Table of Trig Function Values for Special Angles -- sidebar

Why do we need to know this?

The exact answers for the various trig functions for certain angles are very well known, and your teachers will expect you to know them. This is one of those times when some memorization is important.

What should you know?

You should know and be able to reproduce this table with no books, no notes, and no calculator.

θ in radians	θ in degrees	sin(θ)	cos(θ)	tan(θ)
0	0°	0	1	0
$\frac{\pi}{6}$	30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
$\frac{\pi}{4}$	45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1
$\frac{\pi}{3}$	60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$
$\frac{\pi}{2}$	90°	1	0	undefined

You will also need to know these trig functions for special angles all around the circle (for example, $\cos\frac{7\pi}{6} = -\frac{\sqrt{3}}{2}$.) I think it's easier to memorize this small table and use pictures and reference angles to figure out the others.

An assortment of facts that can help you remember or figure out the special values.

- Remember the two special right triangles and then use SOHCATOA to compute the sines and cosines. The 45-45-90 right triangle has both its legs the same, so you can use the Pythagorean Theorem to find its hypotenuse. The 30-60-90 right triangle is half of an equilateral triangle, so its short leg = ½ of its hypotenuse. You can use the Pythagorean Theorem to find the length of the longer leg.

- Remember that $\tan\theta = \frac{\sin\theta}{\cos\theta}$

- Remember the unit circle. 0 and $\frac{\pi}{2}$ lie on the x- and y-axes, respectively, which lets you remember the coordinates (0,1) or (1, 0).

- You can fill in the table using the pattern $\frac{\sqrt{?}}{2}$; sine counts up, cosine counts down.

- You can use your calculator to remind you – but remember that 0.707 is a different number from $\frac{\sqrt{2}}{2}$. Also remember that you may sometimes have to reproduce these values without your calculator to help you.

- Converting between radians and degrees -- 180º = π radians = half a circle. Degrees are very small compared to radians – an angle will measure many (almost 60 times as many) degrees as radians.

- Fractions of π radians are far more friendly than decimal radians.