



Computing Progression map, Skills map, Support map and Challenge map

Key Stage 1	Key Stage 2
<ul style="list-style-type: none"> • Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. • Write and test simple programs. • Use logical reasoning to predict the behaviour of simple programs. • Organise, store, manipulate and retrieve data in a range of digital formats. • Communicate safely and respectfully online, keeping personal information 	<p>Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <ul style="list-style-type: none"> • Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. • Use logical reasoning to explain how a simple algorithm works, 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

<p>private and recognise common uses of information technology beyond school.</p>	<p>web; and the opportunities they offer for communication and collaboration.</p> <ul style="list-style-type: none"> • Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. • Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
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		Milestone 1	Milestone 2	Milestone 3
To code (using Scratch)	Motion	<ul style="list-style-type: none"> • Control motion by specifying the number of steps to travel, direction and turn. 	<ul style="list-style-type: none"> • Use specified screen coordinates to control movement. 	<ul style="list-style-type: none"> • Set IF conditions for movements. Specify types of rotation giving the number of degrees.
	Looks	<ul style="list-style-type: none"> • Add text strings, show and hide objects and change the 	<ul style="list-style-type: none"> • Set the appearance of objects and create sequences of changes. 	<ul style="list-style-type: none"> • Change the position of objects between screen layers (send to back, bring to front).

	features of an object.		
Sound	<ul style="list-style-type: none"> • Select sounds and control when they are heard, their duration and volume. 	<ul style="list-style-type: none"> • Create and edit sounds. Control when they are heard, their volume, duration and rests. 	<ul style="list-style-type: none"> • Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.
Draw	<ul style="list-style-type: none"> • Control when drawings appear and set the pen colour, size and shape. 	<ul style="list-style-type: none"> • Control the shade of pens. 	<ul style="list-style-type: none"> • Combine the use of pens with movement to create interesting effects.
Events	<ul style="list-style-type: none"> • Specify user inputs (such as clicks) to control events. 	<ul style="list-style-type: none"> • Specify conditions to trigger events. 	<ul style="list-style-type: none"> • Set events to control other events by ‘broadcasting’ information as a trigger.
Control	<ul style="list-style-type: none"> • Specify the nature of events (such as a single event or a loop). 	<ul style="list-style-type: none"> • Use IF THEN conditions to control events or objects. 	<ul style="list-style-type: none"> • Use IF THEN ELSE conditions to control events or objects.
Sensing	<ul style="list-style-type: none"> • Create conditions for actions by waiting for a user input (such as responses to questions like: 	<ul style="list-style-type: none"> • Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions). 	<ul style="list-style-type: none"> • Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.

	What is your name?).		
Variables and lists	<ul style="list-style-type: none"> • From Year 3 onwards. 	<ul style="list-style-type: none"> • Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables. 	<ul style="list-style-type: none"> • Use lists to create a set of variables.
Operators	<ul style="list-style-type: none"> • From Year 3 onwards. 	<ul style="list-style-type: none"> • Use the Reporter operators $() + ()$ $() - ()$ $() * ()$ $() / ()$ to perform calculations. 	<ul style="list-style-type: none"> • Use the Boolean operators $() < ()$ $() = ()$ $() > ()$ $() \text{and} ()$ $() \text{or} ()$ Not() to define conditions. • Use the Reporter operators $() + ()$

				<p>() - ()</p> <p>() * ()</p> <p>() / ()</p> <p>to perform calculations.</p> <p>Pick Random () to ()</p> <p>Join () ()</p> <p>Letter () of ()</p> <p>Length of ()</p> <p>() Mod () This reports the remainder</p> <p>after a division calculation</p> <p>Round ()</p> <p>() of ().</p>
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To connect		<ul style="list-style-type: none"> • Participate in class social media accounts. • Understand online risks and the age rules for sites. 	<ul style="list-style-type: none"> • Contribute to blogs that are moderated by teachers. • Give examples of the risks posed by online communications. • Understand the term 'copyright'. • Understand that comments made online that are hurtful or offensive are the same as bullying. • Understand how online services work. 	<ul style="list-style-type: none"> • Collaborate with others online on sites approved and moderated by teachers. • Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. • Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. • Understand the effect of online comments and show responsibility and sensitivity when online. • Understand how simple networks are set up and used.
To communicate		<ul style="list-style-type: none"> • Use a range of applications and devices in order to communicate 	<ul style="list-style-type: none"> • Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally. 	<ul style="list-style-type: none"> • Choose the most suitable applications and devices for the purposes of communication.

		ideas, work and messages.		<ul style="list-style-type: none"> • Use many of the advanced features in order to create high quality, professional or efficient communications.
To collect		<ul style="list-style-type: none"> • Use simple databases to record information in areas across the curriculum. 	<ul style="list-style-type: none"> • Devise and construct databases using applications designed for this purpose in areas across the curriculum. 	<ul style="list-style-type: none"> • Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.

- Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.
- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- An understanding of the connected nature of devices.
- The ability to communicate ideas well by using applications and devices throughout the curriculum.
- The ability to collect, organise and manipulate data effectively.

Support

P4	P5	P6	P7	P8	Early Years
<ul style="list-style-type: none"> • Make selections to communicate meanings. • Make selections to generate familiar/ preferred sounds or images. • Know that certain actions produce predictable results. 	<ul style="list-style-type: none"> • Use web or mobile applications to manipulate something on screen. • Make connections between control devices and information on screen. 	<ul style="list-style-type: none"> • Use computing to interact with other pupils and adults. • Use a keyboard or touch screen to select letters and/or images for own name. • Show an understanding that information can be stored on a computer. • Respond to simple instructions to control a device. • Operate some devices independently. 	<ul style="list-style-type: none"> • Gather information from different sources. • Use computing to communicate meaning and express ideas in a variety of contexts. • Begin to choose equipment and applications for a familiar activity. 	<ul style="list-style-type: none"> • Find similar information in different formats (such as in photographs, books, websites or television programmes). • Use computing to communicate and present ideas. • Start an application and make a choice from it. • Communicate about the uses of computing. 	<ul style="list-style-type: none"> • Recognise that a range of technology is used in homes and in schools. • Use a simple application on a computer or mobile device. • Use computing devices to interact with age-appropriate applications. • Create simple representations of events, people and objects.

Challenge

Years 7, 8 and 9

Computing opportunities	Coding	Connecting	Communicating	Collecting
<ul style="list-style-type: none">• Use a range of devices and applications across all curriculum subjects.• Further develop coding skills and applications.• Communicate a wide range of ideas to a variety of audiences.	<ul style="list-style-type: none">• Design and use computer abstractions that model real world problems and physical systems.• Understand some key algorithms for sorting and searching.• Use a number of programming languages to solve a variety of computational problems.• Use data structures such as tables or arrays.	<ul style="list-style-type: none">• Understand the devices and applications that make up networked computer systems and how they interact.• Explain how networks such as the internet work.• Understand how computers can monitor and control physical systems.	<ul style="list-style-type: none">• Undertake creative projects that involve selecting, using and combining multiple applications, across a range of devices, to achieve goals.• Create, reuse, revise and repurpose digital information and content with attention to design, intellectual property and audience.	<ul style="list-style-type: none">• Explain how data of various types can be represented and manipulated in the form of binary digits including numbers, text, sounds and pictures.• Collect and analyse data.

<ul style="list-style-type: none">• Collect, manipulate and analyse data.	<ul style="list-style-type: none">• Use procedures to write modular programs.• Understand Boolean logic (such as AND, OR and NOT) and its use in determining which parts of a program are executed.• Explain how instructions are stored and executed within a computer system.			
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