



# Curriculum map – Computer Science

YEAR 8	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
<b>TOPIC(s)</b>  What students will know	<b>8.1 Web awareness</b> <ul style="list-style-type: none"> <li>Getting Organised &amp; Computer Systems</li> <li>The School Network</li> <li>Wired and Wireless Networks</li> <li>Data and Privacy</li> <li>IoT and the cloud</li> <li>Assessment</li> </ul>	<b>8.2 Computational Thinking</b> <ul style="list-style-type: none"> <li>Bubble sort</li> <li>Searching algorithms</li> <li>Logic Gates</li> <li>Assessment &amp; Reading (George Boole)</li> </ul>	<b>8.3 The language of computers</b> <ul style="list-style-type: none"> <li>Levels of Language</li> <li>Hex/binary conversion</li> <li>Binary shifting</li> <li>Flowcharts</li> <li>Pseudocode</li> <li>Assessment &amp; Reading (Pioneers of Computing)</li> </ul>	<b>8.4 Learning the Syntax of Code: Text-based Programming</b> <ul style="list-style-type: none"> <li>Intro to Python</li> <li>Variables</li> <li>Data types (Basics)</li> <li>Selection (Basics)</li> </ul>	<b>8.4 Learning the Syntax of Code: Text-based Programming</b> <ul style="list-style-type: none"> <li>Creating a quiz</li> <li>Iteration (Basics)</li> <li>Debugging (Basics)</li> <li>Assessment</li> </ul>	<b>8.5 Artificial Intelligence</b> <ul style="list-style-type: none"> <li>The History of A.I.</li> <li>How does A.I. use data to learn?</li> <li>A.I. and Bias</li> <li>The future of A.I.</li> </ul>
	<b><u>Strand 1: Computer Science</u></b> <b>Science Networks:</b> <ul style="list-style-type: none"> <li>Recognise Network hardware</li> <li>wired vs wireless networks</li> <li>The difference between the internet and worldwide web.</li> <li>The internet of things and the dangers.</li> </ul> <b><u>Strand 2: Information Technology</u></b> Choosing suitable software when considering an audience.	<b><u>Strand 1: Computer Science</u></b> <ul style="list-style-type: none"> <li>Computers use algorithms to sort and search for data.</li> </ul> <b><u>Strand 2: Information Technology</u></b>  <b><u>Strand 3: Digital Literacy</u></b> <ul style="list-style-type: none"> <li>Websites and popular applications will use searching and sorting algorithms.</li> </ul>	<b><u>Strand 1: Computer Science</u></b> Students will learn <ul style="list-style-type: none"> <li>Three levels of language</li> <li>What hexadecimal is</li> <li>The purpose of a binary shift</li> </ul> <b><u>Strand 2: Information Technology</u></b>  <b><u>Strand 3: Digital literacy</u></b>	<b><u>Strand 1: Computer Science</u></b> Students will learn: <ul style="list-style-type: none"> <li>A text-based programming language (Python) with a focus on input/output, data types, arithmetic operations, variable creation and sequence and selection. The work is scaffolded to support learning the syntax of programming.</li> </ul> <b><u>Strand 2: Information Technology</u></b> <ul style="list-style-type: none"> <li>File management and how to execute a Python file.</li> <li>Python is software.</li> </ul> <b><u>Strand 3: Digital Literacy</u></b> <ul style="list-style-type: none"> <li>Awareness of free software.</li> </ul>	<b><u>Strand 1: Computer Science</u></b>  <b><u>Strand 2: Information Technology</u></b>  <b><u>Strand 3: Digital Literacy</u></b>	<b><u>Strand 1: Computer Science</u></b> <ul style="list-style-type: none"> <li>The definition of AI</li> <li>How AI uses data to learn.</li> <li>Three types of Machine Learning</li> </ul> <b><u>Strand 2: Information Technology</u></b> <ul style="list-style-type: none"> <li>How AI has developed over time.</li> <li>A.I. can be biased.</li> </ul> <b><u>Strand 3: Digital Literacy</u></b> <ul style="list-style-type: none"> <li>How AI could be used to solve BIG problems in the future.</li> <li>The benefits and dangers of AI in solving big world problems.</li> </ul>

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<p>What students will be able to do</p>	<p><b><u>Strand 1 Computer Science</u></b>  <b><u>Science</u></b>            Networks:</p> <ul style="list-style-type: none"> <li>Describe differences between wired, wireless and Bluetooth.</li> <li>List personal data that is at risk</li> <li>Name the Data Protection Act/GDPR</li> </ul> <p><b><u>Strand 2 Information technology</u></b></p> <ul style="list-style-type: none"> <li>Continued folder management, including the cloud to create digital artefacts.</li> <li>Use of:               <ul style="list-style-type: none"> <li>snipping tool</li> <li>suitable image choices</li> <li>effective poster design.</li> <li>Shape rotation</li> </ul> </li> </ul> <p><b><u>Strand 3: Digital Literacy</u></b></p> <ul style="list-style-type: none"> <li>Use the DPA to control their personal data.</li> </ul>	<p><b><u>Computer Science</u></b></p> <ul style="list-style-type: none"> <li>Demonstrate the steps of a bubble sort</li> <li>Name two searching algorithms.</li> <li>Draw three logic gates and complete a truth table.</li> </ul> <p><b><u>Strand 2 Information technology</u></b>            Use a table:</p> <ul style="list-style-type: none"> <li>highlight specific cells</li> <li>Use the fill tool to shade cells</li> <li>create a new row.</li> </ul> <p><b><u>Strand 3: Digital Literacy</u></b></p>	<p><b><u>Strand 1 Computer Science</u></b></p> <ul style="list-style-type: none"> <li>Hexadecimal conversion to and from binary.</li> <li>Shift binary numbers.</li> <li>Create a complex flowchart.</li> <li>Correct the input problem by using a variable.</li> <li>Convert flowcharts into pseudocode (independently)</li> </ul> <p><b><u>Strand 2 Information technology</u></b></p> <ul style="list-style-type: none"> <li>Create a hyperlink.</li> </ul> <p><b><u>Strand 3: Digital Literacy</u></b></p> <ul style="list-style-type: none"> <li>Awareness of clicking links that take you to other websites can be a risk.</li> </ul>	<p><b><u>Strand 1 Computer Science</u></b>            Use the python IDE.            Write simple programs with support using, input and output, variables, data types, arithmetic operators, random number generation, selection and simple debugging.</p> <p><b><u>Strand 2 Information technology</u></b></p> <ul style="list-style-type: none"> <li>Commenting code.</li> </ul> <p><b><u>Strand 3 Digital literacy</u></b></p> <ul style="list-style-type: none"> <li>access open-source software on the internet from reputable places.</li> </ul>	<p><b><u>Strand 1 Computer Science</u></b>            Write simple programs to learn the syntax of programming - using, selection, iteration and debugging errors.</p> <p><b><u>Strand 2 Information technology</u></b></p> <p><b><u>Strand 3 Digital literacy</u></b></p> <ul style="list-style-type: none"> <li>Use of version control.</li> </ul>	<p><b><u>Strand 1 Computer Science</u></b>            Classify data ready to train an A.I.</p> <p><b><u>Strand 2 Information technology</u></b>            Using different software (Canva) to create digital artifacts.</p> <p><b><u>Strand 3 Digital literacy</u></b>            Create an infographic            Collecting and storing images in folders.</p>