

Rockcliffe First School: Computing Long-Term Plan

KS1 - Cycle A

Term	Unit	Key Learning	Vocabulary
Autumn 1	Keeping safe and exploring technology	This unit gives important early lessons on keeping safe online, beginning to explore where we find technology and how it works in the world around us. This builds on what students do in the Early Years, where they are likely to explore a range of control equipment and have early conversations and stories about being safe when using electronic devices and going online. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: - recognise common uses of information technology beyond school - use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have	Control – using computers to move or otherwise change ‘physical’ systems. The computer can be hidden inside the system or connected to it. Digital citizen - someone who uses technology responsibly to learn, create, and participate. Digital media - information that comes to us through the internet, often through a tablet, smartphone, or laptop. Internet – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate. Media - all of the ways that large groups of people get and share information (TV, books, internet, newspapers, phones, etc). Media balance - using media in a way that feels healthy and in balance with other life activities (family, friends, school, hobbies, etc). Media choices - time spent watching, listening to, reading, or creating media. Network - A network consists of multiple devices that communicate with one another. It can be as small as two computers or as large as billions of devices. While a traditional network is comprised of desktop computers, modern networks may include laptops, tablets, smartphones, televisions, gaming consoles, smart appliances, and other electronics. Online - using a digital device to visit a website or app that makes use of the internet. Private information - information about you that can be used to identify you because it is unique to you (e.g. your full name or your address) Server - A server is a computer that serves up information to other computers on a network. Schools and many businesses will have a file server that pupils and employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger. World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.

		concerns about content or contact on the internet or other online technologies.	
Autumn 2	Exploring Digital Sound	This is a creative unit that begins to show students the many ways we can create and edit multimedia content on digital devices. The content focuses on music and sound but also looks at how that can be paired with imagery. It should build on exploring sound and music with instruments in Early Years but show them some interesting and unique ways to create music digitally. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school	Digital - Any signals or data that can be expressed by using the digits 0 and 1 (binary code). Digital content – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video, or virtual environments, and combinations of these (i.e. multimedia). Edit - To change, add or remove elements in a piece of work (usually to improve it). Evaluation - Making judgements Layer - In sound or video terminology, layering is the stacking of media elements in a project timeline to enable playback of multiple elements simultaneously. Online - using a digital device to visit a website or app that makes use of the internet. Save - To store a piece of work in a computer's memory so that it can be recalled later. Timeline - a graphical representation of a period of time. Used in video and sound editing to order and arrange the separate elements of a project

Spring 1	Making multimedia stories	This unit gives students another creative opportunity to select and combine multimedia elements of text, images, animation and sound in projects. It also puts a strong focus on keyboard skills and beginning to type with two hands, which are vital key skills for their future learning. It should build upon a rich background of enjoying stories in Early Years, where they may have listened to, planned and come up with ideas for their own stories. If students have already completed our Year 1 unit Exploring digital sound, then it will build upon lessons that covered combining images and sound. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information	Alter - to change the way something looks, sometimes using a computer or other digital tools Animation - Combining a series of still images to give the illusion of movement when the images are shown as a sequence Digital content – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video, or virtual environments, and combinations of these (i.e. multimedia). Edit - To change, add or remove elements in a piece of work (usually to improve it). Format (text) - Text formatting refers to the attributes of text other than the actual text itself. For example: bold, italics, underlining, colour, and size, are all formatting attributes of text. Import - A computing command that usually means allowing a user to bring in a file, or part of a file into another application so they can be combined. For example, an image could be imported into presentation slides, or art software to use as a background. Media - all of the ways that large groups of people get and share information (TV, books, internet, newspapers, phones, etc). Multimedia - Content that uses a combination of different content forms such as text, audio, images, animations, video and interactive content. Save - To store a piece of work in a computer's memory so that it can be recalled later.
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		technology beyond school	
Spring 2	Action Algorithms!	This unit focuses on what algorithms are and how we can create precise sequences of instructions in different contexts. It supports all of the future computer science learning that the students will experience and should begin to give them an understanding of how computers and other devices can be programmed to produce specific outcomes. It should build on sequencing and sorting activities in Early Years. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • 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	Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Command – a step or line of programming. Condition - a programming rule to dictate when something in a program will happen. Sometimes referred to as an If-Then statement, because IF a condition is met, THEN an action is performed. Control – using computers to move or otherwise change ‘physical’ systems. The computer can be hidden inside the system or connected to it. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Logic - Predicting and analysing. Computational logic is used to allow a program to decide what to do and when. For example, you may write code that says: “When the user clicks this button, perform this calculation.” Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Program - (verb) To give a series of instructions to a machine so that it will perform a task automatically Repetition (Also referred to as a ‘Loop’) – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped. Selection – ‘when things happen’ - A programming construct in which the instructions that are executed are determined by whether a particular condition is met. A question is asked, and depending on the answer, the program chooses between two or more possible courses of action. Sequence – to place programming instructions in order, with each executed one after the other.

Summer 1	An introduction to digital art	This unit gives students the chance to explore a range of key digital art design skills and tools. It should build on experimentation with drawing simple pictures in Early Years, both on paper and using digital devices. It supports the development of mouse skills, which will be a vital key skill for their future learning. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school	Alter - to change the way something looks, sometimes using a computer or other digital tools Edit - To change, add or remove elements in a piece of work (usually to improve it) Evaluation - Making judgements (a computational thinking concept) Flood fill - a graphic drawing tool that colours a contained area with colour with a single click, usually represented by a tin of paint tipping over. Multimedia - Content that uses a combination of different content forms such as text, audio, images, animations, video and interactive content. Online - using a digital device to visit a website or app that makes use of the internet. Save - To store a piece of work in a computer's memory so that it can be recalled later. Software – computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to 'apps' running on mobile devices and to web-based services.
Summer 2	Programming direction	This unit focuses on algorithms, planning and debugging precise sequences of instructions for directions. It supports all of the future computer science learning that the students will experience and should begin	Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Block – a 'chunk' of programming or a particular graphic block or piece found in a graphical programming language such as Scratch. Blocks linked together are called a script in Scratch. Command – a step or line of programming. Control – using computers to move or otherwise change 'physical' systems. The computer can be hidden inside the system or connected to it. Debug – to detect and correct the errors in a computer program.

		to give them an understanding of how computers and other devices can be programmed to produce specific outcomes. It should build on sequencing and sorting activities and any opportunities they have had to experiment with control devices in Early Years. It also builds on the activities and vocabulary from the Year 1 unit Action Algorithms. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • 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	Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Edit - To change, add or remove elements in a piece of work (usually to improve it). Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Logic - Predicting and analysing. Computational logic is used to allow a program to decide what to do and when. For example, you may write code that says: “When the user clicks this button, perform this calculation.” Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Program - (verb) To give a series of instructions to a machine so that it will perform a task automatically Repetition (Also referred to as a ‘Loop’) – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped. Save - To store a piece of work in a computer’s memory so that it can be recalled at a later time. Sequence – to place programming instructions in order, with each executed one after the other.
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KS1 - Cycle B

Term	Unit	Key Learning	Vocabulary
Autumn 1	Writing in different styles	This unit looks at the key skills of becoming familiar with a keyboard, beginning to type with two hands and word processing and desktop publishing skills. These are all key skills that will underpin future learning for students and help them to work more efficiently with digital devices. The lessons follow on from the Year 1 unit Making multimedia stories and also incorporate some of the drawing skills learned in An introduction to digital art. National Curriculum Links - Computing KS1 The content of this unit covers the following NC strands: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school	Alter - to change the way something looks, sometimes using a computer or other digital tools Copyright - legal protection that a creators have over the things they create Digital content – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video, or virtual environments, and combinations of these (i.e. multimedia). Edit - To change, add or remove elements in a piece of work (usually to improve it). Format (text) - Text formatting refers to the attributes of text other than the actual text itself. For example: bold, italics, underlining, colour, and size, are all formatting attributes of text. Import - A computing command that usually means allowing a user to bring in a file, or part of a file into another application so they can be combined. For example, an image could be imported into presentation slides, or art software to use as a background. Media - all the ways that large groups of people get and share information (TV, books, internet, newspapers, phones, etc). Save - To store a piece of work in a computer's memory so that it can be recalled later.

Autumn 2	An Introduction to Animation	This unit is another example of students working with multimedia content. They will be using a range of tools to create their own animations using digital drawings and stop-motion films with objects and figures. It links brilliantly with literacy lessons on storytelling and sequencing and builds on the Year 1 units Making multimedia stories, where students can animate the movement of objects in their work, and the drawing skills they will develop in An introduction to digital art. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • use technology safely and respectfully	Alter - to change the way something looks, sometimes using a computer or other digital tools Animation - Combining a series of still images to give the illusion of movement when the images are shown as a sequence Capture - (in film or animation) To take a photograph or video recording Export - To take a saved file out of a piece of software so that it can be placed or used in a different location Edit - To change, add or remove elements in a piece of work (usually to improve it). Evaluate - To make a judgement about a piece of work, usually against a set of predetermined criteria. Frame - A single drawing or photograph in an animation Save - To store a piece of work in a computer's memory so that it can be recalled later.
Spring 1	Programming with Scratch Jr	This unit focuses on algorithms, planning and debugging precise sequences	Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem.

		of instructions to create a variety of programs. It builds on sequencing and sorting activities in Early Years as well as computer science concepts from Year 1 units Action algorithms and Programming direction. It also links well with the Year 2 unit An introduction to animation, as students look at creating animations with code. National Curriculum Links - Computing KS1 The content of this unit covers the following NC strands: • 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 • use technology purposefully to create, organise, store,	Block – a ‘chunk’ of programming or a particular graphic block or piece found in a graphical programming language such as Scratch. Blocks linked together are called a script in Scratch. Broadcast - A method of sending a message to trigger an event in a program. Often used between sprites or the stage in Scratch. Command – a step or line of programming. Control – using computers to move or otherwise change ‘physical’ systems. The computer can be hidden inside the system or connected to it. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Edit - To change, add or remove elements in a piece of work (usually to improve it). Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Logic - Predicting and analysing. Computational logic is used to allow a program to decide what to do and when. For example, you may write code that says: “When the user clicks this button, perform this calculation.” Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Program - (verb) To give a series of instructions to a machine so that it will perform a task automatically Repetition (Also referred to as a ‘Loop’) – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped. Save - To store a piece of work in a computer’s memory so that it can be recalled later. Script – (In Scratch) blocks are snapped together into stacks, called scripts. When you click on a script, Scratch runs the blocks from the top of the script to the bottom. You can program sprites and the stage using scripts. Selection – ‘when things happen’ - A programming construct in which the instructions that are executed are determined by whether a particular condition is met. A question is asked, and depending on the answer, the program chooses between two or more possible courses of action. Sequence – to place programming instructions in order, with each executed one after the other.
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		manipulate and retrieve digital content	Sprite – A graphical object that can be controlled by programming. In Scratch projects are made up of objects called sprites. You can change how a sprite looks by giving it a different costume.
Spring 2	Keep safe and create	This unit gives important early lessons on keeping safe online. We hope this builds on work from Early Years, where they are likely to have early conversations and stories about being safe when using electronic devices and going online and how to ask for help when they have problems. This unit also builds on the Year 1 unit Keeping safe and exploring technology and further develops creative skills for dealing with text and images learned in our Year 1 unit Making multimedia stories and An introduction to digital art. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands: • recognise common uses of information technology beyond school • use technology safely and respectfully,	Control – using computers to move or otherwise change ‘physical’ systems. The computer can be hidden inside the system or connected to it. Digital citizen - someone who uses technology responsibly to learn, create, and participate. Digital media - information that comes to us through the internet, often through a tablet, smartphone, or laptop. Internet – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate. Media - all the ways that large groups of people get and share information (TV, books, internet, newspapers, phones, etc). Media balance - using media in a way that feels healthy and in balance with other life activities (family, friends, school, hobbies, etc). Media choices - time spent watching, listening to, reading, or creating media. Network - A network consists of multiple devices that communicate with one another. It can be as small as two computers or as large as billions of devices. While a traditional network is comprised of desktop computers, modern networks may include laptops, tablets, smartphones, televisions, gaming consoles, smart appliances, and other electronics. Online - using a digital device to visit a website or app that makes use of the internet. Private information - information about you that can be used to identify you because it is unique to you (e.g. your full name or your address) Server - A server is a computer that serves up information to other computers on a network. Schools and many businesses will have a file server that pupils and employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger. World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.

		keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. • use technology purposefully to create, organise, store, manipulate and retrieve digital content	
Summer 1	Programming with Logo	This unit focuses on algorithms, planning and debugging precise sequences of instructions to control the movement of a screen 'turtle'. It builds on sequencing and sorting activities in Early Years as well as computer science concepts from Year 1 units Action algorithms and Programming direction and the Year 2 unit Programming with Scratch Jr. National Curriculum Links - Computing KS1 The content of this unit covers the following National Curriculum strands:	Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Block – a ‘chunk’ of programming or a particular graphic block or piece found in a graphical programming language such as Scratch. Blocks linked together are called a script in Scratch. Command – a step or line of programming. Control – using computers to move or otherwise change ‘physical’ systems. The computer can be hidden inside the system or connected to it. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Edit - To change, add or remove elements in a piece of work (usually to improve it). Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Logic - Predicting and analysing. Computational logic is used to allow a program to decide what to do and when. For example, you may write code that says: “When the user clicks this button, perform this calculation.” Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Procedure - A procedure/function is used in programming to break a complex task down into simple steps or sections. Many different types of programming languages can be used

		- 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	to build a procedure. Depending on the programming language, a procedure may also be called a subroutine, subprogram or function. Program - (verb) To give a series of instructions to a machine so that it will perform a task automatically Repetition (Also referred to as a 'Loop') – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped. Save - To store a piece of work in a computer's memory so that it can be recalled later. Sequence – to place programming instructions in order, with each executed one after the other.
Summer 2	Finding and presenting information	This unit covers safe and effective searching for information online, and then looks at how to present that information in different ways such as in graphs and charts. It builds on online safety messages in Year 1 unit Keeping safe and exploring technology and Year 2 unit Keep safe and create. It also builds on literacy skills such as reading and comprehension of non-fiction texts. National Curriculum Links - Computing KS1	Database - A database is an organised collection of data, generally stored and accessed electronically from a computer system. Edit - To change, add or remove elements in a piece of work (usually to improve it). Evaluation - Making judgements (a computational thinking concept) Format (text) - Text formatting refers to the attributes of text other than the actual text itself. For example: bold, italics, underlining, colour, and size, are all formatting attributes of text. Information – the meaning or interpretation given to a set of data by its users, or which results from data being processed. Internet – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate. Network - A network consists of multiple devices that communicate with one another. It can be as small as two computers or as large as billions of devices. While a traditional network is comprised of desktop computers, modern networks may include laptops, tablets, smartphones, televisions, gaming consoles, smart appliances, and other electronics. Online - using a digital device to visit a website or app that makes use of the internet. Save - To store a piece of work in a computer's memory so that it can be recalled later. Search – to identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties.

		The content of this unit covers the following National Curriculum strands: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	Server - A server is a computer that serves up information to other computers on a network. Schools and many businesses will have a file server that pupils and employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger. World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.
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KS2 - Cycle A

Term	Unit	Key Learning	Vocabulary
Autumn 1	Digital literacy and online safety - Year 3	This unit builds on important online safety messages that will be delivered in Key Stage 1. Students cover a range of age-appropriate online safety and digital literacy themes in Keeping safe and exploring technology (Year 1) and Keep safe and create (Year 2). As the students enter Key Stage 2, the themes they learn about in this unit widen to include; screen time issues, privacy, digital footprints, online communities, online bullying and copyright principles. National Curriculum Links - Computing KS2 The content of this unit covers the following NC strands: • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of	Attention - noticing someone or something as important Community - people who share a common neighbourhood, background, or interests Concentration - giving your full attention to a specific activity Credit - giving recognition to a person that created something Digital footprint - a record of what you do online, including the sites you visit and the things you share Distraction - something that keeps you from giving your full attention Internet - a worldwide network that connects people using computers, phones, or other devices Online - using a computer, phone, or tablet to visit a website or app Permanent - something that lasts forever Private - something that you should keep to yourself Private information - information about you that can be used to identify who you are Respect - showing that you appreciate someone

		programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	
Autumn 2	Communication and collaboration	This unit gives important lessons at the beginning of Key Stage 2 about using digital tools for communication and collaboration. The unit is placed here so that the ideas and principles learned in these lessons can be reinforced and used by the students in their learning all the way through Key Stage 2. It builds on some of the online safety messages that are covered in Key Stage 1 units Keeping safe and exploring technology (Year 1) and Keep safe and create (Year 2) about being safe when communicating with other people online.	Alter - to change the way something looks, sometimes using a computer or other digital tools. Annotate - add notes to (a text or diagram) giving explanation or comment. Attachment - A digital document or file that can be attached to, and sent with, an email. It may be an image, video, text document or any other type of file. Most email systems have a limit on the size of the file that can be attached and sent. BCC - Stands for 'Blind Carbon Copy'. A useful way to let others see an e-mail you sent without the main recipient knowing. It is faster than sending the original message and then forwarding the sent message to the other recipients. It is also good etiquette to use Bcc when copying a message to many people. This prevents the e-mail addresses from being captured by someone in the list who might use them for spamming purposes. CC - Stands for 'Carbon Copy'. Typically used when a message is intended for one person but is relevant to other people as well. The main person the message before can be entered in the 'To' section, other people that may need to be aware of the email can be added to the 'CC' section. Cloud storage - Services such as Google Drive, OneDrive and iCloud allow users to store their files and data on internet servers, rather than on their local computers. Advantages of this are that files are safer and can be accessed anywhere with an internet connected device. Storage can also be effectively infinite as you can buy more storage if needed.

		National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact • 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	Collaboration - To work together with others. Many digital tools now allow easy collaboration as users can work remotely on the same document or system at the same time. Tools like Google G-Suite and Microsoft Office 365 offer a variety of collaborative documents and apps. Communication - The exchanging of information with speaking, writing or some other medium. Edit - To change, add or remove elements in a piece of work (usually to improve it). Email - Short for 'electronic mail', it allows you to send and receive messages to and from anyone with an email address, anywhere in the world. Internet – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate. Internet Service Provider (ISP) - a company that lets you connect to the Internet via their system. They may filter unsuitable content or limit how much data can be sent at once (the bandwidth). Online - using a digital device to visit a website or app that makes use of the internet. Packet - A packet is a small amount of data sent over a network, such as a LAN or the Internet. Similar to a real-life package, each packet includes a source and destination as well as the content (or data) being transferred. When the packets reach their destination, they are reassembled into a single file or other contiguous block of data. Password - a secret string of letters, symbols, and numbers that you can use to restrict who can access something digital Personal information - information about you that cannot be used to identify you because it is also true for many other people (e.g. your hair colour or the city you live in) Phishing - The sending of fraudulent emails pretending to be from reputable companies in order to get people to reveal personal information, such as passwords and credit card numbers. Private information - information about you that can be used to identify you because it is unique to you (e.g. your full name or your address) Save - To store a piece of work in a computer's memory so that it can be recalled later. Server - A server is a computer that serves up information to other computers on a network. Schools and many businesses will have a file server that pupils and employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger.
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			Services – programs running on computers, typically those connected to the internet, which provide functionality in response to requests; for example, to transmit a web page, deliver an email or allow a text, voice or video conversation. Social interaction - talking or messaging with people to develop friendship or community. Spam - Junk email or messages on a website or messaging service. Symbol - a character other than a number or letter, such as #, !, or @. Username - a name you create to sign into a website, app, or game. Web browser - A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Edge, Google Chrome, Mozilla Firefox, and Apple's Safari. World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.
Spring 1	Starting from Scratch - NEW	This unit builds on the computer science units with a coding focus from Key Stage 1: Action algorithms and Programming direction (Year 1) and Programming with Scratch Jr and Programming with Logo (Year 2). It introduces the coding language of Scratch which is the most widely used block-based coding language in the world and is a key tool that is used again in several units through Key Stage 2 and 3. New key concepts such as sequence, selection, repetition, working with variables are all introduced in this unit.	Abstraction - Removing unnecessary detail to help you solve a problem (a computational thinking concept) Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Block – a ‘chunk’ of programming or a particular graphic block or piece found in a graphical programming language such as Scratch. Blocks linked together are called a script in Scratch. To find out what a block does, right-click on it, then select help from the pop-up menu. Blocks Palette – (in Scratch) – the library of blocks in most graphical programming languages. Command – a step or line of programming. Coordinate (noun) - Cartesian coordinates are a set of values that show an exact position. In a 2D environment, such as on a graph, two axis are needed, each with an equal number scale. The X axis represents the horizontal position of a point; the Y axis represents the vertical position of a point. Coordinates in a 3D environment require a third axis (Z) which represents depth. Coordinates can be commonly used in coding to position objects (sprites in Scratch) within a program’s visual environment.

		National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • 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	Costume – The costume is the appearance of a sprite on the screen. These are usually editable. A sprite can often have multiple costumes that are changed by programming the sprite. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Input – data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. Information which is received by the computer from a keyboard, mouse or sensor e.g. pressing the left mouse button or space bar creates an input. Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Output – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems. Also, an action performed by the computer e.g. switching on a light, moving a turtle or sprite across the screen. Program – A sequence of instructions written to perform a specified task on the computer Repetition (also known as ‘Loop’ or ‘Iteration’) – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped. Script – (In Scratch) blocks are snapped together into stacks, called scripts. When you click on a script, Scratch runs the blocks from the top of the script to the bottom. You can program sprites and the stage using scripts. Selection – ‘when things happen’ - A programming construct in which the instructions that are executed are determined by whether a particular condition is met. Sequence – to place programming instructions in order, with each executed one after the other. Sprite – A graphical object that can be controlled by programming. Stage – (in Scratch) - the Stage is where you see your stories, games, and animations come to life. Sprites move and interact with one another on the Stage. The Stage is 480 units wide and 360 units tall. It is divided into an x-y grid.
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Spring 2	Databases	This unit builds on some of the content in the Year 2 unit Finding and Presenting Information, where students look at gathering and presenting data in graphs and charts. It also utilises skills learned in the Year 3 unit Communication and collaboration, such as using collaborative tools to gather, analyse, and present information. National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • 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 • 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	Cloud storage - Services such as Google Drive, OneDrive and iCloud allow users to store their files and data on internet servers, rather than on their local computers. Advantages of this are that files are safer and can be accessed anywhere with an internet connected device. Storage can also be effectively infinite as you can buy more storage if needed. Collaboration - To work together with others. Many digital tools now allow easy collaboration as users can work remotely on the same document or system at the same time. Tools like Google G-Suite and Microsoft Office 365 offer a variety of collaborative documents and apps. Data - A structured set of numbers, representing digitised text, images, sound or video, which can be processed or transmitted by a computer. Database - A database is an organised collection of data, generally stored and accessed electronically from a computer system. Edit - To change, add or remove elements in a piece of work (usually to improve it). Evaluation - Making judgements (a computational thinking concept) Export - The opposite of importing and a computing command that usually means saving or sending a file, or part of a file, to a specific new location. It also often allows changing the file format as it's saved. For example, a Photoshop image could be exported as a PDF document or different image types (PNG, JPEG etc). You might also export content between apps on an iPad. A piece of music could be exported to iMovie to use as a soundtrack for a video. Field - Columns of a table in a database, or categories. For example, in a database of people in an organisation you might have fields for 'name', 'address', 'phone number', 'job title' etc. Import - A computing command that usually means allowing a user to bring in a file, or part of a file into another application so they can be combined. For example, an image could be imported into presentation slides, or art software to use as a background. Rank - A number that shows the position of something in a numerically ordered sequence. Record - Every item in a database is called a 'record'. Each record will have information saved for a number of categories or 'fields'. For example, in a database about countries 'Spain' might be a record that is kept. Information on population, land area, and capitol city may be part saved as fields for that record. Save - To store a piece of work in a computer's memory so that it can be recalled later.
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		given goals, including collecting, analysing, evaluating and presenting data and information	Search - To identify data that satisfies one or more conditions, such as web pages or records in a database containing keywords, or files on a computer with certain properties. Sort - To arrange a set of data into a prescribed sequence.
Summer 1	Digital imagery: Patterns in nature	This unit builds on the digital design work that students cover in Key Stage 1. In An introduction to digital art (Year 1), students learn about a wide range of digital drawing and painting tools, such as different brushes and effects, shape and line drawing tools and the flood fill tool. They also apply some of these tools and skills in Making multimedia stories (Year 1), Writing in different styles and Keep safe and create (both Year 2). This unit builds on their previous knowledge and use of digital painting techniques and then extends their learning by beginning to look at photo editing tools and techniques. National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • select, use and combine a variety of software	Alter - to change the way something looks, sometimes using a computer or other digital tools. Attribute - giving credit to the person who created something, such as listing the author's name and date, or a citation. Copyright - legal protection that a creators have over the things they create. Digital content – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video (including animation), or virtual environments, and combinations of these (i.e. multimedia). Edit - To change, add or remove elements in a piece of work (usually to improve it). Evaluation - Making judgements. Export - The opposite of importing and a computing command that usually means saving or sending a file, or part of a file, to a specific new location. It also often allows changing the file format as it's saved. For example, a Photoshop image could be exported as a PDF document or different image types (PNG, JPEG etc). You might also export content between apps on an iPad. A piece of music could be exported to iMovie to use as a soundtrack for a video. Hue - A colour or shade. Intellectual property - the ownership of something you create, giving you a right to how others use it. Import - A computing command that usually means allowing a user to bring in a file, or part of a file into another application so they can be combined. For example, an image could be imported into presentation slides, or art software to use as a background. Layer - In sound, photo or video editing terminology, layering is the stacking of media elements on top of each other, or in a project timeline to enable a view or playback of multiple elements simultaneously. Photo retouching - digital alteration of a photo to enhance the way someone looks (removing of wrinkles, clearing of skin, changing their body, etc). Saturation - The intensity of a colour, how strong or washed out it is. Save - To store a piece of work in a computer's memory so that it can be recalled later.

		(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	Search – to identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties. Software – computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to ‘apps’ running on mobile devices and to web-based services. Web browser - A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome, and Safari.
Summer 2	Getting started with Kodu	This unit builds on the computer science units with a coding focus from Key Stage 1: Action algorithms and Programming direction (Year 1) and Programming with Scratch Jr and Programming with Logo (Year 2). It introduces the coding language of Kodu Game Lab and covers concepts such as sequence, selection and working with variables. National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • design, write and debug programs that accomplish specific	Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Block – a ‘chunk’ of programming or a particular graphic block or piece found in a graphical programming language such as Scratch or Kodu. Command – a step or line of programming. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Input – data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. Information which is received by the computer from a keyboard, mouse or sensor e.g. pressing the left mouse button or space bar creates an input. Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Output – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems. Also, an action performed by the computer e.g. switching on a light, moving a turtle or sprite across the screen.

		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	Program – A sequence of instructions written to perform a specified task on the computer Selection – ‘when things happen’ - A programming construct in which the instructions that are executed are determined by whether a particular condition is met. Sequence – to place programming instructions in order, with each executed one after the other. Sprite – A graphical object that can be controlled by programming. Variables – a way in which computer programs can store, retrieve or change simple data, such as a score, the time left, or the user’s name.
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KS2 - Cycle B

Term	Unit	Key Learning	Vocabulary
Autumn 1	Digital literacy and online safety - Year 4	This unit builds on important online safety messages that will be delivered in Key Stage 1. Students cover a range of age-appropriate online safety and digital literacy themes in Keeping safe and exploring technology (Year 1) and Keep safe and create (Year 2). In Digital Literacy and Online Safety (Year 3) students learn about screen time issues, privacy, digital footprints, online communities, online bullying and copyright principles. National Curriculum Links - Computing KS2 The content of this unit covers the following NC strands: • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Advertising - messages or photos that are made to persuade someone to buy a certain product Alter - to change the way something looks, sometimes using a computer or other digital tools Assumption - something that someone thinks is true, but in reality, may or may not be Community - a group of people who share the same interests or goals Digital citizen - someone who uses technology responsibly to learn, create, and participate Empathy - to imagine the feelings that someone else is experiencing Identity - different parts of your culture, experiences, and interests that make you unique Interpret - to understand something based on our point of view Norm - a way of acting that everyone in a community agrees to Password - a secret string of letters, symbols, and numbers that you can use to restrict who can access something digital Persuade - to cause someone to believe something Photo retouching - digital alteration of a photo to enhance the way someone looks (removing of wrinkles, clearing of skin, changing their body, etc.) Phrase - a group of words that go together and are easy to remember Pledge - a promise or an oath that one makes Responsibility - a duty you have to yourself or others Selfie - a picture you take of yourself, usually with a phone Symbol - a character other than a number or letter, such as #, !, or @. Username - a name you create to sign into a website, app, or game
Autumn 2	Searching the Web	This unit gives important lessons on safe and effective searching online. It covers what a search engine is and tips and tricks for using them effectively, safe and effective image searching,	Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem.

		evaluating what we see online for authenticity and design and searching maps. It also builds on work in our Key Stage 1 unit Finding and presenting information, where students learn about techniques to search for information and learn how to present it in graphs and charts. The safe searching skills covered in these lessons are key skills for all future learning in Key stage 2 and beyond where digital research is required. National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • 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 • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • 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 • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Artificial Intelligence (AI) - technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy Attribute - giving credit to the person who created something, such as listing the author's name and date, or a citation. Chatbot - An AI program designed to make the user feel like they are having a natural conversation (chat) with another human. They are often used as an interface to offer help and support on websites and for generative AI prompts, on sites such as ChatGPT. Cookies - Small text files stored on a computer that keep track of what a person does on a website. Copyright - legal protection that a creators have over the things they create. Digital content – any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video (including animation), or virtual environments, and combinations of these (i.e. multimedia). Evaluation - Making judgements (a computational thinking concept) Generative AI - deep-learning models that can generate high-quality text, images, and other content based on the data they were trained. Inference - an educated guess based on evidence Internet – the global collection of computer networks and their connections, all using shared protocols (TCP/IP) to communicate. Internet Service Provider (ISP) - a company that lets you connect to the Internet via their system. They may filter unsuitable content or limit how much data can be sent at once (the bandwidth). License - a clear way to define the type of copyright creative work has so others know how they can use it Online - using a digital device to visit a website or app that makes use of the internet. PageRank – A way of ordering the results of a search on the internet. Google uses a PageRank algorithm, which determines the quality and rank of a page based on the quality of the pages that link to it. Their quality is, in turn, determined by the quality of the pages that link to them, and so on.
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			Prompt - A query used on a generative AI chatbot to generate content. Search – to identify data that satisfies one or more conditions, such as web pages containing supplied keywords, or files on a computer with certain properties. Server - A server is a computer that serves up information to other computers on a network. Schools and many businesses will have a file server that pupils and employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger. Services – programs running on computers, typically those connected to the internet, which provide functionality in response to requests; for example, to transmit a web page, deliver an email or allow a text, voice or video conversation. Web browser - A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari. World Wide Web – a service provided by computers connected to the internet (web servers), in which pages of hypertext (web pages) are transmitted to users; the pages typically include links to other web pages and may be generated by programs automatically.
Spring 1	Programming Scratch Maze Games	This unit builds on the computer science units with a programming focus from Key Stage 1: Action algorithms and Programming direction (Year 1) and Programming with Scratch Jr and Programming with Logo (Year 2), as well as the Year 3 units Getting Started with Kodu and Animation with Scratch. Key programming concepts such as sequence, selection, repetition and working with variables are all covered in this unit, but with a different application to the Scratch animation unit. In these lessons, students plan and create a game. As well as the coding skills in this unit, there are also plenty of	Abstraction - Removing unnecessary detail to help you solve a problem (a computational thinking concept) Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Block – a ‘chunk’ of programming or a particular graphic block or piece found in a graphical programming language such as Scratch. Blocks linked together are called a script in Scratch. To find out what a block does, right-click on it, then select help from the pop-up menu. Blocks Palette – (in Scratch) – the library of blocks in most graphical programming languages. Command – a step or line of programming.

		opportunities for students to practise and use their design skills, which reinforce learning from our digital literacy units such as An introduction to digital art (Year 1) and Digital imagery: Patterns in nature (Year 3). National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • 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	Coordinate (noun) - Cartesian coordinates are a set of values that show an exact position. In a 2D environment, such as on a graph, two axis are needed, each with an equal number scale. The X axis represents the horizontal position of a point; the Y axis represents the vertical position of a point. Coordinates in a 3D environment require a third axis (Z) which represents depth. Coordinates can be commonly used in coding to position objects (sprites in Scratch) within a program's visual environment. Costume – The costume is the appearance of a sprite on the screen. These are usually editable. A sprite can often have multiple costumes that are changed by programming the sprite. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Execute – to follow a series of instructions. The computer or robot follows the instructions to complete the program. Input – data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. Information which is received by the computer from a keyboard, mouse or sensor e.g. pressing the left mouse button or space bar creates an input. Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Output – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly though the control of motors in physical systems. Also, an action performed by the computer e.g. switching on a light, moving a turtle or sprite across the screen. Program – (noun) A sequence of instructions written to perform a specified task on the computer Program - (verb) To give a series of instructions to a machine so that it will perform a task automatically Repetition (also known as 'Loop' or 'Iteration') – a programming construct in which one or more instructions are repeated, perhaps a
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			certain number of times, until a condition is satisfied or until the program is stopped. Script – (In Scratch) blocks are snapped together into stacks, called scripts. When you click on a script, Scratch runs the blocks from the top of the script to the bottom. You can program sprites and the stage using scripts. Selection – ‘when things happen’ - A programming construct in which the instructions that are executed are determined by whether a particular condition is met. Sequence – to place programming instructions in order, with each executed one after the other. Sprite – A graphical object that can be controlled by programming. Stage – (in Scratch) - the Stage is where you see your stories, games, and animations come to life. Sprites move and interact with one another on the Stage. The Stage is 480 units wide and 360 units tall. It is divided into an x-y grid. Variables – a way in which computer programs can store, retrieve or change simple data, such as a score, the time left, or the user’s name.
Spring 2	3D Design	This unit of work builds on elements of Getting started with Kodu, which, while primarily a computer science and programming unit, also requires students to work and create in a 3D environment and manipulate and control the user viewpoint and work on different planes. This unit introduces many unique 3D design skills, however, it also builds strongly on other artistic units of work they will have covered, such as An introduction to digital art (Year 1), where they learn to use shapes and line drawing tools, something which is replicated in a 3D environment with Sketchup in this unit. Skills from Digital Imagery: Patterns in Nature (Year 3) can also be applied here, such as selecting and working on individual parts of an image and manipulating images in different ways.	3D - (or 3-D) means three-dimensional or having three dimensions. For example, a cube is three-dimensional; it is solid, and not thin like a piece of paper. It has volume, a top and bottom, left and right (sides), as well as a front and back. 3D modelling - 3D modelling is a technique in computer graphics for producing a 3D digital representation of any object or surface. Special software can be used to manipulate points in virtual space to form an object. 3D models are used for a variety of mediums including video games, movies, architecture, illustration, engineering, and advertising. 3D printing - 3D printing is the action or process of making a physical object from a three-dimensional digital model, typically by laying down many thin layers of a material in succession. This can be known as additive manufacturing. Plastic is most commonly used in 3D printing where a spool of solid plastic is melted and layered onto a flat bed to gradually create a 3D model. Other materials can also be used such as chocolate (for unique food designs), concrete (for very fast

		National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: 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	building) and even human cells are being experimented with! (to create body parts for transplant). Alter - To change the way something looks, sometimes using a computer or other digital tools CAD - Computer aided design or CAD is an important industry within the tech world. It involves utilising computers to help with engineering and design for a wide range of projects. Common types of computer aided design include architecture, metal fabrication, carpentry, and 3D printing. Digital content - Any media created, edited or viewed on a computer, such as text (including the hypertext of a web page), images, sound, video, or virtual environments, and combinations of these (i.e. multimedia). Edit - To change, add or remove elements in a piece of work (usually to improve it). Export - The opposite of importing and a computing command that usually means saving or sending a file, or part of a file, to a specific new location. It also often allows changing the file format as it's saved. For example, a Photoshop image could be exported as a PDF document or different image types (PNG, JPEG etc). You might also export content between apps on an iPad. A piece of music could be exported to iMovie to use as a soundtrack for a video. Import - A computing command that usually means allowing a user to bring in a file, or part of a file into another application so they can be combined. For example, an image could be imported into presentation slides, or art software to use as a background. Save - To store a piece of work in a computer's memory so that it can be recalled later. Simulation - Using a computer to model the state and behaviour of real-world (or imaginary) systems, including physical and social systems; an integral part of most computer games. Software - Computer programs, including both application software (such as office programs, web browsers, media editors and games) and the computer operating system. The term also applies to 'apps' running on mobile devices and to web-based services.
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Summer 1	Getting started with the BBC micro:bit	Introduce students to physical computing with a BBC micro:bit. Control the LED matrix and find out how screens work, learn about inputs and outputs, turn your micro:bit into games while learning about variables, conditionals and iteration. National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands: • 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 • 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	Abstraction - Removing unnecessary detail to help you solve a problem (a computational thinking concept) Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Block – a ‘chunk’ of programming or a particular graphic block or piece found in a graphical programming language such as Scratch. Blocks linked together are called a script in Scratch. To find out what a block does, right-click on it, then select help from the pop-up menu. Blocks Palette – (in Scratch) – the library of blocks in most graphical programming languages. Command – a step or line of programming. Coordinate (noun) - Cartesian coordinates are a set of values that show an exact position. In a 2D environment, such as on a graph, two axis are needed, each with an equal number scale. The X axis represents the horizontal position of a point, the Y axis represents the vertical position of a point. Coordinates in a 3D environment require a third axis (Z) which represents depth. Coordinates can be commonly used in coding to position objects (sprites in Scratch) within a program’s visual environment. Costume – The costume is the appearance of a sprite on the screen. These are usually editable. A sprite can often have multiple costumes that are changed by programming the sprite. Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Execute – to follow a series of instructions. The computer or robot follows the instructions in order to complete the program. Input – data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. Information which is received by the computer from a keyboard, mouse or sensor e.g. pressing the left mouse button or space bar creates an input. Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules.
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			Output – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems. Also, an action performed by the computer e.g. switching on a light, moving a turtle or sprite across the screen. Program – A sequence of instructions written to perform a specified task on the computer Repetition (also known as ‘Loop’ or ‘Iteration’) – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped. Script – (In Scratch) blocks are snapped together into stacks, called scripts. When you click on a script, Scratch runs the blocks from the top of the script to the bottom. You can program sprites and the stage using scripts. Selection – ‘when things happen’ - A programming construct in which the instructions that are executed are determined by whether a particular condition is met. Sequence – to place programming instructions in order, with each executed one after the other. Sprite – A graphical object that can be controlled by programming. Stage – (in Scratch) - the Stage is where you see your stories, games, and animations come to life. Sprites move and interact with one another on the Stage. The Stage is 480 units wide and 360 units tall. It is divided into an x-y grid.
Summer 2	Computational Thinking - Alien Contact!	An unplugged unit to develop your students into strong computational thinkers by solving a wide range of exciting, unplugged problems. Will they be able to solve the problems, earn the trust of an alien species and cement a new galactic friendship?! National Curriculum Links - Computing KS2 The content of this unit covers the following National Curriculum strands:	Abstraction - Removing unnecessary detail to help you solve a problem (a computational thinking concept) Algorithm – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular objective. A set of instructions for achieving a goal or solving a problem. Binary - Binary is the language computers use. It is a series of 1s and 0s and is also used in mathematics. Command – a step or line of programming.

		• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • 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.	Cyberbullying - using digital devices, sites, and apps to intimidate, harm, and upset someone Debug – to detect and correct the errors in a computer program. Decomposition - Breaking a problem down into smaller parts (a computational thinking concept) Digital footprint - a record of what you do online, including the sites you visit and the things you post; it can also include things that others post that involve you. Evaluation - Making judgements (a computational thinking concept). Inference - an educated guess based on evidence Logical reasoning – a systematic approach to solving problems or deducing information using a set of universally applicable and totally reliable rules. Online - using a digital device to visit a website or app that makes use of the internet. Output – the information produced by a computer system for its user, typically on a screen, through speakers or on a printer, but possibly through the control of motors in physical systems. Also, an action performed by the computer e.g. switching on a light, moving a turtle or sprite across the screen. Patterns - Spotting and using similarities to solve problems (a computational thinking concept) Personal information - information about you that cannot be used to identify you because it is also true for many other people (e.g. your hair colour or the city you live in) Private information - information about you that can be used to identify you because it is unique to you (e.g. your full name or your address) Program – A sequence of instructions written to perform a specified task on the computer Repetition (also known as ‘Loop’ or ‘Iteration’) – a programming construct in which one or more instructions are repeated, perhaps a certain number of times, until a condition is satisfied or until the program is stopped.
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			Sequence – to place programming instructions in order, with each executed one after the other.
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