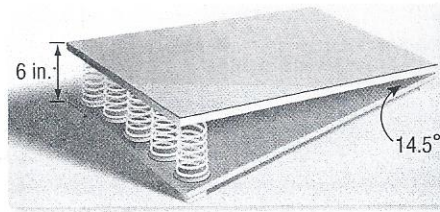


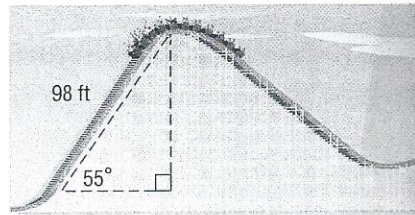
Right Triangle Trig Word Problems

- Bill's father is building a ramp to reach the front porch of their house. The ramp will rise from the flat ground to the top of the porch. The porch is 2 feet tall. The ramp will rise at a 10° angle from the ground. How long does the ramp need to be?

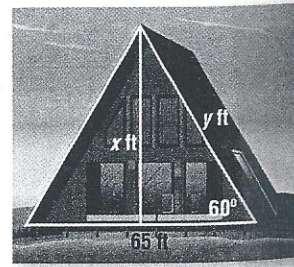
- GYMNASTICS** The springboard that Eric uses in his gymnastics class has 6-inch coils and forms an angle of 14.5° with the base. About how long is the springboard?



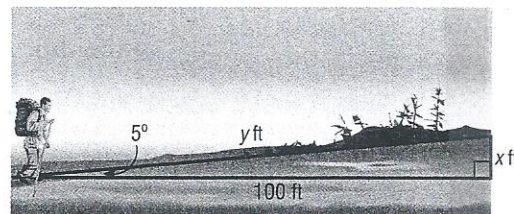
- ROLLER COASTERS** The angle of ascent of the first hill of a roller coaster is 55° . If the length of the track from the beginning of the ascent to the highest point is 98 feet, what is the height of the roller coaster when it reaches the top of the first hill?



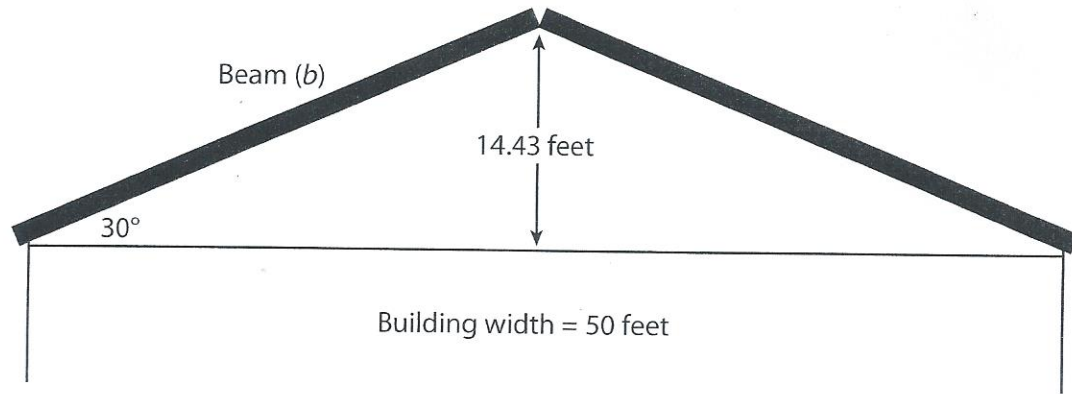
- ARCHITECTURE** The front of the vacation cottage shown is an isosceles triangle. What is the height x of the cottage above its foundation? What is the length y of the roof? Explain your reasoning.



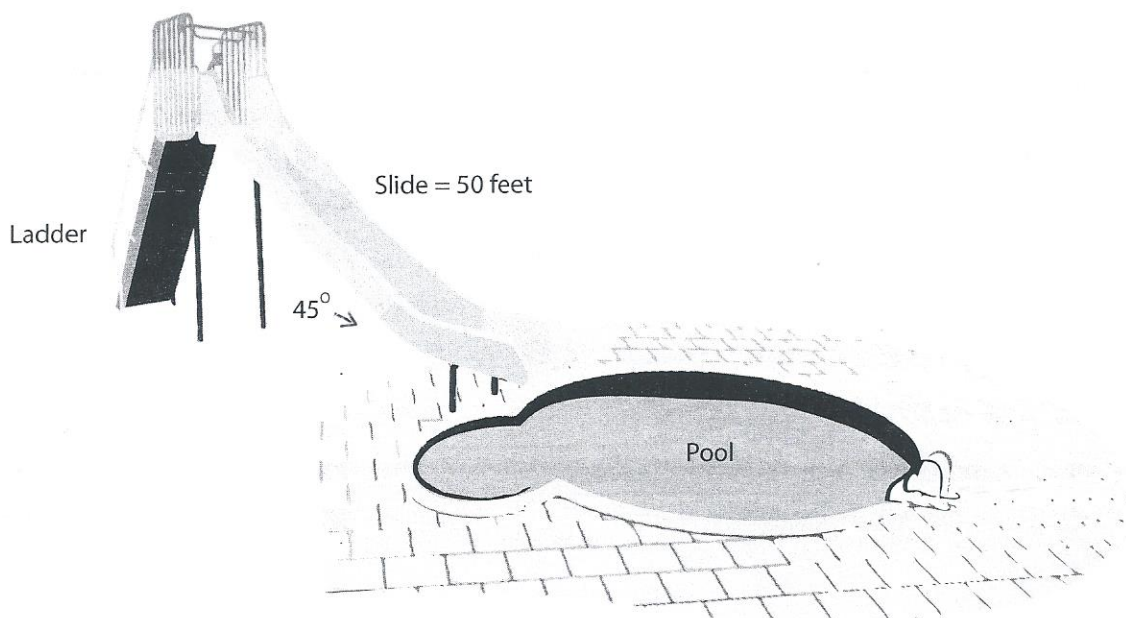
- HIKING** A certain part of a hiking trail slopes upward at about a 5° angle. After traveling a horizontal distance of 100 feet along this part of the trail, what would be the change in a hiker's vertical position? What distance has the hiker traveled along the path?



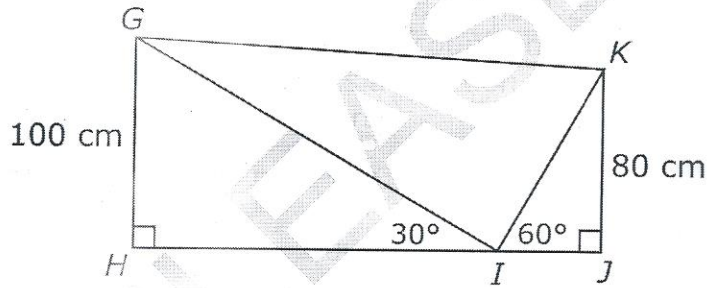
6. A carpenter needs to measure the length of the beams that will support a roof. The building is 50 feet wide. The roof will rise at an angle of 30° from the top of the walls. The peak of the roof is 14.43 feet above the top of the walls. The side adjacent to the 30° angle is half the width of the building. How long is each supporting beam, b , to the nearest thousandths? Add 2 feet to the beam length so that the roof can extend 2 feet past the walls.



7. A water park has a straight slide into a deep pool. The slide is 50 feet long. It rises from the pool at an angle of 45° . How tall do the vertical supports of the platform need to be to support the platform at the top of the slide?

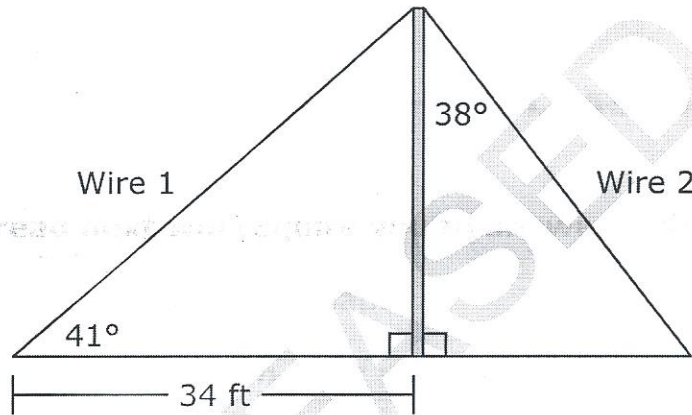


8. What is the **approximate** length of \overline{HJ} in the diagram below?



- A 292 cm
 B 265 cm
 C 219 cm
 D 196 cm

9. In the figure below, a pole has two wires attached to it, one on each side, forming two right triangles.



Based on the given information, answer the questions below.

two right triangles.

- How tall is the pole?
- How far from the base of the pole does Wire 2 attach to the ground?
- How long is Wire 1?

10. A boy flies a kite with a 100-foot-long string. The angle of elevation of the string is 48° . How high is the kite from the ground?

11. A 14-foot ladder is being used to get the top of a 12-foot-tall wall. At what angle of elevation must the ladder be positioned in order to reach the top of the wall?

12. A mother gazes out a second-floor window at her son playing at the playground. If the mother's eye level is 12.6 meters off of level ground and the playground is 20 meters from the base of the building, what is the angle of depression from the mother's line of sight to the playground?

13. A little girl is watching planes take off of the runway from a building's rooftop 40 meters away from the airport. If the height of the building is 400 meters and the girl snaps a photo of a plane at a 24° angle of elevation, what is the altitude, or vertical height, of the plane when the photo is taken?

14. The high school basketball team has won the division title, and a work crew is going to put a celebratory banner up on the gymnasium wall. The top of the banner will be 20 feet off the floor. The crew leader knows that the base of an extension ladder should be 7 feet away from the wall to form an angle of 76° with the floor. He is not sure if a 25-foot ladder will be long enough.