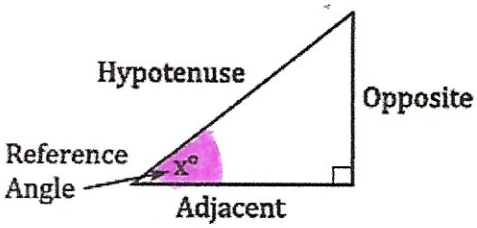
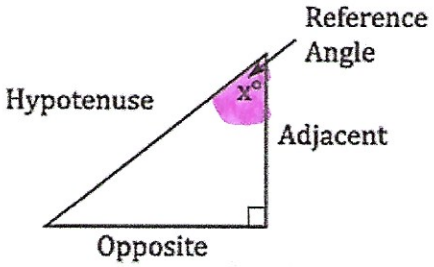
Ch 8.4 Trigonometry

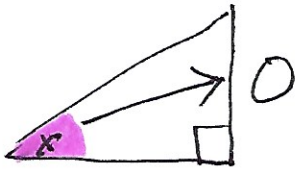
1. Label each triangle with "O" for opposite, "A" for adjacent, and "H" for hypotenuse.

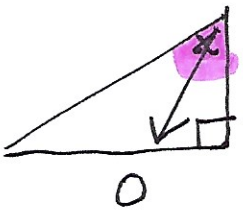
If you have a right triangle and some angle x, this angle is called the Reference Angle. From that angle, you have the opposite side, the adjacent side, and of course, the hypotenuse (a, o and h for short). If that angle changes position as in figure 2, then the adjacent and opposite flip.



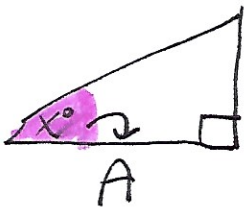


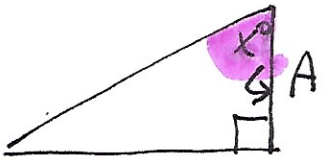
opposite side is across from given angle (Pay attention to where given angle is)



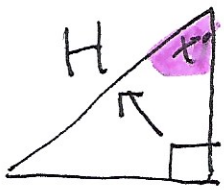


adjacent side is next to given angle





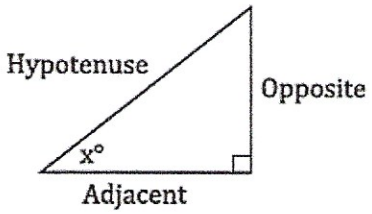
Hypotenuse is longest side, opposite 90° angle.



2. Choose a trig ratio and write it out.

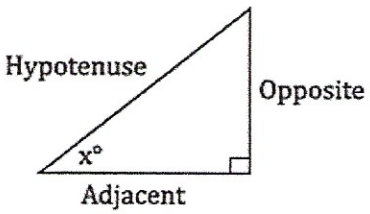
The Sine ratio is defined as the Opposite over the Hypotenuse (abbreviated Sin).

$$\text{Sin } x° = \frac{\text{Opposite}}{\text{Hypotenuse}}$$



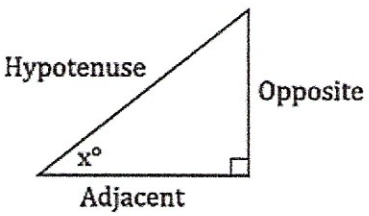
The Cosine ratio is defined as the Adjacent over the Hypotenuse. (Abbreviated Cos)

$$\text{Cos } x° = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$



The Tangent ratio is defined as the Opposite over the Adjacent. (Abbreviated Tan)

$$\text{Tan } x° = \frac{\text{Opposite}}{\text{Adjacent}}$$



Soh Cah Toa ← an easy way to remember Trig ratios !! :)

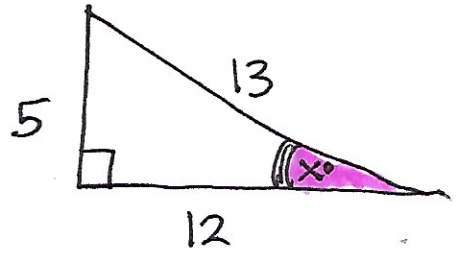
$\text{Sin } X° = \frac{\text{Opp}}{\text{Hyp}}$ Soh

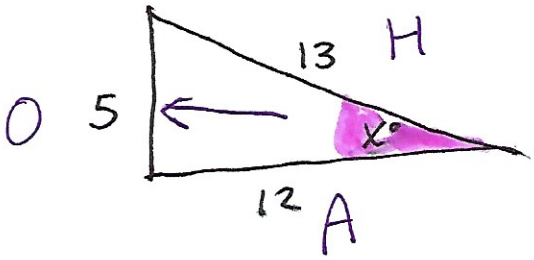
$\cos X° = \frac{\text{Adj}}{\text{Hyp}}$ Cah

$\text{Tan } X° = \frac{\text{Opp}}{\text{Adj}}$ Toa

Practice Problems

Find sin, cos and tan of reference angle X°





First label triangle with "O" for opposite, then add "A" and "H" for adjacent and Hypotenuse

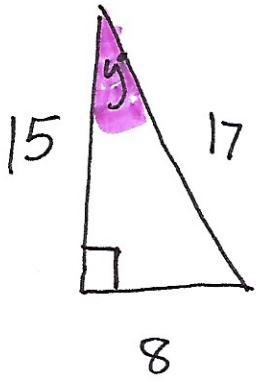
Second, find trig ratios

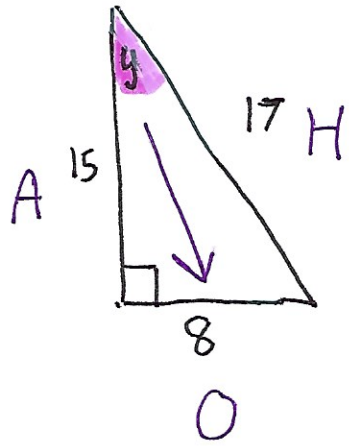
$$\sin X^\circ = \frac{\text{Opposite}}{\text{Hypotenuse}} = \frac{5}{13}$$

$$\cos X^\circ = \frac{\text{adjacent}}{\text{Hypotenuse}} = \frac{12}{13}$$

$$\tan X^\circ = \frac{\text{opposite}}{\text{Adjacent}} = \frac{5}{12}$$

Find sin, cos, and tan of reference angle y





(First) label triangle with
"O" for opposite
"A" for adjaecent and
"H" for hypotenuse

(Second) Find trig ratios

$$\sin y^\circ = \frac{\text{opposite}}{\text{Hypotenuse}} = \frac{8}{17}$$

$$\cos y^\circ = \frac{\text{adjacent}}{\text{Hypotenuse}} = \frac{15}{17}$$

$$\tan y^\circ = \frac{\text{opposite}}{\text{adjacent}} = \frac{8}{15}$$