

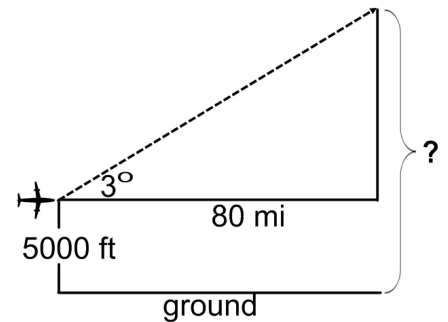
Name:

6.1 Application Problems

Use trig and inverse trig ratios to solve the following problems.

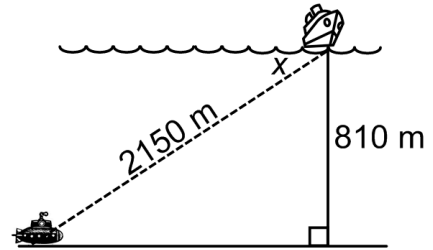
Draw a picture and show your work.

1. A plane is flying at an altitude of 5000 ft. The plane climbs at an angle of 3° and covers a horizontal distance of 80 miles. At the end of the climb, how far above the ground is the plane?
(Hint: watch your units!)



2. A kite flying on the end of a string is making a 65° angle with the ground. If the kite is 30 feet above the ground, how long is the string?
3. An escalator in the Atlanta subway makes an angle of 10° with the horizontal. The escalator travels 59.1 ft horizontally to the subway platform. What is the length of the escalator?
4. A 40 ft tree casts a shadow that is 30 ft long. Find the angle of elevation of the sun

5. A ship's sonar identifies a target at a range of 2150 meters. The ocean depth is 810 meters. What is the measure of the angle of depression to the target they want to hit?



6. A plane takes off at an angle of 24° with the ground.
- How far has it traveled with respect to the ground (horizontal distance) after it has traveled 3 miles?

- How high, in feet, is the plane after it has traveled 3 miles?

7. A woman in a ship at sea looks up at a lighthouse that she knows is 260 feet tall. The angle she looks up at is 11° . How far away is she from the lighthouse?

8. A smokestack stands on top of a building at the edge. At a point 200 feet from the base of a building, the angle of elevation to the bottom of a smokestack is 35° , whereas the angle of depression from the top to the point is 53° . Find the height of the smokestack without the building.

