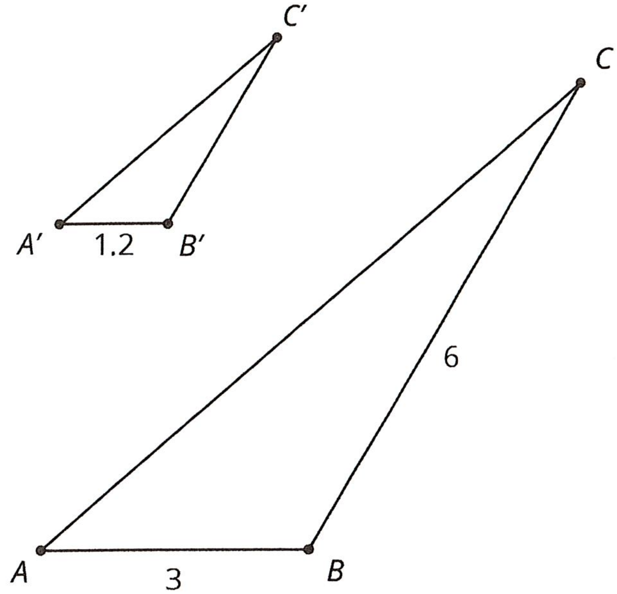
The lengths of the medium side and the short side are in a ratio of 4 : 3. This means that the medium side in each triangle is $\frac{4}{3}$ as long as the short side.

small side → $3 \cdot \frac{4}{3} = \frac{12}{3} = 4$ (small Δ) → medium side

short side → $6 \cdot \frac{4}{3} = \frac{24}{3} = 8$ medium side (large Δ)

This is true for all similar polygons; the ratio between two sides in one polygon is the same as the ratio of the corresponding sides in a similar polygon.

We can use these facts to calculate missing lengths in similar polygons. For example, triangles $A'B'C'$ and ABC shown here are similar. Let's find the length of segment $B'C'$.



In triangle ABC, side BC is twice as long as side AB, so this must be true for any triangle that is similar to triangle ABC. Since $A'B'$ is 1.2 units long and $2 \cdot 1.2 = 2.4$, the length of side $B'C'$ is 2.4 units.

* can set up a proportion

$$\begin{array}{l} \text{small }\Delta \rightarrow \\ \text{large }\Delta \rightarrow \end{array} \quad 6 \cdot \frac{1.2}{3} = \frac{x}{\cancel{6}} \cdot \cancel{6}$$

$$\boxed{2.4 = x}$$