

Precalculus with Trigonometry
Lesson: April 9th

Learning Target:

Students will find missing angles of a triangle using
Law of Cosines

Let's Get Started:

Watch Video: [Law of Cosines](#)

Law of Cosines Formulas

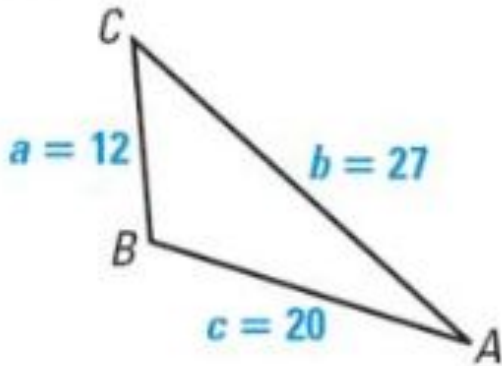
$$c^2 = a^2 + b^2 - 2ab \cdot \cos C$$

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

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

Example problem:

Given the triangle below, find the measure of angle B.



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

Law of cosines

$$27^2 = 12^2 + 20^2 - 2(12)(20) \cos B$$

Substitute.

$$\frac{27^2 = 12^2 + 20^2}{-2(12)(20)} = \cos B$$

Solve for $\cos B$.

$$-0.3854 \approx \cos B$$

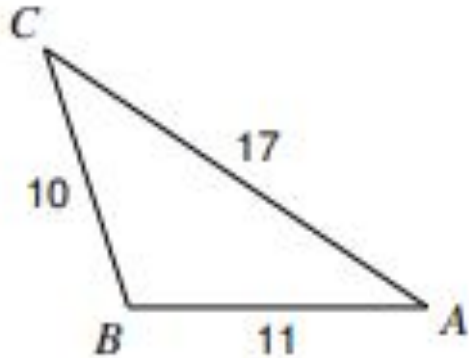
Simplify.

$$B \approx \cos^{-1}(-0.3854) \approx 112.7^\circ$$

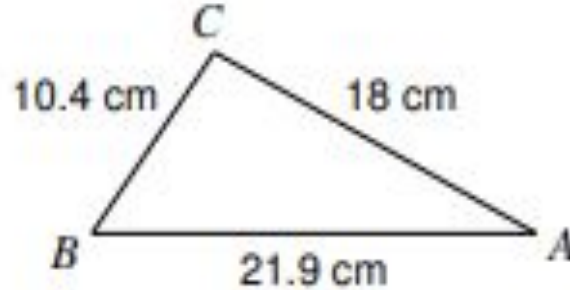
Use inverse cosine.

Practice finding unknown angles using Law of Cosines.

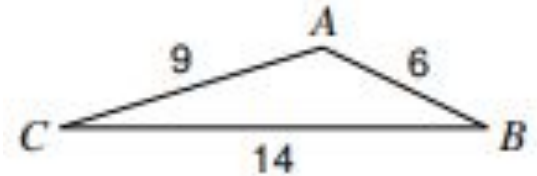
1. Find angle A



2. Find angle B



3. Find angle A



Answer key

1. $A = 34$ degrees
2. $B = 54.6$ degrees
3. $A = 137$ degrees

Additional Practice:

Click on the link below to get additional practice and to check your understanding!

[Solving triangles using Law of Cosines](#)