Pythagoras Theorem

Please write clearly in block capitals

Forename:
Surname:

Materials

For this paper you must have:
• mathematical instruments

You *can* use a calculator.

Instructions

• Use black ink or black ball-point pen. Draw diagrams in pencil.
• Fill in the boxes at the top of this page.
• Answer all questions.
• You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
• Do all rough work in this book. Cross through any work you do not want to be marked.

Information

• The marks for questions are shown in brackets.
• You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.
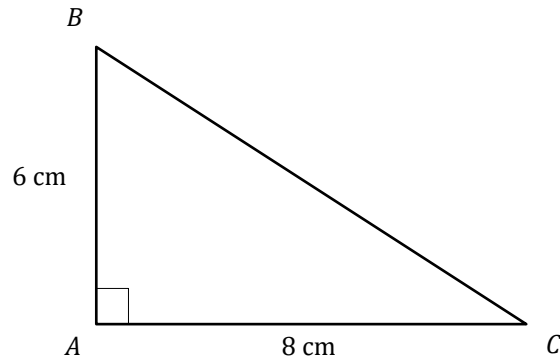
Advice

• In all calculations, show clearly how you work out your answer.

1 ABC is a right-angled triangle with, *(Level 3)*

$AB = 6$ cm

$AC = 8$ cm

B

Not drawn
accurately

6 cm

A   8 cm   C

Calculate the length of the missing side BC.

[2 marks]

_____

_____

_____

_____

Answer _____ cm

Turn over for next question

2

Turn over ▶

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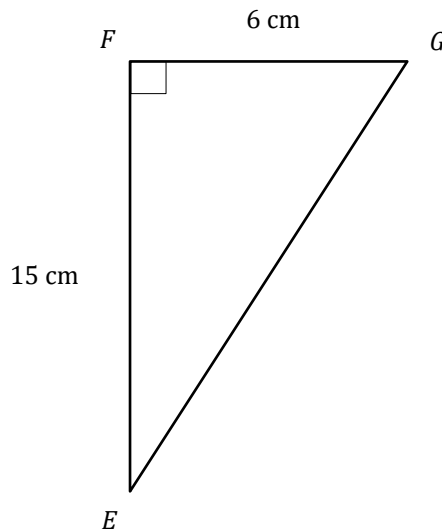**2** EFG is a right-angled triangle.   *(Level 3)*

$$FG \ = 6 \text{ cm}$$

$$EG \ = \ 15 \text{ cm}$$

6 cm

F   *G*

Not drawn
accurately

15 cm

E

Calculate the length of the missing side EG.

[2 marks]

_____

_____

_____

_____

Answer _____ cm

2

Turn over ▶

3   ABC is a right-angled triangle.   *(Level 4)*

$AB = 7.8$ cm

$AC = 9.2$ cm

C

Not drawn
accurately

9.2 cm

A

7.8 cm

B

Calculate the length of the missing side BC

Give your answer correct to 1 decimal place.

[3 marks]

Answer   cm

3
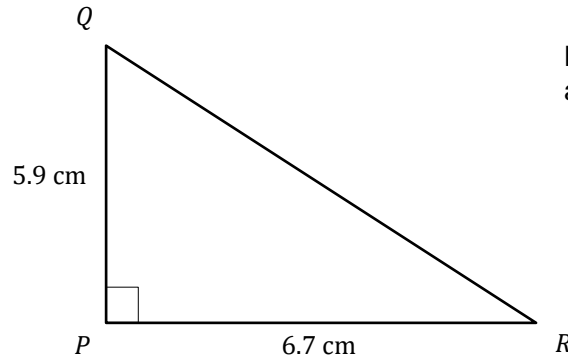
Turn over ▶

4 PQR is a right angled triangle.   *(Level 4)*

$PQ = 5.9$ cm

$PR = 6.7$ cm

Not drawn accurately

4(a)   Calculate the length of the missing side QR.

Give your answer correct to 1 decimal place.

[3 marks]

Answer _____ cm

4(b)   Calculate the perimeter of the triangle PQR.

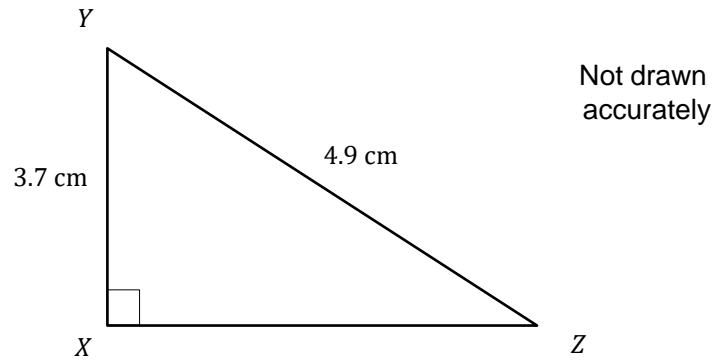**[1 mark]**

Answer _____ cm

Turn over for next question

4

Turn over ▶

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5   XYZ is a right-angled triangle.   *(Level 4)*

   $XY = 3.7$ cm

   $YZ = 4.9$ cm

Not drawn
accurately

Calculate the area of the triangle.

[4 marks]

Answer _____ cm^2

4

Turn over ►

6   A builder places a 3.6 m ladder against a vertical wall as shown.   *(Level 4)*

3.6 m

1.5 m
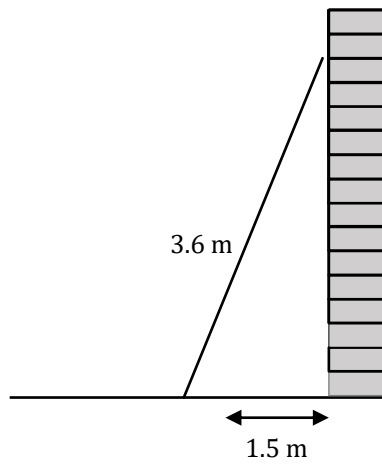
Not drawn
accurately

To be safe to use, the base of this ladder must be 1.5 m away from the wall.

The ladder is also placed on flat horizontal ground.

How far up the wall does the ladder reach?

[3 marks]

_____

_____

_____

_____

Answer _____ m

Turn over for next question

3

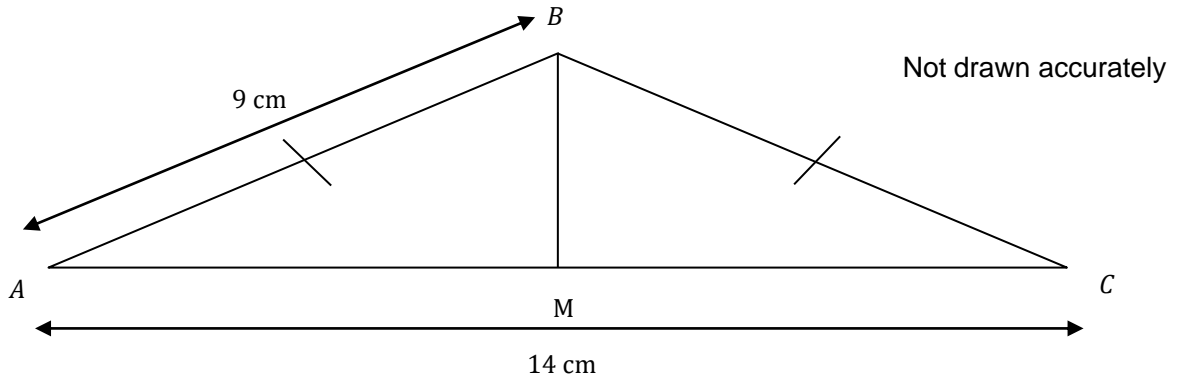Turn over ►

7 ABC is an isosceles triangle.   *(Level 5)*

M is the midpoint of the vertices A and C.

The distance from A to B is 9 cm

The distance from A to C is 14 cm.

Not drawn accurately

9 cm

A   M   C

14 cm

B

7(a)   Work out the length of B to M.

Give your answer to 1 decimal place.

[3 marks]

Answer

7(b)   Find the area of the triangle.

[1 mark]

Answer _____ cm²

Turn over for next question

4

Turn over ►

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8   Two points have the coordinates (2, 3) and (7, 9).   *(Level 5)*

Not drawn
accurately

● (7,9)

●
(2,3)

Calculate the distance between the two points.

Give your answer to 3 significant figures.

[4 marks]

_____

_____

_____

_____

Answer _____

Turn over for next question

4

Turn over ▶

9   The diagram below shows a triangle.   *(Level 6)*

MC is perpendicular to AB

$AB = c$

$AM = x$

$MB = c - x$

Not drawn
accurately
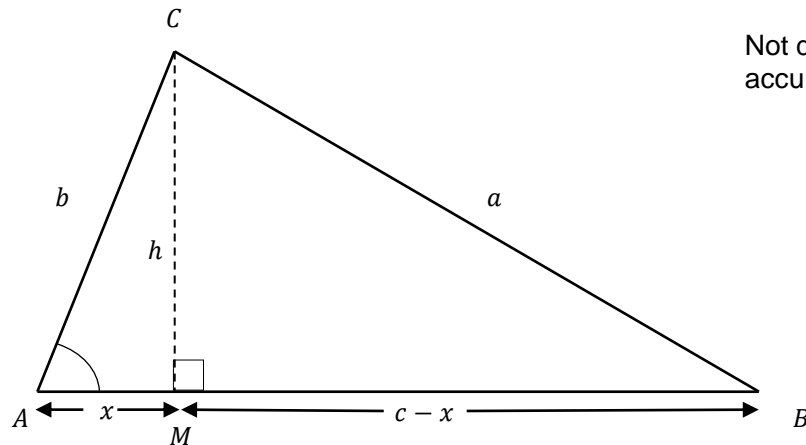
By applying Pythagoras' Theorem to triangles AMC and CMB

Show $c^2 - 2cx = a^2 - b^2$

[3 marks]

_____

_____

_____

_____

_____

_____

Answer   _____

End of questions

3

END