Computer Science

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Curriculum Intent: To give all our students the opportunity to learn 'powerful knowledge' through a curriculum with computational thinking at its core. Our curriculum is designed with a balance of the three strands of; Computer Science, Information Technology and Digital Literacy with the aim of enabling all our students to be active participants in an increasingly digital society.

	Core Knowledge	Procedural Knowledge
Autumn	**Topics:** Collaborating online- safely and respectfully. Introduction to Computational Thinking & The Bebras Challenge (1) Abstraction, decomposition, pattern recognition and algorithms.	**Students will:** • Handle files across a network. Edit, create and modify documents using a range of different applications across school platforms. Develop skills using IT tools and technology. • Use technology safely, respectfully, responsibly and securely. • Know the steps to protect their online identity and privacy. • Recognise inappropriate content & contact. • Know how to report concerns. • Describe the term cyberbully, recognise the effect that cyberbullying can have and understand the consequences of cyberbullying • Understand how to recognise online grooming and know what I need to do to reduce the risks of me becoming a victim • Know what is meant by sexting, understand the consequences of sexting and know where to find help and advice about sexting • Apply decomposition, abstraction, pattern recognition and algorithmic thinking to help solve problems. • Articulate how computers use instructions. Recognise that computers follow the control flow of input/process/output.
Spring	**Topics:** Computer systems - part 1: Computer System fundamentals. Computer Systems 2: Networks and the Internet.	**Students will:** • Apply appropriate constructs to solve a problem and identify the key hardware and software components in computer systems & networks. • Identify how computer systems communicate with one another & with other systems. • Use a development environment to write, execute, and debug a Scratch program. • Use sequence, selection, repetition and subroutines in programs. Work with variables and various forms of input and output. Use debugging techniques to identify errors. • Apply formatting techniques and use basic formulas in spreadsheets. • Know how to identify data and information and primary and secondary sources.

	Topics:	Students will:
Summer	Block based programming in Scratch; an introduction to key programming constructs: Sequencing, selection (inc Boolean Operators) and an introduction to iteration.	• An introduction to the three basic programming constructs, Sequence, Selection & Iteration. Use of the PRIMM model to Predict, Run, Investigate, Modify and Make with existing programs. • Apply Decomposition, Subroutines, Condition-controlled iteration, and lists. Use computational thinking e.g. decomposition to solve problems. Debugging to find problems.

Homework:
Homework will be set on Class Charts for every six hours taught.
There will be a terminology revision and end of topic quiz each half term.

Assessment:
Student learning will be assessed through the use of progress tasks in lessons.
There will also be summative end of topic quizzes consisting of multiple choice and text-based questions.

Assessment January
Students will be assessed on topics from the Autumn Term. The assessment will be online and last 40 minutes. The format will be a mixture of multi-choice questions and text-based questions. Students will complete the assessment in their Computer Science class. A revision guide will be available on Class Charts

Assessment May
Students will be assessed on topics from the Autumn, Spring and early Summer Terms. The assessment will be online and last for 40 minutes. The format will be a mixture of multi-choice questions and text-based questions. Students will complete the assessment in their Computer Science class. A revision guide will be available on Class Charts.

Links to Personal Development:
Enabling students to recognise online risks to their own wellbeing. Students to recognise the dangers of inappropriate use of mobile technology and social media.
Promote inclusion: The cultural capital and inclusive skills of "Computational Thinking".
Develop students by encouraging them to take part in global competitions organised by leading universities. Computer Science opportunities are for everyone.
Build students' confidence, resilience with technology enhancing and preparing them for future success in education, employment and training, so that they can keep themselves mentally healthy and be economically successful.

How is my knowledge further developed in Year 8?
Computer Science in Y8 will continue to help you understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation. Through practical experience of solving such problems, including designing, writing, and debugging programs. You will use physical computing with micro:bits to apply your ideas in the real world. This will then lead on to text-based programming using Python. You will find out about careers in Computer Science.
You will continue to use technology safely, respectfully, responsibly, and securely. Developing your knowledge of staying safe online through developing your understanding of cybersecurity.
You will continue to develop your information technology skills and digital literacy by using a range of platforms, tools and technologies.