Math 2   Name _____
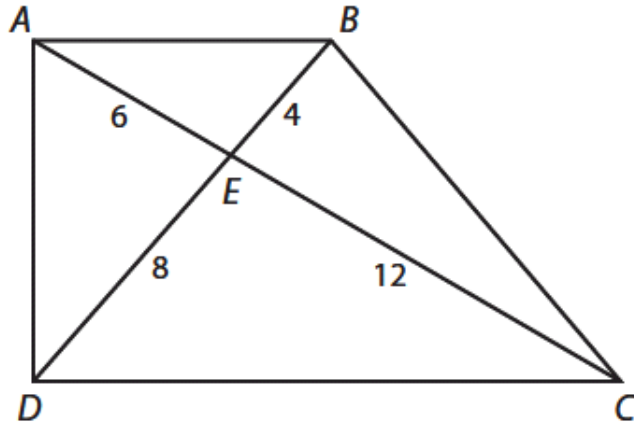
Similar Triangles

In the diagram at the right, quadrilateral *ABCD* is a trapezoid with $\overline{AB} \parallel \overline{CD}$ and segment lengths as shown.
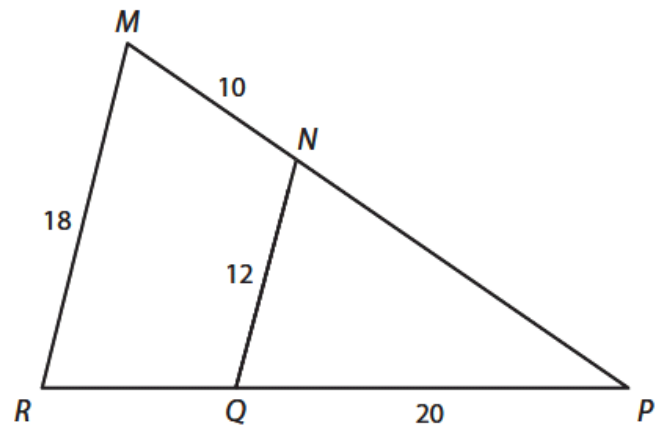
A _____ B   **a.** Is $\triangle AED \sim \triangle BEC$? Explain your reasoning.

6   4

E

8   12

D   C   **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, $\overline{MR} \parallel \overline{NQ}$.   M

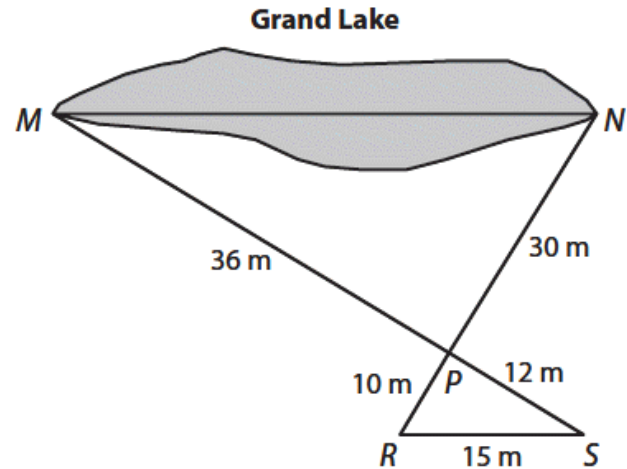**a.** Provide an argument to justify that $\triangle MPR \sim \triangle NPQ$.

10

N

18

12

R   Q   20   P

b. Use the given measurements to determine each of the following.
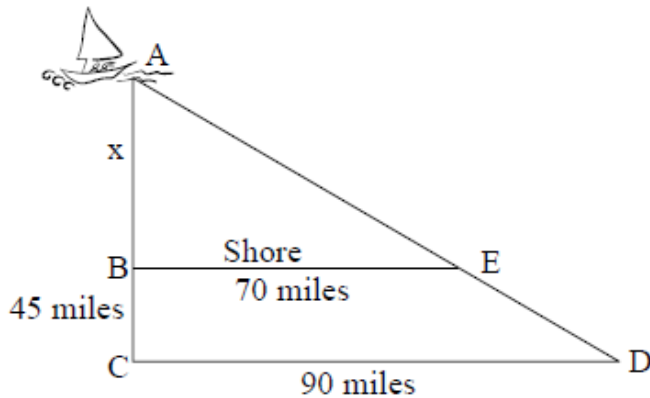   **i.** *RP*   **ii.** *NP*

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

Grand Lake

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 $\overline{BE} \parallel \overline{CD}$.
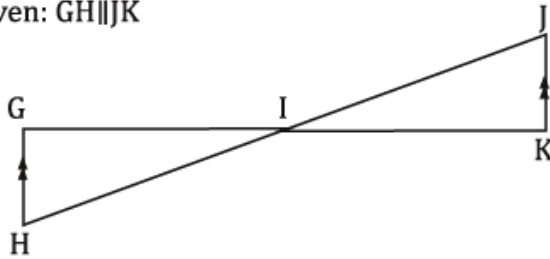

Note: The figure is not drawn to scale.

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.
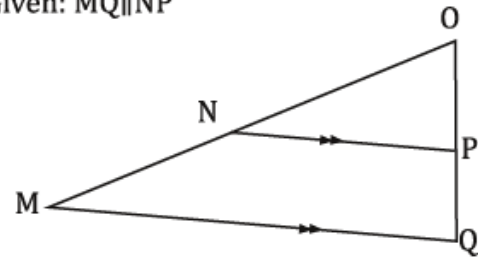
24.

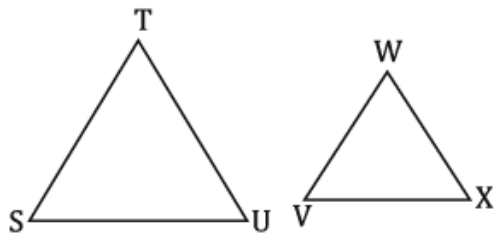Given: $\overline{GH} \parallel \overline{JK}$

Prove: △GHI∼△KJI

25.

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

Prove: △QMO∼△PNO

26.

Given: △ABD and △BCD are equilateral
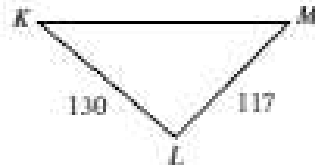

Prove: △STU∼△VWX

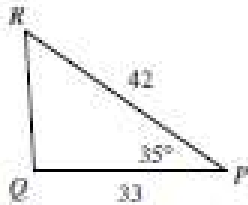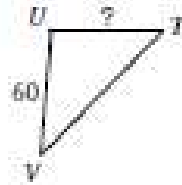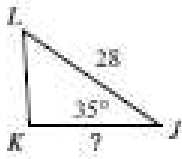**27.**

Given: $\dfrac{AB}{DC} = \dfrac{AC}{CE}$, $\overline{AB} \parallel \overline{CD}$
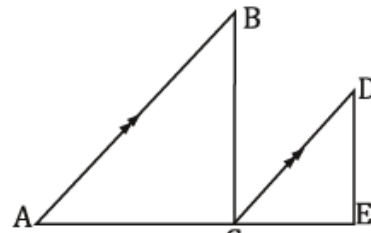
Prove: △ABC∼△CDE

Find the missing length. The triangles in each pair are similar.
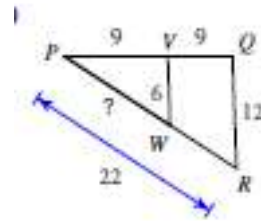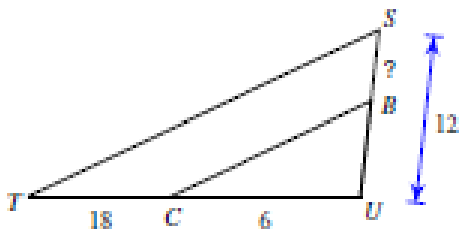
When a Ferris wheel casts a 20-meter shadow, a man 1.8 meters tall casts a 2.4-meter shadow. How tall is the Ferris wheel?

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 adders form the same angle with the ground?

Chris wants to reduce a triangle patter 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?