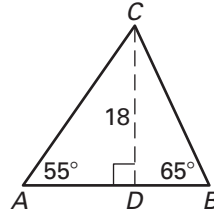


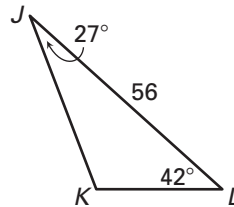
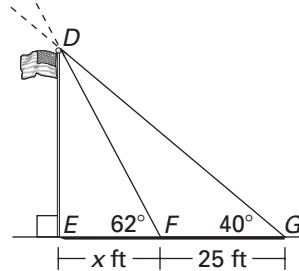
Challenge: Skills and Applications

For use with pages 558–566

1. Refer to the diagram. What is the length of the base \overline{AB} ? Round to the nearest tenth.



2. When the sun is shining at a 62° angle of elevation, a flagpole forms a shadow of length x feet. Later, the sun shines at an angle of 40° , and the shadow is 25 feet longer than before.
- Write two expressions for the height DE of the flagpole, in terms of x .
 - How tall is the flagpole? Round to the nearest tenth of a foot.
3. Refer to the diagram. Find JK and KL . Round decimals to the nearest tenth. (Hint: Draw an altitude.)



In Exercises 4–6, refer to the diagram.

- Write an expression for $\tan x^\circ$ and an expression for $\tan(90 - x)^\circ$, in terms of a , b , and c . How is the tangent of an angle related to the tangent of the angle's complement?
- Write an expression for $(\sin x^\circ)^2 + (\cos x^\circ)^2$ in terms of a , b , and c . Then use the Pythagorean Theorem to simplify your expression.
- If $\sin x^\circ = 0.6$, what is the value of $\cos x^\circ$?
- Complete the following steps to evaluate $\sin 18^\circ$.
 - Show that $\triangle PRQ \sim \triangle QRT$.
 - Use the similar triangles to find and solve a proportion involving x .
 - Name an 18° angle in the diagram. What is the exact value of $\sin 18^\circ$, in radical form?

