Right Triangle Trig Applications WS 1 Name:_____
HPC Hour:_____

1. The safety instructions for a 20 ft ladder indicate that the ladder should not be included at more than a $70°$ angle with the ground. Suppose the ladder is leaned against a house at a $20°$. Find the following:

a. The distance from the base of the house to the foot of the ladder.

b. How far up the side of the house the ladder reaches.

2. Find the measures of the acute angles of a $3-4-5$ right triangle.

3. An airplane is at an elevation of $35{,}000$ ft when it begins its approach to an airport. Its angle of descent is $6°$.

a. What is the distance between the airport and the point on the ground directly below the airplane?

b. What is the approximate air distance between the plane and the airport?

4. A student looks out of a second-story school window and sees the top of the school flagpole at an angle of elevation of $22°$. The student is 18 ft above the ground and 50 ft from the flagpole. Find the height of the flagpole.

5. A wheelchair ramp must rise 30 inches to meet the front door of a public library. If the ramp's angle of elevation is not to exceed $8°$, what is the minimum horizontal length of the ramp (in feet)?

6. Find the angle of depression from the top of a lighthouse 250 **feet** above water to the water line of a ship 2.5 **miles** offshore.

7. The angle of elevation from the base to the top of a waterslide is 13°. The slide extends horizontally 58.2 meters. Approximate the height of the waterslide.

8. An airplane is flying at an elevation of 6500 feet, directly above a straight highway. The pilot spots two cars on the highway in front of him. The angle of depression to one car is 23° and the angle of depression to the other car is 18°. How far apart are the cars?

9. An airplane is flying at an elevation of 5625 ft above a straight highway. Two motorists are driving cars on **opposite sides** of the plane. The angle of depression to one car is 38° and the angle of depression to the other is 46°. How far apart are the cars?

10. At a point 150 feet from the base of a school, the angle of elevation to the bottom of a clock tower on the roof of the school is 42°, and the angle of elevation to the top of the clock tower is 53°. Find the height of the clock tower.

Answers:
1a. 6.84 ft **1b.** 18.79 ft **2.** 53.1°, 36.9° **3a.** 333,002.76 ft **3b.** 334,837.03 ft **4.** 38.2 ft **5.** 17.79 ft

6. 1.09° **7.** 13.4 m **8.** 4,691.9 ft **9.** 12,631.67 ft **10.** 64 ft