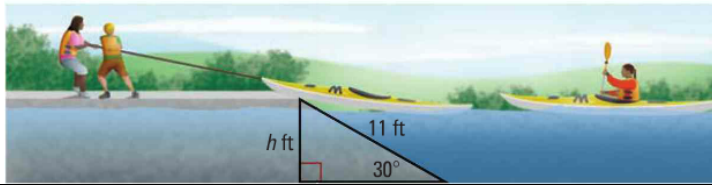
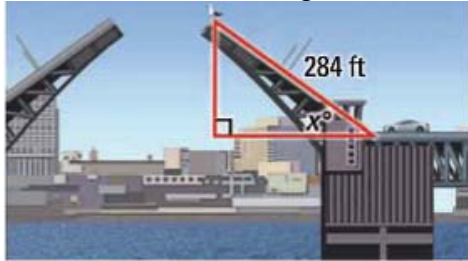


**KAYAK RAMP** A ramp is used to launch a kayak. What is the height of an 11 foot ramp when its angle is  $30^\circ$  as shown?



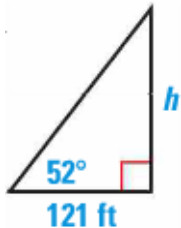
**Drawbridge:** Each half of the drawbridge is about 284 feet long, as shown. How high does it rise on the end when the angle of elevation is  $30^\circ$ ?  $45^\circ$ ?  $60^\circ$ ?



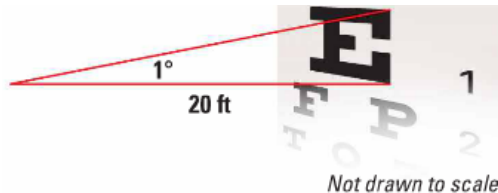
**Washington Monument:** A surveyor is standing 118 feet from the base of the Washington Monument. The surveyor measures the angle between the ground and the top of the monument to be  $78^\circ$ . Find the height ( $h$ ) of the Washington Monument to the nearest foot.



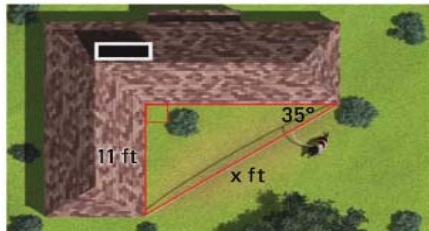
**Roller Coasters:** A roller coaster makes an angles of  $52^\circ$  with the ground. The horizontal distance from the crest of the hill to the bottom of the hill is about 121 feet, as shown. Find the height ( $h$ ) of the roller coaster to the nearest foot.



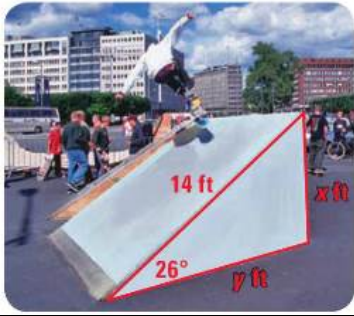
**Eye Chart:** You are looking at an eye chart that is 20 feet away. your eyes are level with the bottom of the “E” on the chart. To see the top of the “E”, you look up  $1^\circ$ . How tall is the “E”?



**Dog Run:** You want to string a cable to make a dog run from two corners of a building, as shown in the diagram. Write and solve a proportion using a trig ratio to approximate the length of cable you will need.



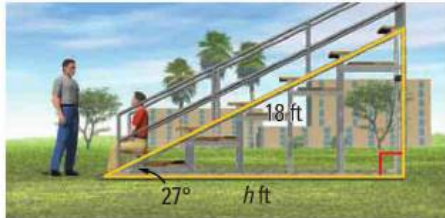
Skateboard Ramp: You want to build a skateboard ramp with a length of 14 feet and an angle of elevation of  $26^\circ$ . You need to find the height and length of the base of the ramp.



Airplane Ramp: The airplane door is 19 feet off the ground and the ramp has a  $31^\circ$  angle of elevation. What is the length of the ramp?

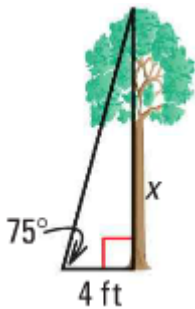


Bleachers: Find the horizontal distance ( $h$ ) the bleachers cover. Round to the nearest foot.



Soccer: A soccer ball is placed 10 feet away from the goal, which is 8 feet high. You kick the ball and it hits the top center of the goal (the crossbar). What is the angle of elevation of your kick?

Tree: The angle between the bottom of a fence and the top of a tree is  $75^\circ$ . The tree is 4 feet from the fence. How tall is the tree? Round to the nearest foot.



Hills: The length of a hill in your neighborhood is 2000 feet. The height of the hill is 750 feet. What is the angle of elevation of the hill?

