Progression of Skills, Understanding and Knowledge in Computing

Unit	Year 7	Year 8	Year 9
	Stage 5		
Python programming with sequences of data	See stages document if children are working below the level of python		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" Perform common operations on lists or individual items 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" Perform common operations on lists or strings - Use iteration (for statements) to iterate over list items" 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" Apply all of the skills covered in this unit

Progression of Skills, Understanding and Knowledge in Computing

Unit	Year 7	Year 8	Year 9
	Stage 5		
Media - Animations	See stages document if children are working below this level. Media 1 and 2		Add, delete, and move objects- Scale and rotate objects- Use a material to add colour to objects 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 Apply different colours to different parts of the same model- Use edit mode and extrude- Use loop cut and face editing Use proportional editing- Use subdivision- Use the knife tool Add and edit set lighting- Compare different render modes- Set up the camera Define 'protocol' and provide examples of non-networking protocols

Progression of Skills, Understanding and Knowledge in Computing

Unit	Year 7	Year 8	Year 9
	Stage 5		
Data Science	See stages document if children are working below the level (Hardware)		Define what a computer network is and explain how data is transmitted between computers across networks List examples of the hardware necessary for connecting devices to networks 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 Describe key words such as 'protocols', 'packets', and 'addressing' Explain how data travels between computers across the internet

Progression of Skills, Understanding and Knowledge in Computing

Unit	Year 7	Year 8	Year 9
		Stage 5	
Representations – going audiovisual	See stages document if children are working below the level.		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 Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together

Progression of Skills, Understanding and Knowledge in Computing

Unit	Year 7	Year 8	Year 9
		Stage 5	
Introduction of cybersecurity	See stages document if children are working below the level.		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 Implement strategies to minimise the risk of data being compromised through human error- Recognise how human errors pose security risks to data 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 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 Compare security threats against probability and the potential impact to organisations- Explain how networks can be protected from common security threats

Progression of Skills, Understanding and Knowledge in Computing

Unit	Year 7	Year 8	Year 9
		Stage 5	
Applying programming skills with physical computing	See stages document if children are working below the level.		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" Write programs that use the micro:bit's built-in input and output devices 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" 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" Implement a physical computing project, while following, revising, and refining the project plan Implement a physical computing project, while following, revising, and refining the project plan