

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	<p>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"</p> <p>Perform common operations on lists or individual items</p> <p>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"</p> <p>Perform common operations on lists or strings - Use iteration (for statements) to iterate over list items"</p> <p>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"</p> <p>Apply all of the skills covered in this unit</p>	



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)	<p>Define what a computer network is and explain how data is transmitted between computers across networks</p> <p>List examples of the hardware necessary for connecting devices to networks</p> <p>Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections</p> <p>Define 'bandwidth', using the appropriate units for measuring the rate at which data is transmitted, and discuss familiar examples where bandwidth is important</p> <p>Describe key words such as 'protocols', 'packets', and 'addressing'</p> <p>Explain how data travels between computers across the internet</p>	



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.		<p>Describe how internet-connected devices can affect me</p> <p>Describe how services are provided over the internet</p> <p>Explain the difference between the internet, its services, and the World Wide Web</p> <p>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)</p> <p>List some of these services and the context in which they are used</p> <p>Describe components (servers, browsers, pages, HTTP and HTTPS protocols, etc.) and how they work together</p>



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.	<p>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</p> <p>Implement strategies to minimise the risk of data being compromised through human error- Recognise how human errors pose security risks to data</p> <p>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</p> <p>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</p> <p>Compare security threats against probability and the potential impact to organisations- Explain how networks can be protected from common security threats</p>	



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.	<p>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"</p> <p>Write programs that use the micro:bit's built-in input and output devices</p> <p>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"</p> <p>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"</p> <p>Implement a physical computing project, while following, revising, and refining the project plan</p> <p>Implement a physical computing project, while following, revising, and refining the project plan</p>	

