Sequences (Nth Term)

Mark Scheme

Level	GCSE
Subject	Maths
Exam Board	Edexcel GCSE
Topic	Sequences (Nth Term)
Grade Level	Grade 4
Booklet	Mark Scheme

Time Allowed: **58 minutes**

Score: **/48**

Percentage: **/100**

Grade Boundaries:

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

5n 5 10 15 20 25

6, 11, 16, 21, 26

+5 +5

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

5n + 1

(Total 2 marks)

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

3 8 13 18 23

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

28, 33

(2)

(b) Explain how you found your answer.

Sequence term to term rule is +5

(1)

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

all terms end in 3 or 8

(1)

(Total 4 marks)

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

126 122 118 114 110

−4

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

106, 102

(1)

(b) Explain how you found your answer.

term to term rule : −4

(1)

The 20th term of the number sequence is 50

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

.....46.....

(1)

(Total 3 marks)

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

4n: 4 8 12 16 20

3 7 11 15 19

+4 +4

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

.....31.....

(1)

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

.....4n − 1.....

(2)

(Total 3 marks)

5. The first five terms of an arithmetic sequence are

7n: 7 14 21 28 35

2 9 16 23 30

+7 +7

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

.....7n − 5.....

(Total 2 marks)

6. The first five terms of an arithmetic sequence are

5n: 5 10 15 20 25

2 7 12 17 22

+5 +5

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

.....5n − 3.....

(Total 2 marks)

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

4n: 4 8 12 16 20

−1 3 7 11 15

+4 +4

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

$4n - 5$

(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.

all numbers in 1st sequence are odd

all numbers in the other sequence are even

(2)

(Total 4 marks)

8. The first four terms of an arithmetic sequence are

−4n −4 −8 −12 −16

21 17 13 9

−4 −4 −4

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

$-4n + 25$

(Total 2 marks)

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

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

$2(4)^2$

$2(16)$

32

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

No

Give reasons for your answer.

$\frac{400}{2} = 200$, 200 is not a square number

(Total 3 marks)

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

$6n$: 6 12 18 24 30

3 9 15 21 27

+6 +6

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

$6n - 3$

(2)

Ben says that 150 is in the sequence.

(b) Is Ben right?

You must explain your answer.

all numbers in the sequence are odd

Ben is therefore incorrect.

(1)

(Total 3 marks)

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

7 14 21 28 35

2 9 16 23 30

+7 +7

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

$7(12) - 5$

$84 - 5$

79

(1)

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

$7n - 5$

$7n - 5$

(2)

(Total 3 marks)

12. The first four terms of an arithmetic sequence are

$-4n$ -4 -8 -12 -16

21 17 13 9

-4 -4 -4

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

$-4n + 25$

(Total 2 marks)

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

$5n$: 5 10 15 20 25

6, 11, 16, 21, 26

$+5$ $+5$ $+5$ $+5$

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

$5n + 1$

(Total 2 marks)

14. The first five terms of an arithmetic sequence are

7 14 21 28 35

2 9 16 23 30

$+7$ $+7$ $+7$

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

$7n - 5$

(Total 2 marks)

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

*

3 8 13 18 23

+5 +5

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

28, 33

(2)

(b) Explain how you found your answer.

term to term rule +5

(1)

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

all numbers in the sequence end in 8 or 3

(1)

(Total 4 marks)

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

4 8 12 16

3 7 11 15 19

+4 +4 +4

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

$4n - 1$

(2)

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

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

$4n - 1 = 319$

$4n = 320$

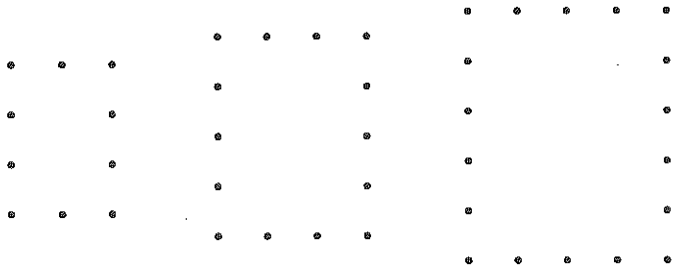
$n = 80$

Adeel is correct, it is the 80th term

(2)

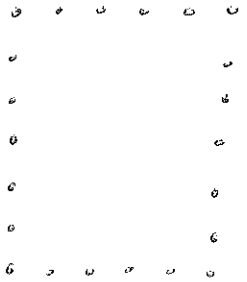
(Total 4 marks)

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	22	26

+4 +4 +4

(1)

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

$26 + (4 \times 5)$

46

(1)

(Total 3 marks)