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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 [].

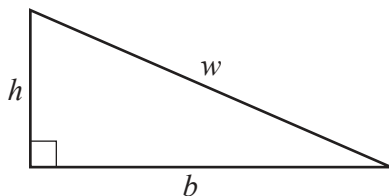
This document has **8** pages. Blank pages are indicated.

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.

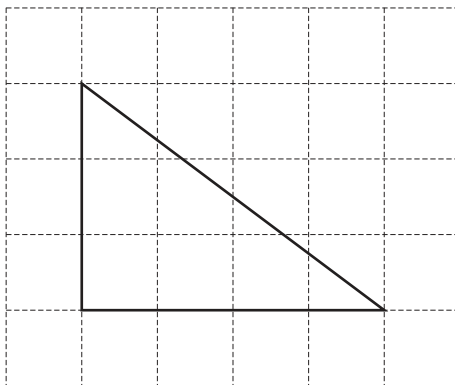


w is the hypotenuse of the triangle,
 b is the base of the triangle,
 h is the height of the triangle.

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 cm^2 grid.

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

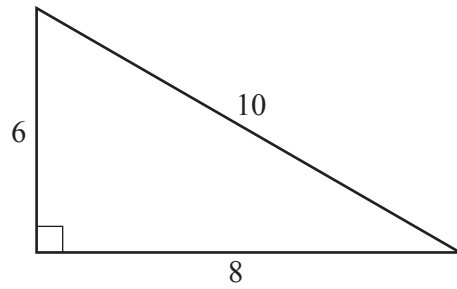
..... [1]

(ii) Show that the perimeter is 12.

[1]

(iii) Find the area of the triangle.

..... [1]

3**(b)**NOT TO
SCALE

- (i)** Find the perimeter of this triangle.

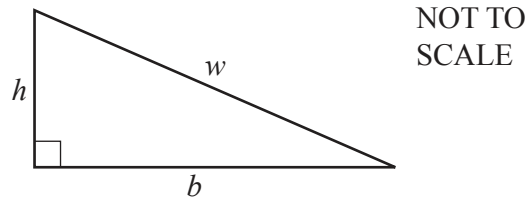
..... [2]

- (ii)** Find the area of this triangle.

..... [2]

4

(c)



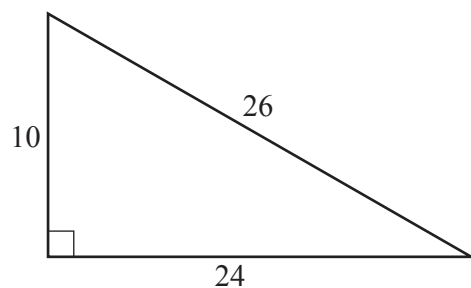
Complete the table for right-angled triangles with sides b , h and w .

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

[5]

5

2 (a)

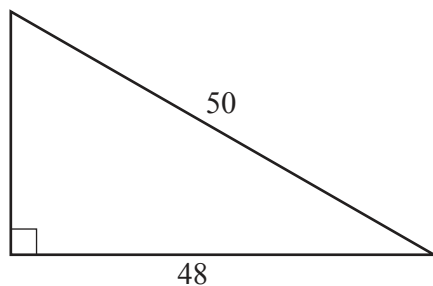
NOT TO
SCALE

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]

6

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	$=$

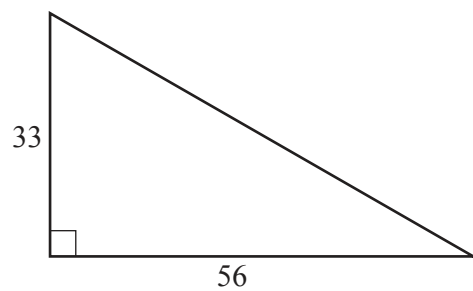
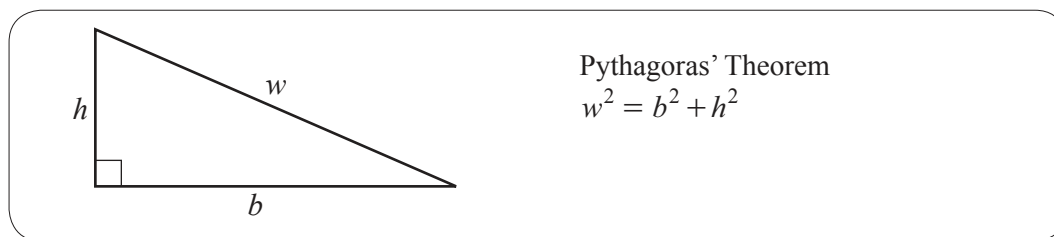
[8]

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

..... [1]

7

(c)

NOT TO
SCALE

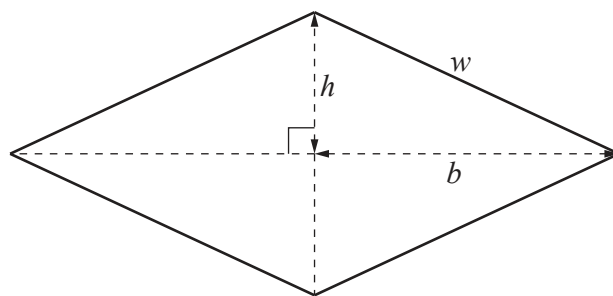
Use your expression from **part (b)** to find the area of this triangle.

..... [4]

Question 4 is printed on the next page.

8

4 (a)

NOT TO
SCALE

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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