

# COMPUTING Year 8 Curriculum End Points and Key Vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Ethos Links	<p><b>STEM</b> – problem solving when creating programs using sequence, variables, selection, and iteration, applying rules for creating variables and using correct data types, interpreting and fixing syntax errors, using comments to improve program clarity, and applying comparison and logical operators to control program flow</p> <p><b>Character</b> – resilience in debugging and fixing syntax errors, perseverance in learning a more complex programming language, responsibility in writing clear and efficient code, critical thinking in designing algorithms with logical and comparison operators, and professionalism in applying programming skills to solve problems</p>	<p><b>STEM</b> – problem solving through converting between binary and denary, applying knowledge of bits, nibbles, bytes, and larger units of storage, understanding binary addition and overflow errors, designing and explaining algorithms with flowcharts, applying knowledge of sensors, actuators, variables, and subroutines, and exploring how control systems are used in real-world applications such as theme park rides</p> <p><b>Character</b> – resilience in mastering binary conversions, calculations, and technical concepts such as sensors and actuators, critical thinking in applying binary rules and designing/evaluating algorithms, responsibility in accurate data representation and in applying control systems safely and ethically, and professionalism in presenting technical working clearly and linking theoretical knowledge to real-world applications</p>	<p><b>STEM</b> – problem solving when applying advanced functions, using validation to create accurate and user-friendly spreadsheets, sorting data and running queries to extract meaningful information, and developing efficiency through recording, editing, and assigning macros to automate processes</p> <p><b>Character</b> – resilience when mastering complex functions and macros, responsibility in handling and presenting data accurately, critical thinking in querying and interpreting results, and professionalism in producing well-structured, efficient, and purposeful spreadsheets</p>	<p><b>Milton Keynes</b> – recognising how AI is increasingly used in local industries such as transport, retail, and healthcare, understanding the impact of automation on jobs within the city, and considering how ethical issues surrounding AI affect the local community</p> <p><b>STEM</b> – problem solving when analysing how rules, facts, and algorithms are applied in AI decision making, applying knowledge of binary data and pattern recognition, exploring techniques for machine learning and sentiment analysis, and critically evaluating the strengths and weaknesses of AI systems</p> <p><b>Character</b> – critical thinking in discussing ethics and bias in AI, resilience in tackling challenging abstract concepts like the Turing test and machine learning, responsibility in evaluating the social impact of AI on jobs and decision making, and professionalism in debating opportunities and problems of AI in society</p>	<p><b>STEM</b> – problem solving when applying HTML tags and CSS codes, developing knowledge of navigation systems and web forms, creating consistent designs using templates, and applying computational thinking to build and structure webpages effectively</p> <p><b>Character</b> – creativity in designing original webpages, resilience in debugging and refining code, responsibility in producing clear and accessible web content, critical thinking in evaluating design choices, and professionalism in applying HTML and CSS to create purposeful digital solutions</p>	<p><b>STEM</b> – problem solving when breaking down problems using decomposition, applying knowledge of events, variables, selection and iteration in a block-based programming environment, designing and developing mobile phone applications that meet user needs, reflecting and reacting to feedback to improve solutions, and evaluating the success of projects through testing and iteration</p> <p><b>Environmental Sustainability</b> – considering how mobile technology can be used to promote sustainable practices (e.g. apps that track energy use, encourage recycling, or reduce waste), and recognising the importance of efficient coding to reduce unnecessary resource consumption</p> <p><b>Character</b> – creativity in designing original applications, resilience when debugging and refining code, responsibility in addressing user needs ethically, critical thinking in evaluating project success, and professionalism in presenting and improving digital solutions based on feedback</p>
Learning End Points	<p><b>Small Basic</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>How to use a text based programming language to create programs using sequence, variables, selection and iteration</li> <li>The rules for creating variables</li> </ul>	<p><b>Data Representation</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>Why computer systems use binary</li> <li>How to convert numbers to and from binary</li> <li>Define the terms bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte</li> </ul>	<p><b>Advanced Spreadsheets</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>The structure and use of a range of more advanced functions</li> <li>How to use validation to create drop-down lists</li> <li>How to sort data and run simple queries</li> </ul>	<p><b>AI &amp; Machine Learning</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>The origin and uses of AI</li> <li>How rules are used in AI decision making</li> <li>What ethics is by considering some simple ethical hypothetical problems</li> </ul>	<p><b>HTML &amp; Web Development</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>What HTML is and where it is used</li> <li>What CSS is and how it can be used when web developing to enhance a webpage</li> </ul>	<p><b>Mobile Phone Development</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>When a problem needs to be broken down using decomposition</li> <li>That events can control the flow of a program</li> <li>How to pass the value of a variable into an object</li> </ul>

	<ul style="list-style-type: none"> <li>• What a syntax error is and how to interpret an error message within the small basic environment</li> <li>• The use and value of using comments</li> <li>• The importance of using correct data types</li> <li>• How to use different comparison operators</li> <li>• How to use different logical operators</li> </ul>	<ul style="list-style-type: none"> <li>• Understand that data needs to be converted into a binary format to be processed by a computer</li> <li>• The rules when adding binary numbers together</li> <li>• What a binary overflow error is</li> </ul> <p><b>Flowol</b> By the end of this unit students will know and understand:</p> <ul style="list-style-type: none"> <li>• How flowcharts are used to explain algorithms</li> <li>• How control systems are used in theme park rides such as rollercoasters</li> <li>• Common types of sensors used in control systems</li> <li>• The purpose of subroutines</li> <li>• The advantages of using subroutines</li> <li>• What actuators are used for in control systems</li> <li>• What a variable is and explain how variables can be used to control systems</li> </ul>	<ul style="list-style-type: none"> <li>• The use of macros to automate processes and know how to record, edit and assign macros</li> </ul>	<ul style="list-style-type: none"> <li>• How intelligence can be measured in humans and computers</li> <li>• What the Turing test is and how it works</li> <li>• The difference between facts and rules</li> <li>• Describe uses of machine learning</li> <li>• What ethics is by understanding and discussing ethical issues as they relate to AI</li> <li>• How jobs can be affected by AI and automation</li> <li>• Issues that make facial recognition difficult</li> <li>• How images are stored as binary data</li> <li>• A technique for detecting patterns in a grid of pixels</li> <li>• The analysis of text to rate an attitude or opinion</li> <li>• Discuss the strengths and weaknesses of machine learning</li> <li>• How bias can be introduced into AI algorithms and machine learning</li> <li>• The opportunities and problems of using AI for sentiment analysis</li> <li>• Why interpreting patterns is not as useful a skill as 'thinking'</li> </ul>	<ul style="list-style-type: none"> <li>• What a navigation system is used for on a website</li> <li>• What a web form is and what it is used for</li> <li>• A range of HTML tags</li> <li>• A range of CSS codes</li> <li>• How a HTML and CSS template can be used to create a consistent look and feel to each page</li> </ul>	<ul style="list-style-type: none"> <li>• How to use a block based programming language (AppLab) to create a mobile phone application using sequence, variables, selection and iteration</li> <li>• How to establish user needs</li> <li>• How to reflect and react to user feedback</li> <li>• How to evaluate the success of a programming project</li> </ul>
<p><b>Key Vocabulary</b></p>	<ul style="list-style-type: none"> <li>• <a href="#">Small Basic Keywords</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Data Representation Keywords</a></li> <li>• <a href="#">Flowol Keywords</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Advanced Spreadsheets Keywords</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">AI &amp; Machine Learning Keywords</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">HTML &amp; Website Development Keywords</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Mobile Phone Development Keywords</a></li> </ul>