Structure of the units of work – KS3 Computing

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Year 7	**Introduction to Computing and the school systems.** **Digital Resilience** - How to stay safe on the internet.	**Computing Systems and Computational Thinking -** Exploring the fundamental elements that make up a computer system.	**Flowol** – Logical reasoning comparing algorithms **What's Inside a Computer –** Exploring the workings of a computer.	**Animation –** Creating animations through object manipulation, and tweaking and adjusting lighting and camera angles	**Physical Programming** – Sensing and controlling with a micro-bit	**Model Data: Spreadsheets** sorting and filtering data and using formulas and functions in spreadsheet software
Year 8	**Developing for the web** – Using HTML and CSS to create webpages	**Cybersecurity (Digital Resilience)** – Identify how users and organisations can protect themselves from cyberattacks	**AI** – Impact of Technology – Applying the programming constructs of sequence, selection and iteration in scratch.	**Networks**: from semaphores to the internet – Recognising networking hardware and explaining how networking components are used for communication.	**Binary and Boolean –** To be able to carry out simple binary operations.	**Introduction – Programming essentials -** Using subroutines to decompose a problem.
Year 9	**Digital Graphics** – creating graphics through objects, layering, and path manipulation	**Introduction to Python –** Applying the programming	**Digital Resilience** – How to stay safe on the internet.	**3D Design –** through object manipulation.	**Data Science –** knowing how to use data to investigate problems	**Creating an App** Using event driven programming to create an online app

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National Curriculum Coverage – Years 7-9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3	8.4	8.5	8.6	9.1	9.2	9.3	9.4	9.5	9.6
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		✓			✓				✓						✓			
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	✓	✓									✓	✓						

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National Curriculum Coverage – Years 7-9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3	8.4	8.5	8.6	9.1	9.2	9.3	9.4	9.5	9.6
numbers [for example, binary addition, and conversion between binary and decimal]																		
Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems	✓				✓					✓		✓		✓				
Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits												✓		✓	✓		✓	
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		✓		✓			✓		✓				✓	✓				✓
Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and			✓					✓								✓		

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National Curriculum Coverage – Years 7-9	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3	8.4	8.5	8.6	9.1	9.2	9.3	9.4	9.5	9.6
privacy; recognise inappropriate content, contact and conduct, and know how to report concerns																		