Computing

"The computer was born to solve problems that did not exist before" Bill Gates

Our curriculum equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

All pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Programme of Study

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Year 7	**Computing Systems and Computational Thinking** – Exploring the fundamental elements that make up a computer system.	**Flowol** – Logical reasoning comparing algorithms	**Digital Resilience** - How to stay safe on the internet.	**Animation –** Creating animations through object manipulation, and tweaking and adjusting lighting and camera angles	**Physical Programming** – Sensing and controlling with a micro-bit	**Model Data: Spreadsheets** sorting and filtering data and using formulas and functions in spreadsheet software	**Representations: from clay to silicon** Representing numbers and text using binary digits
Year 8	**Developing for the web** – Using HTML and CSS to create webpages	**Cybersecurity** – Identify how users and organisations can protect themselves from cyberattacks	**AI** – Impact of Technology – Applying the programming constructs of sequence, selection and iteration in scratch.	**Networks**: from semaphores to the internet – Recognising networking hardware and explaining how networking components are used for communication.	**Binary and Boolean –** To be able to carry out simple binary operations.	**Databases –** Looking at how data is stored	**Scratch – Programming essentials -** Using subroutines to decompose a problem.
Year 9	**Digital Graphics** – creating graphics through objects, layering, and path manipulation	**Festivals – IT Project –** Introduction to GCSE Business **Introduction to Python –** Applying the programming construction	**Introduction to Python –** Applying the programming construction	**Digital Resilience** – How to stay safe on the internet.	**3D Design –** through object manipulation.	**Data Science:** Looking at how data is stored	**Creating an App** Using event driven programming to create an online app *Computer Science pupils – Advance Python*