Trigonometry => measure of triangle

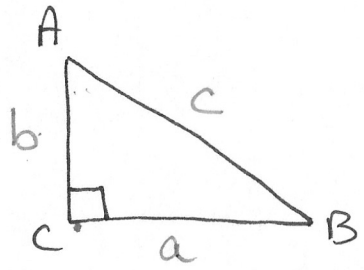
"Hipparchus" => father of trig

TRIG RATIOS: relationship between the angles of a right Δ & the sides

3 Basic SOH CAH TOA

Sine (sin) = $\frac{opp}{hyp}$

Cosine (cos) = $\frac{adj\ (leg)}{hyp}$



Tangent (tan) = $\frac{opp}{adj}$

[Capital Letter – Angles
lower case – sides
across from each other (opposite)

* sides are determine based on starting angle.

Sine A = $\frac{a}{c}$ Sin B = $\frac{b}{c}$ Sin C = $\frac{c}{c}$ = 1

Cos A = $\frac{b}{c}$ Cos B = $\frac{a}{c}$ Cos C = $\frac{0}{c}$ = 0

Tan A = $\frac{a}{b}$ tan B = $\frac{b}{a}$ tan C = $\frac{c}{0}$ -

UND

3 reciprocal trig Ratios

Sin = $\frac{O}{H}$ Cosecant / csc = $\frac{H}{O}$

Cos = $\frac{A}{H}$ Secant / sec = $\frac{H}{A}$

tan = $\frac{O}{A}$ cotangent / cot = $\frac{A}{O}$

CALC: trig values

sin 40° = .643

tan 12° = .213

] calculator

CALC on angle: θ = "theta" angle measure

sin θ = .217

$\sin^{-1}$ sin θ = $\sin^{-1}$ .217 (inverse)

θ = 13°

* to calc an angle use inverse

cos θ = .843

θ = 33°

FIND missing sides & missing angles

ex: $\cos 12 = \frac{x}{7}$

$x = 7 \cdot \cos 12$

$x = 6.8$

$\tan 41° = \frac{7}{x}$

switch

$x = \frac{7}{\tan 41}$

$x = 8.1$

* var IN Num = multiply
var IN denom = divide

ex: $\cos\theta = \frac{6}{11}$

$\theta = \cos^{-1}\left(\frac{6}{11}\right)$

$\theta = 57°$

$\sin\theta = \frac{11}{13}$ $\theta = 58°$

$\sin^{-1}(11/13)$

* Note: $\cos\theta = 1.347$ not possible

$\cos = \frac{A}{H} < 1$

$\sin = \frac{O}{H} < 1$