Computing:
Progression of Conceptual & Procedural Knowledge, Vocabulary and Concepts

CURRICULUM PILLARS	GLOBAL CITIZENS	CIVILISATIONS & NATIONS	LIFE ON EARTH	CULTURE & COMMUNITY

EYFS			
	Autumn term (Proposed topic: All about me, Where we live)	**Spring term (Proposed topic: Space, Farms)**	**Summer term (Proposed topic: Fairy tales, Exploration)**
Progression of content Discrete Computing Sessions	Computing through continuous provision (Taking photos) Exploring mechanical toys from the past Computing systems and networks : Learning about the main parts of a computer and how to use the keyboard and mouse. Searching for information on the internet linked to the local area.	Programming 1 Learning to give and receive instructions and understand the importance of precise instructions. Computing systems and networks Exploring with different computer hardware and learning to operate a camera.	Programming 2 Learning about directions. Programming a Beebot Data Handling Sort and categorise data.
Progression of content Embedded Computing Sessions	Our computing opportunities are centred around play based, unplugged & plugged activities that focus on building children's listening skills curiosity, creativity and problem solving. Examples: listening to music, watching video clips, playing games on the interactive whiteboards, sorting & classifying data.		
Key Vocabulary	Camera, computer, electronic, by hand, battery, button, lever, knob, wind up, mouse, programme, keyboard, information, internet, search, bee bot, program, instructions, data, vote, sort.		

Year 1 & Year 2			
Cycle A	**Autumn term (Overarching topic: Animal Magic)**	**Spring term (Overarching topic: My Place in the World)**	**Summer term (Overarching topic: Roads & Routes)**
Progression of content Discrete Computing Sessions	**To Connect** Introduce logging in and navigating round a computer including online applications. Develop keyboard and mouse skills to enable accurate working. Identify and understand online risks and how to stay safe online including age restrictions, keeping information private and individual user responsibility. **To Communicate** Investigate and use a range of applications and devices in order to communicate. Develop correct use of keyboard functions and short-cuts utilising the skills of touch typing.	**Programming** Introduce algorithms, decomposition and debugging in relation to familiar contexts to identify why instructions need to be specific and unambiguous.	**Programming** Develop early programming skills using Bee-Bot or virtual Bee-Bot **To Collect** Identify what data is and the different ways it can be represented. Develop an understanding of why data is useful, how it can be used and ways in which it can be gathered and recorded both by humans and computers.
Progression of content Embedded Computing Sessions	**To Communicate** Use a range of applications and devices in order to present work and ideas for a range of purposes.	**To Communicate** Use a range of applications and devices in order to present work and ideas for a range of purposes. **To Connect** Use the internet in a safe and respectful way.	**To Communicate** Use a range of applications and devices in order to present work and ideas for a range of purposes. **To Connect** Begin to show independence with research skills, identifying ways to find relevant information. Use the internet in a safe and respectful way.

Key vocabulary	Communicate, connect, devices, digital footprint, emotion, feelings, internet, internet safety, online, personal information, posting, respect, sharing, smart device, strangers, trust, wired, Wireless Battery, buttons, computer, desktop, Device, electricity, invention, laptop, Technology, wire Backspace, copyright, image, import, keyboard character, paste, undo/redo, touch typing	Algorithm, bug, computer, debug, Decompose, device, input, instructions, output, solution	Algorithm, Bee-Bot, computing code, computer program, explain, explore, Instructions, predict, tinker, video Categorise, chart, computer, data, Information, label, pictogram, record , Sort, table, text

Year 1 & Year 2			
Cycle B	**Autumn term (Overarching topic: Explorers)**	**Spring term (Overarching topic: Spotting Spring)**	**Summer term (Overarching topic: Funny Bones)**
Progression of content Discrete Computing Sessions	**To Connect** Explore the use of computers and applications in the wider world. Introduce how inputs and outputs work. Identify and understand online risks and how to stay safe online including age restrictions, keeping information private and individual user responsibility. **To Communicate** Investigate and use a range of applications and devices in order to communicate. Develop correct use of	**Programming** Develop an understanding of algorithms, how to programme them and how they can be developed to be more efficient. Explore the use of Blocks within Scratch Jr to control motion looks and sounds. **To Communicate** Develop the use of digital imagery utilising different devices through searches, photography skills, and the use of editing tools and applications.	**Programming** Develop the use of Blocks within Scratch Jr to control events, sensing and drawing in addition to motion looks and sounds. **To Communicate** Introduce storyboarding to be applied in the creation of simple stop motion animation using different devices and applications

	keyboard functions and short-cuts utilising the skills of touch typing.		
Progression of content Embedded Computing Sessions	**To Communicate** Use a range of applications and devices in order to present work and ideas for a range of purposes.	**To Communicate** Use a range of applications and devices in order to present work and ideas for a range of purposes. **To Connect** Use the internet in a safe and respectful way.	**To Communicate** Use a range of applications and devices in order to present work and ideas for a range of purposes. **To Connect** Begin to show independence with research skills, identifying ways to find relevant information. Use the internet in a safe and respectful way.
Key vocabulary	Accept, consent, content, offline, online Password, permission, personal information, terms and conditions, trusted adult Battery, buttons, computer, desktop, Device, electricity, invention, laptop, Technology, wire Backspace, copyright, image, import, keyboard character, paste, undo/redo, touch typing	Animation, bug, code, debug, icon, Imitate, instructions, sequence Coding – Scratch Jr, code blocks, algorithms, sprites/speeds, repeat and loop control blocks, start/finish, direction Crop, delete, download, drag and drop, editing software, image, import, resize, save as, search engine, sequence, smart device, storage space, visual effects	Coding – Scratch Jr, code blocks, algorithms, sprites/speeds, repeat and loop control blocks, start/finish, direction Animator, storyboard, contraption, upload, decompose, design, download, film review, filming, import, image, plan, sketch, software, stop-motion

Year 3 & Year 4			
Cycle A	**Autumn term (Overarching topic: Flash! Bang!)**	**Spring term (Overarching topic: Shang Dynasty)**	**Summer term (Overarching topic: Rainforests)**
Progression of content Discrete Computing Sessions	**To Connect** Introduce the concept of networks, learning how devices communicate. Identify components, learning how information is owned and shared and exploring examples of real-world networks. Identify risks posed by online communication, and that comments online can be the same as bullying. Identify ways to deal with upsetting materials and how to protect our personal information including using privacy settings. **Programming** Use appropriate programming application (Scratch) to develop the use of motion, looks and sounds in short programs and animations	**Programming** Use appropriate programming application (Scratch) to develop the use of drawing, events and control in short programs and animations	. **To Connect** Introduce and explore different methods of communicating and collaborating online including messaging and moderated blogs. Identify the behaviours of a responsible digital citizen by considering both the content and expression of information sent. **Programming** Use appropriate programming application (Scratch) to develop the use of sensing, variable and operators in short programs and animations
Progression of content Embedded Computing Sessions	**To Connect** Develop research skills, identifying ways to find relevant information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate**	**To Connect** Develop research skills, identifying ways to find relevant information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate**	**To Connect** Apply different methods of communicating and collaborating online primarily using moderated blogs as a responsible digital citizen. **To Communicate**

	Use some of the advanced features of applications and devices in order to communicate to a high standard.	Use some of the advanced features of applications and devices in order to communicate to a high standard.	Use some of the advanced features of applications and devices in order to communicate to a high standard.
Key vocabulary	Computer parts – CPU, GPU, RAM, HDD QR Codes and how to use them Other portable electronic devices accurate, age restricted, autocomplete, beliefs, block, content, digital devices, fact, fake news, opinion, privacy settings, reliable, report, requests, search engine, security questions, smart devices, social media platforms, social networking Animation, sprite, application, Code, code block, debug, decompose, Interface, loop, predict, program, remixing code, repetition code, review	Animation, sprite, application, Code, code block, debug, decompose, Interface, loop, predict, program, remixing code, repetition code, review	Account, spam, attachment, username, BCC, CC, computer, cyberbullying, Domain, email, email account, emoji, Information, log off/ log on, password Code, code block, conditional statement, decompose, direction, feature, icon, orientation, Position, program, project, stage, tinker. variable

Year 3 & Year 4			
Cycle B	**Autumn term (Overarching topic: Blood, Bones & Body Bits)**	**Spring term (Overarching topic: Stone Age to Romans)**	**Summer term (Crossing Continents)**
Progression of content Discrete Computing Sessions	. **To Connect** Introduce the concept of networks, learning how devices communicate. Identify components, learning how information is owned and shared and exploring examples of real world networks. Identify risks posed by online communication, and that comments online can be the same as bullying. Identify ways to deal with upsetting materials and how to protect our personal information including using privacy settings.	**Programming** Identify and explore the four pillars of computational thinking – abstraction, algorithm design, decomposition and pattern recognition – using both device and non-device based activities.	**To Collect** Research and store data using spreadsheets and other applications designed for this purpose. **To Communicate** Identify key layout, design and transition aspects of presentations and their effect on an audience. Explore adding hyperlinks and sounds within a presentation, considering the desired effect on an audience.
Progression of content Embedded Computing Sessions	**To Connect** Develop research skills, identifying ways to find relevant information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Apply the design and layout aspects of presentations considering their effect on an audience.	**To Connect** Develop research skills, identifying ways to find relevant information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Use some of the advanced features of applications and devices in order to communicate to a high standard.	**To Connect** Develop research skills, identifying ways to find relevant information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Create a presentation using an appropriate application. Use hyperlinks and sounds within a presentation, considering the desired effect on an audience.

Key vocabulary	Network maps – house, router, ISP, smart phones, web server, cables Internet uses – communication, file sharing, websites, uploading/downloading, streaming media, games ad/ advertisement, accuracy, alter, belief, bot, chatbot, fact, fake, gaming, in-app purchase, influencer, implication, judgement, live streaming, opinion, pop ups, reliable, respectful, search engine, social media, snippet, sponsored	Abstraction, algorithm, design, code, code blocks, computer, Decompose, problem	Decomposition - data without any identification, order or sequence Sequencing and pattern recognition Algorithm, automated machine Calculate, device, forecast, log data, predict, record, sensor, Source, spreadsheet,

Year 5 & Year 6			
Cycle A	**Autumn term (Overarching topic: Ancient Greece)**	**Spring term (Overarching topic: Extreme Earth)**	**Summer term (Overarching topic: Conflict & Resolution – World War 11)**
Progression of content Discrete Computing Sessions	**To Connect** Extend efficient use of search engines including considering accuracy and ownership of information. Identify how search engines work (web index. page rank, web crawlers) Navigate the internet in an informed, safe and respectful way. **Programming** Use appropriate programming application (Scratch) to develop the use of motion, looks and sounds in short programs and animations	**Programming** Use appropriate programming application (Scratch) to develop the use of events and control in short programs and animations. **To Collect** Investigate the different ways devices and applications gather, store and transfer data securely. Identify and apply ways to analyse, evaluate and present data.	**Programming** Explore a range of codes from simple Roman ciphers to the Enigma code. Identify the importance of cyber-security and investigate 'brute force hacking'. **To Communicate** Design, plan and create a presentation using an appropriate application. Use hyperlinks, transitions, animations and sounds within a presentation, considering the desired effect on an audience.
Progression of content Embedded Computing Sessions	**To Connect** Develop efficient research skills, identifying ways to quickly find relevant and reliable information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate**	**To Connect** Develop efficient research skills, identifying ways to quickly find relevant and reliable information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate**	**To Connect** Develop efficient research skills, identifying ways to quickly find relevant and reliable information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Design, plan and create a presentation using an appropriate application.

	Apply the features of appropriate applications to efficiently create high quality work to communicate relevant information on specific topics	Apply the features of appropriate applications to efficiently create high quality work to communicate relevant information on specific topics	Use hyperlinks, transitions, animations and sounds within a presentation, considering the desired effect on an audience.
Key vocabulary	Application 'app', anonymity, bullying emoji, gif, hacked, interpreted, judgement, meme, mental health, misinterpreted, permissions, reliable, reputation Algorithm, company logo, data leak, data privacy, inaccurate information, Index, keywords, network, online, page rank, TASK, web crawler, website, WWW	Barcode, signal, boolean, systems or data, brand, analyst, commuter, transmission, contactless, data, data privacy, encrypt, infrared waves NFC, QR code, radio waves, RFID big data, bluetooth, corrupt data, digital revolution, GPS, infrared waves, IoT, QR code, SIM, computer simulation smart school/city	acrostic code, brute force hacking, Caesar cipher, cipher, encrypt, invention, Nth letter cipher, password, pigpen cipher, technological advancement, trial and error

Year 5 & YEAR 6			
Cycle B	**Autumn term (Overarching topic: Ways of Seeing, Ways of Being)**	**Spring term (Overarching topic: Global Citizens)**	**Summer term (Overarching topic: Building a Nation)**
Progression of content Discrete Computing Sessions	**To Connect** Extend efficient use of search engines including considering accuracy and ownership of information. Identify how search engines work. Navigate the internet in an informed, safe and respectful way. **Programming** Identify the link between screen imagery, pixels and binary code. Investigate image formats including compression and transfer. Extend the knowledge of how computers work including their RAM and ROM Use appropriate programming application (Scratch) to develop the use of drawing tools and features in short programs and animations **To Communicate** Apply the features of appropriate CAD applications to create 3D designs and visualisations.	**Programming** Use appropriate programming application (Scratch) to develop the use of sensing, variables and operators in short programs and animations. **To Collect** Investigate the different ways devices and applications gather, store and transfer data securely. Identify and apply ways to analyse, evaluate and present data.	**To Connect** Research the history and development of computers using a range of relevant and reliable sources. Explore the impact of computers on a changing world and within the building of 'Modern Britain'. **To Communicate** Design, plan and create a presentation using an appropriate application. Use hyperlinks, transitions, animations and sounds within a presentation, considering the desired effect on an audience.

Progression of content Embedded Computing Sessions	**To Connect** Develop efficient research skills, identifying ways to quickly find relevant and reliable information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Apply the features of appropriate applications to efficiently create high quality work to communicate relevant information on specific topics	**To Connect** Develop efficient research skills, identifying ways to quickly find relevant and reliable information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Apply the features of appropriate applications to efficiently create high quality work to communicate relevant information on specific topics	**To Connect** Develop efficient research skills, identifying ways to quickly find relevant and reliable information of specific topics. Navigate the internet in an informed, safe and respectful way. **To Communicate** Design, plan and create a presentation using an appropriate application. Use hyperlinks, transitions, animations and sounds within a presentation, considering the desired effect on an audience.
Key vocabulary	Application 'app', anonymity, bullying emoji, gif, hacked, interpreted, judgement, meme, mental health, misinterpreted, permissions, reliable, reputation Algorithm, binary image, bit, bit pattern, CAD, compression file, CPU, data, digital image, encode, JPEG, Operating system, pixels RGB, ROM, RAM	Algorithm, code (computer) computer command, sensing, proximity, inputs, variables, Boolean operators, conditions, reporter operations, random Barcode, signal, boolean, systems or data, brand , analyst, commuter, transmission, contactless, data, data privacy, encrypt, infrared waves NFC, QR code, radio waves, RFID big data, bluetooth, corrupt data, digital revolution, GPS, infrared waves, IoT, QR code, SIM, computer simulation smart school/city	Byte, CPU, Memory Storage, Operating system, RAM, ROM, trackpad Memory sizes: kb, mb, gb, tb