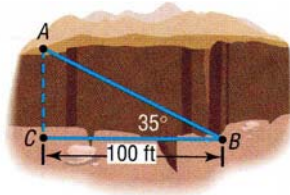
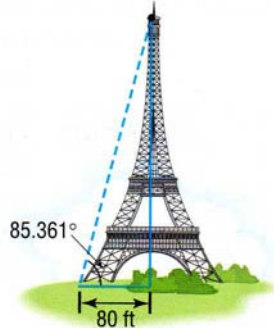


ADDITIONAL RIGHT TRIANGLE APPLICATIONS
MATH 1113

1. **Geometry** A right triangle contains a 25° angle. If one leg is of length 5 inches, what is the length of the hypotenuse? [**Hint:** Two answers are possible.]
2. **Geometry** The hypotenuse of a right triangle is 5 inches. If one leg is 2 inches, find the degree measure of each angle.
3. **Finding the Width of a Gorge** Find the distance from A to C across the gorge illustrated in the figure.

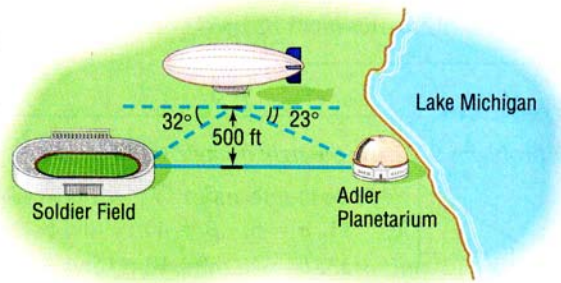


4. **The Eiffel Tower** The tallest building before the era of television masts, the Eiffel Tower was completed on March 31, 1889. Find the height of the Eiffel Tower (before a television mast was added to the top) using the information given in the illustration.

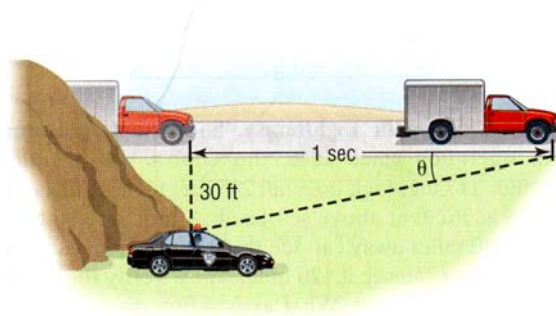


5. **Finding the Distance to a Plateau** Suppose that you are headed toward a plateau 50 meters high. If the angle of elevation to the top of the plateau is 20° , how far are you from the base of the plateau?
6. **Finding the Reach of a Ladder** A 22-foot extension ladder leaning against a building makes a 70° angle with the ground. How far up the building does the ladder touch?

7. **Finding the Distance Between Two Objects** A blimp, suspended in the air at a height of 500 feet, lies directly over a line from Soldier Field to the Adler Planetarium on Lake Michigan (see the figure). If the angle of depression from the blimp to the stadium is 32° and from the blimp to the planetarium is 23° , find the distance between Soldier Field and the Adler Planetarium.



8. **Finding the Length of a Guy Wire** A radio transmission tower is 200 feet high. How long should a guy wire be if it is to be attached to the tower 10 feet from the top and is to make an angle of 21° with the ground?
9. **Washington Monument** The angle of elevation of the Sun is 35.1° at the instant it casts a shadow 789 feet long of the Washington Monument. Use this information to calculate the height of the monument.
10. **Finding the Speed of a Truck** A state trooper is hidden 30 feet from a highway. One second after a truck passes, the angle θ between the highway and the line of observation from the truck is measured. See the illustration.



- (a) If the angle measures 15° , how fast is the truck traveling? Express the answer in feet per second and in miles per hour.
- (b) If the angle measures 20° , how fast is the truck traveling? Express the answer in feet per second and in miles per hour.
- (c) If the speed limit is 55 miles per hour and a speeding ticket is issued for speeds of 5 miles per hour or more over the limit, for what angles should the trooper issue a ticket?

ANSWERS

1. 5.52 in or 11.83 in
2. 23.6° and 66.4°
3. 70.02 ft
4. 985.91 ft
5. 137.37 m
6. 20.67 ft
7. 1978.09 ft
8. 530.18 ft
9. 554.52 ft
10. (a) 111.96 ft/sec; 76.3 mi/hr
(b) 82.42 ft/sec; 56.2 mi/hr
(c) Under 18.8°