

Computing - Progression of knowledge and skills

Pupils should be taught to:

Programming – Substantive Knowledge			
EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<ul style="list-style-type: none"> • Know that actions can be put into a sequence to make something happen. • Know that a set of steps is called an algorithm. • Know that instructions need to be in the right order for them to work 	<ul style="list-style-type: none"> • To understand a program is a sequence of commands that controls a device. • To understand a command is an instruction a device can follow, such as <i>move</i> or <i>turn</i>. • To understand commands control how sprites move and behave in a program. • To understand changing values in commands can affect how sprites move or act. • To understand sprites have their own instructions (algorithms) that tell them what to do. • To understand debugging means finding and fixing problems in a program, and there can be more than one solution to a problem. 	<ul style="list-style-type: none"> • To understand a program needs a start and follows a set sequence to achieve a desired action or effect. • To understand commands can be sequenced and extended to add features and control movement. • To understand commands (blocks) have specific outcomes and must be sequenced correctly. • To understand sprites and backdrops in Scratch have attributes and can be controlled using commands. • To understand sprites respond to events, such as key presses, which trigger actions in a program. • To understand debugging is the process of finding and fixing mistakes to improve how a program runs. 	<ul style="list-style-type: none"> • To understand how computers use commands to control physical systems To know how different types of loops work in programming • To understand that conditions affect how a program behaves. • To understand how selection works in computer programs and how it affects program flow • To know how to use algorithms to plan for selection
Programming – Disciplinary Skills			
EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2

<ul style="list-style-type: none"> Order steps in a sequence to make something happen (e.g., moving a Beebot). Predict what will happen if instructions are followed. Debug by changing steps if the outcome isn't what they expected. 	<ul style="list-style-type: none"> To create and combine directional commands to build and test simple sequences. To predict, observe, and explain what a device will do when given specific commands. To join commands (blocks) together to create a sequence and run a program. To plan, debug, and improve simple programs to achieve a goal. To design and plan how each sprite will move by creating an algorithm. To test and adjust programs by adding or changing commands for different sprites. 	<ul style="list-style-type: none"> To create projects from a design, making choices about appearance and behaviour. To explain how code works, including predicting outcomes and matching actions to commands. To create and adapt programs by choosing sprites, blocks, and keys to meet a given design. To build a program by selecting and ordering blocks to control sprites and sounds. To develop and extend a project by adding features, testing, and modifying sequences of commands. To design and evaluate a maze-based challenge, justifying choices and improving based on outcomes. 	<ul style="list-style-type: none"> To write and test programs that use loops and selection To build and control physical computing systems To design, plan, and evaluate a physical computing project To design a program that uses selection effectively To create, test, and debug a program that uses selection To evaluate and improve a program that uses selection
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Creating Media – Substantive Knowledge

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<ul style="list-style-type: none"> Know that computers, tablets, and cameras can be used to create and record information. Know that images, sounds, and drawings can be stored and shared. Know that tools can be used to change or improve work. 	<ul style="list-style-type: none"> To understand that paint tools (freehand, shape, line) have different functions for creating digital images. To understand that colours, shapes, and brush sizes can be adjusted to achieve different effects. To understand that Digital art can be created in the style of well-known artists and compared to traditional methods. 	<ul style="list-style-type: none"> To understand that animation is a sequence of images or frames that create the illusion of movement. To understand that small changes between frames are needed to make smooth animated motion. To understand that storyboarding helps to plan animations using characters, settings, and events. To understand that text and images communicate messages, each with their own strengths and weaknesses. To understand that page layout and orientation affect how information is presented and understood. To understand that desktop publishing allows content to be arranged clearly and effectively for a specific purpose. 	<ul style="list-style-type: none"> To understand what makes a video effective To understand how video can be planned, recorded, and improved To understand how digital devices are used to record and edit video To understand how vector drawings are created using shapes and objects To understand how tools and features affect the appearance of vector drawings To understand how vector drawings can be used for specific purposes

Creating Media – Disciplinary Skills

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
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<ul style="list-style-type: none"> Take photos or record videos using tablets/cameras. Use drawing apps or simple programs to create images. Choose tools (e.g., sound buttons, paint programs) to share ideas and learning. 	<ul style="list-style-type: none"> To use and name different tools to draw lines, shapes, and marks. To select appropriate tools and colours to match a desired style or effect. To create digital artwork independently and explain tool choices. 	<ul style="list-style-type: none"> To create and review stop-frame animations using digital tools like onion skinning. To improve animations by evaluating their own work and acting on peer feedback. To enhance projects by adding media and explaining design choices. To edit and format text and images by adjusting font styles, colours, and layout to improve clarity. To create a digital publication by selecting content, using placeholders/templates, and arranging it for a specific audience or purpose. To evaluate layouts and design choices, including comparing digital publishing to work created by hand. 	<ul style="list-style-type: none"> To explore and apply filming techniques for a given purpose To plan, create, and edit video content To evaluate the impact of video creation choices To explore and experiment with digital drawing tools To create and edit vector drawings using layering and grouping To evaluate and reflect on the effectiveness of a vector drawing
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Computer systems and networks – Substantive Knowledge

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<ul style="list-style-type: none"> Know that a computer can be used to play games, find information, and work with others. Know that digital devices can be connected (e.g., interactive whiteboard, iPads). Know that devices follow instructions to work. 	<ul style="list-style-type: none"> To know technology is something that helps us. To know computers have main parts such as a keyboard, mouse, and screen. To know a mouse and keyboard are used to control and input information into a computer. To know computers can be used to create and save work. 	<ul style="list-style-type: none"> To know that digital devices work by accepting inputs, processing them, and producing outputs. To know that input and output devices have different roles in how we interact with digital systems. To know that computer networks connect devices and allow information to be shared across multiple connections. 	<ul style="list-style-type: none"> To explain how computer systems are made up of connected parts To recognise the role and value of computer systems in daily life To understand how search engines work and why they are used

Computer systems and networks – Disciplinary Skills

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
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<ul style="list-style-type: none"> • Use computers and tablets for games or activities linked to learning themes. • Explore technology old and new (e.g., typewriters, cameras, kitchen equipment). • Use an interactive whiteboard to explore maps or information together. 	<ul style="list-style-type: none"> • Use a mouse to open programs, click, drag, and create. • Type text using a keyboard (e.g. their name). • Save work to a file. • Switch on and log into a computer independently. 	<ul style="list-style-type: none"> • To classify and describe digital devices by their inputs, outputs, and purpose. • To compare digital and non-digital tools to explain how technology changes the way we work. • To demonstrate how information can be passed through a network and explain the function of network components (e.g. switch, server, wireless access point). 	<ul style="list-style-type: none"> • To identify and explain the parts and function of a digital system • To analyse and evaluate search results • To consider how and why search results are ranked
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Data & Information – Substantive Knowledge

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<ul style="list-style-type: none"> • Know that objects can be sorted and grouped in different ways. • Know that information can be counted and compared. • Know that symbols can be used to represent data (e.g., pictures, marks, tallies). 	<ul style="list-style-type: none"> • To know objects can be grouped and labelled based on shared properties. • To know groups of objects can be counted and compared. • To know objects can be described using different features, such as colour, size, or shape. 	<ul style="list-style-type: none"> • To know branching databases use yes/no questions to group and identify objects. • To know attributes are features or characteristics (like colour or size) used to sort data. • To know well-structured databases need carefully ordered questions to split data effectively and clearly. 	<ul style="list-style-type: none"> • To understand what a database is and how it organises information • To understand how to filter, sort, and group data to answer questions • To understand how data can be presented visually

Data & Information – Disciplinary Skills

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
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<ul style="list-style-type: none"> Group and sort objects by attribute (e.g., colour, size, shape). Record findings using marks, pictures, or digital tools. Talk about what they have found out (e.g., “most”, “least”, “more than”, “less than”). 	<ul style="list-style-type: none"> To group and count objects based on shared properties. To compare and describe groups of objects using labels and numbers. To collect and record information to answer simple questions about objects. 	<ul style="list-style-type: none"> To create and test a branching database using yes/no questions based on object attributes. To plan and build a structure that identifies objects accurately, including using a physical or digital format. To evaluate and refine databases by comparing structures and discussing real-world applications. 	<ul style="list-style-type: none"> To create and manipulate databases to record and organise information To use search tools and filters to find answers in a database To ask and answer questions using data from real-world contexts
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E-Safety – Substantive Knowledge

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
<ul style="list-style-type: none"> Know that some information about themselves is private. Know that we must ask before using someone else’s work or image. Know that they can talk to a trusted adult if something online worries them. 	<ul style="list-style-type: none"> To recognise how internet use can affect and upset others. To identify which information is appropriate to share and post online and which is not. To explain what is meant by online information. To explain why we need passwords and what makes a strong password. To understand that they need to ask permission before sharing content online and explain why. To understand that they have the right to deny their permission to information about them being shared online. Say who they can ask for help with online worries. 	<ul style="list-style-type: none"> To differentiate between fact, opinion and belief online. To recognise that digital devices communicate with each other to share personal information. To recognise why social media platforms are age-restricted. To describe some of the methods used to persuade people to buy online. To explain what a bot is and give examples of different bots. To explain some positive and negative distractions of using technology and small strategies for reducing the time spent on technology. 	<ul style="list-style-type: none"> To understand that passwords need to be strong and that apps require some form of password. To recognise some types of online communication and know who to go to if they need help with any communication matters online. To know what bullying is and that it can occur both online and in the real world. To recognise when health and well-being are being affected in either a positive or negative way through online use. To discuss various issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and describe numerous ways to get help. To explain how sharing online can have both positive and negative impacts. To be aware of how to seek consent from others before sharing material online and describe how content can still be shared online even if it is set to private. To explain what a digital reputation is and what it can consist of.

E-Safety – Disciplinary Skills

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
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<ul style="list-style-type: none">• Follow classroom rules for using computers and tablets safely.• Choose safe online activities (with adult guidance).• Practise asking for help if they see something they don't like.	<ul style="list-style-type: none">• To use some strategies to work out if online information is reliable or not.	<ul style="list-style-type: none">• To explain how to deal with upsetting online content.• To describe how to search over multiple platforms and be aware of the accuracy of the results presented.	<ul style="list-style-type: none">• To search for simple information about a person, such as their birthday or key life moments.• To offer some advice and tips to combat the negative effects of online use.• To understand the importance of capturing evidence of online bullying and demonstrate some of these methods on the devices used at school.• To describe ways to manage passwords and strategies to add extra security, such as two-factor authentication.• To describe strategies to identify scams.• To explain ways to increase their privacy settings and understand why it is important to keep their software updated.
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