Year 2 Computing Curriculum

	Autumn 1	Autumn 2
Curriculum focus	Keep safe and create common sense education	Introduction to animation
Computing Strand	**Digital Literacy**	**Information Technology**
Curriculum links	• 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. • use technology purposefully to create, organise, store, manipulate and retrieve digital content	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • use technology safely and respectfully
Prior learning	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.	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.**
Key vocabulary	• **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	• **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 at a later time.

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	communicate with one another. • **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. • **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.	
Substantive concepts	• Understand the importance of being safe, responsible and respectful online. • Learn the "Pause & Think Online" song to remember basic digital citizenship concepts. • Import images into multimedia resources to share ideas to engage others. • Add and format text appropriately for multimedia resources. • Recognise the different kinds of feelings they can have when using technology. • Know what to do when they don't have a good feeling when using technology. • Understand the importance of being safe, responsible and respectful online. • Create an interactive survey to gather other people's opinions. • Import images into multimedia resources. • Add and format text appropriately for multimedia resources. • Understand that being safe online is similar to staying safe in real life. • Learn to identify websites and apps that are "just right" and "not right" for them. • Know how to get help from an adult if they are unsure about a website. • Understand that being safe online is similar to staying safe in real life. • Learn to identify websites and apps that are "just right" and "not right" for them. • Know how to get help from an adult if they are unsure about a website	• To understand that animation is a collection of still images to make moving images. • To create a simple 2D animation • To explain what a frame is • To use a variety of drawing tools appropriately • Improve the quality of animations with onion skinning and the select tool • To use a variety of drawing tools appropriately • To successfully use the 'Inbetweening' tool to create a simple animation. • To compare 2D and stop motion animation. • To experiment with stop motion animation. • To work successfully in a team • To create a smooth stop motion animation by moving objects in small steps • To make two or more figures interact in a stop motion animation. • To work successfully in a team • To create a smooth stop motion animation by moving objects in small steps • To plan and tell a simple story with stop motion animation. • To work successfully in a team

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	• Create an interactive educational game.	
What comes next?	The digital literacy content in this unit will be built upon in much greater depth with our Digital Literacy and online safety units for Year 3, Year 4, Year 5, and Year 6. These units come from Common Sense Education's excellent Digital Citizenship curriculum and cover a wide range of themes that deliver a comprehensive online safety and digital literacy curriculum.	Students will approach animation in a different way, through coding in our Year 2 unit **Programming with Scratch Jr**, and then again in more depth in our KS2 unit, **Animation with Scratch**. Our scheme of work also contains a wide range of units that cover different ways of creating and editing multimedia digital artifacts which will also build on the skills developed in this unit. In KS2 they will cover **Digital Imagery: Patterns in nature**, **3D Design**, **Manipulating Sound, Creating Instructional videos**, and **Manipulating images**.

	Spring 1	Spring 2
Curriculum focus	Programming with Scratch Jr	Writing in different styles
Strand	**Computer Science**	**Information Technology**
Curriculum links	• 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, manipulate and retrieve digital content	• use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school
Prior learning	This unit focuses on algorithms, planning and debugging precise sequences 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.	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**.
Key vocabulary	• **Algorithm** – an unambiguous procedure or precise step-by-step guide to solve a problem or achieve a particular	• **Alter** - to change the way something looks, sometimes using a computer or other digital tools

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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.
- **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 in order to complete the program.
- **Logic** - Predicting and analysing. Computational logic is used to allow a program to decide what to do and when.
- **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.
- **Script** – (In Scratch) blocks are snapped together into stacks, called 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.

- **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.
- **Media** - all of 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 at a later time.

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Substantive concepts	• Create and debug simple programs • Program the movement and appearance of an on-screen sprite • Use logical reasoning to predict the behaviour of simple programs • Program sprites to create a short animation • Program a number of sprites to move together • Use logical reasoning to predict the behaviour of simple programs • Investigate different ways of triggering movement with code • Program two sprites to interact with each other • Use logical reasoning to predict the behaviour of simple programs • Program scene changes in an animation • Use logical reasoning to predict the behaviour of simple programs • Design and program a simple game with multiple sprites • Use messaging to control sprites in a game	• Begin to use two hands for typing • To understand and use good posture when typing • To understand and use Caps Lock and Shift appropriately for typing capital letters. • To begin to use two hands for typing • To apply simple formatting to text • To import images into a document • To use keyboard shortcuts to work more efficiently • To begin to use two hands for typing • To apply simple formatting to text • Use speech bubbles, thought bubbles and text boxes • Combine images and text • To use two hands for typing • To design your own layout for a document • To apply simple formatting to text • To import images into a document • To use two hands for typing • To design your own layout for a document • To apply simple formatting to text • To import images into a document • To use a spell checker • To compare two pieces of software
What comes next?	This unit 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. The unit is followed up later in Year 2 with another control and programming unit; **Programming with Logo**. Students will then continue their coding journey in Key Stage 2 as they learn about concepts such as sequence, selection, repetition in programs, working with variables and various forms of input and output. Our units **Animation with Scratch**, **Getting started with Kodu**, **Programming Scratch maze games**, **Kodu sports**, **Building retro games - pick a project** all support this learning, as do **LEGO robotics** and **Getting started with the BBC micro:bit**, while also adding in the ability to control physical devices with code.	Our scheme of work contains a wide range of units that cover different ways of creating and editing multimedia digital artifacts. Students revisit desktop publishing, combining text, images and other multimedia to a much deeper level in our Key Stage 2 units; **Communication and collaboration** and **Building collaborative websites**.

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	Summer 1	Summer 2
Curriculum focus	Programming with Logo	Finding and presenting information
Strand	**Computer Science**	**Information Technology**
Curriculum links	• 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, 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
Prior learning	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.**	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.
Key vocabulary	• **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 in order to complete the program.	• **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. • **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

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	• **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. • **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.	it can be recalled at a later time. • **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. • **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.
Substantive concepts	• To understand that Logo is a programming language • To understand that computers need precise, unambiguous commands • To give simple commands using Logo • To decompose a bigger problem into smaller parts • To know and use Logo pen up/down and colour commands • To use repeat commands in Logo to draw regular shapes • Use logical reasoning to predict what a simple program will do • To create and understand a Logo procedure • To combine procedures together • To use repeat commands in Logo to draw regular shapes • To look for similarities and differences between two programming languages • To use repeat commands in Scratch to draw shapes and patterns	• Use and explore appropriate buttons, arrows, menus and hyperlinks to navigate teacher selected web sites. • Understand a website has a unique address and the need for precision when typing it. • Know what to do and who to tell if they see something inappropriate on a website. • Use and explore buttons, arrows, menus and hyperlinks to navigate a website. • Using keywords to safety search a specific resource for information. • Locate specific websites by typing a website address into the address bar. • Begin to evaluate web sites by giving opinions about preferred or most useful sites. • Know what to do and who to tell if they see something inappropriate on a website • Use simple graphing software to produce pictograms and other basic tables or graphs. • Use graphing software to enter data and change a graph type, e.g. pictogram to bar chart. • Interpret and draw conclusions from graphs, discuss information contained and answer simple questions. • Sort and classify a group of items by asking simple yes / no questions. This may take place away from the computer, e.g. a

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		'Guess Who' game. • Develop classification skills by carrying out sorting activities • Use a database program, where appropriate, to sort and identify items. • Use basic search tools in a prepared database to answer simple questions, e.g., how many children have brown hair?
What comes next?	This unit 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. The unit is built upon in Key Stage 2 as they learn about concepts such as sequence, selection, repetition in programs, working with variables and various forms of input and output. Our units **Animation with Scratch**, **Getting started with Kodu**, **Programming Scratch maze games**, **Kodu sports**, **Building retro games - pick a project** all support this learning, as do **LEGO robotics** and **Getting started with the BBC micro:bit**, while also adding in the ability to control physical devices with code.	The safe searching content in this unit will be built upon in our **Digital Literacy and online safety** units for **Year 3**, **Year 4**, **Year 5**, and **Year 6.** The IT content in this unit will be explored in more depth in Key Stage 2, where they will go into more depth about gathering, analysing and presenting data, how search engines really work, what makes computers work, and what the internet is in our units **Databases, Searching the web**, **What is a computer?** and **Inside the internet.**