Computing Long Term Plan

Autumn I	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	**Technology around us:** Computing Systems	**Information Technology around us:** Introduction to networks	**Connecting computers:** Networks & Systems	**The Internet:** Networks & Systems	**Systems and Sharing:** Networks & Systems	**Technology of the Internet:** Networks & Systems
Big Question	What technology exists around us?	How can I make better use of the technology around us?	How does the technology we have in school work together?	How does the Internet work?	How can I make better use of the World Wide Web?	How does the World Wide Web work?
Skills	- Identify technology. - Identify a computer and its main parts. - Use a mouse or equivalent apparatus in different ways. - Use a keyboard to type text into a device. - Use the keyboard to edit text. - Create rules for using technology responsibly.	- Recognise the uses and features of information and communications technology. - Identify uses of technology in school. - Identify uses of technology beyond school. - Explain how technology helps us. - Explain how to use technology safely. - Recognise that choices are made when using technology.	- Explain how digital devices function. - Identify input and output devices. - Recognise how digital devices can change the way we work. - Explain how a computer network is used to share information. - Explore how digital devices can be connected. - Recognise the physical components of a network.	- How networks physically connect to other networks. - Recognise how networked devices make up the Internet. - How websites can be shared via the World Wide Web (www). - Describe how content can be added and accessed via the World Wide Web. - Recognise how the content of the www is created. - Evaluate the consequences of unreliable content.	- Explain that computers can be connected together to form systems. - Recognise the role of computer systems in our lives. - Experiment with search engines. - Describe how search engines select results. - Explain how search results are ranked. - Have strategies for checking on the reliability of search results.	- Explain the importance of internet addresses. - Recognise how data is transferred across the Internet. - Explain how sharing information online can help people to work together. - Evaluate different ways of working together online. - Recognise technology as a communication tool. - Evaluate different methods of online communication.
Key Vocabulary	computer; laptop, tablet; smartphone; camera; touch-screen; keyboard; picture; video; game	log in; sign in; log out; sign out; trackpad; pointer; click; screen; password; account; software	undo, cursor, cables, connection; data; desktop; device; Digital Subscriber Line (DSL); fibre; file; Internet; World Wide Web	network; network map; switch; packets; radio waves; router; cloud server; website; trackers; WiFi	algorithm; appropriate; copyright; data leak; web crawler; search engine; rank; privacy; network, keywords	Internet Protocols; addresses; Domain Name System (DNS); data packets; hubs; servers; cable; fibre; wireless; browser
Challenge	To be able to talk to any adult about what has been learnt during this sequence of lessons.	To be able to talk to any adult about what has been learnt during this sequence of lessons. Some may be able to show and share their work with their class teachers.	To create and publish an artefact which demonstrates a clear technical understanding of the concepts and ideas learnt in this sequence of lessons.	To create and publish an artefact which demonstrates a clear technical understanding of the concepts and ideas learnt in this sequence of lessons.	To create and publish an artefact which demonstrates a clear technical understanding of the concepts and ideas learnt in this sequence of lessons.	To create and publish an artefact which demonstrates a clear technical understanding of the concepts and ideas learnt in this sequence of lessons.

Computing Long Term Plan

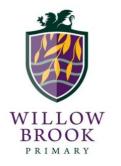| Autumn II	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	**Digital Citizenship:** Trusted adults and sharing safely	**Digital Citizenship:** Benefits of technology	**Digital Citizenship:** Introduction to social media	**Digital Citizenship:** Screen time	**Digital Citizenship:** Being confident in the online world	**Digital Citizenship:** Consent and privacy
Big Question	How do I keep myself safe online?	What can I do if I see, hear or read something which makes me feel worried, scared or sad?	How can I become an Internet Legend?	What do adults mean when they talk about keeping digitally healthy?	Why are PEGI rating and their US equivalent important?	What should I include in a set of rules for myself to keep myself healthy and safe online?
Skills	• Explain ways that someone can change their identity online and why. • Recognise the ways that the Internet can be used to share writing, pictures, sound recordings and videos. • Recognise that information can stay online and be copied. • Describe how to behave online in ways that does not upset others. • Know what people mean about information online and how to find that information. • Identify rules that help keep me safe and healthy in and beyond the home when using technology.	• Describe positive ways for someone to interact with others online. • The importance of trusted adults when using devices connected to the World Wide Web. • Describe what information about myself and my family should always stay private. • Explain what bullying is and how people may bully others as well as how bullying may make someone feel. • Explain why some information that is available online may not be real or true. • Explain rules to keep myself safe when using technology at home, in school and anywhere else.	• Explain how online identities can be copied, modified or altered. • Use the World Wide Web with permission from a trusted adult. • Explain who someone can ask if they are unsure about sharing something online. • Recognise how to help others who might be feeling worried, scared or sad from what they see, read or hear online. • Look at information and make a decision about its accuracy. • Explain simple guidance for using technology in different environments.	• Explain that others can pretend to be someone else, including people I know in real life and why this happens. • The importance of being considerate and kind to people online and to respect their choices. • Describe how to find out information about others by searching online. • Explain why people need to always think carefully before they share anything online. • Explain what is meant by "fake news" and why or how this happens. • Create a plan to achieve a healthy digital lifestyle.	• Make responsible choices about having an online identity, depending on context. • Recognise that what is shared online can make people feel the way they do. • Describe ways that online information about anyone can be used by others. • Recognise online bullying can be different in the real world and describe those differences. • Identify ways the World Wide Web can draw people to information for different reasons. • Describe ways technology can affect health and well-being.	• Identify and critically evaluate online content. • Recognise the risks of inappropriate contacts from messaging and gaming. • Explain strategies anyone can use to protect their digital identity and online reputation including anonymity. • Describe how to record online bullying content so that it can be shared with trusted adults. • Understand the concept of persuasive design and how it can be used to influence others. • Describe common systems which regulate age-related content and why this is important.
Key Vocabulary	identity; online; sharing; copying; information; worried; scared; sad; funny tummy; trusted adults	positive; interaction; private; bullying; real; true; self-image; relationships; reputation; well-being	copyright; ownership; sharp; alert; secure; kind; brave; accuracy; permission; environments	real-life; choices; fake news; mis-information; dis-information; healthy; digital lifestyle	identity; context; online bullying; World Wide Web	critical evaluation; inappropriate contacts; messaging; gaming; strategies; digital identities; anonymity; screen-prints; persuasive design; influencers; age-related content
Challenge	To always apply the ideas of staying safe online.	To always apply the ideas of staying safe online.	To become Internet Sharp, Alert, Secure, Kind and Brave	To always apply the ideas of staying healthy and safe online.	To always apply the ideas of staying healthy and safe online.	To always apply the ideas of staying healthy and safe online.

Computing Long Term Plan

Spring I	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	**Programming (coding):** Introduction to robotics	**Programming (coding):** Writing algorithms	**Programming (coding):** Motion, sound and events	**Programming (coding):** Repetition in shapes	**Programming (coding):** Selection in physical computing	**Programming (coding):** Variables in games
Big Question	How do I make Marty move on its own?	What are algorithms?	What is sequencing?	What is repetition in programming?	What is selection in programming?	How do I make best use of variables?
Skills	• Explain what a given command will do. • Act out a given word. • Combine forwards and backwards commands to make a sequence. • Combine four direction commands to make sequences. • Plan a simple program. • Find more than one solution to a problem.	• Describe a series of instructions as a sequence. • Explain what happens when we change the order of instructions. • Use logical reasoning to predict the outcome of a program. • Explain that programming projects can have code and artwork. • Design an algorithm. • Create and debug a program that I have written.	• Explore a new programming environment. • Identify that commands have an outcome. • Explain that a program has a start. • Recognise that a sequence of commands can have an order. • Change the appearance of my project. • Create a project from a task description.	• Identify that accuracy in programming is important. • Create a program in a text-based language. • Explain what 'repeat' means • Modify a count-controlled loop to produce a given outcome. • Decompose a task into small steps. • Create a program that uses count-controlled loops to produce a given outcome.	• Control a simple circuit connected to a computer. • Write a program that includes count-controlled loops. • Explain that a loop can stop when a condition is met. • Explain that a loop can be used to repeatedly check whether a condition has been met. • Design a physical project that includes selection. • Create a program that controls a physical computing project.	• Define a 'variable' as something that is changeable. • Explain why a variable is used in a program. • 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 Vocabulary	command; instructions; left; right; forward; backwards; turn; clockwise; anti-clockwise; block; programming; background; sprite	algorithm; order; logic; reason; predict; outcome; program; code; debug	Scratch; commands; outcome; start blocks; hat blocks; motion; looks; sound; control; sensing; operators; variables	text based language; block coding; repeat; count-controlled loop; decomposition; abstraction; pattern-recognition	circuit; micro-bit; single board computer; loop; condition; selection; physical computing	variable; design; predict; run; investigate; modify; make; task imagine; plan; improve; feedback
Challenge	Share a link from the project that has been created using Marty Scratch Jr.	Share a link from the project that has been created using Marty Scratch Jr.	Share a link from the project that has been created using Scratch. Achieve a Dr Scratch score above 50 percent.	Share a link from the project that has been created using Scratch. Achieve a Dr Scratch score above 70 percent.	Create a simple device which uses a computer program to function or operate.	Share a link from the project that has been created using Scratch. Achieve a Dr Scratch score above 85 percent.

Computing Long Term Plan

Spring II	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	**Programming (coding):** Creating animations	**Programming (coding):** Creating quizzes	**Programming (coding):** Events and actions	**Programming (coding):** Repetition in game design	**Programming (coding):** Selection in game design	**Programming (coding):** Variables in game design
Big Question	How do I design a good animation?	How do I programme a simple quiz?	How do events and actions help me structure my programming?	What do repetition functions used in gaming contexts look like?	How do I use selection processes in a quiz style game I am creating?	How do sensors on programmable devices work?
Skills	• Choose a command for a given purpose. • Show that a series of commands can be joined together. • Identify the effect of changing a value. • Explain that each sprite has its own instructions. • Design the parts of a project. • Use my algorithm to create a program.	• Explain that a sequence of commands has a start. • Explain that a sequence of commands has an outcome. • Create a program using a given design. • Change a given design. • Create a program using my own design. • Decide how my project can be improved.	• Explain how a sprite moves in an existing project. • Create a program to move a sprite in four directions. • Adapt a program to a new context. • Develop my program by adding features. • Identify and fix bugs in a program. • Design and create a maze-based challenge.	• Develop the use of count-controlled loops in a different programming environment. • Explain that in programming there are infinite loops and count controlled loops. • Develop a design that includes two or more loops which run at the same time. • Modify an infinite loop in a given program. • Design a project that includes repetition. • Create a project that includes repetition.	• 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.	• Create a program to run on a controllable device. • Explain that selection can control the flow of a program. • Update a variable with a user input. • Use a 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.
Key Vocabulary	animation; broadcasting; condition; flow chart; stage; loop; stack; stage; special effects; values	sequence; commands; outcome; design; remix; improve	events; actions; project; bugs; maze-game; string; x-coordinate; y-coordinate; routine; random	count controlled loops; infinite loops; modify; repetition	selection; conditional statements; if; then; else; flow chart; evaluate	controllable device; variable; user input; compare; variables; values; comparison; output
Challenge	Share a link from the project that has been created using Scratch Jr.	Share a link from the project that has been created using Scratch Jr.	Share a link from the project that has been created using Scratch. Achieve a Dr Scratch score above 50 percent.	Share a link from the project that has been created using Scratch. Achieve a Dr Scratch score above 70 percent.	Create a simple device which uses a computer program to function or operate.	Share a link from the project that has been created using Scratch. Achieve a Dr Scratch score above 85 percent.

Computing Long Term Plan

Long Term Plan: Computing - 2022-2023

Summer I	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	**Creative Media:** Digital painting and writing	**Creative Media:** Image making	**Creative Media:** Stop frame animation	**Creative Media:** Image editing	**Creative Media:** Working with vector graphics	**Creative Media:** Skills Showcase
Big Question	How many colours can I make in a digital art project?	How good are photographs at telling the truth about the past?	How do I make a good stop motion animation sequence?	How can I edit photographs?	What are vector drawings?	How are web pages made?
Skills	• Describe what different freehand tools do. • Use the shape tool and the line tools. • Make careful choices when painting a digital picture. • Explain why I chose the tools I used. • Use a computer on my own to paint a picture. • Compare painting a picture on a computer and on paper.	• Use a digital device to take a photograph. • Make choices when taking a photograph. • Describe what makes a good photograph. • Decide how photographs can be improved. • Use tools to change an image. • Recognise that photos can be changed.	• Explain that animation is a sequence of drawings or photographs. • Relate animated movement with a sequence of images. • Plan an animation. • Identify the need to work consistently and carefully. • Review and improve an animation. • Evaluate the impact of adding other media to an animation.	• Explain that the composition of digital images can be changed. • Explain that colours can be changed in digital images. • Explain how cloning can be used in photo editing. • Explain that images can be combined. • Combine images for a purpose. • Evaluate how changes can improve an image.	• Identify that drawing tools can be used to produce different outcomes. • Create a vector drawing by combining shapes. • Use tools to achieve a desired effect. • Recognise that vector drawings consist of layers. • Group objects to make them easier to work with. • Apply what I have learned about vector drawings.	• Review an existing website and consider its structure. • 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 Vocabulary	freehand tools; shape; line; digital picture	photograph; composition; image; tools; edit; enhance; change	animation; stop motion; story-board; sequence; background; foreground; characters; setting; sequence	artefacts; portfolio; colours; RGB; HSV; cloning; creative; link-maker; solution finding; knowledge building; tenacity; determination; focus; collaborative; discovery	vector drawings; layering	html; Cascading Style Sheet; copyright; copyright free; Creative Commons Licence (spelt UK version although CCL spelt with S); preview; navigation path; hyperlinks
Challenge	Appropriately save and share the pictures created and the files of writing that have been typed.	Create a portfolio of captioned images to describe how each photograph was composed and what editing processes were carried out.	Create a short animation that can be stitched together into a feature length production which will be uploaded to video sharing platforms and given a cinema screening.	Create a portfolio of captioned images to describe how each photograph was composed and what editing processes were carried out. Year 4 also expected to reflect on their experiences in the context of the Computer Science Skills Circle.	Create a portfolio of images to describe how each image was composed and what processes were carried out. Year 5 also expected to reflect on their experiences in the context of the Computer Science Skills Circle.	Contribute to a collection of websites as a legacy of their learning. Year 6 also expected to reflect on their experiences in the context of the Computer Science Skills Circle as well as positively evaluate each other's work.

Computing Long Term Plan

Summer II	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic	**Data Science:** Grouping data	**Data Science:** Pictograms	**Data Science:** Branching databases	**Data Science:** Data logging	**Data Science:** Flat file databases	**Data Science:** Introduction to spreadsheets
Big Question	How can I organise data?	What are pictograms?	What are branching databases?	What are data loggers?	What are flat file databases?	How do spreadsheets work?
Skills	• Label objects. • Identify that objects can be counted. • Describe objects in different ways. • Count objects with the same properties. • Compare groups of objects. • Answer questions about groups of objects.	• Recognise that we can count and compare objects using tally charts. • Recognise that objects can be represented as pictures. • Create a pictogram. • Select objects by attribute and make comparisons. • Recognise that people can be described by attributes. • Explain that we can present information using a computer.	• Create questions with yes/no answers. • Identify the attributes needed to collect data about an object. • Create a branching database. • Explain why it is helpful for a database to be well structured. • Plan the structure of a branching database. • Independently create an identification tool.	• Explain that data gathered over time can be used to answer questions. • Use a digital device to collect data automatically. • Explain that a data logger collects 'data points' from sensors over time. • Recognise how a computer can help us analyse data. • Identify the data needed to answer questions. • Use data from sensors to answer questions.	• Use a form to record information. • Compare paper and computer-based databases. • Outline how you can answer questions by grouping and then sorting data. • Explain that tools can be used to select specific data. • Explain that computer programs can be used to compare data visually. • Use a real-world database to answer questions.	• Create a data set in a spreadsheet. • Build a data set in a spreadsheet. • Explain that formulas can be used to produce calculated data. • Apply formulas to data. • Create a spreadsheet to plan an event. • Choose suitable ways to present data.
Key Vocabulary	label; objects; group	tally charts; pictogram; attributes; compare; graphs	branching database; address; data points; labels	data logger; sensor; collect; record	flat file databases; group; search; sort; select	spreadsheet; columns; rows; cells; data; numeric; format; formula; sum; average; mean; median; mode; sort; range (both the statistical meaning and the technical meaning as applied to spreadsheet use).
Challenge	Appropriately save and share the charts created.	Create a portfolio of charts.	Write a non chronological report based on their findings and use of the database that has been designed.	Write a non chronological report based on their findings and use of the data loggers. Year 4 also expected to reflect on their experiences in the context of the Computer Science Skills Circle.	Write a non chronological report based on their findings and use of the database that has been designed. Year 5 also expected to reflect on their experiences in the context of the Computer Science Skills Circle.	Write a non chronological report based on their findings and use of the spreadsheets that have been created. Year 6 also expected to reflect on their experiences in the context of the Computer Science Skills Circle as well as positively evaluate each other's work.