

Right Triangle Trigonometry and Pictures

The problems below don't ask for an answer. Their purpose is to get you to practice drawing pictures so that you can solve word problems later on when you are asked for some answer. So, draw the pictures presented by the information in the problem. Assume that buildings, ladders, etc. are all on level ground so that you're dealing with right triangles.

1. The angle of elevation of the top of a building from a point 100 feet away from the building is 65° .
2. The Sears Tower stands 1,451 feet tall. A person across the street is 30 feet away from the foot of the tower.
3. An airplane is flying at a height of 2 miles above the ground. The distance along the ground from the airplane to an airport is 5 miles.
4. The angle of depression of a buoy from a point on a lighthouse 100 feet above the surface of the water is 3° .
5. A bird sits on top of a 15-foot lamppost. The angle of depression from the bird to the feet of an observer standing away from the lamppost is 35° .
6. If a plane that is cruising at an altitude of 30,000 feet wants to land at Bush Field, it must begin its descent so that the angle of depression to the airport is 7° .
7. From the top of a 35 meter cliff, Lori spots a hiker at an angle of depression of 62° .
8. Josee wanted to measure the depth of the sink hole that opened on Amelia Avenue this morning. She measured the angle of depression to the lowest point to be 35° . She also measured the distance across the sinkhole to be 38 feet.
9. A ship of height 18 m is sighted from a lighthouse. From the top of the lighthouse, the angle of depression to the top of the mast and the base of the ship equal 30° and 45° respectively.
10. Two towers face each other separated by a distance 20 m. As seen from the top of the first tower, the angle of depression of the second tower's base is 60° and that of the top is 30° .
11. Two points on the same side of a tree are 65 feet apart. The angles of elevation of the top of the tree are $21^\circ 19'$ from one point and $16^\circ 20'$ from the other point.
12. A plane is 120 miles north and 85 miles east of an airport.
13. As a hot-air balloon rises vertically, its angle of elevation from a point A, which is 110 kilometers from the point B, which is directly underneath the balloon, changes from 19° to 38° .
14. An engineer determines that the angle of elevation from her position to the top of a tower is 52° . She measures the angle of elevation again from a point 47m farther away from the tower and finds it to be 31° .
15. A boat sails 10km from a harbor H on a bearing of $S30^\circ E$.
16. A boat sails 15 km from a harbor H on a bearing of $N20^\circ E$.
17. An airplane flies in a direction of 253° for 125 miles.
18. An airplane flies in a direction of 52° for 54 miles.