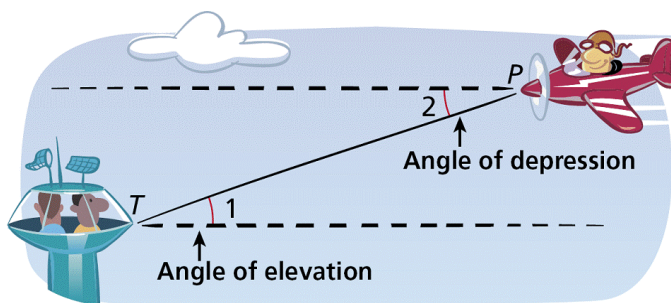


TOPIC 8-2: APPLICATIONS OF TRIG. RATIOS

An angle of depression is the angle formed by a horizontal line and a line of sight to a point *below* the line. $\angle 2$ is the angle of depression from the plane to the tower.



An angle of elevation is the angle formed by a horizontal line and a line of sight to a point *above* the line. In the diagram, $\angle 1$ is the angle of elevation from the tower T to the plane P .

EXAMPLE 1 The Seattle Space Needle casts a 67-meter shadow. If the angle of elevation from the tip of the shadow to the top of the Space Needle is 70° , how tall is the Space Needle? Round to the nearest meter.

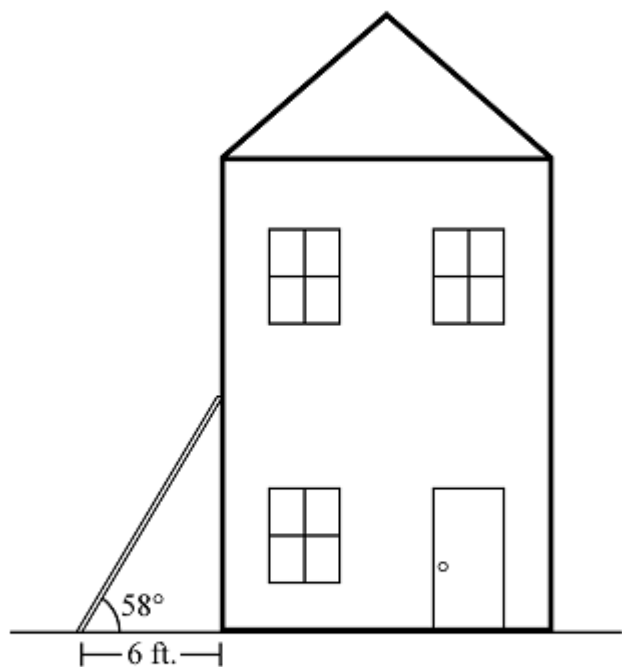
EXAMPLE 2 An ice climber stands at the edge of a crevasse that is 115 ft wide. The angle of depression from the edge where she stands to the bottom of the opposite side is 52° . How deep is the crevasse at this point? Round to the nearest foot.

Now, you try this one.

A damsel is in distress and is being held captive in a tower. Her knight in shining armor is on the ground below with a ladder. When the knight stands 15 feet from the base of the tower and looks up at his precious damsel, the angle of elevation to her window is 60 degrees. How long does the ladder have to be?

EXAMPLE 3

In the picture below, a ladder leaning against a building makes an angle of 58° with level ground.



If the distance from the foot of the ladder to the base of the building is 6 feet, how far up the building does the ladder reach, to the nearest foot?

WORK WITH A PARTNER TO DRAW, LABEL, AND SOLVE THE FOLLOWING TRIG APPLICATION PROBLEMS. WHEN YOU HAVE COMPLETED THESE PROBLEMS BELOW – SHOW TO YOUR TEACHER.

A car traveling on a long, straight road goes down a hill that is inclined at an angle of 15.6° . If the car travels 1,000 feet on this hill, what is its change in elevation to the nearest foot?

The straight string of a kite makes an angle of elevation from the ground of 60° . The length of the string is 400 feet. Which of the following is the best approximation of the height of the kite?

- A** 250 ft.
- B** 200 ft.
- C** 350 ft.
- D** 300 ft.