Year Group	Suggested Order	Unit Name	Lesson	Learning Objectives	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	AL	CM	CS	DD	DI	ET	IT	NW	PG	SS	Education for a Connected World
7	1	Clear messaging in digital media	1	-Choose search terms relating to a particular issue - Identify key features of a good poster - Use tools to copy an image into another application																				- Online bullying - Online relationships - Privacy and security
7	1	Clear messaging in digital media	2	-Choose and download a suitable image - Create a poster using a desktop publishing application - Plan a poster to clearly convey a message																				- Online bullying - Online relationships - Privacy and security
7	1	Clear messaging in digital media	3	-Choose how to combine text and graphics in a slide - Modify a logo using a graphic editing program - Use digital tools to provide feedback on design choices																				- Online bullying - Online relationships - Privacy and security
7	1	Clear messaging in digital media	4	- Modify a logo so that it fits in with the planned slide styles - Plan a consistent layout for a set of slides - Create a styled set of slides based on a plan																				- Online bullying - Online relationships - Privacy and security
7	1	Clear messaging in digital media	5	-Evaluate content against a rubric - Search for and add a suitable image - Search for suitable text for slides																				- Online bullying - Online relationships - Privacy and security
7	1	Clear messaging in digital media	6	-Evaluate your work against a rubric - Explain your work to others through a presentation - Plan how to deliver a presentation																				- Online bullying - Online relationships - Privacy and security

7	2	Networks from semaphores to the Internet	1	-Define ‘protocol’ and provide examples of non-networking protocols - Define what a computer network is and explain how data is transmitted between computers across networks																				- Online bullying - Online relationships - Privacy and security
7	2	Networks from semaphores to the Internet	2	-List examples of the hardware necessary for connecting devices to networks																				- Online bullying - Online relationships - Privacy and security
7	2	Networks from semaphores to the Internet	3	-Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections - Define ‘bandwidth’, using the appropriate units for measuring the rate at which data is transmitted, and discuss familiar examples where bandwidth is important																				- Online bullying - Online relationships - Privacy and security
7	2	Networks from semaphores to the Internet	4	-Define what the internet is - Describe key words such as ‘protocols’, ‘packets’, and ‘addressing’ - Explain how data travels between computers across the internet																				- Online bullying - Online relationships - Privacy and security
7	2	Networks from semaphores to the Internet	5	-Describe how internet-connected devices can affect me - Describe how services are provided over the internet - Explain the difference between the internet, its services, and the World Wide Web - Explain the term ‘connectivity’ as the capacity for connected devices (‘Internet of Things’) to collect and share information about me with or without my knowledge (including microphones, cameras, and geolocation) - List some of these services and the context in which they are used																				- Online bullying - Online relationships - Privacy and security

7	2	Networks from semaphores to the Internet	6	-Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together																			- Online bullying - Online relationships - Privacy and security
7	3	Programming essentials in Scratch – part I	1	-Compare how humans and computers understand instructions (understand and carry out) - Define a sequence as instructions performed in order, with each executed in turn - Modify a sequence - Predict the outcome of a simple sequence																			- Online bullying - Online relationships - Privacy and security
7	3	Programming essentials in Scratch – part I	2	-Define a variable as a name that refers to data being stored by the computer - Make a sequence that includes a variable - Predict the outcome of a simple sequence that includes variables - Recognise that computers follow the control flow of input/process/output - Trace the values of variables within a sequence																			
7	3	Programming essentials in Scratch – part I	3	-Define a condition as an expression that will be evaluated as either true or false - Identify that selection uses conditions to control the flow of a sequence - Identify where selection statements can be used in a program - Modify a program to include selection																			
7	3	Programming essentials in Scratch – part I	4	-Create conditions that use comparison operators (>,<,=) - Create conditions that use logic operators (and/or/not) - Identify where selection statements can be used in a program that include comparison and logical operators																			

7	3	Programming essentials in Scratch – part I	5	-Define iteration as a group of instructions that are repeatedly executed - Describe the need for iteration - Detect and correct errors in a program (debugging) - Identify where count-controlled iteration can be used in a program - Implement count-controlled iteration in a program																				
7	3	Programming essentials in Scratch – part I	6	-Independently design and apply programming constructs to solve a problem (subroutine, selection, count-controlled iteration, operators, and variables)																				
7	4	Modelling data using spreadsheets	1	-Identify columns, rows, cells, and cell references in spreadsheet software - Use formatting techniques in a spreadsheet																				
7	4	Modelling data using spreadsheets	2	-Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /) - Use the autofill tool to replicate cell data																				
7	4	Modelling data using spreadsheets	3	-Collect data - Explain the difference between data and information - Explain the difference between primary and secondary sources of data																				
7	4	Modelling data using spreadsheets	4	-Analyse data - Create appropriate charts in a spreadsheet - Use the functions SUM, COUNTA, MAX, and MIN in a spreadsheet																				

7	4	Modelling data using spreadsheets	5	-Analyse data - Use a spreadsheet to sort and filter data - Use the functions AVERAGE, COUNTIF, and IF in a spreadsheet																				
7	4	Modelling data using spreadsheets	6	-Apply all of the spreadsheet skills covered in this unit - Use conditional formatting in a spreadsheet																				
7	5	Programming essentials in Scratch – part II	7	-Define a subroutine as a group of instructions that will run when called by the main program or other subroutines - Define decomposition as breaking a problem down into smaller, more manageable subproblems - Identify how subroutines can be used for decomposition																				
7	5	Programming essentials in Scratch – part II	8	-Identify where condition-controlled iteration can be used in a program - Implement condition-controlled iteration in a program																				
7	5	Programming essentials in Scratch – part II	9	-Evaluate which type of iteration is required in a program																				
7	5	Programming essentials in Scratch – part II	10	-Define a list as a collection of related elements that are referred to by a single name - Describe the need for lists - Identify when lists can be used in a program - Use a list																				
7	5	Programming essentials in Scratch – part II	11	-Apply appropriate constructs to solve a problem - Decompose a larger problem into smaller subproblems																				- Privacy and security

7	5	Programming essentials in Scratch – part II	12	-Apply appropriate constructs to solve a problem - Decompose a larger problem into smaller subproblems																				- Privacy and security
7	6	Using media – Gaining support for a cause	1	-Apply the key features of a word processor to format a document - Evaluate formatting techniques to understand why we format documents - Identify the key features of a word processor - Select the most appropriate software to use to complete a task																				
7	6	Using media – Gaining support for a cause	2	-Apply appropriate formatting techniques - Demonstrate an understanding of licensing issues involving online content by applying appropriate Creative Commons licences - Demonstrate the ability to credit the original source of an image - Select appropriate images for a given context																				
7	6	Using media – Gaining support for a cause	3	-Apply techniques in order to identify whether or not a source is credible - Critique digital content for credibility																				
7	6	Using media – Gaining support for a cause	4	-Apply referencing techniques and understand the concept of plagiarism - Evaluate online sources for use in own work																				

7	6	Using media – Gaining support for a cause	5	-Apply referencing techniques that credit authors appropriately - Construct a blog using appropriate software - Design the layout of the content to make it suitable for the audience - Organise the content of the blog based on credible sources																			
7	6	Using media – Gaining support for a cause	6	-Apply referencing techniques that credit authors appropriately - Construct a blog using appropriate software - Design the layout of the content to make it suitable for the audience - Organise the content of blog based on credible sources																			
8	1	Media – Vector graphics	1	-Draw basic shapes (rectangle, ellipse, polygon, star) with different properties (fill and stroke, shape-specific attributes) - Manipulate individual objects (select, move, resize, rotate, duplicate, flip, z-order)																			- Privacy and security
8	1	Media – Vector graphics	2	-Combine paths by applying operations (union, difference, intersection) - Manipulate groups of objects (select, group/ungroup, align, distribute)																			- Privacy and security
8	1	Media – Vector graphics	3	-Convert objects to paths - Draw paths - Edit path nodes																			- Privacy and security
8	1	Media – Vector graphics	4	-Combine multiple tools and techniques to create a vector graphic design																			- Privacy and security

8	1	Media – Vector graphics	5	-Explain what vector graphics are - Provide examples where using vector graphics would be appropriate																				- Privacy and security
8	1	Media – Vector graphics	6	-Complete a summative assessment - Improve your own project work based on feedback - Peer assess another pair's project work																				- Privacy and security
8	2	Layers of computing systems	1	-Explain the difference between a general-purpose computing system and a purpose-built device - Recall that a general-purpose computing system is a device for executing programs - Recall that a program is a sequence of instructions that specify operations that are to be performed on data																				
8	2	Layers of computing systems	2	-Describe how the hardware components used in computing systems work together in order to execute programs - Describe the function of the hardware components used in computing systems - Recall that all computing systems, regardless of form, have a similar structure ('architecture')																				
8	2	Layers of computing systems	3	-Analyse how the hardware components used in computing systems work together in order to execute programs - Define what an operating system is, and recall its role in controlling program execution																				

8	2	Layers of computing systems	4	-Describe how hardware is built out of increasingly complex logic circuits - Describe the NOT, AND, and OR logical operators, and how they are used to form logical expressions - Recall that, since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits - Use logic gates to construct logic circuits, and associate these with logical operators and expressions																			
8	2	Layers of computing systems	5	-Associate the use of artificial intelligence with moral dilemmas - Describe how machine learning differs from traditional programming - Describe the steps involved in training machines to perform tasks (gathering data, training, testing) - Identify examples of artificial intelligence and machine learning in the real world - Provide broad definitions of ‘artificial intelligence’ and ‘machine learning’																			
8	2	Layers of computing systems	6	-Explain the implications of sharing program code																			
8	3	Developing for the Web	1	-Describe what HTML is - Modify HTML tags using inline styling to improve the appearance of web pages - Use HTML to structure static web pages																			
8	3	Developing for the Web	2	-Apply HTML tags to construct a web page structure from a provided design - Display images within a web page																			

8	3	Developing for the Web	3	-Assess the benefits of using CSS to style pages instead of in-line formatting - Describe what CSS is - Use CSS to style static web pages																			
8	3	Developing for the Web	4	-Analyse how search engines select and rank results when searches are made - Describe what a search engine is - Explain how search engines 'crawl' through the World Wide Web and how they select and rank results																			
8	3	Developing for the Web	5	-Create hyperlinks to allow users to navigate between multiple web pages - Discuss the impact of search technologies and the issues that arise by the way they function and the way they are used - Use search technologies effectively																			
8	3	Developing for the Web	6	-Complete summative assessment - Implement navigation to complete a functioning website																			
8	4	Representations – from clay to silicon	1	-List examples of representations - Provide examples of how different representations are appropriate for different tasks - Recall that representations are used to store, communicate, and process information																			
8	4	Representations – from clay to silicon	2	-Measure the length of a representation as the number of symbols that it contains - Provide examples of how symbols are carried on physical media - Recall that characters can be represented as sequences of symbols and list examples of character coding schemes																			

8	4	Representations – from clay to silicon	3	-Explain what binary digits (bits) are, in terms of familiar symbols such as digits or letters - Measure the size or length of a sequence of bits as the number of binary digits that it contains																				
8	4	Representations – from clay to silicon	4	-Convert a decimal number to binary and vice versa - Describe how natural numbers are represented as sequences of binary digits																				
8	4	Representations – from clay to silicon	5	-Convert between different units and multiples of representation size - Provide examples of the different ways that binary digits are physically represented in digital devices																				
8	4	Representations – from clay to silicon	6	-Apply all of the skills covered in this unit																				
8	5	Mobile app development	1	-Identify when a problem needs to be broken down - Implement and customise GUI elements to meet the needs of the user																				
8	5	Mobile app development	2	-Develop a partially complete application to include additional functionality - Recognise that events can control the flow of a program - Use user input in an event-driven programming environment - Use variables in an event-driven programming environment																				
8	5	Mobile app development	3	-Establish user needs when completing a creative project - Identify and fix common coding errors - Pass the value of a variable into an object																				

8	5	Mobile app development	4	-Apply decomposition to break down a large problem into more manageable steps - Use a block-based programming language to create a sequence - Use user input in a block-based programming language - Use variables in a block-based programming language																			
8	5	Mobile app development	5	-Reflect and react to user feedback - Use a block-based programming language to include sequencing and selection - Use user input in a block-based programming language - Use variables in a block-based programming language																			
8	5	Mobile app development	6	-Evaluate the success of the programming project - Use a block-based programming language to include sequencing and selection - Use user input in a block-based programming language - Use variables in a block-based programming language																			
8	6	Introduction to Python programming	1	-Describe what algorithms and programs are and how they differ - Locate and correct common syntax errors - Recall that a program written in a programming language needs to be translated in order to be executed by a machine - Write simple Python programs that display messages, assign values to variables, and receive keyboard input																			
8	6	Introduction to Python programming	2	-Describe the semantics of assignment statements - Receive input from the keyboard and convert it to a numerical value - Use simple arithmetic expressions in assignment statements to calculate values																			
8	6	Introduction to Python programming	3	-Generate and use random integers - Use binary selection (if, else statements) to control the flow of program execution - Use relational operators to form logical expressions																			

8	6	Introduction to Python programming	4	-Describe how iteration (while statements) controls the flow of program execution - Use multi-branch selection (if, elif, else statements) to control the flow of program execution																			
8	6	Introduction to Python programming	5	-Use iteration (while loops) to control the flow of program execution - Use variables as counters in iterative programs																			
8	6	Introduction to Python programming	6	-Combine iteration and selection to control the flow of program execution - Use Boolean variables as flags																			
9	1	Python programming with sequences of data	1	-Create lists and access individual list items - Locate and correct common syntax errors - Use selection (**if-elif-else* statements) to control the flow of program execution - Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements																			
9	1	Python programming with sequences of data	2	-Perform common operations on lists or individual items																			
9	1	Python programming with sequences of data	3	-Perform common operations on lists or individual items - Perform common operations on strings or individual characters - Use iteration (while statements) to control the flow of program execution																			
9	1	Python programming with sequences of data	4	-Perform common operations on lists or strings - Use iteration (for statements) to iterate over list items																			

9	1	Python programming with sequences of data	5	-Combine key programming language features to develop solutions to meaningful problems - Use iteration (for loops) to iterate over lists and strings - Use variables to keep track of counts and sums																				
9	1	Python programming with sequences of data	6	-Apply all of the skills covered in this unit																				
9	2	Media – Animations	1	-Add, delete, and move objects - Scale and rotate objects - Use a material to add colour to objects																				- Copyright and ownership - Managing online information
9	2	Media – Animations	2	-Add, move, and delete keyframes to make basic animations - Create useful names for objects - Join multiple objects together using parenting - Play, pause, and move through the animation using the timeline																				- Copyright and ownership - Managing online information
9	2	Media – Animations	3	-Apply different colours to different parts of the same model - Use edit mode and extrude - Use loop cut and face editing																				- Copyright and ownership - Managing online information
9	2	Media – Animations	4	-Use proportional editing - Use subdivision - Use the knife tool																				- Copyright and ownership - Managing online information

9	2	Media – Animations	5	-Add and edit set lighting - Compare different render modes - Set up the camera																				- Copyright and ownership - Managing online information
9	2	Media – Animations	6	-Create a 3–10 second animation - Render out the animation																				- Copyright and ownership - Managing online information
9	3	Data science	1	-Define data science - Explain how visualising data can help identify patterns and trends in order to help us gain insights - Use an appropriate software tool to visualise data sets and look for patterns or trends																				- Copyright and ownership - Managing online information
9	3	Data science	2	-Evaluate findings to support arguments for or against a prediction - Recognise examples of where large data sets are used in daily life - Select criteria and use data set to investigate predictions																				- Copyright and ownership - Managing online information
9	3	Data science	3	-Define the terms ‘correlation’ and ‘outliers’ in relation to data trends - Identify the steps of the investigative cycle - Solve a problem by implementing steps of the investigative cycle on a data set - Use findings to support a recommendation																				- Copyright and ownership - Managing online information
9	3	Data science	4	-Create a data capture form - Identify the data needed to answer a question defined by the learner - Identify the steps of the investigative cycle																				- Copyright and ownership - Managing online information

9	3	Data science	5	-Apply data cleansing techniques to a data set - Describe the need for data cleansing - Visualise a data set																				- Copyright and ownership - Managing online information
9	3	Data science	6	-Analyse visualisations to identify patterns, trends, and outliers - Draw conclusions and report findings - Visualise a data set																				- Copyright and ownership - Managing online information
9	4	Representations – going audiovisual	1	-Define key terms such as ‘pixels’, ‘resolution’, and ‘colour depth’ - Describe how an image can be represented as a sequence of bits - Describe how digital images are composed of individual elements - Recall that the colour of each picture element is represented using a sequence of binary digits																				- Copyright and ownership - Managing online information
9	4	Representations – going audiovisual	2	-Compute the representation size of a digital image, by multiplying resolution (number of pixels) with colour depth (number of bits used to represent the colour of individual pixels) - Describe how colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour’s intensity - Describe the trade-off between representation size and perceived quality for digital images																				- Copyright and ownership - Managing online information

9	4	Representations – going audiovisual	3	-Describe and assess the creative benefits and ethical drawbacks of digital manipulation [Education for a Connected World](https://www.gov.uk/government/publications/education-for-a-connected-world) - Explain how the manipulation of digital images amounts to arithmetic operations on their digital representation - Perform basic image editing tasks using appropriate software and combine them in order to solve more complex problems requiring image manipulation																				- Copyright and ownership - Managing online information
9	4	Representations – going audiovisual	4	-Define key terms such as ‘sample’, ‘sampling frequency/rate’, ‘sample size’ - Describe how sounds are represented as sequences of bits - Explain the function of microphones and speakers as components that capture and generate sound - Recall that sound is a wave																				- Copyright and ownership - Managing online information
9	4	Representations – going audiovisual	5	-Calculate representation size for a given digital sound, given its attributes - Explain how attributes such as sampling frequency and sample size affect characteristics such as representation size and perceived quality, and the trade-offs involved - Perform basic sound editing tasks using appropriate software and combine them in order to solve more complex problems requiring sound manipulation																				- Copyright and ownership - Managing online information
9	4	Representations – going audiovisual	6	-Define ‘compression’, and describe why it is necessary - Recall that bitmap images and pulse code sound are not the only binary representations of images and sound available																				- Copyright and ownership - Managing online information
9	5	Introduction of cybersecurity	1	-Critique online services in relation to data privacy - Explain the difference between data and information - Explain the need for the Data Protection Act - Identify what happens to data entered online																				- Copyright and ownership - Managing online information

9	5	Introduction of cybersecurity	2	-Implement strategies to minimise the risk of data being compromised through human error - Recognise how human errors pose security risks to data																				- Copyright and ownership - Managing online information
9	5	Introduction of cybersecurity	3	-Define hacking in the context of cyber security - Explain how a DDoS attack can impact users of online services - Explain the need for the Computer Misuse Act - Identify strategies to reduce the chance of a brute force attack being successful																				
9	5	Introduction of cybersecurity	4	-Examine how different types of malware causes problems for computer systems - List the common malware threats - Question how malicious bots can have an impact on societal issues																				
9	5	Introduction of cybersecurity	5	-Compare security threats against probability and the potential impact to organisations - Explain how networks can be protected from common security threats																				
9	5	Introduction of cybersecurity	6	-Identify the most effective methods to prevent cyberattacks																				
9	6	Applying programming skills with physical computing	1	-Describe what the micro:bit is - List the micro:bit's input and output devices - Use a development environment to write, execute, and debug a Python program for the micro:bit																				

9	6	Applying programming skills with physical computing	2	-Write programs that use the micro:bit's built-in input and output devices																			
9	6	Applying programming skills with physical computing	3	-Write programs that communicate with other devices by sending and receiving messages wirelessly - Write programs that use GPIO pins to generate output and receive input																			
9	6	Applying programming skills with physical computing	4	-Decompose the functionality of a physical computing system into simpler features - Design a physical computing artifact purposefully, keeping in mind the problem at hand, the needs of the audience involved, and the available resources																			
9	6	Applying programming skills with physical computing	5	-Implement a physical computing project, while following, revising, and refining the project plan																			
9	6	Applying programming skills with physical computing	6	-Implement a physical computing project, while following, revising, and refining the project plan																			