Name:..

Total Marks:..

GCSE (9-1) Grade 4 Sequences (Nth term)

Instructions

Use **black** ink or ball-point pen.
Fill in the boxes at the top of this page with your name.
Answer **all** questions.
Answer the questions in the spaces provided
– there may be more space than you need.
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.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed

Advice

Read each question carefully before you start to answer it
Attempt every question
Check your answers if you have time at the end

1. Here are the first 5 terms of an arithmetic sequence.

$$6, \quad 11, \quad 16, \quad 21, \quad 26$$

Find an expression, in terms of n, for the nth term of the sequence.

....

(Total 2 marks)

2. Here are the first five terms of a number sequence.

$$3 \quad 8 \quad 13 \quad 18 \quad 23$$

(a) Write down the next **two** terms of the sequence.

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

(2)

(b) Explain how you found your answer.

....

(1)

(c) Explain why 387 is **not** a term of the sequence.

....

....

(1)

(Total 4 marks)

3. Here are the first five terms of a number sequence.

$$126 \quad 122 \quad 118 \quad 114 \quad 110$$

(a) Write down the next two terms of the number sequence.

……………, ……………

(1)

(b) Explain how you found your answer.

…………………………………………………………………………………

(1)

The 20th term of the number sequence is 50

(c) Write down the 21st term of the number sequence.

…………………..

(1)
(Total 3 marks)

4. Here are the first five terms of a number sequence.

3   7   11   15   19

(a) Work out the 8th term of the number sequence.

....

(1)

(b) Write down an expression, in terms of n, for the nth term of the number sequence.

....

(2)
(Total 3 marks)

5. The first five terms of an arithmetic sequence are

2   9   16   23   30

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

....
(Total 2 marks)

6. The first five terms of an arithmetic sequence are

2   7   12   17   22

Write down, in terms of n, an expression for the nth term of this sequence.

....
(Total 2 marks)

7. Here are the first five terms of an arithmetic sequence.

$$-1 \quad 3 \quad 7 \quad 11 \quad 15$$

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

…………………………………..

(2)

In another arithmetic sequence the nth term is $8n - 16$

John says that there is a number that is in both sequences.

(b) Explain why John is wrong.

……………………………………………………………………………

……………………………………………………………………………..

(2)
(Total 4 marks)

8. The first four terms of an arithmetic sequence are

$$21 \quad 17 \quad 13 \quad 9$$

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

....
(Total 2 marks)

9. The nth term of a sequence is $2n^2$

(i) Find the 4th term of the sequence.

....

(ii) Is the number 400 a term of the sequence?

....

Give reasons for your answer.

....

....

(Total 3 marks)

10. Here are the first 5 terms of an arithmetic sequence.

$$3 \quad 9 \quad 15 \quad 21 \quad 27$$

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

....

(2)

Ben says that 150 is in the sequence.

(b) Is Ben right?

You must explain your answer.

....

....

....

....

(1)

(Total 3 marks)

11. Here are the first 5 terms of an arithmetic sequence.

$$2 \quad 9 \quad 16 \quad 23 \quad 30$$

(a) Write down the 12th term of this sequence.

………………………..

(1)

(b) Find, in terms of n, an expression for the nth term of this sequence.

…………………………………

(2)

(Total 3 marks)

12. The first four terms of an arithmetic sequence are

         21   17   13   9

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

                                         ....

(Total 2 marks)

13. Here are the first 5 terms of an arithmetic sequence.

         6,   11,   16,   21,   26

Find an expression, in terms of n, for the nth term of the sequence.

                                 ....

(Total 2 marks)

14. The first five terms of an arithmetic sequence are

         2   9   16   23   30

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

                                 ....

(Total 2 marks)

15. Here are the first five terms of a number sequence.

$$3 \quad 8 \quad 13 \quad 18 \quad 23$$

(a) Write down the next **two** terms of the sequence.

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

(2)

(b) Explain how you found your answer.

....

(1)

(c) Explain why 387 is **not** a term of the sequence.

....

....

....

(1)

(Total 4 marks)

16. Here are the first five terms of a number sequence.

$$3 \quad 7 \quad 11 \quad 15 \quad 19$$

(a) Write down an expression, in terms of n, for the nth term of this sequence.

....

(2)

Adeel says that 319 is a term in the number sequence.

(b) Is Adeel correct?
You must justify your answer.

....

....
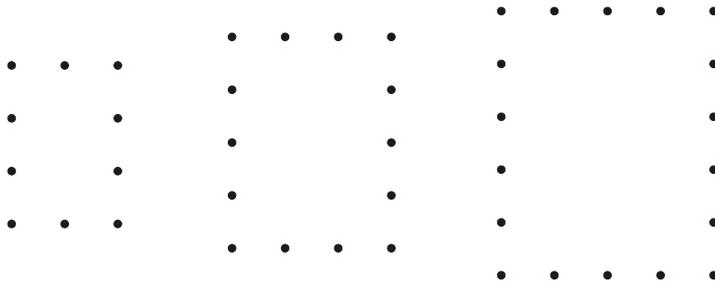
(2)

(Total 4 marks)

17. Here are some patterns made up of dots.

Pattern number 1   Pattern number 2   Pattern number 3

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

(1)

(b)   Complete the table.

Pattern number	1	2	3	4	5
Number of dots	10	14	18		

(1)

(c)   How many dots are used in Pattern number 10?

....

(1)
(Total 3 marks)