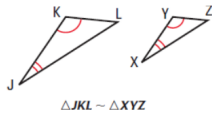


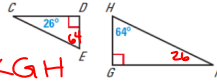
Angle-Angle (AA) Similarity Postulate



If you know 2 pairs of corresponding angles are congruent, then the triangles are similar.

**EXAMPLE 1** Use the AA Similarity Postulate

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

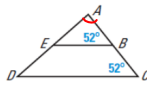


yes  $\triangle CDE \sim \triangle KGH$   
by AA Sim.  $\frac{90}{-26}$   
 $\frac{64}{64}$

**EXAMPLE 2** Show that triangles are similar

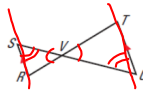
Show that the two triangles are similar.

a.  $\triangle ABE$  and  $\triangle ACD$



$\angle A \cong \angle A$   
by reflexive  
 $\triangle ABE \sim \triangle ACD$   
by AA Sim

b.  $\triangle SVR$  and  $\triangle UVT$

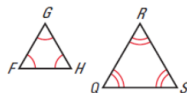


$\angle SVR \cong \angle UVT$   
by Vert.  $\angle$ 's  $\cong$  Thm  
 $\angle S \cong \angle U$  by  
Alt. Int.  $\angle$ 's Thm  
so  $\triangle SVR \sim \triangle UVT$   
by AA Sim

Try this:

Show that the triangles are similar. Write a similarity statement.

1.  $\triangle FGH$  and  $\triangle RQS$



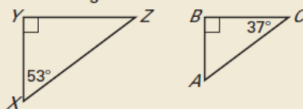
Equiangular  $\Delta$ 's  
mean all  $= 60^\circ$   
so  
 $\triangle FGH \sim \triangle RQS$   
by AA Sim

2.  $\triangle CDF$  and  $\triangle DEF$



$\angle DFE \cong \angle CFD$   
by linear pair post.  
by  $\Delta$  Sum Thm  
 $m\angle CDF = 58^\circ$   
so  $\angle CDF \cong \angle DEF$   
so  $\triangle CDF \sim \triangle DEF$   
by AA Sim

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



By  $\Delta$  Sum Thm  
& Rt.  $\angle$ 's  $\cong$  Thm  
 $\triangle XYZ \sim \triangle ABC$   
by AA Sim

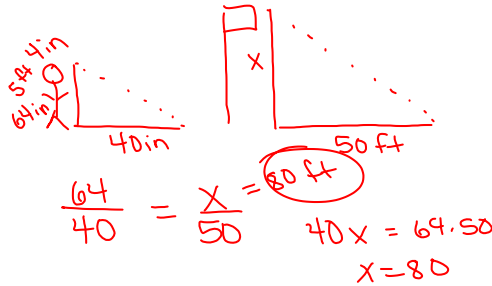
**EXAMPLE 3** Standardized Test Practice

A flagpole casts a shadow that is 50 feet long. At the same time, a woman standing nearby who is five feet four inches tall casts a shadow that is 40 inches long. How tall is the flagpole to the nearest foot?



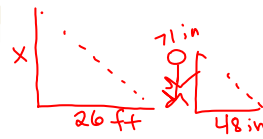
- (A) 12 feet      (B) 40 feet  
 (C) 80 feet      (D) 140 feet

With your group, start by drawing 2 similar figures below using the info given.



**Try this:**

A school building casts a shadow that is 26 feet long. At the same time a student standing nearby, who is 71 inches tall, casts a shadow that is 48 inches long. How tall is the building to the nearest foot?



- (A) 18 ft      (B) 33 ft  
 (C) 38 ft      (D) 131 ft

$$\frac{X}{26} = \frac{71}{48}$$

$$X = 38.4 \dots$$

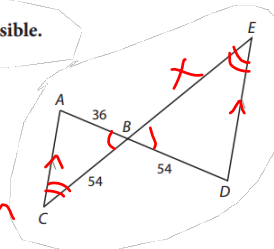
**Explain 2** Applying Angle-Angle Similarity

Architects and contractors use the properties of similar figures to find any unknown dimensions, like the proper height of a triangular roof. They can use a level angle tool to check that the angles of construction are congruent to the angles in their plans.

**Example 2** Find the indicated length, if possible.

- (A)  $BE = 81$

Since we know these  $\Delta$ 's are similar by AA Sim



$$\frac{X}{54} = \frac{54}{36}$$

$$36X = 2916$$

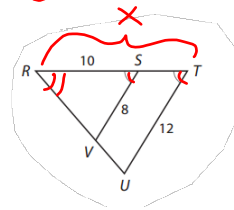
$$X = 81$$

- (B)  $RT = 15$

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

$$8X = 120$$

$$X = 15$$



# Homework

## Worksheet