



# Curriculum Overview

## Curriculum Area: Computing Year: 8

### Year 8 Curriculum:

#### **Autumn Term A: Vector graphics**

This unit offers pupils the opportunity to design graphics using vector graphic editing software. Pupils will be able to better understand the processes involved in creating such graphics and will be provided with the knowledge and tools to create their own.

#### **Autumn Term B: Representations**

This unit introduces binary digits to pupils as the symbols computers use to perform these tasks and focus on the representation of text and numbers.

#### **Spring Term A: Mobile app development**

In today's world, there is an app for every possible need. In this unit, pupils work through the entire process of designing and creating their own mobile app, using App Lab. Building on the programming concepts pupils used in previous units, they will work in pairs to perform user research, design their app, write the code for it, before finally evaluating and publishing it for the world to use

#### **Spring Term B: Developing for the Web**

In this unit, pupils will explore the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML, and CSS,

#### **Summer Term A: Introduction to Python Programming**

This unit introduces pupils to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection and iteration.,

#### **Summer Term B: Artificial Intelligence and Machine Learning**

This unit gives students a first insight into the fascinating world of Artificial Intelligence and Machine Learning. Pupils begin by considering where AI is used from simple problems such as solving a maze to those more advanced, such as self-driving cars. Pupils will then look at how machine learning and deep learning are used in image recognition. This is a fast-moving area of development, so the Ethics of AI is also considered.

### Links to National Curriculum

Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users  
Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation

Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits

Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables, or arrays]; design and develop modular programs that use procedures or functions

Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem.

### Knowledge and understanding of this curriculum will be assessed by:

Summative assessment at the end of each unit

Formative assessment throughout lessons

### Powerful Knowledge/Cultural Capital Opportunities

In Computing, all pupils will be taught to be courteous, respectful users of technology, who are responsible, competent and confident and creative users of information and communication technology at the highest level suitable for the future world society. All pupils will be equipped to use Computational Thinking and problem-solving skills and take them into the workplace as individuals who are computer literate and active participants in the digital world.