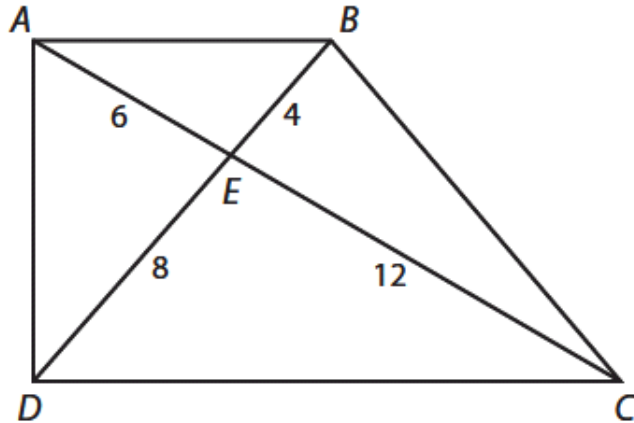


In the diagram at the right, quadrilateral  $ABCD$  is a trapezoid with  $\overline{AB} \parallel \overline{CD}$  and segment lengths as shown.



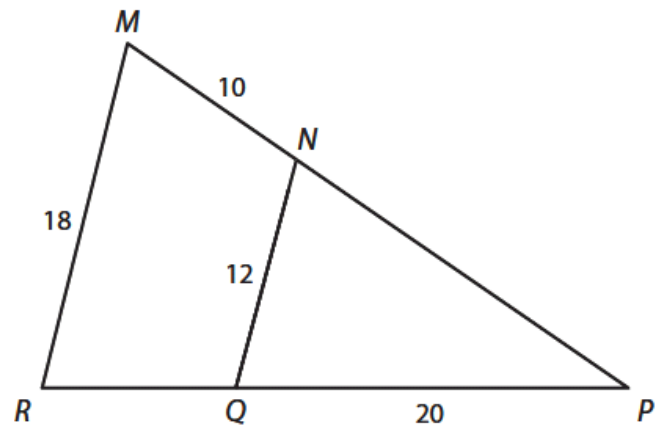
a. Is  $\triangle AED \sim \triangle BEC$ ? Explain your reasoning.

b. Prove that  $\triangle AEB \sim \triangle CED$ .

Directions: Be sure to show all your work and explain your answers to get full credit.

1. In the diagram below,  $\overline{MR} \parallel \overline{NQ}$ .

a. Provide an argument to justify that  $\triangle MPR \sim \triangle NPQ$ .



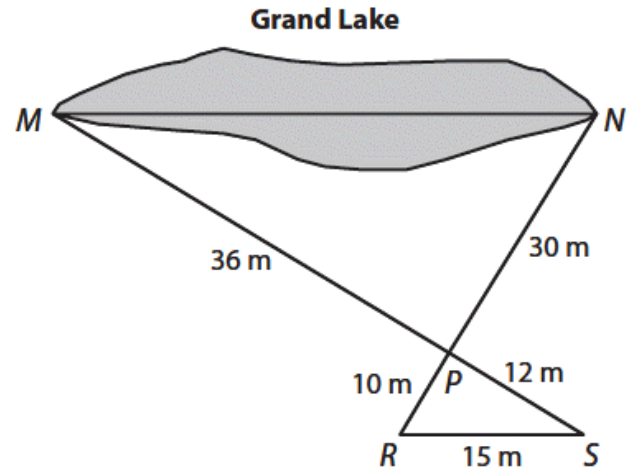
b. Use the given measurements to determine each of the following.

i.  $RP$

ii.  $NP$

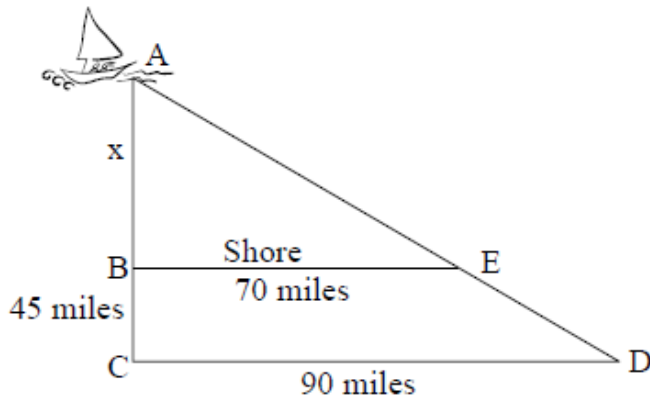
2. Maya needed to determine the longest distance across Grand Lake. She made the measurements as shown in the diagram.

a. Provide an argument to justify that  $\triangle NPM \sim \triangle RPS$ .



b. Determine  $MN$ , the longest distance across Grand Lake.

Captain Cook needs to know the distance from his ship to the shore. He knows the measures given and that  $\overline{BE} \parallel \overline{CD}$ .

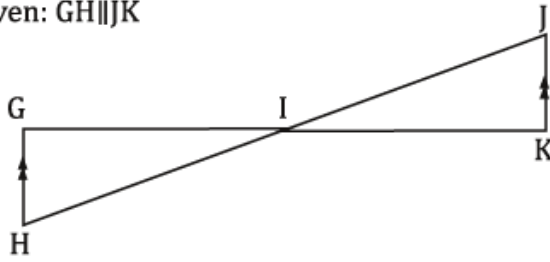


Note: The figure is not drawn to scale.

What is the distance ( $x$ ) from his ship to the shore? Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.

24.

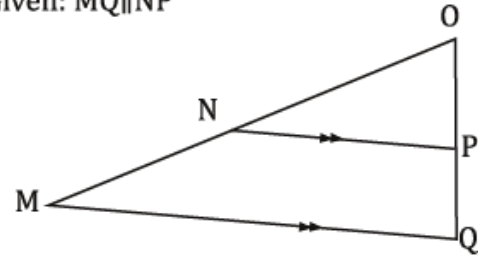
Given:  $\overline{GH} \parallel \overline{JK}$



Prove:  $\triangle GHI \sim \triangle KJI$

25.

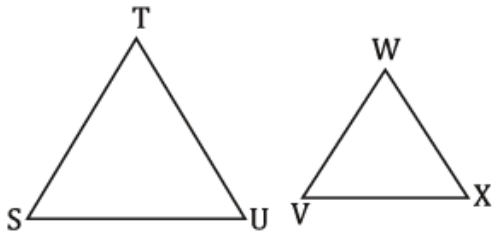
Given:  $\overline{MQ} \parallel \overline{NP}$



Prove:  $\triangle QMO \sim \triangle PNO$

26.

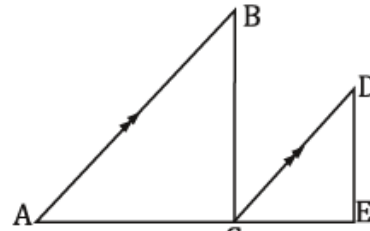
Given:  $\triangle ABD$  and  $\triangle BCD$  are equilateral



Prove:  $\triangle STU \sim \triangle VWX$

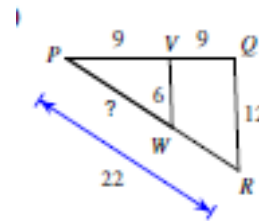
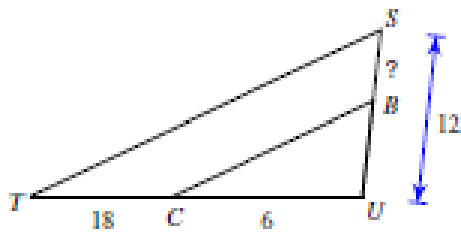
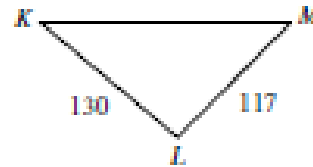
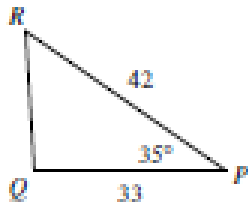
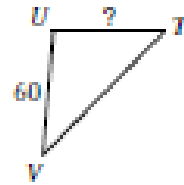
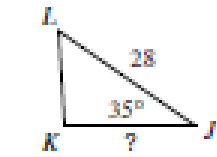
27.

Given:  $\frac{AB}{DC} = \frac{AC}{CE}$ ,  $\overline{AB} \parallel \overline{CD}$



Prove:  $\triangle ABC \sim \triangle CDE$

Find the missing length. The triangles in each pair are similar.



When a Ferris wheel casts a 20-meter shadow, a man 1.8 meters tall casts a 2.4-meter shadow. How tall is the Ferris wheel?

A 9-foot ladder leans against a building six feet above the ground. At what height would a 15-foot ladder touch the building if both ladders form the same angle with the ground?

Chris wants to reduce a triangle pattern with sides 16, 16, 20 centimeters. If the longest side of the new pattern is to be 15 cm, how long should the other two sides be?