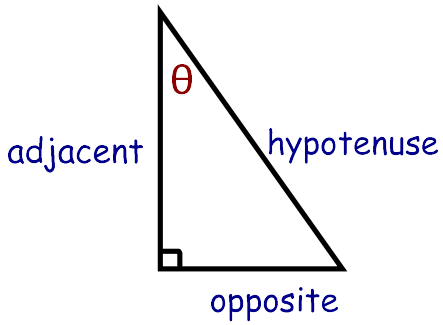
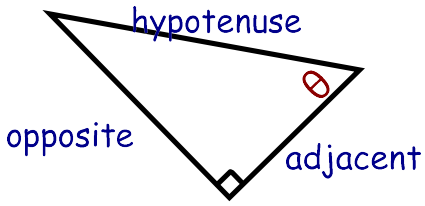
1.3 Primary Trig Ratios

Trigonometric ratios are based on sides, relative to a given angle.

hypotenuse: the side across from the right angle.
opposite: the side *across* from a given angle θ.
adjacent: the side that is *beside* a given angle θ.





Let's Explore...

1) Draw a RIGHT triangle with an angle of 25°.

2) Using the 25° as your reference angle (θ), label the sides

   opposite, adjacent, hypotenuse.

3) Measure the side lengths, and label these on the triangle.

4) Complete the following table. Compare with some classmates. What do you notice?

Trig Ratio	Ratios using measured sides from your triangle	As a decimal	
$\frac{O}{H}$	———		*is it close to 0.4?*
$\frac{A}{H}$	———		*is it close to 0.9?*
$\frac{O}{A}$	———		*is it close to 0.5?*

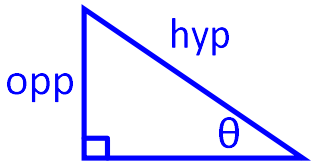
5) Draw a RIGHT triangle with an angle of 30°. Repeat #1-4 above. Make sure you compare with classmates, and discuss what you notice.

Try it with a few triangles that are 25° to compare with your first results

In right angle triangles, there are 3 primary trig ratios.

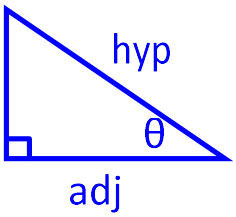
The Sine Ratio

$$\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$$



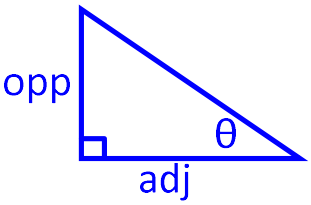
The Cosine Ratio

$$\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$



The Tangent Ratio

$$\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$$



θ → The Greek letter "theta" - represents an ANGLE

* If we know the side lengths of a triangle, we can find the angles.
* If we know the angles of a triangle, we can find the side lengths.