Mathelpers

Name: _____

Applications and Models

1) Ship A left a harbor and traveled on a course of bearing N42°W for 68 miles. A second ship left the same harbor and traveled 45.5 miles due west. How many miles north of ship B is ship A?

2) From an observation tower at point A, a forest ranger sights a fire in the direction S38°W. From a point B, 8 miles west of point A, another ranger sights the same fire in the direction S52°E. Find the distance of the fire from point A.

3) From a point 15 meters above level ground, a surveyor measures the angle of depression of an object on the ground at 68°. Approximate the distance from the object to the point on the ground directly beneath the surveyor.

4) A ship, offshore from a vertical cliff known to be 100 feet in height, takes a sighting of the top of the cliff. If the angle of elevation is found to be 25°, how far offshore is the ship?

5) A 22-foot extension ladder leaning against a building makes a 70° angle with the ground. How far up the building does the ladder touch?

6) Find the angle of depression from the top of a lighthouse 250 feet above water level to the water line of a ship 2 miles offshore.

7) From the top of a 172 -foot - high water tank, the angle of depression to a house is 13°. How far away is the house from the water tank?

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8) A 30-foot ladder used by firefighters is safe only when it leans against a building at an angle of 75° or less to the ground. What is the maximum height on a building the ladder can reach?

9) The distance along a slope from the top of the bank of a river to the edge of the water is 18.6 meters. A surveyor found that the land slopes downward at an angle of 24°. Find the horizontal distance from the top of the bank to the river's edge.

10) A pilot plans to make his approach to an airstrip at an angle of 12° with the horizontal. If the plane is at an altitude of 5500 feet, how far from the airstrip should the pilot begin the descent?

11) The angle of elevation of a pipeline up the side of a mountain is 42°. The pipe is 25 meters long. Find the vertical rise of the mountain.

12) From a cliff 125 meters above the shoreline, the angle of depression of a ship is 36°. What is the distance of the ship from the shoreline?

13) From an airplane, the angles of depression to the opposite sides of a canyon are 34° and 56°. The plane is at an altitude of 18,000 feet. What is the distance across the canyon?

14) The length of a ski slope is 620 meters. When a skier is at the top of the slope, the angle of depression to the bottom of the slope is 16.4°. Find the vertical drop of the ski slope.