

Sequences

GCSE Maths · Practice Questions

20 questions · 62 marks total

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Section A · Foundation

Questions 1–3 are the most straightforward; they get harder as you go on. Question 10 is the most challenging.

1

[1 mark]

Write down the next term of this sequence.

4 9 14 19

.....

2

[2 marks]

Find an expression for the n th term of this sequence.

3 7 11 15

.....

3

[2 marks]

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

Write down the first three terms.

.....

4

[2 marks]

Find the 10th term of the sequence

6 10 14 18 ...

.....

5

[3 marks]

Here is a sequence.

20 17 14 11

(a) Write down the next two terms.

(b) Find an expression for the n th term.

(c) Is -7 a term of this sequence? Give a reason.

.....

6

[3 marks]

Here is a sequence.

2 5 7 12 19

- (a) Describe the rule for finding the next term.
 - (b) Write down the next two terms.
-

7

[3 marks]

Here is a sequence.

3 6 12 24

- (a) Describe the rule for finding the next term.
 - (b) Write down the next two terms.
 - (c) Work out the 7th term.
-

8

[3 marks]

- (a) Write down the first five square numbers.
 - (b) Write down the first five triangular numbers.
 - (c) Which number appears in both lists?
-

9

[4 marks]

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

- (a) Show that 102 is not a term of the sequence.
 - (b) Find the largest term of the sequence that is less than 200.
-

10 [4 marks]

Matchstick patterns are made as shown. Pattern 1 uses 4 matches, pattern 2 uses 7 matches and pattern 3 uses 10 matches.

- (a) Find an expression for the number of matches in pattern n .
- (b) How many matches are needed for pattern 20?
- (c) Which pattern uses exactly 100 matches?

Section B · Higher

Higher-tier style. Again, questions 1–3 are the gentlest and question 10 is the hardest.

1 [2 marks]

Find an expression for the n th term of

2 9 16 23

2 [2 marks]

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

Work out the 6th term.

3 [3 marks]

Find an expression for the n th term of the quadratic sequence

4 7 12 19 28

4 [3 marks]

Find an expression for the n th term of

5 12 23 38 57

5

[4 marks]

Here is a geometric sequence.

5 15 45 ...

- (a) Write down the common ratio.
 - (b) Find an expression for the n th term.
 - (c) Work out the 8th term.
-

6

[4 marks]

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

Show that 168 is a term of the sequence and state its position.

7

[4 marks]

The n th term of a sequence is $5n - 3$

- (a) Find the first term of the sequence that is greater than 500.
 - (b) Prove that every term of the sequence is 2 more than a multiple of 5.
-

8

[4 marks]

A sequence is defined by $u_1 = 5$ and $u_{n+1} = 2u_n - 3$

- (a) Work out u_2 , u_3 and u_4 .
 - (b) Describe what happens to the terms as n increases.
-

9

[4 marks]

A pattern of dots grows like this: 1, 5, 13, 25, 41, ...

Find an expression for the number of dots in the n th pattern.

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

- (a) Prove that every term of the sequence is an even number.
- (b) Two consecutive terms of the sequence differ by 26. Find these two terms.