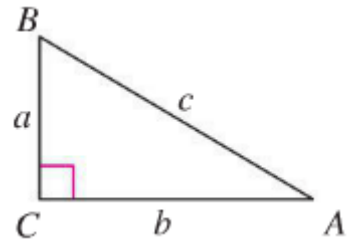# Section 4.8

**Problem 1.** Solve the right triangles show for all unknown sides and angles.

a) $B = 71°, \ b = 24$



b) $B = 54°, \ c = 15$

c) $a = 25, \ c = 35$

**Problem 2.** The sun is 25° above the horizon. Find the length of a shadow cast by a building that is 100 feet tall.

**Problem 3.** The length of a shadow of a tree is 125 feet when the angle of elevation of the sun is 33°. Approximate the height of the tree.

**Problem 4.** A passenger in an airplane at an altitude of 10 kilometers sees two towns directly to the east of the plane. The angles of depression to the towns are 28° and 55° (see figure). How far apart are the towns?
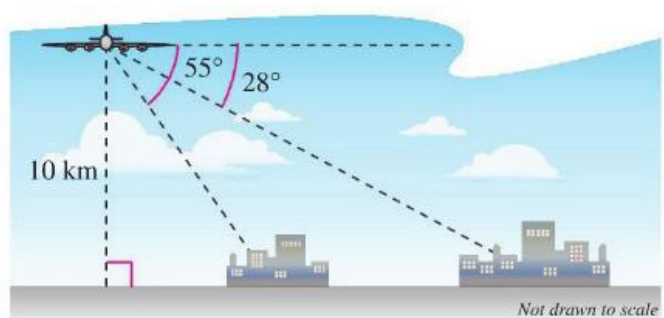
**Problem 5.** You observe a plane approaching overhead and assume that its speed is 550 miles per hour. The angle of elevation of the plane is 16° at one time and 57° one minute later. Approximate the altitude of the plane.

**Problem 6.** A jet leaves Reno, Nevada, and is headed towards Miami, Florida, at a bearing of 100°. The distance between the two cities is approximately 2472 miles.

    a) How far north and how far west is Reno relative to Miami?

    b) The jet is to return directly to Reno from Miami. At what bearing should it travel?

**Problem 7.** A ship is 45 miles east and 3 miles south of a port. The captain wants to sail directly to port. What bearing should be taken?

**Problem 8.** A buoy oscillates in simple harmonic motion as waves go past. The buoy moves a total of 3.5 feet from its low point to its high point (see figure), and it returns to its high point every 10 seconds. Write an equation that describes the motion of the buoy where the high point corresponds to the time $t = 0$.
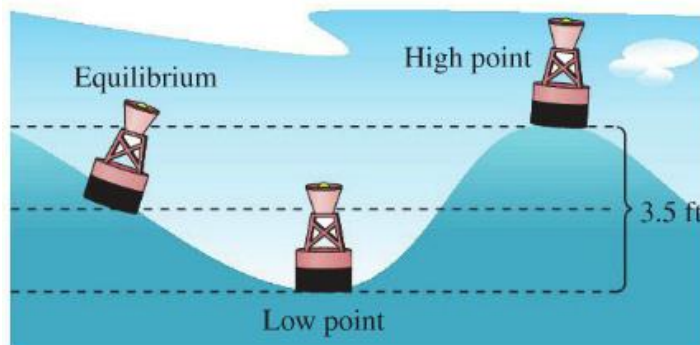


Read section 4.8, do #7, 9, 19, 23, 25, 35, 39, 42