Right Triangle Trig
Word Problems

Name_____
Date_____

Draw and label the picture, set up the equation and find the solution.

1. A tower 150ft in height casts a shadow 50.5ft long. Find the angle of elevation of the sun.

2. If the height of a pole is 75.4 ft, find the distance from the foot of the pole an observer must stand so that the angle of elevation to the top of the pole is 41°.

3. A regular pentagon is inscribed in a circle with radius 10cm. Find the perimeter of the pentagon.

4. The leaning tower of Pisa is approximately 179ft in "height" and is approximately 16.5ft out of plumb. Find the angle at which it deviates from the vertical.

5. An isosceles triangle has a base of 22cm and a vertex angle of 36°. Find the perimeter of the triangle. (Hint: remember an isosceles triangle has two sides and two angles the same and the vertex angle is at the top)

6. The angle of depression from a person on top of a building to a point 20 meters from the base of the building is 42°. What is the height of the building?

7. The sides of a rectangle are 3" and 4". Find the lesser (smaller) angle formed by a side and a diagonal of the rectangle.

8. Find the area of an isosceles triangle in which the lengths of the equal sides are 2.4cm and one angle measures 118°.

9. A 20ft ladder leans against a building 30ft high. The base of the ladder forms a 72° angle with the ground. How far below the top of the building is the top of the ladder?

APPLICATIONS OF RIGHT TRIANGLE TRIGONOMETRY – WORKSHEET #2

For each of the following problems:

- Draw a right triangle depicting the problem.
- Label the given information.
- Identify the asked for part(s) of the triangle.
- Set up an equation to solve for those parts.
- Round all angle measurements to the nearest minute.
- Round all sides to the nearest tenth.

1. A building casts a shadow 20 meters long. If the angle from the tip of the shadow to a point on top of the building is 69°, how tall is the building?

3. A 50-foot tower is located on the edge of a river. The angle of elevation between the opposite bank and the top of the tower is 37°. How wide is the river?

4. The top of a 20-foot ladder is leaning against the edge of the roof of a house. If the angle between the ladder and the ground is 51°, (a) what is the height of the house, (b) how far is the base of the ladder from the house?

5. An airplane at an altitude of 25,000 ft approaches a radar station located on a 2000-foot hill. At one instant in time, the angle between the radar dish pointed at the plane and the horizontal is 57°. What is the straight-line distance in miles between the airplane and the radar station at that particular instant?

6. A 5-mile straight segment of a road climbs a 4000-foot hill. Determine the angle that the road makes with the horizontal.

8. A man standing 50 feet from a 20-foot tall house looks up at a TV antenna located on the edge of the roof. If the angle between his line of sight to the edge of the roof and his line of sight to the top of the antenna is 12°, how tall is the antenna?

9. The gnomon (pin) of a sundial is 4 inches in height. What is the angle of elevation of the sun when it casts a 6-inch shadow?

10. Weather radar is capable of measuring both the angle of elevation to the top of a thunderstorm and its range (the horizontal distance to the storm). If the range of a storm is 90 km and the angle of elevation to the top of the storm is 4°, can a passenger plane that is able to climb to 10 km fly over the storm?