

Is a Triangle Right-Angled?



Key idea



A triangle is right-angled only when $a^2 + b^2 = c^2$, where c is the **longest** side and a, b are the two shorter sides.

How to check



1. Find the longest side, c .
2. Add the squares of the two shorter sides.
3. Square the longest side.
4. Equal? Then it is right-angled.

Example: yes



Check 5, 12, 13.

$$5^2 + 12^2 = 25 + 144 = 169$$

$$13^2 = 169$$

Equal, so it **is** right-angled.

Common mistake

Do not just square the first two numbers you see. Find the **longest** side first — that is the side being tested.

When It Is Not Right-Angled



Example: no



Check 6, 8, 9.

$$6^2 + 8^2 = 36 + 64 = 100$$

$$9^2 = 81$$

$100 \neq 81$, so it is **not** right-angled.

Scaled triples still work

Scaling a triple keeps the right angle: 6, 8, 10 and 9, 12, 15 are scaled 3, 4, 5.

Common mistake

Close is not enough. Check 8, 15, 16:

$$8^2 + 15^2 = 289 \text{ but } 16^2 = 256.$$

The squares must match **exactly**. Three whole-number sides do not prove a right angle.

