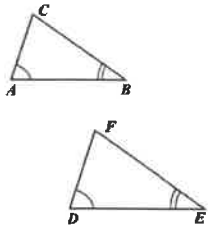
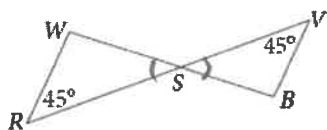


<p>Angle-Angle Similarity</p>	<p>If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.</p>	
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1. Determine whether the triangles are similar. If so, write a similarity statement. Explain your reasoning.

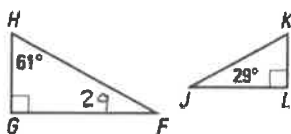
a.



vertical angles are  $\cong$   
By AA  $\triangle RWS \sim \triangle VBS$   
similarity

\* order matters  $\rightarrow$  corresponding sides are  $\cong$

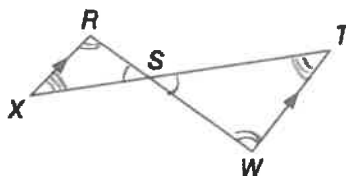
b.



$180^\circ$  in a  $\triangle$

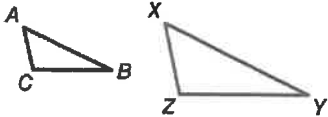
by AA  $\triangle HGF \sim \triangle KLI$   
similarity

c.

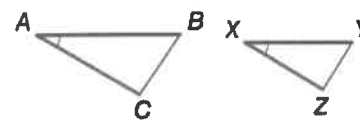


vertical angles are  $\cong$   
Alternate interior angles are  $\cong$

by AA  $\triangle RSX \sim \triangle WST$   
similarity

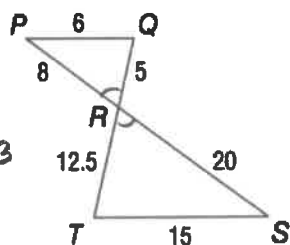
<p>Side-Side-Side Similarity</p>	<p>If the corresponding side lengths of two triangles are proportional, then the triangles are similar.</p>	 <p>If <math>\frac{AB}{XY} = \frac{BC}{YZ} = \frac{CA}{ZX}</math> then <math>\triangle ABC \sim \triangle XYZ</math>.</p>
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Geometry CP  
7.3 Similar Triangles

<p>Side-Angle-Side Similarity</p>	<p>If the lengths of two sides of one triangle are proportional to the lengths of two corresponding sides of another triangle and the included angles are congruent then the triangles are similar.</p>	 <p>If <math>\angle A \cong \angle X</math> and <math>\frac{AB}{XY} = \frac{AC}{XZ}</math> then <math>\triangle ABC \sim \triangle XYZ</math>.</p>
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2. Determine whether the triangles are similar. If so, write a similarity statement.  
Explain your reasoning.

a.



\* or could check all 3 sides similar for SSS

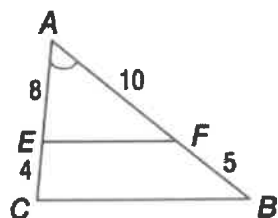
$$\frac{RP}{RS} = \frac{QR}{RT} \quad \text{similar by SAS sim.}$$

$$\frac{8}{20} = \frac{5}{12.5}$$

$$\frac{2}{5} = \frac{2}{5} \checkmark$$

$$\triangle PQR \sim \triangle STR$$

b.  $\frac{2}{5} = \frac{2}{5} \checkmark$



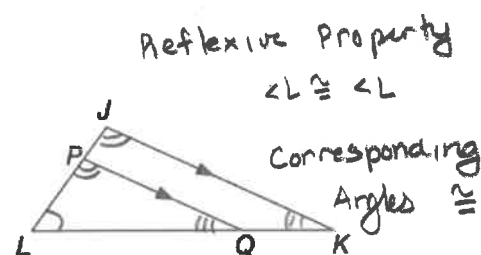
Reflexive Property  $\angle A \cong \angle A$

$$\frac{10}{15} = \frac{8}{12}$$

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

Similar by SAS similarity  
 $\triangle AEF \sim \triangle ACB$

c.

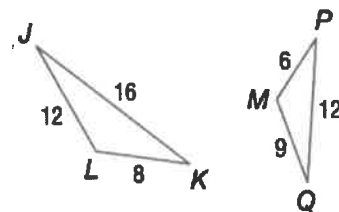


Reflexive Property  
 $\angle L \cong \angle L$

Corresponding Angles  $\cong$

Similar by AA similarity  
 $\triangle LPQ \sim \triangle LJK$

d.



$$\frac{8}{6} = \frac{12}{9} = \frac{16}{12}$$

$$\frac{4}{3} = \frac{4}{3} = \frac{4}{3} \checkmark$$

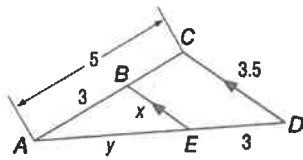
similar by SSS similarity

$$\triangle JKL \sim \triangle QPM$$

Geometry CP  
7.3 Similar Triangles

3. The following triangles are similar:

a. Find  $BE$  and  $AD$



$$\frac{BE}{CE} = \frac{AB}{BC} \quad \frac{AE}{AC} = \frac{AB}{BC}$$

$$\frac{x}{3.5} = \frac{3}{5} \quad \frac{y}{y+3} = \frac{3}{5}$$

$$5x = 10.5$$

$$x = 2.1$$

$$\boxed{BE = 2.1}$$

$$5y = 3(y+3)$$

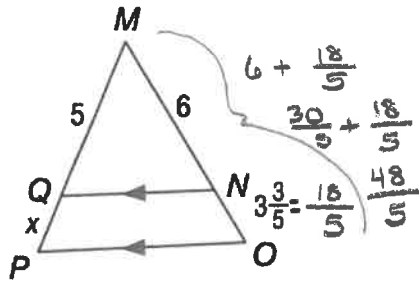
$$5y = 3y + 9$$

$$2y = 9$$

$$y = 4.5$$

$$\boxed{AE = 4.5}$$

b. Find  $QP$  and  $MP$



$$\frac{5}{x+5} = \frac{6}{\frac{48}{5}}$$

$$5\left(\frac{48}{5}\right) = 6(x+5)$$

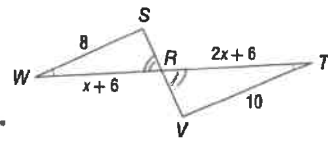
$$48 = 6x + 30$$

$$18 = 6x$$

$$3 = x$$

$$\boxed{QP = 3 \quad MP = 8}$$

c. Find  $WR$  and  $RT$



$$\frac{2x+6}{x+6} = \frac{10}{8}$$

$$8(2x+6) = 10(x+6)$$

$$16x + 48 = 10x + 60$$

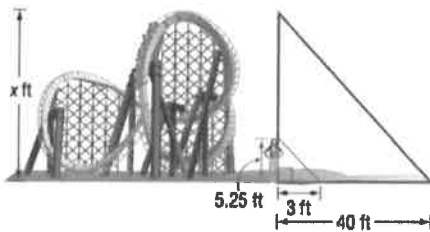
$$6x = 12$$

$$x = 2$$

$$\boxed{WR = 8}$$

$$\boxed{RT = 10}$$

4. Hallie is estimate the height of the superman roller coaster in Mitchellville, Maryland. She is 5 feet 3 inches tall and her shadow is 3 feet long. If the length of the shadow of the roller coaster is 40 feet, how tall is the roller coaster?

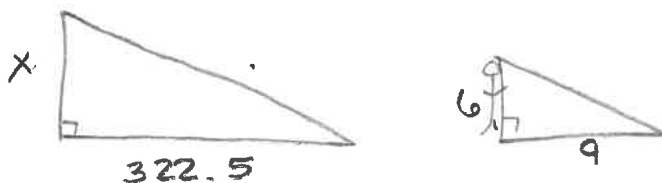


$$\frac{x}{5.25} = \frac{40}{3}$$

$$3x = 210$$

$$\boxed{x = 70 \text{ ft}}$$

5. Adam is standing next to the Palmetto Building in Columbia, South Carolina. He is 6 feet tall and the length of his shadow is 9 feet. If the length of the shadow of the building is 322.5 feet, how tall is the building?



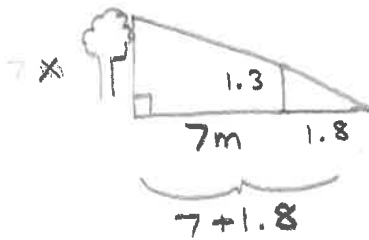
$$\frac{6}{x} = \frac{9}{322.5}$$

$$9x = 1935$$

$$\boxed{x = 215 \text{ ft}}$$

Geometry CP  
7.3 Similar Triangles

6. Tonya is 1.3 meters tall. She stands 7 meters in front of a tree and casts a shadow of 1.8 meters long. How tall is the tree?

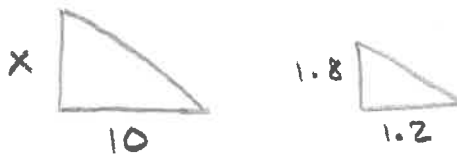


$$\frac{1.3}{x} = \frac{1.8}{8.8}$$

$$11.44 = 1.8x$$

$$6.35\bar{m} = x$$

7. Stephanie casts a shadow of 1.2 m and she is 1.8 m tall. A wind turbine casts a shadow 10 m at the same time that Stephanie measured her shadow. Draw a diagram of this situation and then calculate how tall the wind turbine is.

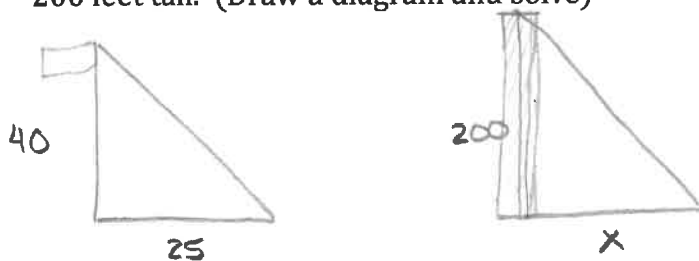


$$\frac{1.8}{x} = \frac{1.2}{10}$$

$$18 = 1.2x$$

$$15 \text{ m} = x$$

8. A 40 foot flagpole casts a 25 foot shadow. Find the shadow cast by a nearby building 200 feet tall. (Draw a diagram and solve)



$$\frac{200}{40} = \frac{x}{25}$$

$$40x = 5000$$

$$x = 125 \text{ ft}$$