Trigonometry Application Problems

Read each question carefully, underline key information, draw a picture if none is given and decide which trigonometry method you will use to solve the problem. Round angles to the nearest degree and lengths to the nearest tenth, unless otherwise stated.

1. A flagpole casts a shadow 17.7 m long when the angle of elevation of the sun is 66.4°. How tall is the flagpole?

2. The Bermuda Triangle is a region off the coast of Miami, extending to the islands of Bermuda and Puerto Rico. The distance from Miami to Bermuda is 1,690 km, from Bermuda to Puerto Rico is 1,049 km, and from Puerto Rico to Miami is 1,600 km. Find the measures of the angles of the triangle. The sides are approximately 1,690, 1,049, and 1,600 km.

*Be sure to convert 1,049 km to m before solving for the angles.

3. A ferry is used to transport guests from the dock to the hotel. The dock is located one level 550 m apart. The first hotel is at an angle of 40° to the dock and the second hotel is at an angle of 75°.

*The second hotel is at an angle of 75° between the dock and the first hotel. How far is each hotel from the dock?

4. Harold and Seena are standing 321 m apart, watching a hot air balloon above them. Harold measures the angle of elevation to the balloon to be 54°. Seena measures the angle of elevation to the balloon to be 38°.

*How far is each person from the balloon, to the nearest metre?

5. Michael stands 10 m from the base of a building. He measures the angle of elevation to the top of the building to be 65°. Michael’s measurement was made from 4 m above the ground. Determine the height of the building to the nearest metre. How much is 3.28 ft?

Three roads join Hometown, Mytown, and Outtown.

a) What is the distance from Hometown to Outtown?

b) What angles do the roads make at Hometown and at Outtown?