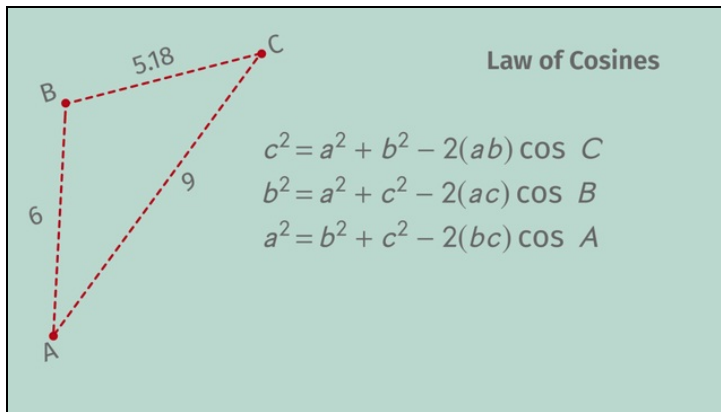




Printable Worksheets from [sofatutor.com](https://www.sofatutor.com)

## Using the Law of Sines and Cosines to Find Angles



- 1 Define the law of cosines.
- 2 Calculate the angle using the law of sines.
- 3 Find angle  $A$  using the law of cosines.
- 4 Determine the law of cosines equation.
- 5 Solve for the angle Pete needs to navigate to the island.
- 6 Identify the values of the angles marking potential new locations for lighthouses.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.



The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



## Define the law of cosines.

Choose the correct equation.



Pete must use the law of cosines to navigate the treacherous bay.

Select the equation that defines the law of cosines.

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



## Hints for solving these problems

1  
of 6

### Define the law of cosines.

#### Hint #1

Pay close attention to the signs.

---

#### Hint #2

Only one of the equations is correct.

---

#### Hint #3

It may help to write out the equations of the law of cosines, and then compare these equations to the ones given.

---



## Answers and detailed answer explanations for these problems

1  
of 6

### Define the law of cosines.

**Answer key:** A

The equations given by the law of cosines are:

1.  $a^2 = b^2 + c^2 - 2(bc) \cos A$

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

3.  $c^2 = a^2 + b^2 - 2(ab) \cos C$

Let's compare the given equations to these:

✓  $a^2 = b^2 + c^2 - 2(bc) \cos A$

This equation matches equation 1 exactly.

✗  $b^2 = a^2 - c^2 - 2(ac) \cos B$

This equation almost matches equation 2, but the sign on the  $c^2$  term is wrong.

✗  $c^2 = a^2 + b^2 + 2(ab) \cos C$

This equation almost matches equation 3, but the sign on the  $2(ab) \cos C$  term is wrong.

✗  $a^2 = b^2 + c^2 - 2(ac) \cos A$

This equation almost matches equation 1, but the term multiplied by  $\cos a$  should be  $-2(bc)$  instead of  $-2(ac)$ .