

## Curriculum Map Year 9: Computer Science

|             | Topic              | Key Knowledge<br><i>What will students know by the end of this topic?</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Key Skills<br><i>What skills will students have developed by the end of this topic?</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Assessment Opportunities<br><i>How will student progress be measured?<br/>What are the key assessment pieces?</i> |
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| Half Term 1 | 1. Theory          | <ul style="list-style-type: none"> <li>Advanced Binary: How to add binary numbers together and how shifting bits multiplies or divides a number.</li> <li>Hexadecimal: Understanding the base-16 system (0–F) and why computer scientists use it as shorthand for binary.</li> <li>Logic Circuits: Why computers use electrical circuits and the layout of three core logic gates (AND, OR, NOT).</li> <li>Compression: Why data is shrunk, the difference between lossy and lossless types, and how RLE and Huffman coding work.</li> <li>Networks: What a network is, the difference between local (LAN) and wide (WAN) networks, and the benefits of connecting devices.</li> </ul>                      | <ul style="list-style-type: none"> <li>Binary Maths: Adding two binary lines and performing left or right binary shifts accurately.</li> <li>Hex Conversions: Translating numbers smoothly between hexadecimal, binary, and decimal formats.</li> <li>Tracing Gates: Identifying logic gate diagrams and mapping how inputs change to outputs through a circuit.</li> <li>Shrinking Files: Applying RLE methods to compress data patterns without breaking them.</li> <li>Network Mapping: Explaining the perks of networks and sorting them into local or multi-location setups.</li> </ul>                        | Self-assessment<br>Quizzes<br>End of unit test with student reflection and actions                                |
| Half Term 2 | Bebras Challenge   | <ul style="list-style-type: none"> <li>Bebras rules: The layout and rules of the Bebras competition tasks.</li> <li>Thinking patterns: Basic ideas of breaking down problems, spotting patterns, and designing steps.</li> <li>Problem solving: Different ways to think through tricky logic puzzles.</li> <li>Coding links: How puzzle solving connects to writing computer code.</li> </ul>                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Logic analysis: Breaking big, unfamiliar problems into smaller pieces.</li> <li>Pattern spotting: Finding similarities in puzzles and ignoring unneeded details.</li> <li>Step-by-step thinking: Creating clear steps or rules to solve challenges fast.</li> <li>Resilience: Staying confident and trying again when tackling hard puzzles.</li> </ul>                                                                                                                                                                                                                      | Challenge scored remotely<br>Certificates                                                                         |
| Half Term 3 | 2. Web development | <ul style="list-style-type: none"> <li>Web Basics &amp; Design: Knowing key web terminology, how to break down client briefs, and how to plan layouts using wireframes.</li> <li>HTML Structure: Understanding that HTML builds the backbone and content of a page, including text tags, accessible images (using alt tags), and links.</li> <li>CSS Styling: Understanding that CSS controls the design, and knowing the structure of a CSS rule (Selector, Property, Value).</li> <li>Multi-page Sites: Knowing how to connect multiple pages into a full website using a styled navigation bar.</li> <li>Evaluation: Knowing how to test a finished website against a client's project goals.</li> </ul> | <ul style="list-style-type: none"> <li>Planning Layouts: Creating wireframe drawings that match what a client wants for their target audience.</li> <li>Coding Structure: Writing HTML tags for headings, lists, paragraphs, links, and accessible images.</li> <li>Applying Styles: Writing CSS code to change text alignments, fonts, backgrounds, and image sizes.</li> <li>Building Sites: Combining multiple HTML pages and a CSS navigation bar into a fully working website.</li> <li>Reviewing Code: Checking and improving wireframes and final code to make sure they match the project brief.</li> </ul> | Self-assessment<br>Quizzes<br>End of unit test with student reflection and actions                                |

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| Half Term 4 | 3. Javascript        | <ul style="list-style-type: none"> <li>Coordinate Drawing: How to use basic code functions (ellipse, rect, line) to place shapes on specific screen points.</li> <li>Fills &amp; Notes: How to use colour fills accurately and write code comments to explain your work.</li> <li>Variables &amp; Scales: How to use variables to store values and size drawing parts relative to each other.</li> <li>Motion &amp; Text: How animation works in code, how to follow mouse movements, and how to display text labels.</li> <li>Extension Logic: How to use math rules to rotate shapes accurately on the screen.</li> </ul>                                                                                 | <ul style="list-style-type: none"> <li>Plotting Shapes: Writing code to draw lines, rectangles, and circles exactly where you want them.</li> <li>Styling Code: Adding colours to shapes and using clear text comments inside your script.</li> <li>Coding Motion: Using variables and mouse inputs to make shapes move, change size, and react to the user.</li> <li>Printing Text: Code commands to display clear text on top of animations.</li> <li>Extension Skill: Applying code transformations to smoothly turn and rotate active shapes.</li> </ul> | Self-assessment<br>Quizzes<br>End of unit test with student reflection and actions                                |
| Half Term 5 | 4. Cyber Security    | <ul style="list-style-type: none"> <li>Data vs Information: Knowing the difference between raw facts (data) and processed meaning (information), and how websites use your online data.</li> <li>Cyber Threats: Understanding how threats like hacking, blagging, phishing, brute force attacks, and Distributed Denial of Service (DDoS) operate and impact users.</li> <li>Human Risk: Knowing how mistakes made by people can compromise digital systems.</li> <li>Tech Laws: Understanding the key rules and importance of the Data Protection Act (DPA) and the Computer Misuse Act (CMA).</li> <li>Defence Strategies: Knowing the exact methods used to block and minimise cyber threats.</li> </ul> | <ul style="list-style-type: none"> <li>Spotting Threats: Identifying and defining various cyber attacks and digital scams.</li> <li>Minimising Risks: Applying practical defence habits to protect accounts against brute force and social engineering.</li> <li>Analysing Impact: Explaining how human errors and network-level threats like DDoS attacks cause real-world damage.</li> <li>Legal Awareness: Sorting real-world scenarios into legal breaches according to the Data Protection Act and Computer Misuse Act.</li> </ul>                      | Self-assessment<br>Quizzes<br>End of unit test with student reflection and actions                                |
| Half Term 6 | 5. Digital Marketing | <ul style="list-style-type: none"> <li>Business Basics: Knowing the difference between physical goods and intangible services, and what a Unique Selling Point (USP) is.</li> <li>Branding &amp; House Style: Understanding how mood boards, brand values, targeted fonts, and combined vector shapes create a clear brand identity.</li> <li>Marketing Assets: Knowing the design rules needed to make posters and flyers stand out and stay easy to read.</li> </ul>                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Market Research: Sifting through existing businesses to gather design ideas and plan an original brand concept with a strong USP.</li> <li>Visual Design: Making inspirational mood boards and combining graphics to build a professional company logo.</li> <li>Creating Layouts: Applying a consistent house style to design clean, high-impact marketing posters and flyers.</li> </ul>                                                                                                                            | Self-assessment<br>Quizzes<br>End of unit test with student reflection and actions                                |

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|  |       | <ul style="list-style-type: none"><li>• Social Media Platforms: Understanding the key differences in audience and style between Facebook and Instagram.</li><li>• AI Marketing: Knowing how generative AI tools can be used to plan and draft commercial assets.</li></ul> | <ul style="list-style-type: none"><li>• AI Prompting: Using AI tools effectively to build realistic mock-up marketing posts tailored for a Facebook audience</li></ul> |                                                                                                                          |