

## Math 2

- Test Wednesday!
- toolkits + gluesticks  
+ scissors.
- Project due 16th  
↳ I am giving  
it out today!

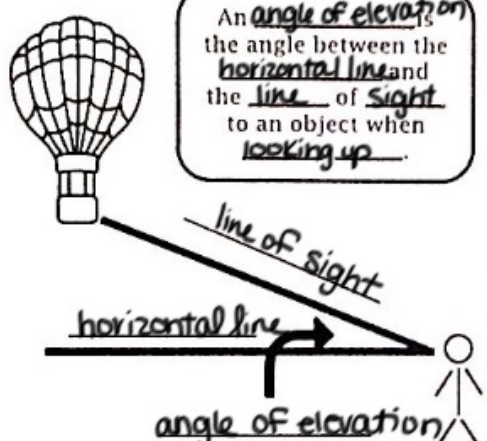
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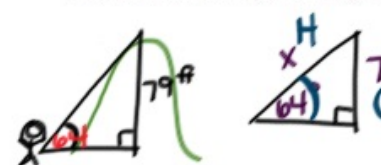
### Angles of Elevation

An angle of elevation is the angle between the horizontal line and the line of sight to an object when looking up.

The line of sight is the imaginary path that your eyes follow when looking at an object.



**Example one:** Lisa is standing at the bottom of a hill. The angle of elevation from her to the top of the hill is  $64^\circ$ . If the hill is 79 feet tall, how long is the path up the hill?

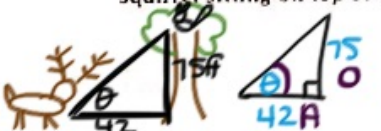


$$x \cdot \sin 64 = \frac{79 \cdot x}{\sin 64}$$

$$\frac{x \sin 64}{\sin 64} = \frac{79}{\sin 64}$$

$$x = \frac{79}{\sin 64} \rightarrow 87.9$$

**Example two:** A deer is standing 42 feet from the base of a 75 foot tall tree. What is the angle of elevation from her to a squirrel sitting on top of the tree?



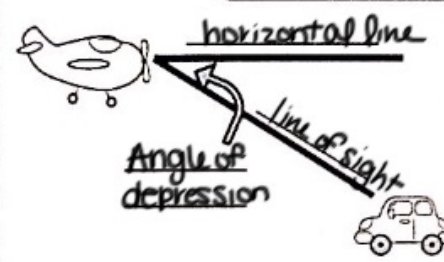
$$\tan \theta = \frac{75}{42}$$

$$\theta = \tan^{-1}\left(\frac{75}{42}\right) \rightarrow 60.8^\circ$$

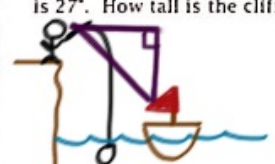
### Angles of Depression

An angle of depression is the angle between the horizontal line and the line of sight to an object when looking down.

The line of sight is the imaginary path that your eyes follow when looking at an object.



**Example one:** The angle of depression from a fisherman on top of a cliff to a boat 320 feet from the base of the cliff is  $27^\circ$ . How tall is the cliff?

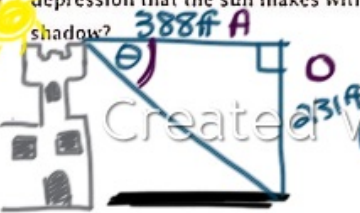


$$320 \tan 27 = \frac{x}{320} \cdot 320$$

$$x = 320 \tan 27$$

$x = 163 \text{ ft}$

**Example two:** The tower of an ancient castle 231 feet tall and casts a shadow that is 388 feet long. What is the angle of depression that the sun makes with the ground to create the shadow?



$$\tan \theta = \frac{231}{388}$$

$$\theta = \tan^{-1}\left(\frac{231}{388}\right)$$

$\theta = 30.8^\circ$