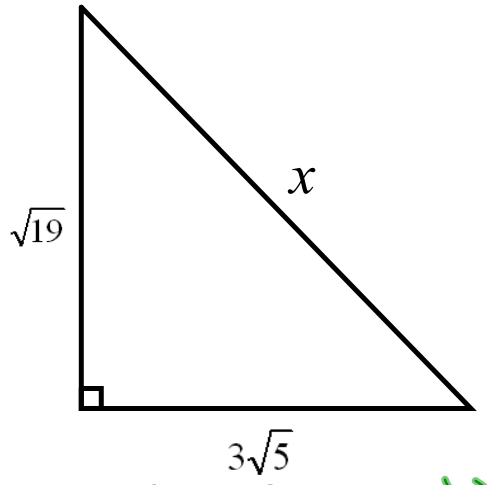
Warm Up

Determine the measure of the variable in each of the following diagrams:

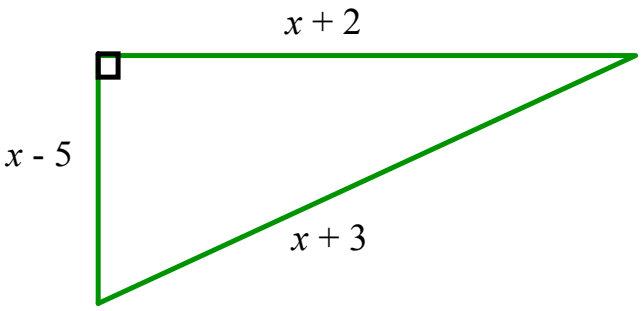


$x^2 = (\sqrt{19})^2 + (3\sqrt{5})^2$

$x^2 = 19 + 9(5)$

$\sqrt{x^2} = \sqrt{64}$

$x = 8$



$(x-5)^2 + (x+2)^2 = (x+3)^2$

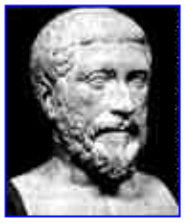
$x^2 - 10x + 25 + x^2 + 4x + 4 = x^2 + 6x + 9$

$x^2 - 12x + 20 = 0$

$(x-10)(x-2) = 0$

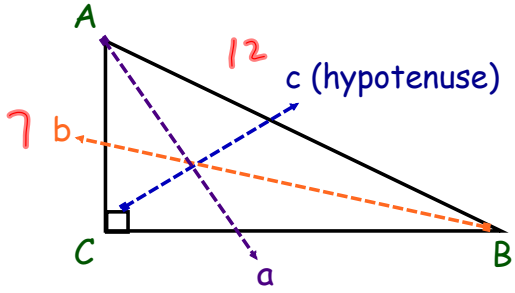
$x = 10, 2$

Can not have negative side length



Pythagorean Theorem

- is a fundamental relationship amongst the sides on a **RIGHT triangle.**



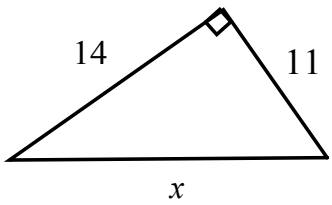
$$c^2 = a^2 + b^2$$

OPTIONS...

#1. Finding the unknown hypotenuse:

$$c^2 = a^2 + b^2$$

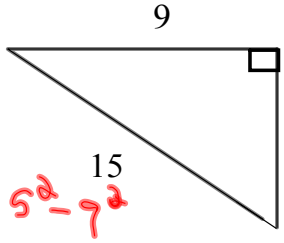
ex:



#2. Finding an unknown side

$$a^2 = c^2 - b^2$$

ex:



~~2, 4, 13~~

$y^2 = 15^2 - 9^2$

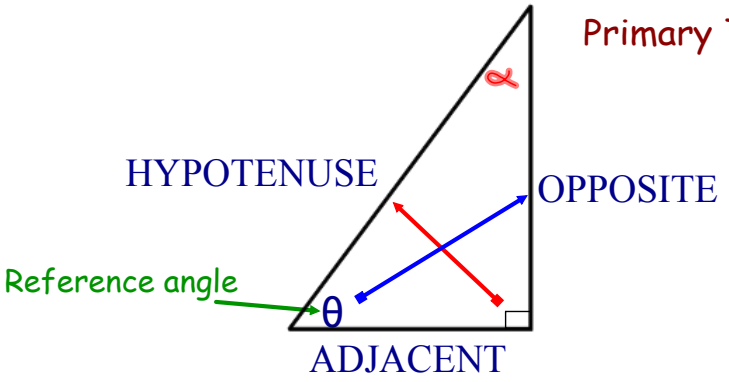
$= 225 - 81$

$= 144$

$y = 12$ → Pythagorean Triple = 3, 4, 5

Trigonometric Ratios

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



Primary Trigonometric Ratios

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

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

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

Memory Aid: "SOH CAH TOA"

Reciprocal Trigonometric Ratios

$$\text{cosecant}\,\theta = \frac{hypotenuse}{opposite}$$

$$\text{secant}\,\theta = \frac{hypotenuse}{adjacent}$$

$$\text{cotangent}\,\theta = \frac{adjacent}{opposite}$$

Notice that these ratios are each the reciprocal of one of the primary trig ratios

Summary

Primary Ratios	Reciprocal Ratios
$\sin\theta = \frac{opp}{hyp}$	$\csc\theta = \frac{hyp}{opp}$
$\cos\theta = \frac{adj}{hyp}$	$\sec\theta = \frac{hyp}{adj}$
$\tan\theta = \frac{opp}{adj}$	$\cot\theta = \frac{adj}{opp}$

Reciprocal ratios are not found on a calculator....we must learn how to use the reciprocal function on our calculator.

Reciprocal Functions ---------> 

or 

Inverse Trigonometric Functions
(Arc Trig Functions)

Trigonometric Functions

Evaluate each of the following:

$\sin 78^\circ =$ _____

$\cos\theta = 0.6469$

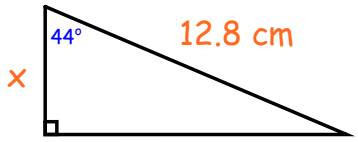
$\theta =$ _____

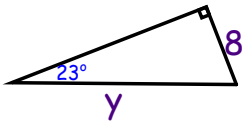
$\cot 118^\circ =$ _____

$\sec\theta = 3.2361$

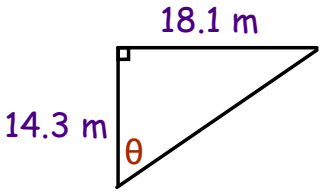
$\theta =$ _____

EXAMPLE - Finding an unknown side

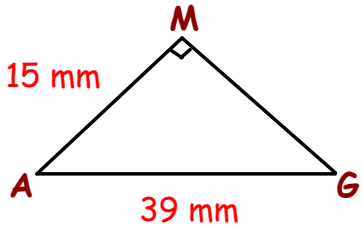


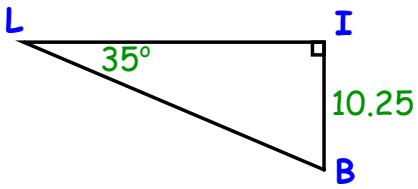


EXAMPLE - Finding an unknown angle



EXAMPLE - Solve the triangle (find ALL sides and angles)





HOMEWORK...

Worksheet - Primary Trig Ratios.doc

Attachments

Worksheet - Primary Trig Ratios.doc