

4-1 Word Problem Practice

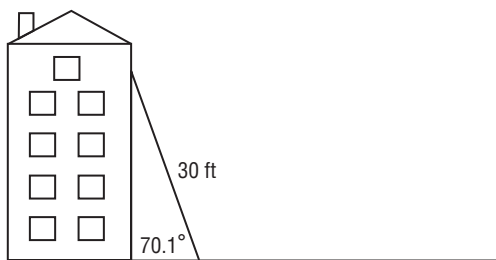
Right Triangle Trigonometry

1. MONUMENTS The Leaning Tower of Pisa in Italy is about 55.9 meters tall and is leaning so it is only about 55 meters above the ground. At what angle is the tower leaning?

2. SUBMARINES A submarine that is 250 meters below the surface of the ocean begins to ascend at an angle of 22° from vertical. How far will the submarine travel before it breaks the surface of the water?

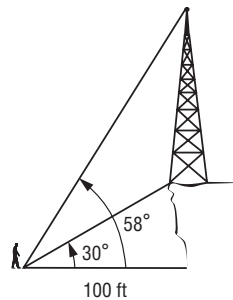
3. PHYSICS Suppose you are traveling in a car when a beam of light passes from the air to the windshield. The measure of the angle of incidence θ_i is 55° , and the measure of the angle of refraction θ_r is 35.25° . Use Snell's Law, $\frac{\sin \theta_i}{\sin \theta_r} = n$, to find the index of refraction n of the windshield to the nearest thousandth.

4. CONSTRUCTION A 30-foot ladder leaning against the side of a house makes a 70.1° angle with the ground.

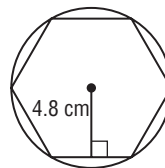


- How far up the side of the house does the ladder reach?
- What is the horizontal distance between the bottom of the ladder and the house?

5. OBSERVATION A person standing 100 feet from the bottom of a cliff notices a tower on top of the cliff. The angle of elevation to the top of the cliff is 30° , and the angle of elevation to the top of the tower is 58° . How tall is the tower?



6. GEOMETRY The apothem of a regular polygon is the measure of the line segment from the center of the polygon to the midpoint of one of its sides. A circle is circumscribed about a regular hexagon with an apothem of 4.8 centimeters.



- Find the radius of the circumscribed circle.
 - What is the length of a side of the hexagon?
 - What is the perimeter of the hexagon?
- 7. SKATEBOARD** Suppose you want to construct a ramp for skateboarding with a 19° incline and a height of 4 feet.
- Draw a diagram to represent the situation.
 - Determine the length of the ramp.