SM 3H

Date: **Section:**

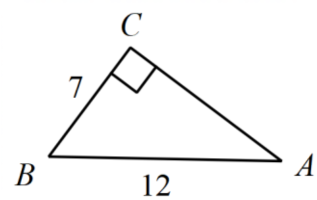
Objective:

Starter: (Round answers to the nearest tenth.)

1. Solve for x.

$$\frac{2}{6}=\frac{3}{x+7}$$

2. Find the measure of the angle indicated.



When do you use sine, cosine, and tangent to solve for a missing side or angle of a triangle?

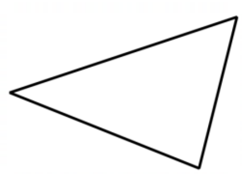
What happens if the triangle is an oblique triangle?

An ___________________ _____________________ is a triangle without a right angle. To solve an oblique triangle, we must know three pieces of information, at least one of which must be the length of a side. (Three angles define an infinite number of triangles).

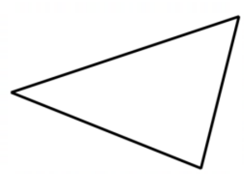
A. Law of Sines –

**Use when you have ASA, AAS, or SSA

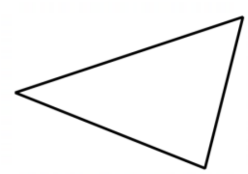
ASA triangle

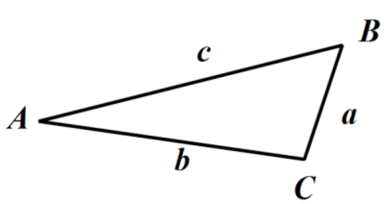


AAS triangle



SSA triangle (ambiguous case)



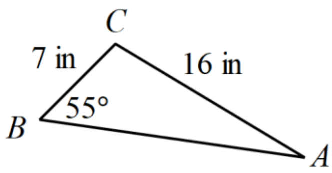


Law of sines:

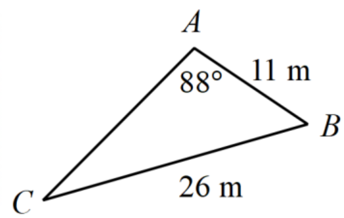
or

Examples: Identify the type of triangle. Then find each measurement indicated using law of sines. Round your answers to the nearest tenth.

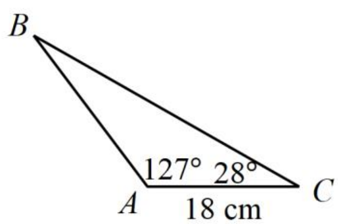
1. Find $m\angle A$



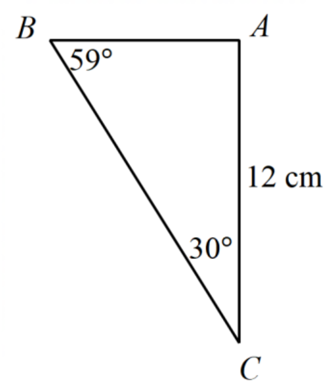
2. Find $m\angle C$



3. Find BC



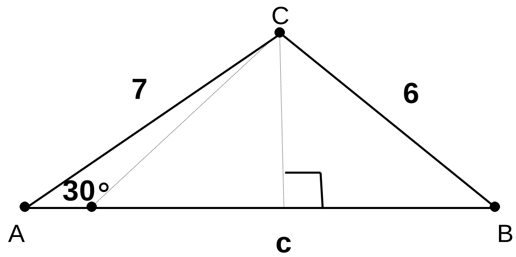
4. Find AB

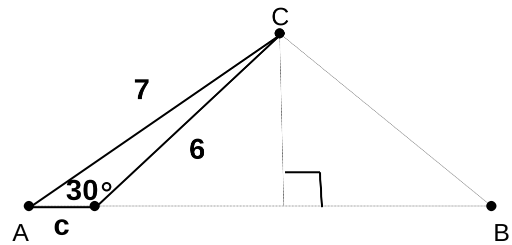


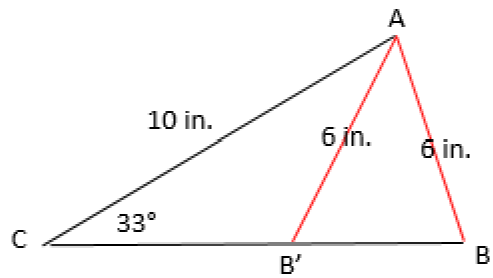
If the picture is not draw for an SSA triangle, you do not know how the triangle is put together.

SSA (The Ambiguous Case): If you know two sides and a non-included angle (an angle that is not between the sides), there may be zero, one, or two possible triangles that fit the given measurements.

Solve $\triangle ABC$ given that a = 6, b = 7, and $\angle A = 30°$. Two triangles are possible with the given information.







To determine if there is a 2nd valid angle:

1. See if you are given two sides and the angle not in between (SSA). This is the situation that may have 2 possible answers.
2. Find the value of the unknown angle.
3. No triangle:

One triangle:

Two triangles:

******When using law of sines, you must ____!!!!!!!!**

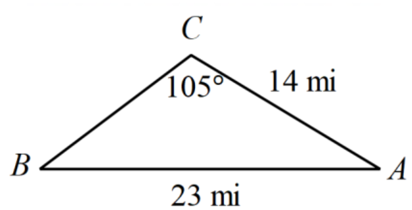
Examples:

a) $B = 38°, b = 2.9, c = 5.9$

b) $B = 38°, b = 6.4, c = 5.9$

Examples: Solve each triangle. Round your answers to the nearest tenth. Hint: Draw the triangle and identify the type of triangle.

1.



2. $B = 38°, b = 4.7, c = 5.9$

$m\angle A =$ ___________ $a =$ ___________ $m\angle A =$ ___________ $a =$ ___________

$m\angle B =$ ___________ b = ___________ $m\angle B =$ ___________ b = ___________

$m\angle C =$ ___________ c = ___________ $m\angle C =$ ___________ c = ___________

3. $m\angle B = 61°, m\angle C = 108°, a = 5$ yd

$m\angle A =$ ___________ $a =$ ___________

$m\angle B =$ ___________ b = ___________

$m\angle C =$ ___________ c = ___________

4. $m\angle C = 36°, b = 19$ m, $c = 20$ m

$m\angle A =$ ___________ $a =$ ___________

$m\angle B =$ ___________ b = ___________

$m\angle C =$ ___________ c = ___________

<u>Steps for solving Application Problems</u>

1) Read the problem
2) Define a variable
3) Write an equation
4) Solve the equation
5) Check your answer

Complementary angles—

Supplementary angles—

How to solve if have 2 sides and a right angle—

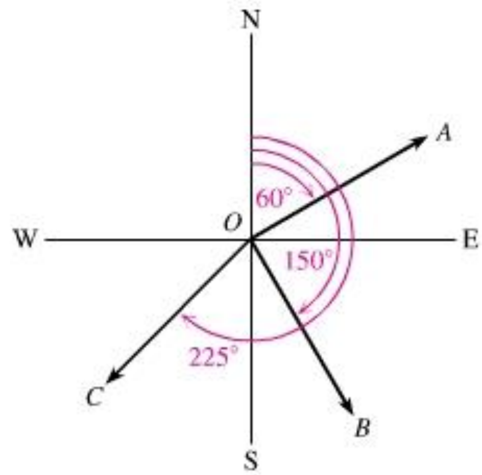
Triangle sum theorem—

Angle of elevation—

Angle of depression—

Line of sight—

Bearing: The measure of an angle that describes the direction of a ray is called the bearing. Bearing is the clockwise angle from due north.



Another way to express bearing is to describe the acute angle that the ray makes with a ray pointing due north or south. For example:

N60°E is a bearing of 60° east of north
S30°E is a bearing of 30° east of south
S45°W is a bearing of 45° west of south

Example: During an important NATO exercise, an F-14 Tomcat left the carrier Nimitz on a course with a bearing of 34° and flew 400 miles. Then the F-14 flew for some distance on a course with a bearing of 162°. Finally, the plane flew back to its starting point on a course with a bearing of 308°. What distance did the plane fly on the final leg of the journey? Round to the nearest tenth of a mile.