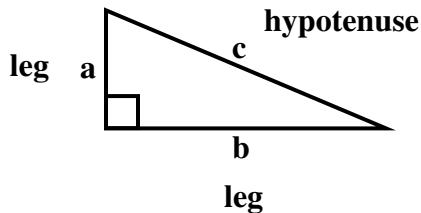


Chapter 7 Summary Sheet

Pythagorean Theorem

$$(\text{leg})^2 + (\text{leg})^2 = (\text{hypotenuse})^2$$

$$a^2 + b^2 = c^2$$



Large Square Roots

$\sqrt{169} = 13$	$\sqrt{289} = 17$
$\sqrt{196} = 14$	$\sqrt{324} = 18$
$\sqrt{225} = 15$	$\sqrt{361} = 19$
$\sqrt{256} = 16$	$\sqrt{400} = 20$

Pythagorean Triples: 3, 4, 5 5, 12, 13

Important: Be aware of Pythagorean triples in disguise.

- Ex:** 6, 8, 10 → 2(3), 2(4), 2(5)
18, 24, 30 → 6(3), 6(4), 6(5)
10, 24, 26 → 2(5), 2(12), 2(13)

Proving a Triangle is Right, Acute, or Obtuse

Important: a and b are the smallest lengths and c is the always the largest.

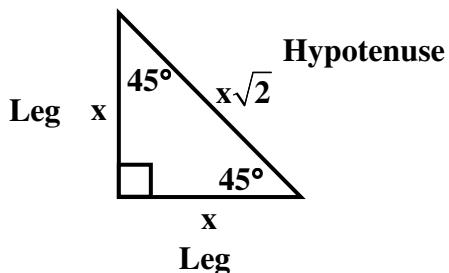
If $a^2 + b^2 \stackrel{<}{=} c^2$, then the triangle is a right triangle.

If $a^2 + b^2 \stackrel{>}{=} c^2$, then the triangle is an acute triangle

If $a^2 + b^2 \stackrel{<}{>} c^2$, then the triangle is an obtuse triangle.

45°- 45°- 90°

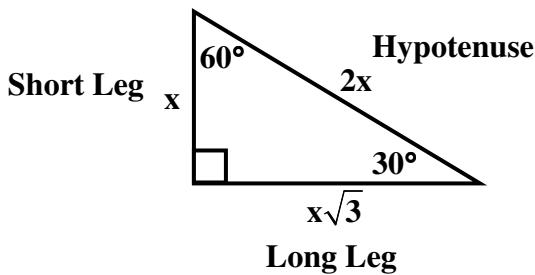
Triangle Properties



$$\text{Leg} \cdot \sqrt{2} = \text{Hypotenuse}$$

30°- 60°- 90°

Triangle Properties



$$\text{Short Leg} \cdot \sqrt{3} = \text{Long leg}$$

$$\text{Short Leg} \cdot 2 = \text{Hypotenuse}$$

Acronym to help remember trig ratios: **Soh Cah Toa** or $\frac{\sin \theta}{h} \quad \frac{c}{h} \quad \frac{\tan \theta}{a}$

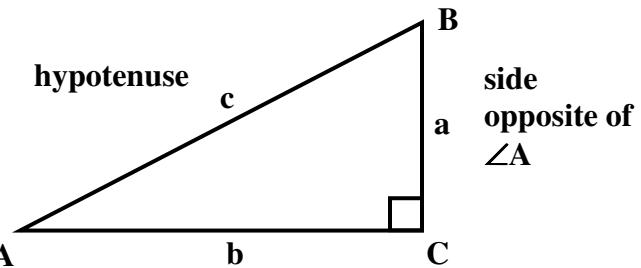
Trigonometric Ratios

Let $\triangle ABC$ be a right triangle. The sine, the cosine, and the tangent of the acute angle $\angle A$ are defined as follows.

$$\sin A = \frac{\text{side opposite of } \angle A}{\text{hypotenuse}} = \frac{a}{c}$$

$$\cos A = \frac{\text{side adjacent to } \angle A}{\text{hypotenuse}} = \frac{b}{c}$$

$$\tan A = \frac{\text{side opposite of } \angle A}{\text{side adjacent to } \angle A} = \frac{a}{b}$$



side adjacent to $\angle A$