

Sequences Nth Term

GCSE Maths · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Find the nth term of 7, 12, 17, 22, ...

Step 1 · Common difference

5, so start with $5n$ (5, 10, 15, 20)

Step 2 · Adjust

$$7 - 5 = 2$$

Answer: $5n + 2$

Check: $n = 4$: $20 + 2 = 22$ ✓

2. Now try one with the steps

Find the nth term of 20, 17, 14, 11, ...

Step 1 · Common difference

Step 2 · Adjust

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Write down the next two terms of 4, 9, 14, 19, ... [1]

2. Find the nth term of 5, 8, 11, 14, ... [2]

3. Find the nth term of 2, 9, 16, 23, ... [2]

4. Find the nth term of 20, 17, 14, 11, ... [2]

5. Find the 50th term of the sequence with nth term $3n + 2$. [1]
6. Is 100 a term of 4, 7, 10, 13, ...? If so, which term? [2]
7. Is 85 a term of the sequence with nth term $2n + 6$? Explain. [2]
8. Find the nth term of 1.5, 2, 2.5, 3, ... [2]
9. Find the common ratio of 2, 6, 18, 54, ... [1]
10. Write down the next term of 80, 40, 20, 10, ... [1]
11. Write down the next two terms of the Fibonacci-type sequence 1, 3, 4, 7, 11, ... [1]
12. Find the first term greater than 100 in the sequence with nth term $7n - 4$. [2]
13. Write down the first four terms of the sequence with nth term 2^n . [1]
14. A row of squares made from matchsticks uses 4, 7, 10, ... matches for 1, 2, 3, ... squares. How many matches are needed for 20 squares? [3]
15. Write down the next term of the geometric sequence 1, $\sqrt{2}$, 2, $2\sqrt{2}$, ... [1]

4. Before you hand it in

nth term of 3, 6, 9, 12 is $n + 3$

The difference multiplies n : $3n$. Check: $n = 1$ gives 3 ✓.

nth term of 20, 17, 14 is $3n + 17$

The sequence goes DOWN by 3, so it is $-3n + 23$. Check: $n = 1$ gives 20 ✓.

$2n + 6 = 85 \rightarrow n = 39.5$, so 85 is the 39.5th term

Term positions are whole numbers, so 85 is NOT in the sequence.

Treating 3, 6, 12, 24

The differences change. Check ratios: each term is double the last, so it is geometric.