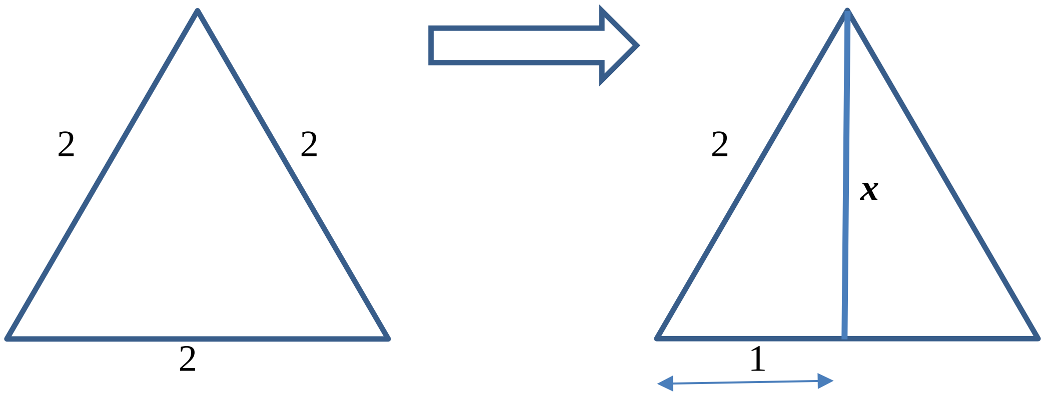
THE SPECIAL TRIANGLES.

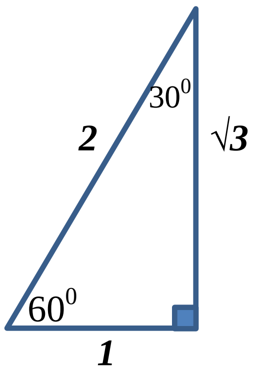
Consider an equilateral triangle with sides of 2 cm.
Obviously the angles are all 60^0

Split the triangle in half:



Calculating x by Pythagoras's Theorem:

$$x^2 + 1^2 = 2^2$$
$$x^2 = 3$$
$$x = \sqrt{3}$$



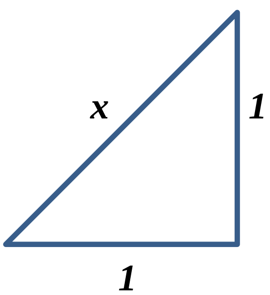
From this triangle we can "read off"
all the trigonometric ratios for 60^0 and 30^0

$\sin 60 = \dfrac{\sqrt{3}}{2}$ $\qquad$ $\sin 30 = \dfrac{1}{2}$

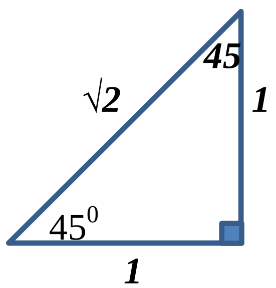
$\cos 60 = \dfrac{1}{2}$ $\qquad$ $\cos 30 = \dfrac{\sqrt{3}}{2}$

$\tan 60 = \dfrac{\sqrt{3}}{1}$ $\qquad$ $\tan 30 = \dfrac{1}{\sqrt{3}}$ *which we usually simplify to* $\dfrac{\sqrt{3}}{3}$

Similarly consider a right angled isosceles triangle with the equal sides = 1 cm
The other angles are both 45^0



Obviously $x^2 = 1 + 1$
$x = \sqrt{2}$



Obviously we read off these values: $\sin 45 = \cos 45 = \dfrac{1}{\sqrt{2}}$ and $\tan 45 = 1$

VIDEO http://screencast.com/t/iXuA4jCACUu