Law of Sines

Trigonometry

# Introduction

## Definition - Oblique Triangles

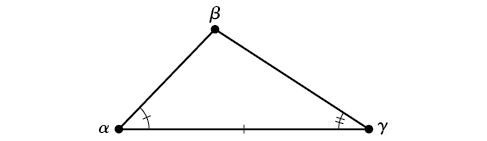
Any triangle that is not a right triangle is an **oblique triangle**.

## Definition - Solving a Triangle

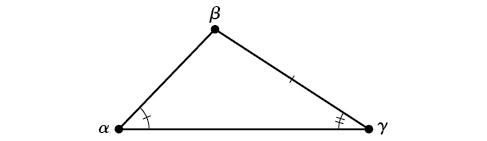
**Solving** a triangle means finding the measures of all angles and sides given incomplete information.

## Types of Triangles for the Law of Sines

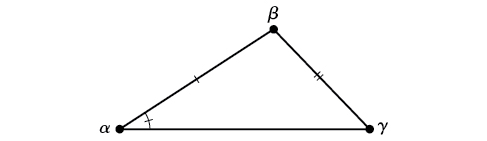
**ASA (angle-side-angle)**



**AAS (angle-angle-side)**

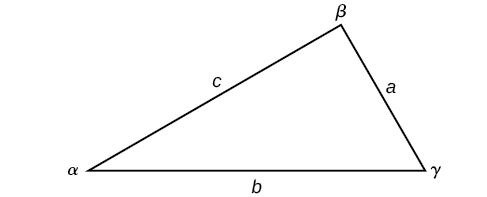


**SSA (side-side-angle)**



# Law of Sines

## Fact - Law of Sines

Given a triangle with angles and opposite sides labeled as the triangle to the right, the ratio of the measurement of an angle to the length of its opposite side will be equal to the other two ratios of angle measure to opposite side. All proportions will be equal.

## Examples

For the following exercises, assume the angles are sides are as in the triangle above. Solve each triangle, if possible. Round each answer to the nearest tenth.

1. , ,
2. , ,

## You Try It

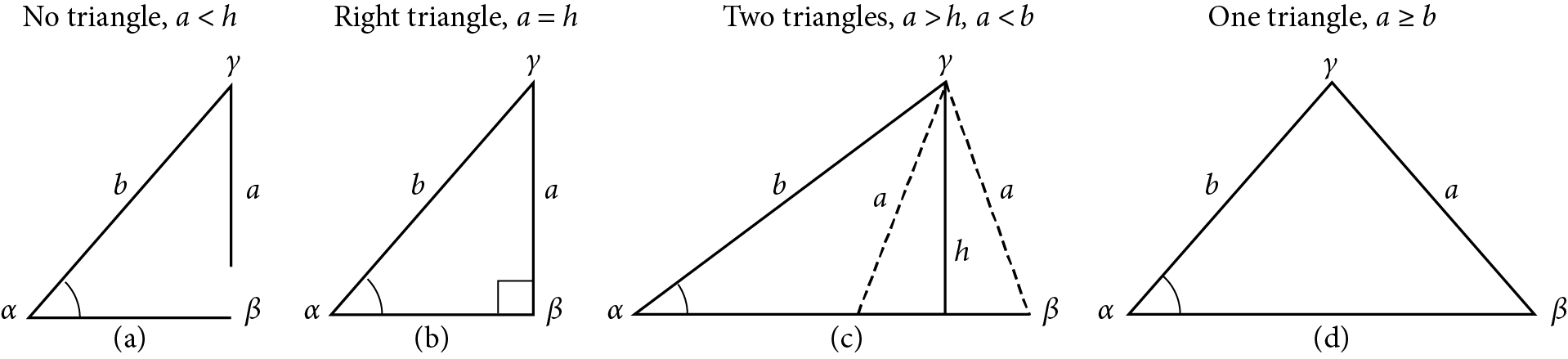
For the following exercises, assume the angles are sides are as in the triangle above. Solve each triangle, if possible. Round each answer to the nearest tenth.

1. , ,
2. , ,

# 

# The Ambiguous Case

## Possible Cases for SSA triangles



Comparison of SSA Triangles

**Examples**

Determine whether there is no triangle, one triangle, or two triangles. Then solve each triangle, if possible. Round each answer to the nearest tenth.

1. , ,
2. , , .
3. , , .