

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

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

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

KEEP CALM
AND
SOHCAHTOA

Unit 2: Trigonometry

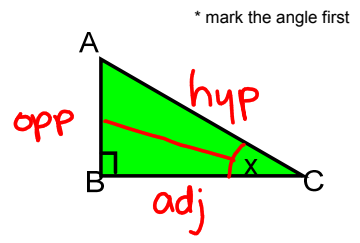
2.1 Trig Ratios

* Degree Mode *

Trig ratios can help determine the angles and side lengths of a right angle triangle.

In order to use them we must understand the terms:
adjacent, opposite and hypotenuse.

- hypotenuse - longest side, across from right angle
- adjacent - side touching angle x, but not the hypotenuse
- opposite - side across from angle x



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

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

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

KEEP CALM
AND
SOHCAHTOA

In this course there are 3 trigonometric ratios we will use:

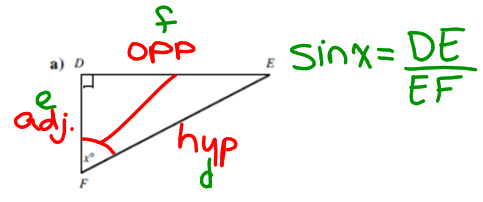
- sine $\theta = \frac{\text{opposite}}{\text{hypotenuse}}$
- cosine $\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$
- tangent $\theta = \frac{\text{opposite}}{\text{adjacent}}$

The acronym **SOH CAH TOA** can be used to remember the trig ratios.

SOH CAH TOA

Ex.) Label the adjacent, opposite and hypotenuse in reference to angle x.

- Sin x = $\frac{\text{opp}}{\text{hyp}}$
- Cos x = $\frac{\text{adj}}{\text{hyp}}$
- Tan x = $\frac{\text{opp}}{\text{adj}}$



Sin x = $\frac{DE}{EF}$

sin θ = opp / hyp

cos θ = adj / hyp

tan θ = opp / adj

KEEP CALM
AND
SOHCAHTOA

Ex.) Determine the trig ratios for angle a.

$$\sin \theta = \frac{20}{29}$$

$$\cos a = \frac{21}{29}$$

$$\tan a = \frac{20}{21}$$

Ex.) Determine the value to the nearest thousandth:

a) $\sin 81^\circ = 0.988$ b) $\tan 14^\circ = 0.249$ c) $\cos 44^\circ = 0.719$

What if you are given the trig ratio and want to determine the angle?

Ex.) a) $\sin a^\circ = 0.3584$ b) $\cos b^\circ = 0.5389$
 $\sin^{-1}(0.3584) = 21^\circ$ $b = 57^\circ$
 c) $\tan P^\circ = 3.2106$ d) $\sin C^\circ = 1/2$
 $P = 73^\circ$ $C = 30^\circ$

* to find angle: $\sin^{-1}(0.3584)$
2nd|sin

sin θ = opp / hyp

cos θ = adj / hyp

tan θ = opp / adj

KEEP CALM
AND
SOHCAHTOA

There are 3 different right triangles.
 When we look at the cosine ratios, what do you notice?

$$\cos 38^\circ = \frac{4.3}{5.5} = 0.7818$$

$$\cos 38^\circ = \frac{3.1}{4} = 0.7750$$

$$\cos 38^\circ = \frac{1.9}{2.4} = 0.7917$$