SM 2

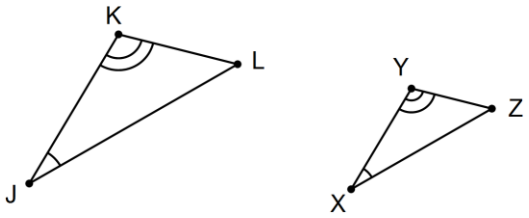
Date: **Section: 10.4**

Objective: Triangle Similarity notes

So far, if we wanted to show that two figures are similar, we've had to show that *all* of the corresponding angles are congruent and *all* of the corresponding sides are proportional. Luckily, there are some shortcuts for triangles.

Angle-Angle Similarity Postulate (AA Similarity):

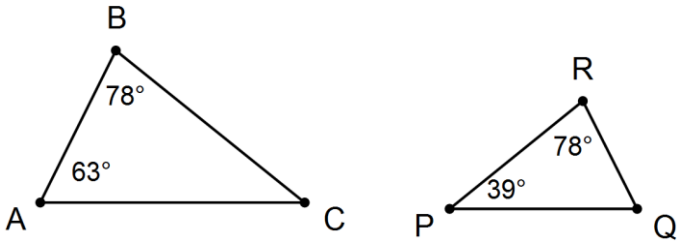
If two angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar.



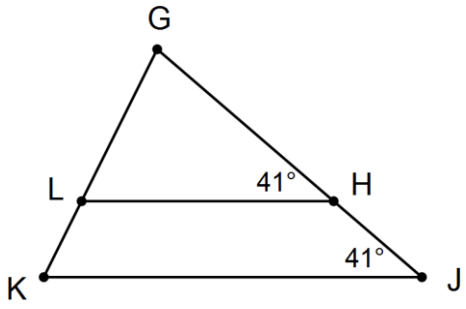
If $\angle J \cong \angle X$ and $\angle K \cong \angle Y$, then $\triangle JKL \sim \triangle XYZ$

Examples: Determine whether the triangles are similar. **Explain** your reasoning. If they are similar, write a similarity statement.

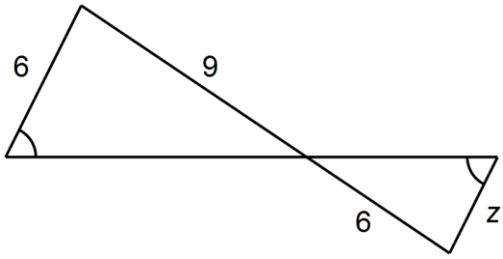
a)



b)



Example: Write a similarity statement for the triangles. Then find the value of *z*.



Use the diagram to fill in the statements

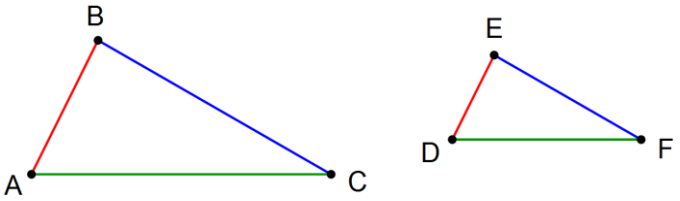
a) $\angle B \cong$_____

b) $\frac{AB}{DB} = \frac{BC}{?}$

c) What is the scale factor?

Side-Side-Side Similarity Theorem (SSS Similarity)

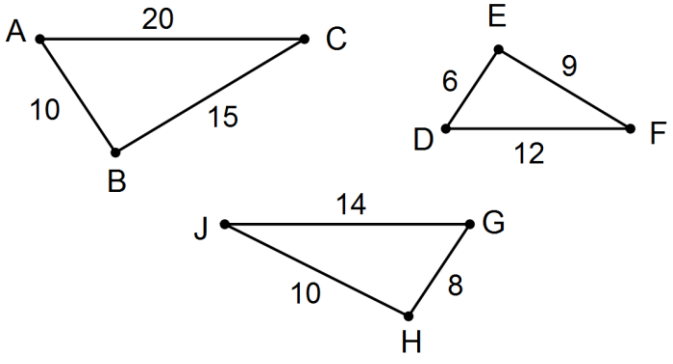
If the corresponding sides of two triangles are proportional, then the triangles are similar.



If $\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$, then $\triangle ABC \sim \triangle DEF$

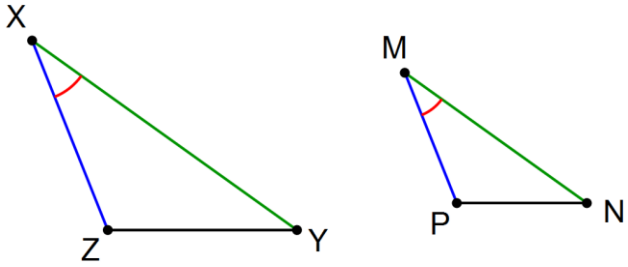
★ **TIP:** When testing for SSS similarity, compare the shortest sides, longest sides, and medium sides.

Example: Is either $\triangle DEF$ or $\triangle GHJ$ similar to $\triangle ABC$?



Side-Angle-Side Similarity Theorem (SAS Similarity)

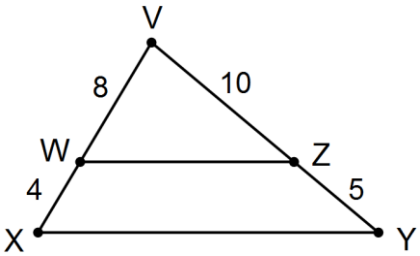
If an angle of one triangle is congruent to an angle of a second triangle and the lengths of the sides that include these angles are proportional, then the triangles are similar.



If $\angle X \cong \angle M$ and $\frac{PM}{ZX} = \frac{MN}{XY}$, then $\triangle XYZ \sim \triangle MNP$

Examples: Determine whether the triangles are similar. If they are similar, write a similarity statement and determine the scale factor.

a)



b)