Centre Number					Candidate Number				
Surname									
Other Names									
Candidate Signature									

Mathematics 43602H

Past Paper Type Questions by Topic

Sequences

H

For this paper you must have:
- a calculator
- mathematical instruments.

Time allowed
- 1 hour

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.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is.
- The quality of your written communication is specifically assessed in some questions. These questions are indicated with an asterisk (*)
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer booklet.

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

1　　Write down the next term in each sequence.

1 (a)(i)　5　8　11　14　.......

...........................…………...………......…………………………………………..

(1 mark)

1 (a)(ii)　6　4　2　0　.......

...........................…………...………......…………………………………………..

(1 mark)

1 (a)(iii)　2　4　8　16　.......

...........................………...………......…………………………………………..

(1 mark)

1 (b)　　The numbers in this sequence increase by the same amount each time.

　　　　　　　　　　　11　　.......　　.......　　35

　　What are the missing numbers?

...........................………...………......…………………………………………

　　　　　　　Answer………………and…………………….

(2 marks)

2 The *n*th term of a sequence is 100 − 3*n*.

2 (a) Work out the first three terms.

....……………………………………………………………..

....……………………………………………………………..

....……………………………………………………………..

Answer ....,.........................,...................

(2 marks)

2 (b) Work out the first term of the sequence that is negative.

...................................………….…………...…………………………………………………..

...................................………….…………...…………………………………………………..

Answer ....

(2 marks)

3 (a)   Here are the first three terms of a sequence.

20   12   8   ....

The rule for working out the next term in the sequence is

| Add 4 to the previous term and then divide by 2 |

Work out the first term that is **not** a whole number.

....

....

Answer ....……….…...………...………

(2 marks)

3 (b)   This sequence uses the same rule.

| Add 4 to the previous term and then divide by 2 |

The third term of this sequence is 9.

….   ….   9   ….

Work out the first term.

....

....

....

....

Answer ....……….…...………...………   *(3 marks)*

4 (a)   Write down the next term of each sequence.

4 (a) (i)   3   8   13   18   ....

....
(1 mark)

4 (a) (ii)   5.1   5.3   5.5   5.7   ....

....
(1 mark)

4 (a) (iii)   2   −1   −4   −7   ....

....
(1 mark)

4 (b)   Here is a different sequence.
The third term is 20 and the fourth term is 36.

……   ……   20   36   ……

The term to term rule for this sequence is

Double and subtract four

Work out the first term of the sequence.

....

....

....

Answer .... *(2 marks)*

5 (a) The numbers in this sequence decrease by the same amount each time.

74　　……　　58　　50　　42　　……

What are the **two** missing numbers?

....

Answer .... and .... *(2 marks)*

5 (b) The numbers in this different sequence decrease by the same amount each time.

26　　……　　……　　……　　6

What are the **three** missing numbers?

....

....

....

....

Answer .... ,　　................... ,　　.................... *(2 marks)*

6 (a)   Here are the first two terms of a sequence.

5   4   ……   ……   ……

The rule for finding the next term in the sequence is

| Multiply the previous term by 2 and subtract 6 |

Work out the first negative term of the sequence.

....

....

Answer ....   *(2 marks)*

6 (b)   Here are the first three terms of another sequence.

1   4   7   ……   ……   ……

Which of the following is the nth term for this sequence?
Circle the correct answer.

....

....

....

$n + 3$ $3n + 1$ $3n - 2$ $3n + 2$

(1 mark)

7 (a) A sequence starts

49   46   43   40

7 (a) (i) Write down the next two terms.

Answer .... and ....   *(2 marks)*

7 (a) (ii) What is the rule for continuing the sequence?

Answer ....   *(1 mark)*

7 (b) Another sequence starts

57   50   43   36

This sequence is continued.

What is the first negative number in this sequence?

....

....

Answer ....   *(1 mark)*

7 (c) The first sequence is also continued.
The two sequences have the number 43 in common.

What is the next number that the two sequences have in common?

....

....

Answer ....   *(2 marks)*

8 (a)   Here are the first two terms of a sequence.

        5   4   ……   ……

The rule for finding the next term in the

sequence is Multiply the previous term

by 2 and subtract 6

Work out the first negative term of the sequence.

....

....

           Answer ....   *(2 marks)*

8 (b)   Here are the first three terms of another sequence.

      1   4   7   ……   ……

Which of the following is the nth term for this

sequence?
Circle the correct answer.

....

....

....

                                                                 (1 mark)

$n + 3$ $3n + 1$ $3n - 2$ $3n + 2$

The rule for finding the next term in a sequence is
Subtract x and then multiply by 4

The second term is 12.
The third term is 52.

…. 12 52 ….

Work out the first term of the sequence.

....

....

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....

Answer .... *(4 marks)*

10   The nth term of a sequence is $n^2 + 50$

10 (a)   Work out the first three terms of the sequence.

....

....

Answer 1st term .... 2nd term .... 3rd term .... *(2 marks)*

10 (b)   How many terms in the sequence are less than 100?

....

....

....

Answer ....   *(2 marks)*

*11   The first three terms of a sequence are

    x y z ……..

The term-to-term rule of the sequence is

| Multiply by 2 and subtract 4 |

Show that $z = 4(x - 3)$

....

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(4 marks)