Geometry
Ch. 9C Lesson #3: The Law of Cosines

Name: ______________________________
Period: _____

## Theorem

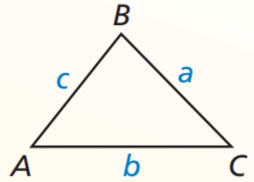
**Theorem 9.10 Law of Cosines**

If $\triangle ABC$ has sides of length $a$, $b$, and $c$, as shown, then the following are true.

$$a^2 = b^2 + c^2 - 2bc\cos A$$

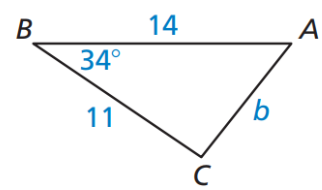
$$b^2 = a^2 + c^2 - 2ac\cos B$$

$$c^2 = a^2 + b^2 - 2ab\cos C$$




Law of Cosines
#3: p. 513: 19 Find $a$
20 Find $b$
21 Find $m\angle A$
22 Find $m\angle B$
23 Find $b$
24 Find $m\angle B$
SOHCAHTOA Practice:
p. 523: 1, 3, 7

1) Find the value of $b$.




$b^2 = (\quad)^2 + (\quad)^2 - 2(\quad)(\quad)\cos(\quad)$

$b^2 =$ ________ $-$ __________ $\cos(\quad)$

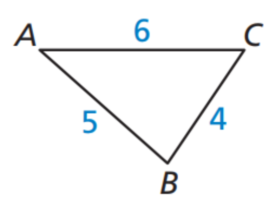
$b^2 =$ __________

$b =$ ________

Solve:

$x^2 = 11 - 2(-3)$

2) Find the $m\angle C$




$(\quad)^2 = (\quad)^2 + (\quad)^2 - 2(\quad)(\quad)\cos(C)$

$= \qquad - \qquad \cos(C)$

____ $=$ ____ $\cos(C)$

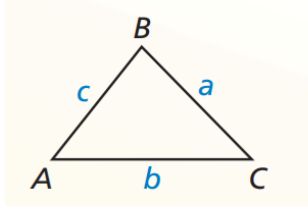
__________ $= \cos(C)$

$C =$ ____________

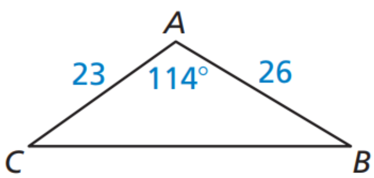
Solve:

$8 = 15 - 20x$

$$a^2 = b^2 + c^2 - 2bc\cos A$$
$$b^2 = a^2 + c^2 - 2ac\cos B$$
$$c^2 = a^2 + b^2 - 2ab\cos C$$




3) Solve the triangle. After using the Law of Cosines to find *a*, use **Law of Sines** to find the *B* or *C*.



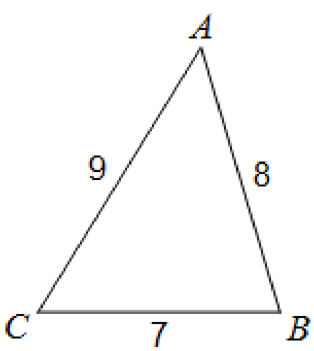

$a =$ ___________

$m\angle B =$ ______ °

$m\angle C =$ ______ °

Area = _________

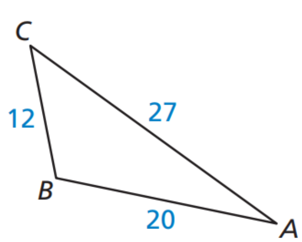
4) Find the $m\angle A$




$m\angle A =$ ______ °

Area = _________

5) Find the $m\angle B$.




$m\angle B =$ ______ °

Area = _________