

# Chapter 6 Additional Topics in Trigonometry

Course Number

Instructor

Date

## Section 6.1 Law of Sines

**Objective:** In this lesson you learned how to use the Law of Sines to solve oblique triangles and how to find the areas of oblique triangles.

### Important Vocabulary

Define each term or concept.

**Oblique triangle**

### I. Introduction (Pages 428–429)

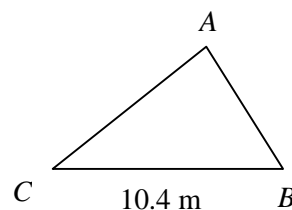
State the **Law of Sines**.

#### *What you should learn*

How to use the Law of Sines to solve oblique triangles (AAS or ASA)

To solve an oblique triangle, you need to know the measure of at least one side and any two other parts of the triangle. Describe two cases that can be solved using the Law of Sines.

**Example 1:** For the triangle shown at the right,  $A = 31.6^\circ$ ,  $C = 42.9^\circ$ , and  $a = 10.4$  meters. Find the length of side  $c$ .



### II. The Ambiguous Case (SSA) (Pages 430–431)

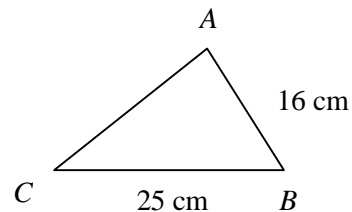
If two sides and one opposite angle of an oblique triangle are given, \_\_\_\_\_ possible situations can occur, which are:

#### *What you should learn*

How to use the Law of Sines to solve oblique triangles (SSA)

**Example 2:** For a triangle having  $A = 25^\circ$ ,  $b = 54$  feet, and  $a = 26$  feet, how many solutions are possible?

**Example 3:** For the triangle shown at the right,  $A = 110^\circ$ ,  $c = 16$  centimeters, and  $a = 25$  centimeters. Find the length of side  $b$ .



### III. Area of an Oblique Triangle (Page 432)

The area of any triangle is \_\_\_\_\_ the product of the lengths of two sides times the sine of \_\_\_\_\_.

That is,

$$\text{Area} = \underline{\hspace{10em}}$$

**Example 4:** Find the area of a triangle having two sides of lengths 30 feet and 48 feet and an included angle of  $40^\circ$ .

***What you should learn***  
How to find the areas of oblique triangles

### IV. Applications of the Law of Sines (Page 433)

Describe a real-life situation in which the Law of Sines could be used.

***What you should learn***  
How to use the Law of Sines to model and solve real-life problems

#### Homework Assignment

Page(s)

Exercises