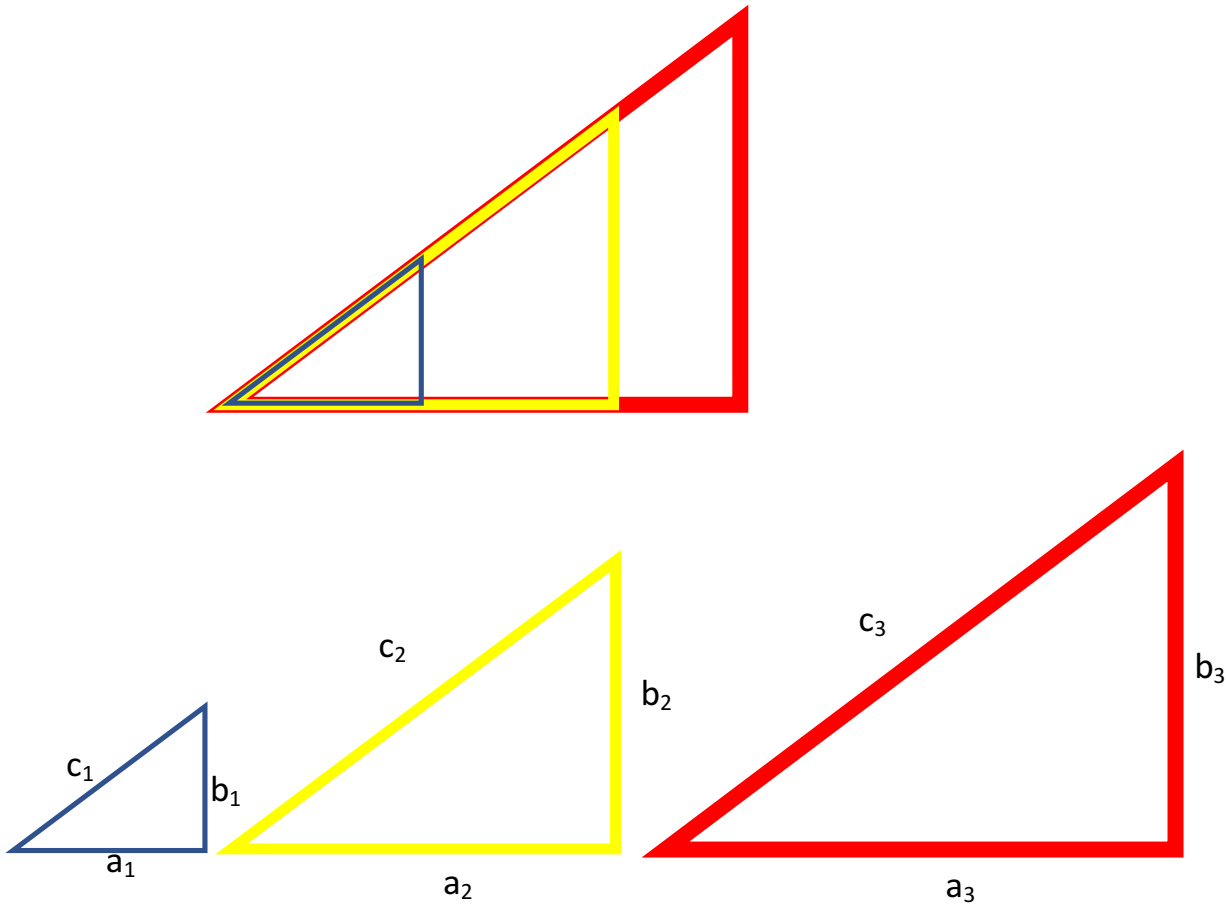


# Trigonometry: Sine, Cosine, and Tangent function

Similar triangles: Same 'shape'. All angles are equal, and sides are proportional.

Similar (right) triangles:



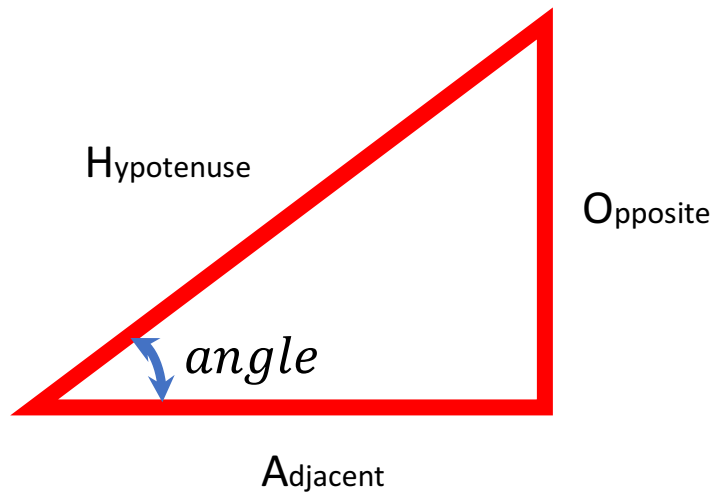
Similar triangles: Same ratios:  $\frac{a_2}{a_1} = \frac{c_2}{c_1}$  and  $\frac{b_2}{b_1} = \frac{c_2}{c_1}$

Calculate the ratios:

	Blue Triangle (1)	Yellow Triangle (2)	Red Triangle (3)
$\frac{a}{c}$			
$\frac{b}{c}$			
$\frac{b}{a}$			

New trigonometric functions:

## SOH CAH TOA



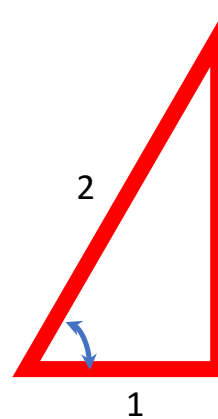
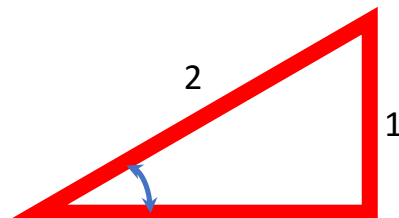
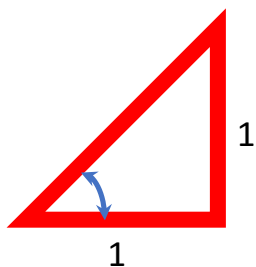
$$\sin( \textit{angle} ) = \frac{O}{H}$$

$$\cos( \textit{angle} ) = \frac{A}{H}$$

$$\tan( \textit{angle} ) = \frac{O}{A}$$

Application:  
Measuring tree height!

Special triangles and angles, and their Sine, cosine, and Tangent values.



For each of the triangles, complete the following table:

Angle measure	$45^\circ$
Adjacent	1
Opposite	1
Hypotenuse	
$\sin(\text{ angle } )$	
$\cos(\text{ angle } )$	
$\tan(\text{ angle } )$	

	$30^\circ$
	1
	2

	$60^\circ$
	1
	2