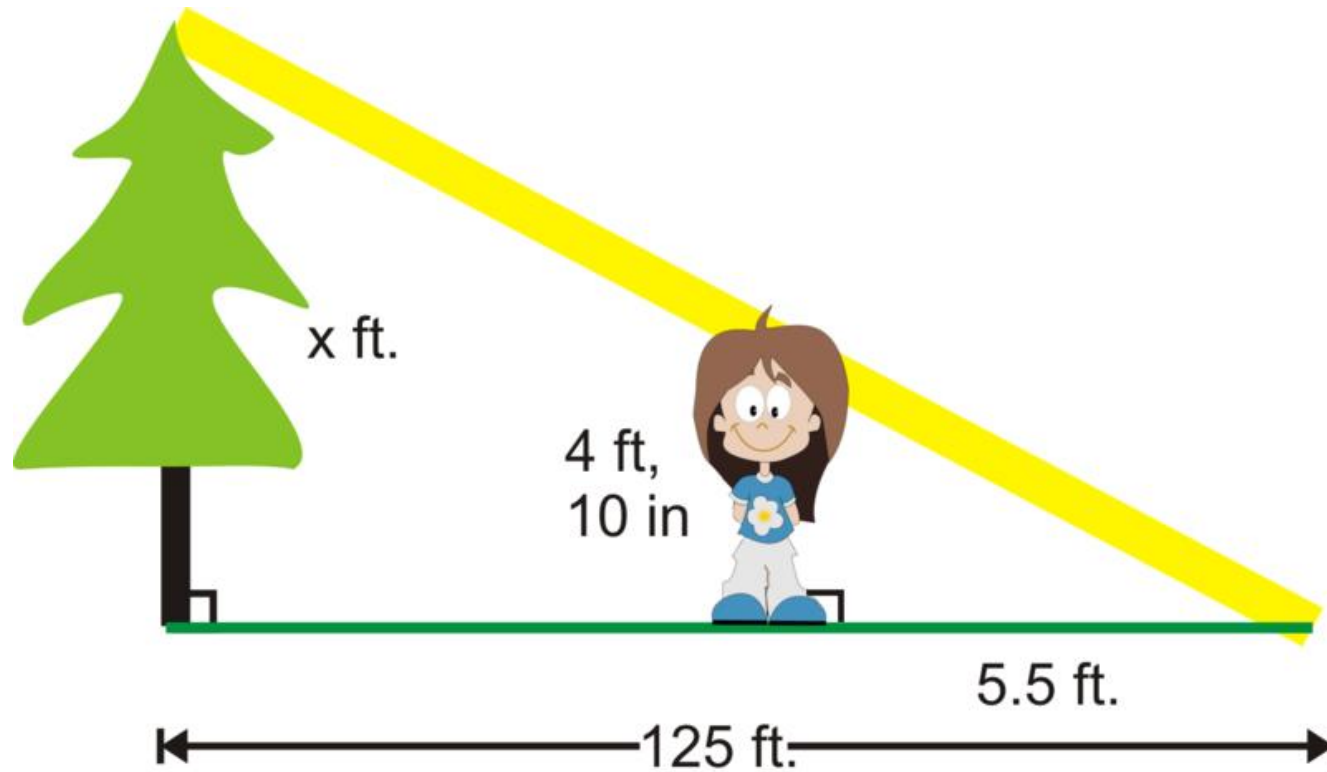
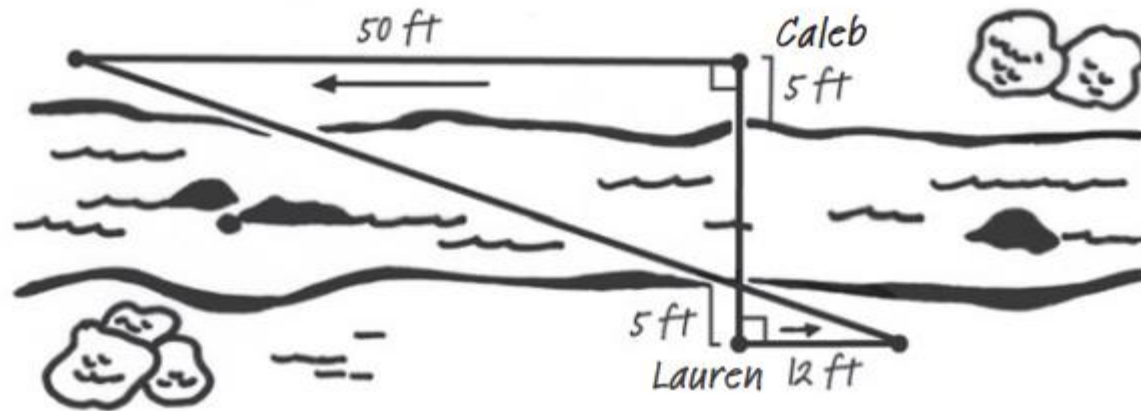


Warm-up: How tall is that tree?

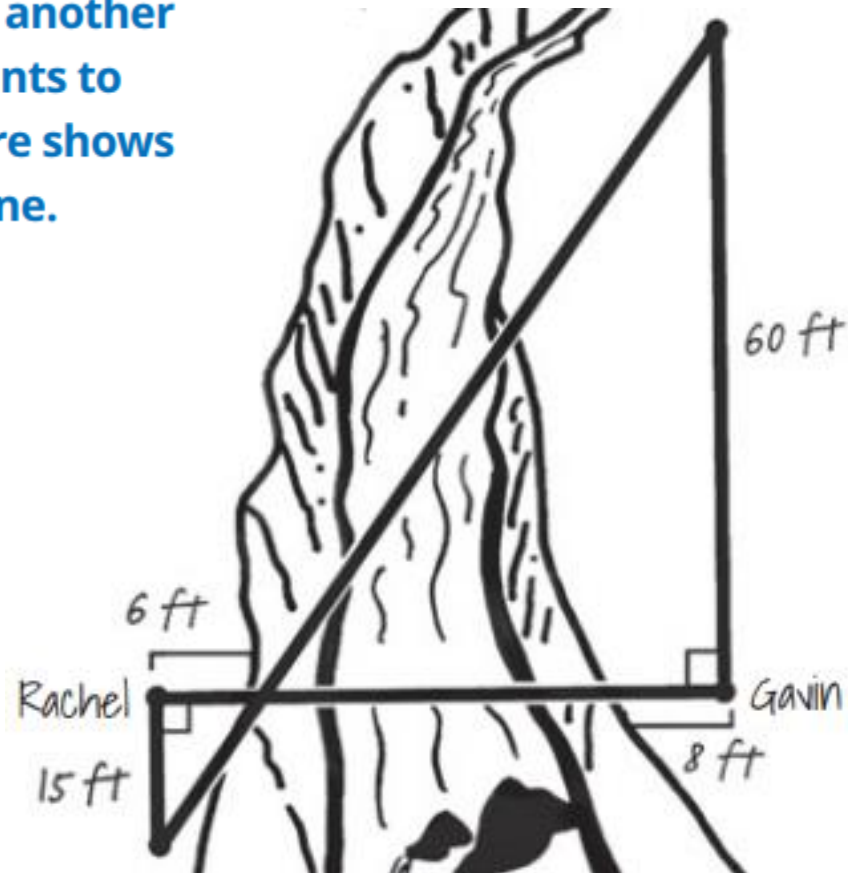


1. A group of friends are visiting a park. Lauren stands on one side of the creek and Caleb stands directly across the creek as shown in the figure.

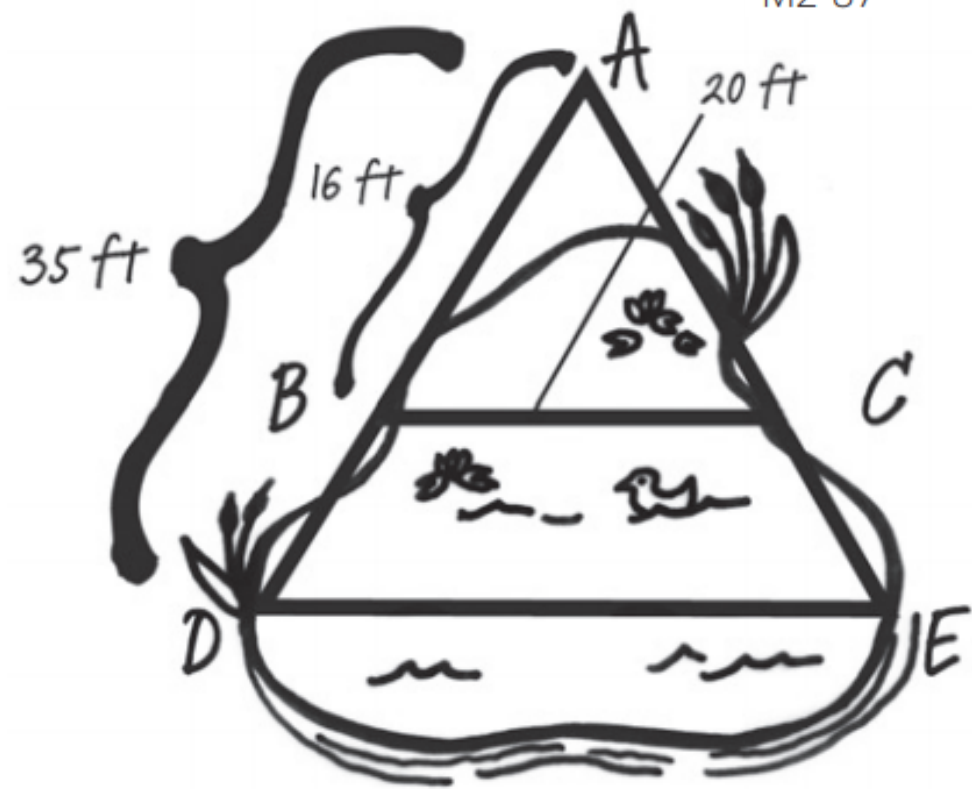


- How do you know that the triangles formed by the lines are similar?
- Calculate the distance from Caleb's starting point to Lauren's side of the creek. Round your answer to the nearest tenth, if necessary.
- What is the width of the creek? Explain your reasoning.

2. There is also a ravine (a deep hollow in the earth) on another edge of the park. Rachel and Gavin take measurements to indirectly calculate the width of the ravine. The figure shows their measurements. Calculate the width of the ravine.



3. There is a large pond in the park. Elijah wants to calculate the distance across the widest part of the pond, labeled as  $\overline{DE}$ . To indirectly calculate this distance, he first placed a stake at point  $A$ . From point  $A$  he could see the edge of the pond on both sides at points  $D$  and  $E$ , where he also placed stakes. Then, he measured the distance from point  $A$  to point  $D$  and from point  $A$  to point  $E$ . At a narrow portion of the pond, he placed stakes at points  $B$  and  $C$  along the string so that  $\overline{BC}$  is parallel to  $\overline{DE}$ . The measurements are shown on the diagram. Calculate the distance across the widest part of the pond.



4. In the figure shown, the cue ball hits the black ball. The dashed line represents the black ball's path to the pocket. The distance from the black ball to the point at which it will bank off the left side of the table, represented by  $AB$ , is 50 cm. The perpendicular distance from the black ball to the left side of the table, represented by  $TA$ , is 40 cm. The width of the pool table,  $EL$ , is 200 cm. Determine the total distance the black ball will travel before it sinks into the pocket.

