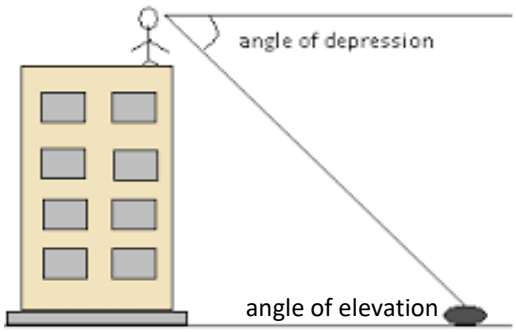
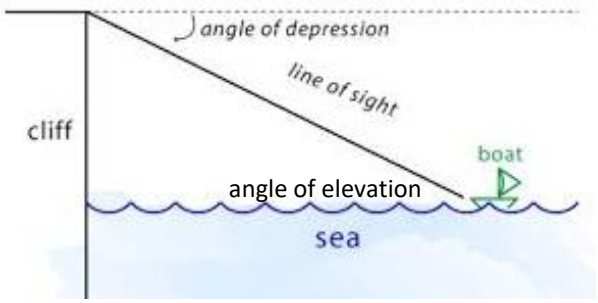
Name_____Date_____Section_____
Applied Geometry
Lesson Ch8 Day 6: Angle of Depression & Angle of Elevation

Angle of Depression: the angle of depression is formed by the horizon and the line of sight to a point BELOW the line.

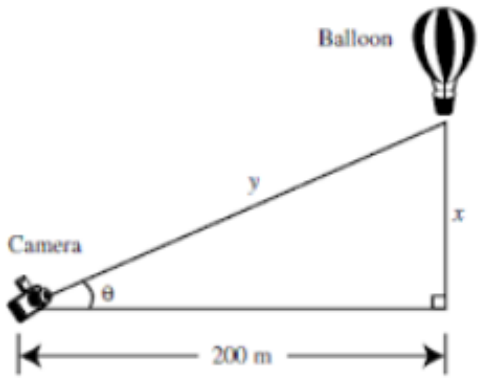
Angle of Elevation: the angle of elevation is formed by a horizontal line to a point ABOVE the line.

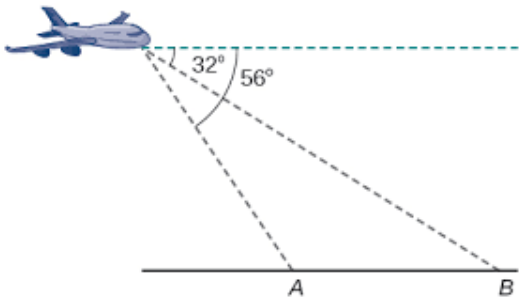


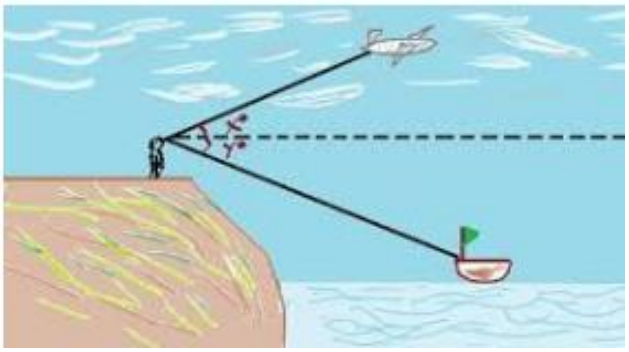


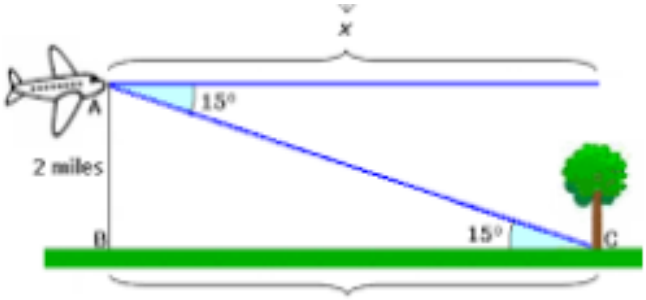
We can use the angle of depression & elevation to calculate distances by creating a RIGHT TRIANGLE and then applying our TRIG Ratios.

For each of the following, label the angle of depression, the angle of elevation or both if the image involves both.







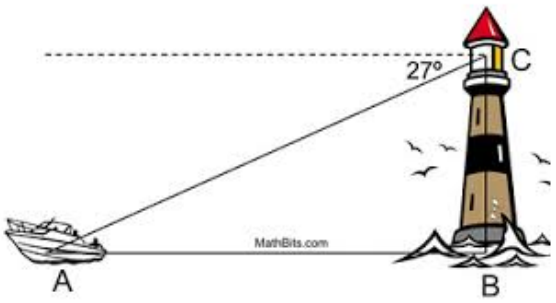


$$Sin\measuredangle = \frac{Opp}{Hyp} \qquad Cos\measuredangle = \frac{Adj}{Hyp} \qquad Tan\measuredangle = \frac{Opp}{Adj}$$

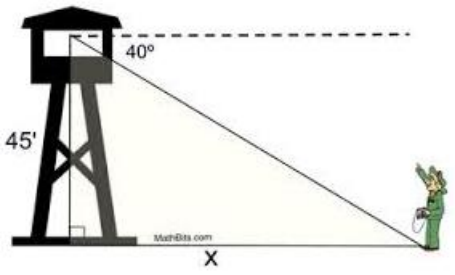
To solve angle of depression and angle of elevation problems:

1) **Identify angle of depression & or angle of elevation & shade the angle (of reference)**
2) **Label the sides based on the reference angle : Hypotenuse (H), Opposite (O), Adjacent (A)**
3) **Identify the trig. Function to use.**
4) **Substitute in values**
5) **Solve.**
6) **Round accordingly and accurately.**

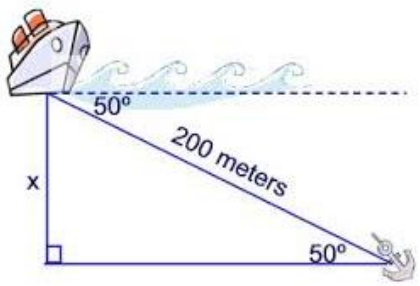
1. Janie is the lighthouse and sees a boat drifting on the ocean at an angle of depression of $27°$. If the light house is $215\,ft$ tall, how far away is the boat from the base of the lighthouse (to the nearest tenth of a foot)?



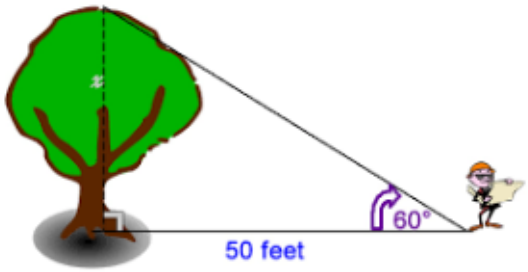
2. Forest ranger Joe sees in the fire tower sees his friend below at an angle of depression of $40°$. How far is his friend from the base of the fire tower.



3. There is a steamer ship out on the ocean. It has let out it's anchor line $200m$. At what depth is the anchor (to the nearest meter)?



4. Sammy is hanging out $50\,ft$ from the base of a nearby tree. If he looks to the top of the tree the angle of elevation is $60°$. Find the height of the tree to the nearest tenth of a foot.



5. Johnny is on a cliff $67\,ft$ high and sees Sally fishing. Sally is in her boat $98\,ft$ from the base of the cliff. Using the given information in the diagram, find the angle of depression to the nearest degree.