

Progression in Computing

	Year 1/ Year 2	Year 3/ Year 4	Year 5/ Year 6
National Curriculum A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.	Computer Science		
	Pupils should be taught to: - Understand what algorithms are; how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions - Create and debug simple programs - Use logical reasoning to predict the behaviour of simple programs - Recognise common uses of information technology beyond school.	Pupils should be taught to: - Design write and debug programs that accomplish specific goals,.....solve problems by decomposing them in smaller parts - Use sequence, selection and repetition in programs - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Pupils should be taught to: - Design, write and debug programs that accomplish specific goals; including controlling or simulating physical systems and solving 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 - Understand computer networks including the internet; how they can provide multiple services, such as the world wide web, and the opportunities they offer for communication and collaboration
	Digital Literacy		
	Pupils should be taught to: Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they	Pupils should be taught to: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Pupils should be taught to: Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact

	have concerns about content on the internet or other online technologies	Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content	Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content
	Digital safety		
	Pupils should be taught to: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Pupils should be taught to: Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Pupils should be taught to: Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
	Information Technology		
		Recognise common uses of information technology beyond school	

Computer Science						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Skills	• Use the word algorithm correctly • Can follow a simple algorithm • Can put a sequence in the correct order • Know that if one part of the algorithm changes then the end result will be different • Can construct their own algorithm to complete an action • Use the word debug to correct mistakes	• Explain what the word algorithm means • Create their own simple algorithm • Explain what the end point of an algorithm will be • Identify mistakes/ errors in algorithms • Make suggestions about how to improve algorithm	• Can read simple linear algorithms in familiar programming • Predict the outcome of a program, run it and check the results • Plan and design a program for a specific task • Find and correct errors • Show the use of sequence and repetition in programs • Talk about similarities between programming systems • Use repeat to achieve a solution	• Read increasingly complex programs in familiar programming language • Use an algorithm to sequence more complex programming • Suggest plausible meanings for new blocks of code • Can produce diagrams to show how the code could look before creating blocks of code on screen. • Know that programs can work with different types of data • Can use a range of input and output devices • Solve open ended problems using efficient procedures	• plan and design a solution (algorithm) that uses repetition and two-way selection • can explain the difference between 'if', 'then' and 'else' statements • can independently declare and assign variables • show an awareness of tasks best completed by humans or computers • know that different solutions exist for the same problem • Group commands to achieve a specific outcome	• use decomposition to plan and design solutions for different parts of a problem • design, write and debug modular programs • Record in detail the steps that are required and refer to this when programming • Create variables to provide a score/ trigger an action

Digital Literacy						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Skills	• can open a program and create work for a given task • name different types of computer produced work • talk about their work and suggest ways to improve it • share their use of technology outside of school, naming common devices and their functions • login and off the school network with increasing speed and accuracy using appropriate scaffolding • Use index fingers on a keyboard • Know how to use the space bar • Know how to use the shift key to	• can name software/app that would be appropriate for a simple given task • login without support • Create own documents adding text • Know when and how to use the Enter, shift and backspace keys	• collect information from a range of sources and use this to find answers to questions • Explore and evaluate different uses of communication	• plan, produce and edit a media project taking into account the audience • can explain the difference between data and information • collect images from devices or the internet and use simple editing tools	• know the difference between the internet and internet service e.g. the World Wide Web • compare the difference between hardware and application software, and the roles within a computer system	• know how to effectively use search engines, and know how search results are selected, including that search engines use 'web crawler programs' • perform more complex searches for information • analyse and evaluate data and know that poor quality data leads to unreliable results, and inaccurate conclusions

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Information Technology						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Skills	- begin to save their work in the correct folders as directed by staff - Use a video or camera to record an activity	- can open a saved piece of work, edit the project and resave with increasing accuracy - can find relevant content for a topic from the world wide web using a web browser	- discuss how to improve their work and knows that by using technology any editing can be made more quickly - use the internet to carry out simple web searches to collect digital content - show an awareness of copyright and understand that digital work belongs to the author - use a spreadsheet to	capture good quality still and moving images considering the purpose and the audience can organise data in a table to make it useful	- use the criteria to improve the content and design of their digital project - work with increasing confidence both independently and as a group to create a digital project	- make spreadsheet models to answer given problems, using a range of simple calculations and functions - can represent data in a variety of formats and can explain when each would be appropriate

			produce simple graphs			
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Digital Safety						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Skills	- list what personal information to keep private - name at least one action to follow if they have concerns about their online safety - Know when to take breaks from devices - Explain rules for online safety - Explain how technology might help people	- explain how to use technology safely - can explain the importance of keeping passwords secret and protecting other personal information	- know a range of ways to report unacceptable content they might encounter online - discuss what is appropriate contact when online - Discuss ways digital devices can be distracting - Demonstrate an understanding of how people can connect on the internet	- explain how and when to use range on online services responsibly, identifying possible risks and how they can be reduced - Define term password and understand why strong passwords are important - Consider how posting images will invite assumptions - Identify ways to respond to mean words online	- Identify healthy forms of media - Describe and provide examples of the differences between personal and private information - Define digital footprint - Define copyright and explain how it works	- Identify a range of ways to report concerns about content in and out of school. - Reflect on media balance - Identify strategies for avoiding clickbait - Define term cyberbullying - Describe benefits and risks of online only friendships

Vocabulary				
EYFS	Year 1	Year 2	Year 3/4	Year 5/6
Control Information Internet Program Technology	Control Information Internet Program Algorithm Data Debug Online Repeat Search Selection Sequence	Control Information Internet Program Algorithm Data Debug Repeat Search Selection Sequence Browser Computer networks Execute Input Loop Output Software World Wide Web Web browser Web browser	Control Information Internet Program Algorithm Data Debug Search Search engine Selection Sequence Computer networks Execute Input Loop Output Software World Wide Web Web browser Abstraction Block Blocks Palette Browser Command Condition Control Block Costume Decomposition Digital content Evaluation Logic Logical reasoning PageRank Patterns Processor Procedure Repetition (sometimes referred to as 'iteration' in u pper KS2)	Control Information Internet Program Algorithm Data Debug Search Search engine Selection Sequence Computer networks Execute Input Loop Output Software World Wide Web Web browser Block Blocks Palette Browser Command Condition Control Block Costume Decomposition Digital content Evaluation Logic Logical reasoning PageRank Patterns Processor Procedure Repetition Script Scripts area Server

			Script Scripts area Server Services Simulation Software Sprite Stage Variables	Services Simulation Software Sprite Stage Variables Abstraction Array CPU CSS GPU Hard drive Hardware HTML Iteration List Operating system RAM ROM
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