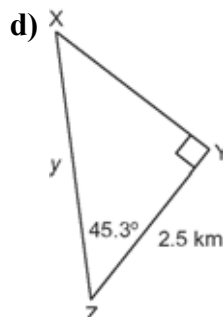
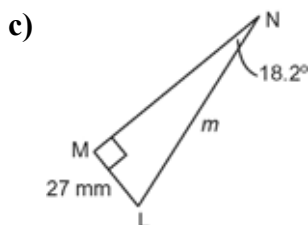
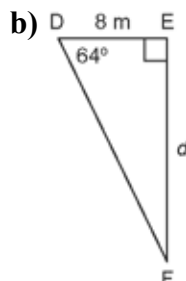
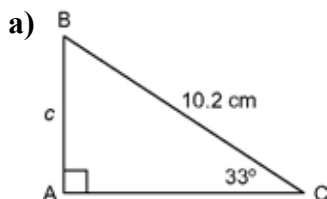


Section 4.1 Use Trigonometry to Find Lengths

1. Find the length of the indicated side. Round to the nearest tenth of a unit.



2. Draw each triangle. Then, find the lengths of all unknown sides to the nearest tenth of a unit.

a) In $\triangle ABC$, $\angle A = 90^\circ$, $\angle B = 11.7^\circ$, and $b = 11.9$ m

b) In $\triangle GHI$, $\angle G = 90^\circ$, $\angle I = 41.5^\circ$, and $h = 16.2$ m

c) In $\triangle UVW$, $\angle V = 90^\circ$, $\angle W = 61.9^\circ$, and $w = 1.7$ km

3. The angle of elevation of a children's slide at a park is 38.6° . The slide covers a horizontal distance of 5 m. Find the length and height of the slide to the nearest tenth of a metre.

4. An airplane is preparing to land at an airport. The angle of depression from the airplane to the airport is 10° . The altitude of the plane is 0.8 km.

- a) What is the angle of elevation from the airport to the airplane?
 b) How far is the airplane from the airport to the nearest hundredth of a kilometre?
 c) What is the horizontal distance from the airplane to the airport to nearest hundredth of a kilometre?

5. The height of a mountain is 1 km. The angle of depression from the top of the mountain to the bottom is 35° . A trail runs down the length of the mountain. What is the length of the trail to the nearest hundredth of a kilometre?

6. Milan and Amberley are going to a movie theatre located directly north of their house. The fastest route is to travel 3 km east, then turn 45° northwest, and travel the rest of the way.

- a) What is the least distance from the movie theatre to their house?
 b) How far do they have to drive to get to the movie theatre? Round your answer to the nearest tenth of a kilometre.

7. Bethany wants to hang lights on her house. The maximum angle of elevation of the ladder is 80° . The length of the ladder is 5 m.

- a) At the maximum angle, how high does the ladder reach?
 b) The eaves trough is 4.8 m above ground. Will Bethany be able to reach it safely on her ladder?

8. An amateur baseball team is playing on an irregular baseball diamond in the shape of a rhombus as shown. Find the distance to the nearest metre, a batter has to run if she hits a home run.

