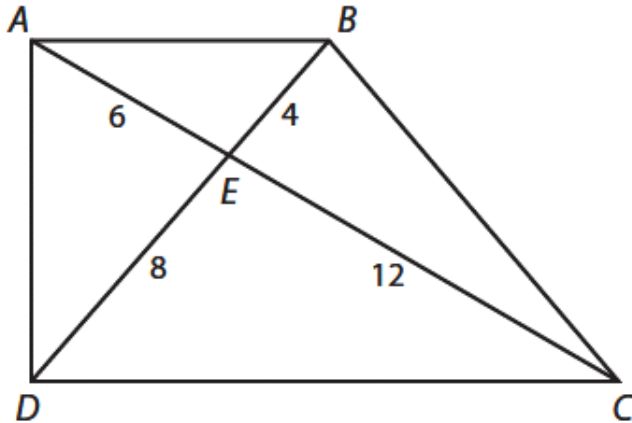


1. In the diagram at the right, quadrilateral $ABCD$ is a trapezoid with $\overline{AB} \parallel \overline{CD}$ and segment lengths as shown.



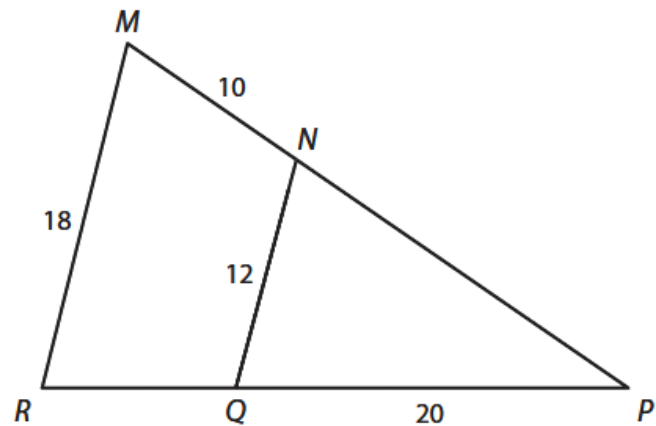
- a. Is $\triangle AED \sim \triangle BEC$? Explain your reasoning.

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

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

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

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



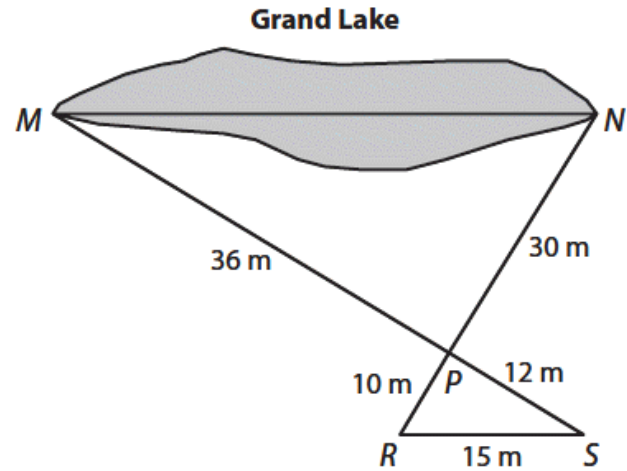
- b. Use the given measurements to determine each of the following.

i. RP

ii. NP

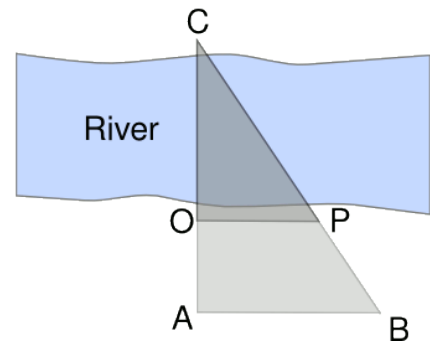
3. Maya needed to determine the longest distance across Grand Lake. She made the measurements as shown in the diagram.

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

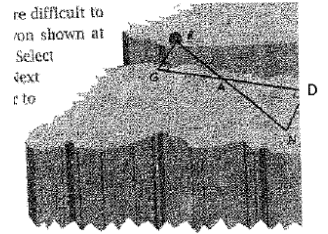


b. Determine MN , the longest distance across Grand Lake.

4. Calculate the distance across the river shown below by sighting a pole on the opposite bank at point C. Align points A and O on the near bank so that points C, A and O are on the same line. Next measure a convenient distance AB with AB perpendicular to AC, then locate points P by sighting the intersection of BC with OP. (OP is perpendicular to AC). You can calculate the distance across the river, OC, because $\triangle COP \sim \triangle CAB$. If AO is 45 meters, AB is 90 meters, and OP is 60 meters, find the distance across the river.



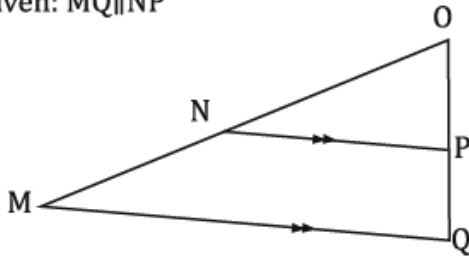
Similar triangles can also be used to find distances that are difficult to measure directly. Calculate the distance across the canyon shown at the right by sighting a rock on the opposite side at point R. Select points G and D so that GD is perpendicular to RG. Next measure a convenient distance ND (with ND perpendicular to DG), then locate point A, the intersection of RN and GD.



Because $\angle D$ and $\angle G$ are congruent and $\angle DAN$ and $\angle GAR$ are congruent, then $\triangle DAN \sim \triangle GAR$. The distance across the canyon can be determined because the triangles are similar. If GA is 120 meters, DA is 60 meters, and ND is 50 meters, find GR, the distance across the canyon.

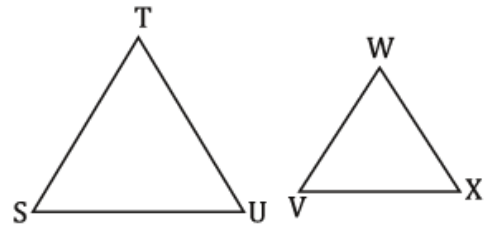
25.

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



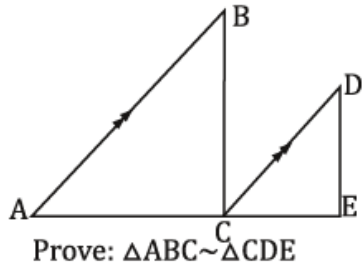
Prove: $\triangle QMO \sim \triangle PNO$

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

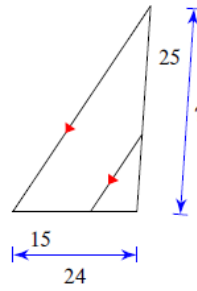
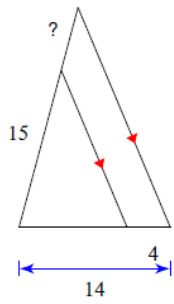


Prove: $\triangle STU \sim \triangle VWX$

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



Find the missing length.



Solve for x.

