Computing Medium Term Plan

EYFS		
	Foundation Stage 1	**Foundation Stage 2**
Overview	At the heart of EYFS is curiosity, creativity and problem-solving. Our pedagogy supports children to develop these dispositions by interacting with the provision around them. In turn, these dispositions lay the foundation for their journey into computing. Children are also given opportunities, time and encouragement where needed, to explore how things work mechanically. This supports children to develop the computational and logical thinking they require for future learning in computer science. Pulleys, cogs, jigsaw puzzles, Lego and alternative building materials, water wheels and windup toys are part of rotated provision in EYFS and allow children to experience cause and effect in its simplest form, as well as develop skills in design, logical reasoning, problem solving and sequencing in an 'unplugged' context.	In FS2 children continue to explore 'unplugged' activities which support computational thinking. Further to this, FS2 children learn the very basics within the three strands of Computing. In information technology, children take photographs to contribute to a shared story based around a character from a core text and to document the effects of the changing seasons they see in Forest School sessions. They also learn that information such as facts about animals can be found on the internet. In computer science, they use the Beebots to further their understanding of cause and effect within a computing context. FS2 children start their digital literacy learning as they begin to join whole-school e-Safety assemblies in the second half of the year. During the summer term FS2 become exposed to the computer suite in how to log on and off the computers in preparation for KS1.

Children in EYFS are supported to gain skills and knowledge in preparation for the Computing curriculum in Year 1. Below are key teaching points which are taught in EYFS across all 7 areas of learning to support preparation for Year 1 Computing. These are mainly taught through access to continuous provision and some direct adult led teaching where appropriate.

Programming – All about instructions	**Computer systems & networks -Explore hardware (Adult supported)**	**Programming -Beebots (Adult Supported)**	**Data Handling -Introduction to data (Adult Supported)**	**FS2 to Year 1**
-To following instructions given by an adult -Giving simple instructions to others -To debug instructions (washing hands)	-To explore technology (CD player, remotes, telephones, mechanical toys -To identify where technology is used in places, they are familiar – Homes, school -To operate a basic camera and take photos -To take selfie photographs and create a class gallery	-To learn the meaning of direction arrows -To follow simple instructions using arrows -To tinker with Beebots -To follow simple algorithms and program their Beebots	-To sort and categories objects -Children to sort themselves into groups based on given categories -Children to interpret a basic pictogram	-To know where the computer suite is -To go and look around the computer suite -Begin practising how to turn a computer on -To know what a keyboard is -Begin practising logging onto the computer with 2-1 support -Begin to learn how to shut the computer down
Control **Instructions** **Listen** Direction	**Camera** **Telephone** **Technology** **Digital** **Electronic** **Photo** **Photograph** Selfie Gallery	**Beebot** **Electronic** Tinker **Program** **Direction** Arrow	**Sort** **Categories** Pictogram **Group**	**Keyboard** **Press** **Button** **Mouse** **Control** **Touch** **Keys** **Arrow** **Click**

Foundation Stage 1 Milestones						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
				To be able to use the interactive white board with support To be able to use the interactive white board independently	To be able to use the interactive white board independently to complete a simple familiar program To be able to use the interactive white board independently to complete an unfamiliar program	To explore everyday technology in play e.g. phones and cameras Use everyday technology correctly in play e.g. phones, cameras
Foundation 2 Milestones						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	To use everyday technology in play e.g. phones and cameras To know that we can use the internet to find information	To photography a piece of work in class e.g. Photograph a modal we have made	To explore technology such as Beebots and mechanical toys To explain the different uses of technology e.g. phones, cameras	To look for information on google with an adult	To begin to use a mouse to complete a simple ICT programme	To use a mouse and complete a simple game on the computer

Key stage 1	
National Curriculum	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.

Year 1 Computing Curriculum						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit	**Computing systems and networks** **Improving mouse skills**	**Programming** **Algorithms unplugged**	**Online Safety** **Using the internet**	**Programming** **Bee-Bots - Virtual**	**Creating Media** **Digital Imagery – Microsoft Office 365**	**Data Handling** **Introduction to Data**
Overview	In this unit, children learn how to login and navigate around a computer with greater independence. We develop mouse skills; learning how to drag, drop, click and control a cursor to create works of art.	In this unit, children build on from their learning in EYFS where they began to follow and use simple instructions. Children are introduced to the term 'algorithm', 'decomposition' and 'debugging' in relatable and familiar contexts. Children follow directions and learn why instructions need to be specific.	Using and being safe online is fundamental to all areas of our curriculum. In this unit, children learn how to stay safe online and how to manage feelings and emotions when someone or something has upset us.	In this second Year 1 Programming, unit children are introduced to programming through the use of a Bee-Bot and exploring its functions. Children are given the opportunity to test out their algorithms (instruction) and correct any mistakes, reinforcing that programming needs to be accurate in order to work successfully.	In this first Creating Media unit, children explore Digital Imagery by taking and editing photos. Children also search safely for images to add to a project. In this unit, children begin to use a search engine; previous work on Online Safety is readdressed.	In this first Data Handling unit, children learn what data is and the different ways it can be represented. Children learn why data is useful and the ways it can be gathered and recorded.
End of Unit Outcomes	-Use computers more purposefully. -Log in and navigate around a computer. -Drag, drop, click and control a cursor using a mouse. -Use software tools to	-Explain what an algorithm is. -Write clear algorithms. -Follow an algorithm. -Explain what inputs and outputs are. -Create an achievable program.	Discuss what the internet is and how it can be used. Recognise that the internet may affect mood or emotions.	-Recognise cause and effect when pressing buttons on a Bee-Bot. -Discuss and demonstrate how the Bee-Bot works. -Record video ensuring everyone is in the shot.	-Plan a pictorial story using photographic images in sequence. -Explain how to take clear photos. -Take photos using a device.	-Represent animal-themed data in different ways, using objects and technology. -Log in and use mouse and keyboard skills to navigate the computer. -Represent the same

	create art on the computer.	-Decompose a design into steps. -Identify bugs in an algorithm and how to fix them.	Recognise how internet use can affect and upset other. Identify which information is appropriate to share and post online and which is not.	-Give a number of clear instructions in sequence. -Program a Bee-Bot to reach a destination. -Identify and correct mistakes in their programming.	-Edit photos by cropping, filtering and resizing. -Search for and import images from the internet. -Explain what to do if something makes them uncomfortable online. -Organise images on the page, orientating where necessary.	data as a pictogram and a table or chart. -Collect data about minibeasts using a tally chart and represent their data digitally. -Click and drag objects to sort data using a branching database. -Consider the types of input that would be used to gather different forms of data when designing an invention
Sequence of learning (small steps)	**1.Logging In - To log in to a computer and access a website** -To recognise what we mean by a computer -To understand why we need to log in to a computer -To log in and out of a computer account	**1.What is an Algorithm? - To understand what an algorithm is** -To recognise what we mean by a computer -To understand why we need to log in to a computer -To log in and out of a computer account	**1. Using the internet safety - To know what the internet is and how to use it safely.** -To understand what the internet is. -To know how to offer advice to anyone who is being treated unkindly online. -To know who to go to when I need help and advice with online matters.	**1.Getting to know a virtual device - To explore a new device** -To 'Tinker' with the buttons of an online Bee-Bot -To complete a number of challenges by: --thinking about what they might do first ('predict') --trying it out ('explore) --seeing if I was right ('explain')	**1. Planning a Photo Story - To understand and create a sequence of pictures** - To explain what is happening in a pictorial story -To recognise the importance of sequencing -To know that sequencing is important in Computing -To plan my own pictorial story	**1.Zoo data - To represent data in different ways** -To know that data can be shown in different ways -To represent data in different ways -To answer questions about the data using my representation
	2.Click & Drag Skills - To develop mouse skills -To navigate a computer using a mouse -To understand what we mean by 'click' and 'drag' -To use the fill and stamp tools in Sketchpad	**2.Algorithm Pictures - To follow instructions precisely to carry out an action** -To explain why an algorithm must be clear and precise -To explain the problems a robot can have following our instruction	**2.Online Emotions -To understand different feelings when using the internet** -To can recall what the internet is -To can recognise advice to stay happy and safe online -To provide advice on ways to stay happy and safe online	**2. Making a virtual Bee-Bot video - To create a demonstration video** - To create a video to explain how to use a Bee-Bot by: -Taking a video recording -Trying it out ('explore') -Seeing if I was right ('explain')	**2. Taking Photos - To take clear photos** - To get down to the level of my character -To look at the screen and check what is in frame -To press the button carefully to ensure nothing changes -To understand that moving can create a blurred image -To ensure that my surroundings are bright enough	**2.Picture data - To use technology to represent data in different ways** -To navigate a computer using a mouse -To type using a keyboard -To understand that data can be shown in different ways -To represent data in different ways

	3.Drawing Shapes - -To use mouse skills to draw and edit shapes -To click and drag objects to change their size or position -To use a mouse to carefully position shapes -To move shapes in front of or behind each other	**3. Virtual Assistants - To understand that computers and devices around us use inputs and outputs** -To identify some input devices -To identify some output devices -To identify some devices that are both input and output devices	**3.Always be kind & considerate - To understand how to treat others, both online and in-person** -To recall the top tips for using the internet safely -To recognise how actions on the internet can affect others -To understand the ways to use the top tips to be in control of my actions when on the internet	**3. Precise instructions - To plan and follow a set of instructions precisely** - To take on all of the following roles: --'Bee-Bot' (following instructions given by the controller) --'Controller' (giving instructions to the Bee-Bot) --'Judge' (checking that the instructions given by the 'controller' are correct)	**3.Editing Photos - To edit photos** -To explain that photos can be changed after they have been taken -To identify ways to improve my photo -To crop, resize and add a colour filter to my photo	**3.Minibeast hunt - To collect and record data** -To identify different minibeasts -To record the number of different minibeasts I see -To represent this data digitally
	4.Drawing a Story - To draw a scene from a story using digital tools -To identify key parts of a story -To use drag and drop to move and resize images -To use a variety of tools to create different effects	**4. Step by Step - To understand and be able to explain what decomposition is** -To explain that decomposition is where you break a problem into small manageable chunks -To understand how decomposition allows you to solve a problem more easily -To explain how we use decomposition in our everyday lives	**4.Posting & sharing online - To understand the importance of being careful about what we post and share online** -To understand the meaning of 'sharing' and 'posting' information online -To understand what 'digital footprint' means -To recognise the information types of my own digital footprint	**4. Bee-Bot world - To program a device** -To personalise my Bee-Bot world -To consider how the Bee-Bot can move from one place to another -To plan a Bee-Bot route -To program a Bee-Bot to follow my planned route	**4.Searching for images - To search for and import images** -To know images can be found online -To think of a keyword to search with -To what to do if I find something uncomfortable	**4.Animal branching databases - To sort data** -To identify and categorise different animals -To click and drag objects -To identify questions to sort data in the most efficient way -To create a branching database
	5.Self-Portrait - To create a self-portrait using digital techniques -To identify different facial features -To use click and drag to create and layer shapes -To resize, move and change the order of shapes	**5.Debugging Directions - To know how to debug an algorithm** -To spot bugs in algorithms -To fix the error (debug it) and explain the problem it caused		**5.Bee-Bot adventures - To create a program** -To know I should not move the Bee-Bot with my mouse -To know how to use programming to give the Bee-Bot clear instructions -To debug my instructions if they go wrong by identifying and correcting the mistake	**5. Photo Collage - To create a photo collage** -To download the photos I want -To organise them on to the page -To resize and change the orientation of my images -To add numbers to show their order	**5.Inventions - To design an invention to gather data** -To understand that computers understand different types of input -To design a computerised invention to gather data -To explain how my invention works

Vocabulary	**Log in** **Login** **Log out / off** **Mouse** Mouse pointer **Keyboard** **Screen** **Password** Account Software Duplicate Ctrl Tools **Right click** **Menu** Layers **Username** **Drag/ Drop** Digital photograph Undo Cursor	**Algorithm** Automatic **Bug** Chunks Clear **Code** **Debug** **Decompose** Decomposition **Device** **Directions** **Input** **Instructions** Manageable Motion Order Organise Output Precise **Programming** **Problem** **Robot** Sensor **Sequence** Solution Specific Steps Tasks Virtual assistant	**Respect** **Online** **Communicate** **Kind** **Unkind** **Instructions** **Computer** **Internet** Connection **Predict** **Internet safety** **Online safety**	**Algorithm** Artificial intelligence **Bee-Bot** **Clear** **Code** **Debug** Demonstration Emulator Filming Inputting **Instructions** **Pause** Precise **Predict** **Program** **Tinker** Video Video recording Virtual	**Background** **Blurred** **Camera** Clear Crop **Delete** Device **Digital camera** Download Drag and drop Edit Editing software Filter **Image** **Import** **Internet** **Keyword** **Online** **Photograph** Resize **Save as** **Screen** Search engine Sequence Software Screen Storage space Visual effects	Bar chart Block graph Branching database **Categorise** **Chart** Click and drag Compare Count **Data** **Data collection** **Data record** Data representation Edit Input **Keyboard** Line graph **Mouse** **Information** **Label** **Pictogram** Pie chart Process Record Resize Sort Table Tally Values

Year 2 Computing Curriculum						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit	**Computing systems and networks** **What is a computer?**	**Programming** **Algorithms & Debugging**	**Online safety** **Permission**	**Programming** **Programming – Scratch Jr**	**Creating Media** **Stop Motion**	**Computing systems and network** **Word Processing – Microsoft Office 365**
Overview	In the unit, children explore what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention.	This unit continues to develop the children's understanding of; what algorithms are, how to program them and how they can be developed to be more efficient. Children are introduced to the use of loops in order to make their algorithms more efficient.	This unit continues to reinforce the importance of online safety. Children learn: how to keep information safe and private online; who we should ask before sharing things online and how to give, or deny permission online.	In this second Year 2 Programming unit, children are introduced to Scratch Junior. Children explore what 'blocks' do' by carrying out an informative cycle of predict > test > review. We programme a familiar story and make a musical instrument.	In this second Creating Media unit, children learn how to create simple animations from storyboarding creative ideas. Children are introduced to 'stop motion' and 'onion skinning' to create their own animations.	This is the second Year 2 unit focussing on Computer Systems and Networks. Children develop their touch-typing skills, learning keyboard shortcuts and simple editing tools.
End of Unit Outcomes	-Name some computer peripherals and their function. -Recognise that buttons cause effects. -Explain that technology follows instructions. -Recognise different forms of technology. -Design an invention which includes inputs and outputs. -Explain the role of computers in the world around them.	-Decompose a game to predict the algorithms. -Give a definition for 'decomposition'. -Write clear and precise algorithms. -Create algorithms to solve problems. -Use loops in their algorithms to make their code more efficient. -Explain what abstraction is.	Explain what is meant by online information. Recognise what information is safe to be shared online. Explain why we need passwords and what makes a strong password. Understand that they need to ask permission before sharing content online and explain why. Understand that they have the right to deny their permission to information about them being shared online. Say who they can ask for help with online worries.	-Explore a new application independently. -Explain what the blocks on ScratchJr do and use them for a purpose. -Recognise a loop in coding and why it is useful. -Use a code to create an animation of an animal moving. -Use code to follow and create an algorithm. -Program code to run 'on tap'. -Explain the role of the blocks in a program they have created.	-Create a flip book animation. -Decompose a story into smaller parts to plan a stop motion animation. -Create stop motion animations with small changes between images.	-Explain which are the home row keys and how to find them for typing. -Use the spacebar and backspace correctly. -Type and make simple alterations to text using buttons on a word processor. -Search for, import and alter appropriate images for a text document. -Modify text in a document. -Use copy and paste to copy text from one document to another. -Explain what information is safe to be shared online.

Sequence of learning (small steps)	**1.Computer Parts** **To recognise the parts of a computer** -To name the key parts of a computer -To explain the purpose of different computer parts -To explain that a keyboard contains lots of buttons	**1.Dinosaur Algorithm -** **To decompose a game to predict the algorithms that are used** -To understand the definitions: decomposition and algorithm -To decompose a game to predict algorithms -To plan algorithms for a more complex game	**1.What happens when I post online? - I know what happens to information posted online** -To explain what online information is. -To know what is safe to share online. -To know who to talk to if something is shared that makes me feel sad or worried.	**1. Using ScratchJr** **To explore a new application** -To know that ScratchJr is a coding application -To predict what I think something new will do -To explore something independently -To explain what I found using ScratchJ	**1. What is animation? - To understand what animation is** -To understand and explain what animation means -To understand how to create a short animation using a flip book -To talk about how animation began	**1.Getting to know the keyboard** **To begin to learn to touch type** -To find keys on a computer keyboard -To identify the home keys on a computer -To understand how to type capital letters using 'shift'
	2.Inputs - To recognise how technology is controlled -To know that people control technology -To know that technology follows instructions -To predict what technology will do	**2.Machine Learning - To understand that computers can use algorithms to make predictions (machine learning)** -To explain what an algorithm is -To explain that computers use algorithms to make predictions -To write a clear and precise algorithm	**2. How do I keep my things safe online? -To know how to keep things safe and private online** -To know what passwords are for -To explain how to create a strong password -To know what information is private and can explain how I can keep this private	**2.Creating an animation - To create an animation** -To use the programming blocks I've learned about for a purpose -To recognise a loop in programming -To think about how animals move -To use my programming skills creatively to use code to represent an animal moving	**2. What is stop motion? - To understand what stop motion animation is** -To explain what 'stop motion' means -To understand how to create a short animation using animation software -To understand what 'onion skinning' is and how animators use it -To use onion skinning to make small changes to my object to make my animation smooth	**2.Getting started with work processing - To understand how to use a word processor** -To type a sentence into a word processor -To select all the text and make it bold or in italics -To explain how to make other changes using a word processor
	3.Technology Safari **To recognise technology** -To suggest what might have a computer inside -To explain why I think this -To suggest what the technology does	**3.Through the Maze - To plan algorithms that will solve problems** -To devise and create algorithms to solve problems -To include loops in my algorithms (count controlled) -To visualise directions from a 2D environment	**3. Who should I ask? - To explain what should be done before sharing information online** -To understand why I ask permission -To explain who I need to ask permission from before sharing content online -To explain people's feelings if I share things online without their permission	**3. Making a musical instrument - To use characters as buttons** -To design a musical instrument -To program code to run 'on tap' -To select appropriate blocks for my purpose	**3. My first animation - To create a stop motion animation** -To understand how to create a short animation using Stop Motion Studio -To use onion skinning to make small changes to my object to make my animation smoother	**3. Newspaper Writer - To understand how to add images to a text document** -To use keyboard shortcuts to alter text -To know how to search for and find an appropriate image -To import and alter an image in a document

	4.Intervention - To create a design for an invention -To include an input and output as part of my invention -To explain how it works, including how to control it -To label my design clearly		**4.Making Maps - To understand what abstraction is** -To explain what abstraction is -To give an example of when abstraction might be useful		**4. It's my choice - To explain why I have the right to say no and deny permission** -To explain why I have the right to say no -To know who to ask for help if I am unsure or feel pressure to do something -To explain why I need to ask a trusted adult before clicking 'accept'	**4. Programming a joke - To follow an algorithm** -To use an algorithm to help me with my programming -To sequence the blocks appropriately -To explain what each block in the program does		**4. Planning my project - To plan my stop motion animation** -To work collaboratively with others to plan an animation -To think carefully about keeping my idea simple and easy to animate -To decompose my story into smaller parts	**4. Poetry Book - To create a poetry book using sources from the internet** -To understand how to use text styles to create headings and subtitles -To copy and paste text into a document -To understand the importance of crediting source materials	
	5.Real World Role Play - To understand the role of computers -To explain where computers are used -To suggest what their job is -To understand that computers work together		**5.Unplugged Debugging - To understand what debugging is** -To understand the meaning of the word 'debugging' -To listen to my peer's verbal instructions -To perform a task by following step-by-step instructions		**5. Is it true? - To understand strategies that will help me decide if something seen online is true or not** -To explain the difference between things that are 'imaginary', 'made up' or 'make believe' and those that are true or real -To explain why some information I find online may not be true -To explain why people may post things online that are not true	**5. 'The Three Little Pigs' algorithms - To plan and use code to create an algorithm** -To explain what an algorithm is -To choose the code to match my algorithm -To use an algorithm to write a computer program		**5. Creating my project- To create my stop motion animation** -To use my planning sheet to structure my animation -To work collaboratively -To create an animation of at least 10 frames	**5. What happens when I post online? - To understand what happens to information posted online** -To explain what online information is -To know what is safe to share online -To know who to talk to if something is shared that makes me feel sad or worried	
Vocabulary	**Computer** **Desktop** **Laptop** **Mouse** **Monitor** **Buttons** Input Output Robot **Device** **Technology** **Tablet** **Digital**	**Camera** **Photo** **Battery** **Wires** **Screen** Electricity Job Digital recorders Video System	**Algorithm** Decomposition Data Artificial intelligence **Loops** Abstraction Unnecessary Zoomed in Key features **Debugging** **Bugs** **Error** **Correcting**	**Accept** Comment **Consent** Content Deny Emojis **Offline** **Online** **Password**	**Permission** **Personal Information** Pop ups Pressure **Private information** **Reliable** Share Terms and conditions Trusted adult	**Algorithm** **Animation** **Blocks** **Bug** **Button** CGI **Computer code** **Code** **Debug** Fluid	Icon Imitate **Instructions** **Loop** 'On tap' **Programming** **Repeat** **ScratchJR** **Sequence** Sound recording	**Animation** **Still images** **Moving images** Flip book **Frames** **Drawing** **Stop motion Animation** Digital device Frame **Onion skinning** Animator **Background** Object Animate Plan	**Keyboard** Keyboard character **Space bar** Word processing software **Touch typing** **Delete** **Backspace** **Highlight/ Undo** Redo Bold/Italics Underline **Back button** Home screen **Image** Import Italic	Layout Navigate **Text** Text effects **Copy** **Paste/Cut** Copyright Author Search **Keyword** Offline Online Information Private Safe Trusted adult

Key Stage 2	
National Curriculum	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 3 Computing Curriculum

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	**Computing systems and network** **Journey inside a computer**	**Programming** **Programming: Scratch**	**Online safety** **Opinion or belief?**	**Computing systems and networks** **Emailing - Microsoft Office 365**	**Creating Media** **Video Trailers – Using iPads**	**Data Handling** **Comparison cards databases - Microsoft Office 365**
Overview	This unit builds on from Year 2 where children explored inputs and outputs, creating their own computer invention. We assume the role of computer parts and create paper versions of computers to consolidate understanding of how a computer works.	In this unit, children build on their knowledge of Scratch from Year 2. We explore the programme Scratch, a programming software that will be used further through school. Children will continue to follow the predict > test > review cycle and learn how to use 'loops', programming an animation, story and game.	This third Online safety unit focusses on learning: the difference between fact, opinion and belief; and how to deal with upsetting online content. Children are taught how to protect personal information online.	This is the second unit in Year 3 focussing on Computer Systems and Networks. This unit looks at sending emails with attachments. As children are taught to communicate with each other online, cyberbullying is addressed and children are taught how to communicate positively with each other.	In this Creating Media unit, children build on their storyboard knowledge to create a book trailer. Building on from Year 1, children take photographs and videos. We develop our digital video skills by adding special effects and transitions.	This unit builds on from the previous Year 1 Data Handling unit. Children learn about new terminology - 'records' and 'fields' as well as sorting and filtering data. Children are introduced to Excel spreadsheets and use this software to create graphs. Children begin to analyse and interpret data, asking and answering questions that can be found using information from a database.

End of Unit Outcomes	-Recognise inputs and outputs and that the computer sends and receives information. -Explain that the parts of a laptop work together and the purpose of each part. -Explain what an algorithm is. -Suggest what memory is for inside a computer. -Make comparisons between different types of computers.	-Explain what some of the blocks do in Scratch. -Explain what a loop is and include one in their program. -Suggest possible additions to an existing program. -Recognise where something on screen is controlled by code. -Use a systematic approach to find bugs. -Explain what an algorithm is and its purpose.	Differentiate between fact, opinion and belief online. Explain how to deal with upsetting online content. Recognise that digital devices communicate with each other to share personal information. Explain what social media platforms are used for. Recognise why social media platforms are age-restricted.	-Log in and out of email. -Send a simple email with a subject plus 'To' and 'From' in the body of the text. -Edit an email. -Type in the email address correctly and send the email. -Add an attachment to an email. -Write an email using positive language, with an awareness of how it will make the recipient feel. -Recognise unkind behaviour online and know how to report it. -Offer advice to victims of cyberbullying. -Recognise when an email may be fake and explain how they know.	-Describe the purpose of a trailer. -Create a storyboard for a book trailer. -Consider camera angles when taking photos or videos. -Import videos and photos into film editing software. -Record sounds and add these to a video. -Add text to a video. -Incorporate transitions between images. -Evaluate their own and others' trailers.	-Explain what is meant by 'field,' 'record,' and 'data.' -Compare paper and computerised databases. -Put values into a spreadsheet. -Sort, filter and interpret data in a spreadsheet. -Create a graph on Microsoft Excel. -Explain the purpose of visual representations of data.
Sequence of learning (small steps)	**1. Inputs and outputs - To recognise basic inputs and outputs** -To recognise some inputs and outputs -To understand that a computer follows instructions -To suggest what the computer is doing	**1.Tinkering with Scratch - To explore a programming application** -To know that Scratch is a coding application -To predict what I think different codes will do -To explore an application independently -To explain what I found	**1.Beliefs, opinions and facts on the internet - To understand how the internet can be used to share beliefs, opinions and facts** -To understand that not all information on the internet is true -To explain the terms 'belief', 'opinion' and 'fact' -To use key phrases within a search engine to produce accurate results	**1.Sending an email - To understand what email is used for and to send an email** -To log in and log out of my email account -To write an email to my teacher -To understand that emails can be used to send information around the world	**1. Planning a Book Trailer -** **To Plan a Book Trailer** -To describe the purpose of a book trailer -To pick out the key events in a story -To plan a book trailer	**1. Records, fields and data** **- To understand the terminology around databases** -To know what field, record and data mean -To compare numbers -To scan a record for relevant information
	2. Building a paper laptop - To decompose a laptop -To suggest a laptop's inputs and outputs -To recognise a laptop is made up of many parts -To use logic to explain the purpose of some parts	**2.Using Loops -To use repetition (a loop) in a program** -To understand and explain what a loop is -To recognise when a loop is used	**2. When being online makes me upset - To understand the effects that some internet use can have on our feelings and emotional wellbeing**	**2.Adding Attachments - To edit email content and add an attachment** -To log in to my email account -To send an email with an attachment	**2. Filming - To take photos or videos to tell a story** -To frame shots differently to create the effect I want	**2. Race against the computer** **- To compare paper and computerised databases** -To understand what a paper database is and can name examples

		-To choose an appropriate loop	-To understand that being on the internet can affect my mood -To know actions that I can take if something on the internet has upset me	-To reply to an existing email	-To use digital devices to record video or take photos	-To understand what a computerised database is -To compare the advantages and disadvantages of paper and computerised databases
	3. Following instructions - To understand the purpose of computer parts -To explain that a computer is made up of many parts -To suggest the purpose of each part -To follow an algorithm	**3. Making an Animation To program an animation** -To decompose a project -To plan what I want to happen -To select the blocks to make that happen	**3. Sharing of information - To understand the ways personal information can be shared on the internet** -To understand what 'privacy settings' are -To recognise that devices can communicate with one another to share personal information -To explain what 'autocomplete' is and how to choose the best suggestion	**3.Be kind online - To understand the importance of being kind online and what this looks like** -To understand how to use positive language within an email -To recognise when digital behaviour is unkind -To know how to be a responsible digital citizen when I encounter others online	**3. Editing the Trailer - To edit a video** -To import videos and photos into film editing software - To tinker with film editing software on a tablet -To include important written information to my video	**3. Sorting and filtering - To sort, filter and interpret data** -To input data into a database -To know how to sort data -To filter data by a particular value -To create questions that can be answered using information from a database -To interpret information
	4. Computer memory - To understand the purpose of computer parts -To explain that a computer is made up of many parts -To suggest the purpose of each part -To use a QR code	**4. Storytelling - To program a story** -To choose appropriate blocks -To continue someone else's program -To debug my own program	**4. Rules of social media platforms - To understand the rules for social media platforms** - To understand what social media platforms are used for -To recognise why social media platforms are age-restricted -To list some top tips on using social media platforms for people to stay safe	**4.Cyberbullying - To understand that cyberbullying involves being unkind online** -To recognise unkind behaviour and know how to report it -To be a responsible digital citizen -To offer advice to support other people who are victims of cyberbullying	**4. Transitions & Text - To add text and transitions to a video** -To add text to my video - To understand what transitions are in film -To incorporate different transitions in my video	**4. Representing data - To represent data in different ways** -To create a graph and chart in Microsoft Excel -To name different types of charts -To understand the purpose of visual representations of data

	5. Dismantling a tablet - To decompose a tablet computer -To recognise a tablet is a computer -To compare similarities and differences across different types of computer -To use logic to suggest what's inside a computer	**5. Programming a Game -To program a game** -To explain the purpose of an algorithm -To decompose a problem -To use an algorithm to code a program		**5.Fake Emails - To understand that not all emails are genuine** -To recognise when an email might be fake -To understand that I shouldn't click on links in an email unless I know what it is -To know what to do if I suspect an email is fake	**5. Video Reviews - To evaluate video editing** -To explain what makes a successful video - To explain what makes a successful book trailer -To think about how I share book recommendations	**5. Planning a holiday - To sort data for a purpose** -To understand that databases are used for different purposes -To know how to sort and filter data -To explain what information is useful in an online database
Vocabulary	**Algorithm** Assemble CPU (central processing unit) **Data** **Decompose** **Desktop** Disassemble GPU (graphics processing unit) **Hard drive** HDD (hard disk drive) Infinite loop **Input** **Keyboard** **Laptop** **Memory** **Microphone** **Monitor** **Mouse** **Output** **Photocopier** **Program** **QR Code** RAM (random access memory) ROM (read only memory) **Storage** Tablet device **Technology** **Touchscreen**	Application **Code** **Code block** Coding application **Debug** **Decompose** Interface **Game** **Loop** **Predict** **Program** Remixing code **Repetition code** Review **Scratch** **Sprite** **Tinker**	Accurate **Age-restricted** Autocomplete Beliefs Block Content **Digital devices** Fact **Fake news** **Internet** **Opinion** **Password** Persuasive **Privacy settings** **Reliable** **Report** **Requests** Search engine Security questions **Sharing** **Smart devices** Social media platforms Social networking Wellbeing	**Attachment** Bcc (Blind carbon copy) Cc (Carbon copy) **Compose** Content **Cyberbullying** **Document** Domain **Download** **Email** **Email account** **Email address** **Emoji** **Emotions** **Fake** **Font** Genuine **Hacker** Icons **Inbox** **Information** Link **Log in** **Log out** Negative language **Password** **Personal information** Positive language	Application **Camera angle** Clip Cross dissolve Edit Fade to black Fade to white **Film** Film editing software Graphics **Import** **Key events** **Music** **Photo** **Plan** **Recording** **Slide** **Sound effects** **Storyboard** Time code **Trailer** Transition **Video** **Voiceover** Wipe	**Categorise** **Category** **Chart** **Data** Database **Excel** **Fields** **Filter** **Graph** **Information** Interpret PDF **Questionnaire** **Record** Representation Sort **Spreadsheets**

Year 4 Computing Curriculum						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit	**Computing systems and networks** **The Internet**	**Programming** **Further coding with Scratch: Microsoft Office 365**	**Online Safety** **What happens when I search online?**	**Creating Media** **Website Design - Microsoft Office 365**	**Programming** **Computational Thinking**	**Data Handling** **Creating Data**
Overview	In this unit, children continue to learn about computer systems and networks. Children gain a better understanding of the internet and using the World Wide Web. Children learn about how information is shared over the internet as well as how content can be added and accessed.	In this unit, children continue to develop their knowledge of Programming. We revisit key features and beginning to use 'variables' in code scripts.	In this Online Safety unit, children search for information, making a judgement about the probable accuracy. We look at adverts and pop-ups and how these are used to encourage us to buy online. We explore the positives and negatives of technology and how it can be used more time effectively.	In this unit, children learn how web pages and sites are created. Children create their own web pages using Microsoft Sway, incorporating a range of features including: embedding media and links.	This second Year 4 Programming unit builds further on previous knowledge. Children solve problems more effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition.	In this Data Handling unit, children build upon their knowledge by entering data and formulas into a spreadsheet. Children are introduced to the more technical aspects of ordering, sorting, adding, editing and calculating data. Children draw and interpret a flowchart with the correct symbols.
End of Unit Outcomes	-To apply their knowledge and understanding of networks -To appreciate the internet as a network of networks which need to be kept secure. -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.	-Understand how to create a simple script in Scratch – be able to change sprite and prevent the sprite from rotating. -Use decomposition to identify key features and understand how to decipher actions that make the quiz game work. -Understand what a variable is and how to use the 'say' and 'ask' blocks. -Create a variable and be able to use a variable to record a score. -Understand what a variable is and how it works within a program.	Describe how to search over multiple platforms and are aware of the accuracy of the results presented. Describe some of the methods used to persuade people to buy online. Explain the difference between fact, opinion and belief and recognise these online. Explain what a bot is and give examples of different bots. Explain some positive and negative distractions of using technology and small strategies on how to reduce the amount of time spent on technology.	-Use most of the tabs (e.g. insert, pages, themes) on Google Sites on their website. -Create a clear plan for their web page and begin to create it. -Create a professional looking web page with useful information and a clear style, which is easy for the user to read and find information from. -Create a clear plan by referring back to their checklist. -Create four web pages with a range of features on their website.	-Understand that problems can be solved more easily using computational thinking. -Understand what the different code blocks do and create a simple game. -Understand the terms 'pattern recognition' and 'abstraction' and how they help to solve a problem. -Create a Scratch program which draws a square and at least one other shape. -Understand how computational thinking can help to solve problems and apply computational thinking to problems they face.	-To enter data and formulas into a spreadsheet -To present data in an appropriate way by ordering and presenting data - To add, edit and calculate data and talk about mistakes in data and suggest how it could be checked. - Understand what Data Bases are including Flow Chart, by drawing and interpreting them with the correct symbols

Sequence of learning (small steps)	**1.Connecting networks To describe how networks physically connect to other networks** -To describe the internet as a network of networks -To demonstrate how information is shared across the internet -To discuss why a network needs protecting	**1.Scratch Reminder - To recall the key features of Scratch** -To know what the main parts of Scratch are called -To recognise how to adjust my sprite in Scratch -To add a new sprite to my stage to write a simple script	**1.What happens when I search online? - To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy** -To describe how to search for information on search engines, social media and image and video sites -To make judgments about the accuracy of the information I am presented with	**1.Getting to know Microsoft Sway - To explore the features of Microsoft Sway to learn how to create content for a web page** -To evaluate websites -To create a web page using Microsoft Sway	**1.What is computational thinking? To understand that computational thinking is made up of four key strands** -To understand that problems can be made easier if I use computational thinking -To know that computational thinking is made up of four strands: decomposition, pattern recognition, abstraction and algorithm	**1. To enter data and formulas into a spreadsheet -Number operations** -To identify cells using rows and columns. -To type text and numbers into cells. -To use the SUM function to add numbers together. -To use the SUM function to perform further calculations
	2. What is the internet made of? To recognise how networked devices make up the internet -To describe networked devices and how they connect -To explain that the internet is used to provide many services -To recognise that the World Wide Web contains websites and web pages	**2. Identifying what Code Does - To understand how a Scratch game works by using decomposition to identify key features** -To recognise that a sprite may contain more than one script -To identify the parts of a Scratch game -To understand what we mean by decomposition	**2. How do companies encourage us to buy online? - To describe some of the methods used to encourage people to buy things online** - To describe some methods used by companies such as 'in-app purchases' and 'pop-ups' -To recognise some of these when they appear -To think about ways to avoid purchases	**2.Book review web page - To plan content for a web page as a collaborative online piece of work** -To plan the content for my web page -To understand the features of Microsoft Sway -To work collaboratively	**2.Decomposition - To understand what decomposition is and how to apply it to solve problems** -To decompose a problem -To use decomposition to figure out what Scratch code does -To decompose a problem to figure out which code blocks might have been used	**2. To present data in an appropriate way -Ordering and presenting data** -To enter a formula for a specific purpose. -To use the fill tool to copy formulas. -To insert a bar/column graph. -To format aspects of a bar/column graph
	3. Sharing information To outline how websites can be shared via the World Wide Web (WWW) -To explain the types of media that can be shared on the WWW -To describe where websites are stored when uploaded to the WWW -To describe how to access websites on the WWW	**3. Introduction to Variables - To understand what a variable is and how to make one** -To use the 'ask' block in Scratch -To what a variable means -To make a variable -To store an answer to a question as a variable	**3. Fact, opinion or belief? - To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true** -To explain the difference between facts, opinions and beliefs -To make my own judgments about what I read and see online	**3. Adding features - To create an engaging web page** -To transform a Microsoft Word document -To add additional content such as videos and links -To make my page informative and interactive	**3. Abstract & pattern recognition - To understand what pattern recognition and abstraction mean** -To know how to recognise patterns -To understand how to abstract key information -To understand how to abstract key information	**3. To add, edit and calculate data -Talk about mistakes in data and suggest how it could be checked.** -To use formulas to calculate totals and averages. -To sort data by different criteria. -To add extra data, including inserting rows or columns.

						-To edit existing data and be aware of the results.
	4. What is a website? **To describe how content can be added and accessed on the World Wide Web (WWW)** -To explain what media can be found on websites -To recognise that I can add content to the WWW -To explain that internet services can be used to create content online	**4. Making a Variable - To understand how to make a variable in Scratch** -To create a variable and use it to store information -To 'call' a variable within my program -To identify that variables can be words or numbers	**4. What is a bot? - To explain that technology can be designed to act like or impersonate living things** -To explain what a 'bot' is -To provide examples of bots -To describe the benefits and the risk of using bots now and in the future	**4.Planning my website - To plan and create a website** -To plan a website in detail, considering the Microsoft Sway features that I will include -To start to build a website based on my designs -To consider information that other people would find useful and interesting	**4. Algorithm Design -To understand how to create an algorithm and what it can be used for** -To create an algorithm for drawing a square -To use my algorithm to write a script using Scratch -To use pattern recognition to modify my script to draw different shapes	**4. Data Base- Flow Chart PT 1** **-Draw and interpret a flowchart with the correct symbols** -To follow a sequence of written instructions in a flowchart. -To draw a flowchart using the correct symbols. -To connect symbols in sequence.
	5. Who owns the web? **To recognise how the content of the WWW is created by people** -To explain that websites and their content are created by people -To suggest who owns the content on websites -To explain that there are rules to protect content	**5. Times tables Project - To use knowledge of how variables work to create a quiz** -To create a range of questions and use an 'if/else' block to check whether the answer is correct -To use a variable called 'score' to calculate the total number of correct answers for those completing my quiz -To make sure my quiz is engaging and exciting for the people playing it	**5. What is my #TechTimetable like? - To explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology** - To explain how technology can be both a positive and negative distraction -To recognise the amount of time I spend on technology -To suggest strategies to help limit time spent on technology	**5.Creating my website - To create a website and evaluate its success** -To build a website with relevant headings about a specific topic -To use a range of features on Microsoft Sway -To evaluate my work and others	**5. Applying Computational Thinking - To combine computational thinking skills to solve a problem** -To apply decomposition, pattern recognition, abstraction and algorithm design to problems -To work with a partner and discuss how to solve a problem	**5. Data Base- Flow Chart PT 2** **-Draw and interpret a flowchart with the correct symbols** -To follow a sequence of written instructions in a flowchart. -To draw a flowchart using the correct symbols. -To connect symbols in sequence.
Vocabulary	**Internet** **Network** **Information** **Protecting** **Shared** **Router** **Switches** **Connecting** Network switch **Server**	Broadcast block **Code blocks** Conditional **Coordinates** Decomposition **Features** **Game** **Information** **Negative numbers** **Orientation** Parameters	**Accuracy** **Advantages** Advertisements Belief Bot Chatbot Computer Distractions Fact Hashtag Implications	Assessment Audience **Checklist** Collaboration Content Contribution **Create** **Design** Embed **Evaluate** **Features**	Abstraction **Algorithm** **Code** **Computational thinking** Decomposition **Input** Logical reasoning **Output** Pattern recognition Script **Sequence**	**Rows** **Columns** **Cells** **Calculations** **Formulas** **Graph** Bar **Insert** **Data** **Total** **Results**

	Wireless access point (WAP) **Website** **Web page** **Web address** **Web Browser** **World Wide Web** Content Links Files Download Sharing **Ownership** **Permission**	**Position** **Program** **Project** **Script** **Sprite** Stage **Tinker** **Variables**	**In-app purchases** **Influencer** **Opinion** **Program** Recommendations **Reliable** **Risks** **Screen time** **Search results** Snippets Sponsored **Trustworthy**	**Google Sites** Hobby **Homepage** **Hyperlinks** **Images** **Insert** **Online** **Plan** Progress Published Record Review Style **Subpage** **Tab** **Theme** **Web page**	**Variable**	Flow chart **Input** **Output** Process Loop Terminator Decision **Sequence** **Instructions** **Symbols**

Year 5 Computing Curriculum						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit	**Computing systems and networks** **Search Engines - Microsoft Office 365**	**Programming** **Programming Music: Scratch**	**Online Safety** **Online Apps**	**Data Handling** **Mars Rover 1**	**Programming** **Lego**	**Creating Media** **Stop motion animation**
Overview	In this unit, children continue to learn about computer systems and networks. Children gain a better understanding of Search Engines and how these can be used more effectively. Children learn about how page rank works, and how to identify inaccurate information.	In this final Scratch unit, children build-on their programming knowledge and music skills to create different sounds, beats and melodies which are put to the test with a Battle of the Bands performance!	This Online Safety unit builds on previous learning about the negative and positive impacts of the Internet. Children learn about app permissions; the positive and negative aspects of online communication; that online information is not always factual; how to deal with online bullying and managing our health and wellbeing.	In this Data Handling unit. Children learn about the Mars Rover, exploring how and why it transfers data including instructions, and how messages can be sent using binary code.	This Programming unit introduces the children to robotics. We explore when and why robots may be used in everyday life. Using algorithms and coding, we create repetitive patterns, making them unique to each groups objectives.	This Creating Media unit builds on from Year 3's Video Trailers unit. Children create animations from their storyboard ideas, decomposing a story into small parts before putting it together using Stop Motion to create the illusion of a moving image.
End of Unit Outcomes	-Explain what a search engine is, suggesting several search engines to use and explain how to use them to find websites and information. -Suggest that things online aren't always true and recognise what to check for. -Explain why keywords are important and what TASK stands for, using these strategies to search effectively. -Recognise the terms 'copyright' and 'fair use' and combine text and images in a poster.	-Iterate ideas, testing and changing throughout the lesson. -Explain what the basic commands do: 'play', 'sleep', '2.times do'. -Explain how their program links to the theme. Include a loop in their work. Correct their own simple mistakes. -Explain their scene in the story. Link musical concepts to their scene. -Include a live loop and explain its function. -Use samples effectively to enhance music. -Code a piece of music that combines a variety of structures. Use loops in their	-Understand that passwords need to be strong and that apps require some form of passwords. -Recognise a couple of the different types of online communication and know who to go to if they need help with any communication matters online. -Search for simple information about a person, such as their birthday or key life moments. -Know what bullying is and that it can occur both	-Identify some of the types of data that the Mars Rover could collect (for example, photos). -Explain how the Mars Rover transmits the data back to Earth and the challenges involved in this. -Read any number in binary, up to eight bits. -Identify input, processing and output on the Mars Rovers. -Read binary numbers and grasp the concept of binary addition. -Relate binary signals (Boolean) to a simple character-based language, ASCII.	-To explore the Lego Spike prime app -To understand why robots are used -To work as part of a group/team -To follow an algorithm to make the robot move -To debug the algorithm to create a new code -To tinker with existing codes and make them unique	-Create a toy with simple images with a single movement. -Create a short stop motion with small changes between images. -Think of a simple story idea for their animation then decompose it into smaller parts to create a storyboard with simple characters. -Make small changes to the models to ensure a smooth animation and delete unnecessary frames.

	-Make parallels between book searching and internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank.	programming. -Recognise that programming music is a way to apply their skills.	online and in the real world. - Recognise when health and wellbeing are being affected in either a positive or negative way through online use. -Offer a couple of advice tips to combat the negative effects of online use.			-Add effects such as extending parts and titles. -Provide helpful feedback to other groups about their animations.
Sequence of learning (small steps)	**1. Searching Basics - To understand what a search engine is and how to use it** -To explain what a search engine is -To use a search engine to navigate the web -To suggest keywords for searching	**1. Tinkering with Scratch music elements - To tinker with Scratch music elements** -To know that Scratch is a coding application that has music elements -To predict what I think different code blocks will do -To explore Scratch independently -To explain what I found from tinkering	**1. Online Protection -To understand how apps can access our personal information and how to alter the permissions.** -To understand the importance of keeping passwords safe -To identify that passwords are needed for access to 'apps' -To explore how apps require permission to access private information -To know how to alter the permissions apps require	**1.Mars Rover - To identify how and why data is collected from space** -To identify a type of data which the Mars Rover may transmit back to Earth -To know the meaning of 'data' and 'transmit' -To understand the challenges of transmitting data over large distances -To give a reason why data is being collected from the Mars Rover	**1. L.O. Code the legs L.O. Code the hub numbers** -To open the Lego Spike app -Select the Prime Solution -To create a new project -To rename the project -To investigate the Hub and the motor ports -To use the algorithm given and make the robots legs move -To use the code given and make the hub numbers change -To tinker with the algorithms and change the speed -To tinker with the algorithms and change the lights on the hub -To debug the algorithms if needed	**1. Animation explored - To understand what amination is** -To understand and can explain what 'animation' means -To explain the history of animation -To create my own 19th century animation toy
	2. Inaccurate information - To be aware that not everything online is true -To recognise that not everything online is true -To understand anyone can create a website -To suggest ways of checking the validity of a website	**2. Scratch Soundtracks - To create a program that plays themed music** -To use Scratch's basic sound commands -To include a loop in my program -To debug simple errors in my code	**2. Online Communication -To be aware of the positive and negative aspects of online communication** -To understand different types of online communication -To be aware of some of the different types of online communication	**2.Binary code - To identify how messages can be sent using binary code** To read and calculate numbers using binary code -To identify binary as the most basic way computers communicate	**2. L.O. Code the swinging arms** -To open the existing project -To find which motor hub the arms are connect too -To use the code given to make the arms move -To tinker a code creating an algorithm to make the arms move	**2. Exploring stop motion - To understand what stop motion animation is** -To understand and can explain what 'stop motion' means -To understand how to create a short animation -To understand what onion skinning is

			-To recognise the positive and negative forms of online communication	-To know how to read binary up to eight characters -To understand each one or zero is referred to as a bit -To calculate binary numbers, knowing each digit is worth double the one that precedes it	-To create a dance that involves both the arms and legs	-To can make small changes to my object to make my animation smoother
	3. Web Quest - To search effectively -To understand the importance of keywords -To use the acronym TASK -To use my search skills to answer focused questions	**3. Planning a Soundtrack - To plan a soundtrack program** -To decompose a story -To plan my program by tinkering -To explain how my program will add to the story	**3. Online Reputation** **-To understand how online information can be used to form judgements** -To understand why people, search personal information about others online -To know how to search for personal information about others online -To form opinions about the reliability of the information about a person	**3.Computer architecture - To identify the computer architecture of the Mars Rovers** -To identify sensors -To know the difference between computer input and output -To explain how the size of random-access memory (RAM) affects the processing of data (CPU)	**3. L.O. Code – beats your robot** --To open the existing project -To follow the instructions, to add the Music tab on the Spike App -To use the code given to create music -To tinker a code creating an algorithm to make music move	**3. Planning my stop motion project - To plan my stop motion video, thinking about the characters I want to use** -To work collaboratively with others to plan a storyboard for an animation -To keep my animation idea simple -To design and create a character that can be used in my animation -To decompose my story into smaller parts
	4. Information Poster - To create an informative poster -To have a clear poster title -To type at least five facts -To choose appropriate pictures, colours and designs -To consider fair use -To credit people for information, images and videos I use	**4. Programming a Soundtrack - To program a soundtrack** -To work from a plan -To use a range of programming commands -To explain how my program enhances the scene	**4. Online Bullying** **To discover ways to overcome bullying** -To recognise differences between online and offline bullying -To describe some of the differences between online and offline bullying -To identify ways to help those being bullied online -To recall organisations and people who can help with online bullying issues	**4.Using binary – numbers - To use simple operations to calculate bit patterns** -To recall how binary can be used to represent numbers up to 255 -To recognise that computers, use binary mathematically, to calculate -To carry out binary addition (and subtraction)	**4. L.O. Robotics within present day society** -To understand what is meant by robotics -To understand what is meant by present day society -To know that technology is always forever changing and improving -To know this includes, houses, factories, shops, mechanics, farming, films etc -To research and list robotics used today in everyday life	**4. Stop motion creation - To create a stop motion animation** -To create a simple animation following my storyboard plan -To change my plan to recognise when something is too difficult to animate -To understand the importance of keeping the camera still and making small movements between shots

	5. Web Crawlers - To understand how search engines work -To understand the role of a web index -To explain what web crawlers are -To discuss page rank	**5. Battle of the Bands - To program music for a specific purpose** -To combine known commands -To code music with a purpose -To use repetition in a program -To use various forms of output [sound]		**5. Online Health** **To understand how technology can affect health and wellbeing** -To identify the advantages and disadvantages technology has to health (mental and/or physical). -To research advice and ways to support others with their online health and wellbeing. -To know where I can go to for support if my wellbeing is being negatively affected by technology.	**5.Using binary – text - To represent binary as text** -To recall that binary is the main means of all data transfer -To read binary numbers to four bits -To know that data transfer needs a common language -To use binary to create a written message	**5. L.O. Understanding the advantages and disadvantages of robotics in society** -To understand the advantages of robotic technology -To understand the disadvantages of robotic technology	**5. Editing my stop motion project - To edit and assess my stop motion animation** -To make small changes to my models to make my animation smoother -To delete frames -To assess my animation
Vocabulary	Algorithm Appropriate Copyright Correct Credit Data leak Deceive Fair Fake Inappropriate Incorrect Index Information Keywords Network Privacy **Rank** **Real** **Search engine** TASK Web crawler **Website**	**Beat** Buffer **Bugs** **Coding** Commands **Debug** **Decompose** **Error** Format **Instructions** Live loops Loop Melody Mindmap **Music** **Output** **Performance** **Pitch** **Play** **Predict** **Programming** **Rehearsal** **Repetition** **Rhythm** Sleep Sonic Pi Soundtrack Spacing	**Tempo** **Timbre** **Tinker** Tutorials **Typing** **Typo**	**Communication** **Emojis** **Health** In-app purchases Information Judgement Memes **Mental health** Mindfulness Mini-biography **Online communication** Opinion Organisation **Password** **Personal information** Positive contributions **Private information** Real world **Strong password** Summarise **Support** **Technology** **Trusted adult** **Wellbeing**	**8-bit binary** **Addition** ASCII **Binary code** Boolean **Byte** **Communicate** Construction CPU Data transmission **Decimal numbers** Design Discovery Distance Hexadecimal **Input** **Instructions** **Internet** **Mars Rover** Moon **Numerical data** **Output** Planet **Radio signal** RAM **Research** **Scientist** **Sequence**	**Lego** **Code** **Hub** **Algorithm** **Debug** **Repeat** **Tinker** **Spike Prime** **New Project** **Motor** **Robot**	**Animation** Animator **Background** **Character** Decomposition **Design** **Digital device** **Edit** **Evaluate** Flip book Fluid movement **Frames** **Model** **Moving images** **Onion skinning** **Still images** **Stop motion** **Storyboard** Thaumatrope Zoetrope

Year 6 Computing Curriculum						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Unit	**Computing systems and networks** **Bletchley Park - Microsoft Office 365**	**Programming** **Intro into Micro:bit**	**Online Safety** **Issues online**	**Data Handling** **Big Data 1**	**Creating Media** **History of Computers - Microsoft Office 365**	**Data Handling** **Big Data 2**
Overview	In this final unit on Computer Systems and Networks, children discover the history of Bletchley and learn about code breaking and password hacking. This unit reinforces the importance of computer security and the importance of a secure password. At the end of the unit, children are able to demonstrate their digital literacy skills by creating presentations about a significant computer historical figure.	In this final Programming unit, a sequence of lessons provides a pathway through six projects as an introduction to micro:bits. We develop the use of some core computing concepts through coding and making practical projects.	The final Online Safety unit focusses on developing the children's ability to deal with issues online. Children are taught about the consequences of sharing information online; how to develop a positive online reputation and combating and dealing with online bullying. The use of protective passwords is further reinforced to ensure all online accounts are secure, preparing them for the future.	This is the first of two Big Data units taught in Year 6. Children identify how barcodes and QR codes work. We learn how infrared waves are used for the transmission of data while recognising the uses of RFID.	The final Creating Media unit builds on previous learning as children write, record, add effects and edit their own radio plays set during WWII. We also learn about how computers have evolved overtime and what we think computers may look like in the future.	In the second Big Data unit, children further develop their understanding of how networks and the Internet are able to share information. We look at how data can be transferred safely and how much data is used in various online activities. Using the principles of Big Data and the Internet of Things we design our own 'smart' village, researching ways to overcome problems in our area.
End of Unit Outcomes	-Explain that codes can be used for a number of different reasons and decode messages. -Explain how to ensure a password is secure and how this works. -Create a simple poster with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. -Explain the importance of historical figures and their contribution towards computer science.	-The program you'll create scrolls text across the screen to show your name. - The program shows a beating heart using two built-in pictures, a large and small heart, on the micro:bit's LED display. - The code uses the micro:bit's accelerometer sensor input to sense when your leg is moving. The code counts how many times the micro:bit has been shaken. It stores this number in a variable called steps.	-Discuss a range of issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help. -Explain how sharing online can have both positive and negative impacts. -Be aware of how to seek consent from others before sharing material online and can describe how content can still be shared online even if it is set to private. -Explain what a 'digital reputation' is and what it can consist of.	-Create (and scan) their own QR code using a QR code generator website. -Explain how infrared can be used to transmit a Boolean type signal. -Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets. -Take real-time data and enter it effectively into a spreadsheet. -Presenting the data collected as an answer to a question. -Recognising the value of analysing real-time data.	-Explain how to record sounds and add in sound effects over the top. -Produce a simple radio play with some special effects and simple edits which demonstrate an understanding of how to use the software. -Create a document that includes correct date information and facts about the computers and how they made a difference. -Demonstrate a clear understanding of their device and how it affected modern computers,	-Recognise that data can become corrupted within a network and that data sent in packets is more robust, as well as identify the need to update devices and software. -Recognise differences between mobile data and WiFi and use a spreadsheet to compare and identify high-use data activities and low-use data activities. -Make links between the Internet of Things and Big Data and give a basic example of how data

	-Present information about their historical figure in an interesting and engaging manner.	- The program uses selection to decide what image to show on the LED display. If the random number was 0, it shows a rock icon, if it was 1 it shows the icon representing paper. If it wasn't 0 or 1, it must be 2 because we instructed the micro:bit to only pick random numbers between 0 and 2, so in that case it shows scissors.	-Understand the importance of capturing evidence of online bullying and can demonstrate some of these methods on the devices used at school. -Describe ways to manage passwords and strategies to add extra security such as two-factor authentication. -Explain what to do if passwords are shared, lost, or stolen. -Describe strategies to identify scams. -Explain ways to increase their privacy settings and understand why it is important to keep their software updated.	-Analyse and evaluate transport data and consider how this provides a useful service to commuters.	including well-researched information with an understanding of the reliability of their sources. -Describe all of the features that we'd expect a computer to have including RAM, ROM, hard drive and processor, but of a higher specification than currently available.	analysis/analytics can lead to improvement in town planning. -Explain ways that Big Data or IoT principles could be used to solve a problem or improve efficiency within the school and prepare a presentation about their idea, considering the privacy of some data. -Present their ideas about how Big Data/IoT can improve the school and provide feedback to others on their presentations.
Sequence of learning (small steps)	**1. Secret Codes - To understand that there are lots of different types of secret codes** -To understand why codes might be valuable -To identify some common secret codes -To decipher some secret codes -To write a message using a secret code	**1: Name badge Students create their first programs and transfer them to their micro:bits.** -To explain that the micro:bit is a tiny computer. -To explain that computers need to be given sets of instructions (an algorithm) in code. -To give the micro:bit instructions in code to make a name badge using the LED display output. -Understand the micro:bit is a tiny computer which needs instructions in code to make it work. -Understand that sets of instructions for computers in a sequence are also called algorithms or programs. -Use the MakeCode editor to create instructions in code that the micro:bit can	**1. Life Online - To describe issues online that give us negative feelings and know ways to get help** - To describe scenarios that could make someone feel sad, worried, uncomfortable or frightened To give examples of how to get help online and offline To explain the importance of asking for help	**1.Barcodes - To identify how barcodes and QR codes work** -To identify and distinguish between barcodes and QR codes -To know some of the advantages and disadvantages of barcodes and QR codes -To understand how computers can use data from barcodes and QR codes	**1. Playing with sound - To tinker with sound** -To identify the key features of a radio play -To record sounds to sound recording software -To add tracks in order to include sound effects into my recording	**1.Transferring Data - To explain how data can be safely transferred** - To recognise that data can become corrupted within a network -To explain how data sent in 'packets' is more robust -To identify the need to update devices and software

		understand and then transfer them to the micro:bit. -Know the micro:bit has an LED display output which it can use to show words (as well as numbers and pictures).				
	2. Brute Force Hacking - To understand the importance of having a secure password -To know what is meant by brute force hacking -To understand why it is important to have a secure password -To understand why a longer password is more secure than a short one	**2. Beating heart Create a simple animation to learn about sequence and simple loops.** -To create a micro:bit animation using a sequence of images in a loop. -To explain that the order or sequence of instructions is important. -To explain that loops can make code more compact and easier to read. -Understand that sequence and timing is important when making an animation. -Understand that animations create an illusion of movement by showing a sequence of still images. -Code the micro:bit to show simple animations on its LED display output. -Use loops to make animations run longer using fewer instructions.	**2. Sharing Online - To think about the impact and consequences of sharing online** - To describe how to be kind and show respect for others online To know the risk involved with sharing things online even if it is sent privately	**2.Transmitting data - To explore how infrared waves transmit data** -To know infrared light is part of the electromagnetic spectrum -To understand infrared light can be used for a variety of purposes -To understand infrared light can be easily blocked	**2. Radio plays - To record, edit and add sound effects to a radio play** -To plan and record a radio play -To edit my radio play to remove any mistakes -To add sound effects to my radio play to make it more interesting	**2.Data Usage - To investigate the data usage of online activities** -To compare methods of wireless data transfer -To recognise differences between WiFi and mobile data -To use a spreadsheet to compare the data-usage of various online activities
	3. Bletchley Park - To understand the importance of Bletchley Park to the World War II war effort -To know that Bletchley Park was important during WWII -To know what the first computer was built for	**3. Emotion badge Start learning about inputs and outputs using buttons and icons on the display.** -To make the micro:bit show different pictures on the LED display output depending on which button input is pressed	**3. Creating a positive Online Reputation** -To know how to create a positive online reputation -To describe what a positive online reputation is To explain strategies to create a positive online reputation	**3.RFID - To recognise the uses of RFID** -To understand how RFID can be used to transmit data -To know encoding keeps data safe -To type formulas into cells using a spreadsheet	**3. First computers - To understand how computers have changed and the impact this has had on the modern world** -To identify how computers have evolved over time -To understand that computers are everywhere in modern life	**3. The Internet of Things - To identify how data analysis can improve city life** -To identify the meaning of the term 'Internet of Things' -To recall how devices can be connected to the 'Internet of Things' – via WiFi or mobile data

	-To create an information poster about Bletchley Park	-To explain that inputs are data sent to a computer. -To explain that outputs are data sent from a computer. -Code the micro:bit to make different outputs happen depending on different inputs. (This is a very simple kind of selection. We look at selection in more detail in lesson 5, Nightlight.) -Understand that inputs and outputs involve the flow of data in and out of computers. -Apply this knowledge using the micro:bit's button inputs and display output.			-To recognise some of the earliest computers and how they impacted the modern world	-To recognise how the IoT has led to Big Data -To link data analytics to improvement in town planning
	4. Computing Heroes - To understand about some of the historical figures that contributed to technological advances in computing -To know some of the people who contributed to computing history -To identify what some historical achieved -To research one historical figure in detail	**4. Step counter Introduce variables to track your step count and begin to use the accelerometer input.** -To turn my micro:bit into a step counter using the accelerometer and variables -To explain that the accelerometer is a sensor, an input that senses movement. -To explain that variables are containers for storing data which can be accessed and updated. -Understand how sensor inputs from the accelerometer can be used to detect movement, such as when a step is taken. -Understand that variables are used to keep track of the current step count. -Understand that the order of instructions is important:	**4. Capturing Evidence -To be able to describe how to capture bullying content as evidence** - To know a range of strategies to collect evidence -To know who to share evidence with to help me	**4.Using RFID - To input and analyse real-world data** -To recognise further uses of RFID -To input and present data in a spreadsheet -To make conclusions from a data source	**4. Computers that changed the world - To research one of the computers that changed the world and present information about it to the class** -To present information about one device that changed the world -To research information carefully and recognise whether information is reliable -To know how to correctly cite and record sources for information found on the Internet	**4. Designing a Smart School** **- To design a system for turning a school into a smart school** -To recall methods of data transfer -To evaluate the methods of data transfer -To apply Big Data/IoT principles to solve a problem -To research the technology associated with solving the problem -To prepare a presentation

		display the variable's value after updating it, not before. -Apply this learning to build a practical, real-world				
	5. Computing Heroes part 2 - To research and present information about historical figures in computing -To identify why historical figures were influential in creating modern computers -To present information using a presentation software -To explain why a historical figure is important	**5. Lesson 5: Nightlight Make an automatic nightlight and discover how logic, conditionals and inputs and outputs combine to make a simple control system.** -To code a micro:bit to make a light that switches on when it gets dark using sensors and logic. -To explain that sensors are inputs that sense things in the real world, such as movement and light. -To explain that logic is how computers make decisions in code based on whether things are true or false. -Understand how inputs, outputs, and computer code work together to make control systems. -Understand how logic (conditional 'if… then… else' instructions) is used to make different outputs happen depending on changes in data from a sensor. -Use 'forever' infinite loops to keep control systems responding to changes in the environment. -Practise testing and improving a project to make the nightlight work better in specific local lighting conditions.	**5. Password Protection - To manage personal passwords effectively** - To know how to create a strong password -To know a range of strategies for managing my passwords -To explain what to do if my password is shared, lost or stolen	**5.Transport data - To analyse and evaluate data** -To recall how RFID is used in data transfer -To understand how RFID helps to solve real-world data challenges -To sort and compare data within a spreadsheet	**5. Future computer - To design a computer of the future** -To understand how computers work To recognise components of a computer and why they are important To know how computers evolved over time To use my understanding of historic computers in order to design a computer of the future	**5. Smart School Presentation - To present ideas for turning a school into a smart school** -To present my ideas for improving school through the application of Big Data and the Internet of Things -To listen to the ideas of my peers and provide effective feedback on their presentation -To ask and answer effective questions that deepen my understanding

		6: Rock, paper, scissors Combine skills from the previous lessons to turn your micro:bit into an electronic simulation of a popular game of chance.- To code a micro:bit Rock, paper, scissors game using inputs, random numbers, variables and logic. -To explain how combining inputs, random numbers, variables and logic can make a computer simulation of a real-world game. -Use the accelerometer via the 'on shake' block to start the code running. -Code the creation of random numbers in a fixed range. Use variables so they can be tested using logic. -Make use of more complex logical 'if… then… else if…' conditional instructions. -Apply these concepts to make a computer simulation of a real-world game -Evaluate the fairness of computer simulations	**6.Think before you click - To be aware of strategies to help be protected online** - To describe simple ways to increase my privacy settings -To explain why I should keep my software updated -To describe strategies to identify scams			
Vocabulary	Acrostic Code **Brute force hacking** Caesar cipher **Chip and pin system** **Cipher** **Code** **Combination** Contribute Date shift cipher Discovery Hero Invention	**Algorithm** **Code** **Command** **Design** **Import** Indentation **Input** **Instructions** **Loop** **Output** **Patterns** Random	**Anonymity** **Antivirus** Biometrics **Block and report** **Consent** **Copy** **Digital footprint** Digital personality Financial information **Hacking** **Inappropriate** Malware	**Algorithms** **Barcode** **Binary** Boolean Brand **Chips** Commuter **Contactless** **Data** **Encrypted** Infrared MagicBand	**Background noise** **Byte** **Computer** **Devices** **File** FX Gigabyte Graphics **Hard drive** **Hardware** **Kilobytes** **Megabyte**	**Big Data** **Bluetooth** **Corrupted** **Data** Energy **GPS** Improve Infrared Internet of Things **Personal** **Privacy** **QR codes**

	Nth Letter Cipher **Password** Pig Latin Pigpen cipher Present **Scrambled** **Secret** **Secure** Technological advancement **Trial and error**	Remix **Repeat** **Shape**	**Online bullying** **Online reputation** **Password** **Paste** **Personal information** Personality **Phishing** **Privacy settings** **Private** **Reliable source** **Report** Reputation Respect **Scammers** Screengrab Secure Settings **Software updates** Two factor authentication URL **Username**	**Privacy** Proximity **QR code** **QR scanner** **Radio waves** RFID **Signal** **Systems/data analyst** **Transmission** **Wireless**	**Memory storage** **Mouse** Operating system Overlay Play Processor Radio play RAM Raspberry Pi **Record** Reverb ROM Script **Smartphone** **Sound** **Sound effects**	Revolution RFID SIM Simulation Smart city Smart school **Stop motion** **Threat** **WiFi** **Wireless**