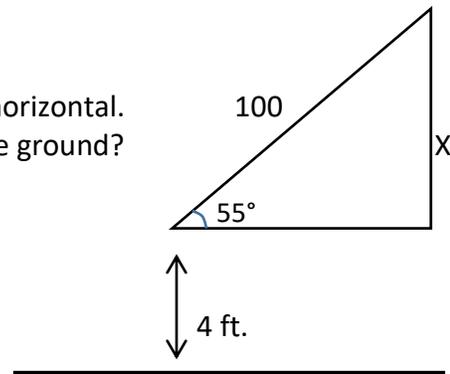


4.4 Applications of Right Triangle Trig.

1. Holly is flying her kite. Her hand holding the string is 4 feet above ground level and the string makes an angle of 55° above horizontal. When she has 100 ft. of string out, how high is the kite above the ground?



2. A damsel is in distress and is being held captive in a tower. Her knight in shining armor is on the ground below with a ladder. When the knight stands 15 feet from the base of the tower and looks up at his precious damsel, the angle of elevation to her window is 60° . How long does the ladder have to be?

3. Suppose you're flying a kite, and it gets caught at the top of the tree. You've let out all 100 feet of string for the kite, and the angle that the string makes with the ground is 75° . Instead of worrying about how to get your kite back, you wonder. "How tall is that tree?"

4. A submarine traveling at a depth of 250 feet dives at an angle of 15° with respect to a line parallel to the water's surface. It travels a horizontal distance of 1500 feet during the dive. What is the depth of the submersible after the dive?

5. Brothers Jeff and Parker buy a tent that has a center pole 6.25 feet high. If the sides of the tent are supposed to make a 50° angle with the ground, how wide is the tent?

6. An old lady's cat gets stuck in the top of a tree that is 30 feet tall and won't come down. She calls the fire department and they come with their ladder. They set their ladder up at a 45.5° angle, how tall must their ladder have been to reach the top of the tree?
7. Kelli is walking to her office building which she knows is 150ft high. The angle to the top of the building from her current location is 6° . How much further does she need to walk?
8. Travis is trying to wash the windows above his porch on his day off and leans a six-meter-long ladder up against his house. If the ladder makes an angle of 60° with the ground, how far up the wall does the ladder reach? How far from the wall is the base of the ladder?
9. From the top of a 35 meter cliff, Kallie sees a fellow hiker below on the road as she looks down at an angle of 62° . How far away is the hiker from Kallie?
10. The tallest television transmitting tower in the world is in North Dakota, and it is 2059 feet tall. If you are on level ground exactly 5280 feet (one mile) from the base of the tower, what is your angle of elevation looking up at the top of the tower?
11. A fire department's longest ladder is 110 feet long, and the safety regulation states that they can use it for rescues up to 100 feet off the ground. What is the maximum safe angle of elevation for the rescue ladder?
12. An observer on the ground at point A watches a rocket ascend. The observer is 1200 feet from the launch point B. As the rocket rises, the distance d from the observer to the rocket increases.
- a. Express the measure of angle A in terms of d . b. Find the measure of angle A if $d = 1500$ feet. c. Find the measure of angle A if $d = 2000$ feet.