

# Trig Applications Unit Summary

Note Title

11/06/2010

## - Right Angle Trig

↳ Trig Ratios: SOH CAH TOA

$$\hookrightarrow \sin \theta = \frac{\text{opp}}{\text{hyp}}, \cos \theta = \frac{\text{adj}}{\text{hyp}}, \tan \theta = \frac{\text{opp}}{\text{adj}}$$

↳ Pythagorean Theorem

$$\hookrightarrow a^2 + b^2 = c^2 \quad (c = \text{hypotenuse})$$

↳ angle of elevation

↳ angle of depression

↳ Z-Theorem

↳ Trig Labs (2)



Can only use w/ right angle  $\Delta$ s!

Always from a horizontal!

## - Area of a Triangle

↳ Area =  $\frac{b \times h}{2}$  (only w/ right angle triangles)

↳ Area =  $\frac{1}{2} ab \sin \theta$  (SAS)

↳ a & b are sides,  $\theta$  is angle in between a & b

↳ surveying (area of quadrilaterals)

## - Law of Sines

$$\hookrightarrow \frac{a}{\sin A} = \frac{b}{\sin B} \quad (\text{solving for a side}) \quad \Bigg| \quad \frac{\sin A}{a} = \frac{\sin B}{b} \quad (\text{solving for an angle})$$

↳ two sides & a non-enclosed angle (SSA)

↳ two angles & a non-enclosed side (AAS)

↳ "think opposites"

## - Law of Cosines

$$\hookrightarrow \underline{a^2 = b^2 + c^2 - 2bc \cos A}$$

$$\underline{b^2 = a^2 + c^2 - 2ac \cos B}$$

$$\underline{c^2 = a^2 + b^2 - 2ab \cos C}$$

↳ 2 sides & an enclosed angle (SAS)

↳ 3 sides & no angles (SSS)

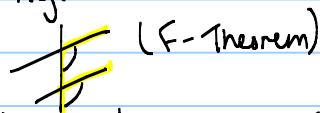
## - Bearings / Azimuths

↳ point of reference is North & go clockwise

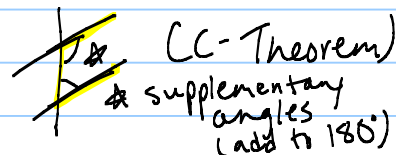
↳ find a common angle between 2 bearings only if they have the same starting point!

↳ subtract the closest to North (smaller #) from the farthest from North (bigger #) (i.e.  $\Rightarrow$  big - small)

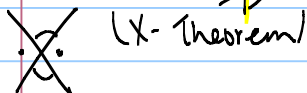
↳ Angle Theorems



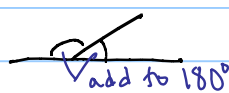
(F-Theorem)



(C-Theorem)  
& supplementary angles (add to 180)



(X-Theorem)



add to 180

