



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
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CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/05

Paper 5 (Core)

May/June 2012

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.

This document consists of **5** printed pages and **3** blank pages.



Answer **all** the questions.

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INVESTIGATION

ADDITION TRIPLES

An addition triple has three **different** numbers.

The numbers (8, 10, 18) form an addition triple because $8 + 10 = 18$.

Some other addition triples are (10, 11, 21) and (21, 24, 45).

This investigation explores patterns with addition triples.

- 1** Nine addition triples can be found from the list of integers 1, 2, 3, 4, 5, 6, 7.
One of these triples is (3, 4, 7).

Write down the other eight addition triples in the spaces provided.

[Note that (3, 4, 7) and (4, 3, 7) are the same addition triple.]

(..... , ,)

(..... , ,)

(..... , ,)

(..... , ,)

(..... , ,)

(..... , ,)

(..... , ,)

(..... , ,)

(3 , 4 , 7)

- 2 Complete the table, showing the addition triples for each list of integers. In the last column write the total number of triples.

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Number of integers	List of integers	Addition triples	Total number of addition triples
3	1, 2, 3	(1, 2, 3)	1
4	1, 2, 3, 4		2
5	1, 2, 3, 4, 5		
6	1, 2, 3, 4, 5, 6		
7	1, 2, 3, 4, 5, 6, 7	Leave this blank – do not write your answer to question 1 again.	9
8	1, 2, 3, 4, 5, 6, 7, 8		12

- 3 Look at the pattern in the last column in the table on page 3.
Use it to complete the following table.

Number of integers	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of addition triples	1	2			9	12	16	20		30	36		

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- 4 Using **Question 3**, complete the following table.

Number of integers	3	5	7	9	11	13	15	17
Number of addition triples	$1 = 1^2$		$9 = 3^2$	$16 = 4^2$		$36 = 6^2$		

- 5 How many integers are in the list when there are 100 addition triples?

.....

6 (a) Is it possible to have 225 addition triples? Explain your answer.

(b) Explain why it is **not** possible to have 900 000 addition triples.

7 (a) The numbers in the second row of the table in **Question 4** form a sequence.

Find the number of addition triples when there are 99 integers in the list.
Show how you do this.

.....

(b) The numbers in the second row of the table in **Question 3** form a sequence.

Find the number of addition triples when there are 100 integers in the list.
Show how you do this.

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