

Day 2!

- Cosine (cos)
- Tangent (tan)

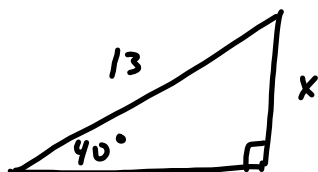
Refresher

Sine of an angle is
opposite side
hypotenuse

$$\text{so } \sin(\theta) = \frac{\text{opp}}{\text{hyp.}}$$

θ : theta
Popular
Letter for
Angles

Ex:



$$13 \cdot \sin(40^\circ) = \frac{x}{13} \cdot 13$$

$$13 \sin(40^\circ) = x$$

on calculator ... $x \approx 8.35$

Acronym: **S**OH CAH **T**DA

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

Right Triangle Trigonometry Day 2

Cosine! SOH **CAH** TOA

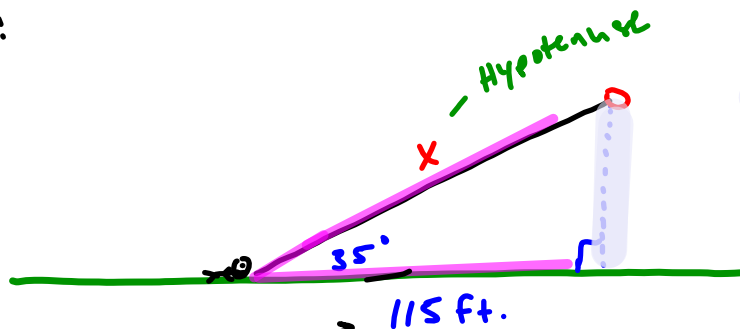
Cosine of an angle is the ratio of the **adjacent side** length over the **hypotenuse**.

$$\cos(\theta) = \frac{\text{adj.}}{\text{hyp.}}$$

adj: short for Adjacent.

hyp: short for Hypotenuse

Ex:



Opposite side is the one that does NOT form your Angle!

so this is the adjacent side. it is a side that forms the angle and is NOT the Hypotenuse.

The setup: ↘

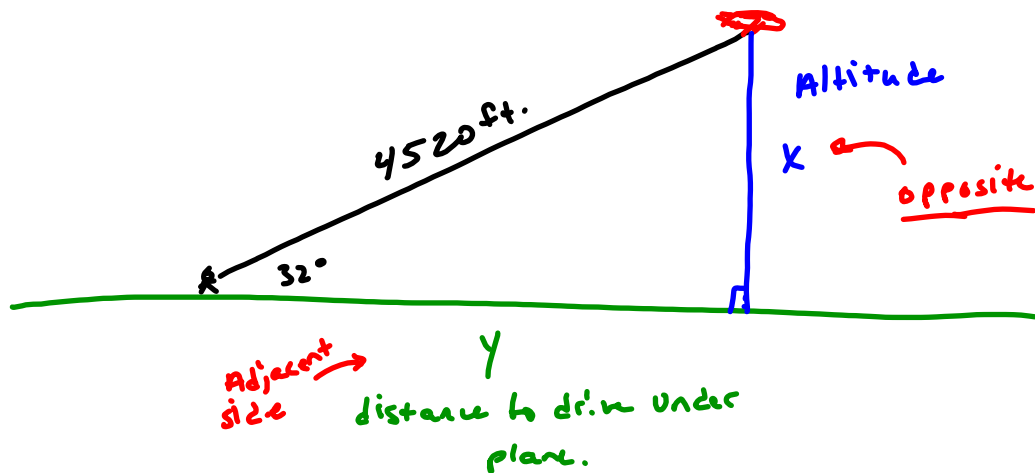
$$x \cdot \boxed{\cos 35^\circ = \frac{115}{x}} \cdot x$$

$$\frac{x \cdot \cos 35^\circ}{\cos 35^\circ} = \frac{115}{\cos 35^\circ}$$

$$x = \frac{115}{\cos 35^\circ} \approx \underline{140.39 \text{ ft.}}$$

Right Triangle Trigonometry Day 2

You use a range finder to see a plane that is 4520 feet from you. Find the distance you'd have to drive to get directly underneath the plane (at the moment you looked at it) as well as the current altitude of the plane.



• Hypotenuse : 4520 , Adj to 32° is y , opp to 32° is x .

- Use sine to find x !

$$4520 \cdot \sin 32^\circ = \frac{x}{4520} \cdot 4520$$

$$x = 4520 \cdot \sin 32^\circ$$

$$x \approx \underline{\underline{2395 \text{ ft.}}}$$

- Use cosine to find y !

$$4520 \cdot \cos 32^\circ = \frac{y}{4520} \cdot 4520$$

$$y = 4520 \cdot \cos 32^\circ$$

$$y \approx \underline{\underline{3833 \text{ ft.}}}$$

Right Triangle Trigonometry Day 2

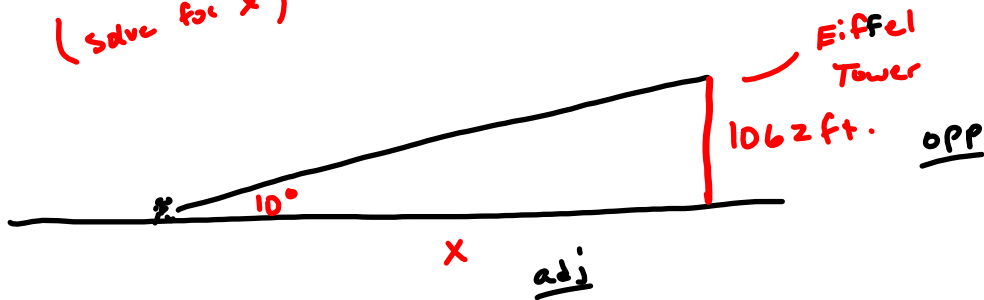
tangent

SOH CAH

TOA

tangent of an angle is the ratio of the opposite side over the adjacent side

How far are you from the tower?
(solve for x)



$$x \cdot \tan 10^\circ = \frac{1062}{x} \cdot x$$

$$\frac{x \tan 10^\circ}{\tan 10^\circ} = \frac{1062}{\tan 10^\circ}$$

$$x = \frac{1062}{\tan 10^\circ} \approx 6023 \text{ ft.}$$

Right Triangle Trigonometry Day 2

Homework:

Numbers 49-54