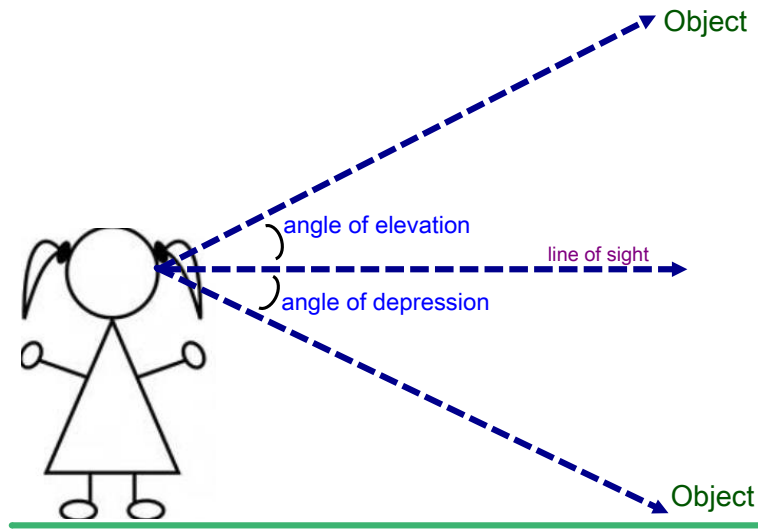
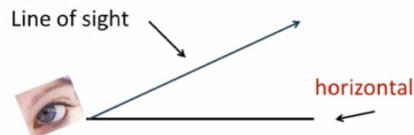


Chapter 3.2: Angles of Elevation/Depression  
and Solving Right Triangles



**Angle of Elevation:**

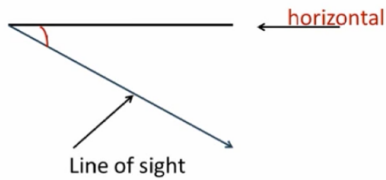
Angle measured from the horizontal to the line of sight.



Example) A surveyor is standing 50 feet from the base of a large tree. The surveyor measures the angle of elevation to the top of the tree as  $71.5^\circ$ . How tall is the tree?

**Angle of Depression:**


Angle measured from the horizontal to the line of sight.




Example) A salvage ship's sonar locates wreckage at a  $12^\circ$  angle of depression. A diver is lowered 40 meters to the ocean floor. How far does the diver need to walk along the ocean floor to the wreckage?

**Try this problem on your own.**

According to a Chinese legend from the Han dynasty (206 B.C.E. - 200 C.E.), General Han Xin flew a kite over the palace of his enemy to determine the distances between his troops and the palace. If the general let out 800 meters of string and the kite was flying at an angle of elevation of  $35^\circ$ , how far away was the palace from General Han Xin's position?



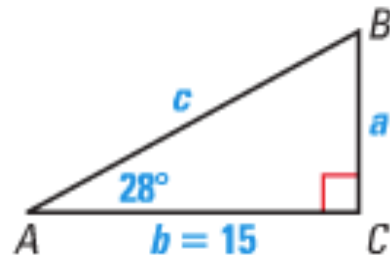
Example) The angle of depression from the top of a 150 meter high cliff to a boat at sea is  $7^\circ$ . How much closer to the cliff must the boat move for the angle of depression to become  $15^\circ$ .



Example) To approach Runway 17 of the Ponca City Municipal Airport in Oklahoma, the pilot must begin a  $3^\circ$  descent starting from an altitude of 2714 feet above sea level. The airport altitude of 1007 feet above sea level. How far must the airplane fly during its descent (find both ground distance and actual distance)?

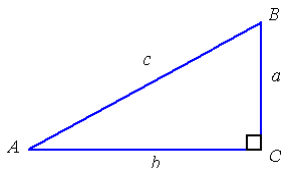
## Solving Right Triangles

Solve  $\triangle ABC$ .



Try this problem on your own.

Solve  $\triangle ABC$ , given the following angles and side lengths.



$$\angle B = 40^\circ, c = 5$$

Classwork/Homework