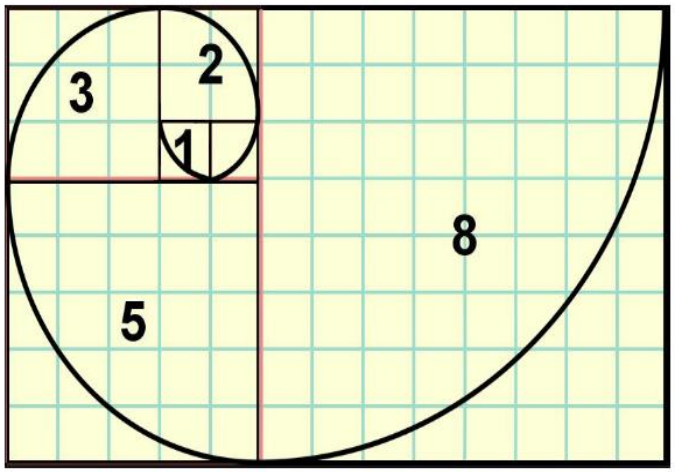
Algebra 1 – Sequences – Knowledge Organiser

Objective
Know and use the vocabulary associated with sequences
Work with a variety of number sequences such as Pascal's Triangle and Fibonacci
Identify special sequences from the patterns they produce
Work with sequences and their rules
Express sequence rules in different ways



Key Facts

A sequence is a series of numbers that follows a set pattern. Each number in a sequence is called a term.

Linear Sequence: A number pattern which increases or decreases by the same amount (common difference)
e.g. 4, 11, 18, 25,….

Quadratic Sequence: A sequence of numbers in which the second difference between consecutive terms changes by the same amount.
e.g. 7, 9, 13, 19,……

Special sequences:

Square numbers	1, 4, 9, 16, 25,…
Cube numbers	1, 8, 27, 64, 125,….
Triangular numbers	1, 3, 6, 10, 15,……
Fibonacci sequence	0, 1, 1, 2, 3, 5,……

Nth term of a linear sequence:

3, 8, 13, 18,…..
+5 +5 +5

First difference = +5

So based on 5 times table:

5, 10, 15, 20,……..5n
3, 8, 13, 18 5n – 2 -2

So nth term is **5n - 2**

Key words used in this unit:

Term-to-term – rule that links each term to the next one in a sequence

Arithmetic Sequence – a sequence of numbers such that the difference of any two successive terms is the same (common difference)

Geometric Sequence – a sequence of numbers such that the next term is found by multiplying the previous term by the same number (common ratio)

Position-to-term - rule that uses algebra to work out what number is in a sequence if the position in the sequence is known.

Nth term – another name for the position-to-term rule

Probing Questions to Check

Is 171 is in the sequence 3, 9, 15, 21, 27,….? Explain your reasoning.
What is the difference between n + 5 and 5n?