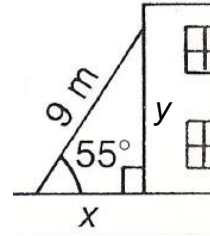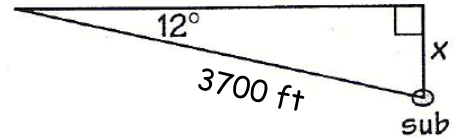## SM2 11.6 Trigonometry Story Problems

Read the following stories. Draw a picture if needed. Define the variable. Set up an equation. Solve the equation and show work. Be sure to label your answer. Round answers to the nearest tenth.
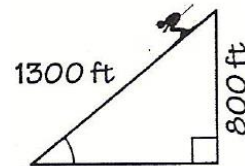
1. As it leans against a building, a 9-meter ladder makes an angle of 55° with the ground.
    a. How far is the bottom of the ladder from the base of the building?
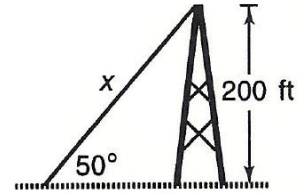   b. How far up the building does the ladder reach?

2. A submarine dives at an angle of 12° to the surface of the water. When the submarine has traveled 3700 feet, how deep is it?
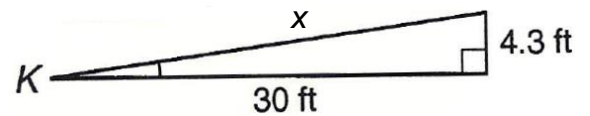
3. A skier drops 800 vertical feet while skiing 1300 feet. What is the angle of the ski slope with the horizontal?

4. A cable from the top of a 200-ft telephone tower makes a 50° angle with the ground. How long is the cable?

x

200 ft

50°

5. A wheelchair ramp rises 4.3 ft over a distance of 30 ft.
   a. How long is the ramp?
   b. What angle does the ramp make with the ground?

x

4.3 ft

K

30 ft

6. The top of an 18-ft waterslide is 14 ft above the ground.
   a. What angle does the slide make with the vertical ladder?
   b. How far is the bottom of the slide from the bottom of the ladder?

M

14 ft

18 ft

x

7. A person is 75 feet from the base of a barn. The angle formed from the person to the top of the barn is 60°. How tall is the barn?

8. A tree 40 feet high casts a shadow 58 feet long. Find the measure of the angle of elevation of the sun.

9. An airplane rises vertically 1000 feet over a horizontal distance of 5280 feet. What is the angle of elevation of the airplane's path?

10. A balloon on a 40-foot string makes an angle of 50° with the ground. How high above the ground is the balloon if the hand of the person holding the balloon is 6 feet above the ground?