

## Computing

EYFS			
<ul style="list-style-type: none"> <li>• Know and talk about the different factors that support their overall health and wellbeing: - sensible amounts of 'screen time'. (PSED)               <ul style="list-style-type: none"> <li>• Select, rotate and manipulate shapes to develop spatial reasoning skills. (M)</li> </ul> </li> </ul> <p style="text-align: center;">ELG's</p> <ul style="list-style-type: none"> <li>• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (CAL)</li> </ul>			
	Knowledge	Vocabulary	Skills
Term 1	<b>Computing through continuous provision</b> Set up continuous provision in the classroom		
Term 2	<p style="text-align: center;"><b>Using a computer</b></p> To be able to understand what a computer keyboard is and recognise some letters and numbers. To know that a mouse can be used to click, drag and create simple drawings. To know that to use a computer you need to log in to it and then log out at the end of your session.	arrow, click, computer, computer safety, computer tower, cursor, drag, drop, keyboard, left click, letters, lock, log in, log out, lowercase, monitor, mouse, mouse control, move, numbers, paint, password, personal, protect, right click, secure, security, stamp, type, uppercase	<ul style="list-style-type: none"> <li>• Learning how to operate a camera to take photographs of meaningful creations or moments.</li> <li>• Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary</li> <li>• Recognising and identifying familiar letters and numbers on a keyboard.</li> <li>• Developing basic mouse skills such as moving and clicking.</li> <li>• Using logical reasoning to understand simple instructions and predict the outcome.</li> <li>• Following instructions as part of practical activities and games.</li> <li>• Learning to give simple instructions.</li> <li>• Experimenting with programming a Bee-bot/ Blue-bot and learning how to give simple commands.</li> <li>• Learning to debug instructions, with the help of an adult, when things go wrong.</li> <li>• Using a simple online paint tool to create digital art.</li> <li>• Representing data through sorting and categorising objects in unplugged scenarios.</li> <li>• Representing data through pictograms.</li> <li>• Exploring branch databases through physical games.</li> <li>• Recognising that a range of technology is used in places such as homes and schools.</li> <li>• Learning to log in and log out.</li> </ul>
Term 3	<p style="text-align: center;"><b>All about instructions</b></p> To know that being able to follow and give simple instructions is important in computing. To understand that it is important for instructions to be in the right order. To understand why a set of instructions may have gone wrong.	adjective, algorithm, bend down, blindfold, debug, describe, duck, first, follow, give, hop, instructions, last, left, next, order, predict, prediction, right, run, second, sequence, shuffle, skip, stand still, step over, stop, straight on, third, tiptoe, timer, turn, two-part instructions, under, walk around	
Term 4	<p style="text-align: center;"><b>Exploring hardware</b></p> To know that different types of technology can be found at home and in school. To know that you can take simple photographs with a camera or iPad. To know that you must hold the camera still and ensure the subject is in the shot to take a photo.	batteries, behind, blurred, blurry, buttons, camera, capture, clear, lick, computer, computer tower, crisp,digital camera, dial, digital clock, electricity, electric toothbrush, gallery, hard-drive, image, iPad, keyboard, keys, larger, lens, memory, mobile phones, monitor, motherboard, mouse, off, on, on top of, open, photograph, photographer, picture, point, power, pull, push, record, remote control, shoot, shut, smaller, speaker, still, system fan, tablets, technology, tinker, twist, under, USB stick, walkie-talkies	
Term 5	<p style="text-align: center;"><b>Programming Bee-Bots</b></p> To know that you can program a Bee-Bot with some simple commands. To understand that debugging means how to fix some simple programming errors To understand that an algorithm is a set of clear and precise instructions.	algorithm, arrow, back, backwards, Bee-Bot, circle, debug, direction, directions, forward, instructions, left, program, right, route, sequence, straight on, turn	
Term 6	<p style="text-align: center;"><b>Introduction to data</b></p> To know that sorting objects into various categories can help you locate information. To know that using yes/no questions to find an answer is known as a branching database. To know that a pictogram is a way of showing information.	altogether, bigger than, branch database, categorise, category, colour, collect, column, count, data, describe, divide, equal, graph, group, height, in total, least popular, length, less, more, most popular, pattern, pictogram, record, row, share, size, smaller than, sort, square, texture, thicker than, thinner than, weight	
Year 1			
	Knowledge	Vocabulary	Skills

Term 1	<p><b>Improving mouse skills</b></p> <p>To know that "log in and log out" means to begin and end a connection with a computer</p> <p>To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clipart.</p> <p>To know that passwords are important for security and to keep us safe</p>	<p>account, click, ctrl, cursor, drag, drag and drop, digital photograph, drop, duplicate, keyboard, layers, log on/in, log out/off, menu, mouse, mouse pointer, password, right click, screen (monitor), software, tool, username</p>	<ul style="list-style-type: none"> <li>• Learning how to explore and tinker with hardware to find out how it works</li> <li>• Learning where keys are located on the keyboard</li> <li>• Using a basic range of tools within graphic editing software</li> <li>• Developing control of the mouse through dragging, clicking and resizing of images to create different effects.</li> <li>• Developing understanding of different software tools.</li> <li>• Recognising devices that are connected to the internet.</li> <li>• Logging in and out and saving work on their own account.</li> <li>• Following a basic set of instructions.</li> <li>• Assembling instructions into a simple algorithm.</li> <li>• Learning to debug instructions when things go wrong.</li> <li>• Learning to debug an algorithm in an unplugged scenario.</li> <li>• Learning how to operate a camera to take photos and videos.</li> <li>• Using logical reasoning to predict the behaviour of simple programs.</li> <li>• Developing the skills associated with sequencing in unplugged activities.</li> <li>• Taking and editing photographs.</li> <li>• Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc.</li> <li>• Programming a floor robot to follow a planned route</li> <li>• Using programming language to explain how a floor robot works.</li> <li>• Searching and downloading images from the internet safely</li> <li>• When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable.</li> <li>• Using data representations to answer questions about data.</li> <li>• Using software to explore and create pictograms and branching databases.</li> </ul>
Term 2	<p><b>Algorithms unplugged</b></p> <p>To understand that an algorithm is when instructions are put in an exact order</p> <p>To know that input devices get information into a computer and that output devices get information out of a computer.</p> <p>To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.</p> <p>To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.</p>	<p>algorithm, automatic, bug, chunks, clear, code, decompose, decomposition, device, directions, input, instructions, manageable, motion, order, output, precise, programming, problem, robot, sensor, sequence, solution, specific, steps, tasks, virtual assistant</p>	
Term 3	<p><b>Rocket to the moon</b></p> <p>To know that when we create something on a computer it can be more easily saved and shared than a paper version.</p> <p>To know some of the simple graphic design features of a piece of online software.</p> <p>To know that a spreadsheet is an electronic 'table' for sorting data.</p>	<p>annotate, cells, components, create, data, debug, designing, digital content, digital image, e-document, edit, editing program, evaluate, folder, input, instructions, log in, photo, program, order, robot, save, sequence, share, software, spreadsheet, table</p>	
Term 4	<p><b>Programming - Bee Bots</b></p> <p>To understand the basic functions of a Bee-Bot.</p> <p>To know that you can use a camera/tablet to make simple videos.</p> <p>To know that algorithms move a Bee-Bot accurately to a chosen destination.</p>	<p>algorithm, Bee-Bot, code, debug, demonstration, explain, explore, filming, inputting, instructions, precise, predict, program, review, test, tinker, video</p>	
Term 5	<p><b>Creating Media - Digital Imagery - Google</b></p> <p>To understand that holding the camera still and considering angles and light are important to take good pictures.</p> <p>To know that you can edit, crop and filter photographs.</p> <p>To know how to search safely for images online.</p>	<p>background, blurred, camera, crop, digital camera, download, edit, editing software, filter, image, import, internet, keyword, online, photograph, resize, save as, search engine, storage space, visual effects</p>	
Term 6	<p><b>Introduction to data</b></p> <p>To know how that charts and pictograms can be created using a computer.</p> <p>To understand that a branching database is a way of classifying a group of objects.</p> <p>To know that computers understand different types of 'input'.</p>	<p>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</p>	
	<p><b>Online safety - covered across all terms</b></p> <p>To know that the internet is many devices connected to one another.</p> <p>To know what to do if you feel unsafe or worried online - tell a trusted adult.</p>	<p>communicate, connect, console, devices, digital footprint, emotion, feelings, instructions, internet, internet safety, laptop, mood, online, personal</p>	

	<p>To know that people you do not know on the internet (online) are strangers and are not always who they say they are.</p> <p>To know that to stay safe online it is important to keep personal information safe.</p> <p>To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet</p>	<p>information, phone, posting, predict, respect, sharing, smart device, smartphone, smart TV, smartwatch, strangers, tablet, trust, wired, wireless</p>	<p>them feel uncomfortable</p> <ul style="list-style-type: none"> <li>Understanding how to interact safely with others online.</li> <li>Recognising how actions on the internet can affect others</li> <li>To be able to recognise what a digital footprint is and how to be careful about what we "post".</li> </ul>
<b>Year 2</b>			
	<b>Knowledge</b>	<b>Vocabulary</b>	<b>Skills</b>
Term 1	<p><b>What is a computer?</b></p> <p>To know the difference between a desktop and laptop computer.</p> <p>To know that people control technology.</p> <p>To know some input devices that give a computer an instruction about what to do (output).</p> <p>To know that computers often work together.</p>	<p>computer, desktop, device, digital content, digital recorder, electricity, input, invention, keyboard, laptop, monitor, mouse, output, photograph, robot, scanner, screen, system, tablet, technology, till, video, wire</p>	<ul style="list-style-type: none"> <li>Understanding what a computer is and that it's made up of different components.</li> <li>Recognising that buttons cause effects and that technology follows instructions.</li> <li>Learning how we know that technology is doing what we want it to do via its output.</li> <li>Using greater control when taking photos with cameras, tablets or computers.</li> </ul>
Term 2	<p><b>Algorithms and Debugging</b></p> <p>To understand what machine learning is and how it enables computers to make predictions.</p> <p>To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times.</p> <p>To know that abstraction is the removing of unnecessary detail to help solve a problem.</p>	<p>abstract, algorithm, artificial intelligence, bug, clear, correct, data, debug, decompose, error, key features, loop, predict, unnecessary</p>	<ul style="list-style-type: none"> <li>Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.</li> <li>Using word processing software to type and reformat text.</li> <li>Creating and labelling images</li> <li>Learning how computers are used in the wider world.</li> <li>Developing confidence with the keyboard and the basics of touch typing</li> </ul>
Term 3	<p><b>Word Processing</b></p> <p>To know that touch typing is the fastest way to type.</p> <p>To know that I can make text a different style, size and colour.</p> <p>To know that "copy and paste" is a quick way of duplicating text.</p>	<p>back button, backspace, bold, copy, copyright, cut, delete, forward button, highlight, image, import, italics, keyboard shortcut, layout, navigate, paste, redo, search, space bar, text, text effects, touch typing, underline, undo, word processing</p>	<ul style="list-style-type: none"> <li>Articulating what decomposition is.</li> <li>Decomposing a game to predict the algorithms used to create it.</li> <li>Learning that there are different levels of abstraction.</li> <li>Explaining what an algorithm is.</li> <li>Following an algorithm.</li> <li>Creating a clear and precise algorithm.</li> <li>Learning that programs execute by following precise instructions.</li> </ul>
Term 4	<p><b>Programming - Scratch Jr</b></p> <p>To know that coding is writing in a special language so that the computer understands what to do.</p> <p>To understand that the character in Scratch Jr is controlled by the programming blocks.</p> <p>To know that you can write a program to create a musical instrument or tell a joke.</p>	<p>algorithm, animation, blocks, bug, button, CGI, computer code, code, debug, fluid, icon, imitate, instructions, loop, 'on tap', programming, repeat, Scratch Jr, sequence, sound recording</p>	<ul style="list-style-type: none"> <li>Incorporating loops within algorithms.</li> <li>Using logical thinking to explore software, predicting, testing and explaining what it does.</li> <li>Using an algorithm to write a basic computer program.</li> </ul>
Term 5	<p><b>Stop motion</b></p> <p>To understand that an animation is made up of a sequence of photographs.</p> <p>To know that small changes in my frames will create a smoother looking animation.</p>	<p>animation, animator, background, digital device, drawing, flipbook, frames, moving images, opinion skinning, still images, decompose, object, plan, digital camera, duration, focus, save, upload</p>	<ul style="list-style-type: none"> <li>Using loop blocks when programming to repeat an instruction more than once.</li> <li>Using software (and unplugged means) to create story animations.</li> </ul>

	To understand what software creates simple animations and some of its features e.g. onion skinning.		<ul style="list-style-type: none"> <li>Collecting and inputting data into a spreadsheet.</li> <li>Interpreting data from a spreadsheet.</li> </ul>
Term 6	<p><b>International Space Station - data handling</b></p> <p>To understand that you can enter simple data into a spreadsheet.</p> <p>To understand what steps you need to take to create an algorithm.</p> <p>To know what data to use to answer certain questions.</p> <p>To know that computers can be used to monitor supplies.</p>	algorithm , astronaut, data, digital, digital content, experiment, galaxy, insulation, interactive map, International Space Centre, International Space Station, interpret, laboratory, monitor, planet, satellite, sensor, space, temperature, thermometer, water reservoir	
	<p><b>Online safety - covered across all terms</b></p> <p>To understand the difference between online and offline.</p> <p>To understand what information I should not post online.</p> <p>To know what the techniques are for creating a strong password.</p> <p>To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'</p> <p>To understand that not everything I see or read online is true.</p>	accept, comment, consent, content, deny, emojis, offline, online, password, permission, personal information, pop-ups, pressure, private information, reliable, share, terms and conditions, trusted adult	<ul style="list-style-type: none"> <li>Identifying whether information is safe or unsafe to be shared online.</li> <li>Learning how to create a strong password.</li> <li>Learning to be respectful of others when sharing online and ask for their permission before sharing content.</li> <li>Learning strategies for checking if something they read online is true.</li> <li>Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable.</li> </ul>

Year 3

	Knowledge	Vocabulary	Skills
Term 1	<p><b>Networks</b></p> <p>To understand that a network is a group of interconnected devices</p> <p>To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices).</p> <p>To know that a server is central to a network and responds to requests made</p> <p>To know that the internet connects all the networks around the world</p> <p>To know that a router connects us to the internet.</p> <p>To know what a packet is and why it is important for website data transfer.</p>	cables, component, connection, corrupted, data, desktop, device, DSL (digital subscriber line), fibre, file, internet, laptop, network, network map, network switch, packets, radio waves, router, server, submarine cables, tablet, text map, The Cloud, web server, website, website trackers, WiFi, wired, wireless, Wireless Access Points, World Wide Web	<ul style="list-style-type: none"> <li>Learning about the purpose of routers.</li> <li>Understanding the role of the key components of a network</li> <li>Understanding that websites &amp; videos are files that are shared from one computer to another</li> <li>Learning about the role of packets</li> <li>Understanding how networks work and their purpose</li> <li>Identifying the key components within a network, including whether they are wired or wireless.</li> <li>Recognising links between networks and the internet.</li> <li>Learning how data is transferred.</li> <li>Using decomposition to explore the code behind an animation.</li> <li>Using repetition in programs.</li> <li>Using logical reasoning to explain how simple algorithms work</li> <li>Explaining the purpose of an algorithm.</li> <li>Forming algorithms independently.</li> </ul>
Term 2	<p><b>Programming - Scratch</b></p> <p>To know that Scratch is a programming language and some of its basic functions</p> <p>To understand how to use loops to improve programming.</p> <p>To understand how decomposition is used in programming</p> <p>To understand that you can remix and adapt existing code</p>	algorithm, animation, application, code, code block, coding application, debug, decompose, interface, game, loop, predict, program, remixing code, repetition code, review, Scratch, sprite, tinker	
Term 3	<p><b>Emailing - Google</b></p> <p>To understand that email stands for 'electronic mail.'</p> <p>To know that an attachment is an extra file added to an email.</p> <p>To understand that emails should contain appropriate and respectful content.</p> <p>To know that cyberbullying is bullying using</p>	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	

	electronics such as a computer or phone.	language, reply, responsible digital citizen, scammer, settings, send, sign in, spam email, subject bar, theme, tone, username, virus, WiFi	<ul style="list-style-type: none"> <li>Using logical thinking to explore more complex software; predicting, testing and explaining what it does</li> <li>Incorporating loops to make code more efficient.</li> <li>Continuing existing code</li> <li>Making reasonable suggestions for how to debug their own and others' code.</li> <li>Learning to log in and out of an email account.</li> <li>Writing an email including a subject, 'to' and 'from'.</li> <li>Sending an email with an attachment.</li> <li>Replying to an email.</li> <li>Understanding the purpose of emails</li> <li>Learning about cyberbullying</li> <li>Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.</li> <li>Understanding what the different components of a computer do and how they work together.</li> <li>Drawing comparisons across different types of computers.</li> <li>Using decomposition to explain the parts of a laptop computer.</li> <li>Taking photographs and recording video to tell a story.</li> <li>Using software to edit and enhance their video adding music, sounds and text on screen with transitions</li> <li>Understanding the vocabulary associated with databases: field, record, data</li> <li>Learning about the pros and cons of digital versus paper databases</li> <li>Sorting and filtering databases to easily retrieve information.</li> <li>Creating and interpreting charts and graphs to understand data</li> <li>Recognising that different information is shared online including facts, beliefs and opinions.</li> <li>Learning how to identify reliable information when searching online.</li> <li>Learning how to stay safe on social media.</li> <li>Considering the impact technology can have on mood.</li> <li>Learning about cyberbullying.</li> <li>Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.</li> </ul>
Term 4	<p><b>Journey inside a computer</b></p> <p>To know the roles that inputs and outputs play on computers. To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together To know what a tablet is and how it is different from a laptop/desktop computer.</p>	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, touchpad	
Term 5	<p><b>Creating media -Video trailers</b></p> <p>To know that different types of camera shots can make my photos or videos look more effective. To know that I can edit photos and videos using film editing software. To understand that I can add transitions and text to my video.</p>	application, camera angle, clip, edit, film editing software, graphics, import, key events, photo, plan, recording, sound effects, storyboard, time code, trailer, transition, video, voiceover, cross blur, crossfade, cross zoom, desktop, digital device, dip to black, directional wipe, laptop	
Term 6	<p><b>Data handling - comparisons cards databases</b></p> <p>To know that a database is a collection of data stored in a logical, structured and orderly manner. To know that computer databases can be useful for sorting and filtering data. To know that different visual representations of data can be made on a computer.</p>	categorise, category, chart, data, database, fields, filter, graph, information, interpret, PDF, questionnaire, record, representation, sort, spreadsheet	
	<p><b>Online safety - covered across all terms</b></p> <p>To know that not everything on the internet is true: people share facts, beliefs and opinions online. To understand that the internet can affect your moods and feelings. To know that privacy settings limit who can access your important personal information such as your name, age, gender etc To know what social media is and that age restrictions apply.</p>		

Year 4			
	Knowledge	Vocabulary	Skills
Term 1	<p><b>Collaborative learning</b></p> <p>To understand that software can be used collaboratively online to work as a team.</p> <p>To know what type of comments and suggestions on a collaborative document can be helpful.</p> <p>To know that you can use images, text, transitions and animation in presentation slides.</p>	<p>animations, average, bar chart, collaboration, comment, conditional formatting, contribution, data, edited, email account, format, freeze, icon, images, insert, link, multiple choice, numerical data, pie chart, presentations, resolved, reviewing comments, share, slides, software, spreadsheets, suggestions, survey, teamwork, themes, transitions</p>	<ul style="list-style-type: none"> <li>• Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.</li> <li>• Use online software for documents, presentations, forms and spreadsheets.</li> <li>• Using software to work collaboratively with others.</li> <li>• Understanding that software can be used collaboratively online to work as a team</li> <li>• Recognising what appropriate behaviour is when collaborating with others online.</li> <li>• Using decomposition to solve a problem by finding out what code was used</li> <li>• Using decomposition to understand the purpose of a script of code.</li> <li>• Creating algorithms for a specific purpose.</li> <li>• Coding a simple game</li> <li>• Incorporating variables to make code more efficient.</li> <li>• Remixing existing code</li> <li>• Building a web page and creating content for it.</li> <li>• Designing and creating a webpage for a given purpose.</li> <li>• Using software to work collaboratively with others</li> <li>• Understanding that information found by searching the internet is not all grounded in fact</li> <li>• Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others.</li> <li>• Identifying patterns through unplugged activities.</li> <li>• Using past experiences to help solve new problems.</li> <li>• Using abstraction to identify the important parts when completing both plugged and unplugged activities.</li> <li>• Using abstraction and pattern recognition to modify code.</li> <li>• Using tablets or digital cameras to film a weather forecast.</li> <li>• Understanding that weather stations use sensors to gather and record data which predicts the weather.</li> </ul>
Term 2	<p><b>Further coding - Scratch</b></p> <p>To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch.</p> <p>To know what a conditional statement is in programming.</p> <p>To understand that variables can help you to create a quiz on Scratch.</p>	<p>broadcast block, code blocks, conditional, coordinates, decomposition, features, game, information, negative numbers, orientation, parameters, position, program, project, script, sprite, stage, tinker, variables</p>	
Term 3	<p><b>Website Design - Google</b></p> <p>To know that a website is a collection of pages that are all connected.</p> <p>To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks.</p> <p>To know that websites should be informative and interactive.</p>	<p>assessment, audience, collaboration, content, contribution, create, design, embed, evaluate, features, hyperlinks, images, insert, online, plan, progress, review, web page, website, World Wide Web, checklist, Google Sites, hobby, homepage, published, record, style, subpage, tab, theme</p>	
Term 4	<p><b>HTML</b></p> <p>To understand and identify examples of HTML tags.</p> <p>To understand what changing the HTML and CSS does to alter the appearance of an object on the web</p> <p>To understand that copyright means that those images are protected and to understand that we should do a "creative commons" image search if we wish to use images from the internet.</p> <p>To know what "fake news" is and ways to spot websites that carry this type of misinformation.</p> <p>To know what the "inspect" elements tool is and ways of using it to explore and alter text and images.</p>	<p>code, component, content, copyright, CSS, end tag, fake news, hacking, heading, headline, hex code, HTML, input, internet browser, output, paragraph, permission, remixing, script, start tag, tags, text, URL, webpage</p>	
Term 5	<p><b>Computational thinking</b></p> <p>To know that combining computational thinking skills can help you to solve a problem.</p> <p>To understand that pattern recognition means identifying patterns to help them work out how the code works.</p> <p>To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.</p>	<p>abstraction, algorithm, code, computational thinking, decomposition, input, logical reasoning, output, pattern recognition, script, sequence, variable</p>	
Term 6	<p><b>Data handling - Investigating weather</b></p> <p>To know that computers can use different forms of input to sense the world around them so that they can record and</p>	<p>accurate, backdrop, climate zone, cold, collaboration, condensation, cylinder, degrees, evaporation, extreme weather, forecast, heat sensor, lightning,</p>	

	<p>respond to data ('sensor data').</p> <p>To know that a weather machine is an automated machine that responds to sensor data.</p> <p>To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.</p>	<p>measurement, pinwheel, presenter, rain, satellite, script, sensitive, sensor data, solar panel, tablet/digital camera, temperature, thermometer, tornado, warm, weather, weather forecast, wind</p>	<ul style="list-style-type: none"> <li>Using keywords to effectively search for information on the internet.</li> <li>Searching the internet for data.</li> <li>Designing a device which gathers and records sensor data.</li> </ul>
	<p><b>Online Safety - covered across all terms</b></p> <p>To understand some of the methods used to encourage people to buy things online.</p> <p>To understand that technology can be designed to act like or impersonate living things.</p> <p>To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.</p> <p>To understand what behaviours are appropriate in order to stay safe and be respectful online.</p>	<p>accuracy, advantages, advertisements, belief, bot, chatbot, distractions, hashtag, implications, in-app purchases, influencer, recommendations, risks, screen time, search results, snippets, sponsored, trustworthy</p>	<ul style="list-style-type: none"> <li>Learning to make judgements about the accuracy of online searches.</li> <li>Identifying forms of advertising online.</li> <li>Recognising what appropriate behaviour is when collaborating with others online.</li> <li>Reflecting on the positives and negatives of time online.</li> <li>Identifying respectful and disrespectful online behaviour.</li> <li>Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others.</li> </ul>
<b>Year 5</b>			
	<b>Knowledge</b>	<b>Vocabulary</b>	<b>Skills</b>
<b>Term 1</b>	<p><b>Search engines</b></p> <p>To know how search engines work.</p> <p>To understand that anyone can create a website and therefore we should take steps to check the validity of websites.</p> <p>To know that web crawlers are computer programs that crawl through the internet.</p> <p>To understand what copyright is.</p>	<p>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</p>	<ul style="list-style-type: none"> <li>Learning that external devices can be programmed by a separate computer.</li> <li>Learning the difference between ROM and RAM.</li> <li>Recognising how the size of RAM affects the processing of data.</li> <li>Understanding the fetch, decode, execute cycle.</li> <li>Learning the vocabulary associated with data: data and transmit.</li> <li>Learning how the data for digital images can be compressed.</li> <li>Recognising that computers transfer data in binary and understanding simple binary addition.</li> <li>Relating binary signals (Boolean) to the simple character-based language, ASCII.</li> <li>Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations.</li> <li>Understanding how bit patterns represent images as pixels.</li> </ul>
<b>Term 2</b>	<p><b>Music</b></p> <p>To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.</p> <p>To understand that using loops can make the process of writing music simpler and more effective.</p> <p>To know how to adapt their music while performing.</p>	<p>beat, bugs, coding, command, debug, decompose,, loop, mindmap, music, output, program language, program,pitch, program , repeat,rhythm, Scratch,soundtrack, tempo, timbre, tinker</p>	
<b>Term 3</b>	<p><b>Mars Rover 1 - data handling</b></p> <p>To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.</p> <p>To know what numbers using binary code look like and be able to identify how messages can be sent in this format.</p> <p>To understand that RAM is Random Access Memory and acts as the computer's working memory.</p>	<p>8-bit binary, addition, ASCII, binary code, boolean, byte, CPU, data, data transmission, decimal numbers, discovery, distance, hexadecimal, input, Mars Rover, the Moon, numerical data, output, planet, radio signal, RAM, scientist, sequence, signal, simulation, space, subtraction,</p>	

	To know what simple operations can be used to calculate bit patterns.		<ul style="list-style-type: none"> <li>Decomposing animations into a series of images.</li> <li>Decomposing a program without support.</li> <li>Decomposing a story to be able to plan a program to tell a story.</li> <li>Predicting how software will work based on previous experience.</li> <li>Writing more complex algorithms for a purpose.</li> <li>Programming an animation.</li> <li>Iterating and developing their programming as they work.</li> <li>Confidently using loops in their programming.</li> <li>Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.</li> <li>Writing code to create a desired effect</li> <li>Using a range of programming commands</li> <li>Using repetition within a program.</li> <li>Amending code within a live scenario.</li> <li>Using logical thinking to explore software more independently, making predictions based on their previous experience.</li> <li>Using a software programme (Sonic Pi/Scratch) to create music</li> <li>Using video editing software to animate.</li> <li>Identify ways to improve and edit programs, videos, images etc.</li> <li>Independently learning how to use 3D design software package TinkerCAD.</li> <li>Developing searching skills and learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns.</li> <li>Understanding how data is collected in remote or dangerous places and how it might be used to tell us about location</li> <li>Learn about different forms of communication that have developed with the use of technology, identifying possible dangers online and learning how to stay safe.</li> <li>Independently learning how to use 3D design software package TinkerCAD.</li> </ul>
Term 4	<p><b>Micro:bit</b></p> <p>To know that a Micro:bit is a programmable device. To know that Micro:bit uses a block coding language similar to Scratch. To understand and recognise coding structures including variables. To know what techniques to use to create a program for a specific purpose (including decomposition).</p>	algorithm, animation, app, blocks, bluetooth, code block, connection, create, debug, decompose, designing, desktop, device, download, images, input, instructions, laptop, load, loop, Micro:bit, outputs, pairing, pedometer, polling, predict, program, repetition, reset, sabotage, scoreboard, screen, systematic, tablet, tinkering, USB, variables, wifi, wireless, wires	
Term 5	<p><b>Creating media - Stop motion animation</b></p> <p>To know that decomposition of an idea is important when creating stop-motion animations. To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. To know that editing is an important feature of making and improving a stop motion animation.</p>	animation, animator, background, character, decomposition, design, edit, evaluate, flip book, fluid movement, frame, model, moving images, still image, storyboard, thaumatrope, zoetrope (Option 1 add in: digital device, onion skinning, stop motion) (Option 2 add in: effects, photos, script)	
Term 6	<p><b>Mars Rover 2</b></p> <p>To understand that bit patterns represent images as pixels. To understand that the data for digital images can be compressed. To know the difference between ROM and RAM. To understand various techniques that will improve the design of a 3D object (using CAD software).</p>	3D, algorithm, binary image, CAD, compression, CPU, data, drag and drop, "Fetch, decode, execute", ID card, input, JPEG, memory, online community, operating system, output, pixels, RAM, responsible, RGB, ROM, safe	
	<p><b>Online safety - covered across all terms</b></p> <p>To know different ways we can communicate online. To understand how online information can be used to form judgements. To understand some ways to deal with online bullying. To know that apps require permission to access private information and that you can alter the permissions.</p>	accurate information, advice, app permissions, apps, bullying, communication, health, judgement, memes, mental health, mindfulness, mini-biography, online communication, organisation, positive contributions, real world, strong password, summarise, support	<ul style="list-style-type: none"> <li>Recognising that information on the Internet might not be true or correct and learning ways of checking validity.</li> <li>Learning what to do if they experience bullying online.</li> </ul>

	To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.		<ul style="list-style-type: none"> <li>Evaluating the pros and cons of online communication and learning to use an online community safely.</li> <li>Identifying possible dangers online and learning how to stay safe.</li> </ul>
<b>Year 6</b>			
	<b>Knowledge</b>	<b>Vocabulary</b>	<b>Skills</b>
Term 1	<p style="text-align: center;"><b>Bletchley Park</b></p> <p>To understand the importance of having a secure password and what "brute force hacking" is.</p> <p>To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2.</p> <p>To know about some of the historical figures that contributed to technological advances in computing.</p> <p>To understand what techniques are required to create a presentation using appropriate software.</p>	acrostic code, brute force hacking, caesar cipher, chip and pin system, cipher, code, combination, contribute, convince, date shift cipher, discovery, hero, invention, Nth Letter Cipher, password, Pig Latin, Pigpen cipher, present, scrambled, secret, secure, technological advancement, trial and error	<ul style="list-style-type: none"> <li>Learning about the history of computers and how they have evolved over time.</li> <li>Using past experiences to help solve new problems</li> <li>Writing increasingly complex algorithms for a purpose.</li> <li>Debugging quickly and effectively to make a program more efficient</li> <li>Remixing existing code to explore a problem.</li> <li>Changing a program to personalise it.</li> <li>Evaluating code to understand its purpose.</li> <li>Predicting code and adapting it to a chosen purpose</li> <li>Using search and word processing skills to create a presentation.</li> <li>Understanding the importance of secure passwords and how to create them.</li> <li>Using search engines safely and effectively.</li> <li>Decomposing a program into an algorithm.</li> <li>Using and adapting nested loops.</li> <li>Programming using the language Python.</li> <li>Using logical thinking to explore software independently, iterating ideas and testing continuously.</li> <li>Understanding and identifying barcodes, QR codes and RFID.</li> <li>identifying devices and applications that can scan or read barcodes, QR codes and RFID</li> <li>Understanding how barcodes, QR codes and RFID work.</li> <li>Gathering and analysing data in real time.</li> <li>Creating formulas and sorting data within spreadsheets.</li> <li>Learning how 'big data' can be used to solve a problem or improve efficiency</li> <li>Using the understanding of historic computers to design a computer of the future.</li> <li>Planning, recording and editing a radio play.</li> <li>Creating and editing sound recordings for a specific purpose.</li> </ul>
Term 2	<p style="text-align: center;"><b>Introduction to Python - Programming</b></p> <p>To know that there are text-based programming languages such as Logo and Python.</p> <p>To know that nested loops are loops inside of loops.</p> <p>To understand the use of random numbers and remix Python code.</p>	algorithm, code, command, design, import, indentation, input, instructions, loop, output, patterns, random, remix, repeat, shape	
Term 3	<p style="text-align: center;"><b>Data Handling - Big Data</b></p> <p>To know that data contained within barcodes and QR codes can be used by computers.</p> <p>To know that infrared waves are a way of transmitting data.</p> <p>To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.</p> <p>To know that data is often encrypted so that even if it is stolen it is not useful to the thief.</p>	algorithms, barcode, binary, Boolean, brand, chips, commuter, contactless, data, encrypted, infrared, proximity, QR code, QR scanner, radio waves, RFID, signal, spreadsheet, systems analyst, transmission, wireless	
Term 4	<p style="text-align: center;"><b>History of Computers</b></p> <p>To know that radio plays are plays where the audience can only hear the action so sound effects are important.</p> <p>To know that sound clips can be recorded using sound recording software.</p> <p>To know that sound clips can be edited and trimmed.</p>	background noise, byte, computer, CPU, device, FX, gigabyte, GPU, graphics, hard drive, kilobytes, megabyte, memory storage, mouse, operating system, overlay, radio play, RAM, record, ROM, script, smartphone, sound clip, sound effect, terabyte, touch screen, track, trackpad	
Term 5	<p style="text-align: center;"><b>Data Handling - Big Data</b></p> <p>To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'.</p> <p>To know that devices that are not updated are most vulnerable to hackers.</p> <p>To know the difference between mobile data and WiFi.</p>	Big Data, bluetooth, corrupted, data, energy, GPS, improve, infrared, Internet of Things, personal, privacy, QR codes, revolution, RFID, SIM, simulation, Smart city, Smart school, stop motion, threat, wifi, wireless	
Term 6	<p style="text-align: center;"><b>Inventing a product</b></p> <p>To know what designing an electronic product involves.</p>	adapt, advert, algorithm, bugs, coding, debugging, design, edit, electronic, evaluate, facts, image rights,	

	<p>To know which programming software/ language is best to achieve a purpose.</p> <p>To know the building blocks of computational thinking e.g. sequence, selection, repetition, variables and inputs and outputs.</p>	<p>images, influence, information, inputs, loops, manipulation, opinions, output, photos, product, program, repetition, screenshot, search engine, selection, sequence, snippets, software, structures, variables, video, website</p>	<ul style="list-style-type: none"> <li>• Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files).</li> <li>• Understanding that computer networks provide multiple services.</li> <li>• Learning about the Internet of Things and how it has led to 'big data'.</li> <li>• Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions.</li> <li>• Using design software TinkerCAD to design a product.</li> <li>• Creating a website with embedded links and multiple pages</li> </ul>
	<p><b>Online Safety - covered across all terms</b></p> <p>To know that a digital footprint means the information that exists on the internet as a result of a person's online activity.</p> <p>To know what steps are required to capture bullying content as evidence.</p> <p>To understand that it is important to manage personal passwords effectively.</p> <p>To understand what it means to have a positive online reputation.</p> <p>To know some common online scams.</p>	<p>anonymity, antivirus, biometrics, block and report, digital personality, financial information, malware, personality, phishing, reliable source, reputation, scammers, screengrab, software updates, two factor authentication</p>	<ul style="list-style-type: none"> <li>• Learning about the positive and negative impacts of sharing online.</li> <li>• Learning strategies to create a positive online reputation</li> <li>• Understanding the importance of secure passwords and how to create them.</li> <li>• Learning strategies to capture evidence of online bullying in order to seek help.</li> <li>• Recognising that updated software can help to prevent data corruption and hacking</li> </ul>