SOLVING RIGHT TRIANGLES

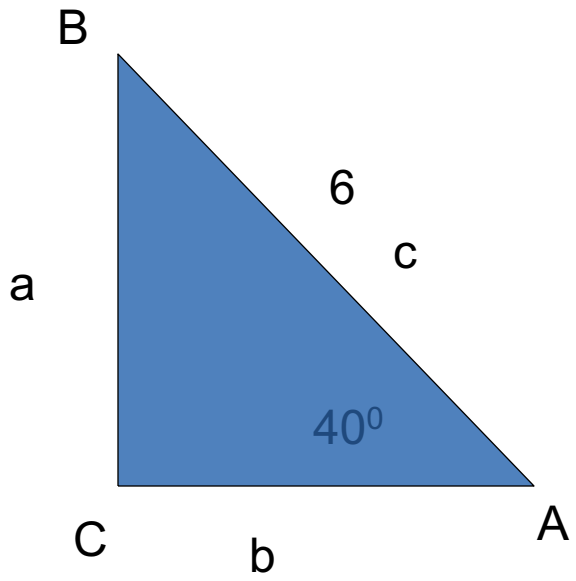
Using your definitions to solve “real world” problems.

What does it mean to solve a right triangle?

- Solving a right triangle means to find all the unknown parts.
- You are usually given one side of a right triangle and one of the acute angles and asked to find one of the other sides,
- Or
- Your are given two sides and asked to find one of the acute angles.

For example

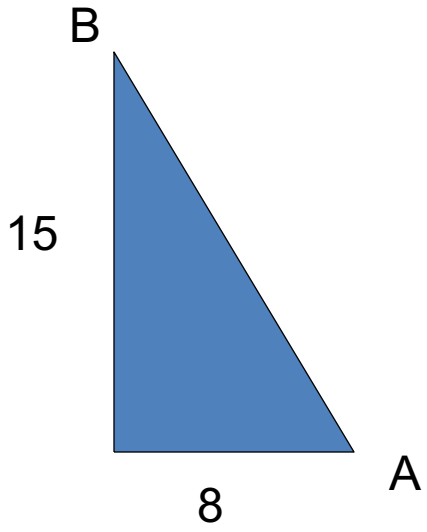
- Given the triangle shown find the remaining parts of the triangle.



- 1st label all the sides and angles.
- Now look at your trig. definitions and decide which one will let you find sides a and b and the angle at B.

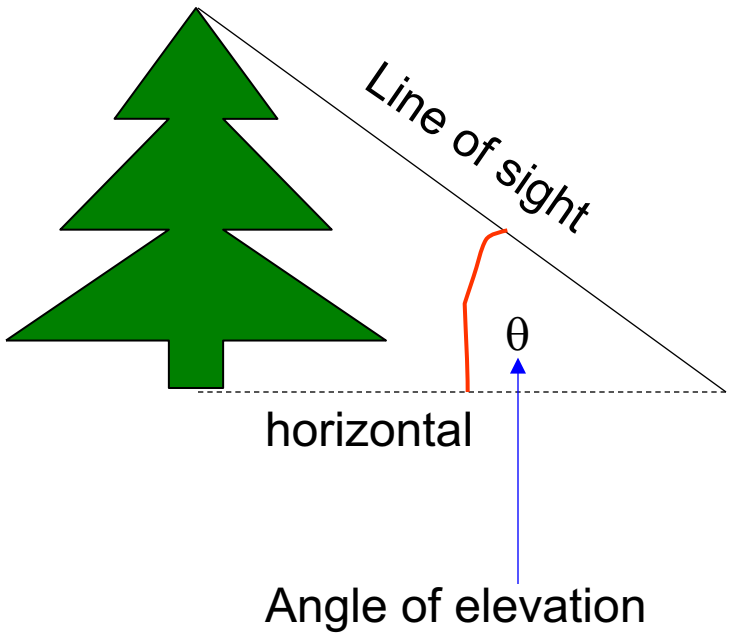
Another example

- Given that two legs of a right triangle are 8 and 15, find the measure of the acute angles.



Some terms you will need.

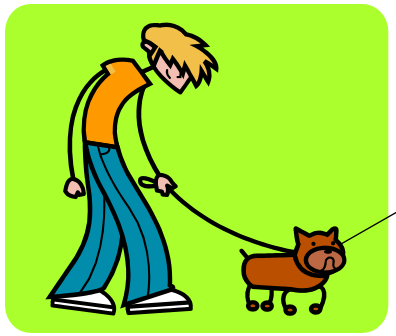
- Angle of elevation.
- The angle measured from the horizontal to the top of the object in question.
- The angle of elevation to the top of a fir tree is shown in the diagram.

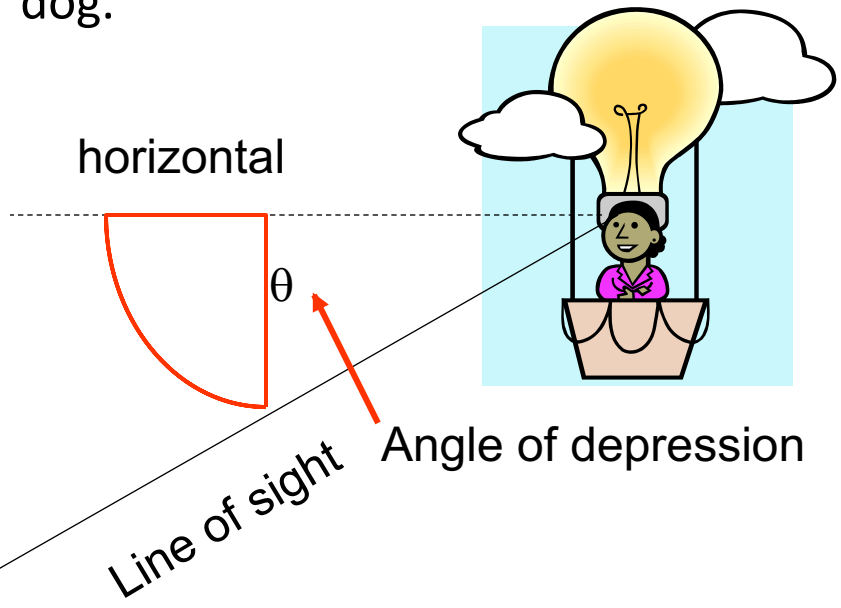


Some terms you will need.

- Angle of depression:
- The angle measured from the horizontal down to the object in question.

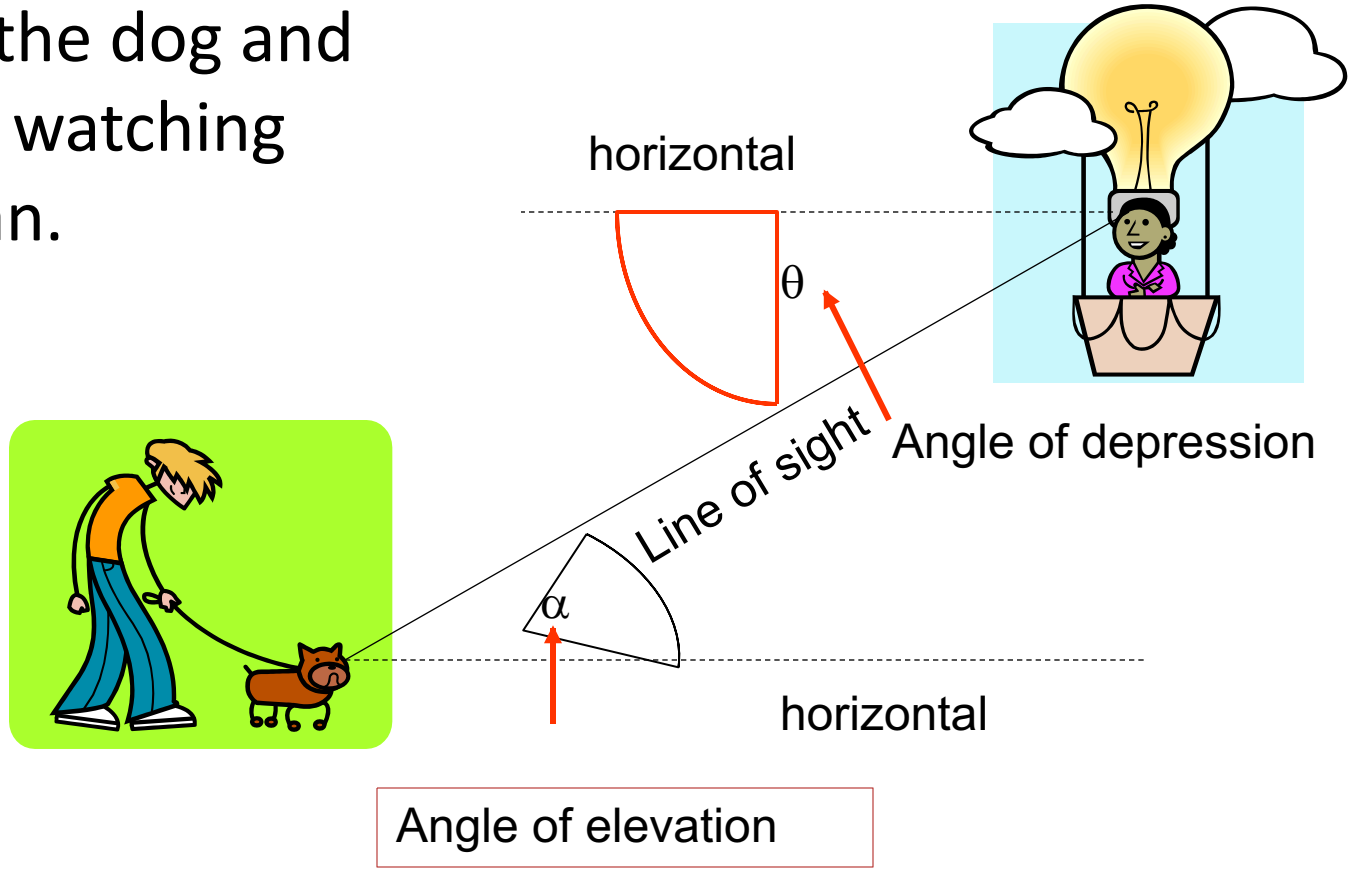
- The woman is watching the dog.





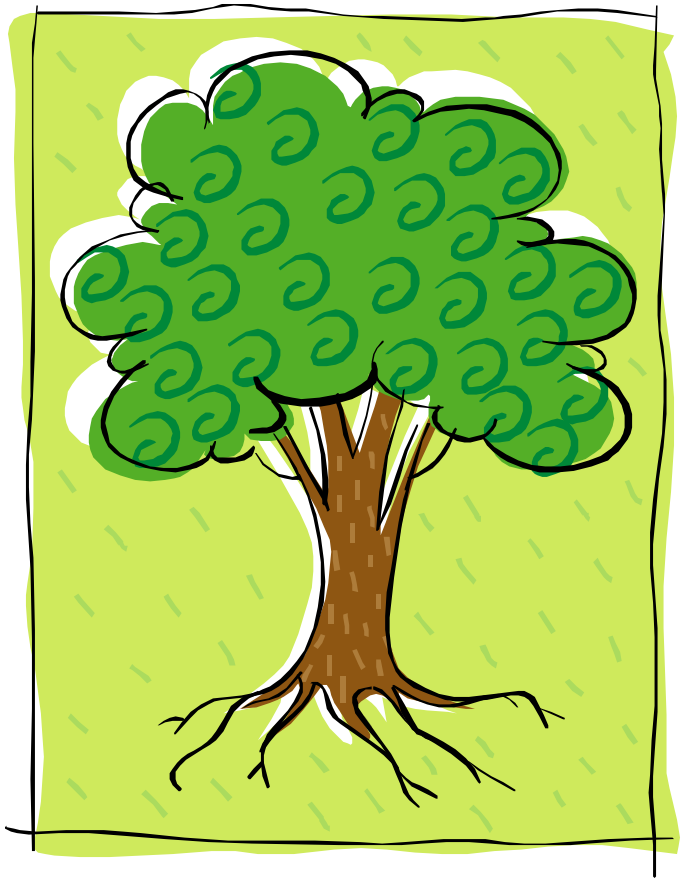
Something interesting

- The woman is watching the dog and the dog is watching the woman.
- $<\alpha = <\theta$



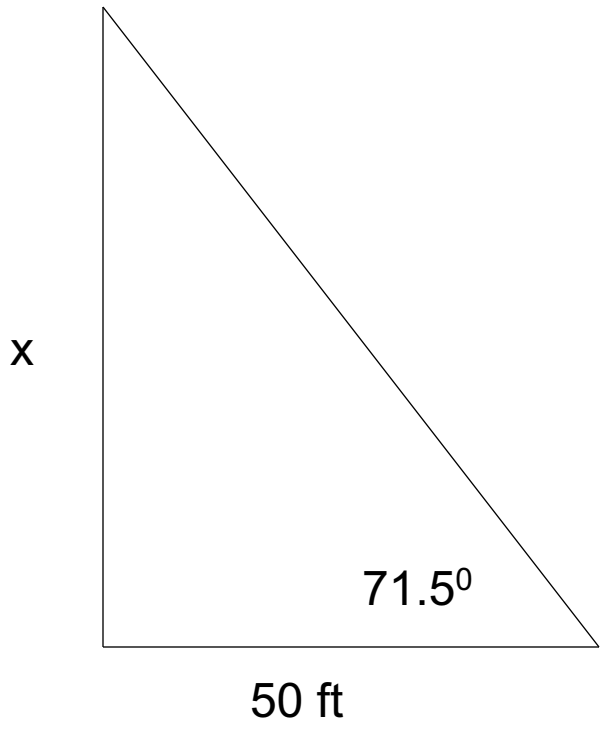
Some examples

- A surveyor is standing 50 ft from the base of a large tree. The surveyor measures the angle of elevation to the top of the tree as 71.5^0. How tall is the tree.



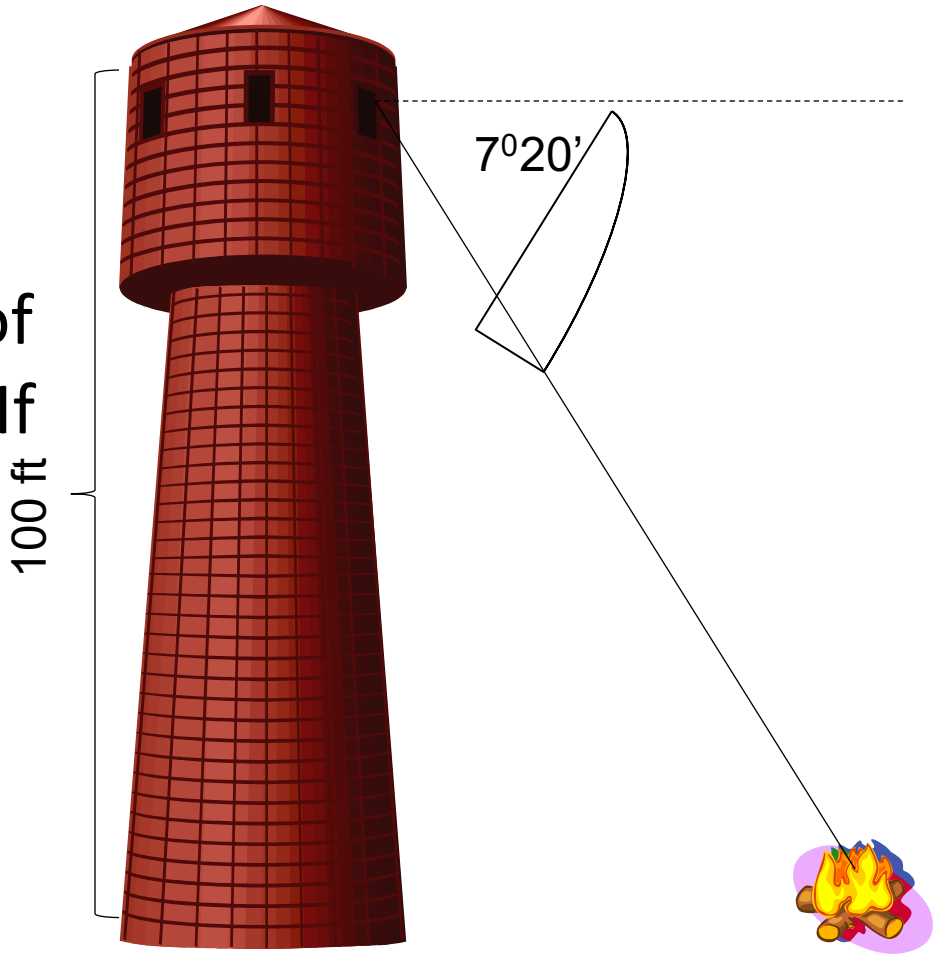
First draw a quick sketch and place all information in the sketch.

- A surveyor is standing 50 ft from the base of a large tree. The surveyor measures the angle of elevation to the top of the tree as 71.5^0. How tall is the tree.

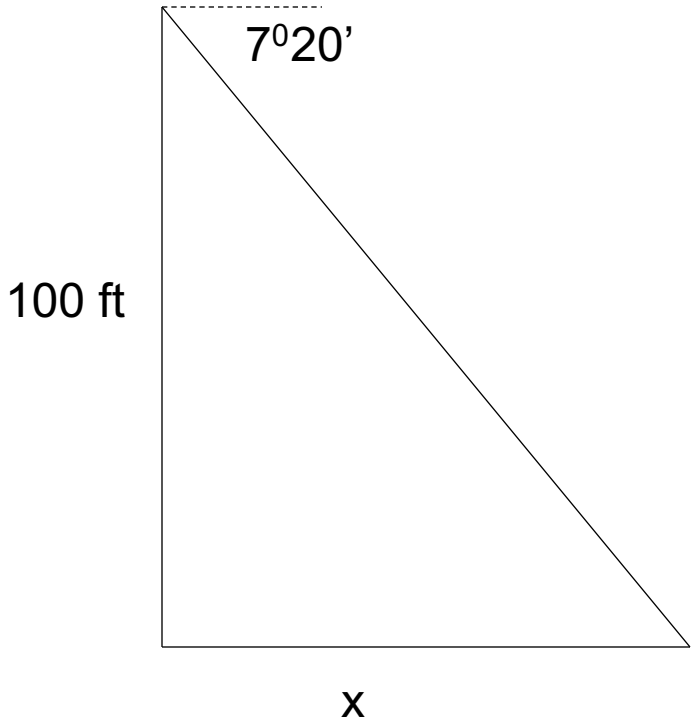


Another example

- From the top of a lookout tower, the angle of depression of a small fire is 7^0 20’. If the height of the tower is 100 ft, how far from the base of the tower is the fire?



- Make a quick sketch.
- Label known and unknowns.
- Notice that the given angle is not inside the triangle.



Another example

- A person is 200 yds from a river. Rather than walking directly to the river, the person walks 400 yds along a straight path to the river's edge. Find the acute angle θ between this path and the river's edge.
- See the figure.