



Learning Aims and Curriculum Intent:

Understand and apply the fundamental principles and concepts of Computer Science, including problem solving, logic, algorithms, and programming • analyse problems in computational terms, and have exposure to practical experience of writing computer programs in order to solve such problems • learn about, discuss and evaluate both new and unfamiliar technologies • become responsible, confident and creative users of Computer Science and related technologies • understand the components that make up digital systems, and how they communicate with one another and with other systems • understand the impacts of digital technology to the individual and to wider society.

Term	Content, Key Questions and Knowledge	Skills	Assessment
Michaelmas	<p><u>Data representation</u></p> <ul style="list-style-type: none"> • Units of computer memory • Data structures and data compression • Data in the form of binary digits <p><u>Algorithms</u></p> <ul style="list-style-type: none"> • Computational thinking • Binary/denary numbers • Flowcharts <p><u>Computational logic</u></p> <ul style="list-style-type: none"> • Boolean logic • Boolean operators • Arithmetic operations 	<p>Implement the decomposition of large problems into smaller sub-problems.</p> <p>Represent the above process using flowcharts.</p> <p>Creation of truth tables using standard logic gates (AND/OR/NOT)</p> <p>Deriving the output of a logic statement using Boolean operators.</p> <p>State the output of an algorithm using standard arithmetic operators.</p> <p>Understand that computer memory or storage are measured using different units.</p> <p>Understand the purpose of data compression in terms of storage and compression.</p> <p>Understand how data can be represented digitally, in the form of binary digits for:</p> <ul style="list-style-type: none"> • Text • Sounds • Pictures 	<p>2 summative assessments to be sat for this unit.</p> <p>Each will be sat before the respective half term break.</p>

Lent	<p><u>Programming techniques</u> <u>Students will be introduced to the following programming concepts using the Python programming language.</u></p> <ul style="list-style-type: none"> • Variables • Input • Output • Storage of data • Sequence • Selection • Iteration • Operators • Comments <p><u>Computer hardware</u></p> <ul style="list-style-type: none"> • Components of a computer • Internal components of a computer and their function • Peripherals and their function. <p><u>Computer memory and storage</u></p> <ul style="list-style-type: none"> • Primary Storage • Secondary Storage <p><u>Computer software</u></p> <ul style="list-style-type: none"> • Operating Systems • System Software • Types of utility software in different contexts • Types of application software in different contexts <p><u>Moral, legal, and environmental concerns</u></p> <ul style="list-style-type: none"> • Moral issues • Legal issues • Environmental issues • Open source and proprietary software • Computer Science legislation 	<p>Use the listed programming conventions to address various computational scenarios.</p> <p>Developing skills from the Michaelmas term, students will complete an extended programming project covering all aspects of a development life cycle.</p> <p>Classify the components of a computer. Identify the basic function of the common internal components of a computer. Identify the basic functions of common peripherals, Identify a range of operating systems.</p> <p>Identify a range of common application software packages, State the purpose of different system utilities,</p> <p>Describe the purpose of primary memory, Describe common storage technologies,</p> <p>State the purpose of each of the following legislations:</p> <ul style="list-style-type: none"> • Data Protection Act (1998) • Computer Misuse Act (1990) • Copyright, Design and Patents Act (1998). 	<p>Extended programming project to be completed by end of first Lent half term</p> <p>First summative assessment to be sat in second Lent half term.</p>
Trinity	<p>Continuation of previous material.</p> <p>On conclusion of the final assessment, students will be introduced to the concepts of data science and cyber security.</p> <p>Students will also have the opportunity to develop programming skills practised as part of progression through the Year 9 curriculum.</p>	<p>Analysis and visualisation of data.</p> <p>Common cybersecurity threats.</p> <p>Countermeasures to common cybersecurity threats.</p>	<p>Second summative assessment for this unit to be completed in early Trinity term.</p> <p>Extended programming challenges beyond this point.</p>

What consolidation looks like in this subject	Opportunity to use skills covered as part of discrete topics in a full programming project, involving the use of computational thinking, algorithm design, programming implementation, testing and project evaluation.	
Examples of Homework	Practice questions. Opportunity for independent study on specified topics to develop greater understanding.	
Key terminology	Sequence, Selection, Iteration, Memory, Storage, Peripheral, Open Source, Proprietary, Integer, Float, Boolean, String,	
Super-curricular enrichment and scholarly extension	<p>Read: Computing Sharepoint Site (News Feed), MCI Resources</p> <p>Watch: BBC Click</p> <p>Listen: BBC Sounds - Podcasts (Technology Section)</p> <p>Visit: 3D Virtual Tour – The National Museum of Computing (tnmoc.org)</p>	
Useful websites	<p>www.gcsepod.com</p> <p>KS3 Computer Science - BBC Bitesize</p> <p>Online dangers - Online safety - KS3 Computer Science Revision - BBC Bitesize</p> <p>https://isaacomputerscience.org/</p>	
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