



Phase	Cycle	Autumn	Spring	Summer
KS1	C	Grouping data	Moving a robot	Programme animation
LKS2 Yr 3/4	C	Connecting Computers	Sequencing sounds	Branching databases
KS2 Yr 4/5	C	Sequencing sounds	Branching databases	Events & Actions in Programmes
UKS2 Yr 5/6	C	Selection in Physical Computing	3d Modelling	Selection in Quizzes

Computing will be taught weekly, once a big term. Year 4/5 will be consolidating this learning from Year 3/4 .

Usual Cycle A/B will continue in 2025-26

Christopher Rawlins CE Primary School
 Computing Curriculum Objectives by Term

Scheme: Teach Computing



Phase	Cycle	Autumn	Spring	Summer
KS1	C	<p>Grouping Data</p> <p>use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>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.</p>	<p>Moving a Robot</p> <p>understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p>create and debug simple programs</p> <p>use logical reasoning to predict the behaviour of simple programs</p> <p>recognise common uses of information technology beyond school</p>	<p>Programme Animation</p> <p>understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p>create and debug simple programs</p> <p>use logical reasoning to predict the behaviour of simple programs</p>
LKS2 Yr 3/4	C	<p>Connecting Computers</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>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</p>	<p>Sequencing Sounds</p> <p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p>	<p>Branching Databases</p> <p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p>

		<p>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</p>	<p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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</p>	<p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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</p>
<p>KS2 Yr 4/5</p>	<p>C</p>	<p>Sequencing Sounds design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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</p>	<p>Branching Databases design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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</p>	<p>Events & Actions in Programmes design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>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</p>

<p>UKS2 Yr 5/6</p>	<p>C</p>	<p style="text-align: center;">Selection in Physical Computing</p> <p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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</p>	<p style="text-align: center;">3D Modelling</p> <p>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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p style="text-align: center;">Selection in Quizzes</p> <p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>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</p>
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LKS2 Yr 3/4	A	<p>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</p> <p>use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>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</p>	<p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>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</p>	<p>use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>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</p>
	B	<p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>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</p> <p>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</p>	<p>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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p>	<p>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</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p> <p>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</p>	<p>design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p>

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		<p>for communication and collaboration</p> <p>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.</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>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.</p> <p>use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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</p>	<p>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</p>	<p>systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</p>	<p>problems by decomposing them into smaller parts</p> <p>use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>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</p>
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	By the end of KS1	By the end of LKS2	By the end of UKS2
Computing systems and networks	<ul style="list-style-type: none"> Learners will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly. Learners will develop their understanding of what information technology (IT) is and will begin to identify examples. They will discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries. Learners will then investigate how IT improves our world, and they will learn about the importance of using IT responsibly. 	<ul style="list-style-type: none"> Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network. Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. 	<ul style="list-style-type: none"> Learners develop their understanding of computer systems and how information is transferred between systems and devices. Learners consider small-scale systems as well as large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines. In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet and how to report concerns about inappropriate content online.
Creating media	<ul style="list-style-type: none"> Learners will develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work. The unit concludes with learners considering their preferences when painting with and without the use of digital devices. Learners will develop their understanding of the various aspects of using a computer to create and manipulate text. 	<ul style="list-style-type: none"> Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text. Learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of 	<ul style="list-style-type: none"> Learners will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided with step-by-step support to take their idea from conception to completion. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.

	<p>They will become more familiar with using a keyboard and mouse to enter and remove text. Learners will also consider how to change the look of their text and will be able to justify their reasoning in making these changes. Finally, learners will consider the differences between using a computer to create text and writing text on paper. They will be able to explain which method they prefer and explain their reasoning for choosing this.</p> <ul style="list-style-type: none"> Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real. In this unit, learners will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music. 	<p>digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.</p> <ul style="list-style-type: none"> Learners will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world. Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have and evaluate the effectiveness of their choices. 	<ul style="list-style-type: none"> Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths. In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work. Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.
<p>Programming</p>	<ul style="list-style-type: none"> Learners will be introduced to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each command for the floor robot does and use that knowledge to start predicting the outcome of programs. Learners are also introduced to the early stages of program design through the introduction of algorithms. Learners will be introduced to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early 	<ul style="list-style-type: none"> This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. Learners also apply stages of program design through this unit. Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. 	<ul style="list-style-type: none"> In this unit, learners will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that utilise this concept. To conclude the unit, learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and its components are connected, and how selection can be

	<p>stages of program design through the introduction of algorithms.</p> <ul style="list-style-type: none"> This unit develops learners' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them. This unit initially recaps on learning from the Year 1 ScratchJr unit 'Programming B – Programming animations'. Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects. 	<ul style="list-style-type: none"> This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of Pen blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze-tracing program. Learners will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout. 	<p>used to control the operation of the model. Throughout this unit, learners will apply the stages of programming design.</p> <ul style="list-style-type: none"> This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch. Learners will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if... then... else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved. This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.
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			<ul style="list-style-type: none"> Design features prominently in this unit. A design template is introduced in Lesson 3, initially scaffolded to give pupils the opportunity to create code from a given design. In Lesson 4 that scaffolding is gradually reduced, then in Lesson 5, pupils create their own design, using the same template. In the final lesson, pupils will apply their knowledge of the programming constructs and use their design to create their own micro:bit-based step counter
<p>Data & Information</p>	<ul style="list-style-type: none"> This unit introduces learners to data and information. Labelling, grouping, and searching are important aspects of data and information. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. This unit of work focuses on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data visually using software. Learners will use the data presented to answer questions. 	<ul style="list-style-type: none"> Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases. In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions 	<ul style="list-style-type: none"> This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question and present their work to others. This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.

Year 1- Programming A (Moving a robot)

	Prior Learning	New Learning (Year1)	Future Learning
National Curriculum Objectives	NA	<ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions create and debug simple programs use logical reasoning to predict the behaviour of simple programs recognise common uses of information technology beyond school 	<ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions create and debug simple programs use logical reasoning to predict the behaviour of simple programs 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.
Key Ideas	NA	<ul style="list-style-type: none"> I can match a command to an outcome I can predict the outcome of a command on a device I can run a command on a device I can follow an instruction I can give directions I can recall words that can be acted out I can compare forwards and backwards movements I can predict the outcome of a sequence involving forwards and backwards commands I can start a sequence from the same place I can compare left and right turns I can experiment with turn and move commands to move a robot I can predict the outcome of a sequence involving up to four commands I can choose the order of commands in a sequence I can debug my program I can explain what my program should do I can identify several possible solutions I can plan two programs I can use two different programs to get to the same place 	<ul style="list-style-type: none"> "-I can choose a series of words that can be enacted as a sequence - I can follow instructions given by someone else - I can give clear instructions" "-I can show the difference in outcomes between two sequences that consist of the same commands - I can use an algorithm to program a sequence on a floor robot - I can use the same instructions to create different algorithms" "-I can compare my prediction to the program outcome - I can follow a sequence - I can predict the outcome of a sequence" "-I can explain the choices I made for my mat design - I can identify different routes around my mat - I can test my mat to make sure that it is usable" "-I can create an algorithm to meet my goal - I can explain what my algorithm should achieve - I can use my algorithm to create a program" "-I can plan algorithms for different parts of a task - I can put together the different parts of my program - I can test and debug each part of the program"
Key Questions	NA	<ul style="list-style-type: none"> What is a command? What is an instruction? Can you show a forward and backward movement? Can you show a forward, backward, left and right movement? Can you choose the order of commands to create a successful sequence? Can you identify a problem in a sequence and create a solution? 	<ul style="list-style-type: none"> What is a clear instruction? Why can there be a different outcome for 2 sequences that consist of the same commands? How can we predict the outcome of a program? Can you show 2 different routes around the mat? How will your algorithm meet your goal? What algorithms could you create for each part of a task?

Vocabulary	NA	Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program.	instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition
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Year 1- Data and information (Grouping data)

	Prior Learning	New Learning (Year1)	Future Learning
National Curriculum Objectives	NA	<ul style="list-style-type: none"> • use technology purposefully to create, organise, store, manipulate and retrieve digital content • 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. 	<ul style="list-style-type: none"> • use technology purposefully to create, organise, store, manipulate and retrieve digital content • 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.
Key Ideas	NA	<ul style="list-style-type: none"> • "- I can describe objects using labels • - I can identify the label for a group of objects • - I can match objects to groups" • "- I can count a group of objects • - I can count objects • - I can group objects" • "- I can describe an object • - I can describe a property of an object • - I can find objects with similar properties" • "- I can count how many objects share a property • - I can group objects in more than one way • - I can group similar objects" • "- I can choose how to group objects • - I can describe groups of objects • - I can record how many objects are in a group" • "- I can compare groups of objects • - I can decide how to group objects to answer a question • - I can record and share what I have found" 	<ul style="list-style-type: none"> • I can compare totals in a tally chart • - I can record data in a tally chart • - I can represent a tally count as a total" • "- I can enter data onto a computer • - I can use a computer to view data in a different format • - I can use pictograms to answer simple questions about objects" • "- I can explain what the pictogram shows • - I can organise data in a tally chart • - I can use a tally chart to create a pictogram" • "- I can answer 'more than'/'less than' and 'most/least' questions about an attribute • - I can create a pictogram to arrange objects by an attribute • - I can tally objects using a common attribute" • "- I can choose a suitable attribute to compare people • - I can collect the data I need • - I can create a pictogram and draw conclusions from it" • "- I can give simple examples of why information should not be shared • - I can share what I have found out using a computer • - I can use a computer program to present information in different ways"
Key Questions	NA	<ul style="list-style-type: none"> • Can you label a variety of objects? • Can you count a group of objects? • Can you describe a group of objects based on their properties? • Can you count how many objects share a property? • Can you group a variety of objects? • Can you group a variety of objects based on a question? 	<ul style="list-style-type: none"> • How can I record data in a tally chart? • How can I record data on a computer? • What is a pictogram? • What is an attribute? • How could you collect data for a pictogram? • Why should information not be shared?
Vocabulary	NA	object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same	more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing

Year 1- Programming B (Programming animations)

	Prior Learning	New Learning (Year1)	Future Learning
National Curriculum Objectives	NA	<ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions create and debug simple programs use logical reasoning to predict the behaviour of simple programs 	<ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following 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
Key Ideas	NA	<ul style="list-style-type: none"> "-I can compare different programming tools - I can find which commands to move a sprite - I can use commands to move a sprite" "-I can run my program - I can use a Start block in a program - I can use more than one block by joining them together" "-I can change the value - I can find blocks that have numbers - I can say what happens when I change a value" "-I can add blocks to each of my sprites - I can delete a sprite - I can show that a project can include more than one sprite" "-I can choose appropriate artwork for my project - I can create an algorithm for each sprite - I can decide how each sprite will move" "-I can add programming blocks based on my algorithm - I can test the programs I have created - I can use sprites that match my design" 	<ul style="list-style-type: none"> I can identify that a program needs to be started - I can identify the start of a sequence - I can show how to run my program" "-I can change the outcome of a sequence of commands - I can match two sequences with the same outcome - I can predict the outcome of a sequence of commands" "-I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can work out the actions of a sprite in an algorithm" "-I can choose backgrounds for the design - I can choose characters for the design - I can create a program based on the new design" "-I can build sequences of blocks to match my design - I can choose the images for my own design - I can create an algorithm" "-I can compare my project to my design - I can debug my program - I can improve my project by adding features"
Key Questions	NA	<ul style="list-style-type: none"> Can you move the sprite? How can I create a series of commands? How do I change the value of a command? How can I add another sprite to a project? What is an algorithm What is a programming block? 	<ul style="list-style-type: none"> How is a programme started? How can the outcome of a sequence be changed? How is a sequence of blocks constructed? How do you change the background? What does a sequence do? What does the word "debug" mean?
Vocabulary	NA	ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.	music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit.

Year 3 - Computing systems and networks (Connecting computers)

	Prior Learning (Yr 2)	New Learning (Yr 3)	Future Learning (Yr 4)
National Curriculum Objectives	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> use sequence, selection, and repetition in programs; work with variables and various forms of input and output 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 given goals, including collecting, analysing, evaluating and presenting data and information 	<ul style="list-style-type: none"> 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.
Key Ideas	<ul style="list-style-type: none"> "- I can describe some uses of computers - I can identify examples of computers - I can identify that a computer is a part of IT" "- I can identify examples of IT - I can identify that some IT can be used in more than one way - I can sort school IT by what it's used for" "- I can find examples of information technology - I can sort IT by where it is found - I can talk about uses of information technology" "- I can demonstrate how IT devices work together - I can recognise common types of technology - I can say why we use IT" "- I can list different uses of information technology - I can say how rules can help keep me safe - I can talk about different rules for using IT" "- I can explain the need to use IT in different ways - I can identify the choices that I make when using IT - I can use IT for different types of activities" 	<ul style="list-style-type: none"> "- I can explain that digital devices accept inputs - I can explain that digital devices produce outputs - I can follow a process" "- I can classify input and output devices - I can describe a simple process - I can design a digital device" "- I can explain how I use digital devices for different activities - I can recognise similarities between using digital devices and non-digital tools - I can suggest differences between using digital devices and non-digital tools" "- I can discuss why we need a network switch - I can explain how messages are passed through multiple connections - I can recognise different connections" "- I can demonstrate how information can be passed between devices - I can explain the role of a switch, server, and wireless access point in a network - I can recognise that a computer network is made up of a number of devices" "- I can identify how devices in a network are connected together - I can identify networked devices around me - I can identify the benefits of computer networks" 	<ul style="list-style-type: none"> I can demonstrate how information is shared across the internet - I can describe the internet as a network of networks - I can discuss why a network needs protecting" "- I can describe networked devices and how they connect - I can explain that the internet is used to provide many services - I can recognise that the World Wide Web contains websites and web pages" "- I can describe how to access websites on the WWW - I can describe where websites are stored when uploaded to the WWW - I can explain the types of media that can be shared on the WWW" "- I can explain that internet services can be used to create content online - I can explain what media can be found on websites - I can recognise that I can add content to the WWW" "- I can explain that there are rules to protect content - I can explain that websites and their content are created by people - I can suggest who owns the content on websites " "- I can explain that not everything on the World Wide Web is true - I can explain why I need to think carefully before I share or reshare content - I can explain why some information I find online may not be honest, accurate, or legal"

Key Questions	<ul style="list-style-type: none"> • What uses does a computer have? • Where are examples of IT in our school? • Where are examples of IT beyond our school? • Why do we use IT? • What rules could keep you safe when using IT? • How can I use IT in different ways? 	<ul style="list-style-type: none"> • What is an input and an output? • How can we classify input and output devices? • What are the similarities and differences between a digital and non-digital tool? • What is a computer network? • How can information be passed between devices? • Can you identify a network of devices within school? 	<ul style="list-style-type: none"> • Why does a network need protection? • Name 3 services the internet provides? • What types of media can be shared to the WWW? • How can content be added to the WWW? • What rules protect content found online? • Is everything on the WWW true?
Vocabulary	Information technology (IT), computer, barcode, scanner/scan	digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets	internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts

Year 3 - Programming A (Sequencing sounds)

	Prior Learning (Yr 2)	New Learning (Yr 3)	Future Learning (Yr 4)
National Curriculum Objectives	<ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
Key Ideas	<ul style="list-style-type: none"> I can identify that a program needs to be started - I can identify the start of a sequence - I can show how to run my program" " -I can change the outcome of a sequence of commands - I can match two sequences with the same outcome - I can predict the outcome of a sequence of commands" " -I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can work out the actions of a sprite in an algorithm" " -I can choose backgrounds for the design - I can choose characters for the design - I can create a program based on the new design" " -I can build sequences of blocks to match my design - I can choose the images for my own design - I can create an algorithm" " -I can compare my project to my design - I can debug my program - I can improve my project by adding features" 	<ul style="list-style-type: none"> " -I can explain that objects in Scratch have attributes (linked to) - I can identify the objects in a Scratch project (sprites, backdrops) - I can recognise that commands in Scratch are represented as blocks" " -I can choose a word which describes an on-screen action for my plan - I can create a program following a design - I can identify that each sprite is controlled by the commands I choose" " -I can create a sequence of connected commands - I can explain that the objects in my project will respond exactly to the code - I can start a program in different ways" " -I can combine sound commands - I can explain what a sequence is - I can order notes into a sequence" " -I can build a sequence of commands - I can decide the actions for each sprite in a program - I can make design choices for my artwork" " -I can identify and name the objects I will need for a project - I can implement my algorithm as code - I can relate a task description to a design" 	<ul style="list-style-type: none"> I can create a code snippet for a given purpose - I can explain the effect of changing a value of a command - I can program a computer by typing commands" " -I can test my algorithm in a text-based language - I can use a template to create a design for my program - I can write an algorithm to produce a given outcome" " -I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome" " -I can choose which values to change in a loop - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop" " -I can explain that a computer can repeatedly call a procedure - I can identify 'chunks' of actions in the real world - I can use a procedure in a program" " -I can design a program that includes count-controlled loops - I can develop my program by debugging it - I can make use of my design to write a program"
Key Questions	<ul style="list-style-type: none"> How is a programme started? How can the outcome of a sequence be changed? How is a sequence of blocks constructed? 	<ul style="list-style-type: none"> What is a sprite? What does a command do? What is code? 	<ul style="list-style-type: none"> What effect can changing the value of a command have? Define "text-based language"? Name 3 everyday tasks that include repetition?

	<ul style="list-style-type: none"> • How do you change the background? • What does a sequence do? • What does the word “debug” mean? 	<ul style="list-style-type: none"> • How can sound commands be added to a project? • How can a sprite be edited? • Why is a task description important? 	<ul style="list-style-type: none"> • What is meant by a “loop”? • What does a computer do when it repeatedly calls a procedure? • What does a “count-controlled” loop do?
Vocabulary	sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.

Year 3 - Data and information (Branching databases)

	Prior Learning (Yr 2)	New Learning (Yr 3)	Future Learning (Yr 4)
National Curriculum Objectives	<ul style="list-style-type: none"> use technology purposefully to create, organise, store, manipulate and retrieve digital content 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> use sequence, selection, and repetition in programs; work with variables and various forms of input and output 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
Key Ideas	<ul style="list-style-type: none"> I can compare totals in a tally chart - I can record data in a tally chart - I can represent a tally count as a total" " -I can enter data onto a computer - I can use a computer to view data in a different format - I can use pictograms to answer simple questions about objects" " -I can explain what the pictogram shows - I can organise data in a tally chart - I can use a tally chart to create a pictogram" " -I can answer 'more than'/'less than' and 'most/least' questions about an attribute - I can create a pictogram to arrange objects by an attribute - I can tally objects using a common attribute" " -I can choose a suitable attribute to compare people - I can collect the data I need - I can create a pictogram and draw conclusions from it" " -I can give simple examples of why information should not be shared - I can share what I have found out using a computer - I can use a computer program to present information in different ways" 	<ul style="list-style-type: none"> " -I can create two groups of objects separated by one attribute - I can investigate questions with yes/no answers - I can make up a yes/no question about a collection of objects" " -I can arrange objects into a tree structure - I can create a group of objects within an existing group - I can select an attribute to separate objects into groups" " -I can group objects using my own yes/no questions - I can select objects to arrange in a branching database - I can test my branching database to see if it works" " -I can compare two branching database structures - I can create yes/no questions using given attributes - I can explain that questions need to be ordered carefully to split objects into similarly sized groups" " -I can create a physical version of a branching database - I can create questions that will enable objects to be uniquely identified - I can independently create questions to use in a branching database " " -I can create a branching database that reflects my plan - I can suggest real-world uses for branching databases - I can work with a partner to test my identification tool" 	<ul style="list-style-type: none"> I can choose a data set to answer a given question - I can identify data that can be gathered over time - I can suggest questions that can be answered using a given data set" " -I can explain what data can be collected using sensors - I can identify that data from sensors can be recorded - I can use data from a sensor to answer a given question" " -I can identify the intervals used to collect data - I can recognise that a data logger collects data at given points - I can talk about the data that I have captured" " -I can explain that there are different ways to view data - I can sort data to find information - I can view data at different levels of detail" " -I can plan how to collect data using a data logger - I can propose a question that can be answered using logged data - I can use a data logger to collect data" " -I can draw conclusions from the data that I have collected - I can explain the benefits of using a data logger - I can interpret data that has been collected using a data logger"
Key Questions	<ul style="list-style-type: none"> How can I record data in a tally chart? How can I record data on a computer? What is a pictogram? What is an attribute? How could you collect data for a pictogram? Why should information not be shared? 	<ul style="list-style-type: none"> Why does data need to be sorted? What does a tree structure allow us to do with data? How can we test a branching database? Why does a branching database need to be well structured? What question could you ask to separate mammals and birds? Where would you find a branching database in the real world? 	<ul style="list-style-type: none"> Name 3 types of data that can be gathered over time? What type of data can be collected using a sensor? What is a data logger and what data can it collect? Name 3 ways to view data? How could a data logger be used to collect the temperature in a room throughout the day? What are the benefits of using a data logger?

Vocabulary	more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing	attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.	data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.
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Year 3 - Programming B (Events and actions in programs)

	Prior Learning (Yr 2)	New Learning (Yr 3)	Future Learning (Yr 4)
National Curriculum Objectives	<ul style="list-style-type: none"> understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
Key Ideas	<ul style="list-style-type: none"> I can identify that a program needs to be started - I can identify the start of a sequence - I can show how to run my program" " -I can change the outcome of a sequence of commands - I can match two sequences with the same outcome - I can predict the outcome of a sequence of commands" " -I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can work out the actions of a sprite in an algorithm" " -I can choose backgrounds for the design - I can choose characters for the design - I can create a program based on the new design" " -I can build sequences of blocks to match my design - I can choose the images for my own design - I can create an algorithm" " -I can compare my project to my design - I can debug my program - I can improve my project by adding features" 	<ul style="list-style-type: none"> " -I can choose which keys to use for actions and explain my choices - I can explain the relationship between an event and an action - I can identify a way to improve a program" " -I can choose a character for my project - I can choose a suitable size for a character in a maze - I can program movement" " -I can choose blocks to set up my program - I can consider the real world when making design choices - I can use a programming extension" " -I can build more sequences of commands to make my design work - I can choose suitable keys to turn on additional features - I can identify additional features (from a given set of blocks)" " -I can match a piece of code to an outcome - I can modify a program using a design - I can test a program against a given design" " -I can evaluate my project - I can implement my design - I can make design choices and justify them" 	<ul style="list-style-type: none"> " -I can list an everyday task as a set of instructions including repetition - I can modify a snippet of code to create a given outcome - I can predict the outcome of a snippet of code" " -I can choose when to use a count-controlled and an infinite loop - I can modify loops to produce a given outcome - I can recognise that some programming languages enable more than one process to be run at once" " -I can choose which action will be repeated for each object - I can evaluate the effectiveness of the repeated sequences used in my program - I can explain what the outcome of the repeated action should be" " -I can explain the effect of my changes - I can identify which parts of a loop can be changed - I can re-use existing code snippets on new sprites" " -I can develop my own design explaining what my project will do - I can evaluate the use of repetition in a project

			<ul style="list-style-type: none"> - I can select key parts of a given project to use in my own design" " -I can build a program that follows my design - I can evaluate the steps I followed when building my project - I can refine the algorithm in my design"
Key Questions	<ul style="list-style-type: none"> How is a programme started? How can the outcome of a sequence be changed? How is a sequence of blocks constructed? How do you change the background? What does a sequence do? What does the word "debug" mean? 	<ul style="list-style-type: none"> What is the relationship between an event and an action? How can movement be programmed? What is a programming extension? What additional features could be used in a program? What does the term "modify" mean? What needs to be considered when creating a maze-based challenge? 	<ul style="list-style-type: none"> How can a cup of tea be made? When might an infinite loop be used? How can an action be repeated for an object? What parts of a loop can be changed? Can you identify repetition in the sequence? What aspect of your project could be refined?
Vocabulary	sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.	motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.

Year 5 - Programming A (Selection in physical computing)

	Prior Learning (Yr 4)	New Learning (Yr 5)	Future Learning (Yr 6)
National Curriculum Objectives	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Key Ideas	<ul style="list-style-type: none"> I can create a code snippet for a given purpose - I can explain the effect of changing a value of a command - I can program a computer by typing commands" "- I can test my algorithm in a text-based language - I can use a template to create a design for my program - I can write an algorithm to produce a given outcome" "- I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome" "- I can choose which values to change in a loop - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop" "- I can explain that a computer can repeatedly call a procedure - I can identify 'chunks' of actions in the real world - I can use a procedure in a program" "- I can design a program that includes count-controlled loops 	<ul style="list-style-type: none"> "- I can create a simple circuit and connect it to a microcontroller - I can explain what an infinite loop does - I can program a microcontroller to make an LED switch on" "- I can connect more than one output component to a microcontroller - I can design sequences that use count-controlled loops - I can use a count-controlled loop to control outputs" "- I can design a conditional loop - I can explain that a condition is either true or false - I can program a microcontroller to respond to an input" "- I can explain that a condition being met can start an action - I can identify a condition and an action in my project - I can use selection (an 'if...then...' statement) to direct the flow of a program" "- I can create a detailed drawing of my project - I can describe what my project will do - I can identify a real-world example of a condition starting an action" "- I can test and debug my project - I can use selection to produce an intended outcome 	<ul style="list-style-type: none"> "- I can explain that the way a variable changes can be defined - I can identify examples of information that is variable - I can identify that variables can hold numbers or letters" "- I can explain that a variable has a name and a value - I can identify a program variable as a placeholder in memory for a single value - I can recognise that the value of a variable can be changed" "- I can decide where in a program to change a variable - I can make use of an event in a program to set a variable - I can recognise that the value of a variable can be used by a program" "- I can choose the artwork for my project - I can create algorithms for my project - I can explain my design choices" "- I can choose a name that identifies the role of a variable - I can create the artwork for my project - I can test the code that I have written" "- I can identify ways that my game could be improved - I can share my game with others - I can use variables to extend my game"

	<ul style="list-style-type: none"> - I can develop my program by debugging it - I can make use of my design to write a program" 	<ul style="list-style-type: none"> - I can write an algorithm that describes what my model will do" 	
Key Questions	<ul style="list-style-type: none"> What effect can changing the value of a command have? Define "text-based language"? Name 3 everyday tasks that include repetition? What is meant by a "loop"? What does a computer do when it repeatedly calls a procedure? What does a "count-controlled" loop do? 	<ul style="list-style-type: none"> What is an infinite loop? What is a count-controlled loop? What is a conditional loop? Can you identify a condition and an action in your project? Can you identify a condition starting an action in the real world? How can you test for issues in a project? 	<ul style="list-style-type: none"> What does the term "variable" mean? Why might the value of a variable change? How can a variable's value be used in a program? Why are design choices important for a project? Why is the name given to a variable important to identify its role? How could you improve your game next time?
Vocabulary	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.	microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer	variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare

Year 5 - Programming B (Making quizzes)

	Prior Learning (Yr 4)	New Learning (Yr 5)	Future Learning (Yr 6)
National Curriculum Objectives	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
Key Ideas	<ul style="list-style-type: none"> "- I can list an everyday task as a set of instructions including repetition - I can modify a snippet of code to create a given outcome - I can predict the outcome of a snippet of code" "- I can choose when to use a count-controlled and an infinite loop - I can modify loops to produce a given outcome - I can recognise that some programming languages enable more than one process to be run at once" "- I can choose which action will be repeated for each object - I can evaluate the effectiveness of the repeated sequences used in my program - I can explain what the outcome of the repeated action should be" "- I can explain the effect of my changes - I can identify which parts of a loop can be changed - I can re-use existing code snippets on new sprites" "- I can develop my own design explaining what my project will do - I can evaluate the use of repetition in a project - I can select key parts of a given project to use in my own design" "- I can build a program that follows my design 	<ul style="list-style-type: none"> "- I can identify conditions in a program - I can modify a condition in a program - I can recall how conditions are used in selection" "- I can create a program with different outcomes using selection - I can identify the condition and outcomes in an 'if... then... else...' statement - I can use selection in an infinite loop to check a condition" "- I can design the flow of a program which contains 'if... then... else...'" - I can explain that program flow can branch according to a condition - I can show that a condition can direct program flow in one of two ways" "- I can identify the outcome of user input in an algorithm - I can outline a given task - I can use a design format to outline my project" "- I can implement my algorithm to create the first section of my program - I can share my program with others - I can test my program" "- I can extend my program further - I can identify the setup code I need in my program - I can identify ways the program could be improved" 	<ul style="list-style-type: none"> "- I can apply my knowledge of programming to a new environment - I can test my program on an emulator - I can transfer my program to a controllable device" "- I can determine the flow of a program using selection - I can identify examples of conditions in the real world I can use a variable in an if, then, else statement to select the flow of a program" I can experiment with different physical inputs I can explain that checking a variable doesn't change its value - I can use a condition to change a variable" I can explain the importance of the order of conditions in else, if statements I can modify a program to achieve a different outcome I can use an operand (e.g. <=>) in an if, then statement" I can decide what variables to include in a project I can design the algorithm for my project I can design the program flow for my project" I can create a program based on my design I can test my program against my design I can use a range of approaches to find and fix bugs

	<ul style="list-style-type: none"> - I can evaluate the steps I followed when building my project - I can refine the algorithm in my design" 		
Key Questions	<ul style="list-style-type: none"> • How can a cup of tea be made? • When might an infinite loop be used? • How can an action be repeated for an object? • What parts of a loop can be changed? • Can you identify repetition in the sequence? • What aspect of your project could be refined? 	<ul style="list-style-type: none"> • How can a condition be modified? • Define how the following can change an outcome: if / then / else • Explain what a program flow is? • What effect does user input have on an outcome? • How can a program be tested? • What could be added to a program to extend it? 	<ul style="list-style-type: none"> • What is an emulator? • Name 3 examples of conditions in the real world? • Identify 3 physical inputs? • What is an operand and how can it be used in an "if, then" statement? • What is a controllable device? • How would you improve your program next time?
Vocabulary	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.	Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.

Year 6 - Creating media (3D Modelling)

	Prior Learning (Yr 5)	New Learning (Yr 6)	Future Learning
National Curriculum Objectives	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> KS3 curriculum
Key Ideas	<ul style="list-style-type: none"> I can discuss how vector drawings are different from paper-based drawings I can experiment with the shape and line tools I can recognise that vector drawings are made using shapes" I can explain that each element added to a vector drawing is an object I can identify the shapes used to make a vector drawing I can move, resize, and rotate objects I have duplicated" I can explain how alignment grids and resize handles can be used to improve consistency I can modify objects to create a new image I can use the zoom tool to help me add detail to my drawings" I can change the order of layers in a vector drawing I can identify that each added object creates a new layer in the drawing I can use layering to create an image" I can copy part of a drawing by duplicating several objects I can recognise when I need to group and ungroup objects I can reuse a group of objects to further develop my vector drawing" I can compare vector drawings to freehand paint drawings I can create a vector drawing for a specific purpose I can reflect on the skills I have used and why I have used them" 	<ul style="list-style-type: none"> "-I can add 3D shapes to a project - I can move 3D shapes relative to one another - I can view 3D shapes from different perspectives" "-I can lift/lower 3D objects - I can recolour a 3D object - I can resize an object in three dimensions" "-I can duplicate 3D objects - I can group 3D objects - I can rotate objects in three dimensions" "-I can accurately size 3D objects - I can combine a number of 3D objects - I can show that placeholders can create holes in 3D objects" "-I can analyse a 3D model - I can choose objects to use in a 3D model - I can combine objects in a design" "-I can construct a 3D model based on a design - I can explain how my 3D model could be improved - I can modify my 3D model to improve it" 	<ul style="list-style-type: none"> KS3 curriculum
Key Questions	<ul style="list-style-type: none"> What is the difference between a vector drawing and a paper-based drawing? How can an object be moved, resized and rotated? 	<ul style="list-style-type: none"> What does "perspective" mean? Name 3 ways a 3D shape can be modified? Why would 3D objects need to be combined? Why is it important to accurately size a 3D object? 	<ul style="list-style-type: none"> KS3 curriculum

	<ul style="list-style-type: none"> • Name 2 ways that consistency can be improved when creating a vector drawing? • What is a "layer" within a vector drawing? • What does grouping and ungrouping a series of objects do? • Why might a vector drawing be used? 	<ul style="list-style-type: none"> • What objects might be used for a house in a 3D model? • How could your 3D model be improved next time? 	
Vocabulary	vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection	TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify	KS3 curriculum