

# Pythagoras Theorem and Its Converse

Chapter 6: Triangles · Topic 2

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## Key Concept

This converse is a powerful tool for verifying whether a triangle is right-angled using only its side lengths, without needing to measure any angles directly — a technique used practically in construction to check if a structure's corner is a true  $90^\circ$ . For example, checking a triangle with sides 6, 8, 10: since  $6^2+8^2=36+64=100=10^2$ , the relationship holds, confirming this is indeed a right triangle with the right angle opposite the side of length 10.

## Quick Revision Notes

- Pythagoras theorem:  $a^2+b^2=c^2$  for a right triangle ( $c$  = hypotenuse).
- Converse: if  $a^2+b^2=c^2$  holds for a triangle's sides, the triangle must be right-angled.
- The right angle is located opposite the longest side ( $c$ ) in a verified right triangle.
- This converse is used practically to check for right angles without measuring angles directly.

## Practice Questions

- 1 Verify if a triangle with sides 6,8,10 is a right triangle.
- 2 Check if a triangle with sides 7,24,25 is a right triangle using the converse of the Pythagoras theorem.
- 3 Explain the practical use of the converse of the Pythagoras theorem in construction.