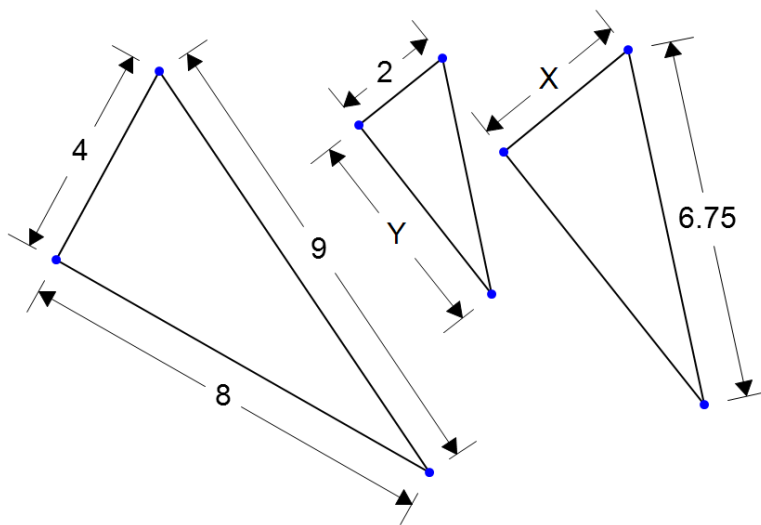
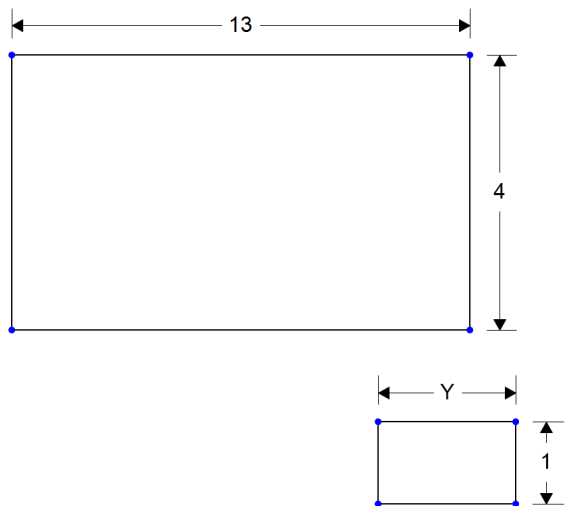


WARM UP

Find the missing measure to make the objects similar.



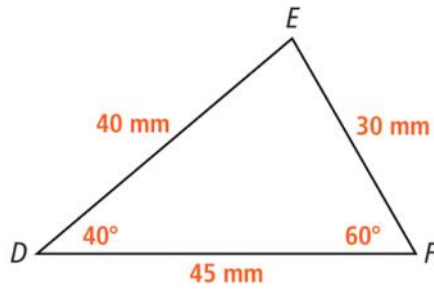
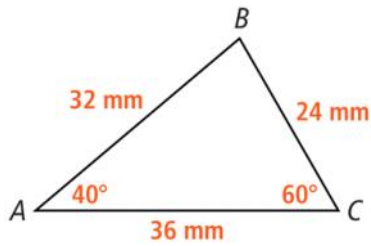
ESSENTIAL QUESTION

How can you use the angles and sides of two triangles to determine whether they are similar?

GOAL: "I CAN...

Use dilation and rigid motion to establish triangle similarity theorems."

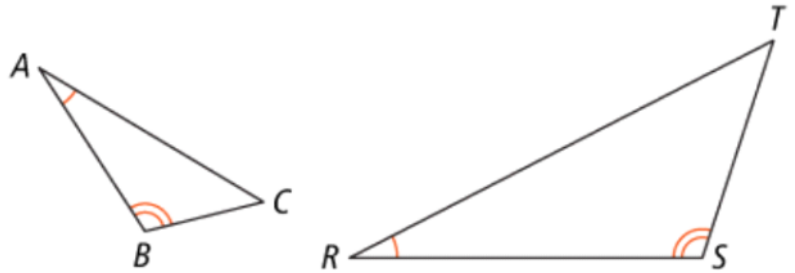
Do you think that the two triangles are similar?



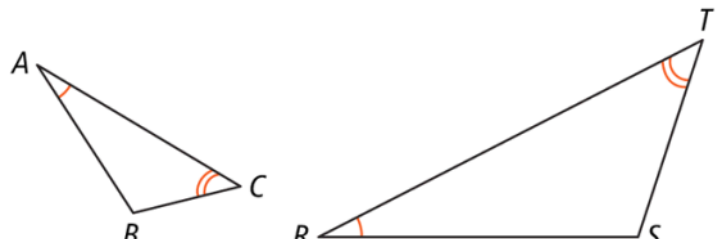
Would any triangle with two angles measuring 40° and 60° be similar to $\triangle ABC$?

EXAMPLE 1

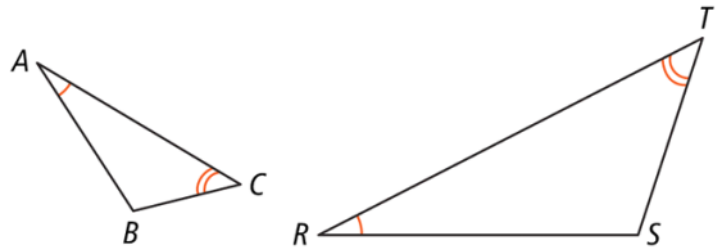
If $\angle A \cong \angle R$ and $\angle B \cong \angle S$, is $\triangle ABC \sim \triangle RST$? Explain.



1. If $\angle A$ is congruent to $\angle R$, and $\angle C$ is congruent to $\angle T$, how would you prove the triangles are similar?



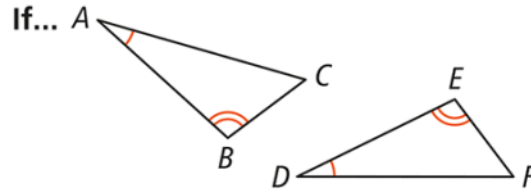
1. If $\angle A$ is congruent to $\angle K$, and $\angle C$ is congruent to $\angle T$, how would you prove the triangles are similar?



Angle-Angle Similarity (AA \sim) Theorem

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

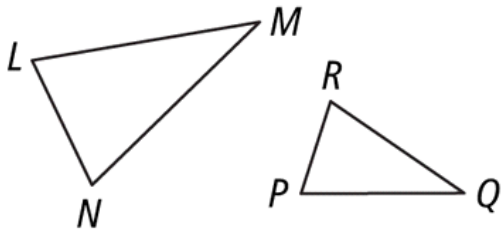
PROOF: SEE EXERCISE 10.



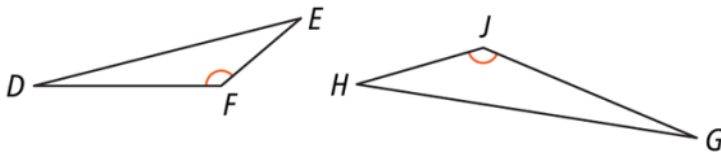
$$\angle A \cong \angle D \text{ and } \angle B \cong \angle E$$

Then... $\triangle ABC \sim \triangle DEF$

If $\frac{LM}{PQ} = \frac{MN}{QR} = \frac{LN}{PR}$, is there a similarity transformation that maps $\triangle PQR$ to $\triangle LMN$? Explain.



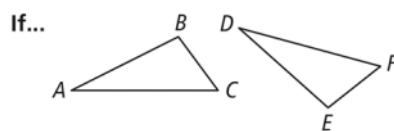
2. If $\frac{DF}{GJ} = \frac{EF}{HJ}$ and $\angle F \cong \angle J$, is there a similarity transformation that maps $\triangle DEF$ to $\triangle GHJ$? Explain.



Side-Side-Side Similarity (SSS \sim) Theorem

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

PROOF: SEE EXERCISE 20.



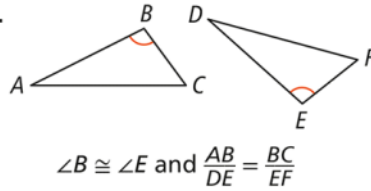
$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$

Then... $\triangle ABC \sim \triangle DEF$

Side-Angle-Side Similarity (SAS ~) Theorem

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

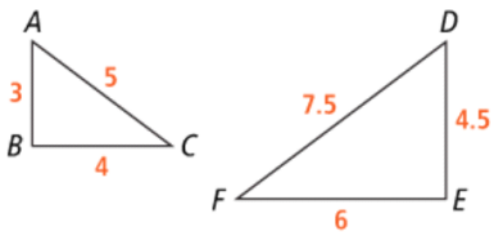
If...



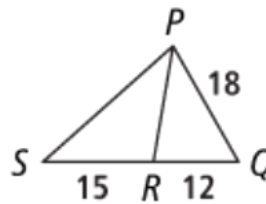
Then... $\triangle ABC \sim \triangle DEF$

PROOF: SEE EXERCISE 13.

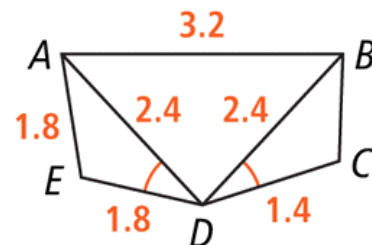
A. Are $\triangle ABC$ and $\triangle DEF$ similar?



B. Are $\triangle PQS$ and $\triangle RQP$ similar?

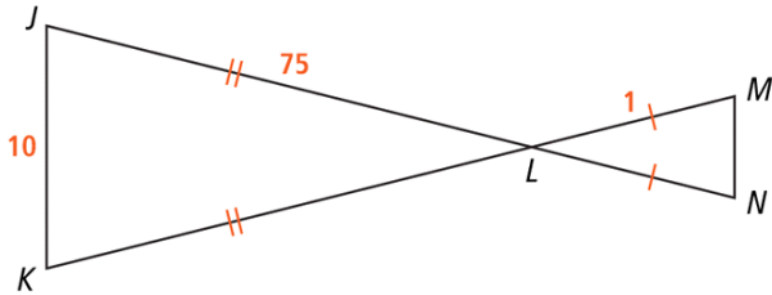


3. a. Is $\triangle ADE \sim \triangle ABD$? Explain.



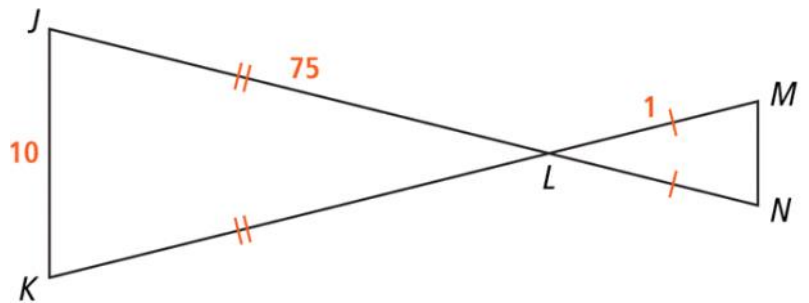
b. Is $\triangle ADE \sim \triangle BDC$? Explain.

What is MN ?

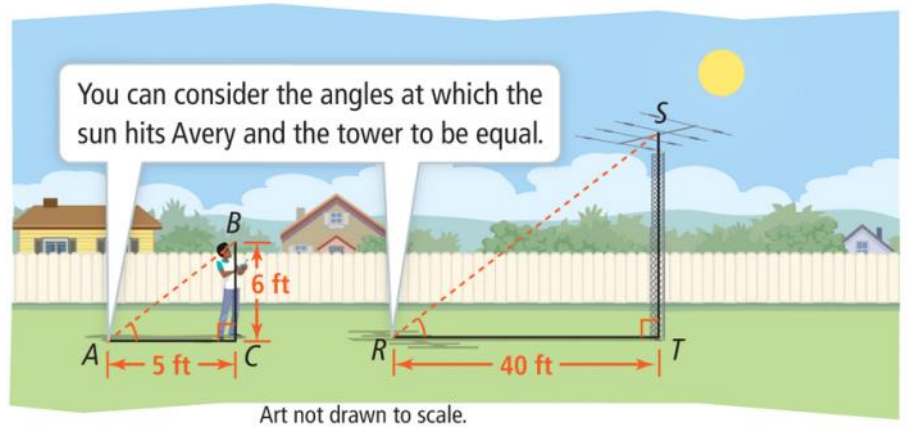


4. a. If the measure of \overline{JL} were 150 instead of 75, how would the value of MN be different?

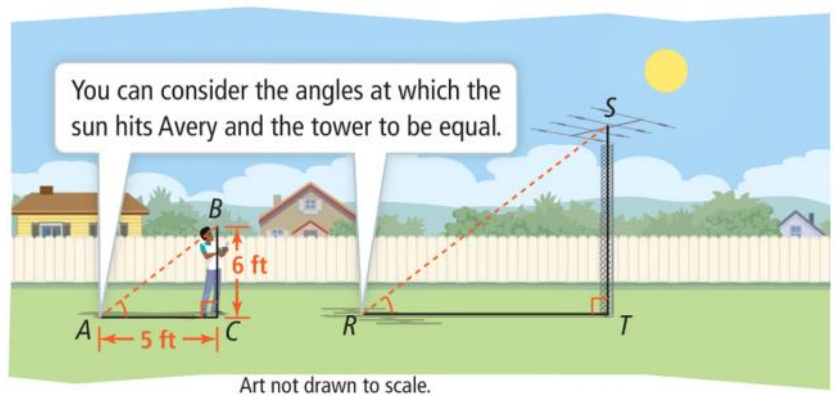
b. If the measure of \overline{JK} were 20 instead of 10, how would the value of MN be different?



Avery puts up a radio antenna tower in his yard. Ella tells him that their city has a law limiting towers to 50 ft in height. How can Avery use the lengths of his shadow and the shadow of the tower to show that his tower is within the limit without directly measuring it?



5. If the tower were 50 ft tall, how long would the shadow of the tower be?



<https://tinyurl.com/rj68r7g>



HOMework

Pg. 322

10, 11, 16-20, 22, 26