Worked answers | Pythagoras' theorem

# Checking whether a triangle is right-angled

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

**1.** Test lengths 5, 12 and 13 for a right angle. [2 marks]

$5 + 12 > 13$.

$25 + 144 = 169 = 13^2$.

**Answer:** Yes.

**2.** Test lengths 8, 10 and 12 for a right angle. [2 marks]

They form a triangle.

$64 + 100 = 164$, not $12^2 = 144$.

**Answer:** No.

**3.** Test lengths 15, 9 and 12 for a right angle. [2 marks]

The longest is 15.

$81 + 144 = 225 = 15^2$.

**Answer:** Yes.

**4.** Can lengths 2, 3 and 5 form a right triangle? [2 marks]

$2+3$ equals 5.

The triangle inequality is not strict.

**Answer:** No; they do not form a non-flat triangle.

**5.** Test exact lengths 0.6 m, 0.8 m and 1 m. [2 marks]

$0.6+0.8>1$.

$0.36+0.64=1=1^2$.

**Answer:** They form a right triangle.

**6.** A frame has exact sides 20 cm, 21 cm and 29 cm. Is the angle opposite the 29 cm side a right angle? Explain. [3 marks]

The triangle is valid because $20+21>29$.

$400+441=841=29^2$.

**Answer:** Yes.