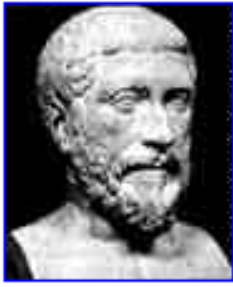


In this lesson we will review right angle trigonometry.

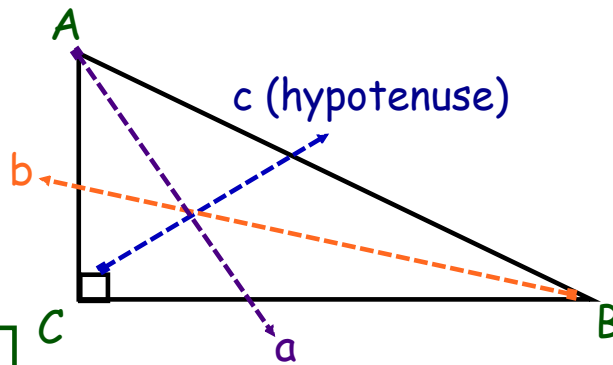
The new work will include using reference triangles to find primary trigonometric ratios, reference angles and rotation angles.

Also we will look at  $\sin\theta$ ,  $\cos\theta$  and  $\tan\theta$  in terms of  $x$ ,  $y$ , and  $r$ .



# Pythagorean Theorem

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

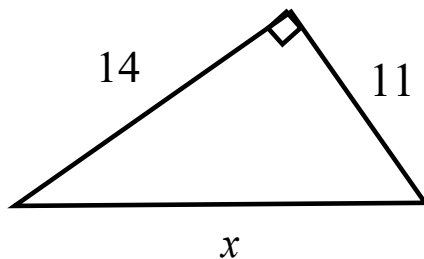


$$c^2 = a^2 + b^2$$

OPTIONS...

#1. Finding the unknown hypotenuse:

ex:



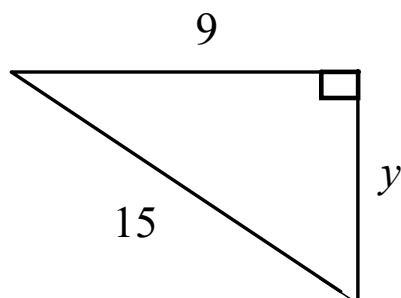
$$c^2 = a^2 + b^2$$

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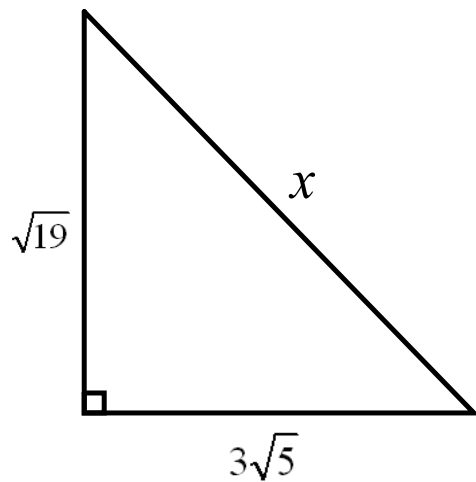
#2. Finding an unknown side

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

ex:



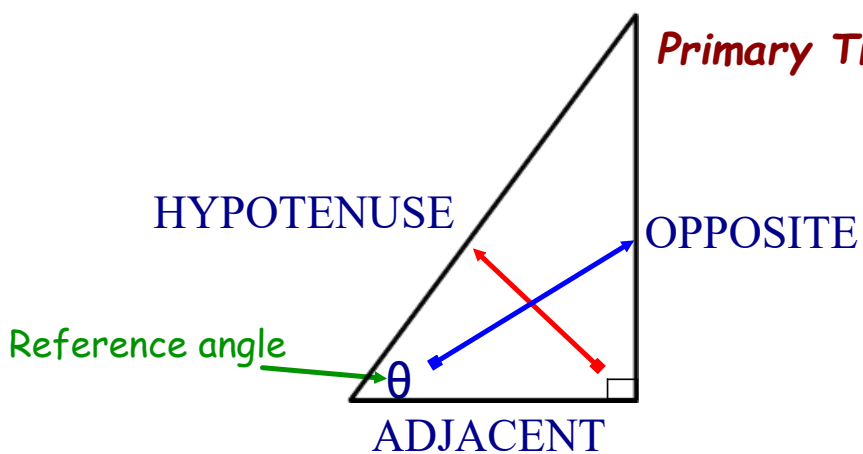
Check Up...



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## Trigonometric Ratios

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*Primary Trigonometric Ratios*

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

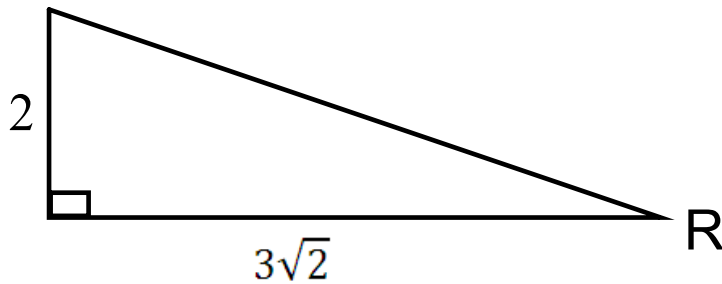
$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

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

Memory Aid: "SOH CAH TOA"

Check up...

State the three primary trigonometric ratios of angle R. Express your ratios as fractions. (Do not have to be in simplest form)



Evaluate each of the following:

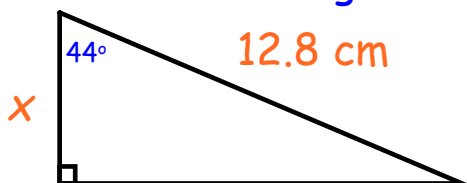
$$\sin 78^\circ = \underline{\hspace{2cm}}$$

```
sin(78)
.9781476007
■
```

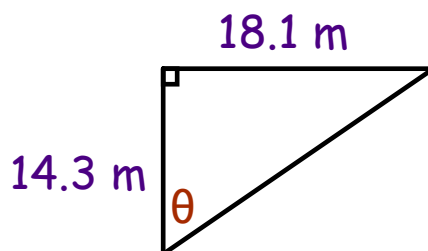
$$\cos \theta = 0.6469$$

$$\theta = \underline{\hspace{2cm}}$$

EXAMPLE - Finding an unknown side



EXAMPLE - Finding an unknown angle

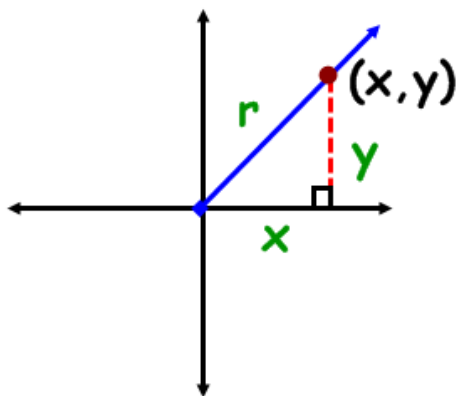


Now that the review is over we are going to use reference triangles to find trigonometric values.

## Angles on the Cartesian Plane

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- **Reference Angle** - an acute angle formed between the terminal arm and the **x-axis**.
- **Reference Triangle** - a triangle formed by drawing a perpendicular line from a point on the terminal to the **x-axis**.



Primary Trigonometric Ratios

$$\sin \theta = \frac{y}{r}$$

$$\cos \theta = \frac{x}{r}$$

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

.

**Example 1**

The terminal arm of angle  $\theta$  passes through the point,  $P(-5, -12)$ .

Find the three primary trigonometric ratios.

•

**Example 2**

A positive angle,  $\theta$ , is in the second quadrant. If  $\cos\theta = -\frac{3}{4}$ , find the value of the other two primary trigonometric ratios.

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