National Curriculum Aims:

EYFS Framework

Nursery

- Remember rules without needing an adult to remind them.
- Match their developing physical skills to tasks and activities in the setting.
- Solve real world mathematical problems with numbers up to 5.
- Discuss routes and locations, using words like 'in front of' and 'behind'.
- Notice and correct an error in a repeating pattern.
- Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then.
- Explore how things work.

Reception

- Show resilience and perseverance in the face of a challenge.
- Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.
- Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
- Count objects, actions and sounds.
- Link the number symbol (numeral) with its cardinal number value.
- Select, rotate and manipulate shapes to develop spatial reasoning skills.
- Continue copy and create repeating patterns.
- Explore, use and refine a variety of artistic effects to express their ideas and feelings.

National Curriculum – Key Stage 1:

- 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.

National Curriculum Key Stage 2:

- 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.

STRAND Programming	**Nursery**	**Reception**	**Year 1**	**Year 2**
Core Knowledge	• To understand that instructions need to be in the right order. • To know that you can programme Toys and devices to move (cause and effect)		• To understand that an algorithm is when instructions are put in an exact order. • To know that we call errors in an algorithm 'bugs' and fixing these is 'debugging' • To understand the basic functions of a Bee Bot To know that algorithms move a Bee Bot accurately to a chosen destination.	• An algorithm is a sequence of instructions or set of rules that are followed to complete the task • To understand that decomposition means breaking a problem down into manageable chunks and that it is important in computing. • I can explain that computers use algorithms to make predictions • I can write a clear and precise algorithm. • I understand the meaning of the word debugging • To understand that the characters on ScratchJR is controlled by programming blocks. • To know that a loop is an instruction repeated multiple times • I can search for and find an appropriate image. • To understand that an animation is made up of a sequence of photographs. • To know that small changes in my frames with create a smoother looking animation. • To know what software creates simple animations and some of its features eg: onion skinning.
Examples of activities and resources	Simon says. Washing hands, getting dressed etc chid led interest linking to real world inside and out.		**Programming 1**: algorithms unplugged L1- To understand what an algorithm is. *Activity: Doll and clothes.* L2- To follow instructions precisely to carry out an action. Activity: Jam sandwich video. Drawing a creature Programming 2: Bee Bot L5- debug an algorithm. L1- tinker with Beebot L3- plan and follow a set of instructions precisely be a Bee Bot. L5- 3 little pigs **Challenge** I can complete a number of challenges by: thinking first about what they might do first ('predict')	**Programming 1: Algorithms and debugging** L1:https://www.bbc.co.uk/bitesize/topics/zkcqn39/articles/zqrq7ty Dinosaur move game as a class with masks and keyboard and green flag. Children give instructions on how to make the dinosaur move. L1continued: show them the dino game on Scratch. Looking at the blocks making predictions. L2- quick draw https://www.bbc.co.uk/bitesize/topics/zkcqn39/articles/zqrq7ty L5- debugging unplugged lego **Programming 2** L1- Scratch Junior Tinkering L2- create an animation (loop) L3: scratch Junior follow an algorithm (creating jokes) **Challenge** L5 three little pigs **Creating media: Stop motion (Using tablets)** L1: What is animation? History of animation and create a flipbook. L2:What is stop motion? J2E Create an animation using onion skinning. L3: My first animation (stop motion studio) Space themed animation L4: Planning my project Using a variety of backgrounds and objects plan a collaborative space themed animation. L5: Creating my project In pairs a minimum of 10 frames. **Challenge** Can you move objects back and forth across the scene. Have more than one object which both move between individual frames.

Key Vocabulary	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 algorithm, arrow, back, backwards, Bee-Bot, circle, debug, direction, directions, forward, instructions, left, program, right, route, sequence, straight on, turn		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 algorithm, artificial intelligence, Bee-Bot, clear, code, debug, demonstration, filming, inputting, instructions, pause, precise, predict, program, tinker, video, video recording (Option 2 only: emulator, virtual)	abstraction, algorithm, artificial intelligence, bug, clear, correct, data, debug, decompose, error, key features, loop, predict, unnecessary algorithm, animation, blocks, bug, button, CGI, computer code, code (verb), debug, fluid, icon, imitate, instructions, loop, 'on tap', programming, repeat, Scratch JR, sequence, sound recording Animation, animator, background, digital device, drawing, flipbook, frames, moving images, opinion skinning, still images (Option 1- as above,plus: decompose, object, plan) (Option 2- as above, plus: decompose, digital camera, duration, focus, import, object, plan, save, upload) (Option 3- as above, plus: debug, effects, evaluate, fluid, pen tool, static)
	Year 3	**Year 4**	**Year 5**	**Year 6**
Core Knowledge	• To know that Scratch is a programming language and some of its basic functions. • To understand how to use loops to improve programming. • To understand how decomposition is used in programming • To know that different types of camera shots can make my photos or videos look more effective. • To know I can edit photos and videos using film editing software. • To understand that I can add transitions and text to my video.	• I can explain the purpose of an algorithm • I can decompose a problem • I can use an algorithm to code a program • To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. • To know what a conditional statement is in programming. • To know that combining computational thinking skills can help you to solve a problem. • To understand that pattern recognition means identifying patterns to help them work out how the code works. • To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.	• To know that a soundtrack is music for a film/video and that one way of composing these is on programming software. • To understand that using loops can make the process of writing music simpler and more effective. • To know how to adapt their music while performing. • To know that decomposition of an idea is important when creating stop-motion animations. • To understand that stop motion animation filmed one frame at a time using models, and with tiny changes between each photographs. • To know that editing is an important feature of making and improving a stop option animation. Micro Bits • 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).	Understand the basic functions of the BBC micro:bit. • Explore how sports and wellbeing technology works and its applications. • Learn how to mimic the functionality of sports gadgets using the micro:bit. • Develop an awareness of how technology can be used to enhance physical fitness and wellbeing Understand the challenges that Gladiators face in their performances and think critically about solutions. • Learn about annotated sketches, cross-sectional and exploded diagrams and how to use them in design. • Research existing gadgets and sports technology to inform their designs. • Draw and label their own gadget inventions, choosing an appropriate diagram method to depict their creation. Understand the process of iterative design and its importance in improving product design. • Collaborate as a team to refine design ideas and develop a final version. • Create a labelled sketch and a cross-sectional or exploded diagram of the design. • Write a description of the design explaining its function, purpose, and how it addresses a Gladiator's challenge. • Optional: Develop creative marketing campaigns or presentations to support their designs
Examples of activities and resources	**Y3 Scratch** L1: tinkering with scratch Explain what each of the blocks do • Add a background • Change sprite • Make it move L2: What is a loop? L3: Decomposition	**Y3 Scratch** L5: Robot bop- to write an algorithm, explain purpose, decompose and code a program **Y4 Programming 1: Further coding with scratch** L1/2 Scratch reminder what do the blocks do	**Programming: Music Scratch** L1: Tinkering with Scratch Music elements L2: Scratch soundtracks L3:Planning a soundtrack L4: Programming a sound track **Challenge** L5: Battle of the bands	**Micro Bits** **Gladiators** L1: Gladiators Inventor Workshop #1 L2: Gladiators Inventor Workshop #2 L3: Gladiators Inventor Workshop #3

	What blocks have been used? Plan their own animation based on class topic? Including loops. **Challenge** Storytelling debugging.	L3: introduction to variables L4: making a variable **Challenge** L5: Times table project **Y4 Programming 2: Computational thinking** L1: What is computational thinking? L2:Decompostition L3: Abstraction and pattern recognition. L4: Algorithm design **Challenge** L5: applying computational thinking to solve a problem	**Creating media: Stop motion animation** L1: To understand what animation is Explore animation making a flipbook, zoetrope or thaumatrope. L2: Exploring stop motion In pairs take pictures of a ball morphing into something else. Us Microsoft photos to create an animation. L3: Plan my stop motion project Based on topic? L4: Stop motion creation **Challenge** L5: Editing stop motion project. **Programming 2: Micro Bits** L1: Tinkering with BBC Micro:bit L2: Programming an animation L3: Polling program L4: Programming a pedometer L5: Programming a scoreboard	
Key Vocabulary	algorithm, animation, application, code, code block, coding application, debug, decompose, interface, game, loop, predict, program, remixing code, repetition code, review, Scratch, sprite, tinker	broadcast block, code blocks, conditional, coordinates, decomposition, features, game, information, negative numbers, orientation, parameters, position, program, project, script, sprite, stage, tinker, variables abstraction, algorithm, code, computational thinking, decomposition, input, logical reasoning, output, pattern recognition, script, sequence, variable	beat, bugs, coding, command, debug, decompose, error, instructions, loop, melody, mindmap, music, output, performance, pitch, play, predict, programming, rhythm, tempo, timbre, tinker, tutorials, typing (Sonic Pi version add in: buffer, format, live loops, rehearsal, repetition, sleep, Sonic Pi, soundtrack, spacing, typo) (Scratch version add in: plan, repeat, scratch, soundtrack, spacing) 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) 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,	LED Display: The micro:bit has a small screen made of 25 tiny lights (LEDs) that can show pictures, numbers, and words. 2. Buttons: There are two buttons (A and B) and a touch-sensitive logo on the front that you can press to control games, start timers, or send messages. 3. Accelerometer: This is like a movement sensor inside the micro:bit that can tell when you shake it, tilt it, or move it in different directions. 4. Compass: The micro:bit has a tiny compass that knows which way is north, so it can tell you the direction you're facing. 5. Bluetooth radio: The micro:bit can talk wirelessly to other devices, like your tablet or another micro:bit, to share information or play games together. 6. Pins: On the bottom, there are connectors called pins that you can use to attach other electronics; like lights, speakers, or sensors. 7. Temperature Sensor: The micro:bit can measure how hot or cold the object it's placed on is, just like a thermometer. 8. Light Sensor: The micro:bit can also sense how bright or dark it is by measuring the light around it using the LED display.

			program, repetition, reset, sabotage, scoreboard, screen, systematic, tablet, tinkering, USB, variables, wifi, wireless, wires	

STRAND Computer systems and networks	**Nursery**	**Reception**	**Year 1**	**Year 2**
Core Knowledge	• To learn what a keyboard is and how to locate relevant keys. • To learn what a mouse is and to develop basic mouse skills such as moving and clicking. • To use a simple online paint tool to create digital art. • To recognise that a range of technology is used in places such as homes and schools • To learn how to operate a camera and /or iPad and use it to take photographs		• To know that "log in" and "log out" means to begin and end a connection with a computer • To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art. • To know that passwords are important for security. • I can navigate a computer using a mouse • To know that when we create something on a computer it can be more easily saved and shared than a paper version. • To know some of the simple graphic design features of a piece of online software. • To know that a spreadsheet is an electronic 'table' for sorting data.	• To learn how to log in and out of a computer. • To know the difference between a desktop and laptop computer. • To know that people control technology. • To know some input devices that give a computer an instruction about what to do (output). • To know that computers often work together. • To know that touch typing is the fastest way to type. • To know that I can make text a different style, size and colour. • To know that "copy and paste" is a quick way of duplicating text.
Examples of activities and resources	Phonics play top marks patterns IWB Art work snow men picture bonfire Laptop, phone, key board small world		**Computing systems and networks**: improving mouse skills L2: click and drag skills To develop mouse skills L3: Drawing shapes To use mouse skills to draw and edit shapes **Challenge** L4: Drawing a story To draw a scene from a story using digital tools **Skills showcase:** Rocket to the moon L1: Rocket materials To identify the parts of a rocket and create a digital list. L2: Rocket design	**Computing systems and networks 1:** What is a computer? L1: Computer parts To recognise the parts of a computer L2: inputs To recognise how technology is controlled L3:technology safari To recognise technology L4:invention To create a design for an invention L5: real world play To understand the role of computers **Computing systems and networks 2:** Word processing

			To design a rocket using a graphics editing programme. L3: Rocket building instructions To sequence a set of instructions L4: Making a rocket Follow instructions to build their rockets referring to their design. L5: Rocket launching To test a design and record data **Creating media: Digital imagery** Based around this unit can children take photographs of their learning and use editing software to create a collage.	L1: to begin to learn to touch type- key board detectives L2: learn to use a word processor- learning key board shortcuts. L3: Newspaper writer- adding images to a text document **Challenge** How many words can you type in a given time?
Key Vocabulary	Keyboard, arrow, click, computer 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		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 annotate, cells, components, create, data, debug, designing, digital content, digital image, document, e-document, edit, editing program, evaluate, folder, input, instructions, log in, photo, program, order, robot, save, sequence, share, software, spreadsheet, table	battery, buttons, camera, computer, desktop, device, digital, digital recorder, electricity, function, input, invention, keyboard, laptop, monitor, mouse, output, paying till, scanner, screen, system, tablet, technology, video, wires backspace, bold, copy, copyright, cut, delete, forward button, highlight, home row, home screen, image, import, italics, keyboard, keyboard character, keyword, layout, navigate, paste, redo, search, space bar, text, text effects, touch typing, underline, undo, word processing
	Year 3	**Year 4**	**Year 5**	**Year 6**
	• To understand what a network is and how school network might be organised • To know that a server is central to a network and responds to requests made. • To know that a router connects us to the internet. • To know how the internet uses networks to share files. • To understand that email stands for 'electronic mail' • To know that an attachment is an extra file added to an email. • To understand emails should contain appropriate and respectful content. • To know the roles that inputs and outputs play on computers. • To know what some of the components inside a computer are eg: CPU, ROM, RAM and hard drive and that they work together.	• To understand that software can be used collaboratively online to work as a team. • To know what type of comments and suggestions on a collaborative document can be helpful. • To know that you can use images, text, transitions and animation in presentation slides. • To know that a website is a collection of pages that are all connected. • To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. • To know that websites should be informative and interactive.	• To know how search engines work. • To understand that anyone can create a website and therefore we should take steps to check the validity of websites. • To know that web crawlers are computer programs that crawl through the internet. • To understand what copyright is.	• To understand the importance of having a secure password and what "brute force hacking" is. • 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. • To know about some of the historical figures that contributed to technological advances in computing. • To understand what techniques are required to create a presentation using appropriate software. • Learning about the history of computers and how they have evolved over time.

Examples of activities and resources	**Computing systems and networks 1: Networks and the internet** L1:What is a network – looking at the schools network L2**:** A files journey- **t**o understand how information moves around a network and recognise real-world networks L3: A website journey https://traceroute-online.com/ use this website to show them what happens when we request a website learning about routers. **Computing systems and networks 2: Emailing** L1: (as a starter) Communicating with technology L2: Sending an email- children learn to log in and out and send an email L3: adding an attachment **Challenge** L5: recognise when an email isn't genuine **Computing systems and networks 3: Journey inside a computer** L1:Inputs and outputs L2: Building a paper laptop Learning what inside a computer and why L3: following instructions- mimicking the CPU and EPU by working in groups to create a piece of art following an algorithm. L4: Computer memory – understanding ROM, RAM and hard drives. https://www.youtube.com/watch?v=HB4l2CgkcCo **Challenge** L5: Dismantling a tablet	**Computing systems and networks: Collaborative learning** L1: Team work- using 'Teams' children work collaboratively L2: Sharing a document- children to contribute to someone else's work. L3: Microsoft forms 1- creating a digital survey L4: Microsoft forms 2- sharing a survey L5: Shared spreadsheets- children to analyse data **Creating media: Website design** L1: getting to know Microsoft Sway To explore the features of Microsoft Sway. L2: Book review webpage To plan content for a collaborative webpage. L3: adding features To create an engaging webpage. L4: planning my website To plan and create a website. L5: creating my website To create and evaluate a website.	**Computing systems and networks: Search engines** L1: Searching basics Naming and comparing search engines. L2: Inaccurate information L3: Web quest L4:Information poster Copyright. **Optional Challenge** **L5**	**Computing systems and networks: Bletchley Park** L1: Secret code L2: Brute force hacking L3: Bletchley Park L4: Computing heroes Challenge L5: Computing Heroes part 2 **Creating media: History of computers** L3:First Computers L4: Computers that changed the world.
Key Vocabulary	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 attachment, bcc (blind carbon copy) cc (carbon copy), compose, content, cyberbullying, document, domain, download, email, email account, email address, emoji, emotions, fake,	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 (Microsoft version add in: rating) assessment, audience, collaboration, content, contribution, create, design,	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	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

	font, genuine, hacker, icons, inbox, information, link, log in, log out, negative language, password, personal information, positive language, reply, responsible digital citizen, scammer, settings, send, sign in, spam email, subject bar, theme, tone, username, virus, WiFi 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	embed, evaluate, features, hyperlinks, images, insert, online, plan, progress, review, web page, website, World Wide Web (Google version add in: checklist, Google Sites, hobby, homepage, published, record, style, subpage, tab, theme) (Microsoft version add in: design view, information, Microsoft Sway, stack, storyline view, style, transform, web browser)		

STRAND	**Nursery**	**Reception**	**Year 1**	**Year 2**
Data Handling	• To understand how to sort and categorise objects. • To explain how items have been sorted and categorised. • To understand how to sort and categorise objects. • To explain how items have been sorted and categorised. • To explore and understand the concept of bar charts		• To know that charts and pictograms can be created using a computer. • To understand that a branching database is a way of classifying a group of objects. • To know that computers understand different types of 'input'.	• To understand that you can enter simple data into a spreadsheet. • To know what data to use to answer certain questions. • To know that computers can be used to monitor supplies.
Examples of activities and resources	Sort themselves into different groups and orders dependant on given criteria. Clothes summer winter Bar graphs porridge pancake toppings gender		Data handling: Introduction to data L1: Zoo data Sorting data in different ways. L2: Picture data Use sketch pad to create a pictogram/chart L3: Mini beast hunt Children to collect and record data (can be changed to any items) L4: Animal branching databases L5: inventions	Data handling: International Space Station L1: Homes in space Children learn how data is used on ISS. L2:Space bag Create a digital drawing L3: Warmer, colder Collect data L5:Goldilocks planets Interpreting data

Key Vocabulary	Categorise, group, sort, 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		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	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
	Year 3	Year 4	**Year 5**	**Year 6**
	• 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.	• To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data'). • To know that a weather machine is an automated machine that respond to sensor data. • To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films	• To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. • To know what numbers using binary code look like and be able to identify how messages can be sent in this format. • To understand that RAM is Random Access Memory and acts as the computer's working memory. • To know what simple operations can be used to calculate bit patterns. • 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).	• To know that data contained within barcodes and QR codes can be used by computers. • To know that infrared waves are a way of transmitting data. • To know that Radio Frequency Identification (RFID) is a more private way of transmitting data. • To know that data is often encrypted so that even if it is stolen it is not useful to the thief. • Analyse and evaluate data • To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'. • To know that devices or that are not updated are most vulnerable to hackers. • To know the difference between mobile data and WiFi.
Examples of activities and resources	Data handling: Comparison cards databases L1: Records, field and data Understand the terminology L2: Race against the computer Compare paper databases to digital L3:Sorting and filtering L4: Representing data in different ways Revisit emailing and get the children to email over finished database. Challenge L5: Plan a holiday	Data handling: Investigating weather L1: What's the weather? Log data in a spreadsheet L3: Extreme weather (just to find out how we can predict the weather) L4: Satellites and forecasts How are forecasts made? Challenge L5:Presenting forecasts plan a weather forecast	Data handling: Mars Rover 1 Data transfer and binary code L1: Mars rover L2: Read and write numbers using the binary code L3: Computer architecture L4: Using binary numbers (Addition and subtraction) Challenge- L5 representing binary as text Data Handling: Mars Rover 2 L1: Pixels L2: Compressing images L3: Fetch, decode and execute L4: Tinker with CAD L5: Tinker CAD tutorials	Data handling 1: Big Data 1 Barcodes, QR codes and RFID L1: Barcodes Qr code treasure hunt L2: Transmitting data L3: RFID Spreadsheets L4: Using RFID optional challenge L5: Transport data Data handling 2: Big Data 2 Data usage and smart schools L1: Transferring data Bluetooth L2:Data usage L3: The internet of things To identify how data analysis can improve city life.
Key Vocabulary	categorise, category, chart, data, database, fields , filter, graph, information, interpret, PDF, questionnaire, record, representation, sort, spreadsheet	accurate, backdrop, climate zone, cold, collaboration, condensation, cylinder, degrees, evaporation, extreme weather, forecast, heat sensor, lightning, measurement, pinwheel, presenter, rain, satellite, script, sensitive, sensor data, solar panel, tablet/digital camera, temperature, thermometer, tornado, warm, weather, weather forecast, wind	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, signal, simulation, space, subtraction, technology, transmit	algorithms, barcode, binary, Boolean, brand, chips, commuter, contactless, data, encrypted, infrared, MagicBand, privacy, proximity, QR code, QR scanner, radio waves, RFID, signal, systems/data analyst, transmission, wireless Big Data, bluetooth, corrupted, data, energy, GPS, improve, infrared, Internet of Things, personal, privacy, QR codes, revolution, RFID,

			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	SIM, simulation, Smart city, Smart school, stop motion, threat, wifi, wireless
STRAND			Year 1	Year 2
Online safety			• To know that the internet is many devices connected to one another. • To know what to do if you feel unsafe or worried online – tell a trusted adult. • To know that people you do not know on the internet (online) are strangers and are not always who they say they are. • To know that to stay safe online it is important to keep personal information safe. • To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.	• To understand the difference between online and offline. • To understand what information I should not post online. • To know how to create a strong password. • To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' • To understand that not everything I see or read online is true.
Examples of activities and resources			Kapow L1: using the internet safely L2: online emotions L3: always be kind and considerate L4: Posting and sharing online L5: How much time should we spend on technology?	Kapow L1: what happens when I post online? L2: How do I keep my things safe online L3: it's my choice L4: is it true
Key vocabulary			app appropriate device digital footprint feelings going online in-person interactions internet kindness offline activity online activity online experience online interactions online safety	accepting consent denying permission fake giving permission offline online password permission personal information pop-up pressure private information real
STRAND	Year 3	Year 4	Year 5	Year 6
Online safety	• That not everything on the internet is true: people share facts, beliefs and opinions online. • The internet can affect people's moods and feelings.	• Some of the methods used to encourage people to buy things online. • Technology can be designed to act like or impersonate living things.	• Possible dangers online and how to stay safe. • The pros and cons of online communication.	• A digital footprint means the information that exists on the internet as a result of a person's online activity. • What steps are required to capture bullying content as evidence.

	• Privacy settings limit who can access important personal information, such as names, ages, gender etc. • What social media is and that age restrictions apply.	• Technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. • What behaviours are appropriate to stay safe and be respectful online.	• That information on the internet might not be true or correct and ways of checking validity. • What to do if they experience bullying online. • How to use an online community safely.	• It is important to manage personal passwords effectively. • What it means to have a positive online reputation. • Some common online scams.
Examples of activities and resources	L1:Beliefs, opinions and facts on the internet L2: Who should I ask L3: When being online makes me upset L4: Sharing information L4: Rules of social media platforms	L1:What happens when I search online L2: How do companies encourage us to buy online L3: Fact, opinion or belief L4: What is a bot?	L1: Online protection L2: Online communication L3: Online reputation L4: Online bullying L5: Online health	L1: Life online L2: Sharing online L3: creating a positive online reputation L4: Capturing evidence L5: Password protection L6: Think before you click
Key vocabulary	accurate age restrictions autocomplete belief charity content digital device fact fake news hoax internet internet of things opinion online emotions	accuracy ad advantage advertisement belief bot computer disadvantage distraction fact hashtag implications in-app purchases influencer	accurate advice app application app permissions biography bullying communication emojis health in-app purchases information judgement meme	