Pythagoras' Theorem questions and answers

10 questions · Core · 3 non-calculator · worked answers

Name _____ Date _____ Score _____

- Original questions in the style of the Cambridge 0580 papers, each labelled Core or Extended and calculator or non-calculator. Try every question before you look at the answers.
- Worked answers start after the questions. Questions with marks come from our 0580 practice bank (M method, A accuracy, B independent marks).
- Online, with more practice: igcsemathrevision.com/igcse-frontend/0580/pythagoras-theorem-questions

Core: for everyone (Papers 1 and 3, and Extended Papers 2 and 4)

1. **Core · calculator · easy**

The two shorter sides of a right-angled triangle are 9 cm and 12 cm.
Find the length of the hypotenuse.

2. **Core · calculator · easy**

The longest side of a right-angled triangle is 25 cm and one of the shorter sides is 7 cm.
Work out the length of the remaining side.

3. **Core · non-calculator · easy · 2 marks**

A right-angled triangle has hypotenuse 13 cm and one other side 5 cm. Find the length of the third side.

4. **Core · calculator · easy · 2 marks**

The two shorter sides of a right-angled triangle are 4.5 cm and 7 cm. Find the length of the hypotenuse. Give your answer correct to 3 significant figures.

5. **Core · calculator · medium**

The two shorter sides of a right-angled triangle are 7 cm and 10 cm.
Find the hypotenuse, correct to 3 significant figures.

6. **Core · calculator · medium**

The top of a 5 m ladder rests against a vertical wall, with its base on flat ground 1.4 m out from the wall.
Work out the height of the top of the ladder above the ground.

7. **Core · calculator · medium**

A rectangle is 15 cm long and 8 cm wide.
Find the length of its diagonal.

8. Core · non-calculator · medium

A triangle has sides 8 cm, 15 cm and 17 cm.
Is it a right-angled triangle? Show how you decide.

9. Core · non-calculator · medium · 2 marks

A triangle has sides 9 cm, 12 cm and 15 cm. Show that it is a right-angled triangle.

10. Core · calculator · hard

An isosceles triangle has two sides of 10 cm and a base of 12 cm.
Work out its area.

Answers and worked solutions

Question 1

Answer: 15 cm

1. $h^2 = 9^2 + 12^2 = 81 + 144 = 225$
2. $h = \sqrt{225} = 15$ cm

Question 2

Answer: 24 cm

1. $a^2 = 25^2 - 7^2 = 625 - 49 = 576$
2. $a = 24$ cm

Question 3 — 2 marks

Answer: 12 cm

M1 $13^2 - 5^2$

A1 12 cm

Question 4 — 2 marks

Answer: 8.32 cm

M1 $\sqrt{4.5^2 + 7^2}$

A1 8.32 cm (8.321…)

Question 5

Answer: 12.2 cm

1. $h^2 = 49 + 100 = 149$
2. $h = \sqrt{149} = 12.20\ldots$ cm

Question 6

Answer: $4.8\,m$

1. $h^2 = 5^2 - 1.4^2 = 25 - 1.96 = 23.04$
2. $h = \sqrt{23.04} = 4.8\,m$

Question 7

Answer: 17 cm

1. $d^2 = 15^2 + 8^2 = 225 + 64 = 289$
2. $d = 17$ cm

Question 8

Answer: Yes, because $8^2 + 15^2 = 17^2$

1. $8^2 + 15^2 = 64 + 225 = 289$ and $17^2 = 289$.
2. The squares of the two shorter sides add to the square of the longest, so it is right-angled.

Question 9 — 2 marks

Answer: $9^2 + 12^2 = 225 = 15^2$, so it is right-angled

M1 $9^2 + 12^2 = 81 + 144$

A1 $= 225 = 15^2$, so right-angled

Question 10

Answer: $48\ \text{cm}^2$

1. The height splits the base into 6 cm and 6 cm.
2. Height $= \sqrt{10^2 - 6^2} = \sqrt{64} = 8$ cm.
3. Area $= \frac{1}{2} \times 12 \times 8 = 48\ \text{cm}^2$

More pythagoras' theorem practice with instant marking, notes and common mistakes: igcsemathrevision.com/igcse-frontend/0580/pythagoras-theorem-questions
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