Pythagorean Theorem/Trig Application Problems

1.

Home Maintenance A painter leans a 15-ft ladder against a house. The base of the ladder is 5 ft from the house.
**a.** To the nearest tenth of a foot, how high on the house does the ladder reach?
b. The ladder in part (a) reaches too high on the house. By how much should the painter move the ladder's base away from the house to lower the top by 1 ft?

2.

A walkway forms the diagonal of a square playground. The walkway is 24 m long. To the nearest tenth of a meter, how long is a side of the playground?

3.

Astronomy The Hubble Space Telescope is orbiting Earth 600 km above Earth's surface. Earth's radius is about 6370 km. Use the Pythagorean Theorem to find the distance x from the telescope to Earth's horizon. Round your answer to the nearest ten kilometers.
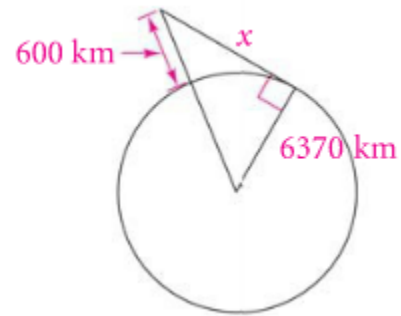

4.

Pyramids All but two of the pyramids built by the ancient Egyptians have faces inclined at 52° angles. Suppose an archaeologist discovers the ruins of a pyramid. Most of the pyramid has eroded, but she is able to determine that the length of a side of the square base is 82 m. How tall was the pyramid, assuming its faces were inclined at 52°? Round your answer to the nearest meter.
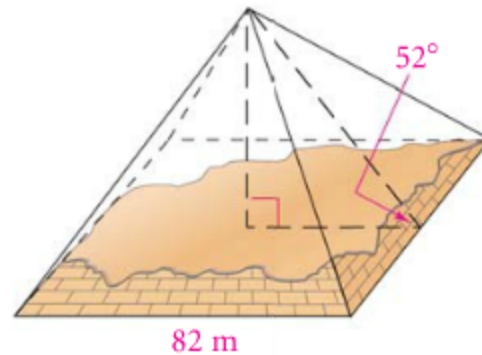
5.

Construction Two office buildings are 51 m apart. The height of the taller building is 207 m. The angle of depression from the top of the taller building to the top of the shorter building is 15°. Find the height of the shorter building to the nearest meter.

not to scale
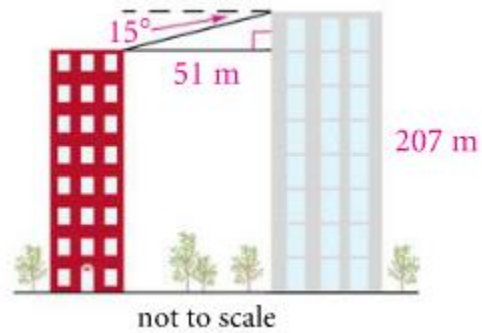
6.

A person standing 30 ft from a flagpole can see the top of the pole at a 35° angle.
  a. Draw a diagram.

  b. The person's eye level is 5 ft from the ground. Find the height of the flagpole to the nearest foot.