



# Cambridge IGCSE™

CANDIDATE  
NAME

CENTRE  
NUMBER

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/53**

Paper 5 Investigation (Core)

**October/November 2020**

**1 hour 10 minutes**

You must answer on the question paper.

No additional materials are needed.

## INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a graphic display calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly, including sketches, to gain full marks for correct methods.
- In this paper you will be awarded marks for providing full reasons, examples and steps in your working to communicate your mathematics clearly and precisely.

## INFORMATION

- The total mark for this paper is 36.
- The number of marks for each question or part question is shown in brackets [ ].

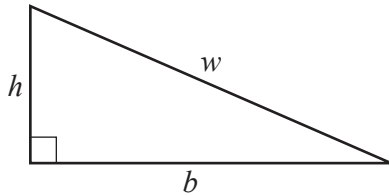
This document has **8** pages. Blank pages are indicated.

Answer **all** the questions.

### INVESTIGATION AREA OF RIGHT-ANGLED TRIANGLES

This investigation looks at finding the area of a right-angled triangle using its perimeter.

In this investigation all lengths are in centimetres.

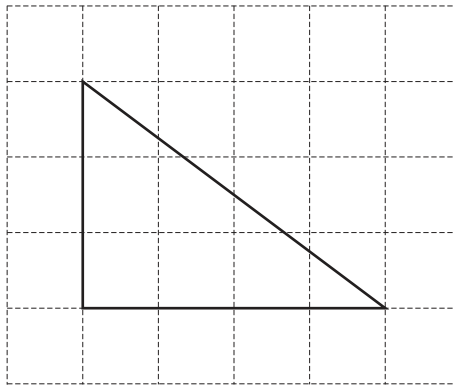


$w$  is the hypotenuse of the triangle,  
 $b$  is the base of the triangle,  
 $h$  is the height of the triangle.

Perimeter,  $P$ , of this triangle.  $P = b + h + w$

Area,  $A$ , of this triangle.  $A = \frac{1}{2}bh$

1 (a)



This right-angled triangle is drawn on a  $1 \text{ cm}^2$  grid.

(i) Measure and write down the length of the hypotenuse.

..... [1]

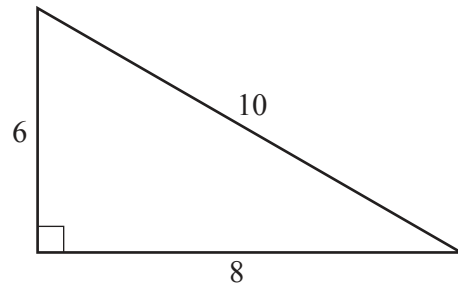
(ii) Show that the perimeter is 12.

[1]

(iii) Find the area of the triangle.

..... [1]

(b)

NOT TO  
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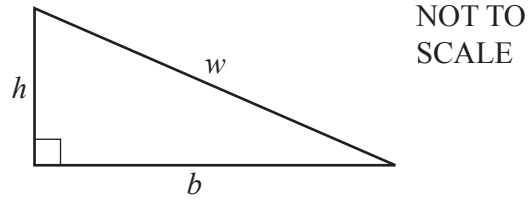
(i) Find the perimeter of this triangle.

..... [2]

(ii) Find the area of this triangle.

..... [2]

(c)

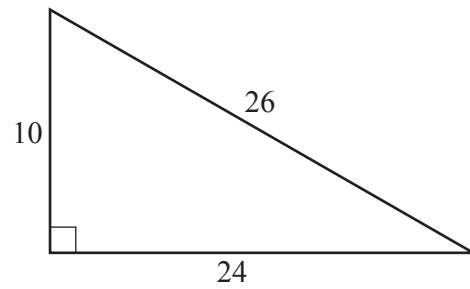


Complete the table for right-angled triangles with sides  $b$ ,  $h$  and  $w$ .

| $b$ | $h$ | $w$ | Perimeter, $P$ | Area, $A$ |
|-----|-----|-----|----------------|-----------|
| 12  | 5   | 13  | 30             | 30        |
| 84  | 13  | 85  |                |           |
| 24  |     | 25  | 56             | 84        |
| 60  | 11  |     | 132            |           |

[5]

2 (a)

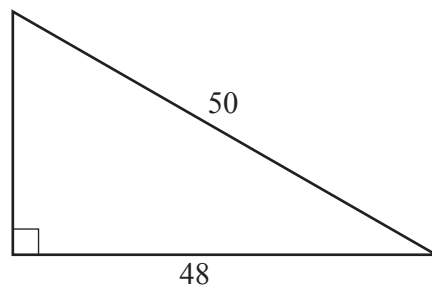
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This triangle has perimeter  $P = 60$ .

Show that the calculation  $\frac{60}{2} \times \left(\frac{60}{2} - 26\right)$  gives the correct area for this triangle.

[3]

(b)

NOT TO  
SCALE

This triangle has perimeter  $P = 112$ .

Show that the calculation  $\frac{112}{2} \times \left(\frac{112}{2} - 50\right)$  gives the correct area for this triangle.

[3]

3 (a) Complete the table.

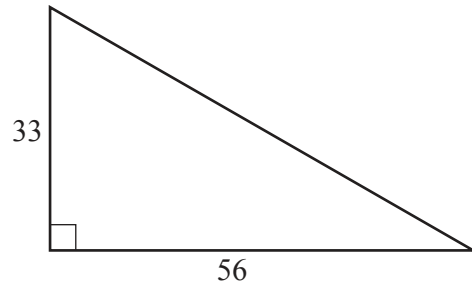
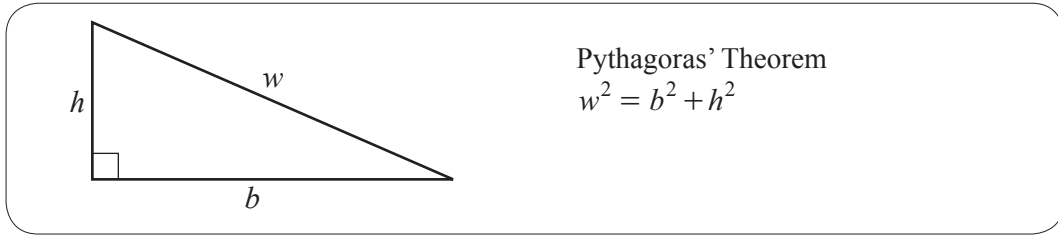
| $b$ | $h$ | $w$ | $P$ | $A$ | Calculation  |
|-----|-----|-----|-----|-----|--|
| 24  | 10  | 26  | 60  | 120 | $\frac{60}{2} \times \left(\frac{60}{2} - 26\right) = 120$ |
| 12  | 9   | 15  | 36  | 54  | $\frac{36}{2} \times \left(\frac{36}{2} - 15\right) = 54$  |
| 48  |     | 50  | 112 |     | $\frac{112}{2} \times \left(\frac{112}{2} - 50\right) =$   |
| 15  | 8   | 17  |     | 60  | $= 60$   |
| 21  |     | 29  | 70  | 210 | $=$  |
|     | 12  | 37  |     | 210 | $=$  |

[8]

(b) Write an expression for the area of a right-angled triangle in terms of  $P$  and  $w$ .

..... [1]

(c)

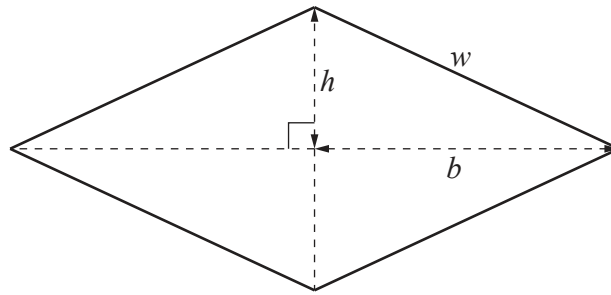
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Use your expression from **part (b)** to find the area of this triangle.

..... [4]

**Question 4 is printed on the next page.**

4 (a)

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This is a rhombus.

Use **Question 3(b)** to write down an expression for the area of this rhombus in terms of  $P$  and  $w$ .

..... [1]

(b) Use your expression from **part (a)** to find the area of this rhombus when  $w = 41$  and  $b = 40$ .

..... [4]

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