

## Curriculum Information Year 9

Autumn Term

Unit title	Key Questions	Knowledge	Assessing Understanding
<p>Back to the Future &amp; Computing Careers</p>	<p>Who are the following individuals and what impact have they had on Computing - Alan Turing, Tim Berners Lee, George Boole and Charles Babbage.</p>	<p>Understanding who Alan Turing was, how messages can be encrypted using ciphers, and how to use a cipher key to decipher codes</p> <p>Understanding who Sir Tim Berners-Lee is, what the World Wide Web (WWW) is, how it differs from the Internet, how the WWW was born, and how to write a simple web page</p> <p>Understanding who George Boole was, what Boolean logic is, and what logic gates are and how they are used in a CPU</p> <p>Understanding who Charles Babbage was, what he did, and how "problem solving" and "logical thought" underpin Computer Science.</p>	<p><b>How understanding is assessed</b> Students complete a series of online tasks for this unit of work</p> <p>Teacher assessment of tasks completed across the unit</p> <p><b>Skills</b> Students gain an understanding and can apply cryptography techniques</p> <p>Students produce a series of logic gate diagrams for given situations</p> <p>Students produce a simple webpage in HTML</p> <p>Students have an opportunity to develop their problem solving skills across the unit of work.</p> <p><b>Assessment Point Information</b></p> <p>MCQ on Google Forms at the end of the unit <b>unit data used to complete Progress check A</b></p>

<p>Algorithms &amp; Flowcharts - Python</p>	<ul style="list-style-type: none"> <li>• Why do we need to declare the datatype when not working with strings?</li> <li>• Can you explain the different types of iteration?</li> <li>• Why use variables?</li> <li>• <b>List Operations:</b> Introduce the <code>len</code> function and the <code>in</code> operator for lists</li> </ul>	<p>The unit focuses on Python programming fundamentals, control flow, and data structures:</p> <p><b>Programming Basics and Control Flow (Recap)</b></p> <ul style="list-style-type: none"> <li>• Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements.</li> <li>• Use selection (<code>if-elif-else</code> statements) to control the flow of program execution.</li> <li>• Locate and correct common syntax errors.</li> </ul> <p><b>Data Structures (Lists and Strings)</b></p> <ul style="list-style-type: none"> <li>• Create lists and access individual list items.</li> <li>• Perform common operations on lists, individual list items, strings, or individual characters.</li> <li>•</li> </ul> <p><b>Iteration and Problem Solving</b></p>	<p><b>How understanding is assessed</b></p> <p>In-lesson questions and practical application tasks</p> <p><b>Skills</b> Students develop their programming and problem solving skills</p> <p>Paired programming tasks also provide students with the opportunity to develop their oracy skills</p> <p><b>Assessment Point Information</b></p> <p><i>unit data used to inform Progress check B</i></p>
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		<ul style="list-style-type: none"> <li>• Use iteration (while statements and for statements/loops) to control the flow of program execution</li> <li>• Combine key programming language features to develop solutions to meaningful problems.</li> </ul>	
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Spring Term

Unit title	Key Questions	Knowledge	Assessing Understanding
Census	<p>What is a census and why is it important to you in your community?</p> <p>How does the government use the census data to inform decision making?</p> <p>What is a database and how can we extract and present data from a database?</p>	<p>Students gain an understanding of what the census is, how this helps inform decision making and students undertake a study to see how the latest census data provides a picture of our local area</p> <p>Students use census data on a specific location to extract information using database filters, queries and learn how to present this data in database</p>	<p><b>How understanding is assessed</b> Students complete a series of worksheets in Google classroom which is assessed by the teacher</p> <p>Students are able to successfully demonstrate database skills</p> <p><b>Skills</b> How to use Microsoft Access to extract information from a database using filters and queries</p> <p>To be able to present information extracted from</p>

		reports.	<p>database queries and present this in reports</p> <p>To be able to produce a presentation on census data in the local borough in which they live</p> <p><b>Assessment Point Information</b> <b>unit data used to inform Progress check B</b></p>
Big Data	<p>What is data science?</p> <p>What is visualising the data showing us?</p> <p>What insights does the data provide us with?</p> <p>Explain why correlation does not always mean causation.</p> <p>How can we use data to help us improve our school community by reducing our waste and recycling as much as we can?</p>	<p>Define data science</p> <p>Explain how visualising data can help identify patterns and trends in order to help us gain insights.</p> <p>Use an appropriate software tool to visualise data sets and look for patterns or trends.</p> <p>Define the terms 'correlation' and 'outliers' in relation to data trends.</p> <p>Identify the steps of the investigative cycle.</p> <p>Solve a problem by implementing steps of the investigative cycle on a data set.</p>	<p><b>How understanding is assessed</b></p> <p>Progress is monitored in class and by the work students complete in class which is marked in Google Classroom</p> <p><b>Skills</b></p> <p>Students can explain how visualising data can help us identify patterns and trends.</p> <p>Recognise examples of where large data sets are used in daily life.</p> <p>Students are able to use software to visualise data sets and look for patterns or trends.</p> <p>Students are able to select criteria and use data sets to investigate predictions.</p> <p>Students are able to solve a problem by implementing steps of the investigative cycle on a data set.</p> <p>Able to apply data cleansing techniques to a data set.<sup>1</sup></p>

			<p>Able to extract data, draw conclusions and make recommendations based on the data</p> <p><b>Assessment Point Information</b></p> <p><b>unit data used to inform Progress check B</b></p>
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Summer Term

Unit title	Key Questions	Knowledge	Assessing Understanding
Cyber Security	<p>What are the greatest cyber security threats?</p> <p>Is it ever ethical to hack?</p> <p>What security and protection measures can a company deploy to protect their system and data?</p>	<p><b>Legislation and Data:</b> Explain the difference between data and information, identify what happens to data entered online, and explain the need for the Data Protection Act and the Computer Misuse Act.</p> <p><b>Threats and Attacks:</b> Define hacking, explain how a DDoS attack can impact users, identify strategies to reduce brute force attacks, and list common malware threats.</p> <p><b>Risk Management:</b> Recognise how human errors pose security risks</p>	<p><b>How understanding is assessed</b></p> <p>Student work in the Cyber Security unit is assessed through ongoing formative checks and a final summative assessment</p> <p><b>Skills</b></p> <p><b>Data Privacy &amp; Ethics:</b> Students can critique online services in relation to data privacy and know the key principles of the DPA, and understand the consequences of data theft.</p> <p><b>Security Risks:</b> Implement strategies to minimise data compromise through human error, know the difference</p>

		<p><b>Prevention:</b> Examine how different types of malware cause problems, question how malicious bots can impact societal issues and be able to explain how networks can be protected</p>	<p>between ethical and unethical hacking, and decide whether specific scenarios breach the Computer Misuse Act.</p> <p><b>Risk Analysis &amp; Protection:</b> Understand the difference between a DOS and DDOS attack, produce a risk analysis comparing the impact and probability of common cyber threats, and know how networks can be protected from common threats.</p> <p><b>Assessment Point Information</b> Summative assessment at the end of the unit of work <b>unit data used to inform Progress check B</b></p>
<p>Digital Skills and Introduction to iDEA</p>	<p>What digital skills will help me in my future career?</p> <p>Who owns the image if it is generated using AI?</p> <p>Why should I complete the iDEA award if I am not taking GCSE Computer Science?</p>	<p>Students learn how to produce a written report using headers/footers, heading styles, and a Table of Contents.</p> <p>Use graphics tools and AI to create images</p> <p>Recap research skills including advanced searches</p> <p>Using a spreadsheet to work out the costs related to their chosen scenario and understanding how using formulas and functions can help answer 'What if' scenarios.</p>	<p><b>How understanding is assessed</b></p> <p>Class discussions are built into the unit, such as addressing the ethical question: "Who owns the image if it is generated using AI?"</p> <p>Classwork is monitored and formative assessment provided by teacher, as well as paired feedback on tasks completed in the first part of the unit</p> <p>When work on iDEA certification commences student progress is tracked on the iDEA platform.</p>

		<p>Introduction to the iDEA platform and the concept of the award, with students working towards completing their bronze award between now and the end of Year 10.</p>	<p><b>Skills</b> Students develop practical skills in the following applications: Word processing, mindmapping tools, spreadsheets, graphics applications in the context of a mini group project.</p> <p>Students work towards completing the bronze iDea award so they have a basic certification of digital skills by the end of year 10 which they can then put on their CV for work experience.</p> <p><b>Assessment Point Information</b></p>
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