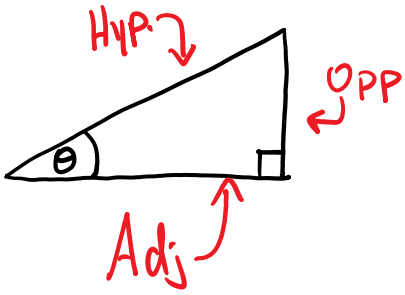
2.4 - Sine & Cosine Angles

October 21, 2019 10:45 AM

Sine (sin) and cosine (cos) are ratios just like tan, but they include the hypotenuse.

ie.



★ $\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$ $\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$ ★

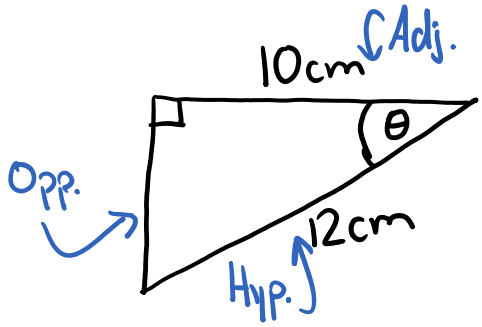
To remember the ratios, use SOH CAH TOA

Sine = Opp. / Hyp.

Cosine = Adj. / Hyp.

Tangent = Opp. / Adj.

Ex: Find θ to the nearest tenth.



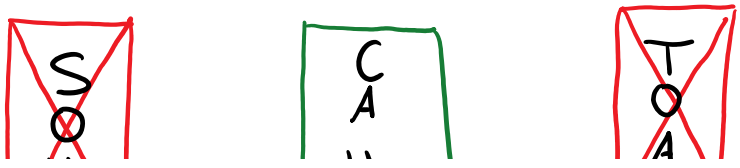
What do we Know?

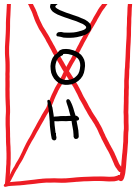
Hyp = 12cm

Adj = 10cm

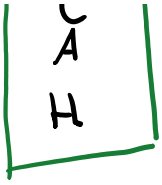
Opp = ?

θ = ?

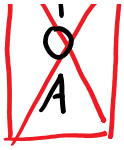




Don't have O (opposite)



- Have Adj. (10cm)
- Have Hyp. (12cm)



Don't have O (opposite)

$$\cos\theta = \frac{Adj}{Hyp.}$$

$$\cos^{-1}[\cos\theta] = \left[\frac{(10cm)}{(12cm)}\right]^{\cos^{-1}}$$

"Inverse cosine" $\cos^{-1}$

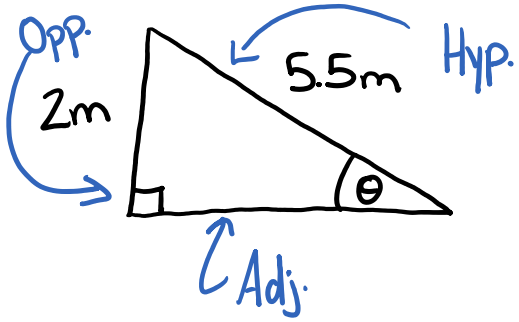
$$\cos^{-1}[\cos\theta] = \cos^{-1}\left(\frac{10cm}{12cm}\right)$$

$$\theta = \cos^{-1}\left(\frac{10cm}{12cm}\right)$$

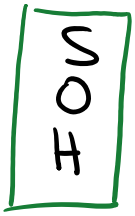
$$\theta = 33.5573....^{\circ}$$

$$\theta = 33.6^{\circ}$$

Ex: Find θ to the nearest degree.



Adj = ?
Opp = 2m
Hyp = 5.5m
θ = ?



- Have Opp.

Don't have

. Have hyp.

Don't have A (adjacent)

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

$\sin^{-1}$

$$\sin^{-1}[\sin\theta] = \left[\frac{(2m)}{(5.5m)}\right]$$

$$\sin^{-1}[\sin\theta] = \sin^{-1}\left(\frac{2m}{5.5m}\right)$$

$$\theta = \sin^{-1}\left(\frac{2m}{5.5m}\right) = 21.323...^{\circ}$$

$$\theta = 21^{\circ}$$

HW: Pg. 95 # 4-10, 12