

GCSE Maths Sequences and nth Term (Higher): check-up and exam-style questions: answers

GCSE Maths - Sequences and nth Term - Higher - Test yourself

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch11-sequences/higher/check-up-and-exam-style-questions/

Exercise 11Z Check-up (non-calculator) Non-calculator

- 1 Write down the next two terms of 4, 11, 18, 25, ...

Answer: 32, 39

- 2 Describe the term-to-term rule of the sequence 5, 15, 45, 135, ...

Answer: multiply by 3

- 3 The n th term of a sequence is $5n - 3$. Write down the first four terms.

Answer: 2, 7, 12, 17

- 4 Find the n th term of the sequence 7, 11, 15, 19, ...

Answer: $4n + 3$

- 5 Find the n th term of the sequence 30, 27, 24, 21, ...

Answer: $-3n + 33$ (or $33 - 3n$)

- 6 The n th term of a sequence is $3n + 1$. Is 100 a term of the sequence?

Answer: Yes, it is the 33rd term

- 7 Work out the 12th triangular number.

Answer: 78

- 8 Here is a Fibonacci-type sequence: 2, 3, ?, 8, ? Write down the two missing numbers.

Answer: 5, 13

- 9 The n th term of a sequence is $7n - 4$. Find the first term that is greater than 100.

Answer: 101 (the 15th term)

- 10 Here are the first three patterns of triangles made from matchsticks. Find the n th term for the number of matchsticks.



Answer: $2n + 1$

Exercise 11X Exam-style questions Non-calculator

- 1 Write down the next two terms of the sequence 8, 13, 18, 23, ... [2 marks]

Answer: 28, 33

- 2 Write down the term-to-term rule for the sequence 2, 6, 18, 54, ... [1 mark]

Answer: multiply by 3

- 3 The n th term of a sequence is $4n + 3$. Write down the first three terms. [2 marks]

Answer: 7, 11, 15

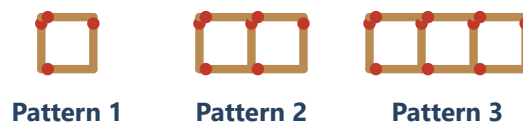
- 4 Find the n th term of the sequence 6, 11, 16, 21, ... [2 marks]

Answer: $5n + 1$

- 5 The n th term of a sequence is $4n - 1$. Is 150 a term of this sequence? You must show your working.

Answer: No [3 marks]

- 6 Here are the first three patterns made from matchsticks. Find the n th term, and the number of matchsticks in pattern 40. [3 marks]



Answer: 121 matchsticks

- 7 Here is a Fibonacci-type sequence: 3, 4, ?, 11, ? Find the two missing numbers. [2 marks]

Answer: 7, 18

- 8 The n th term of a sequence is $7n - 4$. Find the first term of this sequence that is greater than 200. [3 marks]

Answer: 206 (the 30th term)

- 9 Work out the 8th square number and the 5th cube number. [2 marks]

- (a) The 8th square number

Answer: 64

- (b) The 5th cube number

Answer: 125

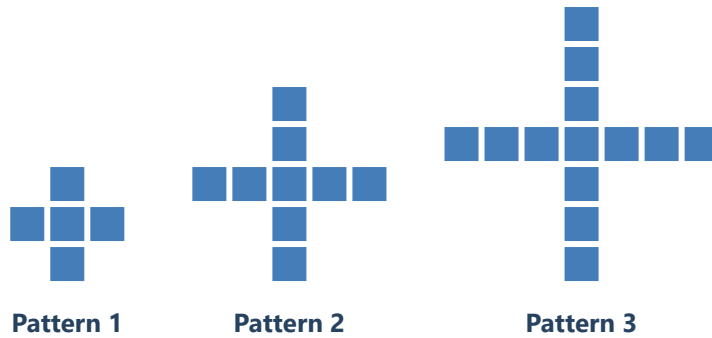
- 10 A van hire company charges a fixed fee plus a daily rate. The cost, in pounds, for 1, 2, 3, 4 days is 42, 54, 66, 78. Find the n th term of this sequence and use it to work out the cost of hiring the van for 15 days.

Answer: n th term $12n + 30$; 15 days cost £210 [4 marks]

- 11 The first term of a sequence is 4. The rule is "double the term and then subtract 1". Write down the next two terms. [2 marks]

Answer: 4, 7, 13

- 12 Here are the first three tile patterns. [4 marks]



- (a) Find the n th term for the number of tiles.

Answer: $4n + 1$

- (b) Which pattern has 101 tiles?

Answer: Pattern 25

- 13 Find the n th term of the quadratic sequence 2, 7, 14, 23, 34, ...

[3 marks]

Answer: $n^2 + 2n - 1$

- 14 In a geometric sequence the 2nd term is 12 and the 5th term is 96. All the terms are positive. Find the common ratio and the n th term of the sequence.

[4 marks]

Answer: $6 \times 2^{n-1}$

- 15 The first two terms of a geometric sequence are 3 and $3\sqrt{2}$. Write down the next two terms. Give each term as simply as possible.

[3 marks]

Answer: 6, $6\sqrt{2}$

- 16 The n th term of a sequence is $2n + 1$. Prove that the sum of any two consecutive terms is a multiple of 4.

Answer: $(2n + 1) + (2n + 3) = 4n + 4 = 4(n + 1)$

[3 marks]