The Basic Trigonometric Ratios

Date:

Remark: $\sqrt{3} \doteq 1.7$; $\sqrt{2} \doteq 1.4$

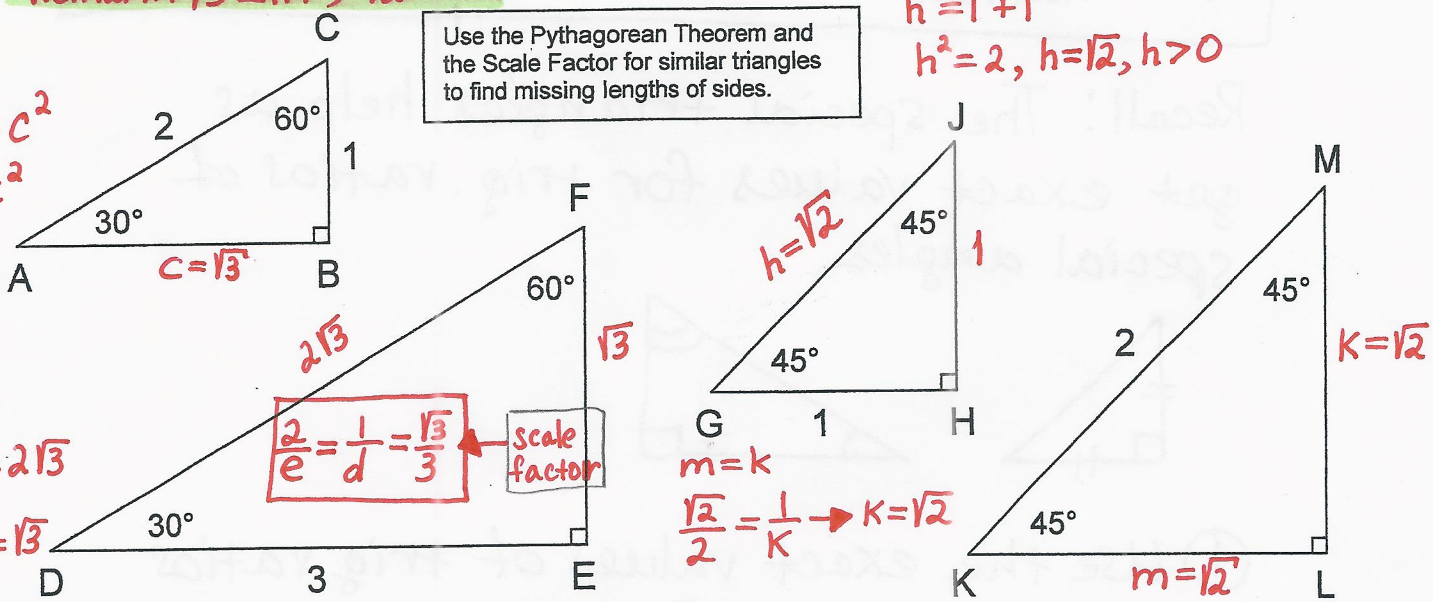
Use the Pythagorean Theorem and the Scale Factor for similar triangles to find missing lengths of sides.

$2^2 = 1^2 + c^2$
$4 = 1 + c^2$
$c^2 = 3$
$c = \pm\sqrt{3}$
$c > 0$
$\boxed{c = \sqrt{3}}$

$e = \frac{6}{\sqrt{3}} = 2\sqrt{3}$

$d = \frac{3}{\sqrt{3}} = \sqrt{3}$

$h^2 = 1^2 + 1^2$
$h^2 = 2$, $h = \sqrt{2}$, $h > 0$



Angle		Ratios		
Name	Size in °	*opposite* / *hypotenuse*	*adjacent* / *hypotenuse*	*opposite* / *adjacent*
∠*A*	$30°$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$
∠*C*	$60°$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{1} = \sqrt{3}$
∠*D*	$30°$	$\frac{\sqrt{3}}{2\sqrt{3}} = \frac{1}{2}$	$\frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
∠*F*	$60°$	$\frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{2\sqrt{3}} = \frac{1}{2}$	$\frac{3}{\sqrt{3}} = \sqrt{3}$
∠*G*	$45°$	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	1
∠*M*	$45°$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{\sqrt{2}} = 1$
Ratio Names →→		sine ratio	cosine ratio	tangent ratio

Idea: For 30° angle, sine, cosine and tangent ratios are the same regardless of which one of infinitely many similar RA triangles the angle is housed in.

θ / ratio	0°	30°	45°	60°	90°
sinθ		$\frac{1}{2}$	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	
cosθ		$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	$\frac{1}{2}$	
tanθ		$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	