



## KS3 Curriculum Map – Computing:

Topic	Knowledge <i>Substantive knowledge:</i> This is the specific, factual content for the topic, which should be connected into a careful sequence of learning.	Skills <i>Disciplinary knowledge:</i> This is the action taken within a particular topic in order to gain substantive knowledge.	Assessment Opportunities  What assessments will be used to measure student progress?
E-Safety	<p><b>E-safety</b></p> <ol style="list-style-type: none"> <li>1. Welcome to the computing lab</li> <li>2. Welcome to your workstation</li> <li>3. Respectful online communication</li> <li>4. Present to an audience 1</li> <li>5. Present to an audience 2</li> <li><b>6. Mid rotation assessment</b></li> <li>7 &amp; 8. Who are you taking to</li> <li>9 &amp; 10. Assessment/Feedback</li> </ol>	<ul style="list-style-type: none"> <li>• Learners will explain the potential dangers on the internet (e.g. cyber bullying, hacking).</li> <li>• Conduct research to be able to find definitions of key terms.</li> <li>• Students will create a poster to highlight the importance of e-safety.</li> <li>• Learners will research different methods on how to them safe on the internet.</li> <li>• Students will understand the steps to make a strong password.</li> <li>• Learners will be able to use their knowledge to be able to spot a phishing attempt.</li> <li>• Students will analyse the dangers and implications of using social media.</li> </ul>	<ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Peer assessment.</li> <li>• Formative assessment (Quizziz)</li> </ul>
Flowcharts and Python	<p><b>Flowcharts and Python</b></p> <ol style="list-style-type: none"> <li>1. Flowcharts</li> <li>2. Intro to Python</li> <li>3. Python errors and variables</li> <li>4. Python Data Types</li> <li>5. Python Operator</li> <li><b>6. Mid rotation assessment</b></li> <li>7. Python Selection</li> </ol>	<ul style="list-style-type: none"> <li>• Students will be able to understand algorithms and flow charts.</li> <li>• Explain python terminology data types, loop and variable etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Peer assessment.</li> <li>• Formative assessment (Quizziz)</li> <li>• PQWC</li> </ul>

	<ul style="list-style-type: none"><li>8. Python Iteration</li><li>9. Python for loop</li><li>10. Python review</li><li>11. Python assessment</li><li>12. Python consolidation</li></ul>		
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<p>Emerging Technologies</p>	<p><b>Emerging Technologies</b></p> <ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Biometrics</li> <li>3. Robotics</li> <li>4. Mobile Phones</li> <li>5. Technology and environment</li> <li><b>6. Mid rotation assessment</b></li> <li>7. Future Technology</li> <li>8. Impact of emerging technologies</li> <li>9. New and emerging technologies</li> <li>10. Living in a digital society</li> <li>11. What are robots</li> <li>12. Emerging Tech assessment</li> </ol>	<ul style="list-style-type: none"> <li>• Learners will be able to define the three main principles and how they are used to define and refine problems. (Abstraction, Decomposition and Algorithmic Thinking).</li> <li>• Learners should understand the three basic programming constructs used to control the flow of a program.</li> <li>• To be able to create and refine algorithms using flow charts.</li> <li>• Students will be required to create a simple flow chart diagrams to show the structure of a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Baseline assessment.</li> <li>• Peer assessment.</li> <li>• Formative assessment (Quizziz)</li> </ul>
<p>How Computers Work</p>	<p><b>How Computers Work</b></p> <ol style="list-style-type: none"> <li>1. What is a computer</li> <li>2. What is inside a computer</li> <li>3. How the Computer works</li> <li>4. File extensions</li> <li>5. Representing characters</li> <li><b>6. Mid rotation assessment</b></li> <li>7. Logic Gates</li> <li>8. Computers assessment</li> <li>9. Computers consolidation</li> </ol>	<ul style="list-style-type: none"> <li>• Recap sequence, selection and iteration and understand how to refine a program using these within the micro-bit.</li> <li>• Students will understand what variables are and why and when to use them in a program.</li> <li>• Learners will understand how to create variables.</li> <li>• Understand the importance of iteration in programming.</li> <li>• Students will understand looping as a form of iteration.</li> <li>• Learn when to use the looping blocks 'repeat' 'while' and 'for'.</li> <li>• Students will understand what conditional statements are and why and when to use them in a program.</li> <li>• Learners will be required to use 'IF' statements blocks.</li> </ul>	<ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Baseline assessment.</li> <li>• Peer assessment.</li> <li>• Formative assessment (Quizziz)</li> </ul>

		<ul style="list-style-type: none"> <li>• Students will be able to create and modify spreadsheets.</li> <li>• Learners will be able to analyse and manipulate data.</li> <li>• Students will learn how to use AUTOSUM, MAX/MIN and COUNT functions.</li> <li>• Learners will use a range of tools to create graphs to analyse data.</li> </ul>	<ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Baseline assessment.</li> <li>• Peer assessment.</li> <li>• Formative assessment (Quizziz)</li> <li>• PQWC</li> </ul>
Computer Hardware	<p><b>Computer Systems</b></p> <ol style="list-style-type: none"> <li>1. Computer Systems and system software</li> <li>2. Under the hood</li> <li>3. Orchestra Conductor</li> <li>4. It is only logical</li> <li>5. Thinking machines</li> <li>6. Mid-term assessment</li> <li>7. Main memory</li> <li>8. Secondary Storage</li> <li>9. Assessment</li> </ol>	<ul style="list-style-type: none"> <li>• Learners should understand the purpose of the CPU including the F-D-E cycle.</li> <li>• Describe the common CPU components and their functions: ALU, Cache, Registers.</li> <li>• Learners should be able to understand the need for secondary storage.</li> <li>• Be able to understand and define the different types of secondary storage.</li> <li>• By the end of the unit learners should be able to list different secondary storage devices.</li> <li>• Learners should be able to understand the purpose of RAM.</li> </ul>	<ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Baseline assessment.</li> <li>• Peer assessment.</li> <li>• Formative assessment (Quizziz)</li> <li>• PQWC</li> </ul>
Data Representation	<p><b>Web Development</b></p> <ol style="list-style-type: none"> <li>1. Website building Zones</li> <li>2. Words are not enough</li> <li>3. Taking Shortcuts</li> <li>4. Searching the web</li> <li>5. Tightening the web</li> <li>6. Midway Assessment</li> <li>7. Navigating the web</li> <li>8. Creating a link</li> <li>9. Creating a form</li> <li>10. Assessment</li> </ol>	<ul style="list-style-type: none"> <li>• Understand the use of binary shifts</li> <li>• Understand the use of binary codes to represent characters</li> <li>• Understand the term 'character set'</li> <li>• Explain the relationship between the number of bits per character in a character set, and the number of characters that can be represented using: <ol style="list-style-type: none"> <li>1. ASCII</li> <li>2. Extended ASCII</li> <li>3. Unicode</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Linked Homework &amp; Classwork</li> <li>• Mid-Year Assessment</li> <li>• End of Year Assessment</li> <li>• PQWC</li> </ul>

<p>Data Representation</p>	<p><b>Data Representation</b></p> <ol style="list-style-type: none"><li>1. Binary</li><li>2. Hexadecimal</li><li>3. Adding in Binary and Binary overflow</li><li>4. Binary Addition</li><li>5. Binary shift</li><li>6. Character Set</li><li>7. Images that are represented in Binary</li><li>8. Metadata, colour depth and resolution</li><li>9. How sound is stored digitally</li><li>10. Data Representation Assessment</li></ol>	<p>Students will be able to:</p> <ul style="list-style-type: none"><li>• Construct truth tables for the following logic gates:<ol style="list-style-type: none"><li>1. NOT</li><li>2. AND</li><li>3. OR</li></ol></li><li>• Construct truth tables for simple logic circuits</li><li>• Create, modify and interpret simple logic circuit diagrams</li></ul>	<ul style="list-style-type: none"><li>• Linked Homework &amp; Classwork</li><li>• Mid-Year Assessment</li><li>• End of Year Assessment</li><li>• PQWC</li></ul>
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<p>Mobile App Development</p>	<p><b>Mobile App Development</b></p> <ol style="list-style-type: none"> <li>1. App for that</li> <li>2. Tappy tap tap</li> <li>3. School lab studios</li> <li>4. User Input</li> <li>5. App Development</li> <li>6. Project Development</li> </ol>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• List ethical issues, cultural issues and environmental issues in relation to a given scenario</li> <li>• List items of legislation that relate to digital technology</li> <li>• Discuss the impacts of digital technology on the wider society including ethical issues, cultural issues and environmental issues</li> <li>• Discuss the impact of manufacture, disposal, upgrading and replacing digital technology</li> <li>• Discuss the impact of e-waste</li> <li>• Discuss the impact of digital technology regarding legal issues and privacy issues</li> <li>• Describe legislation relevant to Computer Science including <ul style="list-style-type: none"> <li>o The Data Protection Act 2018</li> <li>o Computer Misuse Act 1990</li> <li>o Copyright Designs and Patents Act 1988</li> </ul> </li> <li>• Describe the features of open source and proprietary software licences</li> <li>• List the clauses of the Data Protection Act and Computer Misuse Act and give examples of situations in which they are relevant</li> <li>• Evaluate the impact of and issues related to the use of computers in society</li> </ul>	<ul style="list-style-type: none"> <li>• Linked Homework &amp; Classwork</li> <li>• Mid-Year Assessment</li> <li>• End of Year Assessment</li> <li>• PQWC</li> </ul>
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<p>Programming Skills</p>	<ul style="list-style-type: none"> <li>• Programming Constructs – Sequence, Selection &amp; Iteration.</li> <li>• Variables &amp; Data Types - integer, real, Boolean, character, string.</li> <li>• Type casting</li> <li>• Input and output</li> <li>• If statements</li> <li>• String manipulation</li>   <li>• Programming Project – Scratch Game Development</li> </ul>	<ul style="list-style-type: none"> <li>• Understand and use data types: integer, real, Boolean, character and string</li> <li>• Declare and use constants and variables</li> <li>• Use input, output and assignment statements</li> <li>• Use random number generation</li> <li>• Write algorithms in pseudocode involving sequences</li> <li>• Use arithmetic operators including MOD and DIV</li> <li>• Use string handling and conversion functions</li> <li>• Use selection and nested selection statements</li> <li>• Use NOT, AND and OR when creating Boolean expressions</li> <li>• Understand and use iteration in an algorithm</li> <li>• Write algorithms in pseudocode involving sequence, selection and iteration</li> </ul>	<ul style="list-style-type: none"> <li>• Linked Homework &amp; Classwork</li> <li>• Mid-Year Assessment</li> <li>• End of Year Assessment</li> <li>• PQWC</li> </ul>
<p>Careers</p>	<ul style="list-style-type: none"> <li>• Students explore the emergence of STEM-related careers and how this has affected the wider community.</li> <li>• Students research careers in Computing, with an emphasis on emerging technologies</li> <li>• Quantum Computing</li> </ul>	<ul style="list-style-type: none"> <li>• Learners will work in groups and work cohesively to produce a presentation on the future of STEM technologies and careers in the field.</li> <li>• Learners will develop a further understanding of how Computing is influencing other sectors of work.</li> </ul>	<ul style="list-style-type: none"> <li>• Linked Homework &amp; Classwork</li> <li>• Mid-Year Assessment</li> <li>• End of Year Assessment</li> <li>• PQWC</li> </ul>