Curriculum Map Year 9 COMPUTING

Topic Name	**Term**	**Skills** developed with link to NC Subject content	Reflection on previous link in the curriculum	Progress to future link in the curriculum
Computational thinking	*Summer HT1*	• 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 [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem • Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] •	*Year 7: Coding in Scratch part 1* *Year 7: Introduction to coding with Kodu* *Year 7: Coding in Scratch part 2* *Year 7: Networks* *Year 8: Python programming* *Year 8: Understanding computers*	*Year 9: Python programming* *Year 9: Graphics* *Year 9: Sound editing in audacity* *GCSE: Basic programming constructs* *GCSE: Subroutines* *GCSE: Data structures, arrays and records* *GCSE: Structured programming* *GCSE: Boolean logic and expressions* *GCSE: algorithms, abstraction, decomposition and problem solving* *GCSE: Linear and binary searching*
Python programming	*Autumn HT2*	• 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 [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem • 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	*Year 7: Coding in Scratch part 1* *Year 7: Introduction to coding with Kodu* *Year 7: Coding in Scratch part 2* *Year 8: Python programming* *Year 9: Computational thinking*	*GCSE: Data types and operators* *GCSE: Variables, constants, inputs, outputs and assignment* *GCSE: Basic programming constructs* *GCSE: Subroutines* *GCSE: Data structures, arrays and records* *GCSE: Structured programming* *GCSE: classification of programming languages*
Graphics	*Spring HT1*	• Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users • Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability	*Year 7: Using media* *Year 8: Understanding computers* *Year 8: Media: Vector graphics* *Year 9: Computational thinking*	*GCSE: Bit patterns and binary,* *GCSE: Bitmaps* *GCSE: Binary representing data*
Cybersecurity	*Autumn HT1*	• 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	*Year 7: Impact of technology*	*GCSE: Computer networks, protocols and layers* *GCSE: Cybersecurity (Social engineering, malware, penetration testing)* *GCSE: Legal issues, impacts and risks on society*
Sound editing in Audacity	*Spring HT2*	• Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	*Year 7: Using media* *Year 8: Understanding computers* *Year 9: Graphics* *Year 9: Computational thinking*	*GCSE: Sound sampling and compression* *GCSE: Binary representing data*

		• Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability		
Data Science	*Summer HT2*	• Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems • Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users	*Year 7: Modelling data - Spreadsheets* *Year 8: Mobile App development*	*GCSE: Data representation* *GCSE: Databases and SQL*