

Curriculum Map: Computing Year 8

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Content Declarative knowledge 'I Know'</p>	<p>Unit 1: Images and Algorithmic Art ...how images and colours are stored in binary ...how algorithms can be used to generate art</p> <p>Unit 2: Networking ...how devices communicate and work with each other</p>	<p>Unit 3: Python Programming ...how to use iteration in Python</p> <p>Unit 4: Careers: How Computing can help ...how and why Computing skills can be an asset to me in any career/subject I choose in the future.</p>	<p>Unit 5: Advanced Computational Thinking ... how to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems ... understand several key algorithms that reflect computational thinking</p> <p>Unit 6: Advanced Data Representation 1 ... how numbers can be represented in binary, and am able to carry out simple operations on binary numbers ...understand simple Boolean logic and some of its uses in circuits and programming</p>	<p>Unit 7: Advanced Python Programming ...how to make appropriate use of basic data structures in Python ... how to design and develop modular programs</p> <p>Unit 8: Designing Websites ...how to create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability ...about the key considerations that are needed for a good website design</p>	<p>Unit 10: Digital Literacy ... a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting my online identity and privacy.</p> <p>Unit 11: Advanced Data Representation 2 ... understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits</p>	<p>Unit 12: Flexi projects of pupil's choice: Programming with Python / Website design / Games with Construct in teams(groups)</p>
<p>Skills Procedural Knowledge 'I know how to'</p>	<p>... increasing the number of bits in a computer can increase the numbers of colours it can represent ... increasing the number of pixels can increase the resolution / quality of the image use decomposition to break down problems that I need to solve</p>	<p>...use tools in programming that allow sections of code to repeating until a condition is met ...know about how concepts of Computer Science are used in many different fields to enhance the output of those fields, and</p>	<p>... apply the building blocks that make up computational thinking in solving problems ...use classical Computer Science algorithms like bubble Sort to (efficiently) solve real world problems like sorting digital data ...how to manipulate binary data, for example,</p>	<p>...use tools in programming that allow multiple pieces of data to be stored together in structured form in memory called lists ...that it is easier to understand code or to find bugs in it if the code is broken into smaller parts called procedures / sub-routines what types of images/colours/text are</p>	<p>...understand the term sexting and how it relates to the law ...explain how young people can run afoul of the law if they are not careful online including distributing sexting images, harassment, copyright infringement and identity fraud.</p>	<p>...increasing my understanding of concepts learnt throughout years 7 and 8 by applying these to do a project of my choice ...independent learning</p>

	<p>...use basic instructions (algorithms) to create / edit simple patterns</p> <p>...fix some of the bugs in my code on my own but I may need help with others</p> <p>...appreciate the need for networking</p> <p>... name different types of networking hardware</p> <p>...name different network topologies</p> <p>...how the internet works</p>	<p>how I can use my Computing skills to make better progress in any career in a field of my choice.</p>	<p>by adding binary numbers.</p> <p>...how logic gates allow electronic circuits to make decisions using given inputs</p>	<p>suitable for different age groups/genders/communities</p> <p>...what criteria need to be met to produce an artefact so that it matches its purpose</p> <p>...users process information on a page in a certain order</p> <p>...how to design websites using tools such as house style, page layout and wireframe modelling.</p>	<p>...understand the terms pixel, bitmap and vector images</p> <p>...understand that analogue sound gets stored in a computer as digital sound through the process of sampling.</p>	
<p>Strategies</p> <p>Conditional Knowledge</p> <p>'I know when to'</p>	<p>...to have a high-resolution image it needs to have a high number of pixels</p> <p>...can decide when to use a switch/router/hub based on the requirements of a network</p> <p>...what are the key considerations when choosing an ISP</p>	<p>...when to use my knowledge of iteration ('While' loops) statement and adapt it based on the problem I have to solve e.g., whether to use a loop that repeats a fixed number of times or is user-input controlled</p>	<p>...that there can be several different algorithms for solving the same problem, but that each algorithm will have different levels of efficiency, so I need to choose algorithms that suit different situations carefully.</p>	<p>...when it is appropriate to use a list rather than a variable to hold data</p> <p>... to use the UI tools of colour, shapes, font, size efficiently, to guide the user to process information on my page in the intended order</p>	<p>...when to seek assistance and from whom, in case of situations with cyberbullying or sexting.</p> <p>...how I can make the digital sound richer by increasing the sampling rate of analogue sounds</p>	
<p>Key Questions</p>	<p>How does the number of bits a computer has, determine how many colours it can support?</p> <p>How do pixels affect the resolution of a device?</p> <p>What make a topology better than others?</p> <p>What is an IP address and an URL?</p> <p>What should I look for while choosing an ISP?</p>	<p>What are the basic elements used to build a program?</p> <p>When should I use iteration in a program?</p> <p>How can my Computing skills be of use to me in my career in other fields?</p>	<p>How can I use techniques like decomposition and pattern matching to solve problems efficiently?</p> <p>How is binary used to store various data types?</p> <p>How are logic gates used to make decisions in programming?</p>	<p>How I can use a list when I need to multiple pieces of data together.</p> <p>What do the terms Audience and Purpose mean?</p> <p>How does A terms Audience and Purpose play an important role in the UI / UX design of a website.</p>	<p>How can I be safe on the internet?</p> <p>What should I do if I am being cyber bullied?</p> <p>What is the correct way of using resources from the internet?</p> <p>Who is responsible in a distribution of sexting images case?</p>	<p>...whether I would like to take up a GCSE in Computer Science or Creative iMedia, or perhaps both, using my experience of all concepts that I have taught?</p>
<p>Assessment topics</p>	<p>Networking assessment</p>	<p>Python assessment</p>	<p>Classwork assessment</p>	<p>Classwork assessment</p>	<p>Python assessment</p> <p>Data Representation assessments</p>	

Cross curricular links/Character Education	Window into other cultures like Turkey and Greece, and subjects like Art and History.	Problem solving, Algorithmic Thinking. Resilience.	Problem solving, Logical Thinking. Resilience. Mathematics. Pattern matching.	Problem solving. Algorithmic Thinking. Catering to demographics. Accessibility.	Experience real-life problems. Safety/protecting personal information.	Problem solving, team building, independent learning. Resilience.