Geometry Note-Taking Guide **Name:**________________________

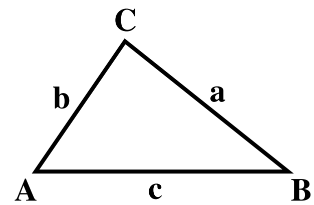
Period:____

Section 7.6 - Law of Sines and Cosines

Area of a Triangle

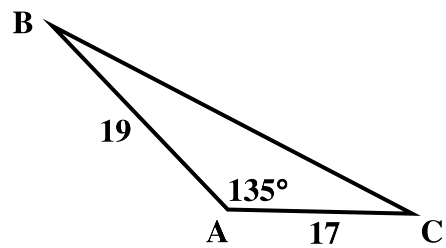
The area of any triangle is given by one-half the product of the length of two sides times the sine of their included angle. For ΔABC shown, there are three ways to calculate the area.

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



Ex 1:

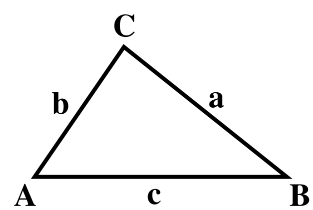
Find the area of the triangle. Round your answer to the nearest tenth.



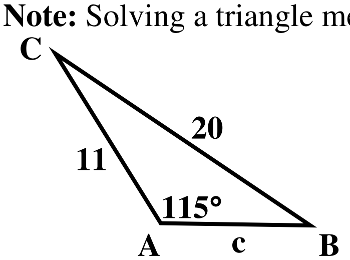
Law of Sines

The Law of Sines can be written in either of the following forms for ΔABC with sides of length a, b, and c.

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



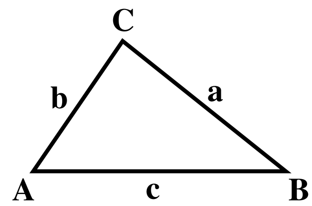
Ex 2:
Solve the triangle. Round decimal answers to the nearest tenth.
Note: Solving a triangle means to find all the missing angle measures and side lengths.



Law of Cosines

In ΔABC has sides of length a, b, and c, as shown.

Standard Form	**Alternative Form**
$a^2 = b^2 + c^2 - 2bc\cos A$	$\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$
$b^2 = a^2 + c^2 - 2ac\cos B$	$\cos B = \dfrac{a^2 + c^2 - b^2}{2ac}$
$c^2 = a^2 + b^2 - 2ab\cos C$	$\cos C = \dfrac{a^2 + b^2 - c^2}{2ab}$



Important: Use the Law of Cosines to find the largest angle measurement. Do <u>not</u> apply the Law of Sines until you have found the largest angle measurement. Always use the largest angle measurement when applying the Law of Sines.

Ex 3:
Solve the triangle. Round decimal answers to the nearest tenth.