Computing Knowledge and Skills Map						
Culture Capital British Values						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Nursery Key Inventor: Sir Clive Sinclair – pocket calculator	Use and explore different forms of technology to see how to make them work e.g. interactive whiteboard, ipad, camera, CD player. Explore 'cause and effect' toys. Learn how to be safe around computers e.g. no water bottles or liquids, no food or snacks, taking care with leads and wires.	Take photos of autumn trees, flowers and displays using phones. Learn how to switch on and off devices. Learn that when they touch buttons on a computer the characters and avatars move. Know how to move objects on a touch screen.	Know that buttons turn something on/off and makes something happen. Learn how to send something to print and then retrieve it from the printer. Write labels and print them off. Press keys on a keyboard to develop fine motor skills.	Use drawing tools to create a picture of a flower and then print it off. Give one instruction for a beebot to make it move.	Learn how to place their fingers on the keyboard. Know where the numbers 1-5 are on the keyboard and practice writing numbers and print them off. Know how people use computers in their jobs. Learn to press numbers on a phone to make an internal phone call.	Know how to move a set of pictures on and back. Know that the mouse controls the cursor on the screen. Know that clicking a mouse will open a program. Learn the names of parts of a computer - keyboard, screen, mouse. Know how to switch a laptop on. Read a book and listen to a video on the computer. Learn how to pause the reading.
Online Safety	Self Image and Identity I can begin to recognise, online or offline, that anyone can say 'no'/'please stop'/'I'll tell'/'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset Online Relationships I can begin to recognise some ways in which the internet can be used to communicate. I can give one example of how I (might) use technology with people I know.	Online Reputation I can begin to identify ways that I can put information on the internet. Online Bullying I can begin to describe ways that some people can be unkind online I can offer an example of how this can make others feel.	Managing Online Information I can begin to talk about how to use the internet as a way of finding information online. I can identify one device I could use to access information on the internet	Health, Wellbeing and Lifestyle I can begin to identify rules that help keep us safe and healthy in and beyond the home when I am using technology. I can give some simple examples of these rules	Privacy and Security I can identify some simple examples of my personal information - name, birthday, age I can begin to name one person who would be trustworthy to share this information with	Copyright and Ownership I know that work I create belongs to me I can begin to name my work so that others know it belongs to me
Vocabulary	Camera, cd player, whiteboard, safe	Photo, buttons, touch screen	Print, printer, keys, keyboard	Drawing, instruction, beebot	Keyboard, phone call	Mouse, keyboard, screen, mouse, laptop
Trips/visitors						
Reception Key Inventor: Charles Babbage - the computer	Know how to take pictures of themselves and others using iPads. Find and press masdt on a keyboard. Type their name on a keyboard.	Know how to use a program to select shapes to create a picture. Know that we can find information from the internet/google maps/aerial photographs. Begin to develop an understanding of the internet.	Learn how to make a connected call e.g. by Zoom, Teams, See-Saw etc. Know that computers are used in different ways outside school - till, card machine, electronic doors.	Know how to programme a journey for a Beebot to follow – at least 3 instructions. Can use directional language – right, left, straight on, forwards, backwards, next, then. Know how to take a short video of the natural world.	Know how to select pictures of different habitats to create a pic collage. Know how to take a short video of the natural world. Identify the numbers 1-10 on a keyboard and the sounds taught.	Name the main features of a computer – keyboard, screen, mouse. Know that we control the laptop. Begin to idenitfy capital letters on the keyboard.
Online Safety	Self-Image and Identity I can recognise, online or offline, that anyone can say 'no'/'please stop'/'I'll tell'/'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset Online Relationships I can recognise some ways in which the internet can be used to communicate. I can give examples of how I (might) use technology with people I know.	Online Reputation I can identify ways that I can put information on the internet. Online Bullying I can describe ways that some people can be unkind online I can offer examples of how this can make others feel.	Managing Online Information I can talk about how to use the internet as a way of finding information online. I can identify devices I could use to access information on the internet	Health, Wellbeing and Lifestyle I can identify rules that help keep us safe and healthy in and beyond the home when I am using technology. I can give some examples of these rules	Privacy and Security I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location) I can describe who would be trustworthy to share this information with; I can explain why they are trusted.	Copyright and Ownership I know that work I create belongs to me I can name my work so that others know it belongs to me
Vocabulary	Ipad, picture, keyboard	Internet, google maps,	Zoom, video call,	Beebot, right, left, straight on, forwards, backwards, video	Keyboard, video, collage	Compueter, screen, mouse, control
Trips/visitors						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Element	**Computing Systems and Networks**	**Creating Media**	**Programming A**	**Data and Information**	**Creating Media**	**Programming B**
Year 1 Key Inventor: Bill Gates - Microsoft	**Technology Around Us** - Recognising Technology in school and using it responsibly	**Digital Painting** - Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally	**Moving a Robot** - Writing short algorithms and programs for floor robots, and predicting program outcomes.	**Grouping Data** - Exploring object labels, then using them to sort and group objects by properties	**Digital Writing** - Using a computer to create and format text, before comparing to writing non-digitally	**Programming Animations** - Designing and programming the movement of a character on screen to tell stories.
	Key knowledge:	Key knowledge: Know what different freehand tools do: shape, line, pencil, paint, erase, colour.	Key knowledge: Know that a command is a specific order from the user to the computer.	Key knowledge: Know that data is information. Know that data can be grouped.	Key knowledge: Know that word processor is a program that you can put information into.	Key knowledge:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Know that technology is something man made that helps us in our everyday lives. Know how to log on to a computer. Know the main parts of a computer: screen, keyboard, mouse. Know that a desktop computer has a base unit. Know that a laptop is portable. Know that we do not share usernames and passwords. Know how to save work to a file and re-open it.		Know that a sequence is a series of events that must happen in order to achieve a task. Know that the order of commands is important. Know that a program is a collection of instructions. Know that debugging means to check that the computer program works and correct it.	Know that a property is how an object can be described. Know that computers need a user to tell it what to do.	Know how to open word processor. Identify the back space key. Know how to delete text. Know how to use the space bar. Know how to change text – bold, italic, underline. Know that double clicking the mouse it selects text. Know that the undo button can remove the last change made.	Know that an algorithm is a set of precise instructions showing what you want the program to do. Know the effect of changing a value. Know that a series of commands can be joined together. Know which command is required.
	Key skills: identify technology switch on and log onto a computer. use a mouse to click and drag. drag a mouse for different purposes: e.g. make a picture, open a program and move objects.	Key skills: Can make marks, draw lines and use paint tools to draw a picture on a screen. To choose appropriate shapes, colours, tools to paint a picture. Develop mouse/touchpad control.	Key skills: combine four direction commands to make sequences plan a simple program find more than one solution to a problem	Key skills: Sort data into groups according to their properties. Begin to ask and answer questions about the data sets.	Key skills: Choose the right tool for effect. Develop confident keyboard skills. Continue to develop mouse skills.	Key skills: design the parts of a project use an algorithm to create a program
Online Safety	Self image and identity I can recognise that there may be people online who could make someone feel sad, embarrassed or upset. If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. Online Relationships I can give examples of when I should ask permission to do something online and explain why this is important. I can use the internet with adult support to communicate with people I know (e.g. video call apps or services) I can explain why it is important to be considerate and kind to people online and respect their choices. I can explain why things one person finds funny or sad online may not always be seen in the same way as others.	Online Reputation I can recognise that information can stay online and could be copied I can describe what information I should not put online without asking a trusted adult first. Online Bullying I can describe how to behave online in ways that do not upset others and can give examples.	Managing Online Information I can give simple examples of how to find information using digital technologies e.g. search engines, voice activated searching I know/understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe/ a joke I know how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable, worried or frightened.	Health, Wellbeing and Lifestyle I can explain rules to keep myself safe when using technology both in and beyond the home	Privacy and Security I can explain that passwords are used to protect information, accounts and devices I can recognise more detailed examples of information that is personal to someone (e.g. where someone lives and goes to school, family names) I can explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others.	Copyright and Ownership I can explain why work I create using technology belongs to me I can say why it belongs to me (e.g. I designed it or I filmed it) I can save my work under a suitable title/name so that others know it belongs to me (e.g. filename, name on content) I understand that work made by others does not belong to me even if I save a copy.
Vocabulary	Technology, screen, keyboard, mouse, log on, base unit, desktop, file, drag, username, password.	Freehand tools, shape, line, pencil, paint, erase, colour	Command, sequence, program, debug	Data, property,	Text, word processor, space key, backspace key, toolbar, bold, italic, underline, font, undo	programming blocks, programming area, start block, end block, algorithm, value
Trips/visitors						

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing Systens and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 2 Key Inventor: Ada Lovelace – computer programme	**Information Technology Around Us -** identifying IT and how its responsible use improves our world in school and beyond.	**Digital Photography -** Capturing and changing digital photographs for different purposes	**Robot Algorithms -** Creating and debugging programs, and using logical reasoning to make predictions.	**Pictograms-** Collecting data in tally charts and using attributes to organise and present data on a computer.	**Making Music -** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. Planets Gustav Holst	**Programming Quizzes -** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz
	Key knowledge: Know that information technology is anything that is a computer or works with a computer. Know how IT helps us.	Key knowledge: Know landscape and portrait. Know which devices can take photographs.	Key knowledge: Know that the same instructions can create different algorithms. Know that artwork is used in computer program design.	Key knowledge: Know data can be organised in charts and graphs. Know that data programs can be used to organise data.	Key knowledge: Know that a computer can be used to create and refine musical patterns. Know that humans can create music on information technology.	Key knowledge: Know that the same instructions can create different algorithms. Know that artwork is used in computer program design.

	Know to keep passwords and usernames safe. Know that we have to ask permission to take someone's picture. Know that we don't share personal information online. Know that we should be kind online.	Know that these are the 5 steps to take a good photograph: 1. Hold the device firmly with both hands. 2. Point the camera lens at the subject. 3. Look into the viewing window or screen. 4. Move the device until you see everything clearly. 5. Press the capture button. Know that photos can be changed by using effects. Know how lighting can affect a photo.	Know decomposition is breaking the task into chunks and creating an algorithm for each chunk.	Know that objects can be represented as pictures. Know that we can count and compare objects using tally charts. Know that attributes are properties. Know when it is appropriate to share data and when it isn't appropriate. Know that it is alright to say no if someone asks for their data. Know how to report their concerns.	Know how to retrieve and review their work.	Know decomposition is breaking the task into chunks and creating an algorithm for each chunk.
	Key skills: explain how to use information technology safely	Key skills: Take a well composed photograph and suggest how photos can be improved. use tools to change an image.	Key skills: use logical reasoning to predict the outcome of a program (series of commands) design an algorithm with a clear start and finish point. Use the algorithm to create a program. Continue to debug their algorithms and programs.	Key skills: create a pictogram after collecting data. Draw a conclusion from the pictogram.	Key skills: use a computer to create a musical pattern using at least three notes. Experiment with sound using a computer.	Key skills: create a program using my own design with new characters and backgrounds. use logical reasoning to predict the outcome of a program (series of commands) design an algorithm with a clear start and finish point. Use the algorithm to create a program. Continue to debug their algorithms and programs.
Online Safety	Self-image and Identity I can explain how other people may look and act differently online and offline. I can give examples of issues that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help. Online Relationships I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. (e.g. email, online gaming, a pen-pal in another school/country) I can explain who I should ask before sharing things about myself and others online. I can describe different ways to ask for, give or deny my permission online and can identify who to help me if I am not sure. I can explain why I have a right to say 'no' or 'I will have to ask someone'. I can explain who can help me if I feel under pressure to agree to something I am unsure about or don't want to do. I can identify who can help me if something happens online without my consent. I can explain how it may make others feel if I do not ask their permission or ignore their answers before sharing something about them online.	Online Reputation I can explain how information put online about someone can last for a long time I can describe how anyone's online information could be seen by others I know who to talk to if something has been put online without consent or if it is incorrect. Online Bullying I can explain what bullying is, how people may bully others and how bullying can make someone feel. I can explain why anyone who experiences bullying is not to blame. I can talk about how anyone experiences bullying can get help.	Managing Online Information I can use simple keywords in search engines I can demonstrate how to navigate a simple webpage to get information I need (e.g. home, forward, back buttons; links, tabs and sections.) I can explain what voice activated searching is and how it might be used, and know it is not real person (e.g. Alexa, Google Now, Siri) I can explain the difference between things that are imaginary, 'made up', or 'make believe' and things that are 'true' or 'real' I can explain why come information I find online may not be real or true.	Health, Wellbeing and Lifestyle I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment. I can say how those rules/guides can help anyone accessing online technologies	Privacy and Security I can explain how passwords can be used to protect information, accounts and devices. I can explain and give examples of what is meant by 'private' and 'keeping things private' I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords) I can explain how some people may have devices in the their homes connected to the internet and give some examples (e.g. lights, fridges, toys, televisions.)	Copyright and Ownership I can recognise that content on the internet may belong to other people. I can describe why other people's work belongs to them.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	I can explain why I should always ask a trusted adult before clicking 'yes', 'agree', or 'accept' online					
Vocabulary	IT, information technology.	Viewing window, composition, positioning, framing , subject,	Decomposition, algorithm, debug, sequence	Pictogram, data, tally chart, attributes, block chart,	Sound, rhythm, tempo, pitch	Decomposition, algorithm, debug, sequence
Trips/visitors						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing Systens and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 3 Key Inventor: Hedy lamaar - Wifi	**Connecting Computers** - Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks	**Stop-Frame Animation** - Capturing and editing digital still images to produce a stop-frame animation that tells a story.	**Sequencing Sounds** - Creating sequences in a block-based programming language to make music.	**Branching Databases** - Building and using branching databases to group objects using yes/no questions.	**Desktop Publishing** - Creating documents by modifying text, images, and page layouts for a specified purpose.	**Events and Actions in Programmes** - Writing algorithms and programs that use a range of events to trigger sequences of action
	Key knowledge: Know that digital devices accept inputs. Know that the inputs start a process. Know that the process produces an output. Know which devices are input/output. Know that devices have more than one purpose. Know that a computer network is made up of a number of devices. Know information can be passed between devices. Know that a switch enables multiple devices on a network to be connected together Know that a server is a computer that manages the network and stores files Know that a wireless network is a device connected to a wired network, which sends and receives wireless signals for devices with Wi-Fi connectivity	Key knowledge: Know that an animation is a sequence of drawings or photographs Know that onion skinning shows a ghost image to help keep movements small and natural. Know the 4 steps for making an effective animation. 1. Use the same characters 2. Use the same background 3. Keep your iPad in the same place 4. Keep your background in the same place Know that we can enhance an animation with text, music, transitions and photos.	Key knowledge: Know that you can add motion to multiple sprites within one program. Know that you can combine motion, sound and events in a computer program. Know that code can be copied from one sprite to another. Know that to copy a code you right click and select Duplicate.	Key knowledge: Know branching databases need closed questions/answers i.e. yes/no questions. Know that questions can separate objects based on attributes. Know how to create a group of objects within an existing group. Know how to test a branching database. Know that questions need to be ordered carefully to split objects. Know real world applications of branching databases – classification of animals, health problems, finding faults.	Key knowledge: Know that text refers to words and pictures refer to images. Know how to change text – font, font size and colour. Know that desktop publishing is a way of creating documents that include text and images. Identify the shift key on the keyboard. Know how to type a capital letter on the keyboard using the shift key. Continue to use the backspace key to delete text. Identify the full stop/exclamation mark/question mark key Know how to type a full stop/exclamation mark/question mark. Identify the return key. Know the return key moves the cursor to a new line.	Key knowledge: Know that different controls can move a sprite/character in a game - swipe, mouse, keyboard Know that a programming extension extends the capabilities of basic data/a program Know the relationship between an action and an event.
	Key skills: explore how digital devices can be connected	Key skills: plan an animation using a storyboard Evaluate an animation and suggest improvements.	Key skills: create a project from a task description To evaluate the effectiveness of their own program. Develop a range of problem solving strategies.	Key skills: Begin to arrange objects into a tree structure. (branching database) Compare the efficiency of different branching databases.	Key skills: Identify real life examples – invitations, magazines, newsletters, posters recognise how text and images convey information recognise that text and layout can be edited choose appropriate page settings add content to a desktop publishing publication consider how different layouts can suit different purposes consider the benefits of desktop publishing	Key skills: adapt a program to a new context develop a program by adding features identify and fix bugs in a program
Online Safety	Self Image and Identity I can explain what is meant by the term 'identity' I can explain how people can represent themselves in different ways online. I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why	Online Reputation I can explain how to search for information about others online I can give example of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal I can explain who someone can ask if they are unsure about putting something online.	Managing Online Information I can demonstrate how to use key phrases in search engines to gather accurate information online. I can explain what autocomplete is and how to choose the best suggestion I can explain how the internet can be used to buy and sell things I can explain the difference between a belief, an opinion and a fact and give examples of how and where they might	Health, Wellbeing and Lifestyle I can explain why spending too much time using technology can sometimes have a negative impact on anyone, e.g. mood, sleep, body, relationships; I can give examples of both positive and negative activities where it is easy to spend a lot of time engaged (e.g. doing homework, games, films, videos) I can explain why some online activities have age restrictions, why it is important to follow them and know	Privacy and Security I can describe simple strategies for creating and keeping passwords private. I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure of feel pressured then they should tell a trusted adult. I can describe how connected devices can collect and share anyone's information with others.	Copyright and Ownership I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.

	Online Relationships I can describe ways people who have similar likes and interests can get together online. I can explain what it means to 'know someone' online and why this might be different from knowing someone offline. I can explain what is meant by 'trusting someone' online, why this is different to 'liking someone' online, and why it is important to be careful about who to trust online including what information and content they are trusted with. I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried. I can explain how someone's feelings can be hurt by what is said or written online. I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and photos	Online Bullying I can describe appropriate ways to behave towards other people online and why this is important. I can give examples of how bullying behaviour could appear online and how someone can get support.	be shared online. E.g. In videos, memes, posts, news stories etc. I can explain that not all opinions shared may be accepted as true or fair by others (E.g. monsters under the bed) I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable, worried or frightened.	who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites)		
Vocabulary	Digital, network, server, wireless, access points, network cables/sockets	Animation, storyboard, onion skinning,			Text, images, font size, font, templates, orientation, place holder, layout,	Event, action, program extension
Trips/visitors						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing Systems and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 4 Key Inventor: Tim Berners-Lee- World wide web	**Sharing Information -** Identifying and exploring how information is shared between digital systems.	**Audio Production -** Planning, capturing, and editing audio to produce a short podcast	**Repetition in Shapes - C**reating programs by planning, modifying, and testing commands to create shapes and patterns.	**Data Logging -** learners will consider how and why data is collected over time.	**Photo editing -** understanding of how digital images can be changed and edited, and how they can then be resaved and reused.	**Repetition in Games -** explore the concept of repetition in programming using the Scratch environment.
	Key knowledge: Know the internet is a network of networks. Know that a router enables messages to be passed between networks via switches. Know that networks can span a country and even the world. Know that networks need protecting. Know that the world wide web is only one part of the internet. Know that files can be shared on the internet. Know that the internet can be used to send emails. Know that a website is a collection of pages under one name Know that a web page is a single document or page on the world wide web. Know the internet is connected by lots of routers. Know that to access the world wide web you need a web browser Name at least 2 examples of web browsers.	Key knowledge: Name at least 2 input and output devices Know that some devices have input and output devices built in – laptop, phone, ipad Know that computers allow you to edit audio Know that a podcast is a recording that is made available over the internet and can be downloaded and played on a digital device.	Key knowledge: Know that Logo is a text based programming service. Know that repeat means to do or say something again. Know that you can use the repeat command in an algorithm. Know that when a repeat command is used in an algorithm, it is called a count controlled loop. Know that a code snippet is a small portion of text that is part of a larger set of programming code Know that a procedure is a named code snippet that can be run multiple times.	Key knowledge: Know that data can be collected over time. Know that data is collected for a reason. Know that specific information can be found from data collection. Know that sensors are input devices.	Key knowledge Know that many of the photos we see are edited. Know that photos can be edited by rotating, cropping or cloning. Know that editing a photo can change the composition of the photo. Know that we can change how people feel when looking at a photo by changing light and colour. Know that images can be combined.	Key knowledge: Know that in an infinite loop, commands are repeated over and over again, without an end point. Know that repetitions can change the outcome of a game.

	Know that information and media on the internet belongs to someone.					
	Key skills: recognise the role of computer systems in our lives recognise how information is transferred over the internet	Key skills: Identify what other people include when recording sounds for a podcast Suggest improvements to a podcast Plan and write content for a podcast. Record, edit and save sound for a podcast	Key skills: Design a program that contains count controlled loops. Identify the loops needed Debug a program	Key skills: Analyse data that has been collected Propose our own questions for data collection Use a computer program to sort and analyse data	Key skills: Change the composition of photos using a variety of techniques. Choose different techniques to edit a photo to meet a given criteria.	Key skills: Design, debug and evaluate a game. Modify loops to achieve a desired outcome.
Online Safety	Self Image and Identity I can explain how my online identity can be different to my offline identity. I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this. Online Relationships I can describe strategies for safe and fun experiences in a range of online social environments e.g. livestreaming, gaming platforms. I can give examples of how to be respectful to others online and how to recognise healthy and unhealthy behaviours. I can explain how content shared online may feel unimportant to one person but may be important to other people's thoughts, feelings and beliefs.	Online Reputation I can describe how to find out information about others by searching online. I can explain ways that some of the information about anyone online could have been created, copied or shared by others Online Bullying I can recognise when someone is upset, hurt or angry online. I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat) I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affects how others feel about them (their reputation)	Managing Online Information I can analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others. I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites) I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers; in app purchases; pop ups) and can recognise some of these when they appear online. I can explain why lots of people sharing the same opinions or beliefs online do not make those beliefs or opinions true. I can explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and risks might be. I can explain what is meant by fake news e.g. why some people will create stories or alter photographs and put them online to pretend that something is true when it isn't.	Health, Wellbeing and Lifestyle I can explain how using technology can be a distraction from other things, in both a positive and negative way. I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time.	Privacy and Security I can describe strategies for keeping personal information private, depending on context. I can explain that internet use is never fully private and is monitored e.g. adult supervision I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure. I know what the digital age of consent is and the impact this has on online services asking for consent.	Copyright and Ownership When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to use it. I can give some simple examples of content which I must not use without permission from the owner e.g. videos, music, images
Vocabulary	Router, web browser, world wide web, web page, website,	Podcast, audio, layering, input, output, edit, trim	Count controlled loop, code snippet	Sensors, input, data	Crop, rotate, clone, composition	Infinite loop
Trips/visitors						

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing Systens and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 5 Key Inventor: Larry Page and Sergey Brin - Google	Sharing Information - Identifying and exploring how information is shared between digital systems.	Video Editing - Planning, capturing, and editing video to produce a short film.	Selection in Physical Computing - Exploring conditions and selection using a programmable microcontroller.	Flat File Databases - Using a database to order data and create charts to answer questions.	Vector Drawing - Creating images in a drawing program by using layers and groups of objects.	Selection in Quizzes - Exploring selection in programming to design and code an interactive quiz.
	Key knowledge: Know that a computer system consists of hardware components that have been carefully chosen so that they work well together. Know that Digital systems are used in a wide range of public contexts, Know that a search engine involves an input, process and output. Know that search engines use **programs** called web crawlers to create an index of the web.	Key knowledge: Know that video is the recording, reproducing, or broadcasting of moving visual images. Know the proximity of the subject to the device and background noise impacts the effectiveness of the device your learners are using for filming. Know that 'static camera' means the camera is fixed and the composition of the shot (the area that is being filmed) does not change.	Key knowledge: Know that a microcontroller is a programmable device that can control outputs and respond to inputs - in this unit it is the crumble. Know that 'conditions' are statements that need to be met for a set of actions to be carried out. Know that a condition is a statement that can only be true or false. Identify that programmers use conditions in programs to trigger actions.	Key knowledge: Know that a database is a collection of organised data that is usually stored on a computer. Know that databases allow people to search and sort large quantities of data to find information. Know that data can be added or removed, edited, or viewed using the structure that was originally used to set up the database.	Key knowledge: Know that vector drawings are drawings that are made on a computer. They are made of lines and shapes, which are put together to make a complete image. Know that each shape used in a vector drawing is called an object. Know that although grouped objects act as a single object, they are still a collection of individual objects that can be manipulated. Know that vector drawings consist of layers.	Key knowledge: Know that 'conditions' are statements that need to be met for a set of actions to be carried out. Know that 'selection' is a programming construct that makes use of conditions to decide which set of actions to follow, know that repetition needs to be used in selection where the condition needs to be repeatedly checked, and that without this, the actions will not be carried out when the condition is true. know that selection can be represented by the structure 'if... then... else...'.

	Know that search engines use ranking to determine the order in which search results are displayed. Know that search engine optimisation (SEO) is applied to websites to help them rank as highly as possible. Know the impact that searchers, search engines, and webpage creators have on the effectiveness of a search, Know that users refine search terms to get more relevant results, Know that there are two ways to conduct a web search: from within a search engine and using the address bar	Know that for pan and tilt, the camera is in a fixed location, but can pivot either vertically or horizontally. Know that zooming means making the subject of the shot larger (by zooming in) or smaller (by zooming out) without moving the camera.	Know that a loop can be used to repeatedly check whether a condition has been met. Know that when writing algorithms and programs, they may want a set of actions to be carried out if the condition is met (rather than stopped). Identify that this is called 'selection', and when it is included in algorithms and programs, it is useful to use the structure 'if…then…'. Know that 'selection' is a programming construct that makes use of conditions to decide which set of actions to follow.	Know that a database consists of 'records', and that each record contains 'fields'.	Know that objects can be grouped to make them easier to work with.	Know that an algorithm with a branching structure can be used to represent selection using the 'if… then… else…' structure. know that selection in the structure 'if… then… else…' can be used to control the flow of actions in programs, and to identify which outcome will be selected by identifying whether the condition has or has not been met. Know that when a user provides an input, in the form of an answer, it will be compared against the condition to identify which outcome to choose.
	Key skills: recognise how information is transferred over the internet explain how sharing information online lets people in different places work together contribute to a shared project online evaluate different ways of working together online	Key skills: capture video using a range of techniques create a storyboard identify that video can be improved through reshooting and editing consider the impact of the choices made when making and sharing a video	Key skills: control a simple circuit connected to a computer write a program that includes count-controlled loops design a physical project that includes selection create a program that controls a physical computing project	Key skills: use a form to record information compare paper and computer-based databases outline how grouping and then sorting data allows us to answer questions explain that tools can be used to select specific data explain that computer programs can be used to compare data visually apply my knowledge of a database to ask and answer real-world questions	Key skills: create a vector drawing by combining shapes use tools to achieve a desired effect evaluate my vector drawing	Key skills: explain how selection is used in computer programs relate that a conditional statement connects a condition to an outcome explain how selection directs the flow of a program design a program which uses selection create a program which uses selection evaluate my program
Online Safety	Self Image and Identity I can explain how identity online can be copied/ modified or altered. I can demonstrate how to make responsible choices about having an online identity, depending on context. Online Relationships I can give examples of technology – specific forms of communication (e.g. emojis, memes, gifs) I can explain that there are some people I can communicate with online who may want to do me or my friends harm/ I can recognise this is not my/our fault. I can describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups) I can explain how someone can get help if they are having problems and identify when to tell a trusted adult. I can demonstrate how to support others (including those who are having difficulties) online.	Online Reputation I can search for information about an individual online and summarise the information found. I can describe ways that information about anyone online can be used by others to make judgements about an individual and why these may be incorrect. Online Bullying I can recognise that online bullying can be different to bullying in the physical world and can describe some of those differences. I can describe how what one person perceives as playful joking and teasing (including banter) might be experienced by others as bullying I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult. I can identify a range of ways to report concerns and access support both in school and at home about online bullying. I can explain how to block abusive users I can describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or The Mix)	Managing Online Information I can explain the benefits and limitations of using different types of search technologies e.g. voice-activated search engine. I can explain how some technology can limit the information I am presented with e.g. voice-activated only giving one search result. I can explain what is meant by 'being sceptical'; I can give examples of when and why it is important to be sceptical. I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results. I can explain key concepts including: information, reviews, fact, opinion, belief, validity, reliability and evidence. I can identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads. I can describe ways of identifying when online content has been commercially sponsored or boosted, (e.g. by commercial companies or by vloggers, content creators, influencers) I can explain what is meant by the term 'stereotype', how 'stereotypes' are amplified and reinforced online, and why accepting 'stereotypes' may influence how people think about others.	Health, Wellbeing and Lifestyle I can describe ways that technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively. I can describe some strategies, tips or advice to promote health and well-being with regards to technology. I can recognise the benefits and risks of accessing information about health and well-being online and how we should balance this with talking to trusted adults and professionals I can explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, loot boxes) and explain the importance of seeking permission from a trusted adult before purchasing	Privacy and Security I can explain what a strong password is and demonstrate how to create one. I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice messages, geolocation) with others. I can explain what app permissions are and can give some examples	Copyright and Ownership I can assess and justify when it is acceptable to use the work of others. I can give examples of content that is permitted to be reused and know how this content can be found online.

			I can describe how fake news may affect someone's emotions and behaviour and explain why this may be harmful.			
Vocabulary	System, connection, digital, search engine, ranking, selection,	talking head, panning, close up, Import, split, trim, reshoot	Microcontroller, components, connection Selection, action, repetition	Database, data, information, record, field, graph, chart, axis, filter	Vector, drawing tools, object, toolbar, align, modify, layers	Implement, design, algorithm, program, selection, condition, outcome, test, run
Trips/visitors						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing Systems and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 6 Key Inventor: Alan Turing	**Internet Communication -** Recognising how the WWW can be used to communicate and be searched to find information	**Web-page Creation -** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	**Variables in games -** Exploring variables when designing and coding a game	**Introduction to Spreadsheets -** Answering questions by using spreadsheets to organise and calculate data	**3D Modelling -** Planning, developing, and evaluating 3D computer models of physical objects	**Sensing -** Designing and coding a project that captures inputs from a physical device
	Key knowledge: Know that a protocol is an agreed way of doing something. Know that IP stands for Internet Protocol. Know that every website address is known as its domain name and that every domain is hosted somewhere on a web server that has its own IP address. Know that every time they do something online, such as access a website, send a message, or watch a video, they need some kind of address. Know that when computers send and receive data, the data is sent in packets. Know that packets are used because they break large volumes of data into small chunks, making them easier to send across networks Know that there are two main parts to a packet – the header and the and the payload. Know that there are several ways of communicating online.	Key knowledge: Know that websites are made with a special code called 'HTML' (Hypertext Markup Language). Know that websites are written with code, called markup, which tells the browser what the web page should look like on the screen. Know that websites can be viewed on different devices and this may change the look of the website. Know that in computing, breadcrumb trails are also very important as they help the user keep track of where they have been on the website or help them find where they need to go if they get lost. Know that links outside your own website are called external links.	Key knowledge: Know that a 'variable' is defined as something that can be set and changed throughout the running of a program. Know that variables are used in programs, and that they can only hold a single value at a time. Know that a variable has a unique name. Know that when the value of a variable is updated, the original value is replaced.	Key knowledge: Know that a spreadsheet is a way of presenting data. Know that each of the boxes that make up a spreadsheet is called a cell. Know that each cell has a unique cell reference. Know that spreadsheets can be used to perform calculations including the following operations: addition, subtraction, multiplication, and division. Know that a formula can tell a computer which mathematical operation to use for a calculation: add, multiply, divide, or subtract. It also tells the computer which pieces of data to use within the calculation. Know that once a formula based on cell references is entered into the spreadsheet, if the input is changed, the output will reflect this. that sometimes when they present data, it is easier for people to understand when it is shown on a chart.	Key knowledge: Know that computers are often used to model real-life 3D items. Know that shapes can be hollowed out using 3D placeholders	Key knowledge: Know that the micro:bit is a tiny computer that runs programs created in the environment MakeCode. Know that an accelerometer is used to detect movement. Know that program flow is the order in which commands are executed (run) in a program. Know that 'comparison operators' are used to describe math symbols within an expression. Know that selection can control the flow of a program
	Key skills: recognise how we communicate using technology evaluate different methods of online communication	Key skills: plan the features of a web page consider the ownership and use of images (copyright) recognise the need to preview pages outline the need for a navigation path recognise the implications of linking to content owned by other people	Key skills: choose how to improve a game by using variables design a project that builds on a given example use my design to create a project evaluate my project	Key skills: apply formulas to data, including duplicating create a spreadsheet to plan an event choose suitable ways to present data	Key skills: use a computer to create and manipulate three-dimensional (3D) digital objects construct a digital 3D model of a physical object identify that physical objects can be broken down into a collection of 3D shapes design a digital model by combining 3D objects develop and improve a digital 3D model	Key skills: create a program to run on a controllable device update a variable with a user input use an conditional statement to compare a variable to a value design a project that uses inputs and outputs on a controllable device develop a program to use inputs and outputs on a controllable device
Online Safety	Self Image and Identity I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. I can explain the importance of asking until I get the help needed.	Online Reputation I can explain the ways in which anyone can develop a positive online reputation I can explain strategies anyone can use to protect the 'digital personality' and online reputation, including degrees of anonymity.	Managing Online Information I can explain what is meant by a 'hoax'. I can explain why someone would need to think carefully before they share. I can explain how search engines work and how the results are selected and ranked.	Health, Wellbeing and Lifestyle I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose I recognise and can discuss the pressures that technology can place on someone and how/when they could manage this.	Privacy and Security I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser. I can explain what to do if a password is shared, lost or stolen.	Copyright and Ownership I can demonstrate the use of a search tool to find and access online content which can be reused by others. I can demonstrate how to make references to and acknowledge sources I have used from the internet.

	Online Relationships I can explain how sharing something online may have an impact positively or negatively. I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not. I can describe how things shared privately online can have unintended consequences for others. E.g. Screen-grabs I can explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this.	Online Bullying I can describe how to capture bullying content as evidence (e.g. Screen-grab, URL, profile) to share with others who can help me. I can explain how someone would report online bullying in different contexts.	I can explain how to use search technologies effectively. I can describe how some online information can be opinions and can offer examples. I can explain how and why some people may present opinions as facts; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal. I can define the terms 'influence', 'manipulation', and 'persuasion' and explain how someone might encounter these online (e.g. advertising and 'ad targeting' and targeting for fake news.) I understand the concept of persuasive design and how it can be used to influence peoples' choices. I can demonstrate how to analyse and evaluate the validity of facts and information and I can explain why using these strategies are important. I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this. I can describe the difference between online misinformation and disinformation. I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation or disinformation. I can identify, flag and report inappropriate content.	I can recognise features of persuasive design and how they are used to keep users engaged (current and future use) I can assess and action different strategies to limit the impact of technology on health (e.g. night-shift mode, regular breaks, correct posture, sleep, diet and exercise)	I can describe how and why people should keep their software and apps up to date e.g. auto updates. I can describe simple ways to increase privacy on apps and services that provide privacy settings. I can describes ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing) I know that online services have terms and conditions that govern their use.	
Vocabulary	Communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS) Packet, header, data payload, slide deck Reuse, remix, collaboration	Hypertext Markup Language (HTML) ,Copyright, fair use breadcrumb trail, navigation, hyperlink, subpage, external link, embed	variable	Spreadsheet, Cell, cell reference, data item, format Formula, calculation, range, duplicate, sigma	Handles, 3D model	Micro:bit, MakeCode, sensing, accelerometer, value
Trips/visitors						