KS3 Computing Progression Pathways
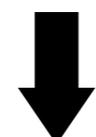
Pupil Progression	Programming & Algorithms	Computer Systems	Digital Literacy
(pink)	• I have created a list of instructions that I can follow to complete a task • I have followed a simple list of instructions created by others	• I can obtain content from the world wide web using a web browser. • I understand the importance of communicating safely and respectfully online, and the need for keeping personal information private.	• I can use software under the control of the teacher to create, store and edit digital content using appropriate file and folder names. • I understand that people interact with computers. • I can talk about my work and I can make changes to improve it.
(yellow)	• I understand what an algorithm is and am able to express simple linear (non-branching) algorithms symbolically. • I understand that computers need precise instructions. • I know that users can develop their own programs and can demonstrate this by creating a simple program in an environment that does not rely on text • I understand that programs execute by following precise instructions	• I can recognise that digital content can be represented in many forms • I understand that computers have no intelligence and that computers can do nothing unless a program is executed. • I can recognise that all software executed on digital devices is programmed. • I know what to do when concerned about content or being contacted. • I can recognise that a range of digital devices can be considered a computer • I can navigate the web and can carry out simple web searches to collect digital content. • I can demonstrate use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.	• I can share my use of technology in school. • I know common uses of information technology beyond the classroom • I can use technology with increasing independence to purposefully organise digital content. • I can use a variety of software to manipulate and present digital content: data and information. • I can share my experiences of technology in school and beyond the classroom. • I show an awareness of tasks best completed by humans or computers.
(orange)	• I can demonstrate care and precision to avoid errors • I can execute, check and change programs • I understand that algorithms are implemented on digital devices as programs • I can design simple algorithms using loops, and selection i.e. if statements. • I can use logical reasoning to predict outcomes. • I can detect and corrects errors i.e. debugging, in algorithms. • I can use arithmetic operators, if statements, and loops, within programs. • I can use diagrams to express solutions. • I understand that iteration is the repetition of a process such as a loop.	• I can recognise different types of data: text, number. • I can recognise and can use a range of input and output devices. • I know that computers collect data from various input devices, including sensors and application software. • I understand the difference between the internet and internet service e.g. world wide web. • I can recognise what is acceptable and unacceptable behaviour when using technologies and online services. • I can demonstrate responsible use of technologies and online services, and I know a range of ways to report concerns. • I know that digital computers use binary to represent all data. • I understand data transmission between digital computers over networks, including the internet i.e. IP addresses • I know the names of hardware e.g. hubs, routers, switches.	• I show an awareness for the quality of digital content collected. • I can talk about my work and I can make improvements to solutions based on feedback received. • I can collect, organises and presents data and information in digital content.
(blue)	• I can use logical reasoning to predict the behaviour of programs • I can detect and correct simple semantic errors i.e. debugging, in programs. • I can design solutions (algorithms) that use repetition and two-way selection i.e. if, then and else. • I can use logical reasoning to predict outputs, showing an awareness of inputs. • I can create programs that implement algorithms to achieve given goals. • I can declares and assign variables. • I understand that programming bridges the gap between algorithmic solutions and computers.	• I appreciate that programs can work with different types of data. • I can recognise that data can be structured in tables to make it useful. • I understand how programs specify the function of a general purpose computer. • I understand the difference between data and information. • I can use filters or can perform single criteria searches for information. • I understand the difference between hardware and application software, and their roles within a computer system. • I show an awareness of, and can use a range of internet services e.g. VOIP. • I understand why and when computers are used. • I know that computers transfer data in binary. • I can querys data on one table using a typical query language. • I understand how to construct static web pages using HTML. • I can use technologies and online services securely, and I know how to identify and report inappropriate conduct.	• I can make appropriate improvements to solutions based on feedback received, and can comment on the success of the solution. • I understand the potential of information technology for collaboration when computers are networked.
(dark red/maroon)	• I can use post-tested loop e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement. • I can recognise that different solutions exist for the same problem. • I can select the appropriate data type. • I can recognise that the design of an algorithm is distinct from its expression in a programming language (which will depend on the programming constructs available).	• I know why sorting data in a flat file can improve searching for information. • I can perform more complex searches for information e.g. using Boolean and relational operators. • I can analyse and evaluate data and information, and I can recognise that poor quality data leads to unreliable results, and inaccurate conclusions. • I can evaluate technology in order to decide how to select/use and how to combine with others? • I understand how bit patterns represent numbers and images. • I can recognise and I understand the function of the main internal parts of basic computer architecture. • I understand how to construct static web pages using HTML and incorporating CSS.	• I can create digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging. • I can make judgements about digital content when evaluating and repurposing it for a given audience. • I can recognise the audience when designing and creating digital content.
(red)	• I have practical experience of a high-level textual language. • I can use a range of operators and expressions e.g. Boolean, and applies them in the context of program control. • I can detect and correct syntactical errors.	• I understand the main functions of the operating system. • I understand how to effectively use search engines, and I know how search results are selected, including that search engines use 'web crawler programs'. • I can select, combine and use internet services. • I can define data types: real numbers and Boolean. • I understand the relationship between binary and electrical circuits, including Boolean logic.	• I can use criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions • I can evaluate the appropriateness of digital devices, internet services and application software to achieve given goals. (EV)
(black/grey)	• I understand the difference between, and appropriately I can use if and if, then and else statements. • I can use a variable and relational operators within a loop to govern termination. • I can recognise that different algorithms exist for the same problem. • I can identify similarities and differences in situations and can use these to solve problems (pattern recognition). • I have practical experience of a high-level textual language, including using standard libraries when programming. • I can use nested selection statements. • I can use logical reasoning to explain how an algorithm works.	• I know the difference between physical, wireless and mobile networks • I know that there is a range of operating systems and application software for the same hardware. • I understand how search engines rank search results.	• I can recognise ethical issues surrounding the application of information technology beyond school. • I can design criteria to critically evaluate the quality of solutions, I can use the criteria to identify improvements and can make appropriate refinements to the solution. • I can justify the choice of and independently combine and use multiple digital devices, internet services and application software to achieve given goals. • I can identify and explain how the use of technology can impact on society.
(grey)	.		