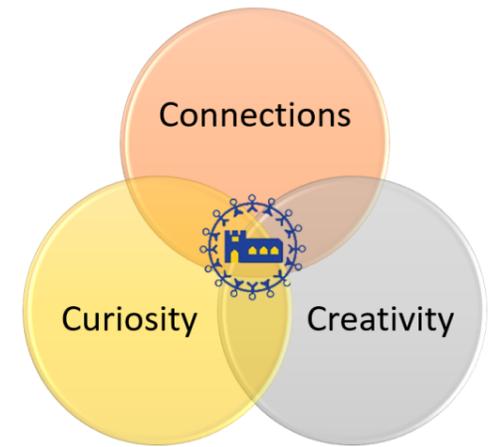




## Computing – Knowledge and Skills Progression



### Intent

Starting in the EYFS we provide high quality teaching to develop the skills that will enable children to embrace and utilise new technology in a socially responsible and safe way in order to flourish. We aim for all children to leave Lyne and Longcross as creators rather than consumers of technology in order to understand and change the world. Our goal is for children to build upon their knowledge of computing year by year, and are encouraged to analyse problems, evaluate their work and take responsibility at every level.

We want our pupils to be able to operate in the 21st century workplace and we want them to know the career opportunities that will be open to them if they study computing. We want children to become autonomous, independent users of computing technologies, making connections from previous learning, gaining confidence and enjoyment from their activities. We want the use of technology to support learning across the entire curriculum and to ensure that our curriculum is accessible to every child. Not only do we want them to be digitally literate and competent end-users of technology but through our computer science lessons we want them to develop curiosity, creativity, resilience and problem-solving and critical thinking skills. We want our pupils to have a breadth of experience to develop their understanding of themselves as individuals within their community but also as members of a wider global community and as responsible digital citizens.

### Implementation

A comprehensive and clear skills progression for Computing across the school has been created for staff to follow, and best embed and cover all areas of the Computing curriculum. The knowledge and skills statements are built upon year by year, so that children's understanding is constantly deepened and learners are being challenged.

In a constantly developing digital world, there is always opportunity to use technology to develop and enhance learning across the curriculum. Technology can be embedded within a wide variety of subjects and the children therefore have the opportunity to apply the skills that they have learnt. These cross curricular opportunities allow for more engaging, creative lessons and opportunities for children to practically apply their learning.

Our whole school curriculum ensures that there are countless opportunities and examples for cross-curricular usage of technology. The aim is to give children a relevant, purposeful way to make use of their digital skills across all areas. Key Stage 2 children have easy access to a bank of tablets, enabling this cross curricular approach whilst children in Key Stage 1 and EFYS have a range of resources including Bee-Bots, Blue-Bots, Rugged Racers and Scratch Tactile Readers.

### Impact

By the time children leave Lyne and Longcross, they:

- Will be confident users of technology, able to use it to accomplish a wide variety of goals, both at home and in school.
- Will have a secure and comprehensive knowledge of implication of technology and digital systems. This is important in a society where technologies and trends are rapidly evolving.



- Will be digitally literate and able to join the rest of the world on its digital platform. They will be equipped, not only with the skills and knowledge to use technology effectively and for their own benefit, but more importantly, safely. Understanding the consequences of using the internet is essential and that they are also aware of how to keep themselves safe online.
- Will be able to apply the British values of democracy, tolerance, mutual respect, rules of law and liberty when using digital systems.

Children should be taught to: (Key Stage 1 and Key Stage 2)

<b>Computer Science</b>	<ul style="list-style-type: none"> <li>• understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions</li> <li>• create and debug simple programs</li> <li>• use logical reasoning to predict the behaviour of simple programs</li> </ul> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> </ul>
<b>Digital Literacy</b>	<ul style="list-style-type: none"> <li>* use technology purposefully to create, organise, store, manipulate and retrieve digital content.</li> <li>* 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</li> </ul> <ul style="list-style-type: none"> <li>*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</li> <li>*use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content and collaboration</li> <li>*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</li> <li>*use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</li> </ul>
<b>Information Technology</b>	<ul style="list-style-type: none"> <li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>• recognise common uses of information technology beyond school</li> </ul> <ul style="list-style-type: none"> <li>• 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</li> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</li> </ul>
<b>Online Safety</b>	<ul style="list-style-type: none"> <li>• 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.</li> </ul> <ul style="list-style-type: none"> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</li> </ul>

**EYFS**

Unlike the National Curriculum objectives outlined above, EYFS outcomes and objectives can be delivered through the seven areas of learning rather than being a discrete subject. The below statements are examples of how children in the Early Years develop so that they can build and develop their computing knowledge and understanding in preparation for the National Curriculum.

Literacy	<ul style="list-style-type: none"> <li>• Children could create a story about the Bee Bot's journey, such as around a local area or a country being studied, or they could sequence events within a story being studied. For example, children could guide the Bee Bot between different locations, characters and locations within Little Red Riding Hood.</li> </ul>	
----------	---	--



	<ul style="list-style-type: none"> <li>Should devices not be available, the Barefoot website has Fake Bots available, which children can use instead of a digital device.</li> </ul>	
Understanding the World	<ul style="list-style-type: none"> <li>Provide a role play area with a range of technology, both functioning and model / broken devices, or a variety of electronic toys, such as remote controlled cars, walkie-talkies and interactive pets, as part of continuous provision.</li> <li>Further technology could be included in conjunction with other activities, such as digital cameras for pupils to photograph their own learning, although children should ideally be given the opportunity to select and use technology for a certain purpose, rather than simply being given a device.</li> <li>The pedagogical approaches used in this age group should also be carefully considered, which includes the need to tinker, or play, with a device, in order to discover how it functions.</li> </ul>	
Physical development	<ul style="list-style-type: none"> <li>Many children entering Early Years settings are already familiar with tablet devices, although their ability to use a keyboard and mouse is often limited. This has recently become a more significant issue, due to the prevalence of tablet devices in the home. It is therefore important that children are given opportunities to become familiar with a range of input devices, including the keyboard and mouse, in order to develop the required fine motor skills. Usage could be linked to phonics sessions, such as through the use of drill and practice games, including Dance Mat Typing or the Animal Typing app, or more creative outcomes, as described when examining the areas below.</li> </ul>	
Communication and Language	<ul style="list-style-type: none"> <li>Unplugged activities, or those away from the machine, give children an opportunity to develop their understanding of technology without the need for expensive devices. Children could be asked to give precise instructions verbally, such as through giving instructions to a sandwich making robot, with links made to the importance of using the correct vocabulary, along with speaking clearly and precisely. Giving instructions could also form part of sessions linked to physical development activities, such as determining rules for certain playground games.</li> </ul>	
Personal, social and emotional development	<ul style="list-style-type: none"> <li>Voice recorders, or the microphone built into a tablet device, could be used to record how pupils are feeling, or to discuss their relationships with others. This could be extended through pupils creating their own videos, which could also link to children giving online safety guidance to their peers on appropriate use of technology and what to do if they feel worried or concerned when using a device. A range of age-appropriate books are now available for young children to examine online safety, such as Chicken Clicking, Goldilocks (A hashtag cautionary tale) and the free Smartie the Penguin. Using voice and video recorders also allows children to self evaluate their own speaking.</li> </ul>	
Expressive arts and design	<ul style="list-style-type: none"> <li>The use of painting and graphics applications can further develop pupils' keyboard and mouse skills, whilst a range of tablet based apps are also available, such as the free Doodle Buddy. Creative outcomes can be produced, which allows pupils to take ownership of their work and could even be part of an extended project.</li> </ul>	



	Outputs produced could be linked to other uses of technology, such as producing mats for Bee Beets to travel around, whilst other physical computing devices, such as Spheros, can even be put into paint and controlled using a tablet device to produce images. Outfits for a device to wear, such as Bee Bot head dresses or Sphero paper cup people, could also be developed.	
Mathematics	<ul style="list-style-type: none"> <li>Controlling devices provides an excellent opportunity to develop pupils' understanding of left and right, along with directional language. Pupils could be asked to guide a device around a shape, or even use activities from computing related websites, such as code.org, to develop their understanding further. However, whilst such activities can effectively engage pupils in programming tasks, their usage should be carefully considered to ensure they have a purpose.</li> </ul>	

In Reception, children will cover computational knowledge and understanding through the topics in the table below:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	Weather and Seasons Hibernation and Animals	Winter	China	Spring		Beaches Plants

**Curriculum Knowledge and Skills Progression**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Teach Computing Units Studied</b>	Technology around us Digital painting Digital writing Grouping data Moving a robot Introduction to animation	Information technology around us Digital photography Making music Pictograms Robot algorithms Introduction to quizzes	Connecting computers Stop-frame animation Desktop publishing Branching databases Sequence in music Events and actions	The internet Audio editing Photo editing Data logging Repetition in shapes Repetition in games	Sharing information Video editing Vector drawing Flat-file database Selection in physical computing Selection in games	Communication Web page creation 3D modelling Spreadsheets Variables in games Sensing
<b>Digital Literacy</b>	<b>Technology around us</b> <ul style="list-style-type: none"> <li>I can identify technology</li> <li>I can identify a computer and its main parts</li> <li>I can use a mouse or touchpad in different ways</li> <li>I can use a keyboard to type</li> <li>I can use the keyboard to edit text</li> <li>I can create rules for using technology responsibly</li> </ul>	<b>Information technology around us</b> <ul style="list-style-type: none"> <li>I can recognise the uses and features of information technology</li> <li>I can identify information technology in the home</li> <li>I can identify information technology beyond school</li> <li>I can explain how information technology benefits us</li> <li>I can show how to use information technology safely</li> </ul>	<b>Connecting computers</b> <ul style="list-style-type: none"> <li>I can explain how digital devices function</li> <li>I can identify input and output devices</li> <li>I can recognise how digital devices can change the way we work</li> <li>I can explain how a computer network can be used to share information</li> <li>I can explore how digital devices can be connected</li> <li>I can recognise the physical components of a network</li> </ul>	<b>The internet</b> <ul style="list-style-type: none"> <li>I can describe how networks physically connect to other networks</li> <li>I can recognise how networked devices make up the internet</li> <li>I can outline how websites can be shared via the World Wide Web</li> <li>I can describe how content can be added and accessed on the World Wide Web</li> </ul>	<b>Sharing information - Online Safety</b> <ul style="list-style-type: none"> <li>I can explain that computers can be connected together to form systems</li> <li>I can recognise the role of computer systems in our lives</li> <li>I can recognise how information is transferred over the internet</li> <li>I can explain how sharing information online lets</li> </ul>	<b>Communication - Online Safety</b> <ul style="list-style-type: none"> <li>I can identify the importance of Internet addresses</li> <li>I can recognise how data is transferred across the internet</li> <li>I can explain how sharing information online can help people to work together</li> <li>I can evaluate different ways of working together online</li> </ul>



<p><b>Key Vocab</b></p>		<ul style="list-style-type: none"> <li>I can recognise that choices are made when using information technology</li> </ul>		<ul style="list-style-type: none"> <li>I can recognise how the content of the WWW is created by people</li> <li>I can evaluate the consequences of unreliable content</li> </ul>	<p>people in different places work together</p> <ul style="list-style-type: none"> <li>I can contribute to a shared project online</li> <li>I can evaluate different ways of working together online</li> </ul>	<ul style="list-style-type: none"> <li>I can recognise communicate using technology</li> <li>I can evaluate different methods of online communication</li> </ul>
	<p>Technology, computer, mouse, trackpad, keyboard, screen, click, drag, input device, shift, spacebar, <i>capital letter, full stop, safely, responsibly</i></p>	<p>Information technology (IT), computer, barcode, scanner/scan</p>	<p>Digital device, input, output, process, program, connection, network, network switch, server, wireless access point (WAP)</p>	<p>Internet, network, router, network security, network switch, wireless access point (WAP), router, website, web page, web address, router, routing, route tracing, browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, accurate, honest, adverts</p>	<p>System, connection, digital, input, process, output, protocol, address, packet, chat, explore, slide deck, reuse, remix, collaboration</p>	<p>Search, search engine, Google, Bing, Yahoo, Swisscows, DuckDuckGo, refine. index, crawler, bot, optimisation, links, web crawlers, content creator, ranking, communication, internet, public, private, one-way, two-way, one-to-one, one-to-many, SMS, email, WhatsApp, blog, YouTube, Twitter, BBC Newsround</p>
<p><b>Information Technology</b></p>	<p><b>Digital Painting - PaintZ</b></p> <ul style="list-style-type: none"> <li>I can describe what different freehand tools do</li> <li>I can use the shape tool and the line tools</li> <li>I can make careful choices when painting a digital picture</li> <li>I can explain why I chose the tools I used</li> <li>I can use a computer on my own to paint a picture</li> <li>I can compare painting a picture on a computer and on paper</li> </ul>	<p><b>Digital photography - Pixlr</b></p> <ul style="list-style-type: none"> <li>I know what devices can be used to take photographs</li> <li>I can use a digital device to take a photograph</li> <li>I can describe what makes a good photograph</li> <li>I can decide how photographs can be improved</li> <li>I can use tools to change an image</li> <li>I can recognise that images can be changed</li> </ul>	<p><b>Stop-frame animation - Stop Motion Studios</b></p> <ul style="list-style-type: none"> <li>I can explain that animation is a sequence of drawings or photographs</li> <li>I can relate animated movement with a sequence of images</li> <li>I can plan an animation</li> <li>I can identify the need to work consistently and carefully</li> <li>I can review and improve an animation</li> <li>I can evaluate the impact of adding other media to an animation</li> </ul>	<p><b>Audio editing - Audacity</b></p> <ul style="list-style-type: none"> <li>I can identify that sound can be digitally recorded</li> <li>I can use a digital device to record sound</li> <li>I can explain that a digital recording is stored as a file</li> <li>I can explain that audio can be changed through editing</li> <li>I can show that different types of audio can be combined and played together</li> <li>I can evaluate editing choices made</li> </ul>	<p><b>Video editing - Microsoft Video Editor</b></p> <ul style="list-style-type: none"> <li>I can recognise video as moving pictures, which can include audio</li> <li>I can identify digital devices that can record video</li> <li>I can capture video using a digital device</li> <li>I can recognise the features of an effective video</li> <li>I can identify that video can be improved through reshooting and editing</li> <li>I can consider the impact of the choices made when making and sharing a video</li> </ul>	<p><b>Web page creation - Google Sites</b></p> <ul style="list-style-type: none"> <li>I can review an existing website and consider its structure</li> <li>I can plan the features of a web page</li> <li>I can consider the ownership and use of images (copyright)</li> <li>I can recognise the need to preview pages</li> <li>I can outline the need for a navigation path</li> <li>I can recognise the implications of linking to content owned by other people</li> </ul>
<p><b>Key Vocabulary</b></p>	<p>Paint program, tool, paintbrush, erase, fill, undo, Piet Mondrian, primary colours, shape tools, line tool, fill tool, undo tool, Henri Matisse, Wassily Kandinsky, feelings, colour,</p>	<p>Device, camera, photograph, capture, image, digital, landscape, portrait, horizontal, vertical, field of view, narrow, wide, format, framing, focal point, subject, matter, flash,</p>	<p>Animation, flip book, stop frame, animation, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency,</p>	<p>Audio, record, playback, microphone, speaker, headphones, input, output, start, stop, podcast, save, file, selection, edit, mixing, time shift,</p>	<p>Video, audio, recording, storyboard, script, soundtrack, dialogue, capture, zoom, storage, digital, tape, AV (audiovisual), videographer, video techniques, zoom, pan,</p>	<p>Website, web page, browser, media, Hypertext Markup Language (HTML), layout, header, media, purpose, copyright, fair use, evaluate, preview, device, breadcrumb,</p>



	brush style, George Seurat, Pointillism, prefer, dislike, like	focus, background, foreground, editing, filter, Pixl, changed, real	delete, frame, media, import, transition	export, MP3, evaluate, feedback	filt, angle, YouTuber, content, camera, colour, export, trim/clip, titles, end credits, timeline, transitions, soundtrack, retake/reshoot, special effects, constructive feedback	trail, navigation, hyperlink, subpage, implication, external link, embed
<b>Information Technology</b>	<b>Digital writing</b> <ul style="list-style-type: none"> <li>I can use a computer to write</li> <li>I can add and remove text on a computer</li> <li>I can identify that the look of text can be changed on a computer</li> <li>I can make careful choices when changing text</li> <li>I can explain why I used the tools that I chose</li> <li>I can compare writing on a computer with writing on paper</li> </ul>	<b>Making music - Chrome MusicLab</b> <ul style="list-style-type: none"> <li>I can say how music can make us feel</li> <li>I can identify that there are patterns in music</li> <li>I can describe how music can be used in different ways</li> <li>I can show how music is made from a series of notes</li> <li>I can create music for a purpose</li> <li>I can review and refine our computer work</li> </ul>	<b>Desktop publishing - Adobe Spark</b> <ul style="list-style-type: none"> <li>I can recognise how text and images convey information</li> <li>I can recognise that text and layout can be edited</li> <li>I can choose appropriate page settings</li> <li>I can add content to a desktop publishing publication</li> <li>I can consider how different layouts can suit different purposes</li> <li>I can consider the benefits of desktop publishing</li> </ul>	<b>Photo editing - Be Funky</b> <ul style="list-style-type: none"> <li>I can explain that digital images can be changed</li> <li>I can change the composition of an image</li> <li>I can describe how images can be changed for different uses</li> <li>I can make good choices when selecting different tools</li> <li>I can recognise that not all images are real</li> <li>I can evaluate how changes can improve an image</li> </ul>	<b>Vector drawing - Google Drawings</b> <ul style="list-style-type: none"> <li>I can identify that drawing tools can be used to produce different outcomes</li> <li>I can create a vector drawing by combining shapes</li> <li>I can use tools to achieve a desired effect</li> <li>I can recognise that vector drawings consist of layers</li> <li>I can group objects to make them easier to work with</li> <li>I can evaluate my vector drawing</li> </ul>	<b>3D modelling - Tinkercad</b> <ul style="list-style-type: none"> <li>I can recognise that you can work in three dimensions on a computer.</li> <li>I can identify that digital 3D objects can be modified.</li> <li>I can recognise that objects can be combined in a 3D model.</li> <li>I can create a 3D model for a given purpose.</li> <li>I can plan my own 3D model.</li> <li>I can create my own digital 3D model.</li> </ul>
<b>Key Vocabulary</b>	Word processor, keyboard, keys, letters, Microsoft Word, letters, numbers, space, backspace, text cursor, toolbar, bold, italic, underline, undo, font, toolbar	Music, planets, Mars, Venus, war, peace, quiet, loud, feelings, emotions, pattern, rhythm, pulse, Neptune, pitch, tempo, notes, instrument, create, open, edit	Text, images, advantages, disadvantages, communicate, font, style, template, desktop publishing, copy, paste, layout, purpose, benefits	Image, edit, arrange, select, digital, crop, undo, save, search, copyright, composition, save, pixels, rotate, flip, adjustments, effects, colours, hue/saturation, sepia, version, illustrator, clone, recolour, magic wand, sharpen, brighten, fake, real, composite, background, foreground, retouch, paste, alter, publication, elements, original, font style, border, layer	Vector, drawing tools, shapes, object, icons, toolbar, move, resize, colour, rotate, duplicate/copy, zoom, select, alignment grid, handles, consistency, modify, layers, front, back, copy, paste, group, ungroup, reuse, improvement, evaluate, alternatives	2D, 3D, 3D object, 3D space, view, resize, colour, lift, rotate, position, select, duplicate, dimensions, placeholder, hole, group, ungroup, modify, evaluate, improve
<b>Information Technology</b> <b>Data and Information</b>	<b>Grouping data</b> <ul style="list-style-type: none"> <li>I can label objects</li> <li>I can identify that objects can be counted</li> <li>I can describe objects in different ways</li> </ul>	<b>Pictograms - j2e.pictogram</b> <ul style="list-style-type: none"> <li>I can recognise that we can count and compare objects using tally charts</li> <li>I can recognise that objects can be represented as pictures</li> </ul>	<b>Branching databases - j2data</b> <ul style="list-style-type: none"> <li>I can create questions with yes/no answers</li> <li>I can identify the object attributes needed to collect relevant data</li> </ul>	<b>Data logging</b> <ul style="list-style-type: none"> <li>I can explain that data gathered over time can be used to answer questions</li> <li>I can use a digital device to collect data automatically</li> </ul>	<b>Flat-file databases - J2data</b> <ul style="list-style-type: none"> <li>I can use a form to record information</li> <li>I can compare paper and computer-based databases</li> </ul>	<b>Spreadsheets - Google Slides</b> <ul style="list-style-type: none"> <li>I can create a data set in a spreadsheet</li> <li>I can build a data set into a spreadsheet</li> </ul>



	<ul style="list-style-type: none"> <li>I can count objects with the same properties</li> <li>I can compare groups of objects</li> <li>I can answer questions about groups of objects</li> </ul>	<ul style="list-style-type: none"> <li>I can create a pictogram</li> <li>I can select objects by attribute and make comparisons</li> <li>I can recognise that people can be described by attributes</li> <li>I can explain that we can present information using a computer</li> </ul>	<ul style="list-style-type: none"> <li>I can create a branching database</li> <li>I can identify objects using a branching database</li> <li>I can explain why it is helpful for a database to be well structured</li> <li>I can compare the information shown in a pictogram with a branching database</li> </ul>	<ul style="list-style-type: none"> <li>I can explain that a data logger collects 'data points' from sensors over time</li> <li>I can use data collected over a long duration to find information</li> <li>I can identify the data needed to answer questions</li> <li>I can use collected data to answer questions</li> </ul>	<ul style="list-style-type: none"> <li>I can outline how grouping and then sorting data allows us to answer questions</li> <li>I can explain that tools can be used to select specific data</li> <li>I can explain that computer programs can be used to compare data visually</li> <li>I can apply my knowledge of a database to ask and answer real-world questions</li> </ul>	<ul style="list-style-type: none"> <li>I can explain that formulas can be used to produce a calculated data</li> <li>I can apply formulas to data</li> <li>I can create a spreadsheet to plan an event</li> <li>I can choose suitable ways to present data</li> </ul>
<b>Key Vocabulary</b>	Object, label, group, search, image, colour, shape, property, value, data set, less, most, fewest, the same	More than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, data, tally chart, compare, count, explain, attribute, group, same, different, most popular, least popular	Attribute, value, questions, table, objects, branching databases, objects, equal, even, separate, order, organise, j2data, selecting, pictogram, information, decision tree, questions	Data, table (layout), input device, sensor, data logger, logging, data point, interval, analyse, import, export, logged, collection, analyse, review, conclusion	Database, data, information, record, field, sort, order, group, search, criteria, value, graph, chart, axis, compare, filter, presentation	Spreadsheet, data, data heading, data set, cells, columns and rows, data item, format, common attribute, formula, calculation, call reference, sigma, graph, evaluate, results, comparisons, questions, software, tools, data, propose
<b>Computer Science Programming</b>	<b>Moving a robot - Bee Bots</b> <ul style="list-style-type: none"> <li>I can explain what a given command will do</li> <li>I can act out a given word</li> <li>I can combine forwards and backwards commands to make a sequence</li> <li>I can combine four direction commands to make sequences</li> <li>I can plan a simple program</li> <li>I can find more than one solution to a problem</li> </ul>	<b>Robot algorithms - Bee Bots/Blue Bots</b> <ul style="list-style-type: none"> <li>I can describe a series of instructions as a sequence</li> <li>I can explain what happens when we change the order of instructions</li> <li>I can use logical reasoning to predict the outcome of a program (series of commands)</li> <li>I can explain that programming projects can have code and artwork</li> <li>I can design an algorithm</li> <li>I can create and debug a program that I have written</li> </ul>	<b>Sequence in sounds - Scratch</b> <ul style="list-style-type: none"> <li>I can explore a new programming environment</li> <li>I can identify that each sprite is controlled by the commands I choose</li> <li>I can explain that a program has a start</li> <li>I can recognise that a sequence of commands can have an order</li> <li>I can change the appearance of my project</li> <li>I can create a project from a task description</li> </ul>	<b>Repetition in shapes - Turtle</b> <ul style="list-style-type: none"> <li>I can identify that accuracy in programming is important</li> <li>I can create a program in a text-based language</li> <li>I can explain what 'repeat' means</li> <li>I can modify a count-controlled loop to produce a given outcome</li> <li>I can decompose a program into parts</li> <li>I can create a program that uses count-controlled loops to produce a given outcome</li> </ul>	<b>Selection in physical computing - Crumble Kits</b> <ul style="list-style-type: none"> <li>I can control a simple circuit connected to a computer</li> <li>I can write a program that includes count-controlled loops</li> <li>I can explain that a loop can stop when a condition is met, eg number of times</li> <li>I can conclude that a loop can be used to repeatedly check whether a condition has been met</li> <li>I can design a physical project that includes selection</li> <li>I can create a controllable system that includes selection</li> </ul>	<b>Variables in games - Scratch</b> <ul style="list-style-type: none"> <li>I can define a 'variable' as something that is changeable</li> <li>I can explain why a variable is used in a program</li> <li>I can choose how to improve a game by using variables</li> <li>I can design a project that builds on a given example</li> <li>I can use my design to create a project</li> <li>I can evaluate my project</li> </ul>



<p><b>Key Vocabulary</b></p>	<p>Forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, plan, algorithm, route, program</p>	<p>Instruction, sequence, clear, unambiguous, algorithm, program, order, commands, prediction, artwork, design, route, mat, debugging</p>	<p>Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, event, task, design, code, run the code, order, note, chord, algorithm, bug, debug</p>	<p>Program, turtle, commands, code, snippet, algorithm, design, debug, logo commands, pattern, repeat, repetition, count-controlled loop, value, decompose, procedure</p>	<p>Microcontroller, crumble controller, components, LED, Sparkle, crocodile clips, connect, battery box, program, repetition, infinite loop, count-controlled loop, condition, true, false, input, action, selection, motor, switch, algorithm, debug, evaluate</p>	<p>Variable, change, name, value, set, design, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share</p>
<p><b>Computer Science Programming</b></p>	<p><b>Introduction to animation Scratch Jr</b></p> <ul style="list-style-type: none"> <li>I can choose a command for a given purpose</li> <li>I can show that a series of commands can be joined together</li> <li>I can identify the effect of changing a value</li> <li>I can explain that each sprite has its own instructions</li> <li>I can design the parts of a project</li> <li>I can use my algorithm to create a program</li> </ul>	<p><b>Introduction to quizzes - Scratch Jr</b></p> <ul style="list-style-type: none"> <li>I can explain that a sequence of commands has a start</li> <li>I can explain that a sequence of commands has an outcome</li> <li>I can create a program using a given design</li> <li>I can change a given design</li> <li>I can create a program using my own design</li> <li>I can decide how my project can be improved</li> </ul>	<p><b>Events and actions - Scratch</b></p> <ul style="list-style-type: none"> <li>I can explain how a sprite moves in an existing project</li> <li>I can create a program to move a sprite in four directions</li> <li>I can adapt a program to a new context</li> <li>I can develop my program by adding features</li> <li>I can identify and fix bugs in a program</li> <li>I can design and create a maze-based challenge</li> </ul>	<p><b>Repetition in games - Scratch</b></p> <ul style="list-style-type: none"> <li>I can develop the use of count-controlled loops in a different programming environment</li> <li>I can explain that in programming there are infinite loops and count controlled loops</li> <li>I can develop a design which includes two or more loops which run at the same time</li> <li>I can modify an infinite loop in a given program</li> <li>I can design a project that includes repetition</li> <li>I can create a project that includes repetition</li> </ul>	<p><b>Selection in quizzes - Scratch</b></p> <ul style="list-style-type: none"> <li>I can explain how selection is used in computer programs</li> <li>I can relate that a conditional statement connects a condition to an outcome</li> <li>I can explain how selection directs the flow of a program</li> <li>I can design a program which uses selection</li> <li>I can create a program which uses selection</li> <li>I can evaluate my program</li> </ul>	<p><b>Sensing - Microbits</b></p> <ul style="list-style-type: none"> <li>I can create a program to run on a controllable device</li> <li>I can explain that selection can control the flow of a program</li> <li>I can update a variable with a user input</li> <li>I can use an conditional statement to compare a variable to a value</li> <li>I can design a project that uses inputs and outputs on a controllable device</li> <li>I can develop a program to use inputs and outputs on a controllable device</li> </ul>
<p><b>Key Vocabulary</b></p>	<p>ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area, block, joining, start, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, appropriate, design</p>	<p>Sequence, command, program, run, program, start, predict, blocks, actions, sprite, modify, match, debug, features, evaluate</p>	<p>Motion, event, sprite, algorithm, logic, move, resize, algorithm, extension block, pen up, set up, design, action, debugging, errors, setup, test</p>	<p>Scratch, programming, sprite, blocks, code, loop, repeat, value, forever, infinite loop, count-controlled loop, animate, costume, event block, duplicate, modify, debug, refine, evaluate, algorithm</p>	<p>Selection, condition, true, false, count-controlled loop, outcomes, conditional statement – the linking together of a condition and outcomes, algorithm, program, debug, implement, question, answer, task, input, outcomes, test, run, setup, share, evaluate, constructive</p>	<p>Micro-bit, MakeCode, input, process, output, flashing, USB, selection, condition, if... then... else, variable, random, navigation, design, task, step counter, plan, create, code, test, debug</p>
<p><b>Online Safety</b></p>	<ul style="list-style-type: none"> <li>I understand that various information is personal (eg. hobbies)</li> <li>I can identify characteristics of trustworthy people</li> </ul>	<ul style="list-style-type: none"> <li>I understand that a wider range of information is personal (eg. regular attendance at a specific place)</li> </ul>	<ul style="list-style-type: none"> <li>I know the need for passwords and that they should be kept safe.</li> <li>I can follow e-safety guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>I know the need to use secure passwords and to keep them private</li> <li>I can use ICT to communicate and collaborate, identify some</li> </ul>	<ul style="list-style-type: none"> <li>I know that personal information should only be given to trusted sources</li> <li>I know that some information on the internet may be misleading or</li> </ul>	<ul style="list-style-type: none"> <li>I can use digital tools to communicate and collaborate effectively online</li> <li>I can identify some of the risks associated with work</li> </ul>



	<ul style="list-style-type: none"> <li>I know that personal information should only be given to trusted people</li> </ul>	<ul style="list-style-type: none"> <li>I can identify some of the ways to use computers safely</li> <li>I always ask permission before using email clients or apps</li> </ul>	<ul style="list-style-type: none"> <li>I recognise what is acceptable/unacceptable behaviour when using technology and online</li> <li>I know that some information available online may be misleading or inaccurate and that it needs to be checked</li> </ul>	<p>of the risks and act to minimise them</p> <ul style="list-style-type: none"> <li>I know that not all information provided on the world wide web is correct and that it needs to be checked</li> </ul>	<p>inaccurate and that it needs to be checked</p> <ul style="list-style-type: none"> <li>I can use technology and online services to communicate and collaborate, identify some of the risks and act to minimise them</li> </ul>	<p>and leisure in a society and act to minimise them</p> <ul style="list-style-type: none"> <li>I can find information online and check it for accuracy and reliability</li> </ul>
--	---	---	---	--	--	--