



# Year 10 Computing



## What have students at St. Crispin's been taught to understand and be able to do?

### Core Knowledge

#### Unit 1 – Computer Systems

Students will explain Logic gates and circuits, the Von Neuman architecture and the role of main and secondary memory, the components of the CPU and Fetch-Execute cycle.

#### Unit 2 – Data Representation

Students will convert from binary, decimal and hexadecimal, add multiply and divide binary numbers and calculate file sizes. They will understand character sets, sound, image and compression of data.

#### Unit 3 – Fundamentals of algorithms

Students understand algorithms expressed in pseudocode and flowcharts and use these to write algorithms. They can understand and explain decomposition, abstraction, efficiency, searching and sorting algorithms.

#### Unit 4 – Cyber security

Students are able to explain cyber security and cybersecurity threats. They can describe methods that suitable for protecting from cyber threats.

#### Unit 5- Programming concepts

Students understand and use data types, operators, variable declaration and assignment. They can apply programming techniques and constructs.

#### Unit 6 – Ethical, environmental and legal issues

Students learn about the laws that govern the use of computer systems and technology. They are able to discuss moral, ethical, legal, social and environmental issues regarding computer technology.

### Core Skills

- take a systematic approach to problem solving including the use of decomposition and abstraction, and make use of conventions including pseudo code and flowcharts
- design, write, test and refine programs, using one or more high-level programming language with a textual program definition, either to a specification or to solve a problem
- use appropriate security techniques, including validation and authentication
- evaluate the fitness for purpose of algorithms in meeting requirements efficiently using logical reasoning and test data
- use abstraction effectively
- to model selected aspects of the external world in a program
- to appropriately structure programs into modular parts with clear, well-documented interfaces.



## Year 10 Computing continued



### How has learning been assessed?

Year 10 students have end of unit assessments after each topic and a final mock exam that is a combination of paper 1 and paper 2 in the summer term.

### What is coming up in the following year?

Moving on into Year 11 gives the students many excellent opportunities to investigate how computers work and how they are used, and to develop computer programming-computational thinking and problem-solving skills.