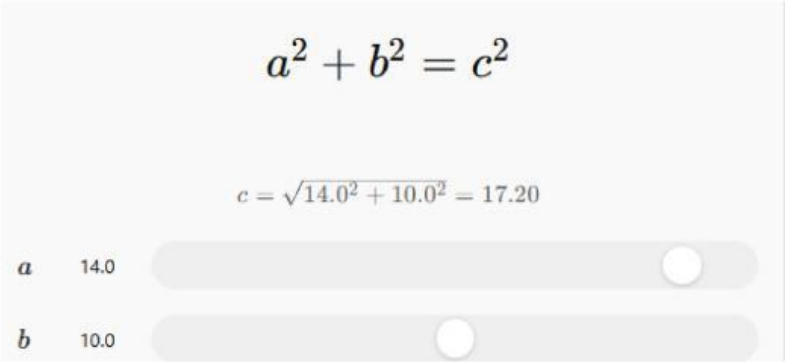
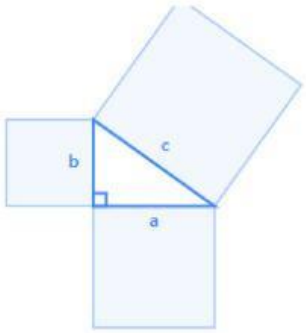
Converse of the Pythagorean Theorem Worksheet





What is the Converse of the Pythagorean Theorem?

The **Converse of the Pythagorean Theorem** helps us determine whether a triangle is a **right triangle**.

If the side lengths satisfy the equation $a^2 + b^2 = c^2$

where **c is the longest side**, then the triangle **is a right triangle**.

If the equation is **not true**, then the triangle **is not a right triangle**.

Step-by-Step Example

Determine whether a triangle with side lengths **6, 8, and 10** is a right triangle.

Step 1: Identify the longest side.

The longest side is **10**, so let:

a = 6 b = 8 c = 10

Step 2: Square the two shorter sides. $6^2 = 36$, $8^2 = 64$

Step 3: Add the squares. $36 + 64 = 100$

Step 4: Square the longest side. $10^2 = 100$

Step 5: Compare the answers. $100 = 100$

Since both sides are equal, **The triangle IS a right triangle.**

Part A – Determine if Each Triangle is a Right Triangle

Write **Yes** if it is a right triangle or **No** if it is not.

1. 3, 4, 5 _____
2. 5, 12, 13 _____
3. 6, 8, 10 _____
4. 7, 24, 25 _____
5. 8, 15, 17 _____
6. 9, 12, 15 _____
7. 8, 10, 12 _____
8. 5, 6, 8 _____
9. 10, 24, 26 _____
10. 12, 16, 20 _____

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Part B – Show Your Work

Use the Converse of the Pythagorean Theorem to determine whether each triangle is a right triangle.

11. 9, 40, 41

The longest side is _____

a = ___ b = ___ c = ___

two shorter sides: $\square^2 = \square$

$\square^2 = \square$

____ + ____ = _____

$\square^2 = \square$

Answer: _____

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12. 10, 11, 15

$\square^2 + \square^2 =$ ____ + ____ = ____

$\square^2 =$ _____

Answer: _____

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13. 15, 20, 25

$\square^2 + \square^2 =$ ____ + ____ = ____

$\square^2 =$ _____

Answer: _____

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14. 12, 35, 37

$\square^2 + \square^2 =$ ____ + ____ = ____

$\square^2 =$ _____

Answer: _____

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15. 13, 14, 18

$\square^2 + \square^2 =$ ____ + ____ = ____

$\square^2 =$ _____

Answer: _____

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