PATTERNS, PREDICTIONS, AND FIXING – OVERVIEW

Overview

This unit builds on students' understanding of algorithms developed in the previous programming unit. In this unit, students will develop their understanding that algorithms can include repeating instructions and patterns. They will learn that programmers often predict what will happen before instructions are followed. Students will develop their understanding that algorithms do not always work the first time and that mistakes can be fixed by changing the instructions. Students will learn that programming is a process of creating, testing, and improving instructions rather than a one-off task.

This unit focuses on developing students' computational thinking skills through practical, unplugged activities and simple representations of programs. It does not rely on block-based programming software so that these concepts can be explored in greater depth in later year groups.

Knowledge and understanding	Computing concepts
To understand what algorithms are.	Algorithm
To understand that programs follow precise and unambiguous instructions.	Sequencing
To understand that some instructions repeat.	Repetition
To understand that programs can be tested and improved.	Debugging
To understand that instructions can be predicted and evaluated	Logical reasoning

The Computing Curriculum

You can see where the knowledge and understanding developed in this unit fits into the computing curriculum in the table below:

Prior Learning	Future Learning
EYFS Unit: Introduction to Beebots and programmable toys.	Year 2 Unit: Debugging algorithms.
Year 1 Unit: Algorithms	Year 2 Unit: Scratch Jnr.
	Year 3 Unit: Introduction to Scratch.
	Year 3 Unit: Programming a quiz in Scratch.
	Year 4 Unit: Introduction to micro:bits.
	Year 4 Unit: Introduction to HTML.
	Year 5 Unit: Advanced micro:bits.
	Year 5 Unit: Programming simulations.
	Year 6 Unit: Scratch – coding a computer game.
	Year 6 Unit: Introduction to Python.

Cross-curricular links and extension activities

This unit provides opportunities for cross-curricular links to maths through identifying and creating patterns and sequences. Students will develop reasoning skills as they predict outcomes and explain their thinking. There are links to English as students describe, explain, and improve instructions using clear language. The unit also supports personal development by encouraging perseverance, problem-solving, and learning from mistakes.