



Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Other Notes
Introduction to Boolean Logic	Autumn 1	<ul style="list-style-type: none"> • Boolean Algebra, logical reasoning, Venn diagrams. • Understanding of logic gates and circuit diagrams. • Truth table and Boolean algebra representation of circuits. • Understand and create 2 and 3 input logic circuits. 	<ul style="list-style-type: none"> • Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming. 	<ul style="list-style-type: none"> • Computational Logic (Year 9 Autumn 1) 	Foundations for GCSE section 2.4
Programming with Python (Re-visited) 2021-22 Y8 cohort only	Autumn 2	<ul style="list-style-type: none"> • Simple Python input and output commands • Programs involving user input. • Data types • Sequences • Selection and nested selection. 	<ul style="list-style-type: none"> • Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems. • Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems • Understand several key algorithms that reflect computational thinking • Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming 	<ul style="list-style-type: none"> • Next Steps with Python – Year 8 Spring 2) 	Foundations for GCSE section 2.2 and 2.3
Introduction to Computer Networks	Spring 1	<ul style="list-style-type: none"> • Basics of computer networks – Advantages and limitations. 	Understand the hardware and software components that make up computer systems and how they communicate with one another and with other systems.	<ul style="list-style-type: none"> • Networks (Year 9 – Spring 1/2) 	Foundations for GCSE section 1.3 and 1.4



		<ul style="list-style-type: none"> • Computer networks – Equipment used. • How the Internet works. • Security threats and encryption. • Network topologies 			
<i>Searching and sorting algorithms</i>	<i>Spring 2</i>	<ul style="list-style-type: none"> • Understand how the bubble sort and insertion sort work. • Be able to compare the two methods with number sets. • Understand and compare the linear and binary search algorithms for searching through data sets. 	<ul style="list-style-type: none"> • <i>Understand several key algorithms that reflect computational thinking [for example ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.</i> 	<ul style="list-style-type: none"> • Algorithms and Problem Solving (Year 10 Autumn 1) 	Foundation for GCSE section 2.1
<i>Programming with Python – 2</i>	<i>Spring 2</i>	<ul style="list-style-type: none"> • <i>Iteration – For and While loops. Counter controlled and condition controlled.</i> • <i>Use of python list data structures. Procedures and Functions</i> 	<ul style="list-style-type: none"> • <i>Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions</i> 	<ul style="list-style-type: none"> • <i>Programming Techniques (Spring Year 9)</i> 	Foundation for GCSE section 2.2



<p>Data Representation – Text/Image and Sound</p>	<p><i>Summer 1</i></p>	<ul style="list-style-type: none">• <i>Binary representation of text using ASCII/Extended ASCII/Unicode table.</i>• <i>Bitmap image representation.</i>• <i>Digital representation of sound.</i>• <i>File size calculations.</i>• <i>Compression algorithms.</i>	<ul style="list-style-type: none">• <i>Understand how instructions are stored and executed within a computer system.</i>• <i>Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.</i>	<ul style="list-style-type: none">• <i>1.2 Memory and Storage (Year 10 – Spring 1)</i>	
<p>AI and Machine Learning</p>	<p><i>Summer 2</i></p>	<ul style="list-style-type: none">• <i>Concept of artificial intelligence.</i>• <i>Machine learning and its real-world applications including image recognition.</i>• <i>Ethical issues surrounding the growth of AI.</i>	<ul style="list-style-type: none">• <i>Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns.</i>• <i>understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.</i>	<ul style="list-style-type: none">• <i>1.6 Ethical, Legal and Cultural Impacts of Computing (Year 11 – Spring 1)</i>	