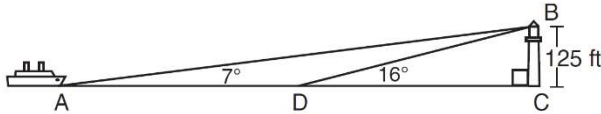


Name _____
Mr. Schlansky

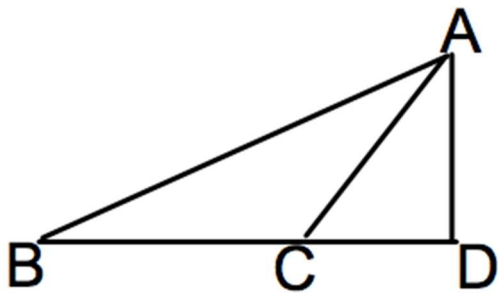
Date _____
Geometry

Compound Right Triangle Problems

1. As shown in the diagram below, a ship is heading directly toward a lighthouse whose beacon is 125 feet above sea level. At the first sighting, point A , the angle of elevation from the ship to the light was 7° . A short time later, at point D , the angle of elevation was 16° . To the *nearest foot*, determine and state how far the ship traveled from point A to point D .

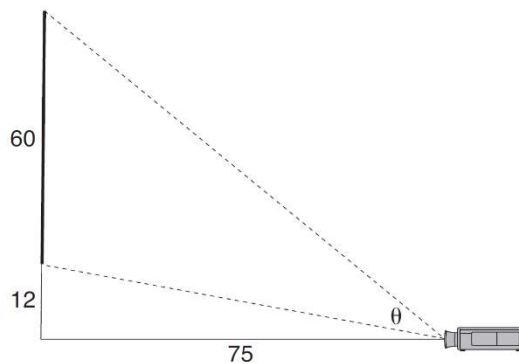


2. In the diagram below, $m\angle CAD = 35$, $m\angle ABD = 42$, and $m\overline{AD} = 60$. Find to the nearest tenth, $m\overline{BC}$.

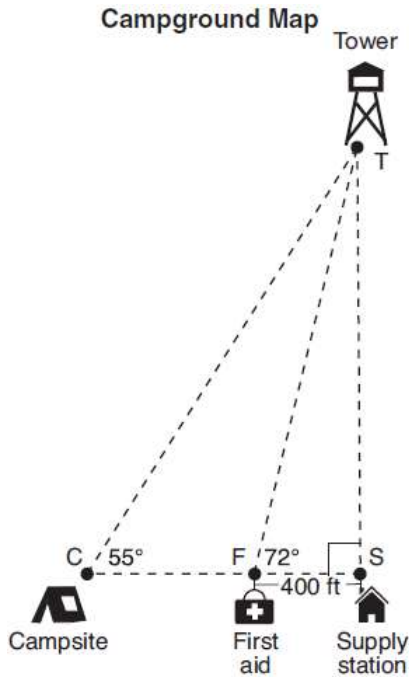


3. Freda, who is training to use a radar system, detects an airplane flying at a constant speed and heading in a straight line to pass directly over her location. She sees the airplane at an angle of elevation of 15° and notes that it is maintaining a constant altitude of 6250 feet. One minute later, she sees the airplane at an angle of elevation of 52° . How far has the airplane traveled, to the *nearest foot*?

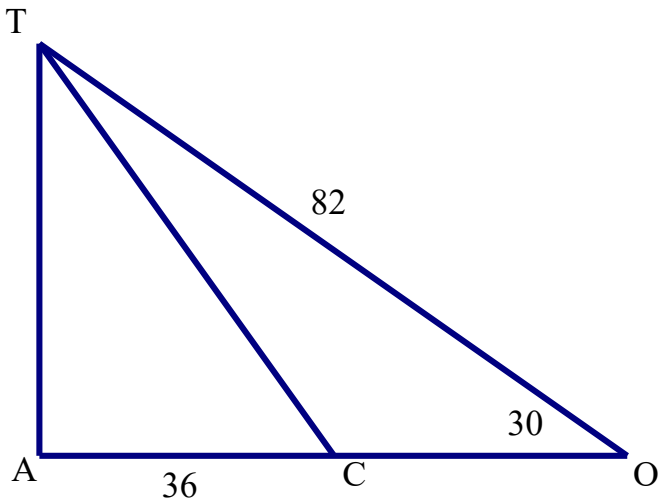
4. As modeled below, a movie is projected onto a large outdoor screen. The bottom of the 60-foot-tall screen is 12 feet off the ground. The projector sits on the ground at a horizontal distance of 75 feet from the screen. Determine and state, to the *nearest tenth of a degree*, the measure of θ , the projection angle.



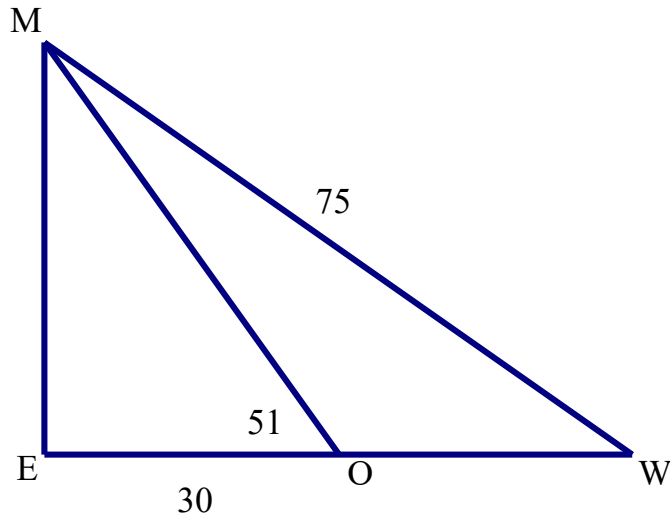
5. The map of a campground is shown below. Campsite C , first aid station F , and supply station S lie along a straight path. The path from the supply station to the tower, T , is perpendicular to the path from the supply station to the campsite. The length of path \overline{FS} is 400 feet. The angle formed by path \overline{TF} and path \overline{FS} is 72° . The angle formed by path \overline{TC} and path \overline{CS} is 55° . Determine and state, to the nearest foot, the distance from the campsite to the tower.



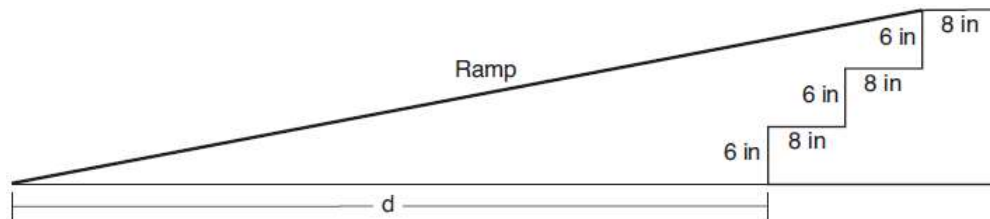
6. Find the measure of $\angle TCA$ in the diagram of right triangle TAO below to the nearest tenth of a degree.



7. Find the measure of \overline{OW} in the diagram of right triangle MEW below to the nearest unit.



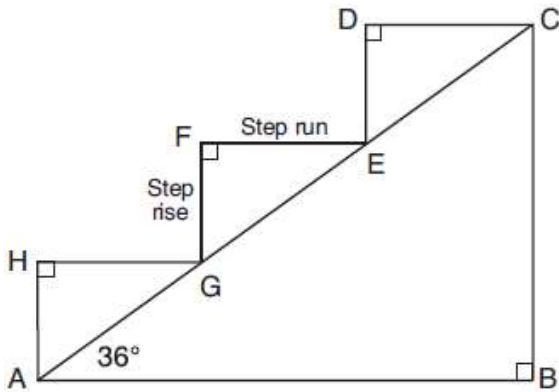
8. As modeled in the diagram below, an access ramp starts on flat ground and ends at the beginning of the top step. Each step is 6 inches tall and 8 inches deep.



If the angle of elevation of the ramp is 4.76° , determine and state the length of the ramp, to the nearest tenth of a foot. Determine and state, to the nearest tenth of a foot, the horizontal distance, d , from the bottom of the stairs to the bottom of the ramp.

9. A homeowner is building three steps leading to a deck, as modeled by the diagram below. All three step rises, \overline{HA} , \overline{FG} , and \overline{DE} , are congruent, and all three step runs, \overline{HG} , \overline{FE} , and \overline{DC} , are congruent. Each step rise is perpendicular to the step run it joins. The measure of $\angle CAB = 36^\circ$ and $\angle CBA = 90^\circ$.

If each step run is parallel to \overline{AB} and has a length of 10 inches, determine and state the length of each step rise, to the *nearest tenth of an inch*. Determine and state the length of \overline{AC} , to the *nearest inch*.



10. The aspect ratio (the ratio of screen width to height) of a rectangular flat-screen television is 16:9. The length of the diagonal of the screen is the television's screen size. Determine and state, to the *nearest inch*, the screen size (diagonal) of this flat-screen television with a screen height of 20.6 inches.

11. Keira has a square poster that she is framing and placing on her wall. The poster has a diagonal 58 cm long and fits exactly inside the frame. The width of the frame around the picture is 4 cm.

Determine and state the total area of the poster and frame to the *nearest tenth of a square centimeter*.

