

**Goals:**

- I can find the area of a triangle using two sides and an included angle.
- I can use the Law of Sines to solve triangles.

Find the Area of a Triangle

In the triangle at the right,  $\sin A = \frac{h}{c}$ , or  $h = c \sin A$ .

$$\text{Area} = \frac{1}{2}bh$$

$$\text{Area} = \frac{1}{2}b(c \sin A)$$

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

**Area of a Triangle**

$$\text{Area} = \frac{1}{2}bc \sin A = \frac{1}{2}ac \sin B = \frac{1}{2}ab \sin C$$

Example 1: Find the Area of a Triangle

Find the area of  $\triangle ABC$  to the nearest tenth.

In  $\triangle ABC$ ,  $a = 8$ ,  $b = 9$ , and  $C = 104^\circ$

Name: \_\_\_\_\_

Algebra 2  
Law of Sines

Use the Law of Sines to Solve Triangles

Solving a triangle: using given measures to find all unknown side lengths and angle measures of a triangle

**Law of Sine**

$a$ ,  $b$ , and  $c$  are opposite angles with measures  $A$ ,  $B$ ,  $C$ , respectively

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

Use Law of Sines if you know:

- 2 angles and a side
- 2 sides and the angle opposite one of the sides

Example 2: Solve a Triangle Given Two Angles and a Side