Important Right Triangles for Vector Operations
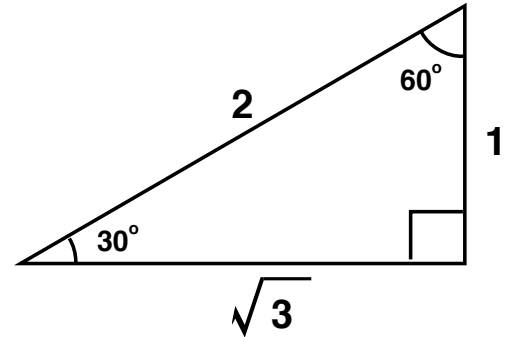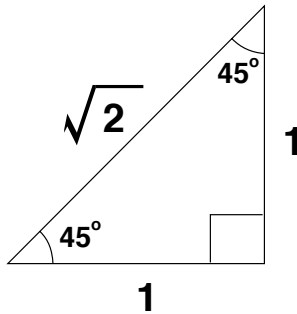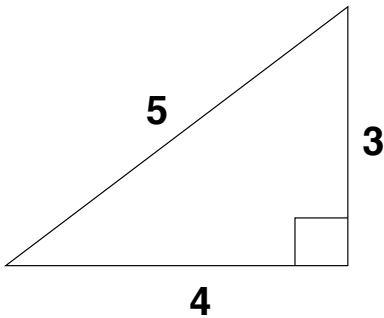
Remember:

$\sqrt{2} \approx 1.4$ $\sqrt{3} \approx 1.7$

"sin" is opposite projection; "cos" is adjacent projection

$$\sin(45^\circ) = \cos(45^\circ) = \frac{1}{\sqrt{2}} \approx 0.71$$

This means that for any ray at a 45º angle, the two projections are equal to each other and are a bit more than seven tenths the length of the ray.

$$\sin(30^\circ) = \frac{1}{2} \qquad\qquad \sin(60^\circ) = \frac{\sqrt{3}}{2} \approx 0.87$$

$$\cos(30^\circ) = \frac{\sqrt{3}}{2} \approx 0.87 \qquad \cos(60^\circ) = \frac{1}{2}$$

For a ray at a 30º angle, the opposite projection is half the length of the ray. The adjacent projection is nearly nine tenths as long. For a 60º angle, this is reversed.