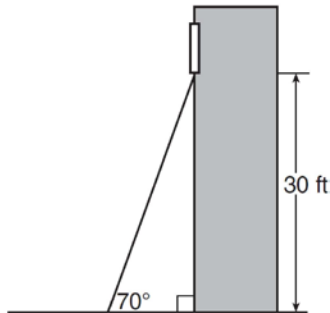
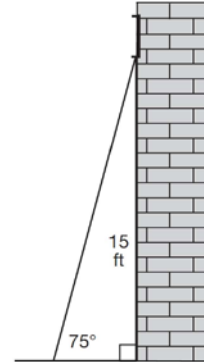


**G.SRT.C.8: Using Trigonometry to Find a Side 2**

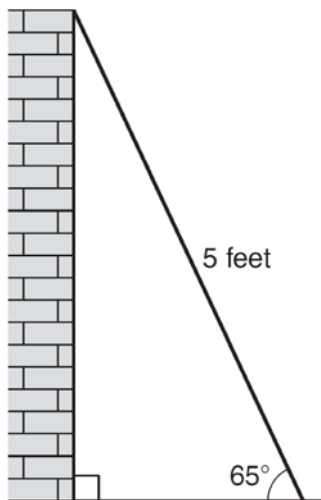
- 1 A carpenter leans an extension ladder against a house to reach the bottom of a window 30 feet above the ground. As shown in the diagram below, the ladder makes a  $70^\circ$  angle with the ground. To the *nearest foot*, determine and state the length of the ladder.



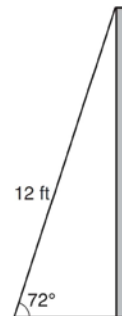
- 3 In the diagram below, a window of a house is 15 feet above the ground. A ladder is placed against the house with its base at an angle of  $75^\circ$  with the ground. Determine and state the length of the ladder to the *nearest tenth of a foot*.



- 2 As shown in the diagram below, a ladder 5 feet long leans against a wall and makes an angle of  $65^\circ$  with the ground. Find, to the *nearest tenth of a foot*, the distance from the wall to the base of the ladder.



- 4 As shown in the diagram below, a ladder 12 feet long leans against a wall and makes an angle of  $72^\circ$  with the ground.

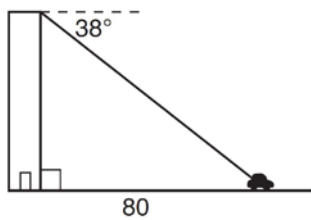


Find, to the *nearest tenth of a foot*, the distance from the wall to the base of the ladder.

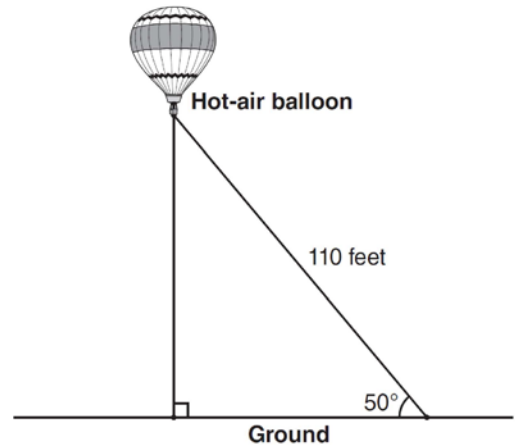
- 5 A 12 foot ladder is placed against a wall. The ladder makes an angle of  $73^\circ$  with the floor. Determine, to the *nearest tenth of a foot*, how high up the wall the ladder will reach.



- 6 From the top of an apartment building, the angle of depression to a car parked on the street below is 38 degrees, as shown in the diagram below. The car is parked 80 feet from the base of the building. Find the height of the building, to the *nearest tenth of a foot*.

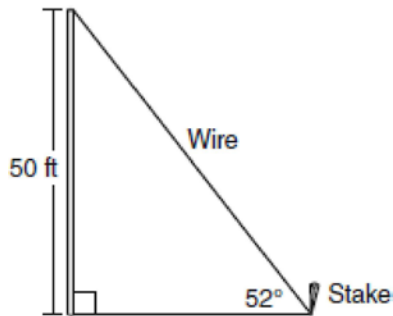


- 7 A hot-air balloon is tied to the ground with two taut (straight) ropes, as shown in the diagram below. One rope is directly under the balloon and makes a right angle with the ground. The other rope forms an angle of  $50^\circ$  with the ground.



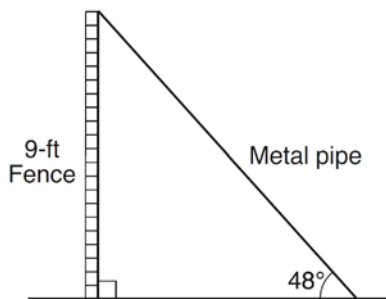
Determine the height, to the *nearest foot*, of the balloon directly above the ground. Determine the distance, to the *nearest foot*, on the ground between the two ropes.

- 8 A stake is to be driven into the ground away from the base of a 50-foot pole, as shown in the diagram below. A wire from the stake on the ground to the top of the pole is to be installed at an angle of elevation of  $52^\circ$ .



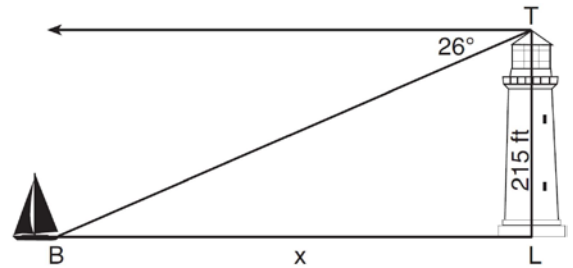
How far away from the base of the pole should the stake be driven in, to the *nearest foot*? What will be the length of the wire from the stake to the top of the pole, to the *nearest foot*?

- 9 A metal pipe is used to hold up a 9-foot fence, as shown in the diagram below. The pipe makes an angle of  $48^\circ$  with the ground.



Determine, to the *nearest foot*, how far the bottom of the pipe is from the base of the fence.  
Determine, to the *nearest foot*, the length of the metal pipe.

- 10 The top of a lighthouse,  $T$ , is 215 feet above sea level,  $L$ , as shown in the diagram below. The angle of depression from the top of the lighthouse to a boat,  $B$ , at sea is  $26^\circ$ . Determine, to the *nearest foot*, the horizontal distance,  $x$ , from the boat to the base of the lighthouse.



**G.SRT.C.8: Using Trigonometry to Find a Side 2  
Answer Section**

1 ANS:

$$\sin 70 = \frac{30}{L}$$

$$L \approx 32$$

REF: 011629geo

2 ANS:

$$2.1. \cos 65 = \frac{x}{5}$$

$$x \approx 2.1$$

REF: 011133ia

3 ANS:

$$\sin 75 = \frac{15}{x}$$

$$x = \frac{15}{\sin 75}$$

$$x \approx 15.5$$

REF: 081631geo

4 ANS:

$$\cos 72 = \frac{x}{12}$$

$$x \approx 3.7$$

REF: 011531ia

5 ANS:

$$\sin 73 = \frac{x}{12}$$

$$x \approx 11.5$$

REF: 061632ia

6 ANS:

$$\tan 38 = \frac{opp}{80}$$

$$opp = 80 \tan 38 \approx 62.5$$

REF: 011436ia

7 ANS:

$$84, 71 \quad \sin 50 = \frac{x}{110} \quad \cos 50 = \frac{y}{110}$$
$$x \approx 84 \quad y \approx 71$$

REF: 081039ia

8 ANS:

$$39, 63. \quad \tan 52 = \frac{50}{x} \quad \sin 52 = \frac{50}{x}$$
$$x \approx 39 \quad x \approx 63$$

REF: 060937ia

9 ANS:

$$\tan 48 = \frac{9}{x} \quad \sin 48 = \frac{9}{y}$$
$$x \approx 8 \quad y \approx 12$$

REF: 011338ia

10 ANS:

$$\tan 26 = \frac{215}{x}$$
$$x = \frac{215}{\tan 26}$$
$$x \approx 441$$

REF: 081434ia