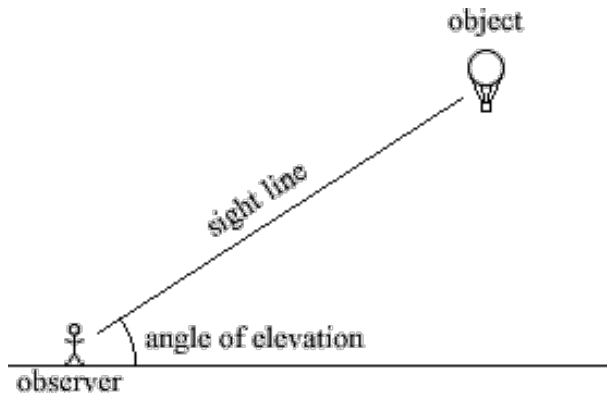
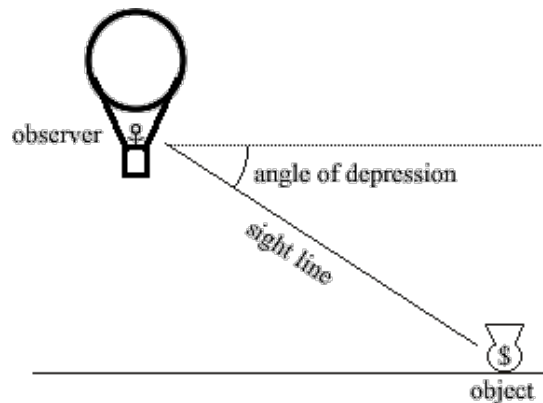


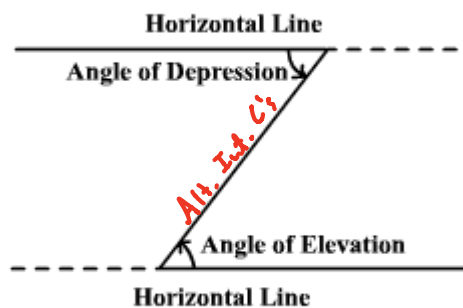
The angle of elevation is the angle formed by a ground and the line of sight looking up.



The angle of depression is the angle formed by a horizontal and the line of sight looking down.

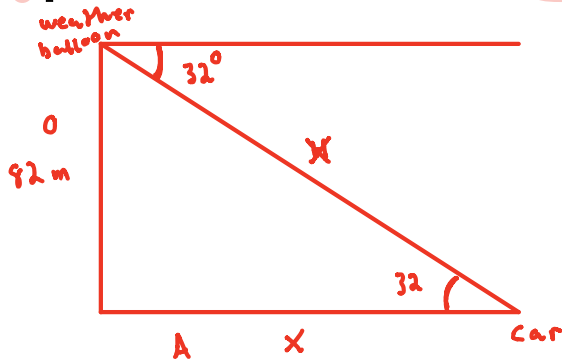


Notice ... the angle of elevation and the angle of depression are Alternate Int. \angle 's when in the same picture!



Examples:

1. Rachel spotted her car from a weather balloon. She knows her altitude is 82 meters and her angle of depression is 32° . She wants to know how far she is from her car.



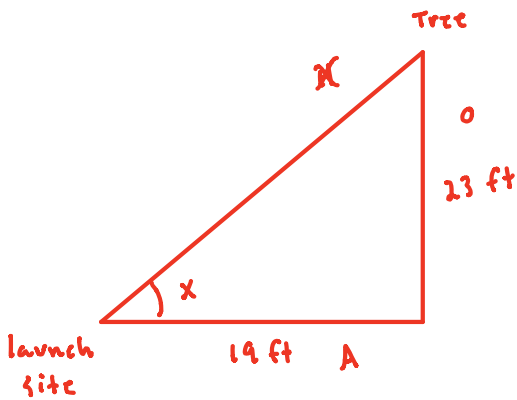
~~SQH CAH TOA~~

$$\frac{\tan 32}{1} = \frac{82}{x}$$

$$\frac{x \tan 32}{\tan 32} = \frac{82}{\tan 32}$$

$$x \approx 131.2 \text{ m}$$

2. Dillon spotted his model rocket from a launch stuck in a tree. HE know the base of the tree id 19 feet from the launch site. The rocket is 23 feet from the ground. He needs to calculate the angle of elevation so he can make adjustments for future launches. Round the answer to the nearest degree.



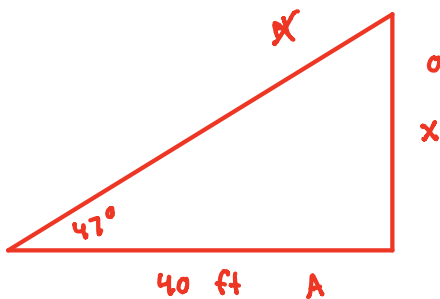
~~SQH CAH TOA~~

$$\tan x = \frac{23}{19}$$

$$\tan^{-1}\left(\frac{23}{19}\right)$$

$$x = 50^\circ$$

3. You stand 40 ft from a tree. The angle of elevation from you the top of the tree is 47° . How tall is the tree?



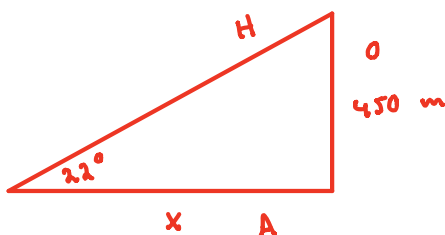
~~SQH CAH TOA~~

$$\frac{\tan 47}{1} = \frac{x}{40}$$

$$x = 40 \tan 47$$

$$x \approx 42.9 \text{ ft}$$

4. The angle of elevation to the top of a building is 22° . You know the building is 450 meters tall. How far are you from the building?



~~SQH CAH TOA~~

$$\frac{\tan 22}{1} = \frac{450}{x}$$

$$\frac{x \tan 22}{\tan 22} = \frac{450}{\tan 22}$$

$$x \approx 1113.8 \text{ m}$$