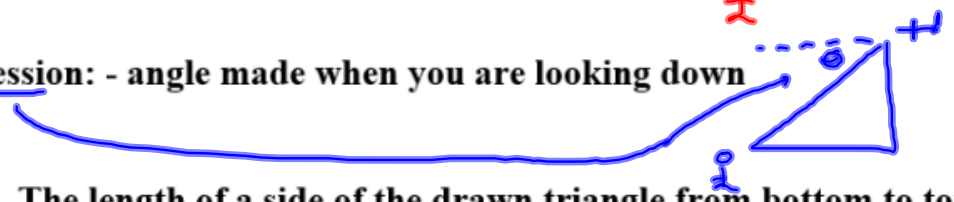
Section 11.6

Objective: Trigonometry real world situations notes

Using trigonometric ratios to solve real world situations.

Vocabulary

Angle of elevation: - angle made when you are looking up



Angle of depression: - angle made when you are looking down

Vertical drop: The length of a side of the drawn triangle from bottom to top.

Steps

1) **Draw a picture. Put in all the information given**

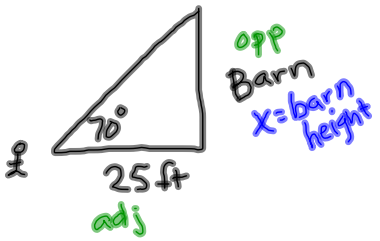
2) **Determine what you are looking for and determine what trigonometric ratio you will need to find the missing information.**

3) **Set up an equation with the proper trig ratio.**

4) **Solve the equation. Check to see if your answer makes sense.**

Read and solve the following.

1. A person is 25 feet from the base of a barn. The angle of elevation from the level ground to the top of the barn is 70°. How tall is the barn?



use $\tan\theta$

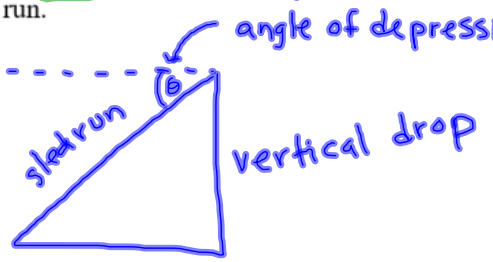
$$\frac{\tan\theta}{1} = \frac{\text{opp}}{\text{adj}}$$

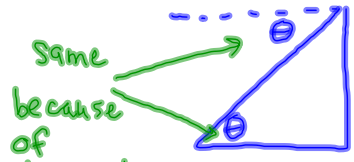
$$\frac{\tan 70^\circ}{1} = \frac{x}{25}$$

$$x = 25\tan 70^\circ$$

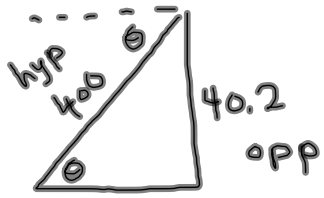
$$x = 68.68 \text{ ft}$$

2. A sledding run is 400 yards long with a vertical drop of 40.2 yards. Find the angle of depression of the run.





same because of alternate interior angle theorem



$$\sin\theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin\theta = \frac{40.2}{400}$$

$$\sin^{-1}\left(\frac{40.2}{400}\right)$$

$$\theta = 5.7679^\circ$$

or $\boxed{5.8^\circ}$