Computing Medium Term Plan 2021-2022

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Topic	-Improving mouse skills -Online safety- Lesson 1	-Rocket to the moon -Online safety Lesson 2	- Algorithms unplugged **- Safer Internet Day SID- 8/2/22**	-Programming -Online safety Lesson 3	-Introduction to data	-Digital imagery -Online safety Lesson 4
	I can	1- pre-assessment in this lesson. I can log into a computer and access a website. 2- I can develop my mouse skills. 3- I can use mouse skills to draw and manipulate shapes. 4- I can use a range of tools to create desired effects. 5- I can understand how to layer shapes to create an image. Post assessment at the end of this lesson. 6- ***pre-assessment of online safety in this lesson.*** I can know what the internet is and how to use it safely.	1- pre-assessment in this lesson. I can recognise that digital content can be represented in many forms. 2- I can design a rocket. 3- I can sequence a set of instructions. 4- I can build a rocket. 5- I can add data to a table or spreadsheet. Post assessment at the end of this lesson. 6- I can understand different feelings when using the internet.	1- pre-assessment in this lesson. I can understand what an algorithm is. 2- I can follow instructions precisely to carry out an action. 3- I can understand that computers and devices around us use inputs and outputs. 4- I can understand and be able to explain what decomposition is. 5- I can understand how to debug an algorithm. Post assessment at the end of this lesson. **6- I can understand the importance of using online technology safely**	1-pre-assessment in this lesson I can explore a new device. 2- I can create a demonstration video. 3- I can plan and follow a set of instructions precisely. 4- I can program a device. 5- I can create a program. Post assessment at the end of this lesson. 6- I can understand how to treat others, both online and in-person.	1- pre-assessment in this lesson. I can represent data in different ways. 2- I can use technology to represent data in different ways. 3- I can collect and record data. 4- I can sort data. 5- I can design an invention to gather data. Post assessment at the end of this lesson.	1- pre-assessment in this lesson. I can understand and create a sequence of pictures. 2- I can take clear photos. 3- I can edit photos. 4- I can search for and import images. 5- I can create a photo collage. Post assessment at the end of this lesson. 6- I can understand the importance of being careful about what we post and share online. ***post-assessment of online safety in this lesson.***

			and responsibly.				
	Skills	- Learning how to login and navigate around a computer - Developing mouse skills - Learning how to drag, drop, click and control a cursor to create works of art.	- Developing keyboard and mouse skills through designing, building and testing. -Creating a digital list of materials, using drawing software and recording data.	-Algorithms, decomposition and debugging are made relatable to familiar contexts, following directions, learning why instructions need to be specific.	-Introducing programming through the use of a Bee-Bot and exploring its functions.	-Learning what data is and the different ways it can be represented.	- Developing keyboard and mouse skills through designing, building and testing. - Creating a digital list of materials, using drawing software and recording data.
		Online safety- Learning how to stay safe online and how to manage feelings and emotions when someone or something has upset us.					
	Key Vocab	• Account • Clipart • Computer • Log on • Log off • Mouse • Password • Resize • Screen (monitor) • Software • Tool • Username	• computer • program • create • data • digital content • e-document • folder • list • save • sequence • share • spreadsheet	• algorithm • bug • computer • debug • decompose • device • input • instructions • output • solution	• algorithm • Bee-Bot • computing code • computer program • explain • explore • instructions • predict • tinker • video	• categorise • chart • computer • data • information • label • pictogram • record • sort • table • text	• crop • delete • download • drag and drop • editing software • image • import • resize • save as • search engine • sequence • smart device • storage space • visual effects
		Online safety- • communicate • connect • devices • digital footprint • emotion • feelings • internet • internet safety • online • personal information • posting • respect • sharing • smart device • strangers • trust • wired • wireless					
	Sticky Knowledge	-Have the ability to explain how to log into computers and use the mouse and	- Use a computer to make a list. -Design a rocket using a basic range of	-Writing clear algorithms, considering the different steps	-Explain what happened when they pressed the given buttons. Explaining	- Representing data in different ways and using this to answer questions.	-Explaining what is happening in a photo story. Planning three distinct parts of a

		keyboard -Creating a piece of artwork that demonstrates clear control of the mouse, using dragging and clicking to create different effects. -using a variety of different tools to draw a scene from a story. - creating a self-portrait that includes the key features of a face and using at least two different paint tools.	tools on graphics editing software. -Put a set of instructions in the correct order and understand why this is important. -Build a model rocket according to instructions and their designs as well as discussing how they would make it better. -Input data into a table or spreadsheet and measure distances accurately.	required. - Explain what an algorithm is. -Use clear instructions in their algorithm and follow an algorithm carefully. -Create a clear, achievable program for their virtual assistant and explain what inputs and outputs are. -Show clear decomposition of their designs, into the necessary steps to recreate it. -Identifying bugs and fixing algorithms.	why they think the buttons that they pressed were the right ones, recognising cause and effect. -Discussing what each button did and demonstrating how it worked. -Recognising which buttons are necessary in the sequence of instructions. Predicting correct instructions to reach a pre-planned destination. -Identifying a destination and getting Bee-Bot there (in as many steps as necessary). -Programming the Bee-Bot to reach the goal as specified in the story. Identifying and correcting mistakes when they go wrong.	-Logging in and using mouse and keyboard skills to navigate the computer; showing how the same data can be shown in a pictogram as well as tables and charts. -Accurately recording the number of different minibeasts they see and representing this data digitally. -Clicking and dragging objects to create a branching database; typing in questions to sort the data. -Designing a computerised invention to gather data; explaining how it works.	photo story. -Identifying clear photos from less clear photos. Taking their own photos. -Acknowledging that images can be changed after being taken. Suggesting changes that can be made to photos. -Knowing that images can be found on the Internet. Explaining what to do if they see something they don't like. -Recognising that a collage means several photos on a page. Adding both images and text. Resizing and dragging images around the page.
		Online safety-					

		-Children should know the meaning of 'sharing' and 'posting' in an online context - Children should know the 4 top tips for staying safe online 1) People you do not know are strangers 2) Be nice to people like you would be in the real world 3) Keep your personal information private 4) If you are unsure about anything, then tell an adult you trust.					
	Expert evidence	• Children will show they can log in and save work on their own account. • They will show they are learning to locate where keys are on the keyboard as well as developing basic mouse skills. • They will know what to do and verbalise if they have concerns about content or contact online. • They will create digital art using an online paint tool.	• Children will be able to open saved documents. • They will create lists and spreadsheets. • They will show they can select software appropriately.	• Children will be able to create algorithms. • They should verbalise that computers need information to be presented in a simple and a clear way. • They will be able to break a computational thinking problem into smaller parts in order to solve it.	• Children will explore and tinker with hardware to find out how it works. • They will construct a series of instructions into a simple algorithm. • They should apply computing concepts to real world situation in an unplugged activity.	• Children will be able to create, organise, store, manipulate and retrieve digital content. • They will show they can select software appropriately. • They will verbalise uses of technology beyond school.	• Children will be able to create, organise, store, manipulate and retrieve digital content. • They will verbalise what to do if they have concerns about content or contact online. • They will use tablets to take photos. • They will predict the behaviour of simple programs.
		Online safety- They should understand that they need to be kind on the internet, as they would in real life. They should discover which devices connect to the internet and understand some tips for staying safe and why this is important.					

Year 2	Topic	-What is a computer? - Online safety Lesson 1	-Algorithms and debugging -Online safety Lesson 2	-Programming: ScratchJr **- Safer Internet Day- 8/2/22**	-Word processing -Online safety Lesson 3	-Stop motion	- International Space Station (link to the planet.) -Online safety Lesson 4 and 5
	I can	1- pre-assessment in this lesson. I can recognise the parts of a computer. 2- I can recognise how technology is controlled. 3- I can recognise technology. 4- I can create a design for an invention. 5- I can understand the role of computers.Post assessment at the end of this lesson. 6- **pre-assessment of online safety in this lesson.**I can understand what happens to information posted online.	1- pre-assessment in this lesson. I can decompose a game to predict the algorithms that are used. 2- I can understand that computers can use algorithms to make predictions. 3- I can plan algorithms that will solve problems. 4- I can understand what abstraction is. 5- I can understand what debugging is.Post assessment at the end of this lesson. 6- I can understand how to keep things safe and private online .	1- pre-assessment in this lesson. I can explore a new application. 2- I can create an animation. 3- I can use characters as buttons. 4- I can follow an algorithm. 5- I can plan and use a code to create an algorithm.Post assessment at the end of this lesson. 6- **I can understand the importance of using online technology safely and responsibly.**	1- pre-assessment in this lesson. I can begin to learn to touch type. 2- I can understand how to use a word processor. 3- I can understand how to add images to a text document. 4- I can create a poetry book using sources from the internet. 5- I can understand what happens to information posted online.Post assessment at the end of this lesson. 6- I can explain what should be done before sharing information online.	1- pre-assessment in this lesson. I can understand what animation is. 2- I can understand what stop motion is. 3- I can create a stop motion animation. 4- I can plan my stop motion animation. 5- I can create my stop motion animation. Post assessment at the end of this lesson.	1- pre-assessment in this lesson. I can understand how computers can help humans survive. 2- I can create a digital drawing of essential items for life in space. 3- I can understand the role of sensors on the ISS. 4- I can create an algorithm for growing a plant in space. 5. I can interpret data. Post assessment at the end of this lesson. 6- I can explain why I have the right to say no and deny permission. 7- I can learn strategies that will help me decide if

							something I see online is true or not. ***post-assessment of online safety in this lesson.***
	Skills	-Exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention.	-Developing an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient, introduction of loops.	-Exploring what 'blocks' do' by carrying out an informative cycle of predict > test > review. - Programming a familiar story and making a musical instrument.	- Developing touch typing skills, learning keyboard shortcuts and simple editing tools.	-Learning how to create simple animations from storyboarding creative ideas.	-Learning how data is collected, used and displayed and the scientific learning of the conditions needed for plants and humans to survive.
		Online safety: Learning how to keep information safe and private online; who we should ask before sharing things online and how to give, or deny permission online.					
	Key Vocab	• battery • buttons • computer • desktop • device • electricity • invention • laptop • technology • wire	• artificial intelligence (AI) • bug • correct • data • debug • decompose • error • key features • loop • predict • unnecessary	• animation • bug • code • debug • icon • imitate • instructions • sequence	• backspace • copyright • image • import • keyboard character • paste • undo/redo • touch typing	• animator • storyboard • contraption · upload • decompose • design • download • film review • filming • import • image • plan • sketch	• approximate • astronaut • data • digital content • experiment • interactive map • laboratory • monitor (verb) • satellite • sensor • space • survival • thermometer

						• software • stop-motion	
		Online safety: • accept • consent • content • offline • online • password • permission • personal information • terms and conditions • trusted adult					
	Sticky Knowledge	-Confidently naming the peripherals: screen, keyboard and mouse and understanding the function of each of the parts. -They should also be able to spot peripherals on different types of computers. -Recognising that buttons cause effects and that technology follows instructions. -Recognising different forms of technology beyond laptops and tablets; suggesting what the technology does (after observing it); explaining why they think something is technology.	-Writing a creative algorithm planned for the dinosaur game and explaining what decomposition means. -Writing clear and precise algorithms that can be understood by another person. -Creating algorithms to solve problems and beginning to use loops to make their code more efficient. -Clearly explaining what abstraction is and creating a plan which can be identified as a particular location through clear landmarks or a key. -Understanding what debugging is and identifying incorrect	-Explain and recognise what the blocks are used. -Explaining what a loop is and why it's useful. - Being able to include 'button' characters -Recognising that the character is controlled by programming blocks. -Understanding the importance of sequencing. -Explaining the role of each of the blocks in their program. -Recognising which blocks matched the statements in the algorithm. -Using the 'cut and paste' paper algorithm when	- Understanding which are the home row keys and how to find them for typing as well as understanding and using spacebar and backspace correctly. -Typing and making simple alterations to text using buttons on a word processor. -Creating a document which contains appropriate images and modification of text, using keyboard shortcuts. -Understanding how to use copy and paste to copy text from one document to another; using different text styles and editing	-Creating a flip book animation of a ball with small changes between images. -Creating a short stop motion with small changes between images. -Planning out an animation with one object.	-Navigating the digital map and describing and explaining at least one way in which astronauts' survival needs are met aboard the ISS. -Identifying and digitally drawing at least six items which fulfil basic human needs when aboard the ISS and explaining the importance of exercise, healthy eating and cleanliness. -Reading the correct temperature on a thermometer and designing a display showing everything that needs to be monitored by sensors on the ISS.

		-Including inputs and/or outputs as part of their invention and suggesting how an invention works. -Recognising computers in the world around them and explaining the role of each computer.	steps within an algorithm.	creating the program.	tools and crediting source materials. -Children can explain what is meant by online information and what information is safe to be shared online.		-Creating an algorithm that addresses all plants' needs and explaining how space exploration can benefit life on Earth. -Able to explain why water is essential to life and to identify which planets have a temperature range that might sustain life.
		Online safety: -Children can explain what is meant by online information and what information is safe to be shared online. -Can explain why we need passwords and the need for a strong password. They know what information is private and how we can begin to make things private online. -Understanding that they need to ask permission before sharing content online. Explaining how it might make others feel if they have not asked permission or have shared information about someone else when asked not to. -Understanding that they have a right to say no/deny their permission and know who they can ask for help. -Understanding that not everything they see online is true and can explain some strategies to help them work out if information is reliable or not.					
	Expert evidence	Children should learn about inputs and outputs and how they are used in algorithms. They should understand what a computer is and the role of	Children should create and debug simple programs. They should use logical reasoning to predict the behaviour of simple programs. Children	Children should create and debug simple programs. They should use logical reasoning to predict the behaviour of simple programs. Children	Children should use word processing software to type and reformat text. They should understand the importance of staying safe online.	Children should use technology purposefully to create, organise, store, manipulate and retrieve digital content. They should understand	Children should use technology to create and label images and to put data into a spreadsheet. They should consider inputs and outputs to understand how

		individual components.	should understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	should understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. They should use technology purposefully to create, organise, store, manipulate and retrieve digital content.		how to use tablets or computers to take photos.	sensors work
		Online safety: Children should be able to identify how to keep personal information private. They should be using technology respectfully by asking for permission before sharing about others online.					
Year 3	Topic	-Networks and the internet -Online safety Lesson 1	-Emailing -Online safety Lesson 2	-Data handling: Comparison cards databases **- Safer Internet Day- 8/2/22**	-Programming: Scratch -Online safety Lesson 3	-Journey inside a computer	-Creating media: Video trailers -Online safety Lesson 4
	I can	1- pre-assessment in this lesson. I can understand what a network is and understand our	1- pre-assessment in this lesson. I can understand what email is used for and to send an email.	1- pre-assessment in this lesson. I can understand the terminology around databases.	1- pre-assessment in this lesson. I can explore a programming application.	1- pre-assessment in this lesson. I can recognise basic inputs and outputs. 2- I can decompose a	1- pre-assessment in this lesson. I can plan a book trailer. 2- I can take photos or videos to tell a

		school network. 2- I can understand how information moves around a network and begin to recognise real world networks. 3- I can understand how the Internet works and explain a website's journey. 4- I can explore the role of routers. 5- I can understand the role of packets.Post assessment at the end of this lesson. **6- pre-assessment of online safety in this lesson** I can understand how the internet can be used to share beliefs, opinions and facts.	2- I can edit email content and add an attachment. 3- I can understand the importance of being kind online and what this looks like. 4- I can understand that cyberbullying involves being unkind online. 5- I can understand that not all emails are genuine. Post assessment at the end of this lesson. 6- I can understand the effects that some internet use can have on our feelings and emotional wellbeing.	2- I can compare paper and computerised databases. 3- I can sort, filter and interpret data. 4- I can represent data in different ways. 5- I can sort data for a purpose.Post assessment at the end of this lesson. **6- I can understand the importance of using online technology safely and responsibly.**	2- I can use repetition (a loop) in a program. 3- I can program an animation. 4- I can program a story. 5- I can program a game.Post assessment at the end of this lesson.	laptop. 3- I can understand the purpose of computer parts . 4- I can understand the purpose of computer parts. 5- I can decompose a tablet computer.Post assessment at the end of this lesson. 6. I can understand the ways personal information can be shared on the internet.	story. 3- I can edit a video. 4- I can add text and transitions to a video. 5- I can evaluate video editing.Post assessment at the end of this lesson. 6- I can understand the rules for social media platforms. ***post-assessment of online safety in this lesson.***
	Skills	-Learning what a network is and how devices communicate and share information.	-Sending emails with attachments. - understanding what cyberbullying is.	-Learning about records, fields and data and sorting and filtering data.	-Exploring the programme Scratch, following the predict > test > review cycle. - Learning about 'loops' and	-Assuming the role of computer parts and creating paper versions of computers to consolidate	-Developing digital video skills to create trailers, with special effects and transitions.

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					programming an animation, story and game.	understanding of how a computer works.	
		Online Safety : -Learning the difference between fact, opinion and belief; and how to deal with upsetting online content. -Knowing how to protect personal information online.					
	Key Vocab	• device • file • internet • network • network map • network switch • router • server • submarine cables • the cloud • wi-fi/wired/wireless • wireless access point	• account • attachment • BCC • CC • computer • cyberbullying • domain • email • email account • emoji • information • log off/ log on • username • spam • password	• categorise • data • database • fields • filter • graphs and charts • information • record • sort • spreadsheet	• animation • application • code • code block • debug • decompose • interface • loop • predict • program • remixing code • repetition code • review • tinker • sprite	• algorithm • computer • computer program • data • desktop • instructions • ROM • tablet device • trackpad	• application • voice • desktop • digital device • edit • film • film editing software • graphics • import • key events • laptop • plan • recording • sound effects • time code • voiceover
		Online safety; • accurate, • age restricted, • autocomplete, • beliefs, • block, • content, • digital devices, • fact, • fake news, • opinion, • privacy settings, • reliable, • report, • requests, • search engine, • security questions, • smart devices, • social media platforms, • social networking					
	Sticky Knowledge	-Recognising that a network is two or	-Understanding how to log in and log out	-Explaining what is meant by field,	- Being able to explain what	-Suggesting what inputs and outputs	-Creating a storyboard to plan

		more devices connected and showing this information in a poster that combines text and images. -Recognising that files are saved on a server and that files travel through wireless and wire connections rather than travelling directly. -Understanding that networks connect to the internet via a router and explaining parts of the journey a website goes through to reach your computer. -Explaining that routers connect us to the internet and suggesting what they have to do. -Explaining that websites are split into small pieces to be sent via the internet and that	of email and sending a simple email which includes a subject plus 'To' and 'From' in the body text -Editing an email, typing the correct email address and adding at least one attachment before sending it. -Writing an email with instructions written using positive language. -Consider pairing pupils of mixed ability to support pupils of lower ability. -Sending an email which describes some of the best ways to avoid being tricked by fake emails.	record and data and playing the Comparison cards game by accurately comparing numbers and scanning for relevant information. -Identifying examples of paper and computerised databases from a list of statements. -Putting values into a spreadsheet, sorting, filtering and interpreting that data and creating questions that can be answered by the data. -Creating a graph on Google Sheets, naming different types of chart and explaining the purpose of visual representations of data. -Explaining what databases are used for as well as sorting and filtering data for	happened when they added certain blocks. Suggesting how the colour differences could help them predict block actions. -Children can explain what a loop is and what its role in a program is. Children can include a loop in their program and explain what it's doing. -Suggesting which blocks are used and to create what effect. Suggesting possible additions to an existing program. Choosing blocks to create specific effects. -Suggesting what blocks/features have been used. Recognising where something on screen is controlled by code. Using a systematic approach to finding bugs.	are and recognising that the computer sends and receives instructions. -Should focus on the definitions of the CPU and hard drive as these are most straightforward. -Suggesting parts of a computer and explaining what an algorithm is. -Suggesting what memory is for inside a computer and using a QR code. -Recognising some computer parts relating to functions and making some laptop and tablet comparisons.	their book trailer and describing the purpose of a trailer. -Using digital devices to record video or take photos, framing shots carefully to create the desired effects. -Importing videos and photos into film editing software. -Adding text to their trailer, as well as incorporating different transitions between shots or images. -Identifying and articulating what makes a successful book trailer and suggesting how to share book recommendations with others.

		packets are encoded with information to get to the right place.		a specific purpose.	-Explaining what an algorithm is. Understanding the purpose of an algorithm. Using a class algorithm when creating a program.		
		Online safety -Confidence in understanding knowing examples of opinions, beliefs and facts. -The children's ability to recall some of the seven tips for dealing with upsetting online content. -The children understand that digital devices used can share personal information amongst each other. -Can draw the icons and/or interface of a popular social media platform discussed in their group's role play.					
	Expert Evidence	Children should identify network components and understand how they are used to connect to the internet and how data is transferred. They should show understanding 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.	Children should learn about cyberbullying and fake emails. They should understand the purpose of emails.	Children should use technology purposefully to create, organise, store, manipulate and retrieve data.	Children should use logical reasoning to explain how simple algorithms work. They should be designing, writing and debugging programs that accomplish specific goals, including controlling or simulating physical systems. They should be solving problems by decomposing them into smaller parts. They should use sequence, selection, and repetition in programs. as well as	Children should understand what different components of a computer do. They should understanding that programs execute by following precise and unambiguous instructions.	Children should use technology purposefully to create, organise, store, manipulate and retrieve digital content, including searching for relevant information.

					working with variables and various forms of input and output		
		Online safety: Children should learn to distinguish between facts, opinions and beliefs on the internet. They should learn how to deal with upsetting online content as well as learn about how to protect our personal information using privacy settings and how to be discerning about what information we share and who with.					
Year 4	Topic	- Website design - Online safety Lesson 1 and 2	- Further coding with Scratch -Online safety Lesson 3	- Investigating weather **- Safer Internet Day- 8/2/22**	- HTML - Online safety Lesson 4	- Collaborative learning	- Computational thinking - Online safety Lesson 5 and 6
	I can	1- pre-assessment in this lesson. I can explore the features of Google Sites to learn how to create content for a web page. 2- I can plan content for a web page as a collaborative online piece of work. 3- I can create a web page as part of a collaborative class website. 4- I can plan and create a website. 5- I can create a website and evaluate its success. Post	1- pre-assessment in this lesson. I can recall the key features of Scratch. 2- I can understand how a Scratch game works by using decomposition to identify key features. 3- I can understand what a variable is and how to make one. 4- I can understand how to make a variable in Scratch. 5- I can use knowledge of how variables work to create a quiz.Post assessment at the	1- pre-assessment in this lesson. I can log data taken from online sources within a spreadsheet. 2- I can design a weather station. 3- I can design an automated machine to respond to sensor data. 4- I can understand how weather forecasts are made. 5- I can use green screen technology in a video to present a weather forecast. Post assessment at the end of this	1- pre-assessment in this lesson. I can understand that web pages are built using different programming languages, and one of them is HTML. 2- I can change the HTML. 3- I can change the HTML and CSS to alter the appearance of an object on the web. 4- I can understand and explore more complex components of a web page. 5- I can alter key	1- pre-assessment in this lesson. I can understand that software can be used collaboratively online to work as a team. 2- I can understand how to contribute to someone else's work effectively. 3- I can understand how to create effective presentations. 4- I can understand how to create and share Google Forms. 5- I can understand how to use a shared spreadsheet to	1- pre-assessment in this lesson. I can understand that computational thinking is made up of four key strands. 2- I can understand what decomposition is and how to apply it to solve problems. 3- I can understand what pattern recognition and abstraction mean. 4- I can understand how to create an algorithm and what it can be used for. 5- I can combine computational

		assessment at the end of this lesson. **6- *pre-assessment of online safety in this lesson***I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy. 7. I can describe some of the methods used to encourage people to buy things online.	end of this lesson. 6- I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true.	lesson. **6- I can understand the importance of using online technology safely and responsibly.**	elements on a webpage including text and images.Post assessment at the end of this lesson.	explore data. Post assessment at the end of this lesson. 6. I can explain that technology can be designed to act like or impersonate living things.	thinking skills to solve a problem. Post assessment at the end of this lesson. 6- I can explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology. 7. I can understand how to be safe and respectful online. ***post-assessment of online safety in this lesson.***
	Skills	-Learning how web pages and sites are created and how to embed media and links.	-Revisiting the key features and beginning to use 'variables' in code scripts.	-Researching and storing data on spreadsheets. -Designing a weather station.	-Learning about the markup language behind a webpage - Becoming familiar with HTML tags - Changing HTML and CSS code to alter images and 'remix' a live website.	-Learning how to work collaboratively and exploring a range of collaborative tools.	-Solving problems effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition.
		Online safety: -Searching for information and making a judgement about the probable accuracy. -Recognising adverts and pop-ups - Understanding that technology can be distracting.					

Key Vocab						
	• collaboration • tab • content • website • create • WWW • design • edit • embed • feature • header • hyperlink • insert (file) • online • plan	• code • code block • conditional statement • decompose • direction • feature • icon • orientation • position • program • project • stage • tinker • variable	• algorithm • temperature • automated machine • calculate • weather • climate • device • forecast • log data • predict • record • sensor • source • spreadsheet	• code • content • copyright • CSS • hacker • hex code • internet browser • permission • script • URL • web page	• collaborate • spreadsheet • comment • transition • e-Document • edit • email • icon • insert (file) • link • presentation software • presentation • reply • reviewing comments • share	• abstraction • algorithm • design • code • code blocks • computer • decompose • problem

Online safety: • ad/ advertisement • accuracy • alter • belief • bot • chatbot • fact • fake • gaming • in-app purchases • influencer • implication • judgement • live streaming • opinion • pop ups • reliable • respectful • search engine • social media • snippet • sponsored

Sticky Knowledge						
	-Using most skills from the checklist on their website. -Creating a clear plan for their web page and beginning to create it. -Creating a professional looking web page with useful information and a clear style, which is easy for the user to	-An understanding of how to create a simple script in Scratch as well as an ability to change sprite and prevent the sprite from rotating. -knowing some of the actions that make the quiz game work. -An understanding of what a variable is and	-Searching the web efficiently to find temperatures of different cities and recording this accurately. -Designing a weather station which gathers and records sensor data, explaining how it works and the units of measurement it would use.	-Adding text between the heading and paragraph tags. Easily activating the goggles to investigate a web page. -Explaining how they altered the HTML to create their own posters. -changing the colours of their object elements. Changing	-Understanding the need to be thoughtful when working on a collaborative document. -Using comments to suggest changes to a document and understanding how to resolve comments on a document. -Using a variety of	-An understanding that problems can be solved more easily using computational thinking. -Understanding what the different code blocks do and creating a simple game using the code looked at in the start of the lesson plus a few further features.

			read and find information from. -Creating a clear plan by referring back to their checklist to include a range of features. -Creating four web pages with a range of features in their website	how to use the 'say' and 'ask' blocks -use of a variable to record a score -An understanding of what a variable is and how it works within a program	-Designing an automated machine which uses selection to respond to sensor data. -Searching for and recording weather forecast information in a spreadsheet and explaining how this data is collected. -Creating a video which uses chroma keying and includes weather forecast information.	the sizes of some of the elements. Explaining how they created their story. -Adapting the basic elements of a story within a web page using the 'Inspect Elements' tool. -Could use simpler website layouts such as 'Kiddle' and may need support before completing the activity independently.	different slide styles to convey information including images and transitions. -Creating a Google Form with a range of different questions types that will provide different types of answer, e.g. text, multiple choice or numerical values. -Exporting data to a spreadsheet, highlighting data, using conditional formatting and calculating averages and sums of numbers.	-Understanding the terms 'pattern recognition' and 'abstraction' and how they help to solve a problem as well as making some changes to the existing code by recognising the patterns that cause the current actions to happen. -Creating a Scratch program which draws a square and at least one other shape. -Understanding how computational thinking can help to solve problems and applying computational thinking to problems they face.
		Online safety: - Being able to describe how to search over multiple platforms and are aware of the accuracy of the results presented. -Describing some of the methods used to persuade people to buy online . - Being able to explain the difference between fact, opinion and belief and recognise these online. -Can explain what a bot is and give examples of different bots. -being able to explain some positive and negative distractions of using technology and small strategies on how to reduce the amount of time spent on technology. -Children can describe strategies for being safe online and give examples of how to be respectful. They know how to respect the thoughts and beliefs of others.					

| | Expert Evidence | Children should be selecting using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals.
They should understand opportunities offered by the World Wide Web for communication and collaboration. | Children should use logical reasoning to explain how simple algorithms work. they should design, write and debugging programs that accomplish specific goals, including controlling or simulating physical systems.
They should solve problems by decomposing them into smaller parts. Using sequence, selection and repetition in programs.
They should also work with variables and various forms of input and output. | Children should understand why some sources are more trustworthy than others. Children should understanding the role of inputs and outputs in computerised devices. | Children should recognise that information on the internet might not be true or correct. They should use technology safely, by recognising acceptable/ unacceptable behaviour. They should know what to do when they have concerns about content or contact online.
Children should understand that websites can be altered by exploring the code beneath the site.
They should be able to design, write and debug programs that accomplish specific goals. Children should solve problems by decomposing them into smaller parts. | Children should select using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals.
They should understand opportunities offered by the World Wide Web for communication and collaboration. | Children should understand what decomposition is and how it facilitates problem solving.
They should design, write and debug programs that accomplish specific goals.
They should understand abstraction and pattern recognition. |
|---|---|---|---|---|---|---|---|
| | | Online safety:- Children should use technology safely and responsibly by considering the risks of screen-time and technology. | | | | | |

		They should use search technologies effectively, appreciating how results are selected and ranked.					
Year 5	Topic	-Mars Rover 1 -Online safety Lesson 1 and 2	-Mars Rover 2 -Online safety Lesson 3	-Search engines **- Safer Internet Day- 8/2/22**	-Micro:bit -Online safety Lesson 4	- Programming: music	-Stop motion animation -Online safety Lesson 5
	I can	1- pre-assessment in this lesson. I can identify how and why data is collected from space. 2- I can identify how messages can be sent using binary code. 3- I can identify the computer architecture of the Mars Rovers. 4- I can use simple operations to calculate bit patterns. 5- I can represent binary as text.Post assessment at the end of this lesson. 6- *pre-assessment of online safety in this lesson* I can understand how apps can access our personal information and how to alter the	1- pre-assessment in this lesson. I can understand how bit patterns represent images as pixels. 2- I can explain how the data for digital images can be compressed. 3- I can identify and explain the 'fetch, decode, execute' cycle. 4- I can create a safe online profile and tinker with 3D design software. 5- I can modify the design of a 3D object using CAD software.Post assessment at the end of this lesson. 6- I can understand how online information can be used to form	1- pre-assessment in this lesson. I can understand what a search engine is and how to use it. 2- I can be aware that not everything online is true. 3- I can search effectively. 4- I can create an informative poster. 5- I can understand how search engines work. Post assessment at the end of this lesson. **6- I can understand the importance of using online technology safely and responsibly.**	1- pre-assessment in this lesson. I can tinker. 2- I can program an animation. 3- I can recognise coding structures. 4- I can create a program. 5- I can create a program. Post assessment at the end of this lesson.	1- pre-assessment in this lesson. I can tinker with Scratch music elements. 2- I can create a program that plays themed music. 3- I can plan a soundtrack program. 4- I can program a soundtrack. 5- I can program music.Post assessment at the end of this lesson. 6. I can discover ways to overcome bullying.	1- pre-assessment in this lesson. I can understand what animation is. 2- I can understand what stop motion animation is. 3- I can plan my stop motion video, thinking about the characters I want to use. 4- I can create a stop motion animation. 5- I can edit and assess my stop motion animation.Post assessment at the end of this lesson. 6- I can understand how technology can affect health and wellbeing. *post-assessment of online safety in this lesson*.

		permissions. 7. I can be aware of the positive and negative aspects of online communication.	judgements				
	Skills	-Learning about the Mars Rover, exploring how and why it transfers data including instructions, and how messages can be sent using binary code.	-Exploring how the Mars rover: moves, follows instructions, collects and sends data -Understanding how computers work, what data is and how it is transferred.	-Learning about how page rank works and how to identify inaccurate information.	-Creating algorithms and programs that are used in the real world. -Using the 'predict, test and evaluate' cycle to create and debug programs with specific aims.	-Building-on programming and music skills to create different sounds, beats and melodies which are put to the test with a Battle of the Bands performance!	-Creating animations, storyboard ideas and decomposing a story into small parts before putting it together to create the illusion of a moving image.
		Online safety -Learning about app permissions; the positive and negative aspects of online communication; that online information is not always factual; how to deal with online bullying and managing our health and wellbeing.					
	Key Vocab	• binary code • data • sequence • data transmission • discovery • signal • distance • simulation • input • space (astronomy) • moon • numerical data • output • planet	• algorithm • binary image • bit • bit pattern • CAD • data • encode • image • JPEG • memory computer • operating system • pixels	• algorithm • company logo • data leak • data privacy • inaccurate information • index • keywords • network • online • page rank • TASK • web crawler • website	• .hex file • variable • .zip file • bluetooth • code blocks • decompose • emulator • feature • loop • pedometer • predict • systematic • tinker	• basic commands • tinker • bug/debug • code (computer and verb) • error • live loop • loop • pitch • program language • rhythm • soundtrack • tempo • timbre	• animation • animator • background • decompose • design • digital device • duplicate • editing • frame • illusion • onion skinning • stop-motion • storyboard • upload

		• radio signal • scientist		• WWW			
		Online safety: • application 'app' • anonymity • bullying • emoji • gif • hacked • interpreted • judgement • meme • mental health • misinterpreted • permissions • reliable • reputation					
	Sticky Knowledge	-Identifying some of the types of data which the Mars Rover could collect (for example, photos). Explaining how the Mars Rover transmits the data back to Earth (radio waves) and the challenges involved in this (the great distance). Researching a comparative fact about the distance to Mars. -Reading any number in binary, up to eight bits. -Identifying input, processing and output on the Mars Rovers. -Reading binary numbers and grasping the concept of binary addition.	-Creating a pixel picture, explaining that a pixel is the smallest element of a digital image and that binary is used to code and transfer this data. -Saving JPEG as a bitmap and recognising the difference in file size as well as explaining how pixels are used to transfer image data. -Explaining the 'fetch, decode, execute' cycle in relation to real-world situations. -Creating a profile with a safe and suitable username and password and beginning to use 3D design tools. -Independently taking	-Explaining what a search engine is, suggesting several search engines to use and explaining how to use them to find websites and information. -Suggesting that things online aren't always true and recognising what to check for. -Explaining why keywords are important and what TASK stands for, using these strategies to search effectively. -Recognising the terms 'copyright' and 'fair use' and combining text and images in a poster. -Making parallels between book searching and	-Confidence to clip blocks together and predict what will happen. Making connections with previous programming interfaces they've used, e.g. Scratch. -Creating their own images to make the animation and recognising the difference between 'on start' and 'forever'. -Recognising blocks they've used previously, identifying inputs and outputs used and making predictions about how variables work. -Choosing appropriate blocks to complete the program and attempting the challenges independently.	-Iterating ideas, testing and changing throughout the lesson. Explaining what the basic commands do. -Explaining how their program linked to the theme. Including a loop in their work. Correcting their own simple mistakes. -Explaining their scene in the story. Being able to link the musical concepts to their scene. Recognising that they can program their music in that way. -Including a repeat and explaining its function to enhance music. -The ability to code a piece of music that combined a variety	-Creating a toy with simple images with a single movement. -Creating a short stop motion with small changes between images. -Thinking of a simple story idea for their animation then decomposing it into smaller parts to create a storyboard with simple characters. -Making small changes to the models to ensure a smooth animation and deleting unnecessary frames. -Have a clear animation with added effects such as extending parts and the use of a title. They will also be able to provide helpful feedback to other

		-Relating binary signals (Boolean) to a simple character based language, ASCII.	tutorial lessons, applying what they have learnt to their design and understanding the importance of using an online community responsibly.	internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank.	-Breaking a program down into smaller steps, suggesting appropriate blocks and matching the algorithm to the program.	of structures. Using loops in their programming. Recognising that programming music is a way to apply their skills.	groups about their animations.
		Online safety: -Understanding that passwords need to be strong and that apps do require some form of passwords. -Recognising a couple of the different types of online communication and know who to go to if they need help with any communication matters online. -Searching for simple information about a person, such as their birthday or key life moments. -Knowing what bullying is and that it can occur both online and in the real world. -Recognising when health and wellbeing are being affected in either a positive or negative way through online use. Offering a couple of advice tips to combat the negative effects of online use.					
	Expert Evidence	Children should 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. They should use search technologies effectively, appreciating how	Children should develop their CAD skills. They should understand how image data is transferred.	Children should recognise that information on the internet might not be true or correct. They should know how to use keywords to quickly find accurate information.	Children should use block coding to program a device. They should explore variables and different forms of input. Children should understand how external devices can be programmed by a separate computer.	Children should select using and combining a variety of software to design and create a range of programs, systems and content that accomplish given goals. They should use programming language to create music, including use of loops.	Children should use technology purposefully to create, organise, store, manipulate and retrieve digital content. They should understand how to use tablets or computers to take photos. Children should consider sequence and selection of frames when editing work.

		results are selected and ranked, and be discerning in evaluating digital content. They should recognise that computers transfer data in binary and understand simple binary addition.					
		Online safety: Children should understand permissions required by apps to access personal information. They should consider online judgements that people make and how they treat others online.					
Year 6	Topic	- Big Data 1 -Online safety Lesson 1 and 2	- Computing systems and networks: Bletchley Park -Online safety Lesson 3 and 4	- Big Data 2 **- Safer Internet Day- 8/2/22**	-Creating media: History of computers	-Intro to Python -Online safety Lesson 5	-Skills showcase -Online safety Lesson 6
	I can	1- pre-assessment in this lesson. I can identify how barcodes and QR codes work. 2- I can know how infrared waves transmit data. 3- I can recognise the uses of RFID. 4- I can gather and analyse data in real time.	1- pre-assessment in this lesson. I can understand that there are lots of different types of secret codes. 2- I can understand the importance of having a secure password. 3- I can understand the importance of Bletchley Park to the	1- pre-assessment in this lesson. I can explain how data can be safely transferred. 2- I can investigate the data usage of online activities. 3- I can identify how data analysis can improve city life. 4- I can design a system for turning a	1- pre-assessment in this lesson. I can tinker with sound. 2- I can record, edit and add sound effects to a radio play. 3- I can understand how computers have changed and the impact this has had on the modern world. 4- I can research one	1- pre-assessment in this lesson. I can tinker. 2- I can understand nested loops. 3- I can understand basic Python commands. 4- I can use loops when programming. 5- I can understand the use of random numbers.Post	1- pre-assessment in this lesson. I can design an electronic product. 2- I can code and debug a program. 3- I can use CAD to design a product. 4- I can create a website. 5- I can create and edit a video. 6. I can understand

		5- I can analyse and evaluate data. Post assessment at the end of this lesson. 6-*pre-assessment of online safety in this lesson* I can describe issues online that give us negative feelings and know ways to get help. 7. I can think about the impact and consequences of sharing online	World War II war effort. 4- I can understand about some of the historical figures that contributed to technological advances in computing. 5- I can research and present information about historical figures in computing.Post assessment at the end of this lesson. 6- I can understand how to create a positive online reputation. 7. I can describe how to capture bullying content as evidence.	school into a smart school . 5- I can present ideas for turning a school into a smart school.Post assessment at the end of this lesson. **6- I can understand the importance of using online technology safely and responsibly.**	of the computers that changed the world and present information about it to the class. 5- I can design a computer of the future. Post assessment at the end of this lesson.	assessment at the end of this lesson. 6- I can manage personal passwords effectively.	the techniques used in advertising a product. Post assessment at the end of this lesson. 7- I can be aware of strategies to help be protected online. *post-assessment of online safety in this lesson.*
	Skills	-Identifying how barcodes and QR codes work. -Learning how infrared waves are used for the transmission of data while recognising the uses of RFID.	-Discovering the history of Bletchley and learning about code breaking and password hacking. -Demonstrating digital literacy skills by creating	-Further developing understanding of how networks and the Internet are able to share information. -Learning how big data can be used to design smart buildings.	-Writing, recording and editing radio plays set during WWII -Learning about how computers have evolved.	-Using the programming language 'Python' to create designs and art. -Learning how to create loops and nested loops to make their code more	-Designing a product, pupils: evaluate, adapt and debug code to make it suitable for their needs and designing products in CAD and creating a website and video.

		presentations.			efficient.	
		Online safety: -Learning to deal with issues online; about the impact and consequences of sharing information online; how to develop a positive online reputation; combating and dealing with online bullying and protective passwords.				
	Key Vocab	• barcode • signal • boolean • systems or data • brand • analyst • commuter • transmission • contactless • data • data privacy • encrypt • infrared waves • NFC • QR code • radio waves • RFID	• acrostic code • brute force hacking • Caesar cipher • cipher • encrypt • invention • Nth letter cipher • password • pigpen cipher • technological advancement • trial and error	• big data • bluetooth • corrupt data • digital revolution • GPS • infrared waves • IoT • QR code • SIM • computer simulation • smart school/city	• background noise • byte • computer • CPU • memory storage • mouse • OS • radio play • RAM • ROM • sound effects • touch screen • trackpad	• algorithm • code (computer) • computer command • decompose • import • loop • nested loop • random numbers • remix • script libraries • variable	• input • information • invention • loop • output • photo • program • repetition • screenshot • selection (programming) • sequence • variable • WWW
		Online safety: • anonymity • anti-virus software • digital footprint • digital personality • malware • online reputation • peer-pressure • permission • phishing • privacy settings • report • scammers • screengrab • selfie • software update • two-factor authentications				
	Sticky Knowledge	-A firm understanding of why	-Explaining that codes can be used for	-Recognising that data can become	-Explaining how to record sounds and	-Iterating ideas, testing and changing	-Evaluating code, understanding what it

		barcodes and QR codes were created. An ability to create (and scan) their own QR code using a QR code generator website. -Explaining how infrared can be used to transmit a Boolean type signal. -The ability to explain how RFID works, recall a use of RFID chips, type formulas into spreadsheets. -Taking real time data and entering it effectively into a spreadsheet. Presenting the data collected as an answer to a question (Which ride is the best choice for a FastPass?). Recognising the value of analysing real time data. -Complete customer scenarios two and	a number of different reasons and decoding messages. -Explaining how to ensure a password is secure and how this works. -Presenting a simple website with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. -Explaining the importance of historical figures and their contribution towards computer science. -Presenting information about their historical figure in an interesting and engaging manner.	corrupted within a network and that data sent in packets is more robust, as well as identifying the need to update devices and software. -Recognising differences between mobile data and WiFi and using a spreadsheet to compare and identify high-use data activities and low-use data activities. -Making links between the Internet of Things and Big Data and giving a basic example of how data analysis/analytics can lead to improvement in town planning. -Explaining ways that Big Data or IoT principles could be used to solve a problem or improve efficiency within the school, preparing a	add in sound effects over the top. -Producing a simple radio play with some special effects and simple edits which demonstrates an understanding of how to use the software. -Creating a document which includes correct date information and facts about the computers and how they made a difference. -Demonstrating a clear understanding of their device and how it affected modern computers, including well researched information with an understanding of the reliability of their sources. -Describing all of the features that we'd expect a computer to have including RAM, ROM, hard drive and	throughout the lesson and explaining what their program does. -Using nested loops in their designs, explaining why they need two repeats. -Alter the house drawing using Python commands; using comments to show a level of understanding around what their code does. -Using loops in Python and explaining what the parts of a loop do. -Recognising that computers can choose random numbers; decomposing the program into an algorithm and modifying a program to personalise it.	does.. -I can debug programs and make them more efficient. I can use sequence, selection, repetition or variables within my program -designing appropriate housing for their product using CAD software, including any input or output devices needed to make it work. -Creating an appealing website for their product, aimed at their target audience which explains what their product is and what it does, using persuasive language. -Creating an edited video of their project, articulating the key benefits. -Being able to describe and show how to search for information online and being aware of the

		three in the Activity: Customer scenarios.		presentation about their idea, considering the privacy of some data. -Presenting their ideas about how Big Data/IoT can improve the school and providing feedback to others on their presentations.	processor, but of a higher specification than currently available.		accuracy of the results presented. Also, they will be able to understand the difference between fact and opinion.
		Online safety: -The ability to discuss a range of issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help. -Explaining how sharing online can have both positive and negative impacts. Being aware of how to seek consent from others before sharing material online and can describe how content can still be shared online even if it is set to private. -Children explaining what a 'digital reputation' is and what it can consist of. -Children understand the importance of capturing evidence of online bullying and can demonstrate some of these methods on the devices used at school. -Pupils will be able to describe ways to manage passwords and strategies to add extra security such as two factor authentication. Pupils can also explain what to do if passwords are shared, lost, or stolen. -The pupils being able to describe strategies to identify scams. They will be able to explain ways to increase their privacy settings and understand why it is important to keep their software updated.					
	Expert Knowledge	Children should understand how learning can be applied to a real world context. They should select, use and combine a variety of software to design and create a range of programs,	Children should understand the importance of secure passwords and using searching and word processing skills to create a presentation. They should use programming	Children should select, use and combine a variety of software to design and create a range of programs, systems and content to collect, analyse, evaluate and present data.	Children should edit sound recordings for specific purposes. They should learn about the history of computers and how they evolved over time.	Children should understand that websites can be altered by exploring the code beneath the site. They should design, write and debug programs that accomplish specific	Children should showcase their digital literacy skills. They should demonstrate their computational thinking skills by designing and debugging programs, using different inputs

		systems and content to collect, analyse, evaluate and present data. Children should understand that computer networks provide multiple services. They should understand how barcodes and QR codes work.	software to understand hacking, relating this to computer cracking codes in WWII.			goals. Children should solve problems by decomposing them into smaller parts.	and outputs. Children should understand how search engines work and knowing how to use them safely and effectively.
		Online safety: Children should learn about online reputations and how to go about creating a positive one. They should be aware of the threats that face us online such as scammers and phishing emails and how to identify them.					