

**Lesson Objectives:**

- to recognize and write the 3 basic trigonometric ratios
- to identify the sine, cosine and tangent of a special right triangle
- to identify the sine, cosine and tangent of any right triangle.

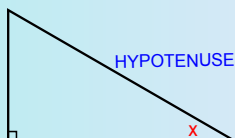
**RIGHT TRIANGLE TRIGONOMETRY**

Trigonometry comes from the Greek words *trigonon* and *metria* meaning "triangle measurement."

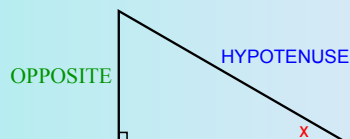
The Greek mathematicians Hipparchus of Nicaea and Ptolemy created the discipline of trigonometry more than 2000 years ago, primarily to study astronomy.



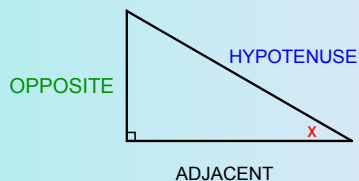
The **HYPOTENUSE** is the side opposite the right angle.



The **OPPOSITE** is the side opposite the angle you are working with.



The ADJACENT is the side which intersects the hypotenuse to form the angle.



Here is someone who can help you remember the trig ratios.

He is Chief SOH-CAH-TOA of the trigonometric tribe. He knows all about trigonometry.

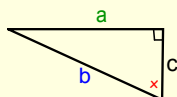
### SOH-CAH-TOA



$$\sin x \text{ (sine)} = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{a}{b}$$

$$\cos x \text{ (cosine)} = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{c}{b}$$

$$\tan x \text{ (tangent)} = \frac{\text{opposite}}{\text{adjacent}} = \frac{a}{c}$$

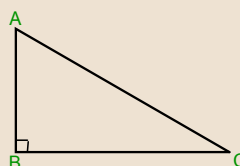


Find the ratios. Remember to correctly name the segments.

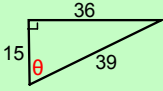

$$\sin \angle C = \text{PUSH}$$

$$\tan \angle C = \text{PUSH}$$

$$\sin \angle A = \text{PUSH}$$



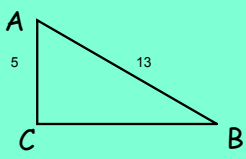
Write the ratios

Write the ratios as decimals rounded to the nearest thousandth.

push

Express each trig ratio as a fraction and as a decimal rounded to the nearest thousandth.

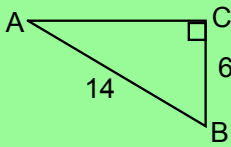


a.  $\sin A$       b.  $\cos A$

c.  $\tan A$       d.  $\sin B$

e.  $\cos B$       f.  $\tan B$

Express each trig ratio as a fraction and as a decimal rounded to the nearest thousandth.



a.  $\sin A$       b.  $\cos A$

c.  $\tan A$       d.  $\sin B$

e.  $\cos B$       f.  $\tan B$

What do you notice about the values of the trig ratios?



Two important things to remember:

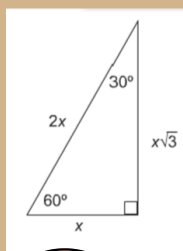
1. Never find the ratios of the right angle.
2. Only the tangent can be greater than one.

Day 2 Trig Ratio's of Special Right Triangles

Draw and label the special right triangles.

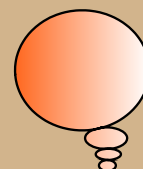
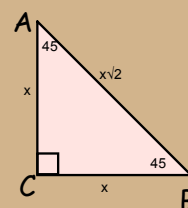
Identify the trig ratios as fractions

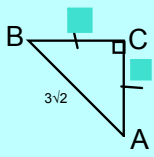
- a.  $\sin 60$
- b.  $\sin 30$
- c.  $\cos 60$
- d.  $\cos 30$
- e.  $\tan 60$
- e.  $\tan 30$



Identify the trig ratios as fractions

- a.  $\sin 45$
- b.  $\cos 45$
- c.  $\tan 45$





Identify the side measures and give the measure of the three trig ratios for  $\angle A$  in each triangle

