



# UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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CANDIDATE NAME						
CENTRE NUMBER				CANDIDATE NUMBER		

#### **CAMBRIDGE INTERNATIONAL MATHEMATICS**

0607/05

Paper 5 (Core)

October/November 2011

1 hour

Candidates answer on the Question Paper

Additional Materials:

**Graphics Calculator** 

# **READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

Do not use staples, paper clips, highlighters, glue or correction fluid.

You may use a pencil for any diagrams or graphs.

DO **NOT** WRITE IN ANY BARCODES.

Answer all the questions.

You must show all relevant working to gain full marks for correct methods, including sketches.

In this paper you will also be assessed on your ability to provide full reasons and communicate your mathematics clearly and precisely.

At the end of the examination, fasten all your work securely together.

The total number of marks for this paper is 24.

# Answer all questions.

# **INVESTIGATION**

#### MAXIMISING THE PERIMETER

www.PapaCambridge.com Identical shapes can be joined to make larger shapes. 1 Squares of side 1 cm may be joined edge to edge, for example but **not** like this. (a) The diagram below shows a shape made of 3 squares and a shape made of 4 squares. Draw a different shape made of 3 squares and a different shape made of 4 squares. **(b) (i)** The diagram below shows a shape, made of 5 squares, with a perimeter of 10 cm. Draw two different shapes each made of 5 squares and each with a perimeter greater than 10 cm.

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								3						13	dayaCann.
	(ii)								square				of 12	cm.	aColl.
		Draw than 12	two d 2 cm.	ifferen	t shap	es each	n mad	e of 6	square	es and	each	with a	a peri	meter	great
•	•		1		1		•	•	•	•	•	•	•	•	•
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(c)	Find	d the gr	eatest	perime	eter for	r shapes	s made	e of							
	(i)	4 squa	res,												cm
	(ii)	5 squa	res.									•••••		••••••	cm
	()		,												
															cm
	(iii)	6 squa	res.												em
		6 squa ı may u		grid be	low to	draw y	our sł	napes.							em
•				grid be	low to	o draw y	our sł	napes.	•	•					em
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(d) (i) Complete this tab	le.			4				4	WW. Pale	Cambride	For iner's
Number of squares	2	3	4	5	6	7	8	9	10	Orige	
Greatest perimeter (cm)	6					16			22		COM
(ii) Write down the gr	eatest p	erimete	r for a s	hape ma	ide of 1	7 square	s.	1			

	(ii)	Write down the greatest perimeter for a shape made of 17 squares.
	(iii)	How many squares make the shape when the greatest perimeter is 32 cm?
(e)	Loo	k at your table to help you complete the following statements.
	(i)	To find the greatest perimeter for a shape made of 2 squares,
		multiply 2 by 2, then add
	(ii)	To find the greatest perimeter for a shape made of 7 squares,
		multiply 7 by, then add
<b>(f)</b>		te down an expression, in terms of $x$ , for the greatest perimeter for a shape made squares.

uilateral triangles of side 1 cm may be	e joined	d edge to	o edge,	tor exar	nple	4		, de
nt <b>not</b> like this.	<b>.</b>	$\triangle$	7					PapaCa
) Find the greatest perimeter for a sh	ape ma	de of 6	v equilate	ral triar	ngles.			
								cm
You may use the grid below to help	p you.							
	•	•		•	•	•	•	
	•	•	•	•	•		•	•
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	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•
(i) Complete this table.					Τ	ı	Τ	7
Number of equilateral triangles	2	3	4	5	6	7	8	_
Greatest perimeter (cm)	4						10	
(ii) Write down the greatest perim	eter for	r a shape	e made	of 10 ec	quilatera	al triang	les.	
								cm
(iii) How many equilateral triangle	es make	the sha	pe whe	n the gr	eatest p	erimete	is 18 c	m?
) Write down an expression, in t		.c. c.	41	~~~~4		C	a aha	

www.PapaCambridge.com Find an expression, in terms of x, for the greatest perimeter for a shape made of x regular hexa 3

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