LEVEL 4 - U.K. CURRICULUM ALIGNMENT MAP

Level 4 - (Year 6 and 7) Ages 10-12	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11
Science - Year 6											
Evolution and inheritance								✓			
Light			✓								
Electricity	✓										
Science - Year 7											
Working Scientifically	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Biology - Genetics and Evolution							✓	✓			
Physics - Energy						✓			✓		✓
Physics - Motion and Forces						✓					
Physics - Waves				✓							
Physics - Electricity and Electromagnetism											
Physics - Matter		✓	✓								
Computing - KS2											
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Computing - KS3											
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					✓		✓	✓	✓	✓	

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use 2 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 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				✓	✓		✓	✓			
understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Design and Technology - KS2											
Design	✓	✓	✓	✓	✓	✓	✓		✓		✓
Make	✓	✓	✓			✓			✓		✓
Evaluate				✓	✓	✓			✓		
Technical Knowledge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Design and Technology - KS3											
Design	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Make		✓							✓		✓
Evaluate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Technical Knowledge	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
English - KS2											
Reading - Word Reading	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reading - Comprehension	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Writing - Transcription											
Writing - Composition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Writing - Vocabulary, Grammar and Punctuation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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English - KS3											
Reading	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Writing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Grammar and Vocabulary	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spoken English	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Geography - KS2											
Physical Geography										✓	
Geography - KS3											
Human and Physical Geography										✓	
Mathematics - Year 6											
Number and Place Value										✓	
Number - addition, subtraction, multiplication and division											✓
Measurement											✓
Statistics										✓	✓
Mathematics - KS3											
Working Mathematically				✓	✓		✓	✓		✓	✓
Algebra					✓			✓			
Probability										✓	
Statistics										✓	

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Computing At Schools (CAS) Progression Grid Standards covered throughout the level 4 lessons on SAM Space and SAM Blockly. *Pink, Yellow and Orange levels covered throughout all.*

Level 4 Lesson Range Focus
SAM Space and Blockly

Pink ▸ Yellow ▸ Orange ▸ Blue ▸ Purple ▸ Red ▸ Black ▸ White

Level 4 - Ages 10-12	4.1 Exploring Circuits	4.2 Earth & Orbit	4.3 Night & Day	4.4 Morse Code Alert	4.5 Patterns & Passwords	4.6 Every Action	4.7 Exploring Heredity	4.8 Grey or Ginger Kittens	4.9 Water Dispenser	4.10 Ratio	4.11 Random Number Generator
Software Used	*SAM Space*	*SAM Space*	*SAM Space*	*SAM Space*	*SAM Space*	*SAM Space*	*SAM Space*	*SAM Blockly*	*SAM Space*	*SAM Space*	*SAM Blockly*
ALGORITHMS											
Blue Level											
Shows an awareness of tasks best completed by humans or computers.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Designs solutions by decomposing a problem and creates a sub-solution for each of these parts.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recognises that different solutions exist for the same problem.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Purple Level											
Understands that iteration is the repetition of a process such as a loop.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recognises that different algorithms exist for the same problem.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Can identify similarities and differences in situations and can use these to solve problems (pattern recognition).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Red Level											
Understands a recursive solution to a problem repeatedly applies the same solution to smaller instances of the problem.	✓		✓	✓	✓		✓	✓	✓	✓	✓
Recognises that some problems share the same characteristics and use the same algorithm to solve both.	✓		✓	✓	✓		✓	✓	✓	✓	✓
Understands the notion of performance for algorithms and appreciates that some algorithms have different performance characteristics for the same task.	✓		✓	✓	✓		✓	✓	✓	✓	✓
Programming and Development											
Blue Level											
Understands the difference between, and appropriately uses if and if, then and else statements.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Uses a variable and relational operators within a loop to govern termination.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Designs, writes and debugs modular programs using procedures.	✓		✓	✓	✓		✓	✓	✓	✓	✓
Knows that a procedure can be used to hide the detail with sub-solution.	✓		✓	✓	✓		✓	✓	✓	✓	✓
Purple Level											
Understands that programming bridges the gap between algorithmic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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solutions and computers.											
Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Selects the appropriate data types.								✓			✓
Red Level											
Appreciates the need for, and writes, custom functions including use of parameters.								✓			✓
Knows the difference between, and uses appropriately, procedures and functions.	✓		✓	✓	✓		✓	✓	✓	✓	✓
Uses and manipulates one dimensional data structures.								✓			✓