

Progression of Knowledge in: Computing

National Curriculum Aims:

The National Curriculum for Computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology

Key stage 1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Key stage 2

Pupils should be taught to:

- 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
- 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.

Year Groups	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<u>Units</u>	1. Technology Around Us 2. Digital Painting 3. Programming 4. Data 5. Creating Media 6. Programming Animations	1. Information Technology Around Us 2. Digital Photography 3. Robot Algorithm 4. Pictograms 5. Making Music 6. Programming Quizzes	1. Connecting Computers 2. Stop Frame Animation 3. Sequencing 4. Branching Databases 5. Desktop Publishing 6. Events & Actions in Programming	1. The Internet 2. Audio Production 3. Programming 4. Data Logging 5. Photo Editing 6. Repetition in Games	1. Systems and Searching 2. Video Production 3. Selection 4. Flat-File Databases 5. Vector Drawing 6. Selection in Quizzes	1. Communication and Collaboration 2. Website Creation 3. Variables 4. Spreadsheets 5. 3D Modelling 6. Sensing

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum Attainment Targets:	Pupils should be taught to: ● understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions ● create and debug simple programs ● use logical reasoning to predict the behaviour of simple programs ● use technology purposefully to create, organise, store, manipulate and retrieve digital content ● recognise common uses of information technology beyond school ● use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the Internet or other Online technologies		Pupils should be taught to: ● 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 ● 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.			

Colour coding used in this document to reflect the different strands of the Computing Curriculum

Computer Science

Problem Solving

Programming

Logical Thinking

Wider Understanding (from KS2)

Information Technology

Media Content

Data Content

Searching

Digital Literacy

Using Devices/Software

Online Safety

Using IT Beyond the School (KS1)

	Y1 Autumn Term 1	Y2 Autumn Term 1	Y3 Autumn Term 1	Y4 Autumn Term 1	Y5 Autumn Term 1	Y6 Autumn Term 1
Teach Computing Units: Systems & Networks:	Technology Around Us Children 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. Children will also consider how to use technology responsibly and who to ask for help if they see any content or comments online that make them feel uncomfortable.	Information Technology Around Us Children 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. Children will then investigate how IT improves our world, and they will learn about the importance of using IT responsibly.	Connecting Computers Children 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, children will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, children will discover the benefits of connecting devices in a network.	The Internet Children 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.	Systems and Searching Children develop their understanding of computer systems and how information is transferred between systems and devices. Learners will consider how to keep their personal information safe online and what makes a trusted website. Children 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.	Communication and Collaboration In this unit children 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. Children 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.
National Curriculum Statements Relevant to the Units, Children will be taught to:	recognise common uses of information technology beyond school 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.	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	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 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	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.	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 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	
Declarative Knowledge Pupils will know that:  Computer Science Wider Understanding (from KS2) Information Technology Searching Digital Literacy Using Devices/Software Online Safety Using IT Beyond the School (KS1)	technology is something that can help us a computer is an example of technology choices are made when using technology some technology can be used in different ways rules are needed when using technology	a computer is a part of information technology information technology benefits us choices are made when using information technology rules for using information technology can help us there are different types of computers used in school and at home	a process acts on the inputs an output is produced by the process a computer system accepts an input and processes it to produce an output a computer can be used to share information a digital device is made of several parts computers can be connected to each other a network is made up of a number of components networks can be connected to other networks computer systems change the way that we work there are benefits of computer networks	the World Wide Web is part of the internet the global interconnection of networks is the internet types of content/media can be added, created, and shared on the World Wide Web the content of the World Wide Web is created, owned, and shared by people the internet enables us to view the World Wide Web the World Wide Web comprises of websites and web pages there is a need for security on the internet	a system is a set of interconnected parts which work together computers can be connected together to form IT systems data can be transferred between IT systems ranking orders search results to make them more useful ranking is determined by rules, and that different search engines use different rules search engines make money by selling targeted advertising space search engines create indices, and that they are different for each search engine different search terms produce different results search engines are examples of large IT systems	data is transferred across networks using agreed protocols (methods) data is transferred in packets connections between computers allow access to shared stored files different types of media can be shared through the internet that communicating and collaboration using the internet can be public or private computers connected to the internet allow people in different places to work together
Procedural Knowledge Pupils will know how to:  Computer Science Wider Understanding	identify the main parts of a computer use a mouse in different ways use a keyboard to type use the keyboard to edit text choose a piece of technology to do a job	describe some uses of computers recognise the features of information technology identify information technology in school talk about uses of information	identify input and output identify how changing the process can affect the output explain the role of a switch server, and wireless access point to a network identify network devices around them	describe how networks connect to other networks outline how information can be shared via the World Wide Web access the World Wide Web evaluate the reliability of content and the consequences of unreliable content	recognise inputs, processes, and outputs in large IT systems describe the input and output of a search engine explain the role of web crawlers in creating an index explain how search results are selected explain why the order of results is important and	discuss the opportunities that technology offers for communication and collaboration outline methods of communicating and collaborating using the internet choose methods of internet communication and collaboration for given purposes evaluate different methods of online communication and collaboration decide what they should and should not share online

(from KS2) Information Technology Searching Digital Literacy Using Devices/Software Online Safety Using IT Beyond the School (KS1)	use technology safely	technology say how rules for using information technology can help us talk about uses of information technology use information technology safely identify information technology beyond school		describe the current limitations of World Wide Web media explain the benefits of the World Wide Web	to whom evaluate the results of search terms describe the role of a particular IT system in their lives	
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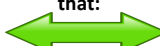
	Y1 Autumn Term 2	Y2 Autumn Term 2	Y3 Autumn Term 2	Y4 Autumn Term 2	Y5 Autumn Term 2	Y6 Autumn Term 2
Teach Computing Units: Creating Media, Searching, Media Rights	Digital Painting Children will develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work. The unit concludes with children considering their preferences when painting with and without the use of digital devices.	Digital Photography Children 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.	Stop Frame Animation Children 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 children adding other types of media to their animation, such as music and text.	Audio Production Children will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, children 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.	Video Production Children 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. Children will also learn about what actions to take if they see any inappropriate content online. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.	Website Creation Children 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, children pay specific attention to copyright, fair use of media and creative commons, the aesthetics of the site, and navigation paths. This will enable the learners to understand how to be a respectful and responsible user of technology online.
National Curriculum Statements Relevant to the Units, Children will be taught to:	use technology purposefully to create, organise, store, manipulate, and retrieve digital content	use technology purposefully to create, organise, store, manipulate, and retrieve digital content 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	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.	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	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	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.
Declarative Knowledge. Pupils will know that:  <u>Information Technology</u> Media Content Searching <u>Digital Literacy</u> Online Safety	computers can be used to create art a tool can be adjusted to suit my need	digital devices can capture images using a camera capture a digital image photographs can be saved and viewed late photographs can be changed after they have been taken some images are not real (fake)	an animation is made up of a sequence of images. a capturing device needs to be in a fixed position smaller movements create smoother animation consistency in working is important a project must be exported so it can be shared to search for information they can use keywords when searching on the Internet it is important to consider who owns content and whether they have the right to reuse it inappropriate online content should be reported to a trusted adult and that screens should be tilted or iPads turned over	sound can be recorded an input device is needed to record sound output devices are needed to play audio recorded audio can be stored on a computer audio can be edited sound can be represented visually as a waveform audio can be layered so that multiple sounds can be played at the same time know that there are various ways to search for the information they want (e.g. menus, site search functions) copying someone else's work from the internet without permission can cause problems (plagiarism/theft). The copyright symbol means work cannot be used. when searching on the Internet it is important to consider who owns content and whether they have the right to reuse it inappropriate online content should be reported to a trusted adult and that screens should be tilted or iPads turned over	there can be limitations of editing video on a recording device videos can be edited on a recording device or on a computer videos can be improved through and reshooting or editing recognise projects need to be exported to be shared some devices can and can't record video a storyboard can be used to plan a film know that there are various ways to search for the information they want (e.g. menus, sitemaps, site search functions) copying someone else's work from the internet without permission can cause problems (plagiarism/theft/fines). The copyright symbol means work cannot be used, copyright free, creative commons and royalty free content may be used. when searching on the Internet it is important to consider who owns content and whether they have the right to reuse it inappropriate online content should be reported to a trusted adult and that screens should be tilted or iPads turned over	there is a relationship between HTML and visual display web pages can contain different media types web pages are written by people a website is a set of hyperlinked web pages there are various components of a web page layout navigate online content, websites, or social media feeds using more sophisticated tools to get to the information they want (e.g. menus, sitemaps, breadcrumb-trails, site search functions). there are implications of linking to content owned by others. Copying someone else's work from the internet without permission can cause problems (plagiarism/theft/fines). The copyright symbol means work cannot be used, copyright free, creative commons and royalty free content may be used. Age 10 is the age of legal responsibility. when searching on the Internet it is important to consider who owns content and whether they have the right to reuse it. inappropriate online content should be reported to a trusted adult and that screens should be tilted or iPads turned over
Procedural Knowledge. Pupils will know how to:  <u>Information</u>	explain what different freehand tools do use shape and line tools when precision is needed use a range of paint	talk about how to take a digital photograph take photographs in both landscape and portrait format make choices when composing a photograph	set up the work area with an awareness of what will be captured plan an animation storyboard capture an image use the onion skinning tool to review subject position	record sound using a computer play recorded audio import audio into a project delete a section of audio change the volume of tracks in a project	explain the features of video as a visual media format use different camera angles use pan, tilt and zoom determine what scenes will convey their idea regularly review and reflect on a video project	review an existing website (navigation bars, header) create a new blank web page add text to a web page set the style of text on a web page embed media in a web page

<u>Technology</u> Media Content Searching <u>Digital Literacy</u> Online Safety	colours use the fill tool to colour an enclosed area use the undo button to correct a mistake combine a range of tools to create a piece of artwork decide when it's appropriate to use each tool consider impact of choices made compare painting using a computer with painting using brushes	view photographs on digital devices recognise features of "good" photographs decide which photos to keep identify how a photograph could be improved hold the camera still to take a photograph use zoom to change the composition use simple editing tools improve a photo by retaking it	move a subject between captures review a captured sequence of frames as an animation remove frames to improve an animation explain the impact of adding other media add media to enhance an animation review a completed project use key phrases in search engines use search technologies effectively	consider the results of editing choices made use key phrases in search engines use search technologies effectively navigate online content, websites,using tools to get to the information they want (e.g. menus, site search functions) assess and justify when it is acceptable to use the work of others	choose to reshoot a scene or improve later through editing decide what changes I will make when editing use split, trim and crop to edit a video navigate online content, websites,using sophisticated tools to get to the information they want (e.g. menus, sitemaps, site search functions) use search tools to find and access online content which can be reused by others assess and justify when it is acceptable to use the work of others make references to and acknowledge sources they have used from the internet	preview pages (different screens / devices) add web pages to a website insert hyperlinks between pages insert hyperlinks to another site navigate online content, websites, or social media feeds using more sophisticated tools to get to the information they want (e.g. menus, sitemaps, breadcrumb-trails, site search functions). assess and justify when it is acceptable to use the work of others. use search tools to find and access online content which can be reused by others make references to and acknowledge sources I have used from the internet. explain the principles of fair use and apply this to case studies
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	Y1 Spring Term 1	Y2 Spring Term 1	Y3 Spring Term 1	Y4 Spring Term 1	Y5 Spring Term 1	Y6 Spring Term 1
Teach Computing Units: Programming A	Programming Children will be introduced to early programming concepts. Children 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. The unit is paced to ensure time is spent on all aspects of programming, and builds knowledge in a structured manner. Children are also introduced to the early stages of program design through the introduction of algorithms.	Robot Algorithms This unit develops childrens' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Children 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.	Sequencing 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. Children 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. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Children also apply stages of program design through this unit.	Programming Children will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo , a text-based programming language. This unit is the first of the two programming units in Year 4 and looks at repetition and loops within programming.	Selection Children will use physical computing to explore the concept of selection in programming through the use of the Microbit programming environment. Learners will be introduced to a Microbit 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. Children 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, children 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 used to control the operation of the model . Throughout this unit, children will apply the stages of programming design. See ADAPTIVE UNIT	Variables Children will explore the concept of variables in programming through games in Scratch. First, children 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, children apply their knowledge of variables and design to improve their games in Scratch.
National Curriculum Statements Relevant to the Units, Children will be taught to:	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	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	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	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	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	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
Declarative Knowledge Pupils will know that:  <u>Computer Science</u> <u>Problem Solving</u> Programming Logical Thinking <u>Digital Literacy</u> <u>Using Devices/Software</u> <u>Using IT Beyond the School (KS1)</u>	words can be enacted commands can be used on a given device commands do given things commands are matched to an outcome a program is a set of commands that a computer can run a series of instructions can be issued before they are enacted many devices around the home use algorithms	a series of instructions is a sequence a series of instructions can be issued before they are enacted changing the order of instructions changes what a device does you can predict the outcome of a program many devices around the home use algorithms and are programmable	programs start because of an input sequence means in order algorithms are written in order a program includes sequences of commands the order of commands can affect a program's output different sequences can achieve the same output different sequences can achieve different outputs		that a condition can only be true or false a count-controlled loop contains a condition a condition-controlled loop will stop when a condition is met when a condition is met, a loop will complete a cycle before it stops selection can be used to branch the flow of a program a loop can be used to repeatedly check whether a condition has been met	a 'variable' is something that is changeable a variable can be used in a program, eg a "score" a program variable is a placeholder in memory for a single value a variable has a name and a value the value of a variable can be used by a program the value of a variable can be updated variables can hold numbers (integers) or letters (strings) a variable can be set as a constant (fixed value) it is important to set up a variable at the start of a program (initialisation) there is only one value for a variable at any one time if you change the value of a variable, you cannot access the previous value (cannot undo) if you read a variable, the value remains

						the name of a variable is meaningless to the computer the name of a variable needs to be unique
Procedural Knowledge Pupils will know how to:  <u>Computer Science</u> Problem Solving Programming Logical Thinking <u>Digital Literacy</u> Using Devices/Software	enact a given word predict the outcome of a command on a device run a command on a floor robot choose a command for a given purpose choose a series of words that can be enacted as a program choose a series of commands that can be run as a program build a sequence of commands in steps combine commands in a program run a program on a device	choose a series of words that can be enacted as a sequence choose a series of instructions that can be run as a program create a program trace a sequence to make a prediction run a program on a device debug a program	build a sequence of commands combine commands in a program order commands in a program create a sequence of commands to produce a given outcome		combine count-controlled loop with a condition-controlled loop create a condition-controlled loop use a condition in an 'if...then...' statement to start an action use selection to switch the program flow in one of two ways use a condition in an 'if...then...else...' statement to produce given outcomes explain the importance of instruction order in 'if...then...else...' statements	identify information that is variable, for example, a football score during a match identify a variable in an existing program experiment with the value of an existing variable choose a name that identifies the role of a variable to make it easier for humans to understand it decide where in a program to set a variable update a variable with a user input use an event in a program to update a variable use a variable in a conditional statement to control the flow of a program use the same variable in more than one location in a program

	Y1 Spring Term 2	Y2 Spring Term 2	Y3 Spring Term 2	Y4 Spring Term 2	Y5 Spring Term 2	Y6 Spring Term 2
Teach Computing Units: Data Content	Data 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.	Pictograms Children 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. Children will use the data presented to answer questions.	Branching Databases Children 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. Children 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.	Data Logging Children will consider how and why data is collected over time. Children 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. Children 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. Children will spend time using a computer to review and analyse data. Towards the end of the unit, children will pose questions and then use data loggers to automatically collect the data needed to answer those questions.	Flat-File Databases Children will look at how a flat-file database can be used to organise data in records. They 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.	Spreadsheets This unit introduces children to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Children 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. Children will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.
National Curriculum Statements Relevant to the Units, Children will be taught to:	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	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	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	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	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	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
Declarative Knowledge Pupils will know that:  Computer Science Problem Solving Programming Logical Thinking Wider Understanding (from KS2) <u>Information Technology</u> Data Content	objects can be counted that collected data can be counted objects can be grouped by similarities (attribute) information can be presented	people, animals and objects can be described by attributes we can present information using a computer	a data set can be structured using yes/no questions a branching database is an identification tool a well-structured branching database will enable you to identify objects using fewer questions there are real-world applications for branching databases	questions can be answered using a table of data data can be logged overtime sensors are input devices a sensor can be used as an input device for data collection a data logger captures "data points" from sensors over time there are real-world applications for branching datalogging	a computer program can be used to organise data tools can be used to select data to answer questions ordering data allows us to answer some questions operands can be used to filter data 'AND' and 'OR' can be used to refine data selection computer programs can be used to compare data visually we present information to communicate a message the school uses a variety of databases, as do a variety of organisations	questions can be answered using spreadsheet data there are different software tools to work with data the data type determines how a spreadsheet can process the data formulas can be used to produce calculated data cells can be linked data should be organised in a spreadsheet a cell's value automatically updates when the value in a linked cell is Changed the school uses spreadsheets, as do a variety of organisations
Procedural Knowledge Pupils will know how to:  Computer Science Problem Solving Programming Logical Thinking Wider Understanding (from KS2) <u>Information Technology</u> Data Content	identify some attributes of an object collect simple data describe the properties of an object choose an attribute to group objects by group objects to answer questions describe a group of objects (based on commonality) recognise that information can be presented in different ways	use a tally chart to collect data enter data onto a computer use a computer to view data in different formats use pictograms to answer single-attribute questions compare objects that have been grouped by attribute use a computer to answer comparison questions (graphs, tables) suggest appropriate headings for tally charts and pictograms use a computer to answer comparison questions (graphs, tables) construct (complete) a given comparison question, eg "Are there more....balls than....balls?" use a computer program to present information in different ways give simple examples of why some information should not be shared	investigate questions with yes/no answers identify attributes that they can ask yes/no questions about create questions with yes/no answers select an attribute to separate objects into two similarly sized groups choose questions that will divide objects into evenly sized subgroups repeatedly create subgroups of objects identify an object using a branching database retrieve information from different levels of the branching database relate two levels of a branching database using	use a digital device to collect data automatically choose an appropriate time frame when collecting data automatically use a set of logged data to find information use a computer program to sort data by one attribute Export information in different formats	choose different ways to view data choose which attribute and value to search by to answer a given question (operands) ask questions that need more than one attribute to answer choose which attribute to sort data by to answer a given question choose multiple criteria to search data to answer a given question (AND and OR) select an appropriate graph to visually compare data choose suitable ways to present information to other people	explain what an item of data is in a spreadsheet calculate data using a formula for each operation use functions to create new data use existing cells within a formula evaluate results in comparison to the question asked choose suitable ways to present spreadsheet data

	Y1 Summer Term 1	Y2 Summer Term 1	Y3 Summer Term 1	Y4 Summer Term 1	Y5 Summer Term 1	Y6 Summer Term 1
Teach Computing Units: Media Content	Creating Media Children will develop their understanding of the various aspects of using a computer to create and manipulate text. 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, children 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.	Making Music Children will listen to a variety of pieces of music and consider how music can make them think and feel. Children will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.	Desktop Publishing Children will become familiar with the terms 'text' and 'images' and emojis and understand that they can be used to communicate messages offline and online. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Children 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. Children 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.	Photo Editing Children 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.	Vector Drawing Children start to create vector drawings. They learn how to use different drawing tools to help them create images. Children recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Children layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.	3D Modelling Children will develop their knowledge and understanding of using a computer to produce 3D models. They 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, children 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.
National Curriculum Statements Relevant to the Units, Children will be taught to:	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.	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	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	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	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	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
Declarative Knowledge Pupils will know that:  <u>Information Technology</u> Media Content Using IT Beyond the School (KS1) <u>Digital Literacy</u> Using Devices/Software Online Safety	they can create documents using a word processor a keyboard is used to enter text into a computer the Shift key changes the output of a key text can be changed the appearance of text can be changed text can be edited word processing is used in many areas of life	the same pattern can be represented in different ways computers can be used to play sounds of different instruments professional musicians use music software	magazine covers use a variety of text and images for effect text and images can be used together to convey information landscape and portrait are two different page orientations different layouts can suit different purposes DTP pages can be structured with placeholders different font styles and effects are used for particular purposes they should ask permission before taking a photo	editing images can be unethical different colour effects make you feel different things images can be combined often you can't tell when images have been edited or combined Some countries now require a creator to add a label when an image has been edited	vector drawing are widely used to illustrate many things a vector drawing comprises separate objects each object in a drawing is in its own layer vector images can be scaled without impact on quality objects can be modified in groups alignment and size guides can help create a more consistent drawing	3D models can be created on a computer a 3D environment can be viewed from different perspectives digital tools can be used to manipulate 3D objects placeholders can create holes in 3D objects artefacts can be broken down into a collection of 3D objects
Procedural Knowledge Pupils will know how to:  <u>Computer Science</u> Problem Solving Wider Understanding (from KS2) <u>Information Technology</u> Media Content <u>Digital Literacy</u> Using Devices/Software	create a lost toy poster use letter, number, and Space keys to enter text into a computer use punctuation and special characters select text use the Backspace key to remove text position the text cursor in a chosen location choose options to achieve a desired effect change the appearance of text on a computer use Undo consider the impact of choices made	use a computer to create a musical pattern use a computer to compose a rhythm and a melody on a given theme use a computer to play the same music in different ways (e.g. tempo) improve a musical composition created on a computer experiment with musical patterns on a computer experiment with different sounds on a computer compare playing music on instruments with making music on a computer evaluate a musical composition created on a computer	create a magazine cover and content using a template change page orientation add text to a placeholder organise text and image placeholders in a page layout add and remove images to and from placeholders edit text in a placeholder move resize and rotate images choose fonts and apply effects to text review a document consider the benefits of using a DTP application in various areas of life	rotate an image crop an image experiment with different colour effects explain certain colour choices remove parts of an image before cloning use tools to select and copy part of an image use a range of tools to copy between images combine images for a purpose review against a criteria combine text and image	create a variety of vector artwork add an object to a vector drawing select one or multiple objects move objects between the layers of a drawing duplicate objects using copy and paste modify objects reposition objects group and ungroup selected objects combine options to achieve a desired effect create a vector drawing for a given purpose recognise and give examples of the uses of vector graphics in the wider world	create a 3d model of a car and a building use digital tools to modify 3D objects combine objects to create a 3D digital artefact use digital tools to accurately size 3D objects construct a 3D model which reflects a real world object

	Y1 Summer Term 2	Y2 Summer Term 2	Y3 Summer Term 2	Y4 Summer Term 2	Y5 Summer Term 2	Y6 Summer Term 2
Teach Computing Units: Programming B	Programming Animations Children will be introduced to on-screen programming through Scratch. 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 stages of program design through the introduction of algorithms.	Programming Quizzes This unit initially recaps on learning from the Year 1 Programming Animations'. Children 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 Scratch, and realise these designs in Scratch using blocks of code. Finally, children evaluate their work and make improvements to their programming projects.	Events & Actions in Programming This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Children 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.	Repetition in Games 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.	Selection in Quizzes Children 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.	Sensing 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. 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 children to build in and test within the new programming environment, before transferring it to their micro:bit. Children then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth. 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, children 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.
National Curriculum Statements Relevant to the Units, Children will be taught to:	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	understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions create and debug simple programs use logical reasoning to predict the behaviour of simple programs use technology purposefully to create, organise, store, manipulate and retrieve digital content use logical reasoning to predict the behaviour of simple programs	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 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	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	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	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
Declarative Knowledge Pupils will know that:  <u>Computer Science Programming</u>	there are words that can be enacted commands can be used on a given device a program is a set of commands a computer can run a series of instructions can be issued before they are enacted	a series of instructions is a 'sequence' a series of instructions needs to be issued before they are enacted	programs start because of an input a series of instructions is a 'sequence' a program includes sequences the sequence of a program is a process the order of commands can affect a program's output different sequences can achieve the same output different sequences can achieve different outputs	know that repetition involves repeating things there are everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves we can use a loop command in a program to repeat instructions in programming there are indefinite loops and count-controlled loops an indefinite loop will run until the program is stopped you can program a loop to stop after a specific number of times tools that enable more than one process to be run at the same time (concurrency) not all tools enable more than one process to be run at once	a condition can only be true or false a count-controlled loop contains a condition a condition-controlled loop will stop when a condition is met when a condition is met a loop will complete a cycle before it stops selection can be used to branch the flow of a program a loop can be used to repeatedly check whether a condition has been met	'variable' can be defined as something that is changeable a variable can be used in a program, e.g. 'score' a program variable can be defined as a placeholder in memory for a single value a variable has a name and a value the value of a variable can be used by a program the value of a variable can be updated variables can hold numbers (integers) or letters (strings) a variable can be set as a constant (fixed value) setting a variable at the start of a program (initialisation) is important there is only one value for a variable at any one time if you change the value of a variable, you cannot access the previous value (cannot undo) if you read a variable, the value remains the name of a variable is meaningless to the computer the name of a variable needs to be unique

Procedural Knowledge Pupils will know how to:  Computer Science Problem Solving Programming Logical Thinking	enact a given word predict the outcome of a command on a device explain what a given command does match a command to an outcome run a command (press a button) choose a command for a given purpose choose a series of words that can be enacted as a program choose a series of commands that can be run as a program build a sequence of commands in steps combine commands in a program run a program on a device	choose a series of words that can be enacted as a sequence explain what happens when we change the order of Instructions choose a series of commands that can be run as a program use logical reasoning to predict the outcome of a program trace a sequence to make a prediction test a prediction by running the sequence create and debug a program run a program on a device	build a sequence of commands combine commands in a program order commands in a program create a sequence of commands to produce a given outcome	list an everyday task as a set of instructions including repetition identify a loop within a program identify patterns in a sequence identify patterns in a sequence, eg 'step 3 times' means the same as 'step, step, step' use a count-controlled loop to produce a given outcome use a loop and when not to create two or more sequences that run at the same time	choose a condition to use in a program compare a count controlled loop with a condition-controlled loop create a condition-controlled loop use a condition in an 'if... then...' statement to start an action use selection to switch program flow use 'if... then... else...' to switch program flow in one of two ways use a conditions to produce a given outcome explain the importance of instruction order in 'if... then... else...' statements	identify examples of information that is variable, e.g. a football score during a match identify a variable in an existing program experiment with the value of an existing variable define the way that a variable is changed choose a name that identifies the role of a variable to make it more usable (to humans) decide where in a program to set a variable update a variable with a user input use an event in a program to update a variable use a variable in a conditional statement to control the flow of a program use the same variable in more than one location in a program
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Computing in EYFS

In the Early Years, technology is taught and used across the whole curriculum. Children recognise that a range of technology is used in places such as homes and schools and that Online Safety is important. The children are helped to be curious about technology in real-world contexts through role-play and natural discussions. They learn to select and use technology for particular purposes across various areas of learning. A wide range of digital technologies (for example, iPads and programmable robots to support early coding skills) allow the children to represent their own ideas, thoughts, and feelings—often collaboratively, as well as providing them with new ways to communicate and share their ideas. Within the EYFS we encourage parents to be involved in their child’s learning journey by using digital technology to record and share their child’s learning at home through photographs and videos taken on iPads. We ensure there is a careful balance between encouraging parents to use digital technology with their children and understanding that there is a need to limit screen time so that its use is purposeful and meaningful. They develop skills such as investigating, evaluating, using commands and simple algorithms¹.

Programmes of Study

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children’s vocabulary will support later reading comprehension.

Big Ideas To understand how technology can help us. To begin to programme simple programmable toys. To begin to understand how to keep ourselves safe.	Continuous Provision 
Key Vocabulary computer, mouse, keyboard, iPad, move, create, on, off, close, safe, unsafe, click, password, plug, unplugged, internet, screen, instructions, Ambitious Vocabulary	Key Texts 

¹ The EYFS team use the statutory programmes of study and the early learning goals (end of EYFS assessment points) designed by subject leads to create the ‘Big Ideas’ so that there is coherence and key themes running from nursery to year 6. The EYFS team has worked with an EYFS consultant to support the development of the curriculum. The knowledge has been organised under 3 ‘Big Ideas’ for each KS1/KS2 curriculum area with the exception of Music, P.E and PSHE. These are then broken down into key knowledge for Nursery and Reception that build to the three Big Ideas.

Coding, website, online, and offline, tabs, icons, programming, download, username	
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Nursery- non negotiable		
To show an interest in technological toys/objects.	To use technology in play to investigate and record. Cameras on ipads, talking tins, talking watches, talking clipboards To begin to operate simple equipment (Bee bots).	To talk about/identify technology in their environment. Visiting our local area - identifying technology around us e.g. cars, traffic lights, cash machines, phone boxes To begin to know some ways to stay safe with technology.
Reception- non negotiable		
To recognise that a range of technology is used in places such as homes and schools and to understand what it's used for.	To select and use technology for a particular purpose. To interact purposefully with age-appropriate technology. To know the functions of certain technology and why we use them.	To show an understanding of some ways to stay safe online.

Vocabulary Lists

See above EYFS section for vocabulary in the Early Years

Y1 Autumn Term 1	Y2 Autumn Term 1	Y3 Autumn Term 1	Y4 Autumn Term 1	Y5 Autumn Term 1	Y6 Autumn Term 1
Technology Around Us technology, computer, mouse, trackpad, keyboard, screen, double-click, typing	Information Technology Around Us information technology (IT), computer, barcode, scanner/scan	Connecting Computers digital device, input, process, output, secure, password, cyber attack, input, process, output, program, digital, non-digital, connection, network, network switch, server, wireless access point, network cables, network sockets	The Internet Internet, network, router, network security, network switch, server, wireless access point (WAP), router, website, web page, web address, routing, web browser, content, links, files, download, sharing, ownership, permission, Information, sharing, accurate, honest, content, adverts	Systems and Searching system, connection, digital, input, process, output, connection, digital, input, process, output, search, search engine, refine, index, crawler, bot, search engine, ordering, ranking, search engine, links, algorithm, search engine optimisation (SEO), , search engine, web crawler, content creator, selection, ranking	Communication and Collaboration communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, public, private, one-way, two-way, one-to-one, one-to-many

Y1 Autumn Term 2	Y2 Autumn Term 2	Y3 Autumn Term 2	Y4 Autumn Term 2	Y5 Autumn Term 2	Y6 Autumn Term 2
Digital Painting paint program, tool, paintbrush, erase, fill, undo, primary colours, shape tools, line tool, fill tool, undo tool, feelings, colour, brush style, brush size, pictures, painting, computers, like, prefer, dislike	Digital Photography device, camera, photograph, capture, image, digital, Landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, lighting, focus, filter	Stop Frame Animation animation, flip book, stop-frame animation, frame, sequence, image, photograph, Setting, character, events, stop-frame animation, onion skinning, onion skinning, consistency, evaluation, animation, onion skinning, delete, frame, animation, media, import, transition	Audio Production Audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, edit, selection, load, import, save, export, MP3, editing, evaluate, feedback	Video Production video, audio, camera, talking head, panning, close up, Video camera, microphone, lens, close up, mid range, long shot, moving subject, side by side, high angle, low angle, normal angle, static camera, zoom, pan, tilt, storyboard, storyboard, filming, review, Import, split, trim, clip, edit, reshoot, delete, trim, reorder, export, evaluate, share	Website Creation website, web page, browser, media, Hypertext Markup Language (HTML), web page, website, logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed

Y1 Spring Term 1	Y2 Spring Term 1	Y3 Spring Term 1	Y4 Spring Term 1	Y5 Spring Term 1	Y6 Spring Term 1
Programming forwards, backwards, turn, clear, go, commands, Instructions, directions, left, right, turn, Plan, algorithm, program, route, plan	Robot Algorithms instruction, sequence, clear, unambiguous, algorithm, program, sequence, order, algorithm, instructions, prediction, program, design, route, mat, debugging, algorithm, program, decomposition	Sequencing Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, programming blocks, motion, turn, point in direction, go to, glide, Sequence, event, task, design, code, run the code, sequence, order, note, chord, Sprite, stage, costume, backdrop, design, algorithm, bug, debug	Programming program, turtle, commands, ode snippet, algorithm, design, debug, Logo, pattern, repeat, repetition, count-controlled loop, algorithm, value, trace, repeat, decompose, procedure	Selection See ADAPTIVE UNIT	Variables variable, change, name, value, set, design, event, algorithm, task, artwork, program, project, code, test, debug, Improve, evaluate, share

Y1 Spring Term 2	Y2 Spring Term 2	Y3 Spring Term 2	Y4 Spring Term 2	Y5 Spring Term 2	Y6 Spring Term 2
Data object, label, group, search, image, property, label, colour, size, shape, data set, value, more, less, most, fewest, the same	Pictograms More than, less than, most, least, organise, data, object, tally chart, votes, total, more than, less than, count, pictogram, explain, more, less, most, least, more common, least common, attribute, group, same, different, object, more than/less than, most/least, most popular, least popular, conclusion, block diagram, sharing	Branching Databases attribute, value, questions, table, objects, database, attribute, value, questions, objects, equal, even, separate, value, questions, objects, structure, compare, order, organise, selecting, branching database, attribute, value, questions, information, decision tree	Data Logging data, table, layout, Input device, sensor, data logger, logging, data point, interval, analyse, data set, import, export, logged, collection, analyse, review, conclusion	Flat-File Databases database, data, information, record, field, sort, order, group, data, value, search, criteria, graph, chart, axis, compare, filter, presentation	Spreadsheets data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, data, spreadsheet, input, output, cells, cell reference, calculate, operation, formula, cell, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, comparison, questions, software, tools

Y1 Summer Term 1	Y2 Summer Term 1	Y3 Summer Term 1	Y4 Summer Term 1	Y5 Summer Term 1	Y6 Summer Term 1
Creating Media word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, font, format, compare, typing, writing	Making Music music,, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, instrument, pitch, pulse/beat, tempo, instrument, rhythm, notes, open, edit	Desktop Publishing text, images, advantages, disadvantages, communicate, font, font style, communicate, template, landscape, portrait, orientation, placeholder, template, layout, content, copy, paste, desktop publishing, layout, purpose, benefits	Photo Editing image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, retouch, clone, select, copy, paste, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, rotate, crop, zoom, clone, select, copy, paste, undo, font	Vector Drawing Vector, drawing tools, object, toolbar, move, resize, colour, rotate, duplicate/copy, align, resize, modify, zoom, layers, vector drawing, reuse, paste, reflection, vector drawing	3D Modelling 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, placeholder, hollow, choose, combine, construct, evaluate, modify

Y1 Summer Term 2	Y2 Summer Term 2	Y3 Summer Term 2	Y4 Summer Term 2	Y5 Summer Term 2	Y6 Summer Term 2
Programming Animations ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area, block, joining, command, start block, run, program, programming area, background, delete, reset, algorithm, predict, effect, change, value, block, instructions, sprite, delete, program, algorithm, background, appropriate, algorithm, design, programming blocks, programs	Programming Quizzes sequence, command, program, run, start, outcome, predict, program, blocks, sprite, algorithm, blocks, design, sequence, predict, design, sequence, modify, change, actions, build, match, Compare, design, debug, features, evaluate	Events & Actions in Programming motion, event, sprite, algorithm, logic, move, resize, algorithm, extension block, pen up, set up, design, event, action, algorithm, debugging, errors, code, test, debug	Repetition in Games Scratch, programming, sprite, blocks, code, loop, repeat, value, block, repeat, forever, infinite loop, count-controlled loop, costume, repetition, forever, infinite loop, count-controlled loop, animate, costume, event block, duplicate, repeat, forever, infinite loop, modify, design, count-controlled loop, repetition, design, sprite, algorithm, duplicate, debug, refine, evaluate	Selection in Quizzes selection, condition, true, false, count-controlled loop, outcomes, conditional statement (the linking together of a condition and outcomes), algorithm, program, debug, question, answer, task, design, algorithm, input, program, implement, test, run, setup	Sensing Micro:bit, MakeCode, input, process, output, flashing, selection, condition, if then else, variable, random, input, selection, condition, variable, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug

Online Safety Curriculum

In EYFS children are taught “To begin to understand how to keep ourselves safe” - one of the three EYFS 'Big Ideas’ which includes Online Safety.

In Years 1-6 Online Safety is addressed through lessons from Teach Computing (see above), a rolling programme of assemblies (identified below) which follows the 8 recommended strands of Online Safety as listed in the advisory government document, ***Education for a Connected World***. Elements of Online Safety are also taught through the PSHE curriculum.

At the start of the academic year, children in Key Stage 1 and 2 sign that they have read, understood and signed *Acceptable Use Agreements*. These may be updated during the year if needed.

All children across the school also watch, discuss and are taught to understand LGFL's ***Undressed Campaign*** video at <https://undressed.lgfl.net/> during Establishment Week. There is also a Childline video at: <https://www.youtube.com/watch?v=fCA6EhBhiC8> which is viewed and discussed with the children.

We use Swiggle to search. A child-friendly search engine developed by the South Western Grid for Learning (SWGfL)

EYFS

At the start of the academic year, all children watch and discuss LGfL's Undressed Campaign video <https://undressed.lgfl.net/> Undressed and Childline posters are also put up in every classroom. There is a Childline video at: <https://www.youtube.com/watch?v=fCA6EhBhiC8> which is viewed and discussed with the children.

The document below details where Online Safety is covered in EYFS under “To begin to understand how to keep ourselves safe” - one of the three EYFS 'Big Ideas'.

Nursery- non negotiable		
To show an interest in technological toys/objects.	To use technology in play to investigate and record. Cameras on ipads, talking tins, talking watches, talking clipboards To begin to operate simple equipment (Bee bots).	To talk about/identify technology in their environment. Visiting our local area - identifying technology around us e.g. cars, traffic lights, cash machines, phone boxes To begin to know some ways to stay safe with technology.
Reception- non negotiable		
To recognise that a range of technology is used in places such as homes and schools and to understand what it's used for.	To select and use technology for a particular purpose. To interact purposefully with age-appropriate technology. To know the functions of certain technology and why we use them.	To show an understanding of some ways to stay safe online.

Y1-3 Online Safety Assembly Cycle

At the start of the academic year, all children watch and discuss LGfL's Undressed Campaign video <https://undressed.lgfl.net/> Undressed and Childline posters are also put up in every classroom. There is a Childline video at: <https://www.youtube.com/watch?v=fCA6EhBhiC8> which is viewed and discussed with the children.

	Autumn	Spring 1	Summer	Notes
KS1 Cycle 1	Self-Image and Identity- Worries1 What worry is What might make us feel worried online Trusted adults Childline	Privacy and Security What a stranger is and how we should treat them Being careful with personal details Trusted adults Childline	Online Bullying How we should treat others online What online bullying is Trusted adults Childline	
KS1 Cycle 2	Self-Image and Identity- Worries 2 Different feelings we might have online Different situations online How to get help	Managing Online Information What things can be shared online? How long do things stay online for? How can we ask for permission?	Online Relationships What online & offline means What it means to be kind What it means to be polite	
KS1 Cycle 3	Online Reputation How long does information stay Online? Do I know who to talk to if something has been put Online without my consent or if it is incorrect? Sharing information Online	Health, Wellbeing and Lifestyle I can explain rules to keep myself safe when using technology both in and beyond the home Rules to keep myself safe both at school and at home	Copyright and Ownership If I have a copy of it, does it belong to me? Is it mine?	

Online Safety Coverage	
Area	Number of Sessions KS1
Self-Image and Identity	2
Online Relationships	1
Online Reputation	1
Online Bullying	1
Managing Online Information	1
Health, Wellbeing and Lifestyle	1
Privacy and Security	1
Copyright and Ownership	1

Y4-6 Online Safety Assembly Cycle

At the start of the academic year, all children watch and discuss LGfL's Undressed Campaign video <https://undressed.lgfl.net/> Undressed and Childline posters are also put up in every classroom. There is a Childline video at: <https://www.youtube.com/watch?v=fCA6EhBhiC8> which is viewed and discussed with the children.

	Autumn	Spring	Summer	Notes
KS2 Cycle 1	Self-Image and Identity What anxiety is What might make us feel worried or uncomfortable online Trusted adults Childline	Online Bullying How we should treat others online What online bullying is Trusted adults Childline Online Safety Tips	Managing Online Information Discuss what fake news is See if we can spot fake news Learn how to check if news is fake	
KS2 Cycle 2	Self-Image and Identity What self image is Online identity Reputation Avatars Stranger Danger	Copyright and Ownership What copyright is Why it matters Searching for content that is copyright free What can happen if you use copyrighted materials without permission	Privacy and Security Why we have passwords What mistakes people make Examples of poor passwords Examples of strong passwords	
KS2 Cycle 3	Health, Wellbeing and Lifestyle Being Healthy Online Why do some Online activities have age restrictions?	Online Reputation What is a digital personality? Creating a positive Online reputation	Online Relationships What is an emoji, gif and meme?	

Online Safety Coverage	
Area	Number of Sessions KS2
Self-Image and Identity	2
Online Relationships	1
Online Reputation	1
Online Bullying	1
Managing Online Information	1
Health, Wellbeing and Lifestyle	1
Privacy and Security	1
Copyright and Ownership	1

