Pythagoras' Theorem: exam questions

10 questions · 26 marks · mark schemes at the end

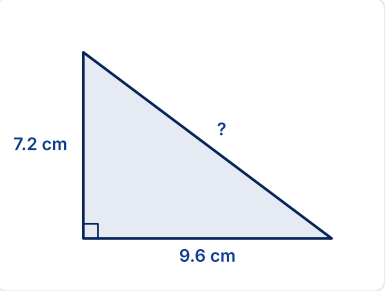
Name _____ Date _____ Score / 26

- Calculators are allowed on both 4MA1 Higher papers (1H and 2H). Show your working: most marks are for method.
- Mark schemes start after the questions. M marks are for a correct method, A marks for an accurate answer that follows a correct method, and B marks for a correct result on its own.
- Online, with more practice: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/pythagoras-theorem

1. **2 marks**

The two shorter sides of a right-angled triangle are 7.2 cm and 9.6 cm.

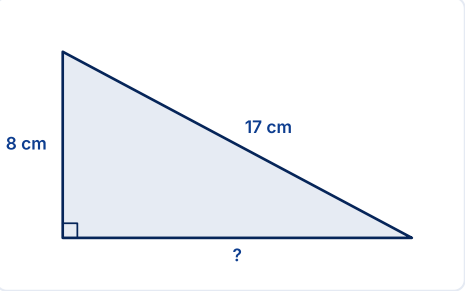
Work out the length of the hypotenuse.



2. **2 marks**

A right-angled triangle has a hypotenuse of 17 cm and one side of 8 cm.

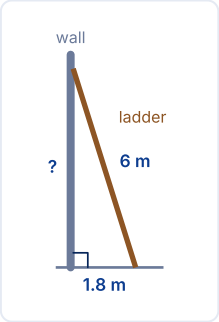
Work out the length of the third side.



3. **3 marks**

A ladder 6 m long leans against a vertical wall. The foot of the ladder is 1.8 m from the wall on horizontal ground.

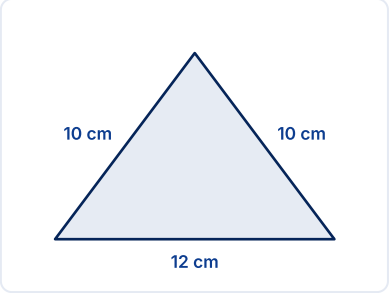
How far up the wall does the ladder reach?



4. **3 marks**

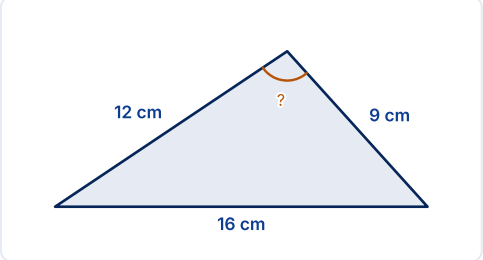
An isosceles triangle has sides of 10 cm, 10 cm and 12 cm.

Work out its area.



5. **2 marks**

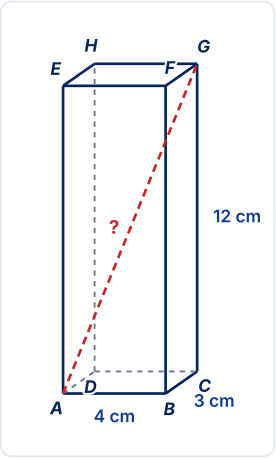
Is a triangle with sides 9 cm, 12 cm and 16 cm right-angled? You must show your working.



6. **3 marks**

A cuboid measures 3 cm by 4 cm by 12 cm.

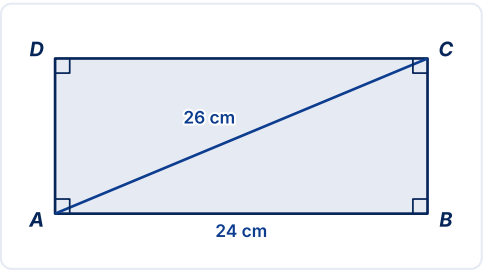
Work out the length of a diagonal joining opposite corners of the cuboid.



7. **3 marks**

$ABCD$ is a rectangle. $AB = 24$ cm and the diagonal $AC = 26$ cm.

Work out the perimeter of the rectangle.



8. **3 marks**

An equilateral triangle has sides of 8 cm.

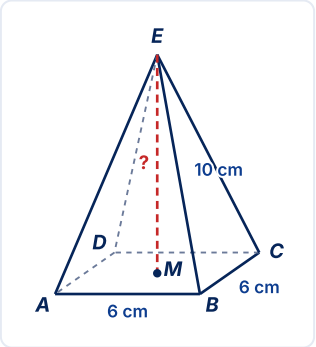
(a) Work out its height. **(2)**

(b) Work out its area. **(1)**

9. **3 marks**

A pyramid has a square base of side 6 cm. Each sloping edge, from the top of the pyramid to a corner of the base, is 10 cm long.

Work out the vertical height of the pyramid.



10. **2 marks**

A ship sails 14 km due north and then 9 km due west.

How far is the ship from its starting point?

Answers and worked solutions

Question 1 — 2 marks

M1 $\sqrt{7.2^2 + 9.6^2}$

A1 12 cm

Answer: 12 cm

Question 2 — 2 marks

M1 $\sqrt{17^2 - 8^2}$

A1 15 cm

Answer: 15 cm

Question 3 — 3 marks

M1 $6^2 - 1.8^2$

M1 $\sqrt{32.76}$

A1 5.72 m

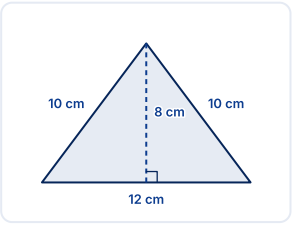
Answer: 5.72 m

Question 4 — 3 marks

M1 height $\sqrt{10^2 - 6^2}$

A1 8 cm

A1 $48\,\text{cm}^2$



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

Question 5 — 2 marks

M1 $9^2 + 12^2 = 225$ and $16^2 = 256$

A1 No, because $225 \neq 256$

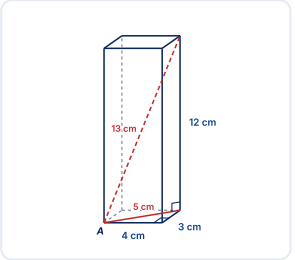
Answer: No

Question 6 — 3 marks

M1 $\sqrt{3^2 + 4^2} = 5$ (diagonal of the base)

M1 $\sqrt{5^2 + 12^2}$

A1 13 cm



Answer: 13 cm

Question 7 — 3 marks

M1 $BC = \sqrt{26^2 - 24^2}$

A1 10 cm

A1 68 cm

Answer: 68 cm

Question 8 — 3 marks

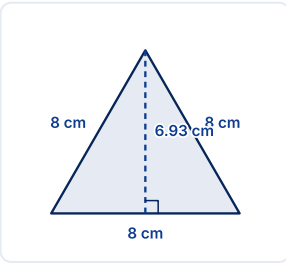
(a)

M1 $\sqrt{8^2 - 4^2}$

A1 6.93 cm

(b)

B1 $27.7\,\text{cm}^2$



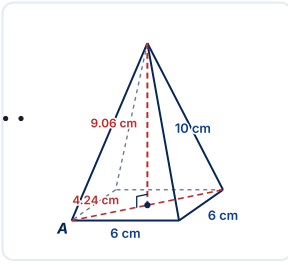
Answer: (a) 6.93 cm; (b) $27.7\,\text{cm}^2$

Question 9 — 3 marks

M1 half the diagonal of the base $\frac{1}{2}\sqrt{6^2 + 6^2} = 4.24\ldots$

M1 $\sqrt{10^2 - 18}$

A1 9.06 cm

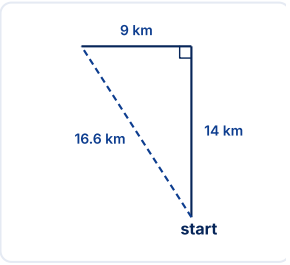


Answer: 9.06 cm

Question 10 — 2 marks

M1 $\sqrt{14^2 + 9^2}$

A1 16.6 km



Answer: 16.6 km

Online, with every solution: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/pythagoras-theorem
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