

# Geometry

## Trig. Practice

### Goals

I can use trigonometry to solve problems.

Unless otherwise noted, for each of the following problems:

- Use separate paper.
- Use your table of trigonometric ratios to help solve the problems.
- Create a drawing for each problem, label it with the given information and a question mark for what you are trying to find.
- Round lengths to the nearest integer and angles to the nearest degree.
- Justify your answer with clear and complete calculations.
- For word problems, answer in a complete sentence. Include units where appropriate.

1. Find the measure of the indicated angle of  $\triangle DEF$  with  $m\angle F = 90^\circ$ .

a.  $DE = 120$ ,  $DF = 45$ ,  $m\angle D = \underline{\quad ? \quad}$

b.  $DF = 25$ ,  $EF = 40$ ,  $m\angle E = \underline{\quad ? \quad}$

c.  $EF = 82$ ,  $DE = 125$ ,  $m\angle D = \underline{\quad ? \quad}$

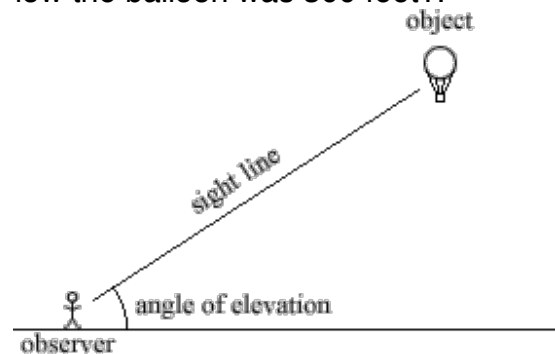
2. Find the length of the indicated side of  $\triangle PQR$ .

a.  $m\angle Q = 90^\circ$ ,  $m\angle P = 38^\circ$ ,  
 $PR = 25$ ,  $PQ = \underline{\quad ? \quad}$

b.  $m\angle P = 90^\circ$ ,  $m\angle Q = 20^\circ$ ,  
 $PQ = 75$ ,  $PR = \underline{\quad ? \quad}$

c.  $m\angle R = 90^\circ$ ,  $m\angle P = 31^\circ$ ,  
 $PQ = 64$ ,  $QR = \underline{\quad ? \quad}$

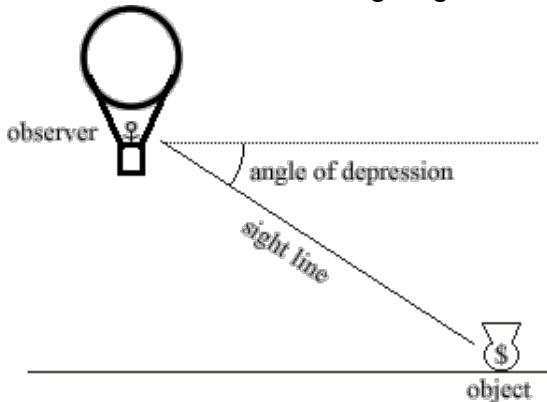
3. Ang Ell was measuring the height of a balloon. What would be the height of the balloon if the angle of elevation was  $28^\circ$  and the distance from the point of intersection of the sight line and the ground to a point directly below the balloon was 300 feet?



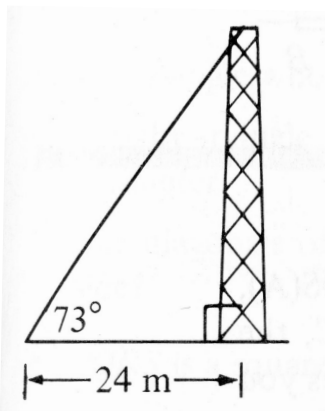
4. The angle of elevation of the top of a building from a point on the ground 51 meters from the base of one wall is  $63^\circ$ . How tall is the building?

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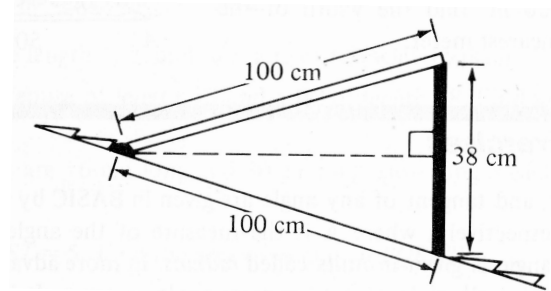
5. An observer in a balloon notices a bag of gold on the ground. It is determined that the angle of depression is  $30^\circ$  and that the height of the balloon is 450 feet. What is the straight line distance from the balloon to the bag of gold?



6. A sunken pirate ship on the ocean floor is determined to be at an angle of depression of  $42^\circ$  from the water line of a salvage ship. After sailing 50 m, the salvage ship is directly over the sunken ship. How deep is the water at this point?
7. A guy wire for a radio tower makes an angle of  $73^\circ$  with the ground. The vertex of this angle is 24 meters from the base of the tower. How long is the wire?



8. A hinged roof window is 100 cm long and is to be held open by a rod 38 cm long. What angle does the open window make with the roof?



9. The sides of a rhombus are each 75 cm long, and the measure of one of its angles is  $76^\circ$ . Find the length of the longer diagonal of the rhombus. (Hint: It helps to make an accurate drawing!)
10. The diagonals of a rhombus are 16 cm and 30 cm long. What's the perimeter of the rhombus? What's the area?
11. When a 6 meter ladder is placed against a building, it meets the ground at an angle of  $70^\circ$ . To the nearest tenth of a meter, find the distance from the top of the ladder to the ground.
12. Each diagonal of a rectangle has length 12 inches, and one of the acute angles formed by the two diagonals measures  $40^\circ$ . Find the perimeter of the rectangle.
13. The sides of a rectangle have lengths of 14.0 meters and 4.8 meters. Find the measure of one of the acute angles formed by the diagonals of the rectangle.