WESTON ST MARY C OF E PRIMARY SCHOOL

Long term Computing Plan 2023-24 Cycle B

EYFS - Technology						
Autumn A	**Autumn B**	**Spring A**	**Spring B**	**Summer A**	**Summer B**	**Early Learning Goal**
To show an interest in technological toys such as IWB, iPads, toys with knobs, pulleys and buttons	To know how to operate simple equipment To draw pictures on IWB and begin to change colours To use the iPad to take pictures	To access, understand and interact with a range of technology within the Year R environment To draw pictures on IWB, changing colour and pen size	To learn about e-safety To use the IWB, changing games and programmes	To explore how a Bee-Bot works To use the internet with adult supervision to find and retrieve information	To begin to give reasons why we need to stay safe online To use the Bee-Bots and program them to go forwards and backwards To type their name using an iPad or notebook	*There are no early learning goals that directly relate to computing objectives, though it is still expected that children will be introduced to appropriate technology and use it within their provision.*

Year 1/2	**Autumn A**	**Autumn B**	**Spring A**	**Spring B**	**Summer A**	**Summer B**
	Computing systems and networks/E-Safety	**Programming 1**	**Skills showcase**	**Programming 2**	**Creating media**	**Data handling**
	What is a computer?/E-Safety	**Algorithms and debugging**	**Word Processing**	**Scratch Jr**	**Stop motion**	**International Space Station**
Key Skills	• Understanding what a computer is and that it's made up of different components. • Recognising that buttons cause effects and that technology follows instructions. • Learning how we know that technology is doing what we want it to do via its output. • Using greater control when taking photos with cameras, tablets or computers. • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts. • Using word processing software to type and reformat text. • Creating and labelling images.	• Developing confidence with the keyboard and the basics of touch typing. • Articulating what decomposition is. • Decomposing a game to predict the algorithms used to create it. • Learning that there are different levels of abstraction. • Explaining what an algorithm is. • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. • Incorporating loops within algorithms. • Using logical thinking to explore software, predicting, testing and explaining what it does.	• Developing confidence with the keyboard and the basics of touch typing. • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts. • Using word processing software to type and reformat text. • Searching for appropriate images to use in a document. • Understanding what online information is. • Identifying whether information is safe or unsafe to be shared online.	• Recognising that buttons cause effects and that technology follows instruction • Explaining what an algorithm is. • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. • Incorporating loops within algorithms. • Using logical thinking to explore software, predicting, testing and explaining what it does. • Using an algorithm to write a basic computer program. • Using loop blocks when programming to repeat an instruction more than once.	• Using greater control when taking photos with cameras, tablets or computers. • Using logical thinking to explore software, predicting, testing and explaining what it does.	• Developing confidence with the keyboard and the basics of touch typing. • Creating and labelling images. • Collecting and inputting data into a spreadsheet. • Interpreting data from a spreadsheet. • Learning how computers are used in the wider world.

	• Learning how computers are used in the wider world. • Identifying whether information is safe or unsafe to be shared online. • Learning how to create a strong password. • Learning to be respectful of others when sharing online and ask for their permission before sharing content. • Learning strategies for checking if something they read online is true. • Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable.	• Using an algorithm to write a basic computer program. • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.		• Using software (and unplugged means) to create story animations.		
Key Knowledge	• To know the difference between a desktop and laptop computer. • To know that people control technology. • To know some input devices that give a computer an instruction about what to do (output). • To know that computers often work together. • To understand the difference between online and offline. • To understand what information I should not post online. • To know what the techniques are for creating a strong password. • To know that you should ask permission from others before sharing	• To understand what machine learning is and how it enables computers to make predictions. • To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. • To know that abstraction is the removing of unnecessary detail to help solve a problem.	• To know that touch typing is the fastest way to type. • To know that I can make text a different style, size and colour. • To know that “copy and paste” is a quick way of duplicating text.	• To know that coding is writing in a special language so that the computer understands what to do. • To understand that the character in ScratchJr is controlled by the programming blocks. • To know that you can write a program to create a musical instrument or tell a joke.	• To understand that an animation is made up of a sequence of photographs. • To know that small changes in my frames will create a smoother looking animation. • To understand what software creates simple animations and some of its features e.g. onion skinning.	• To understand that you can enter simple data into a spreadsheet. • To understand what steps you need to take to create an algorithm. • To know what data to use to answer certain questions. • To know that computers can be used to monitor supplies.

	about them online and that they have the right to say 'no.' • To understand that not everything I see or read online is true.						
Vocabulary	Battery Buttons Camera Computer Desktop Device Digital Digital recorder Electricity Function Input Invention Keyboard Laptop Monitor Mouse Output Paying till Scanner Screen System Tablet Technology Video Wires Accept Comment Consent Content Deny Emojis Offline Online Password Permission Personal information Pop ups Pressure Private information Reliable Share Terms and conditions Trusted adult	Abstraction Algorithm Artificial intelligence Bug Clear Correct Data Debug Decompose Error Key features Loop Predict Unnecessary	Backspace Bold Copy Copyright Cut Delete Forward button Highlight Home row Home screen Image Import Italics Keyboard Keyboard character Keyboard shortcut Keyword Layout Navigate Paste Redo Search Space bar Text effects Touch typing Underline	Algorithm Animation Blocks Bug Button CGI Computer code Code Debug Fluid Icon Imitate Instructions Loop 'On tap' Programming Repeat ScratchJR Sequence Sound recording	Animation Background Decompose Digital device Drawing Flipbook Frames Moving images Object Onion skinning Plan Still image	Algorithm Astronaut Data Digital Digital content Experiment Galaxy Insulation Interactive map International Space Centre International Space Station Interpret Laboratory Monitor Planet Satellite Sensor Space Temperature Thermometer Water reservoir
Why this, Why now?	Building on Year Cycle A Mouse skills, exploring what a computer is by identifying and learning how inputs and outputs work. Understanding how computers are used in the wider world, children design their own computerised invention. Learning about online safety, including: what happens to information posted online; how to keep things private online; who we should ask before sharing online; describing different ways to ask for, give, or deny permission online.	Building on Cycle A programming. Developing an understanding of what algorithms are, how to program them and how they can be developed to be more efficient through a range of unplugged and plugged-in activities.	Building on Cycle A mouse skills. Learning about word processing and how to stay safe online as well developing touch typing skills. Introducing important keyboard shortcuts, as well as simple editing tools within a word processor including: bold, italics, underline and font colour as well as how to import images.	Building on Cycle A programming. Exploring what 'blocks' do, using the app 'ScratchJr,' by carrying out an informative cycle of predict > test > review. Programming a familiar story and an animation of an animal, children make their own musical instrument by creating buttons and recording sounds as well as following an algorithm to record a joke.	Building on digital imagery in cycle A. Children explore storyboarding and simple animation creation using tablet devices.	Building on Introduction to data from Cycle A, Children learn how astronauts survive on the ISS, including identifying necessary items, designing sensor displays, and exploring habitable planets. Children gain an understanding of living in space and how space exploration can benefit life on Earth.
Unit Outcomes	• Name some computer peripherals and their function. • Recognise that buttons cause effects. • Explain that technology follows instructions.	• Decompose a game to predict the algorithms. • Give a definition for 'decomposition'. • Write clear and precise algorithms.	• Explain which are the home row keys and how to find them for typing. • Use the spacebar and backspace correctly. • Type and make simple alterations to text using	• Explore a new application independently. • Explain what the blocks on ScratchJr do and use them for a purpose.	• Create a flip book animation. • Decompose a story into smaller parts to plan a stop motion animation.	• Describe and explain how astronauts' survival needs are met aboard the ISS. • Identify and digitally draw items which fulfil

	• Recognise different forms of technology. • Design an invention which includes inputs and outputs. • Explain the role of computers in the world around them. • Explain what is meant by online information. • Recognise what information is safe to be shared online. • Explain why we need passwords and what makes a strong password. • Understand that they need to ask permission before sharing content online and explain why. • Understand that they have the right to deny their permission to information about them being shared online. • Say who they can ask for help with online worries. • Use some strategies to work out if online information is reliable or not.	• Create algorithms to solve problems. • Use loops in their algorithms to make their code more efficient. • Explain what abstraction is.	buttons on a word processor. • Search for, import and alter appropriate images for a text document. • Modify text in a document. • Use copy and paste to copy text from one document to another. • Explain what information is safe to be shared online.	• Recognise a loop in coding and why it is useful. • Use a code to create an animation of an animal moving. • Use code to follow *and* create an algorithm. • Program code to run 'on tap'. • Explain the role of the blocks in a program they have created.	• Create stop motion animations with small changes between images.	basic human needs when aboard the ISS. • Read the correct temperature on a thermometer. • Design a display showing everything that needs to be monitored by sensors on the ISS. • Create an algorithm that addresses all plants' needs. • Explain how space exploration can benefit life on Earth. • Read data to identify whether a planet might be habitable.

Year 3/4	**Autumn A**	**Autumn B**	**Spring A**	**Spring B**	**Summer A**	**Summer B**
	Computing systems and networks/E-Safety	**Programming 1**	**Creating media**	**Skills showcase**	**Programming 2**	**Data handling**
	Collaborative learning /E-Safety	**Further Coding with Scratch**	**Website Design**	**HTML**	**Computational Thinking**	**Investigating Weather**
Key Skills	• Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration. • Use online software for documents, presentations, forms and spreadsheets.	• Using decomposition to solve a problem by finding out what code was used. • Using decomposition to understand the purpose of a script of code. • Creating algorithms for a specific purpose. • Coding a simple game.	• Building a web page and creating content for it. • Designing and creating a webpage for a given purpose. • Using software to work collaboratively with others.	• Remixing existing code. • Building a web page and creating content for it. • Understanding that information found by searching the internet is not all grounded in fact. • Recognising that information on the Internet might not be true or correct and that	• Using decomposition to solve a problem by finding out what code was used. • Using decomposition to understand the purpose of a script of code. • Identifying patterns through unplugged activities.	• Using tablets or digital cameras to film a weather forecast. • Understanding that weather stations use sensors to gather and record data that predicts the weather. • Using keywords to effectively search for

	• Using software to work collaboratively with others. • Understanding that software can be used collaboratively online to work as a team. • Recognising what appropriate behaviour is when collaborating with others online. • Understanding why some results come before others when searching. • Understanding that information found by searching the internet is not all grounded in fact. • Learning to make judgements about the accuracy of online searches. • Identifying forms of advertising online. • Reflecting on the positives and negatives of time online. • Identifying respectful and disrespectful online behaviour. • Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others	• Incorporating variables to make code more efficient. • Remixing existing code.		some sources are more trustworthy than others.	• Using past experiences to help solve new problems. • Using abstraction to identify the important parts when completing both plugged and unplugged activities. • Creating algorithms for a specific purpose. • Using abstraction and pattern recognition to modify code.	information on the internet. • Searching the internet for data. • Designing a device that gathers and records sensor data. • Recording data in a spreadsheet independently. • Sorting data in a spreadsheet to compare using the 'sort by…' option. • Understanding that data is used to forecast weather.
Key Knowledge	• To understand that software can be used collaboratively online to work as a team. • To know what type of comments and suggestions on a collaborative document can be helpful. • To know that you can use images, text, transitions and animation in presentation slides.	• To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. • To know what a conditional statement is in programming. • To understand that variables can help you to create a quiz on Scratch.	• To know that a website is a collection of pages that are all connected. • To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. • To know that websites should be informative and interactive.	• To understand and identify examples of HTML tags. • To understand what changing the HTML and CSS does to alter the appearance of an object on the web. • To understand that copyright means that those images are protected and to understand that we should do a "creative	• To know that combining computational thinking skills can help you to solve a problem. • To understand that pattern recognition means identifying patterns to help them work out how the code works. • To understand that algorithms can be used for a number of purposes	• To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data'). • To know that a weather machine is an automated machine that respond to sensor data. • To understand that weather forecasters use specific language, expression and pre-

	• To understand some of the methods used to encourage people to buy things online. • To understand that technology can be designed to act like or impersonate living things. • To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. • To understand what behaviours are appropriate in order to stay safe and be respectful online.			commons" image search if we wish to use images from the internet. • To know what "fake news" is and ways to spot websites that carry this type of misinformation. • To know what the "inspect" elements tool is and ways of using it to explore and alter text and images.	e.g. animation, games design etc.	prepared scripts to help create weather forecast films.
Vocabulary	Animations Average Bar chart Collaboration Comment Contribution Data Edited Email account Format Freeze Icon Images Insert Link Multiple choice Numerical data Pie chart Presentations Resolved Reviewing comments Share Slides Software Spreadsheets Suggestions Survey Accuracy Advantages Advertisements Belief Bot Chatbot Computer Distractions Fact Hashtag Implications In-app purchases Influencer Opinion Program Recommendations Reliable Risks Screen time Search results Snippets Sponsored Trustworthy	Broadcast block Code blocks Conditional Coordinates Decomposition Features Game Information Negative numbers Orientation Parameters Position Program Project Script Sprite Stage Tinker Variables	Assessment Audience Checklist Collaboration Content Contribution Create Design Embed Evaluate Features Google Sites Hobby Homepage Hyperlinks Images Insert Online Plan Progress Published Record Review Style Subpage Tab Theme	Code Component Content Copyright CSS End tag Fake news Hacking Heading Headline Hex code HTML Input Internet browser Output Paragraph Permission Remixing Script Start tag Tags Text URL Webpage	Abstraction Algorithm Code Computational thinking Decomposition Input Logical reasoning Output Pattern recognition Script Sequence Variable	Accurate Backdrop Climate zone Cold Collaboration Condensation Cylinder Degrees Evaporation Extreme weather Forecast Heat sensor Lightning Measurement Pinwheel Presenter Rain Satellite Script Sensitive Sensor data Solar panel Tablet/Digital camera Temperature Thermometer Tornado Warm
Why this, Why now?	Working collaboratively in a responsible and considerate way as well as looking at a range of collaborative tools and building on previous knowledge of computer systems and networks. Further developing E-Safety understanding - learning how to	Learning the basics of programming in Scratch, children will create a simple script, use decomposition and understand what variables are.	Building on their knowledge and skills from KS1, children will develop their research, word processing, and collaborative working skills whilst learning how web pages and web sites are created, exploring how to change layouts, embed images	Building on the previous unit, children will edit the HTML and CSS of a web page to change the layout of a website and the text and images.	This unit builds and develops the four areas of computational thinking through a range of plugged and unplugged activities.	Building on previous data handling units, children will Research and store data using spreadsheets, designing a weather station which gathers and records data and learning how weather forecasts are made. Children use tablets or

	navigate the internet in an informed, safe and respectful way.		and videos and link between pages.			digital cameras to present a weather forecast.
Unit Outcomes	• Understand the need to be thoughtful when working on a collaborative document. • Use comments to suggest changes to a document and understand how to resolve comments. • Plan a survey for Microsoft Form with a range of different questions types that will provide different types of answer, e.g. text, multiple choice or numerical values. • Create a Microsoft Form with a range of different question types that will provide different types of answer, e.g. text, multiple choice or numerical values. • Export data to a spreadsheet, highlighting data, using conditional formatting and calculating averages and sums of numbers. • Describe how to search over multiple platforms and are aware of the accuracy of the results presented. • Describe some of the methods used to persuade people to buy online. • Explain the difference between fact, opinion and belief and recognise these online. • Explain what a bot is and give examples of different bots. • Explain some positive and negative distractions of using technology and small strategies on how to reduce the amount of time spent on technology.	• Understand how to create a simple script in Scratch – be able to change sprite and prevent the sprite from rotating. • Use decomposition to identify key features and understand how to decipher actions that make the quiz game work. • Understand what a variable is and how to use the 'say' and 'ask' blocks. • Create a variable and be able to use a variable to record a score. • Understand what a variable is and how it works within a program.	• Create a Sway with a title, image and a completed first header section. • Create a clear plan for their web page and beginning to create it. • Create a professional-looking web page with useful information and a clear style, which is easy for the user to read and find information from. • Create a clear plan by referring back to their checklist to include a range of features. • Create a web page with clear sections and with a range of features in.	• Add text between the heading and paragraph tags. • Easily activate the goggles to investigate a web page. • Explain how they altered the HTML to create their own posters. • Change the colours and sizes of their object elements. Explain how they created their story. • Adapt the basic elements of a story within a web page using the 'Inspect Elements' tool. • Change an image within a web page and create their own news story, replacing the text and images of a webpage.	• Understand that problems can be solved more easily using computational thinking. • Understand what the different code blocks do and create a simple game. • Understand the terms 'pattern recognition' and 'abstraction' and how they help to solve a problem. • Create a Scratch program which draws a square and at least one other shape. • Understand how computational thinking can help to solve problems and apply computational thinking to problems they face.	• Search the web efficiently to find temperatures of different cities and record this accurately. • Design a weather station that gathers and records sensor data, explaining how it works and the units of measurement it would use. • Design an automated machine that uses selection to respond to sensor data. • Search for and record weather forecast information in a spreadsheet and explain how this data is collected. • Create a video which includes weather forecast information.

Year 5/6	Autumn A	Autumn B	Spring A	Spring B	Summer A	Summer B
	Computing systems and networks/E-Safety	**Programming**	**Data handling**	**Creating media**	**Data handling**	**Skills showcase**
	Bletchley Park/E-Safety	**Intro to python**	**Big Data 1**	**History of computers**	**Big Data 2**	**Inventing a product**
Key Skills	• Learning about the history of computers and how they have evolved over time. • Using past experiences to help solve new problems. • Writing increasingly complex algorithms for a purpose. • Debugging quickly and effectively to make a program more efficient. • Remixing existing code to explore a problem. • Changing a program to personalise it. • Evaluating code to understand its purpose. • Predicting code and adapting it to a chosen purpose. • Using search and word processing skills to create a presentation. • Understanding how search engines work. • Understanding the importance of secure passwords and how to create them. • Using search engines safely and effectively.	• Decomposing a program into an algorithm. • Writing increasingly complex algorithms for a purpose. • Debugging quickly and effectively to make a program more efficient. • Remixing existing code to explore a problem. • Using and adapting nested loops. • Programming using the language Python. • Changing a program to personalise it. • Evaluating code to understand its purpose. • Using logical thinking to explore software independently, iterating ideas and testing continuously.	• Understanding and identifying barcodes, QR codes and RFID. • Identifying devices and applications that can scan or read barcodes, QR codes and RFID. • Understanding how barcodes, QR codes and RFID work. • Gathering and analysing data in real time. • Creating formulas and sorting data within spreadsheets. • Learning how 'big data' can be used to solve a problem or improve efficiency.	• Learning about the history of computers and how they have evolved over time. • Using the understanding of historic computers to design a computer of the future. • Using search and word processing skills to create a presentation. • Planning, recording and editing a radio play. • Creating and editing sound recordings for a specific purpose.	• Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files). • Understanding that computer networks provide multiple services. • Using search and word processing skills to create a presentation. • Creating formulas and sorting data within spreadsheets. • Learning about the Internet of Things and how it has led to 'big data'. • Learning how 'big data' can be used to solve a problem or improve efficiency.	• Using past experiences to help solve new problems. • Writing increasingly complex algorithms for a purpose. • Debugging quickly and effectively to make a program more efficient. • Remixing existing code to explore a problem. • Changing a program to personalise it. • Evaluating code to understand its purpose. • Predicting code and adapting it to a chosen purpose. • Using logical thinking to explore software independently, iterating ideas and testing continuously. • Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions.
Key Knowledge	• To understand the importance of having a secure password and what "brute force hacking" is. • To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2.	• To know that there are text-based programming languages such as Logo and Python. • To know that nested loops are loops inside of loops. • To understand the use of random numbers and remix Python code.	• To know that data contained within barcodes and QR codes can be used by computers. • To know that infrared waves are a way of transmitting data. • To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.	• To know that radio plays are plays where the audience can only hear the action so sound effects are important. • To know that sound clips can be recorded using sound recording software. • To know that sound clips can be edited and trimmed.	• To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'. • To know that devices or that are not updated are most vulnerable to hackers. • To know the difference between mobile data and WiFi.	• To know what designing an electronic product involves. • To know which programming software/language is best to achieve a purpose. • To know the building blocks of computational thinking e.g. sequence, selection, repetition,

	• To know about some of the historical figures that contributed to technological advances in computing. • To understand what techniques are required to create a presentation using appropriate software. • To know that a digital footprint means the information that exists on the internet as a result of a person's online activity. • To know what steps are required to capture bullying content as evidence. • To understand that it is important to manage personal passwords effectively. • To understand what it means to have a positive online reputation. • To know some common online scams.		• To know that data is often encrypted so that even if it is stolen it is not useful to the thief.			variables and inputs and outputs.
Vocabulary	Acrostic Code Brute force hacking Caesar cipher Chip and pin system Cipher Code Combination Contribute Convince Date shift cipher Discovery Hero Invention Nth Letter Cipher Password Pig Latin Pigpen cipher Present Scrambled Secret Secure Technological advancement Trial and error	Anonymity Antivirus Biometrics Block and report Consent Copy Digital footprint Digital personality Financial information Hacking Inappropriate Malware Online bullying Online reputation Password Paste Personal information Personality Phishing Privacy settings Private Reliable source Report Reputation Respect Scammers	Algorithm Code Command Design Import Indentation Input Instructions Loop Output Patterns Random Remix Repeat Shape	Algorithms Barcode Binary Boolean Brand Chips Commuter Contactless Data Encrypted Infrared MagicBand Privacy Proximity QR code QR scanner Radio waves RFID Signal Systems/data analyst Transmission Wireless	Background noise Byte Computer Devices File FX Gigabyte Graphics Hard drive Hardware Kilobytes Megabyte Memory storage Mouse Operating system Overlay Play Processor Radio play RAM Raspberry Pi Record Reverb ROM Script Smartphone Sound Sound effects	Big Data Bluetooth Corrupted Data Energy GPS Improve Infrared Internet of Things Personal Privacy QR codes Revolution RFID SIM Simulation Smart city Smart school Stop motion Threat WiFi Wireless	Adapt Advert Algorithm Bugs Coding Debugging Design Edit Electronic Evaluate Facts Image rights Images Influence Information Inputs Loops Manipulation Opinions Output Photos Product Program Repetition Screenshot Search engine Selection Sequence

		Screengrab Secure Settings Software updates Two factor authenication URL Username			Terrabytes Touch screen Track Trackpad Trailer		Snippets Software Structures Variables
Why this, Why now?	Discovering the history of Bletchley Park, historical figures, and computer science. Children learn about code-breaking and password hacking as well as decoding messages. Children present information about historical figures which links to our History Curriculum in Year 6. Children enhance their online safety knowledge, learning how to navigate the internet in an informed, safe and respectful way.		Learning the fundamentals of the programming language of Python, they will test, change and explain what their program does. Children use loops and explain what repeats do and what the parts of the loop do while recognising that computers choose random numbers and decompose the program into an algorithm. These skills build on previous programming units.	Understanding about the use of big data including barcodes, QR codes, infrared, and RFID technologies. Children will create and scan their own QR codes, manipulate real-time data in spreadsheets, and present their findings. They also analyse transport data to understand its usefulness to commuters. QR codes are used throughout KS2.	This unit links to the Year 1/2 History curriculum covering WWII. Writing, recording and editing radio plays set during WWII, looking back in time at how computers have evolved and designing a computer of the future.	This unit builds directly on Big Data 1. Understanding data usage through the use of mobile data vs WiFi, the Internet of Things, and big data. Identifying high/low data activities and preparing presentations on using Big Data/IoT to improve school efficiency while respecting privacy.	Building on previous knowledge and skills, children design a new electronic product and use CAD software to design appropriate housing for it. Developing skills in website design, video editing, and persuasive language to promote their product. Evaluating and adapting existing code, debugging programs, and searching for accurate information online.
Unit Outcomes	• Explain that codes can be used for a number of different reasons and decode messages. • Explain how to ensure a password is secure and how this works. • Create a simple website with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. • Explain the importance of historical figures and their contribution towards computer science. • Present information about their historical figure in an interesting and engaging manner. • Discuss a range of issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help. • Explain how sharing online can have both		• Iterate ideas, testing and changing throughout the lesson and explain what their program does. • Use nested loops in their designs, explaining why they need two repeats. • Alter the house drawing using Python commands; use comments to show a level of understanding around what their code does. • Use loops in Python and explain what the parts of a loop do. • Recognise that computers can choose random numbers; decompose the program into an algorithm and modify a program to personalise it.	• Understand why barcodes and QR codes were created. • Create (and scan) their own QR code using a QR code generator website. • Explain how infrared can be used to transmit a Boolean type signal. • Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets. • Take real-time data and enter it effectively into a spreadsheet. • Presenting the data collected as an answer to a question. • Recognising the value of analysing real-time data. • Analyse and evaluate transport data and consider how this provides a useful service to commuters.	• Explain how to record sounds and add in sound effects over the top. • Produce a simple radio play with some special effects and simple edits which demonstrate an understanding of how to use the software. • Create a document that includes correct date information and facts about the computers and how they made a difference. • Demonstrate 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. • Describe all of the features that we'd expect a computer to have including RAM, ROM, hard drive and processor,	• Recognise that data can become corrupted within a network and that data sent in packets is more robust, as well as identify the need to update devices and software. • Recognise differences between mobile data and WiFi and use a spreadsheet to compare and identify high-use data activities and low-use data activities. • Make links between the Internet of Things and Big Data and give a basic example of how data analysis/analytics can lead to improvement in town planning. • Explain ways that Big Data or IoT principles could be used to solve a problem or improve efficiency within the school and prepare a presentation about their idea, considering the privacy of some data.	• Evaluate code, understanding what it does and adapt existing to code for a specific purpose. • Debug programs and make them more efficient using sequence, selection, repetition or variables. • Design appropriate housing for their product using CAD software, including any input or output devices needed to make it work. • Create an appealing website for their product, aimed at their target audience which explains what their product is and what it does, using persuasive language. • Create an edited video of their project, articulating the key benefits. • Describe and show how to search for information online and be aware of

	positive and negative impacts. • Be 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. • Explain what a 'digital reputation' is and what it can consist of. • Understand the importance of capturing evidence of online bullying and can demonstrate some of these methods on the devices used at school. • Describe ways to manage passwords and strategies to add extra security such as two-factor authentication. • Explain what to do if passwords are shared, lost, or stolen. • Describe strategies to identify scams. • Explain ways to increase their privacy settings and understand why it is important to keep their software updated.			but of a higher specification than currently available.	• Present their ideas about how Big Data/IoT can improve the school and provide feedback to others on their presentations.	the accuracy of the results presented.