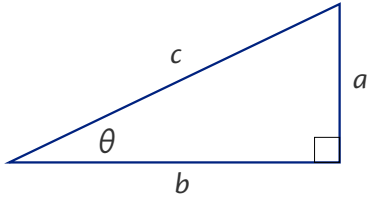


## Trigonometric Functions ("SohCahToa")



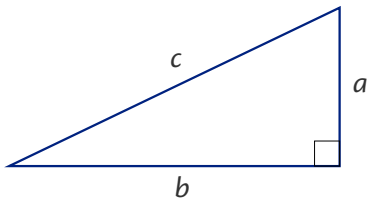
$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{a}{c}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{b}{c}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{a}{b}$$

## Triangles

### Pythagorean Theorem and Friends



Right triangle:  $c^2 = a^2 + b^2$

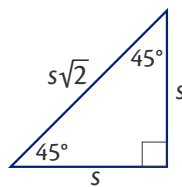
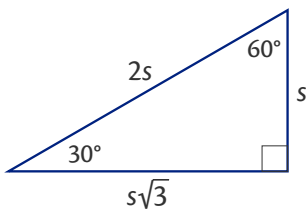
Obtuse triangle:  $c^2 > a^2 + b^2$

Acute triangle:  $c^2 < a^2 + b^2$

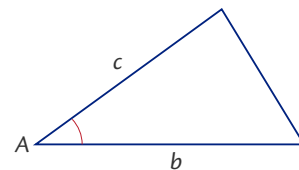
#### Pythagorean Triples

- 3-4-5
- 5-12-13
- 7-24-25
- 8-15-17

### Special Triangles

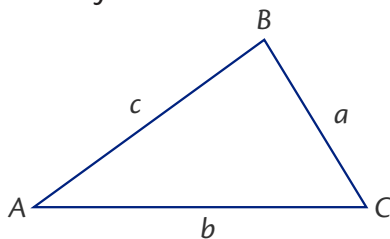


#### Area of an Arbitrary Triangle



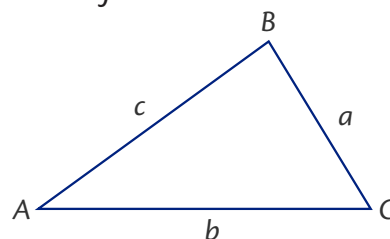
$$\text{Area} = \frac{1}{2} bc \cdot \sin A$$

### Law of Sines



$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

### Law of Cosines



$$a^2 = b^2 + c^2 - 2bc \cos(A)$$