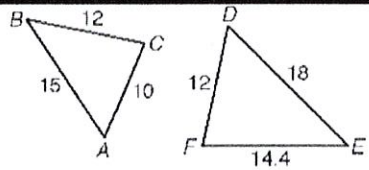
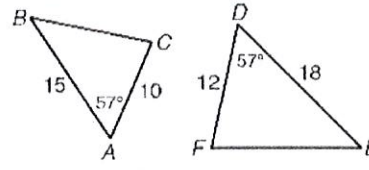
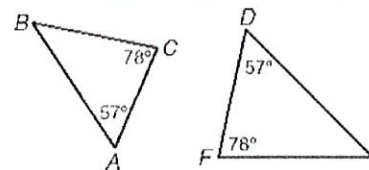


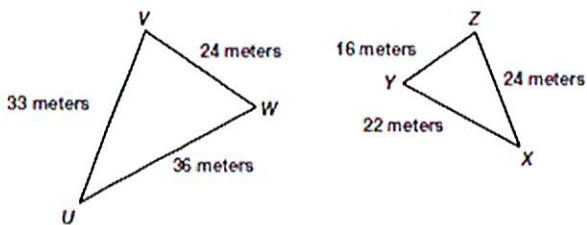
Day 3 – Proving Triangles Similar

There are three ways to prove that triangles are similar. They are as follows:

<p>Side – Side – Side (SSS) Similarity Statement</p> <p>If the measures of the corresponding sides of two triangles are proportional, the figures are similar.</p>	 <p>$\triangle ABC \sim \triangle DEF$</p>
<p>Side – Angle – Side (SAS) Similarity Statement</p> <p>If the measures of two sides of a triangle are proportional to the measures of two corresponding sides of another triangle and the included angles are congruent, the figures are similar.</p>	 <p>$\triangle ABC \sim \triangle DEF$</p>
<p>Angle – Angle (AA) Similarity Statement</p> <p>If two angles of one triangle are congruent to two angles of another triangle, the triangles are similar.</p>	 <p>$\triangle ABC \sim \triangle DEF$</p>

***Remember:** You can mark vertical angles and shared angles congruent!

Example 1: Prove $\triangle UVW \sim \triangle XYZ$ are similar.

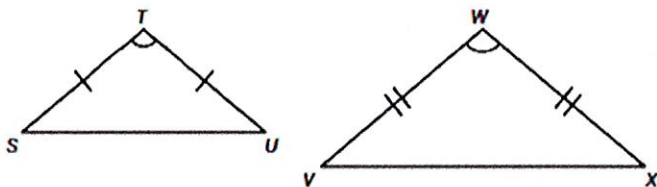


$$\frac{16}{24} = \frac{22}{33} = \frac{24}{36}$$

$$\frac{2}{3} = \frac{2}{3} = \frac{2}{3}$$

$\triangle UVW \sim \triangle XYZ$ by SSS ~

Example 2: Is $\triangle TSU \sim \triangle WVX$? Prove why or why not.

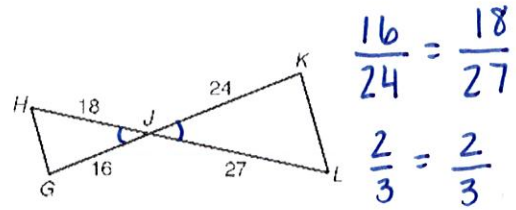
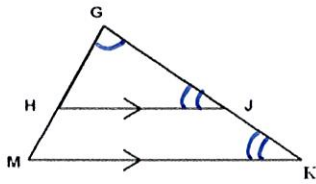


$$\angle T \cong \angle W$$

$$\frac{TS}{WV} = \frac{TU}{WX}$$

$\triangle TSU \sim \triangle WVX$ by SAS ~

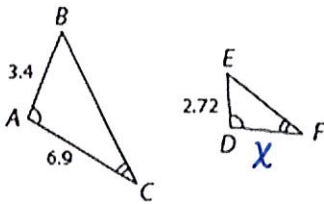
Example 3: Determine if the triangles are similar and then create a similarity statement.



$\Delta GHJ \sim \Delta GMK$ by AA

$\Delta HGJ \sim \Delta LJK$ by SAS

Example 4: Prove $\Delta ABC \sim \Delta DEF$ and then find the length of DF.



$\angle A \cong \angle D$
 $\angle C \cong \angle F$
 $\Delta ABC \sim \Delta DEF$ by AA

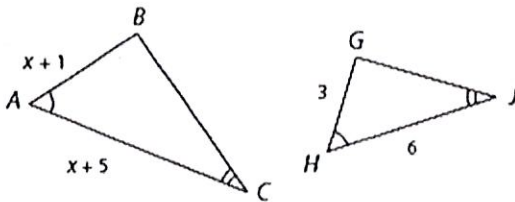
$$\frac{3.4}{2.72} = \frac{6.9}{x}$$

$$3.4x = 18.768$$

$$x = 5.52$$

DF = 5.52

Example 5: Determine if the triangles are similar and then create a similarity statement. Then find the value of x.



$\Delta BAC \sim \Delta GHJ$ by AA

$$\frac{x+1}{3} = \frac{x+5}{6}$$

$$6(x+1) = 3(x+5)$$

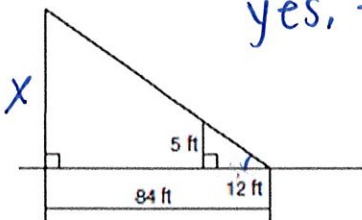
$$6x+6 = 3x+15$$

$$3x+6 = 15$$

$$3x = 9$$

x = 3

Example 6: Minh wanted to measure the height of a statue. She lined herself up with the statue's shadow so that the tip of her shadow met the tip of the statue's shadow. She marked the spot where she was standing. Then she measured the distance from where she was standing to the tip of the shadow, and from the statue to the tip of the shadow. Are the two triangles similar? What is the height of the statue?



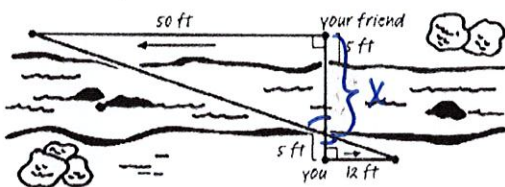
yes, they are similar by AA. The statue is 35 ft tall.

$$\frac{5}{x} = \frac{12}{84}$$

$$12x = 420$$

$$x = 35$$

Example 7: You and your friend are on opposite sides of the creek and are 5 feet from the creek bank. She walks 50 feet to the left on one side and you walk 12 feet to the right. Are the triangles similar? Find the width of the creek.



yes, they are similar by AA.

$$\frac{12}{50} = \frac{5}{x}$$

$$12x = 250$$

$$\text{width} = 20.\bar{83} - 5$$

$$= 15.\bar{83}$$

The width of the creek is about 15.83 feet.

x = 20.83