

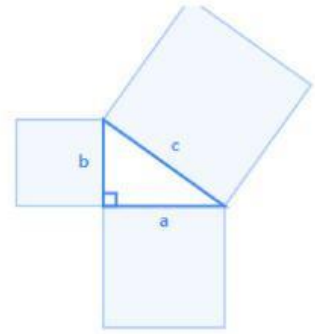
# Converse of the Pythagorean Theorem Worksheet

$$a^2 + b^2 = c^2$$

$$c = \sqrt{14.0^2 + 10.0^2} = 17.20$$

a 14.0

b 10.0



## 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:

$$a = 6 \quad b = 8 \quad c = 10$$

**Step 2: Square the two shorter sides.**  $6^2 = 36$

**Step 3: Add the squares.**  $8^2 = 64$

**Step 4: Square the longest side.**  $36 + 64 = 100$

**Step 5: Compare the answers.**  $10^2 = 100$

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 \_\_\_\_\_

5. 8, 15, 17 \_\_\_\_\_

9. 10, 24, 26 \_\_\_\_\_

2. 5, 12, 13 \_\_\_\_\_

6. 9, 12, 15 \_\_\_\_\_

10. 12, 16, 20 \_\_\_\_\_

3. 6, 8, 10 \_\_\_\_\_

7. 8, 10, 12 \_\_\_\_\_

4. 7, 24, 25 \_\_\_\_\_

8. 5, 6, 8 \_\_\_\_\_

**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 = \_\_\_

Answer: \_\_\_\_\_

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

\_\_\_\_ + \_\_\_\_ = \_\_\_\_  
 $\square^2 = \square$

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12. 10, 11, 15

Answer: \_\_\_\_\_

$$\square^2 + \square^2 = \_\_\_ + \_\_\_ = \_\_\_$$

$$\square^2 = \_\_\_\_\_\_$$

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13. 15, 20, 25

Answer: \_\_\_\_\_

$$\square^2 + \square^2 = \_\_\_ + \_\_\_ = \_\_\_$$

$$\square^2 = \_\_\_\_\_\_$$

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14. 12, 35, 37

Answer: \_\_\_\_\_

$$\square^2 + \square^2 = \_\_\_ + \_\_\_ = \_\_\_$$

$$\square^2 = \_\_\_\_\_\_$$

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15. 13, 14, 18

Answer: \_\_\_\_\_

$$\square^2 + \square^2 = \_\_\_ + \_\_\_ = \_\_\_$$

$$\square^2 = \_\_\_\_\_\_$$

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