

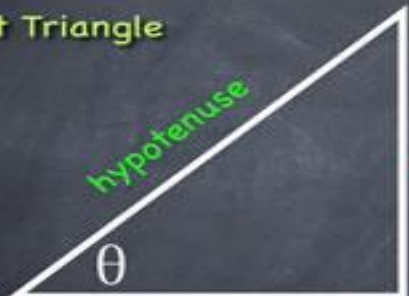
Trigonometry

Trigonometry is the branch of Mathematics that involves various techniques to study the characteristic of various triangles. With the help of which, we can find the solutions of realistic problems. In modern days it is named as circular functions. Let's just start it with simple things.

Math - Trigonometry A when paused
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Trigonometry is the mathematics that deals with the ratios of the lengths of the sides of a right triangle.

Right Triangle



$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$
 $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$
 $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$

The other 3 ratios are the inverses of the ones shown.

The ratios of the lengths of the sides depend on the angle.

"Sohcahtoa"

Some Standard Angles and Trigonometric Ratios:

	0°	30°	45°	60°	90°
$\sin \theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\tan \theta$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$\pm \infty$

Signature of T-Ratios in various quadrants:

$\sin(-\theta) = -\sin \theta$	$\sin(90 - \theta) = \cos \theta$
$\cos(-\theta) = \cos \theta$	$\cos(90 - \theta) = \sin \theta$
$\tan(-\theta) = -\tan \theta$	$\tan(90 - \theta) = \cot \theta$
$\sec(-\theta) = \sec \theta$	$\sec(90 - \theta) = \operatorname{cosec} \theta$
$\operatorname{cosec}(-\theta) = -\operatorname{cosec} \theta$	$\operatorname{cosec}(90 - \theta) = \sec \theta$
$\cot(-\theta) = -\cot \theta$	$\cot(90 - \theta) = \tan \theta$

