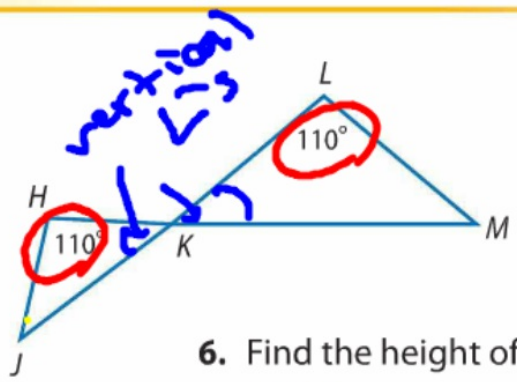


Show your work.

a. $\angle JKH \cong \angle MKL$
and $\angle L \cong \angle H$ so
 $\triangle JKH \sim \triangle MKL$

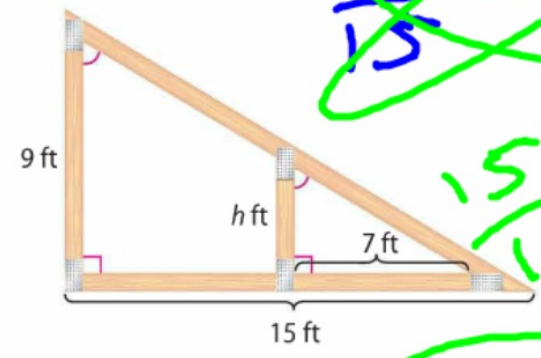
Got It? Do this problem to find out.

a.



6. Find the height of the brace. (Example 3)

4.2 ft



~~$\frac{9}{15} = \frac{h}{7}$~~

~~$\frac{15h}{15} = \frac{63}{15}$~~

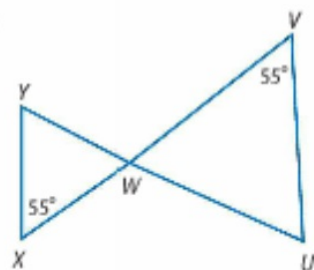
~~$\frac{7}{15} = \frac{5}{9}$~~

lar Point in Ohio is one of tall. If the Giant Wheel on to find the height of

Guided Practice

Determine whether the triangles are similar. If so, write a similarity statement. (Example 1)

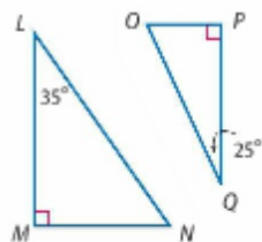
1.



Show your work.

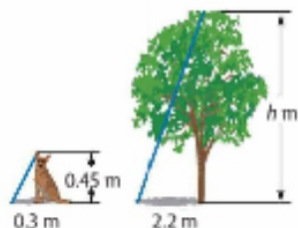
$\angle YWX \cong \angle UWV$ and $\angle V \cong \angle X$,
so $\triangle YWX \sim \triangle UWV$

2.

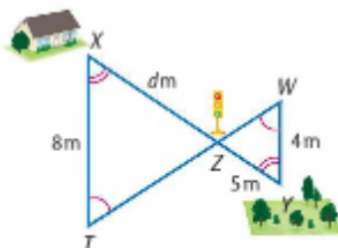


The triangles are not similar.

3. How tall is the tree? (Example 2) 3.3 m



4. Find the distance from the house to the street light. (Example 3) 10 m

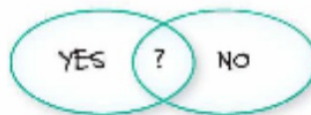


5. **Building on the Essential Question** How do similar triangles make it easier to measure very tall objects?

Sample answer: Two objects and their shadows form similar right triangles. If you can measure the height of one of the objects, you can use a proportion to find the measure of the other object.

Rate Yourself!

Are you ready to move on?
Shade the section that applies:



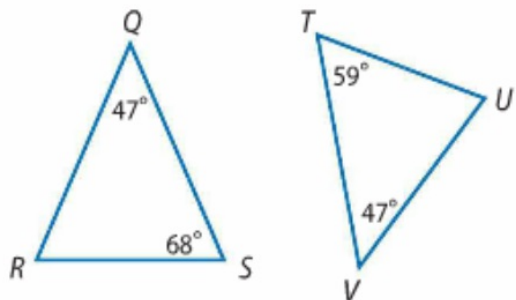
For more help, go online to [www.ck12.com](#)



Determine whether the triangles are similar. If so, write a similarity statement. (Example 1)

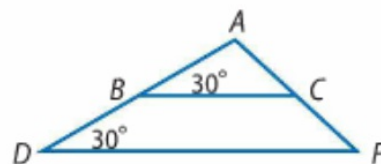
1.

Show your work.



The triangles are not similar.

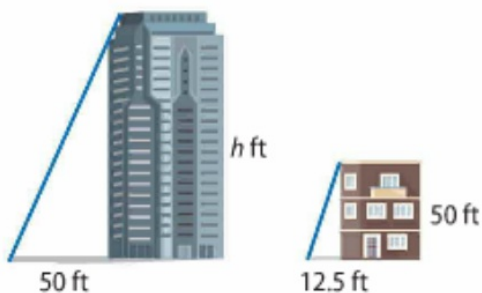
2.



$\angle BAC \cong \angle DAF$ and $\angle ABC \cong \angle D$, so $\triangle BAC \sim \triangle DAF$

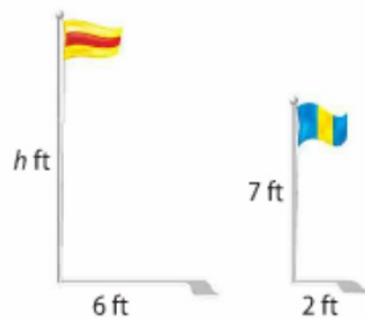
3. How tall is the building? (Example 2)

200 ft



4. How tall is the taller flagpole? (Example 2)

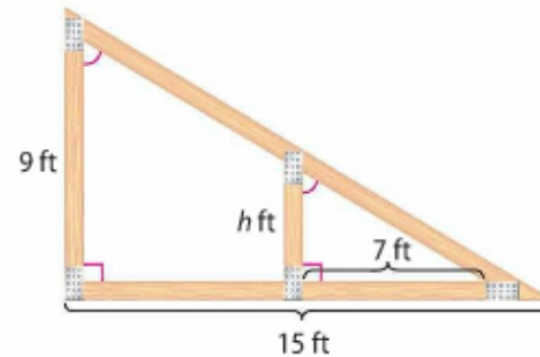
21 ft



- 5 How far is it from the log ride to the pirate ship? (Example 3) 37.5 m



6. Find the height of the brace. (Example 3)
4.2 ft



- 7 **CCSS Reason Abstractly** The Giant Wheel at Cedar Point in Ohio is one of the tallest Ferris wheels in the country at 136 feet tall. If the Giant Wheel casts a 34-foot shadow, write and solve a proportion to find the height of a nearby man who casts a $1\frac{1}{2}$ -foot shadow.

$$\frac{136}{34} = \frac{h}{1.5}; \text{ 6 feet tall}$$



H.O.T. Problems Higher Order Thinking

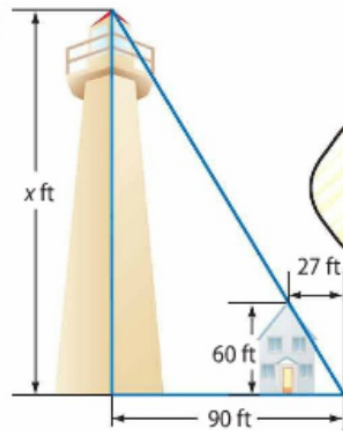
8. **CCSS Find the Error** Sara is finding the height of the lighthouse shown in the diagram. Find her mistake and correct it.

Sara set up the proportion incorrectly.

$$\frac{27}{90} = \frac{60}{x}$$

$$27x = 90 \cdot 60$$

$$x = 200$$



$$\frac{27}{60} = \frac{x}{90}$$

$$27 \cdot 90 = 60x$$

$$x = 40.5$$



9. **CCSS Model with Mathematics** On a separate sheet of paper, draw two different triangles so that each one contains both of the angles shown. Then verify that they are similar by determining which transformation will map one onto the other.

See students' work.



10. **CCSS Persevere with Problems** You cut a circular hole $\frac{1}{4}$ -inch in diameter in a piece of cardboard. With the cardboard 30 inches from your face, the Moon fits exactly into the hole. The Moon is about 240,000 miles from Earth. Is the Moon's diameter more than 1,500 miles? Justify your reasoning.

$$\text{Yes; } \frac{0.25}{30} = \frac{x}{240,000}; x = 2,000 \text{ mi; } 2,000 > 1,500$$

11. **CCSS Identify Structure** What measures must be known in order to calculate the height of tall objects using shadow reckoning?

Sample answer: The length of the tall object's shadow, the length of the shadow of a nearby object with a height that is directly measurable, and the height of the nearby object.

12. **CCSS Reason Inductively** Mila wants to estimate the height of a statue in a local park. Mila's height and both shadow lengths are shown in the diagram. Is an estimate of 15 feet reasonable for the statue's height? Explain your reasoning. **No; sample answer: Since Mila's height is less than her shadow's length, the statue's height must be less than its shadow's length.**

