

Name: \_\_\_\_\_

# IGCSE

## Sequences

### Instructions

- Use **black** ink or ball-point pen.
- Answer all Questions.
- Answer the Questions in the spaces provided  
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

### Information

- The marks for each Question are shown in brackets  
– *use this as a guide as to how much time to spend on each Question.*

### Advice

- Read each Question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every Question.
- Check your answers if you have time at the end

1 Here are the first five terms of a sequence.

2                      5                      8                      11                      14

Write down the next two terms in the sequence.

..... , .....

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**(Total for Question 1 is 1 mark)**

2 The first term in a sequence is 3.  
The term to term rule is add 5.

Is 97 a term in the sequence?  
Give a reason for your answer.

.....  
.....

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**(Total for Question 2 is 2 marks)**

3 Here are the first five terms of a sequence

6                      10                      14                      18                      22

Write down the next two terms in the sequence.

..... , .....

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**(Total for Question 3 is 2 marks)**

4 The  $n$ th term of a sequence is  $4n + 3$

(a) Find the first two terms of this sequence.

(b) Is 35 a term in this sequence.  
You must show how you get your answer.

..... , .....

.....  
.....

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**(Total for Question 4 is 2 marks)**

5 The  $n$ th term of a sequence is  $n^2 + 1$

(a) Find the first two terms of this sequence.

..... , .....

(b) Is 35 a term in this sequence. (1)  
You must show how you get your answer.

.....  
..... (1)

**(Total for Question 5 is 2 marks)**

6 Here are the first 5 terms of a sequence.

17                  14                  11                  8                  5

(a) Find the next term of this sequence.

..... (1)

The  $n$ th term of a different sequence is  $10n^2 + 5$

(b) Work out the 5<sup>th</sup> term of this sequence.

..... (1)

**(Total for Question 6 is 2 marks)**

7 Here are the first four terms of a sequence.

7                  13                  19                  25

(a) Write down the next term in the sequence.

..... (1)

(b) Explain how you got your answer

..... (1)

**(Total for Question 7 is 2 marks)**

**8** Here are the first four terms of a number sequence.

2                      3                      5                      9

The rule to continue the sequence is  
multiply the previous term by 2 and then subtract 1

Work out the 5<sup>th</sup> term of this sequence.

.....  
**(Total for Question 8 is 1 mark)**

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**9** Here are the first 5 terms of a sequence.

29                      24                      19                      14                      9

Find the 8th term of this sequence.

.....  
**(Total for Question 9 is 2 marks)**

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**10** The  $n$ th term of a sequence is  $n^2 + 3$

(a) Find the first three terms of this sequence.

..... , ..... , .....

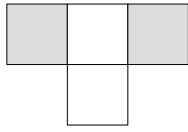
(b) Find the 10<sup>th</sup> term in this sequence.

(2)

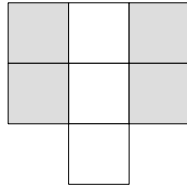
.....  
(1)  
**(Total for Question 10 is 3 marks)**

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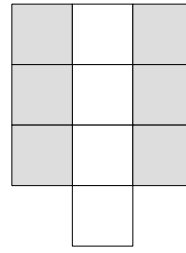
11 Here is a sequence of patterns made from white tiles and grey tiles.



pattern number 1



pattern number 2



pattern number 3

(a) In the space below, draw pattern number 4.

(1)

(b) Work out the total number of tiles to make pattern number 7.

(2)

Kyle says

“There are 4 white tiles in pattern number 3 so there will be 8 white tiles in pattern number 6.”

(c) Is Kyle right?

You must give a reason for your answer.

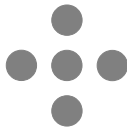
.....

.....

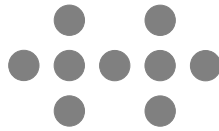
(1)

**(Total for Question 11 is 4 marks)**

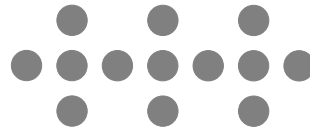
12 Here is a sequence of patterns made from grey counters.



pattern number 1



pattern number 2



pattern number 3

(a) In the space below, draw pattern number 4.

(b) Work out the total number of counters to make pattern number 10.

(1)

.....  
(2)

**(Total for Question 12 is 3 marks)**

13 Here are the first five terms of a sequence.

31                      27                      23                      19                      15

(a) Find the first negative term in the sequence.

(b) Is  $-30$  a term in this sequence?  
Give a reason for your answer.

.....  
(2)

.....  
.....  
(1)

**(Total for Question 13 is 3 marks)**

**14** Here are the first 5 terms of an arithmetic sequence.

-3                      1                      5                      9                      13

(a) Find an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

The  $n$ th term of a different arithmetic sequence is  $2n - 3$

.....  
(2)

(b) Is 101 a term in this sequence?

Show how you get your answer.

(2)

**(Total for Question 14 is 4 marks)**

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**15** Here are the first 5 terms of a sequence.

9                      14                      19                      24                      29

Find an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

.....  
**(Total for Question 15 is 2 marks)**

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**16** Here are the first 5 terms of a sequence.

25                      22                      19                      16                      13

Find an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

.....  
**(Total for Question 16 is 2 marks)**

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**17** Here are the first four terms of an arithmetic sequence.

4                      11                      18                      25

Write down an expression, in terms of  $n$ , for the  $n$ th term of the sequence.

.....  
**(Total for Question 17 is 2 marks)**

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**18** Here are the first four terms of an arithmetic sequence.

35                      31                      27                      23

Write down an expression, in terms of  $n$ , for the  $n$ th term of the sequence.

.....  
**(Total for Question 18 is 2 marks)**

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**19** Here are the first five terms of an arithmetic sequence.

21                      27                      33                      39                      45

Write down an expression, in terms of  $n$ , for the  $n$ th term of the sequence.

.....  
**(Total for Question 19 is 2 marks)**

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**20** Here are the first five terms of an arithmetic sequence.

2                      7                      12                      17                      22

Write down an expression, in terms of  $n$ , for the  $n$ th term of the sequence.

.....  
**(Total for Question 20 is 2 marks)**

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