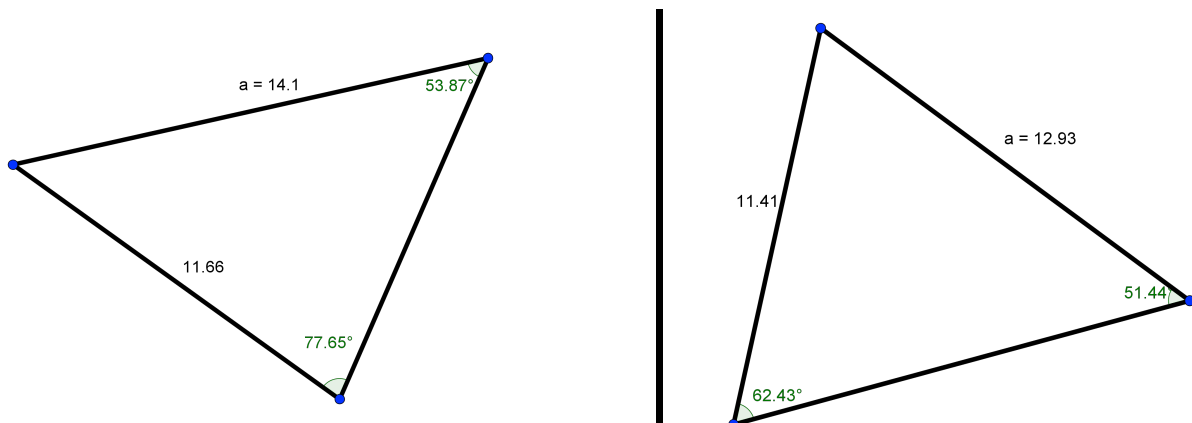


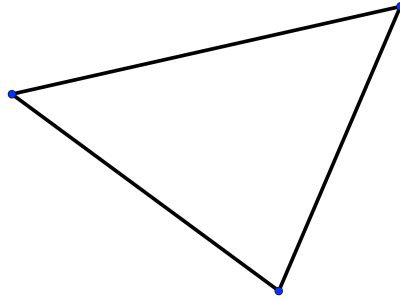
**(A) Lesson Context**

BIG PICTURE of this UNIT:	<ul style="list-style-type: none"> <li>How do we work through geometry based problems, wherein triangles are used to model the problem</li> <li>How do we model phenomenon that are periodic in nature</li> </ul>		
CONTEXT of this LESSON:	Where we've been We have reviewed SOHCAHTOA and working through right triangles	Where we are How can we work in non-right triangles wherein the information provided is in a AAS or ASA or SSA pattern	Where we are heading How do we work in any given triangle (right, acute, obtuse)

**(B) Lesson Objectives:**

- Introduce terms and conventions used when discussing angles and triangles.
- Investigate the Sine Law through constructions and measurements.
- Solve for unknowns in acute triangles using the Sine Law.
- Apply the Sine Law to word problems.

**(C) Fast Five: Determining an Altitude in An Acute Triangle**

**(D) Terms**a. Acute Triangles:c. Altitude:b. Naming Conventions for Sides and Angles: (see diagram)

**(E) Constructions and Ratios** → In the space provided below, construct an acute triangle and CAREFULLY measure the length of the sides and the corresponding angles. Record your measurements and use these measurements to determine the required ratios:

Side a =	Side b =	Side c =	$\frac{a}{\sin(A)} =$	$\frac{b}{\sin(B)} =$	$\frac{c}{\sin(C)} =$
Angle A =	Angle B =	Angle C =			

**(a)** What do you notice about your three ratios?

**(b)** What do you notice about the three ratios of other people at your table?

**(c)** Are your ratios the same as any else at your table?

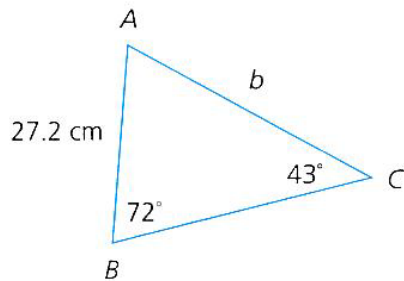
**(d)** See the website <http://www.mnwest.edu/fileadmin/static/website/dmatthews/Geogebra/LawOfSines.html>.

**Statement of the Sine Law**

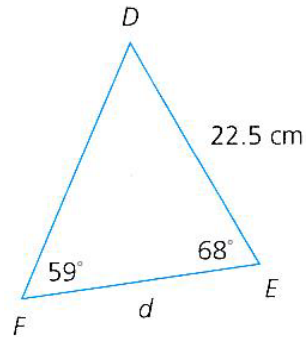
**(F) Working with the Sine Law – Triangles**

1. Find the length of the indicated side, to one decimal place.

(a)

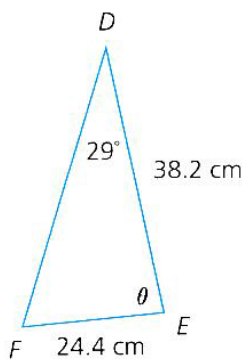


(b)

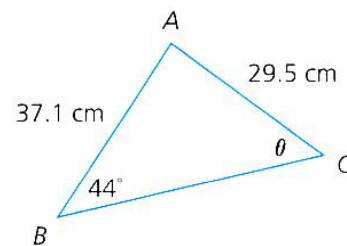


2. Find the measure of angle  $\theta$ .

(a)



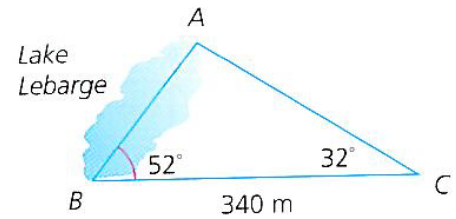
(b)



**(G) Working with the Sine Law – Word Problems**

12. **Knowledge and Understanding:** Louise is a naturalist studying the effect of acid rain on fish populations in different lakes. As part of her research, she needs to know the length of Lake Labarge. Louise makes the measurements shown. How long is the lake?

(A)



15. A radio tower is supported by two wires on opposite sides, as shown. The wires form an angle of  $60^\circ$  at the top of the post. On the ground, the ends of the wire are 15.0 m apart, and one wire is at a  $45^\circ$  angle to the ground. How long will the wires be?

