

Similarity

1. How are congruence and similarity related?

Congruence: equal scale factor, $k=1$

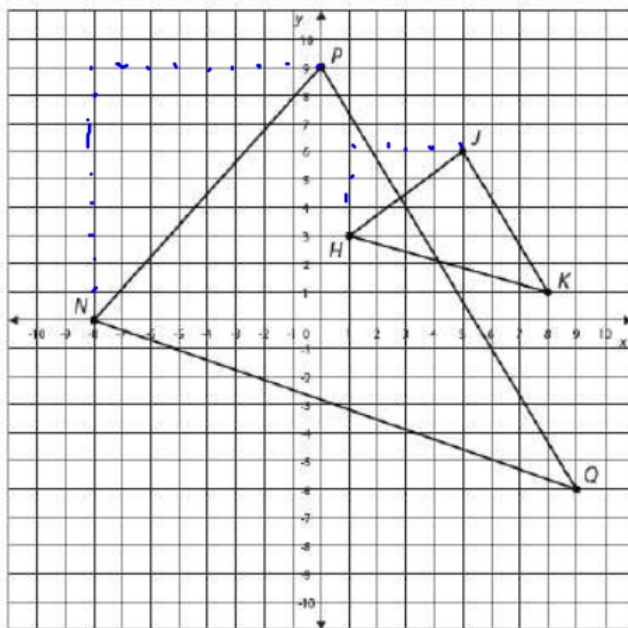
Similarity: side to side ratio, $k > 1$ or $k < 1$

2. There are 4 ways to prove that triangles are similar:

1. Show dilation is true
2. SSS
3. SAS
4. AA Similarity.

Determine if the figures are similar based on the fact that dilations are similar.

3. $\triangle NPQ \sim \triangle HJK$



1) Shapes preserved.

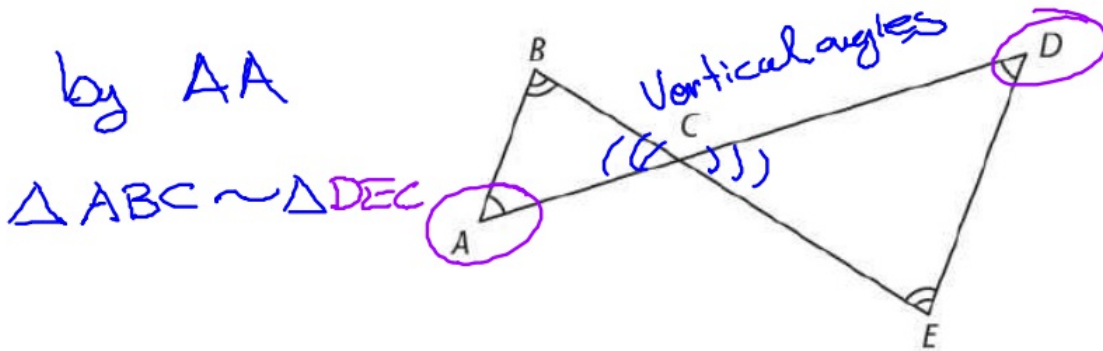
2) Scale factor, k

3) Corresp. slopes are //
 Slope $\overline{NP} = \frac{9}{8}$
 Slope $\overline{HJ} = \frac{3}{4}$ } Not parallel.

4) Colinear Points.

4.

Explain why the triangles are similar and write a similarity statement.



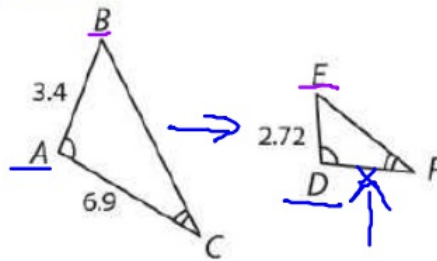
5.

Explain why $\triangle ABC \sim \triangle DEF$, and then find the length of DF .

Yes it is similar

$$\frac{DE}{AB} = \frac{2.72}{3.4} = 0.8 = k$$

$$DF = 6.9 \cdot 0.8 = 5.52$$



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

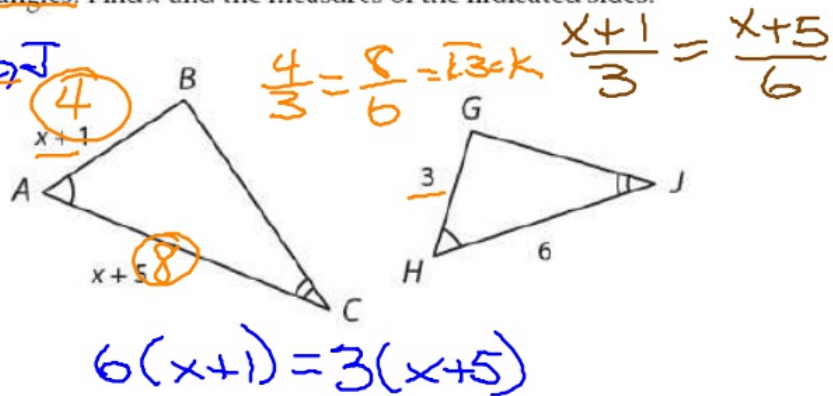
6.

Identify the similar triangles. Find x and the measures of the indicated sides.

$\triangle ABC \sim \triangle HGT$

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

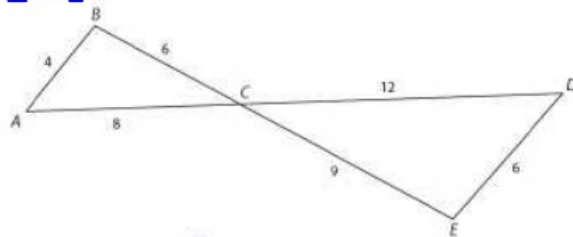
$$\frac{AB}{AC} = \frac{HG}{HJ}$$



7. Suppose a person 5 feet 10 inches tall casts a shadow that is 3 feet 6 inches long. At the same time of day, a flagpole casts a shadow that is 12 feet long. To the nearest foot, how tall is the flagpole?

Prove $\triangle ABC \sim \triangle DEC$.

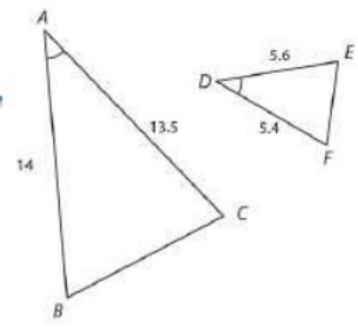
8.



Statement	Reason
1) $AB=4, BC=6, AC=8$ $DE=6, DC=12, EC=9$	1) Given.
2) $\frac{AB}{DE} = \frac{BC}{EC} = \frac{AC}{DC}$ $\frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{2}{3}$	2) Ratio or division
3) $\triangle ABC \sim \triangle DEC$	3) by SSS

9. Prove that the triangles are similar.

Statement	Reason



10.

Determine whether the triangles are similar. Explain your reasoning.

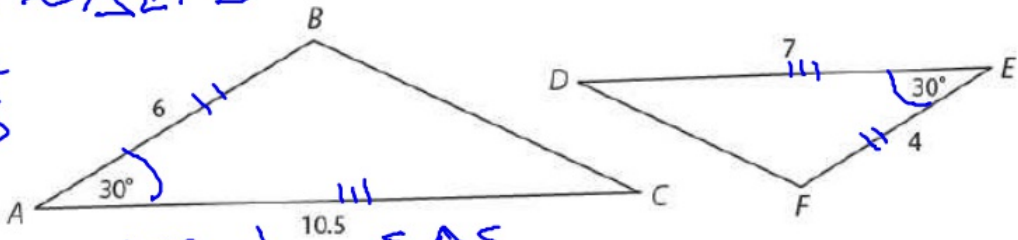
$$\triangle ABC \sim \triangle EFD$$

$$\frac{AB}{AC} = \frac{EF}{ED}$$

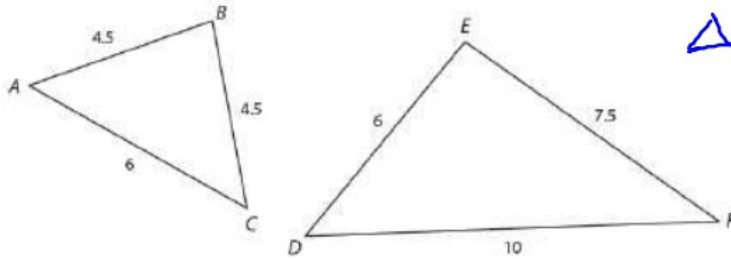
$$\frac{6}{10.5} = \frac{4}{7}$$

$$0.57 = 0.57$$

yes by SAS



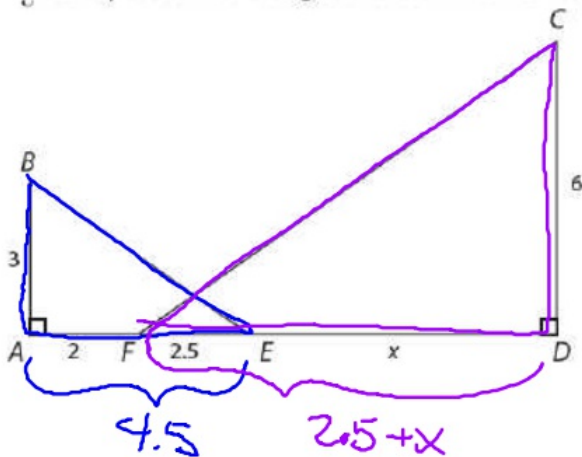
11. Determine whether the triangles are similar. Explain your reasoning.



$$\triangle ABC \not\sim \triangle DEF$$

$$\frac{AB}{DE} \neq \frac{AC}{DF} \neq \frac{BC}{EF}$$

12. Identify the similar triangles and then find the value of x.



$$\triangle ABE \sim \triangle DCF$$

$$\frac{AB}{CD} = \frac{AE}{DF}$$

$$\frac{3}{6} = \frac{4.5}{2.5+x}$$

$$6(4.5) = 3(2.5+x)$$

$$27 = 7.5 + 3x$$

$$19.5 = 3x$$

$$6.5 = x$$