Quick Reference: Alternate Formulas for the Area of a Triangle
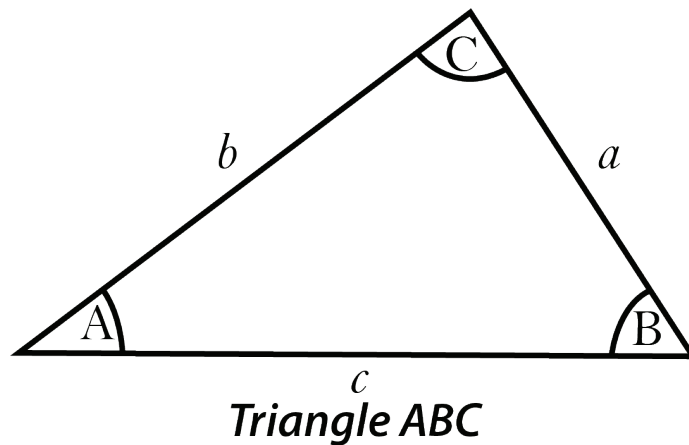
You can use the following formulas to calculate the area of *any* triangle ABC:

Triangle ABC

When you have two sides and the angle in between:

$$Area_{triangle} = (\tfrac{1}{2})a \cdot b \cdot sin(C)$$

$$Area_{triangle} = (\tfrac{1}{2})a \cdot c \cdot sin(B)$$

$$Area_{triangle} = (\tfrac{1}{2})b \cdot c \cdot sin(A)$$

When you have one side and all three angles:

$$Area_{triangle} = \frac{a^2 \cdot sin(B) \cdot sin(C)}{2sin(A)}$$

$$Area_{triangle} = \frac{b^2 \cdot sin(A) \cdot sin(C)}{2sin(B)}$$

$$Area_{triangle} = \frac{c^2 \cdot sin(A) \cdot sin(B)}{2sin(C)}$$

When you have all three sides, use Heron's Formula:

$$s = \frac{a+b+c}{2}$$

$$Area_{triangle} = \sqrt{s(s-a)(s-b)(s-c)}$$