

### **Section 4.3 Day 2 Worksheet: Right Triangle Trigonometry Applications**

1. A safety regulation states that the maximum angle of elevation for a rescue ladder is  $72^\circ$ . If a fire department's longest ladder is 110 feet, what is the maximum safe rescue height?
2. A ranger in a fire tower spots a fire at an angle of depression of  $4^\circ$ . The tower is 36m tall. How far from the base of the tower is the fire?
3. A guy wire is secured near the top of a television transmitting tower. The guy wire meets the ground at an angle of  $48^\circ$ . If the height of the tower is 32 m, how far from the base of the tower is the guy wire secured? Round to the nearest tenth.
4. An office worker on the fourteenth floor of a building sight a friend on the street. The angle of depression is  $35^\circ$ , and the fourteenth floor is 135 ft in the air. How far is the friend from the building?
5. At a certain time of day, the angle of elevation of the sun is  $44^\circ$ . Find the length of a shadow cast by a building 30 meters high.
6. The angle of elevation to the top of the Empire State Building in New York is found to be  $11^\circ$  from the ground at a distance of 1 mile from the base of the building. Using this information, find the height of the Empire State Building in feet.

7. Orlando and Ryan are taking measurements related to the installation of a TV tower. Orlando measures a  $62^\circ$  angle of elevation to the top of the 950 ft TV tower. Find the angle of elevation for Ryan, standing 80 ft farther from the tower than Orlando.
8. The angle of depression from the top of a 320 foot office building to the top of a 200 foot office building is  $55^\circ$ . How far apart are the two buildings?
9. An airplane is flying at an elevation of 5150 ft, directly above a straight highway. Two motorists are driving cars on the highway on opposite sides of the plane, and the angle of depression to one car is  $35^\circ$  and to the other is  $52^\circ$ . How far apart are the cars?
10. A passenger in an airplane flying at an altitude of 10 kilometers sees two towns directly to the left of the plane. The angles of depression to the towns are  $28^\circ$  and  $55^\circ$ . How far apart are the towns?
11. Bill Owen is an architect designing a new parking garage for the city. The floors of the garage are to be 10 feet apart. The exit ramps between each pair of floors are to be 75 feet long. What is the measurement of the angle of elevation of each ramp?
12. Two buildings are 60 feet apart across a street. A person on top of the shorter building finds the angle of elevation of the roof of the taller building to be  $20^\circ$  and the angle of depression of its base to be  $35^\circ$ . How tall is the taller building to the nearest foot?