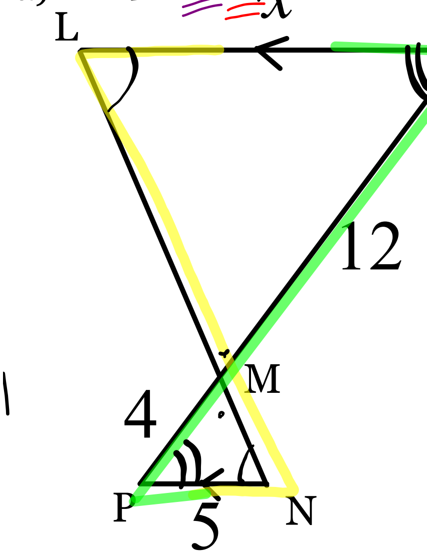
WARM-UP

Solve for the unknown in each of the following.

a) $\triangle LKM \sim \triangle NPM$



$$\frac{x}{5} = \frac{12}{4}$$

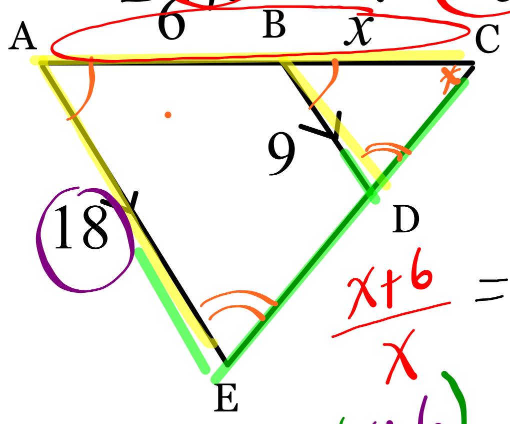
$$\cancel{5}\frac{x}{\cancel{5}} = 3(5)$$

$$x = 15$$

$x = 15$

[redacted]

$\triangle ACE \sim \triangle BCD$



$$\frac{x+6}{x} = \frac{18}{9}$$

$$\frac{(x+6)}{x} = \frac{2}{1}$$

$$x+6 = 2x$$

$$6 = 2x - x$$

$$6 = x$$

$$x = 6$$

$x = 6$

[redacted]

#5)

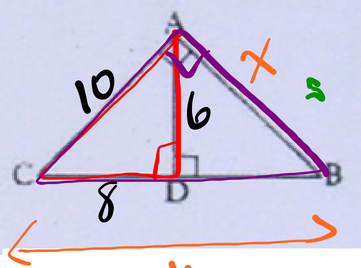
5 In △ADC and △BAC, AC = 10, DC = 8, and AD = 6.

(a) Why is △ADC ~ △BAC? share

(b) Find AB.

(c) Find BC.

90°



b) $\Delta ADC \sim \Delta BAC$

$$\frac{\cancel{6}x}{\cancel{6}} = \frac{10}{8}(6)$$

$$x = 7.5$$

c) $\Delta ADC \sim \Delta BAC$

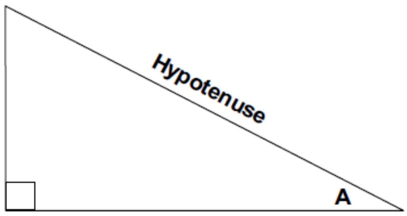
$$\frac{\cancel{10}y}{\cancel{10}} = \frac{10}{8}(10)$$

$$y = 12.5$$

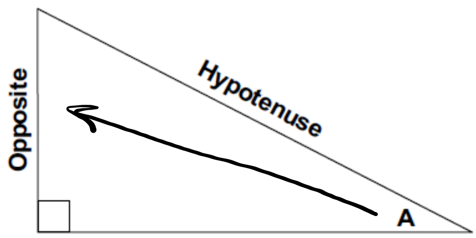
Naming the sides of triangles is EXTREMELY important!!

Naming the sides

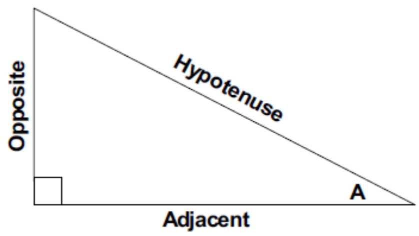
Now, first up, there are *three* different names for the three different sides of a right-angled triangle. The names are *opposite, hypotenuse and adjacent*. Now we've come across the hypotenuse before – it is the longest side of the triangle. This is always easy to spot. The other two names, opposite and adjacent, depend on which *angle* you're currently looking at in the triangle. For instance, say I was looking at angle A:



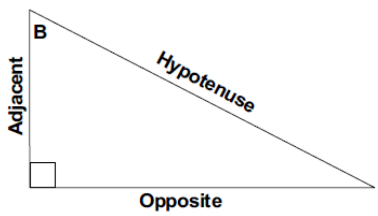
The opposite side is the side opposite the angle we're looking at. We're looking at angle A at the moment, so the side opposite it is the side on the left:



This leaves us with the adjacent side. The adjacent side is the side of the triangle that *touches* the angle we're looking at, but which is *not* the hypotenuse. There are two sides touching our angle A – one is the hypotenuse. The other side therefore is the adjacent side:



What about if we'd picked another angle, say angle B in the following diagram? Well, the hypotenuse would stay the same, but the adjacent and opposite sides would change, like this:



Trigonometric Ratios

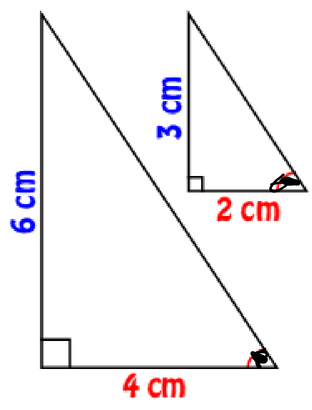
- Each angle has a specific trigonometric ratio

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.



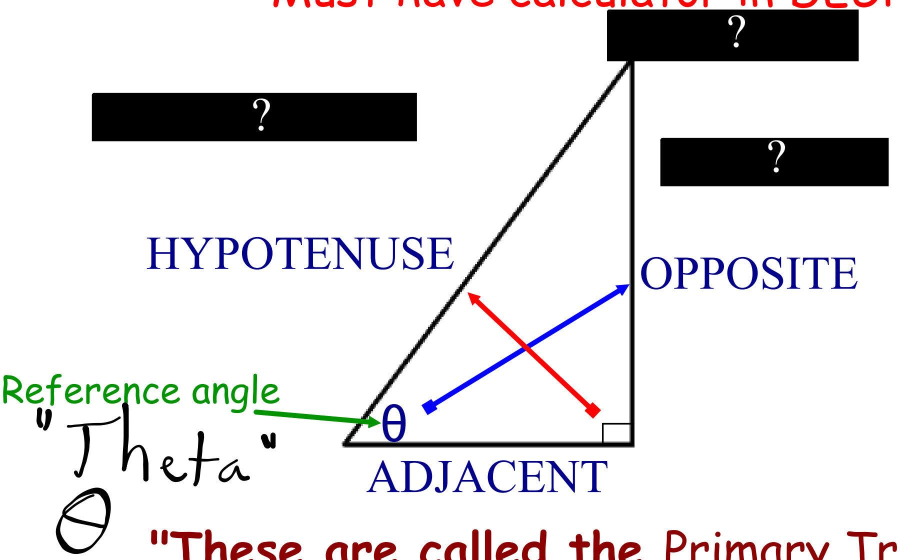
$\frac{3}{2} = \frac{6}{4}$

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

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

Trigonometric Ratios

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



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

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

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

"These are called the Primary Trig Ratios "

REMEMBER: "SOH CAH TOA"

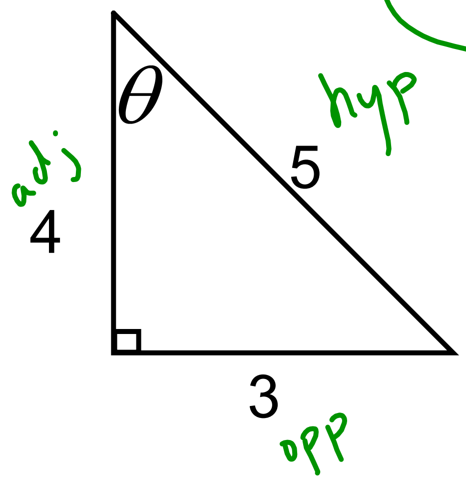
GREEK ALPHABET

Α α	alpha	Ν ν	nu
Β β	beta	Ξ ξ	ksi
Γ γ	gamma	Ο ο	omicron
Δ δ	delta	Π π	pi
Ε ε	epsilon	Ρ ρ	rho
Ζ ζ	zeta	Σ σς	sigma
Η η	eta	Τ τ	tau
Θ θ	theta	Υ υ	upsilon
Ι ι	iota	Φ φ	phi
Κ κ	kappa	Χ χ	chi
Λ λ	lambda	Ψ ψ	psi
Μ μ	mu	Ω ω	omega

Greek alphabet chart © by deTraci Regula; licensed to About.com

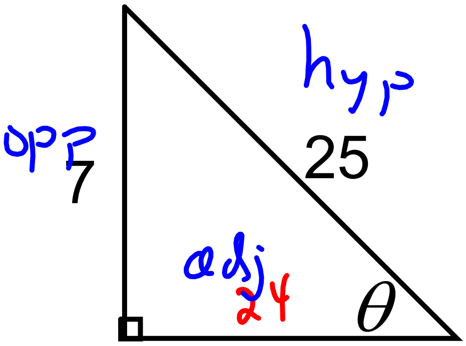
State all 3 Primary Trig ratios... **SOH CAH TOA**

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



$\sin\theta = \frac{3}{5}$ $\cos\theta = \frac{4}{5}$ $\tan\theta = \frac{3}{4}$

Determine the missing side then list trig ratios...



SOH CAH TOA

$$\sqrt{x^2} = \sqrt{25^2 - 7^2}$$

$$X = 24$$

$$\sin\theta = \frac{7}{25}$$

$$\cos\theta = \frac{24}{25}$$

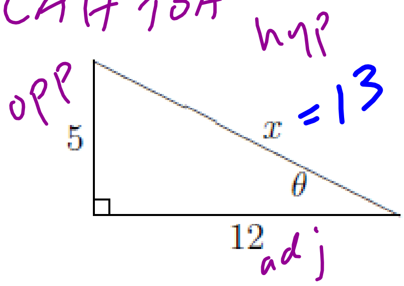
$$\tan\theta = \frac{7}{24}$$

EXERCISE: Identifying trigonometric ratios from a diagram...

SOH CAH TOA

(a) Use Pythagoras' theorem to find x

(b) Find (i) $\sin\theta$
(ii) $\tan\theta$
(iii) $\cos\theta$



i) $\sin\theta = \frac{5}{13}$

ii) $\tan\theta = \frac{5}{12}$

iii) $\cos\theta = \frac{12}{13}$

HOMEWORK...

Worksheet - Pythagorus and Primary Trig Ratios.pdf

Worksheet - Identifying Primary Trig ratios.pdf

Attachments

Worksheet - Identifyting Primary Trig ratios.pdf

Worksheet - Pythagorus and Primary Trig Ratios.pdf