Name: _____ Hour: _____ **11.3-Applications of Finding Missing Sides ws**

1. You sight a rock climber on a cliff at a $32°$ angle of elevation. Your eye level is 6 ft above the ground and you are 1000 ft from the base of the cliff. What is the approximate height of the rock climber from the ground?

2. A meteorologist measures the angle of elevation of a weather balloon as $41°$. A radio signal from the balloon indicates that it is 1503 m from his location. To the nearest meter, how high above the ground is the balloon?

3. An airplane pilot sights a life raft at a $26°$ angle of depression. The airplane's altitude is 3 km. What is the airplane's horizontal distance d from the raft?

4. A tourist looks out from the crown of the Statue of Liberty, approximately 250 ft above the ground. The tourist sees a ship coming into the harbor and measures the angle of depression as $18°$. Find the distance from the base of the statue to the ship to the nearest foot.

5. A safety regulation states that the maximum angle of elevation for a rescue ladder is $72°$. A fire department's longest ladder is 110 feet. What is the maximum safe rescue height?

6. The Aerial run in Snowbird, Utah, has an angle of elevation of $20.2°$. Its vertical drop is 2900 feet. Estimate the length of this run.

7. A surveyor stands 100 feet from a building and sights the top of the building at a $55°$ angle of elevation. Find the height of the building.

8. In a sightseeing boat near the base of the Horseshoe Falls at Niagara Falls, a passenger estimates the angle of elevation to the top of the falls to be $30°$. If the Horseshoe Falls are 173 feet high, what is the distance from the boat to the base of the falls?

9. A surveyor is standing 50 feet from the base of a large tree. The surveyor measures the angle of elevation to the top of the tree as $71.5°$. How tall is the tree?

10. A 30-meter line is used to tether a helium-filled balloon. Because of a breeze, the line makes an angle of approximately $75°$ with the ground. What is the height of the balloon?