Test - Sequences and nth term

Year: Year 9 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Term-to-term and nth term

Here are the first four terms of a sequence: $4, 9, 14, 19, \ldots$

a. Write down the next two terms. (1 mark)
b. Write down the term-to-term rule. (1 mark)
c. Find the nth term. (2 marks)

Question 2 (4 marks)

Question 2 – Using a formula

The nth term of a sequence is $4n - 3$.

a. Write down the first three terms. (1 mark)
b. Find the 20th term. (1 mark)
c. Is 99 a term of the sequence? Show your working. (2 marks)

Question 3 (4 marks)

Question 3 – A decreasing sequence

Here is a sequence: $25, 21, 17, 13, \ldots$

a. Find the nth term. (2 marks)
b. Find the first term of the sequence that is negative. (2 marks)

Question 4 (4 marks)

Question 4 – Problem: matchstick pattern

Pattern 1 uses 5 matchsticks, pattern 2 uses 9 and pattern 3 uses 13. The pattern continues.

a. Find the nth term for the number of matchsticks. (2 marks)
b. How many matchsticks are in pattern 25? (1 mark)
c. Which pattern uses 201 matchsticks? (1 mark)

Question 5 (4 marks)

Question 5 – A geometric sequence

Here is a sequence: $3, 12, 48, 192, \ldots$

a. Find the common ratio. (1 mark)
b. Write the next term. (1 mark)
c. Find the 7th term. (1 mark)
d. Explain why the sequence is not arithmetic. (1 mark)