Right angled triangles ratios

short form

sine θ = <u>opposite</u>
　　　　　hypotenuse

$Sin \theta = \dfrac{opp}{hyp}$

cosine θ = <u>adjacent</u>
　　　　　　hypotenuse

$Cos \theta = \dfrac{adj}{hyp}$

tangent θ = <u>opposite</u>
　　　　　　adjacent

$Tan \theta = \dfrac{opp}{adj}$

acronym...... SOH CAH TOA

Apr 27-7:51 AM

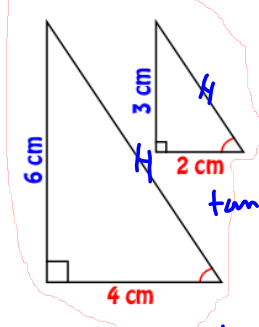Trigonometric Ratios

- Each angle has a specific trigonometric ratio

ie. tan 56° = 1.4826 (ALWAYS carry 4 decimal places!!)

　　　cos 50° = 0.6428

These ratios will be found
using a scientific calculator

Look at these two triangles...they are similar.

Even though these triangles are
different sizes, the ratios of their
sides would be equal.

$tan \theta = \dfrac{opp}{adj}$

$= \dfrac{6}{4}$

This confirms that as long as the
angles are the same measure, the
trigonometric ratios will be the same.

$tan \theta = 1.5$
$\theta = tan^{-1}(1.5)$
$= 56°$

$\dfrac{tan \theta}{tan} = \dfrac{1.5}{tan}$

$\theta = tan^{-1} 1.5$

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

$$= \frac{x}{z}$$

$$\cos\theta = \frac{adj}{hyp}$$

$$= \frac{z}{y}$$

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

$$= \frac{z}{x}$$

$$\cos\theta = \frac{adj}{hyp}$$

$$= \frac{x}{y}$$

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Trigonometric Ratios

*** Must have calculator in DEGREE mode ***

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

$$\cos\theta = \frac{adj}{hyp}$$

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

HYPOTENUSE

OPPOSITE

Reference angle

θ

? ADJACENT

"These are called the *Primary Trig Ratios*"

REMEMBER: "SOH CAH TOA"

Jan 31-3:49 PM

Examples

1. $\cos 74° = 0.2756$

2. $\sin \theta = 0.5$
    $\theta = \sin^{-1}(0.5)$
    $= 30°$
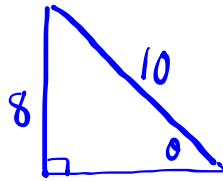
3.

$\sin \theta = \dfrac{opp}{hyp}$

$= \dfrac{8}{10}$

$\theta = \sin^{-1} 0.8$

$= 53°$

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Homework...

$\dfrac{x}{4} = \dfrac{3}{7} \rightarrow x = \dfrac{3(4)}{7}$

$\dfrac{7x}{7} = \dfrac{4(3)}{7}$

$x = \dfrac{12}{7}$

$= \dfrac{12}{7}$

$\dfrac{4}{x} = \dfrac{15}{6}$

$\dfrac{15x}{15} = \dfrac{4(6)}{15}$

$x = \dfrac{24}{15}$

$= \dfrac{8}{5}$

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