KS3 Maths: revision notes

Sequences

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Sequences and rules

- A **sequence** is a list of numbers that follows a rule. The **term-to-term rule** tells you how to get from one **term** to the next.
- In an arithmetic (linear) **sequence**, the same amount is added or subtracted each time: 3, 7, 11, 15 (+4).
- In a **geometric sequence**, each **term** is multiplied by the same number: 2, 6, 18, 54 (×3).

Special sequences

- Square numbers: 1, 4, 9, 16, 25... Cube numbers: 1, 8, 27, 64...
- Triangular numbers: 1, 3, 6, 10, 15... (add 2, then 3, then 4...).
- Fibonacci numbers: 1, 1, 2, 3, 5, 8, 13... (add the two **terms** before).

The nth term

- The **nth term** is a position-to-**term** rule. For 3, 7, 11, 15, the difference is 4, so start with 4n; 4 × 1 = 4, and the first **term** is 3, so subtract 1: the nth term is 4n – 1.
- Use it to find any **term**: the 20th **term** is 4 × 20 – 1 = 79.
- To check whether a number is in the **sequence**, solve 4n – 1 = 99: n = 25, a whole number, so 99 is the 25th **term**.

Key terms

Sequence	A list of numbers that follows a rule.
Term	One number in a sequence.
Term-to-term rule	How to get from one term to the next.
Arithmetic sequence	A sequence that goes up or down by the same amount each time.

Your notes

Geometric sequence	A sequence where each term is multiplied by the same number.
nth term	A rule that gives any term from its position, such as 4n – 1.
Common difference	The amount added each time in an arithmetic sequence.
Fibonacci sequence	A sequence where each term is the sum of the two before it.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is the next term in 3, 7, 11, 15, ...?
2. What is the term-to-term rule for 5, 10, 20, 40, ...?
3. What is the next term in 2, 6, 18, 54, ...?
4. What is the next triangular number after 1, 3, 6, 10?
5. What is the next Fibonacci number after 1, 1, 2, 3, 5, 8?
6. What is the nth term of 3, 7, 11, 15, ...?
7. What is the nth term of 5, 8, 11, 14, ...?
8. The nth term of a sequence is 2n + 5. What is the 10th term?

Answers

1. 19
2. Multiply by 2
3. 162
4. 15
5. 13
6. 4n – 1
7. 3n + 2
8. 25

What to do next

Practise 12 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

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Your notes