

# Law Of Sines And Cosines Worksheet Answer Key PDF

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## Part 1: Foundational Knowledge

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**What is the formula for the Law of Sines?**

undefined. A)  $( a^2 + b^2 = c^2 )$

**undefined. B)  $( \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} )$  ✓**

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

undefined. D)  $( \sin A + \sin B + \sin C = 1 )$

The formula for the Law of Sines is  $( \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} )$ .

**Which of the following are formulas for the Law of Cosines?**

**undefined. A)  $( c^2 = a^2 + b^2 - 2ab \cdot \cos C )$  ✓**

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

undefined. C)  $( a^2 + b^2 = c^2 )$

**undefined. D)  $( a^2 = b^2 + c^2 - 2bc \cdot \cos A )$  ✓**

The formulas for the Law of Cosines include  $( c^2 = a^2 + b^2 - 2ab \cdot \cos C )$ ,  $( b^2 = a^2 + c^2 - 2ac \cdot \cos B )$ , and  $( a^2 = b^2 + c^2 - 2bc \cdot \cos A )$ .

**Explain in your own words what the Law of Sines is used for in solving triangles.**

**The Law of Sines is used to find unknown angles or sides in a triangle when certain angles and sides are known.**

**List the types of triangles based on their angles.**

1. What is an acute triangle?

**A triangle with all angles less than 90 degrees.**

2. What is a right triangle?

**A triangle with one angle equal to 90 degrees.**

3. What is an obtuse triangle?

**A triangle with one angle greater than 90 degrees.**

The types of triangles based on their angles are acute, right, and obtuse.

## Part 2: Comprehension

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**In which type of triangle can the Law of Sines be applied?**

undefined. A) Only right triangles

undefined. B) Only acute triangles

undefined. C) Only obtuse triangles

**undefined. D) Any triangle ✓**

The Law of Sines can be applied to any triangle.

**Which of the following statements about the Law of Cosines are true?**

**undefined. A) It can be used to find an angle when all three sides are known. ✓**

undefined. B) It is only applicable to right triangles.

**undefined. C) It relates the sides of a triangle to the cosine of one of its angles. ✓**

**undefined. D) It can be used to find a side when two sides and the included angle are known. ✓**

The true statements about the Law of Cosines include that it can be used to find an angle when all three sides are known, it relates the sides of a triangle to the cosine of one of its angles, and it can be used to find a side when two sides and the included angle are known.

**Describe a real-world scenario where the Law of Sines might be useful.**

**The Law of Sines can be useful in navigation, architecture, and various fields of engineering where triangle measurements are needed.**

## Part 3: Application and Analysis

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Given a triangle with sides  $(a = 7)$ ,  $(b = 10)$ , and angle  $(C = 45^\circ)$ , which law would you use to find side  $(c)$ ?

undefined. A) Law of Sines

undefined. **B) Law of Cosines ✓**

undefined. C) Pythagorean Theorem

undefined. D) None of the above

You would use the Law of Cosines to find side  $(c)$  in this triangle.

If you know two angles and one side of a triangle, which methods can you use to find the remaining sides?

undefined. **A) Law of Sines ✓**

undefined. B) Law of Cosines

undefined. **C) Trigonometric Ratios ✓**

undefined. D) Pythagorean Theorem

You can use the Law of Sines and Trigonometric Ratios to find the remaining sides.

Solve for the unknown side  $(c)$  in a triangle where  $(a = 5)$ ,  $(b = 8)$ , and  $(C = 60^\circ)$  using the Law of Cosines.

Using the Law of Cosines, you can calculate  $(c)$  by substituting the known values into the formula.

Which law would be more efficient to use when given two sides and the included angle of a triangle?

undefined. A) Law of Sines

undefined. **B) Law of Cosines ✓**

undefined. C) Both are equally efficient

undefined. D) Neither

The Law of Cosines would be more efficient to use in this scenario.

Compare and contrast the Law of Sines and the Law of Cosines in terms of their application and usefulness.

The Law of Sines is useful for finding unknown angles or sides when two angles and one side are known, while the Law of Cosines is more applicable when two sides and the included angle are known.

## Part 4: Evaluation and Creation

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Which of the following best describes the advantage of using the Law of Cosines over the Law of Sines?

undefined. A) It is simpler to calculate.

undefined. **B) It can be used in any triangle without angle restrictions. ✓**

undefined. C) It requires fewer known values.

undefined. D) It is only applicable to right triangles.

The Law of Cosines can be used in any triangle without angle restrictions, which is a significant advantage.

Evaluate the following statements and identify which are true regarding the application of the Law of Sines and Cosines:

undefined. **A) Both laws can be used to solve any triangle. ✓**

undefined. **B) The Law of Sines is preferred when two angles are known. ✓**

undefined. **C) The Law of Cosines is necessary when all sides are known. ✓**

undefined. D) The Law of Sines is only applicable to right triangles.

The true statements include that both laws can be used to solve any triangle, the Law of Sines is preferred when two angles are known, and the Law of Cosines is necessary when all sides are known.

Create a real-world problem that involves using both the Law of Sines and the Law of Cosines to find missing measurements in a triangle. Describe the scenario and outline the steps to solve it.

**A real-world problem could involve navigation or construction, where both laws are needed to find unknown measurements.**