Computing

Why do we teach Computing?

At St Mary's, we believe that we are developing 'thinkers of the future' through a modern, ambitious and relevant education in computing. We aim to equip pupils to use computational thinking and creativity that will enable them to become active participants in the digital world. It is important to us that children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to drive their generation forward into the future. We want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online.

Our aim is to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to apply skills in various digital contexts. Beyond teaching computing discreetly, we will give pupils the opportunity to apply and develop what they have learnt across wider learning in the curriculum.

How do we teach Computing?

At St Mary's, we teach computing through the online programme, Purple Mash. This covers all aspects of the National Curriculum. This scheme was chosen as it has been created by subject experts and provides our learners with a practical and all-round experience of computing. It includes all online programmes that are needed to cover the curriculum on its platform.

The curriculum aims to equip young people with the knowledge, skills and understanding they need to thrive in the digital world of today and the future. The curriculum can be broken down into 3 Big Ideas: Computer Science, Information Technology and Digital Literacy, with the aims of the curriculum reflecting this distinction.

What do we want our children to achieve through their Computing lessons?

By using the Purple Mash Computing Scheme of Work we have comprehensive set of resources aligned to the National Curricula for Computing, Technology and Digital Competence. The Scheme of Work is intended to facilitate teachers in achieving the very best outcomes for all children. It exposes children to a wide variety of digital tools, technological skills and innovations to enable them to become informed members of the digital community. It contains everything that is needed to deliver inspiring and engaging lessons whilst allowing for the flexibility to meet individual school needs. The scheme provides the scaffolding for teaching key skills alongside the flexibility to change the context to meet needs of individuals. For example, relating graphing to the local environment; tailoring blogging to individual cultures, experiences and interests.

Where it all begins - laying the foundations for Computing in EYFS

Our EYFS curriculum encourages pupils to develop their understanding of technology through the Early Learning Goal of 'Understanding the World.'

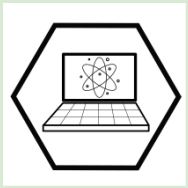
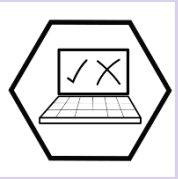
Pupils discuss the technology around them and how this has developed. They explore life in the past and see how technology is used today, for examples in our homes and schools.

Pupils learn about how the internet allows us to access information and how it can help with our learning.

Pupils learn to use a digital camera or iPad and tale pictures of their learning and work.

Computing Curriculum – Big Ideas:

The Big Ideas are the key concepts of Computer Science, Digital Literacy and Information Technology.

Computer Science	Digital literacy	Information Technology
		
At St Mary's we learn to be prepared for the digital world. We learn that computer programmes are written to perform tasks.	**At St Mary's we learn to problem solve.** We learn this through practical experiences and through the use of technologies.	**At St Mary's we use Information Technology in a number of ways.** We use technology purposefully to create, organise, store, manipulate and retrieve digital content.

How can we link our values to our actions online?

We use an overarching theme of online safety to think, explore and action how we can be responsible in our use of technology.

See Judge Act	***How can we remain safe online?*** ***How can we use our values to be responsible digital citizens?***

Year 1 Autumn 1: Online Safety and Exploring Purple Mash			Duration: ½ term
Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge		As a Computer Programmer, I know it is important to log in to a site safely and the importance of keeping passwords safe. As a Computer Programmer, I know many online sites, including Purple Mash, have an area for their work that is accessible only to the user. As a Computer Programmer, I know an avatar is a virtual representation of myself suitable for use online. As a Computer Programmer, I know work can be loaded and saved in an online area in platforms that I have access to, and can be accessed by teachers. As a Computer Programmer, I know that many online sites and programmes use common icons. As a Computer Programmer, I know the importance of logging when I have finished my work as a way of securing my personal account.	Y2 Online Safety – Know the emotional impact of communications. Y2 Effective Searching – Know that my digital footprint is a record of my online use.
Disciplinary Knowledge		As a Computer Programmer, I can access Purple Mash at school, and sort and save work in my folder. As a Computer Programmer, I can give reasons why it is important to keep a password safe and not share it with other people. As a Computer Programmer, I can make and edit my own avatar. As a Computer Programmer, I can recognise and use the common icons for New, Open, Save, Export, Print and Share.	Y2 Online Safety – Learn how to share safely online. Y3 Email – Evaluating communications.

		As a Computer Programmer, I can log out of a program to protect my work.	
Vocabulary	Alert, Avatar, Button, Device, File Name, Filter, Home Screen, Icon, Login, Log out, Menu, Notification, Password, Private, Saving, Search, Shared Folder, Textbox, Tool bar, Typing		

Year 1 Autumn 2: Grouping & Sorting Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Online safety – I know that I have my own password for online safety.	As a Computer Programmer, I know that items can be sorted using a range of criteria, and a logical process should be used. As a Computer Programmer, I know an algorithm is a precise, step-by-step set of instructions used to solve a problem. As a Computer Programmer, I know computers can be used as a way of sorting on screen objects.	Y3 Branching databases – I know that data can be sorted using a branching database. Y3 Graphing – I know that there are different ways to present and display data.
Disciplinary Knowledge	Y1 Online Safety – I can safely logon to a computer using my own password.	As a Computer Programmer, I can describe physical items that are needing to be sorted thinking about all the different ways they could be described. As a Computer Programmer, I can identify criteria that can be used to sort items and check that they are sorted accordingly. As a Computer Programmer, I can follow human and computer algorithms to sort shapes. As a Computer Programmer, I can identify criterion containers and drag objects into the correct container. I recognise that some objects may fit into an overlap criterion.	Y1 Pictograms – I can present data in a picture format.
Vocabulary	Activities, Criteria, Describe, Equal, Groups, Less than, More than, Sort		

Year 1 Spring 1: Lego Builders Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge		As a Computer Programmer, I know that to achieve a specific effect when building something, accurate instructions must be followed. As a Computer Programmer, I know computer programmes need precise instructions to follow, and these are called algorithms. If instructions are vague, outcomes will vary for any given task. As a Computer Programmer, I know that the order of instructions for a task affects the results. As a Computer Programmer, I know that correcting errors in an algorithm or programme is called debugging.	Y1 Maze Explorers – I know that computers follow instructions. Y1/2 Coding – I know that algorithms are sets of instructions for the computer. I know that we can programme timers, object types and repeat functions into code.
Disciplinary Knowledge		As a Computer Programmer, I can recognise whether instructions have been followed correctly when comparing two Lego models. As a Computer Programmer, I can give clear, concise building instructions for someone to follow. As a Computer Programmer, I can follow a set of instructions and identify why a sequence of instructions might be incorrect. As a Computer Programmer, I can find and correct simple errors in a simple algorithm.	Y1 Coding – I can plan an algorithm to create a set of instructions for a computer to follow. Y3 Branching Databases – I can sort information using a binary model.
Vocabulary	Algorithm, Code, Computer, Debugging, Instructions, Machine, Program, Recipe, Sequence		

Year 1 Spring 2: Technology Outside School		Duration: ½ term	
Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Online Safety – I know that a computer has a screen and keyboard.	As a Computer Programmer, I know that technology is science and engineering knowledge put into practical use to solve problems or invent useful tools. As a Computer Programmer, I know that technology is used in our school. As a Computer Programmer, I know that technology is used outside of school.	Y2 Effective Searching – I know that a search engine allows me to explore the web. Y4 Hardware Investigators – I know the function of the parts of a computer.
Disciplinary Knowledge	Y1 Online Safety – I can use a computer keyboard and mouse/track pad to input information.	As a Computer Programmer, I can recognise and identify common types of technology such as electronic devices. As a Computer Programmer, I can identify and describe the function of technology examples within our school. As a Computer Programmer, I can identify and describe the function of technology outside of school.	Y2 Effective Searching – I can identify parts of a web search. Y2/3/4/5/6 Online Safety – I can communicate safely with a range of technology.
Vocabulary	Computer, Technology		

Year 1 Summer 1: Maze Explorers Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Lego Builders – I know that computers follow a set of instructions.	As a Computer Programmer, I know that we can move a character (turtle) within specific computer programmes around a computer screen such as 2Go by using direction keys. As a Computer Programmer, I know that on-screen direction keys can have eight possible directions which include diagonal movements. As a Computer Programmer, I know that number keys can be combined with direction keys to give a program more accurate instructions and avoid less command words. As a Computer Programmer, I know that lists can be made with directional instructions within 2Go and these are known as algorithms.	Y1 Coding – I know that block coding can make a range of objects, actions and events execute. Y4 Logo – I know that text-based coding can be used to create directional instructions.
Disciplinary Knowledge	Y1 Lego Builders – I can sequence instructions for a computer to follow.	As a Computer Programmer, I can open 2Go and use the direction and number keys to make a character move in different directions. As a Computer Programmer, I can reference an onscreen grid with number keys when creating commands. As a Computer Programmer, I can formulate a list of instructions to move a character, drag instructions into the algorithm box, run the instructions and debug by modifying the instructions.	Y1 Coding – I can create block coding to make a range of objects, actions and events execute. Y4 Logo – I can use my understanding of coding structures to write text-based coding for directional structures.

Vocabulary	Algorithm, Challenge, Command, Delete, Direction, Instruction, Left and Right, Route, Undo, Unit

Year 1 Summer 2: Coding Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Lego Builders – I know that computers follow instructions. Y1 Maze Explorers – I know that programmes use sequence and repeat to code an object to move.	As a Computer Programmer, I know that tasks can be given to humans and computers by using instructions. As a Computer Programmer, I know that computer programs work by following instructions called code know as algorithms. These need to be clear and concise. As a Computer Programmer, I know there are objects and action code block in the 2Code environment and that you can make a simple programme using these. Each single instruction is called a command. As a Computer Programmer, I know an event such as pressing a key or clicking a screen can make a block of code run. As a Computer Programmer, I know when code is run, this is known as code being executed. As a Computer Programmer, I know debugging is when we fix code that isn't working how it was designed to. As a Computer Programmer, I scenes can be made using backgrounds ad objects. These have properties that can be modified.	Y2 Coding – I know that debugging allows a coder to identify and fix problems in a code. Y3 Branching Databases – I know that information can be sorted using a binary model.

Disciplinary Knowledge	Y1 Lego Builders – I can create a set of instructions for a computer to follow. Y1 Maze Explorers - I can use a sequence of coding and repeat commands to make an object move.	As a Computer Programmer, I can give and receive clear instructions that others can follow. As a Computer Programmer, I can recognise objects and actions in printed code block form. I can arrange a printed object block next to a printed action. Eg. 'Tuna left' As a Computer Programmer, I can recognise that the set of code blocks arranged to create actions is known as algorithm. As a Computer Programmer, I can make a command in 2Code by using an object and action together. As a Computer Programmer, I can recognise, arrange and run code with a **When Clicked** event. As a Computer Programmer, I can execute code using the run button and stop code executing by clicking the stop button. As a Computer Programmer, I can analyse where my code isn't working and make changes to debug it. As a Computer Programmer, I can switch to a design view, add backgrounds and change the size of objects.	Y2 Coding – I can identify and fix problems in my code. Y3 Branching Databases – I can sort information using a binary model.
Vocabulary	Action, algorithm, Background, Click, Code, Code blocks, Coding, Code view, Command, Debug / Debugging, Design view, Event, Execute, Instruction, Object, Output, Plan, Programmer, Properties, Run, Scale, Scene, Software, Sound, When Clicked		

Year 2 Autumn 1: Online Safety Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Online Safety – I know that my login must remain private to me. I know that I must logout to prevent others from accessing my personal data. Y1 Technology Outside School – I know that technology has many uses.	As a Computer Programmer, I know that searches can be refined so it is easier to find something. As a Computer Programmer, I know work can be shared in a variety of ways. As a Computer Programmer, I know that email is a way of communicating and that you need to be considerate of the user. As a Computer Programmer, I understand that the term digital footprint relates to the information that a user puts online, and that this footprint may remain even when we think we have removed the information.	Y2 Effective Searching – I know that my digital footprint remains online even after I have logged out. Y3 Online Safety – I know the importance of good passwords and password privacy.
Disciplinary Knowledge	Y1 Online Safety – I know how to login and logout safely. Y1 Technology Outside School – I can name many uses of technology that surrounds us..	As a Computer Programmer, I can locate the search bar, type in simple terms and look at ways to narrow down the search to a specific group or subject. As a Computer Programmer, I can explain why a search on the internet may not be a safe search and can tell a trusted adult if the results are upsetting or inappropriate. As a Computer Programmer, I can define what is meant by sharing work and can share work in a number of ways. As a Computer Programmer, I can explain what email is and reply to an email on 2Email. As a Computer Programmer, I can talk about what a digital footprint is and how it can identify them.	Y2 Effective Searching – I can use a search engine to safely search for information online. Y3 Online Safety – I can consider the reliability and appropriateness of the information that I find online.

Vocabulary	Attachment, Digital footprint, Display board, Email, Filter, Identifying, Internet, Personal information, Private information, Protection, Reply, Search, Secure, Sharing

Year 2 Autumn 2: Effective Searching Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Online Safety – I know that it is important to protect my data online use a safe and secure password. Y2 Online Safety – I know that the term digital footprint relates to the information that a user puts online, and that this footprint may remain even when we think we have removed the information.	As a Computer Programmer, I know the Internet is a global network of connected computers around the World. As a Computer Programmer, I know the World Wide Web refers to the documents and pages someone sees when using a browser. Websites can be found using a browser that contains a search engine. As a Computer Programmer, I know search engines use millions of peoples' digital footprints to help provide more accurate results. As a Computer Programmer, I know that to find results the we want on a search engine, we need to search effectively.	Y3 Online Safety – I know that websites and games have PEGI BBFC ratings to keep us safe. Y4 Effective Searching – I know web pages need to evaluated to see if the information contained is true and reliable.
Disciplinary Knowledge	Y1 Online Safety – I can use the Purple Mash search functionality. Y2 Online Safety – I can share information to a display board.	As a Computer Programmer, I can explain the difference between the Internet and World Wide Web, recognising the World Wide Web is powered by the Internet. As a Computer Programmer, I can recognise a web browser, search engine and the key elements they contain. As a Computer Programmer, I can enter a search query using words and questions, and review results. As a Computer Programmer, I can share information about searching effectively with others.	Y3 Online Safety – I can evaluate the reliability of information and spoof websites. Y4 Effective Searching - I can analyse the content of a web page for clues about the reliability of information.
Vocabulary	Browser, Device, Digital footprint, Domain, Internet, Network, Search Engine, URL, Web Address, Web Page, Website, World Wide Web		

Year 2 Spring 1: Creating Pictures Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Exploring Purple Mash – I know that an avatar is a digital representation of myself.	As a Computer Programmer, I know that computer drawing programmes contain palettes which are the range of colours or shapes available to the user. As a Computer Programmer, I know that computer drawing programmes may have a choice of painting effects: The size of a tool brush stroke and intensity of colours can be manipulated. As a Computer Programmer, I know how outline tools and fill tools help users to create paintings. As a Computer Programmer, I know that pattern tools can be used to create repeating patterns and manipulate how a pattern is arranged.	Y2 Presenting Ideas – I know digital content can be presented in many forms.
Disciplinary Knowledge	Y1 Exploring Purple Mash – I can create a digital avatar. I can use simple paint tools.	As a Computer Programmer, I can open 2Paint a Picture, explore how the range of painting effects can give different effects. As a Computer Programmer, I can select different colours, change the size of brush strokes and use the dilute tool to change the intensity of a selected colour. As a Computer Programmer, I can identify, select and resize an outline tool. As a Computer Programmer, I can locate and use the fill tool to colour enclosed areas.	Y2 Presenting Ideas - I can discuss the differences between a traditional book, e-book, concept map and digital quiz including the advantages and limitations of each format. I can open 2Quiz and add a question type.

		As a Computer Programmer, I can locate the pattern template, change the arrangement of the pattern and increase / decrease the size of a pattern.	
Vocabulary	Art, Clipart, Diagonal, Dilute, eCollage, Fill, Horizontal, Impressionism, Line, Palette, Parallel, Pointillism, Repeating pattern, Rotated, Stamps, Style, Surrealism, Symmetry, Vertical		

Year 2 Spring 2: Making Music Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge		As a Computer Programmer, I know music can be made digitally using programs like 2Sequence. As a Computer Programmer, I know sounds can be incorporated into music programs to make a melody. As a Computer Programmer, I know the speed (tempo) of a digital music composition can be altered. As a Computer Programmer, I know the volume (dynamics) of instruments / sounds can be changed when using music programmes. As a Computer Programmer, I know additional features such as changing the number of bars and looping a composition are available in music programmes. As a Computer Programmer, I know music programmes let users input their own sounds into a composition.	Y5 Game Creator - I know it is important to plan out a game before commencing on making it. This includes graphical and sound elements.
Disciplinary Knowledge		As a Computer Programmer, I can open 2Sequence and explore sounds and instruments available. As a Computer Programmer, I can drag sounds into the playable area, and experiment with the organisation of sounds on a track. As a Computer Programmer, I can locate the beats per minute slider, experiment and listen in play mode to how changing the position of the slider affects a composition.	Y5 Game Creator - I can design and add appropriate graphical and sound elements to my game including floor, walls and ceilings.

		As a Computer Programmer, I can locate the bar select, change the number of bars in a composition and experiment with the looping feature. As a Computer Programmer, I can use the record button to input my own sound from a microphone.	
Vocabulary	Bars, Beat, Compose, Note, Tune, Repeat, Sound Effect, Soundtrack, Speed, Tempo, Volume		

Year 2 Summer 1: Presenting Ideas Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Creating Pictures - I know that computer drawing programmes contain palettes which are the range of colours or shapes available to the user.	As a Computer Programmer, I know digital content can be presented in many forms. As a Computer Programmer, I know quizzes can be made using programs such as 2Quiz. As a Computer Programmer, I know digital content should be presented using a suitable format. As a Computer Programmer, I know digital content in one format can be re-used in other formats to present to audiences.	Y3 Touch Typing - I know home, top and bottom row keys are areas on a keyboard where specific keys are located. Y3 Presenting - I know presentation software is a way of creating and displaying information to an audience that is clear and engaging.
Disciplinary Knowledge	Y2 Creating Pictures – I can use 2Paint a Picture to create art and collage effects.	As a Computer Programmer, I can compare a traditional book with an e-book, and can talk about the differences. As a Computer Programmer, I can recognise digital concept maps and their use for organising ideas. As a Computer Programmer, I can discuss the differences between a traditional book, e-book, concept map and digital quiz including the advantages and limitations of each format. As a Computer Programmer, I can open 2Quiz and add a question type.	Y3 Touch Typing - I can open activities in 2Type and use both the left hand, right hand and combined hands to type. Y3 Presenting - I can locate and

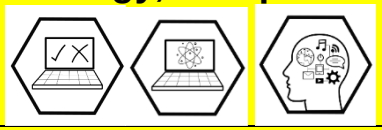
		As a Computer Programmer, I can compare a digital mindmap in 2Connect with a digital fact-file in 2Publish. I can identify the format that is most use when presenting to an audience. As a Computer Programmer, I can open 2Connect and 2 Publish. I can use font tools, clipart, page settings and images to enhance digital content.	click on blank presentation, delete existing text boxes and insert new text boxes, word art and images into a presentation slide.
Vocabulary	E-book, Fact file, Fiction, Mind Map, Multiple-choice, Node, Non-fiction, Presentation, Quiz		

Year 2 Summer 2: Coding Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Coding –I know there are objects and action code block in the 2Code environment and that you can make a simple programme using these. Each single instruction is called a command. Y1 Lego Builders –I know computer programmes need precise instructions to follow, and these are called algorithms. If instructions are vague, outcomes will vary for any given task. Y1 Maze Explorers –I know that number keys can be combined with direction keys to give a program more accurate instructions and avoid less command words.	As a Computer Programmer, I know in computing that a set of instructions is known as an algorithm. Steps in an algorithm must be followed in order to achieve the intended outcome. As a Computer Programmer, I know code can be created to detect when 2 objects collide. I know this code could also have an action associated with it. (Eg. Sound) This is called collision detection in 2Code. As a Computer Programmer, I know that programmes follow a sequence of instructions (commands) in order. Timers can be introduced to make parts of the programme run after a set time. As a Computer Programmer, I know a computer programme in 2Code can include objects that are different types. Each object type will have attributes (properties) that can be modified. As a Computer Programmer, I know events in computer programmes cause a block of code to be run. This could be the result of a user pressing a key or clicking the screen. As a Computer Programmer, I know buttons are an object in 2Code. Buttons use the 'When Clicked' event and will run a piece of code when they are clicked on. As a Computer Programmer, I know that bugs are bits of code that are stopping a programme from working. Debugging is the process of looking for any problems in code, fixing the problems and repeatedly testing them.	Y3 Coding –I know timers are used in coding to help control when a block of commands are run. I know repeat is a control block and blocks of commands can be set to repeat a specified number of times using the repeat block. Y3 Branching Databases - I know objects can be sorted using yes/no questions and relate this to how computer binary databases work.

Disciplinary Knowledge	Y1 Coding –I can make a command in 2Code by using an object and action together. Y1 Lego Builders – I can find and correct simple errors in a simple algorithm. Y1 Maze Explorers – I can formulate a list of instructions to move a character, drag instructions into the algorithm box, run the instructions and debug by modifying the instructions.	As a Computer Programmer, I can predict what will happen if a planned algorithm is converted to code. As a Computer Programmer, I can use the correct code in 2Code to implement an algorithm which includes event 'When Clicked', objects and actions. As a Computer Programmer, I can recognise and use the collision detection block to make an event when two objects collide. As a Computer Programmer, I can recognise and use the timer command block in a programme. As a Computer Programmer, I can place up to four different objects in a design scene of a programme. I can change an objects size by clicking and selecting scale from its attributes table. As a Computer Programmer, I can recognise and use different command blocks: When Key Event, When Swiped Event, When Clocked Event and Collision Detection. As a Computer Programmer, I can nest code within the When Clicked Button that makes an object carry out an action when the button is clicked. As a Computer Programmer, I can recognise what a programme in 2Code is supposed to do. If anything hasn't worked, I can stop and make changes to broken code.	Y3 Coding –I can insert code within the time that will action after specified seconds and nest a second time after command to run after the first time has finished. I can use a timer every command to make an event happen such as a ticking sound for a clock every second. Y3 Branching Databases - I can identify questions that can be used to sort physical objects and that when a question is asked, there can only be two possible answers.
Vocabulary	Action, Algorithm, Background, Bug, Button, Click events, Collision detection, Collision detection action, Collision detection event, Command, Debug / Debugging, Event, Execute, Image, Implement, Instructions, Interaction, Interval, Object, Object name, Output, Predict, Properties, Run, Scale, Scene, Sequence, Test, Text, Timer, Turtle Object, When Clicked, When Key Event, When Swiped Event		

Year 3 Autumn 1: Online Safety Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Online Safety - I know that email is a way of communicating and that you need to be considerate of the user. Y2 Effective Searching - I know that to find results the we want on a search engine, we need to search effectively.	As a Computer Programmer, I know passwords are private and should never be shared. As a Computer Programmer, I know blogs can help us to communicate our thoughts and ideas. As a Computer Programmer, I know not everything is factually correct, and some websites can be referred to as spoof websites. As a Computer Programmer, I know that PEGI / BBFC ratings exist to keep young people safe and steps can be taken should students see inappropriate content.	Y3 Email - I know it is important to use emails systems safely and there are things that people can do to try and keep themselves safe. Y4 Online Safety - I know there are risks and benefits of installing software including apps.
Disciplinary Knowledge	Y2 Online Safety - I can explain why a search on the internet may not be a safe search and can tell a trusted adult if the results are upsetting or inappropriate. Y2 Effective Searching - I can enter a search query using words and questions, and review results.	As a Computer Programmer, I can take steps to keep a password safe by using a mix of letters, numbers and special characters. As a Computer Programmer, I can use a blog or vlog to communicate ideas and thoughts. I can contribute to a class blog. As a Computer Programmer, I can ascertain which information in a website maybe fake by checking the validity of information. As a Computer Programmer, I can consider what content may be deemed inappropriate. As a Computer Programmer, I can check PEGI / BBFC ratings to see if chosen media is suitable.	Y3 Email - I can select and use the attachment icon and am cautious if I receive an email with an attachment. Y4 Online Safety - I can download apps and programs in the safest possible way. I can define

		As a Computer Programmer, I can talk to a trusted adult about what I have seen or heard if inappropriate content or contact makes me feel uncomfortable.	malware as a type of software designed to cause viruses on my device or leave it unusable.
Vocabulary	Appropriate, Blog, Inappropriate, Internet, Password, Personal information, Permission, Reliable Source, Reputable Source, Spoof, Verify, Vlogs, Website		

Year 3 Autumn 2: Typing & Email Duration: ½ term Big Idea: Information Technology, Computer Science & Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Exploring Purple Mash – I know work can be loaded and saved in an online area in platforms that I have access to, and can be accessed by teachers. Y2 Effective Searching – I know that to find results the we want on a search engine, we need to search effectively. Y2 Presenting Ideas - I know digital content should be presented using a suitable format. Y3 Online Safety - I know passwords are private and should never be shared.	TYPING As a Computer Programmer, I know typing is the action or skill of writing something by means of a keyboard (physical or virtual) and that it is important to have a good posture when typing. As a Computer Programmer, I know home, top and bottom row keys are areas on a keyboard where specific keys are located. As a Computer Programmer, I know to be efficient at typing, hands should be positioned correctly on a keyboard and that the left and right hands should work independently of each other. EMAIL As a Computer Programmer, I know that emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address. As a Computer Programmer, I know it is important to use emails systems safely and there are things that people can do to try and keep themselves safe. As a Computer Programmer, I know that pictures, documents and other file types can be attached to emails. As a Computer Programmer, I know that address books can be made in email clients which store known contacts' email addresses. When sending an email, we can use an address and send to multiple people.	Y4 Online Safety - I know safe protocols can be developed to protect people when using email. Y4 Effective Searching – I know there are different skills needed to research effectively. Y5 Word Processing - I know the look of a text within a document can be changed.

Disciplinary Knowledge	Y1 Exploring Purple Mash – I can recognise and use the common icons for New, Open, Save, Export, Print and Share. Y2 Effective Searching – I can enter a search query using words and questions, and review results. Y2 Presenting Ideas - I can use font tools, clipart, page settings and images to enhance digital content. Y3 Online Safety - I can take steps to keep a password safe by using a mix of letters, numbers and special characters.	TYPING As a Computer Programmer, I can check my posture, position of the equipment and position of wrists when typing. As a Computer Programmer, I can locate the home, top and bottom keys. As a Computer Programmer, I can open activities in 2Type and use both the left hand, right hand and combined hands to type. EMAIL As a Computer Programmer, I can open 2Email, identify key areas and functions: inbox, alerts, reply, formatting tools. As a Computer Programmer, I can open an email and reply to it. As a Computer Programmer, I can compose an email including address, subject and message. As a Computer Programmer, I can recognise and report a concerning email / contact. As a Computer Programmer, I can identify a trusted contact, limit information shared by email, recognise the difference between personal and private information, and use the draft feature to review messages before sending them. As a Computer Programmer, I can select and use the attachment icon and am cautious if I receive an email with an attachment. As a Computer Programmer, I can use the address book in 2Email to find and send to multiple contacts.	Y4 Online Safety - I can identify emails that may be phishing emails and another name for these emails is spam emails. I know I should ignore these and not reply to them.
Vocabulary	Keys, Posture, Spacebar, Typing, Address Book, Attachment, BCC – Blind Carbon Copy, CC – Carbon Copy, Communication, Compose, Email, Inbox, Link, Mind mapping, Node, Password, Personal Information, Save to draft, Trusted Contact		

Year 3 Spring 1: Branching Databases Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Grouping & Sorting – I know that items can be sorted using a range of criteria, and a logical process should be used.	As a Computer Programmer, I know a database is a collection of data organised in a way that it can be searched, and information found easily. As a Computer Programmer, I know objects can be sorted using yes/no questions and relate this to how computer binary databases work. As a Computer Programmer, I know branching databases can be created using programs such as 2Question. As a Computer Programmer, I know it is important to test and debug if needed when creating branching databases so that they work as intended.	Y3 Graphing - I know that computer programmes such as 2Graph can be used to present data in more meaningful ways. Y4 Spreadsheets - I know a spreadsheet can create a range of graphs and charts and these can be interrogated. Y5 Databases - I know that a database can be used to search for information.

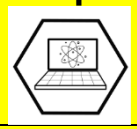
Disciplinary Knowledge	Y1 Grouping & Sorting - I can identify criteria that can be used to sort items and check that they are sorted accordingly. I can follow human and computer algorithms to sort shapes.	As a Computer Programmer, I can explain what a database is and provide examples of these such as the school's attendance database. As a Computer Programmer, I can explain that binary databases are also known as branching databases due to the branch like structure. As a Computer Programmer, I can identify questions that can be used to sort physical objects and that when a question is asked, there can only be two possible answers. As a Computer Programmer, I can develop questions to include more / less. As a Computer Programmer, I can locate and open 2Question. I can add record cards, insert question texts and choice button texts for each card. I can include an image for each card. As a Computer Programmer, I can plan and use 2Question to create my own branching database. I can identify and fix errors.	Y3 Graphing - I can collect data in a suitable table, record the collected data into 2Graph and include accurate labels and a title. Y4 Spreadsheets - I can type cell numbers in and choose an appropriate number option to create a formula. Y5 Databases - I can sort group and arrange information in a database. I can use a database to answer questions.
Vocabulary	Binary Tree, Branching Database, Data, Database, Debugging		

Year 3 Spring 2: Graphing Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Grouping & Sorting – I know that items can be sorted using a range of criteria, and a logical process should be used. Y3 Branching Databases - I know a database is a collection of data organised in a way that it can be searched, and information found easily.	As a Computer Programmer, I know that computer programmes such as 2Graph can be used to present data in more meaningful ways. As a Computer Programmer, I know it is important to use the most appropriate graph type according to the information entered into it. As a Computer Programmer, I know graphing programmes can be used to help solve questions.	Y4 Spreadsheets – I know a spreadsheet can create a range of graphs and charts and these can be interrogated. Y5 Databases – I know that a database can be used to search for information. Y6 Spreadsheets - I know a spreadsheet can be used to investigate a problem such as the frequency of a number rolled on a collection of dice.

Disciplinary Knowledge	Y1 Grouping & Sorting – I know a database is a collection of data organised in a way that it can be searched, and information found easily. Y3 Branching Databases - I can locate and open 2Question. I can add record cards, insert question texts and choice button texts for each card. I can include an image for each card.	As a Computer Programmer, I can open 2Graph with prepopulated data and compare how it is presented in the table and graph. As a Computer Programmer, I can edit an existing graph to show updated information that has been recorded. As a Computer Programmer, I can recognise and compare the different charts that can be used to display data recorded within 2Graph. I can identify the most suitable graph to display the data. As a Computer Programmer, I can collect data in a suitable table, record the collected data into 2Graph and include accurate labels and a title.	Y4 Spreadsheets – I can recall what a line graph is, enter data in a cell and create a correctly labelled graph. Y5 Databases – I can set up a database with appropriate fields and add at least 8 records to the database. Y6 Spreadsheets - I can use the graphing function to display results from a table.
Vocabulary	Axis, Chart, Column, Data, Graph, Investigation, Row, Sorting, Survey, Tally Chart, Title		

Year 3 Summer 1: Presenting Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Creating Pictures – I know that computer drawing programmes contain palettes which are the range of colours or shapes available to the user. Y2 Presenting Ideas – I know digital content should be presented using a suitable format. Y3 Touch Typing - I know home, top and bottom row keys are areas on a keyboard where specific keys are located.	As a Computer Programmer, I know presentation software is a way of creating and displaying information to an audience that is clear and engaging. As a Computer Programmer, I know that simple presentations can be made quickly by using features such as textboxes, word art and images. As a Computer Programmer, I know presentations can include additional slides, video and audio. As a Computer Programmer, I know the designs of slides can be changed. As a Computer Programmer, I know animations can be incorporated into a presentation. As a Computer Programmer, I know that transitions can be applied between slides. As a Computer Programmer, I know timings can be added to transitions and animations.	Y5 Word Processing – I know that various features within the programme will enhance a document's look and visibility. Y6 Blogging - I know it is important to plan out the these and content of a blog before writing it.

Disciplinary Knowledge	Y2 Creating Pictures – I can open 2Paint a Picture, explore how the range of painting effects can give different effects. Y2 Presenting Ideas – I can open 2Connect and 2 Publish. I can use font tools, clipart, page settings and images to enhance digital content. Y3 Touch Typing - I can open activities in 2Type and use both the left hand, right hand and combined hands to type.	As a Computer Programmer, I can explain what Microsoft PowerPoint / Google Slides is and can open the programme and identify some of the basic layout features. As a Computer Programmer, I can locate and click on blank presentation, delete existing text boxes and insert new text boxes, word art and images into a presentation slide. As a Computer Programmer, I can insert new slides, record audio to insert and insert videos into a slide. As a Computer Programmer, I can identify, explore and apply different design templates. As a Computer Programmer, I can identify, preview and apply animations to an image. As a Computer Programmer, I can identify, preview and apply suitable transitions. As a Computer Programmer, I can identify and apply a duration to an image. I can apply a duration to a slide transition.	Y5 Word Processing – I can use the text formatting bar to apply a style to a document, add headings / subheadings and bullet points to a document. Y6 Blogging - I can talk about the key features of a blog home page and what makes a good blog.
Vocabulary	Animation, Audio, Border Properties, Duration, Editing, Fill colour, Font formatting, Layer, Media, Presentation, Presentation Design, Preview, Review, Slide, Slideshow, Sound effect, Textbox, Theme, Timing, Transition, Video, WordArt		

Year 3 Summer 2: Coding Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Coding –I know that programmes follow a sequence of instructions (commands) in order. Timers can be introduced to make parts of the programme run after a set time. I know a computer programme in 2Code can include objects that are different types. Each object type will have attributes (properties) that can be modified. I know events in computer programmes cause a block of code to be run. I know buttons are an object in 2Code. Buttons use the 'When Clicked' event and will run a piece of code when they are clicked on.	As a Computer Programmer, I know flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram. As a Computer Programmer, I know timers are used in coding to help control when a block of commands are run. In 2Code there are two options: timer every and timer after. As a Computer Programmer, I know repeat is a control block and blocks of commands can be set to repeat a specified number of times using the repeat block. As a Computer Programmer, I know testing, debugging and fixing are an important part of the process of making computer programmes. Understanding and nesting is and the effect it has on a programme, can help when trying to debug a programme.	Y4 Coding – I know IF statements are used to create a selection in 2Code and that they are bits of code that will run only if a condition is true. I know IF/ELSE statements are a conditional command that tests a statement. Y4 Logo – I understand that representations of shapes, letters and flowers can be used in 2Logo using the repeat command. Y5 Coding – I know strings are text or a combination of text

	I know that bugs are bits of code that are stopping a programme from working. Debugging is the process of looking for any problems in code, fixing the problems and repeatedly testing them. Y3 Branching Databases - I know objects can be sorted using yes/no questions and relate this to how computer binary databases work.		characters and numbers within programmes.
Disciplinary Knowledge	Y2 Coding - I can recognise what a programme in 2Code is supposed to do. If anything hasn't worked, I can stop and make changes to broken code. Y3 Branching Databases - I can locate and open 2Question. I can add record cards, insert question texts and choice button texts for each card. I can include an image for each card.	As a Computer Programmer, I can identify the point the flowchart starts, identify any points on it that represents an input or output, identify any delays such as a time and identify any processes. As a Computer Programmer, I can follow the flow of a chart and interpret what it is representing. As a Computer Programmer, I can review my use of timer after from Year 2. I can identify a time after command in code view and specifiy the number of seconds. As a Computer Programmer, I can insert code within the time that will action after specified seconds and nest a second time after command to run after the first time has finished. As a Computer Programmer, I can begin to distinguish the difference between timer every and timer after commands. As a Computer Programmer, I can use a timer every command to make an event happen such as a ticking sound for a clock every second. As a Computer Programmer, I understand that the repeat command is useful for avoiding lots of unnecessary coding repetition. I can insert a repeat command as part of the control blocks group.	Y4 Coding - I can set a variable type to number, name a variable, set the value of a variable and execute a code with a variable within it. Y4 Logo - I can create shapes, pictures and words by typing instructions and using the repeat command. Y5 Coding - I can create a string variable and initialise it

		As a Computer Programmer, I can recognise examples of nesting in a 2Code programme. As a Computer Programmer, I can test what happens when changing how a programme is nested. As a Computer Programmer, I can use my knowledge of nesting to help debug a programme that isn't working as intended.	
Vocabulary	Action, Alert, Algorithm, Background, Bug, Button, Click events, Code, Collision detection event, Command, Debug / Debugging, Degrees, Event (When key, When clicked, When swiped), Flowchart, Implement, Input, Interval, Nest, Object, Predict, Properties, Repeat, Right-Angle, Run, Scene, Sequence, Test, Timer, Turtle Object		

Year 4 Autumn 1: Online Safety Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Effective Searching – I know search engines use millions of peoples' digital footprints to help provide more accurate results. Y3 Online Safety – I know passwords are private and should never be shared. Y3 Email - I know it is important to use emails systems safely and there are things that people can do to try and keep themselves safe.	As a Computer Programmer, I know safe protocols can be developed to protect people when using email. As a Computer Programmer, I know that everything put online leaves a trail known as a digital footprint. As a Computer Programmer, I know there are risks and benefits of installing software including apps. As a Computer Programmer, I know that copying the work of other and presenting it as my own is called 'plagiarism.' As a Computer Programmer, I know there are positive and negative influences of technology on health and the environment.	Y4 Effective Searching – I know web pages need to evaluated to see if the information contained is true and reliable. Y5 Online Safety – I know the SMART rules are designed to keep children safe online. Y6 Blogging - I know blog posts written by others can be commented on.

Disciplinary Knowledge	Y2 Effective Searching – I can share information about searching effectively with others. Y3 Online Safety – I can take steps to keep a password safe by using a mix of letters, numbers and special characters. Y3 Email - I can identify a trusted contact, limit information shared by email, recognise the difference between personal and private information, and use the draft feature to review messages before sending them.	As a Computer Programmer, I can identify emails that may be phishing emails and another name for these emails is spam emails. I know I should ignore these and not reply to them. As a Computer Programmer, I am aware that a digital footprint can be positive or negative depending on what I have posted. As a Computer Programmer, I can download apps and programs in the safest possible way. I can define malware as a type of software designed to cause viruses on my device or leave it unusable. As a Computer Programmer, I can identify plagiarism, talk about what it means and correctly reference someone else's work when using it. As a Computer Programmer, I can think about how much time I spend on screen and record it over a week. I can discuss the positive and negative influences of too much screen time.	Y4 Effective Searching – I can analyse the content of a web page for clues about the reliability of information. Y5 Online Safety – I know the 5 different SMART rules and how these keep users safe online. Y5 Word Processing – I can edit an image, wrap text around an image and use style options to change the appearance of an image.
Vocabulary	AdFly, Attachment, Citation, Collaboratem Collaborative database, cookies, Copyright, Data analysis, Digital footprint, Malware, Phishing, Plagiarism, Ransomware, Report, SMART rules, Software, Spam, Virus, Watermark		

Year 4 Autumn 2: Effective Searching Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Effective Searching – I know search engines use millions of peoples' digital footprints to help provide more accurate results. Y3 Online Safety - I know that PEGI / BBFC ratings exist to keep young people safe and steps can be taken should students see inappropriate content. Y4 Online Safety – I know that copying the work of other and presenting it as my own is called 'plagiarism.'	As a Computer Programmer, I know information can be located on a search engine page. As a Computer Programmer, I know there are different skills needed to research effectively. As a Computer Programmer, I know web pages need to evaluated to see if the information contained is true and reliable.	Y5 Online Safety – I know the SMART rules are designed to keep children safe online. Y6 Online Safety – I know it is important to balance game and screen time with other parts of our lives. Y6 Networks - I know that LAN and WAN are different types of networks.

Disciplinary Knowledge	Y2 Effective Searching – I can enter a search query using words and questions, and review results. Y3 Online Safety - I can ascertain which information in a website maybe fake by checking the validity of information. Y4 Online Safety – I can identify emails that may be phishing emails and another name for these emails is spam emails. I know I should ignore these and not reply to them.	As a Computer Programmer, I can load up a search engine and enter a search enquiry. As a Computer Programmer, I can enter both basic and more advanced search enquiries and use the answers to complete a quiz. As a Computer Programmer, I can analyse the content of a web page for clues about the reliability of information. As a Computer Programmer, I can appreciate that the search engine will give results tailored to the interests of the searcher.	Y5 Online Safety – I know the 5 different SMART rules and how these keep users safe online. Y6 Online Safety – I analyse the data and consider the positive and negative impact of technology on their education, well-being and the environment. Y6 Networks - I can give examples of well-known search engines and explain what an IP address is.
Vocabulary	Balanced view, Easter eggs, Internet, Key words, Reliability, results page, Search engine		

Year 4 Spring 1: Spreadsheets Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y3 Graphing - I know that computer programmes such as 2Graph can be used to present data in more meaningful ways.	As a Computer Programmer, I know it is possible to input numbers into a spreadsheet in different formats including the use of a decimal point. As a Computer Programmer, I know formulas can be added to a spreadsheet to speed up calculations when data is changed. As a Computer Programmer, I know there is specific functionality of some tools within 2Calculate. As a Computer Programmer, I know a spreadsheet can create a range of graphs and charts and these can be interrogated. As a Computer Programmer, I know spreadsheets can be used to model a real-life situation and improve the efficiency of day-to-day tasks. As a Computer Programmer, I know a value can be added to images in 2Calculate to make a resource to teach place value.	Y5 Spreadsheets – I know a formula can be written in a sheet to convert units of length and distance. Y6 Spreadsheets - I know a spreadsheet can be used to investigate a problem such as the frequency of a number rolled on a collection of dice.
Disciplinary Knowledge	Y3 Graphing - I can collect data in a suitable table, record the collected data into 2Graph and include accurate labels and a title.	As a Computer Programmer, I can find, highlight and format a cell in 2Calculate. I can enter appropriate data. As a Computer Programmer, I can type cell numbers in and choose an appropriate number option to create a formula. As a Computer Programmer, I can use the random number, spin number and timer tool in 2Calculate. As a Computer Programmer, I can recall what a line graph is, enter data in a cell and create a correctly labelled graph.	Y5 Spreadsheets – I can write a simple formula for converting cm to m and m to cm using cell references. Y5 Databases – I can sort, group and arrange information in a

		As a Computer Programmer, I can recall what is meant by a budget, analyse information in a budget and create my own budget template In 2Calculate. I can use the TOTAL functionality within the programme. As a Computer Programmer, I can explain what is meant by place value. I can allocate values to images, import the image onto a spreadsheet and make a place value activity.	database. I can use a database to answer questions. Y6 Spreadsheets - I can create a table, format cells, add images and calculate totals. I can use this to work out the difference between income and expenditure.
Vocabulary	Average, Budget, Calculations, Chart, Column, Data, Decimal place, Equals to tool, Format Cell, Formula, Formula Wizard, Line graph, Percentage, Place value, Random number tool, resize, Row, Set image, Spinner tool, Timer, Totals		

Year 4 Spring 2: Hardware Investigators Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Technology Outside School –I know that technology is science and engineering knowledge put into practical use to solve problems or invent useful tools. Y2 Effective Searching –I know the Internet is a global network of connected computers around the World. Y4 Effective Searching - As a Computer Programmer, I know information can be located on a search engine page.	As a Computer Programmer, I know the different parts that make up a computer.	Y6 Networks –I know that LAN and WAN are different types of networks. Y6 Understanding Binary – As a Computer Programmer, I know that binary is a number system using only 1 and 0 and is how data is saved and used. Y6 Blogging - I know a blog is an online vehicle for displaying thoughts and ideas in an informal style.

Disciplinary Knowledge	Y1/2/3 Online Safety – I understand the connections and communications between devices and device capabilities. Y1 Technology Outside School –I can recognise and identify common types of technology such as electronic devices. Y4 Effective Searching - I know that emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address.	As a Computer Programmer, I can name the different parts of a computer such as Hard Drive, RAM, Network card etc. As a Computer Programmer, I can define what is meant by hardware, components and peripherals.	Y6 Networks –I can talk about all the connected devices I use in school and at home. Y6 Understanding Binary –I can explain that computers use a binary system based around 2 integers – 0 and 1. 0 refers to off and 1 refers to on.
Vocabulary	Components, CPU, Graphics Card, Hard Drive, Hardware, Input, Motherboard, Network Card, Output, Peripherals, RAM, Software		

Year 4 Summer 1: Logo Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Lego Builders – I know that computers follow instructions. Y1 Maze Explorers – I know that programmes use sequence and repeat to code an object to move. Y1 Coding – I know debugging is when we fix code that isn't working how it was designed to. Y2 Coding – I know in computing that a set of instructions is known as an algorithm. Steps in an algorithm must be followed in order to achieve the intended outcome. Y3 Coding – I know testing, debugging and fixing are an important part of the process of making computer programmes. Understanding and nesting is and the effect it has on a	As a Computer Programmer, I know 2Logo has its own language with specific instructions. As a Computer Programmer, I understand that representations of shapes, letters and flowers can be used in 2Logo using the repeat command. As a Computer Programmer, I know that repeat command is a more efficient way to code in 2Logo. As a Computer Programmer, I know it is important to test and debug code in 2Logo as with other coding platforms to ensure it runs effectively.	Y5 Game Creator – I know the design of characters and quest items is a key aspect of game creation. Y5 Coding – I know a function is a block or sequence of code that can be accessed when it is needed. This means code doesn't have to be rewritten every time it is needed. Instead, the function can be called each time it is needed.

	programme, can help when trying to debug a programme. Y3 Branching Databases – I know objects can be sorted using yes/no questions and relate this to how computer binary databases work.		
Disciplinary Knowledge	Y1 Coding – I can analyse where my code isn't working and make changes to debug it. Y2 Coding – I can predict what will happen if a planned algorithm is converted to code. As a Computer Programmer, I can predict what will happen if a planned algorithm is converted to code. Y3 Coding – I can use my knowledge of nesting to help debug a programme that isn't working as intended. Y3 Branching Databases – As a Computer Programmer, I can explain that binary databases are also known as branching databases due to the branch like structure.	As a Computer Programmer, I can input directional instructions into 2Logo and leave appropriate spaces. As a Computer Programmer, I can input more abstract non-directional code such as PU, PD & CS. As a Computer Programmer, I can create shapes, pictures and words by typing instructions and using the repeat command. As a Computer Programmer, I can programme repeating commands of code a line at a time. As a Computer Programmer, I can identify errors in the output, look at code and identify why the errors have occurred.	Y4 Coding - I can insert repeat until into my own programmes. Y5 Game Creator – I can design a quest item and add in movement, sound effects and actions.

Vocabulary	Debugging, Grid, Logo, Logo Commands (eg. FD, BK, RT, LT), Multi Line Mode, Pen Down, Pen Up, Prediction, Procedure, Repeat, Run Speed, SETPC, SETPS

Year 4 Summer 2: Coding Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1/2/3 Coding – I know that algorithms are a set of instructions for a computer to follow. I know that there are lots of variables that can be added into code: timers, repeat, buttons, object types… Y3 Branching Databases – I know objects can be sorted using yes/no questions and relate this to how computer binary databases work. Y4 Logo – I know 2Logo has its own language with specific instructions.	As a Computer Programmer, I know there are objects in 2Code and that there are different types and these have attributes (properties) that can be changed. As a Computer Programmer, I know backgrounds can be changed and manipulated. As a Computer Programmer, I know selection is a term used in computer programming. It is a decision command that will be run dependent on whether a condition is met. As a Computer Programmer, I know IF statements are used to create a selection in 2Code and that they are bits of code that will run only if a condition is true. As a Computer Programmer, I know coordinates are used in computer programming to determine the position of a point, shape or object and that these change according to where they are positioned on the screen. As a Computer Programmer, I know repeat until is a control block and that blocks of code will repeat until a condition is met. As a Computer Programmer, I know IF/ELSE statements are a conditional command that tests a statement. If a condition is true, commands inside the if clock will run. If a condition is false, commands inside the else block will run. As a Computer Programmer, I know variables are a virtual container (a place in computer memory) that contain a value that can change. The	Y5 Coding – I know a simulation is a model that represents a real or imaginary situation. Y6 Binary – I know it is possible to represent the state of an object in a game as active or inactive using the respective binary values of 1 or 0.

		value is normally in the format of a number or letter. Variables are used in programming to keep track of things that can change such as the score in a computer game. There are 3 main types that can be created using 2Code.	
Disciplinary Knowledge	Y1/2/3 – I can create code to include timers, repeats, object types and buttons. I can identify, correct and test errors in my code. (Debug) Y3 Branching Databases - I can locate and open 2Question. I can add record cards, insert question texts and choice button texts for each card. I can include an image for each card. Y4 Logo - I can input directional instructions into 2Logo and leave appropriate spaces.	As a Computer Programmer, I can change attributes such as image, name, allow off screen, angle and movement in 2Code. As a Computer Programmer, I can select a background in design mode. As a Computer Programmer, I can use a flowchart to help me visualise a simple programme and explain what happens if a condition is or isn't met within it. As a Computer Programmer, I can identify if statement control blocks. I can recognise how an if statement in 2Code is being used to create selection within a simple programme. As a Computer Programmer, I can create selection within 2Code using if statement blocks. As a Computer Programmer, I can change the coordinates in the attributes of objects. As a Computer Programmer, I can insert repeat until into my own programmes. As a Computer Programmer, I can identify and insert the if/else command within a programme. As a Computer Programmer, I can set a variable type to number, name a variable, set the value of a variable and execute a code with a variable within it.	Y5 Coding – I can plan an algorithm of a physical system such as traffic light sequences. I can convert this into a programme within 2Code. Y6 Binary – I can make a simple program where objects are on or off.
Vocabulary	Action, Alert, Algorithm, Background, Button, Code blocks, Command, Coordinates, Debug / Debugging, Design, Event (When key, When clicked, When swiped), Execute, Flowchart, If statement, If/else statement, Input, Nest, Object, Prompt, Implement, Predict, Repeat, Repeat until, Run, Properties, Selection, Sequence, Timer, Variable		

Year 5 Autumn 1: Online Safety Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1/2/3/4 Online Safety – I know there are risks and benefits of installing software including apps. I know that copying the work of other and presenting it as my own is called 'plagiarism.' Y3 Email – I know it is important to use emails systems safely and there are things that people can do to try and keep themselves safe. Y4 Effective Searching - I know web pages need to evaluated to see if the information contained is true and reliable.	As a Computer Programmer, I know the SMART rules are designed to keep children safe online. As a Computer Programmer, I know that passwords need to be kept secure. As a Computer Programmer, I know care needs to be given when sharing content online. As a Computer Programmer, I know sources should be referenced in work. As a Computer Programmer, I know different forms of communication are best used for specific purposes.	Y5 Word Processing – I know images can be edited in Word using Word Wrap. Y6 Online Safety – I know it is important to balance game and screen time with other parts of our lives. Y6 Blogging - I know blog posts written by others can be commented on.

Disciplinary Knowledge	Y1/2/3/4 Online Safety – I can download apps and programs in the safest possible way. I can define malware as a type of software designed to cause viruses on my device or leave it unusable. I can take steps to keep a password safe by using a mix of letters, numbers and special characters. Y3 Email – I can recognise and report a concerning email / contact. Y4 Effective Searching - I can analyse the content of a web page for clues about the reliability of information.	As a Computer Programmer, I know the 5 different SMART rules and how these keep users safe online. As a Computer Programmer, I can create and keep a password safe. As a Computer Programmer, I consider what information should be shared online. As a Computer Programmer, I use an avatar as a virtual representation of myself rather than a photograph. As a Computer Programmer, I can define what is meant by plagiarism and reference sources used in my work. As a Computer Programmer, I can name various forms of communication and compare the advantages of online and face-to-face communication.	Y5 Word Processing – I can edit an image, wrap text around an image and use style options to change the appearance of an image. Y6 Online Safety – I can look at a range of digital footprints and discuss if the impression left is positive or negative. Y6 Blogging - I can talk about the key features of a blog home page and what makes a good blog.
Vocabulary	Appropriate, Avatar, Bibliography, Citation, Collaborate, Communication, Copyright, Creative commons licence, Critical thinking, Digital Footprint, Encrypt, Identity theft, Image manipulation, Malware, Ownership, PEGI ratings, Phishing, Password, Personal information, Plagiarism, Reference, Reliability, Responsibility, Reliable source, Screenshot, SMART rules, Spoof, Validity		

Year 5 Autumn 2: Word Processing Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y3 Typing – I know to be efficient at typing, hands should be positioned correctly on a keyboard and that the left and right hands should work independently of each other. Y3 Email – I know that pictures, documents and other file types can be attached to emails. Y4 Effective Searching – I know there are different skills needed to research effectively.	As a Computer Programmer, I know that a word processing tool can be used to create a range of documents. As a Computer Programmer, I know images can be added to a document. As a Computer Programmer, I know images can be edited in Word using Word Wrap. As a Computer Programmer, I know the look of a text within a document can be changed. As a Computer Programmer, I know that various features within the programme will enhance a document's look and visibility. As a Computer Programmer, I know tables can be used to present information within a document. As a Computer Programmer, I know a template can be used to create a document. As a Computer Programmer, I know page layout can be improved by using headings and columns.	Y6 Blogging - I know a blog is an online vehicle for displaying thoughts and ideas in an informal style.

Disciplinary Knowledge	Y3 Typing – I can open activities in 2Type and use both the left hand, right hand and combined hands to type. Y3 Email – I can open an email and reply to it. Y4 Effective Searching – I can enter both basic and more advanced search enquiries and use the answers to complete a quiz.	As a Computer Programmer, I can open a blank document, navigate using the tool bar, save a document, use SHIFT or CAPS LOCK to write capital letters and format a document so that it is easy to read. As a Computer Programmer, I can switch between portrait and landscape mode. I can use keyboard shortcuts to copy, paste and cut images into a document. As a Computer Programmer, I can edit an image, wrap text around an image and use style options to change the appearance of an image. As a Computer Programmer, I can use the text formatting bar to apply a style to a document, add headings / subheadings and bullet points to a document. As a Computer Programmer, I can insert text boxes and shapes to a document. I can layer objects and add hyperlinks to an external website. As a Computer Programmer, I can insert and edit a table including merging cells, adding rows and inserts, choosing table borders and changing the background colour of a cell in a table. As a Computer Programmer, I can create a document using a template and use the spelling and grammar check. As a Computer Programmer, I can insert columns into a blank document to create a newspaper front page.	Y6 Blogging - I can open the blogging tool, create a blog, write a blog post and publish the post.
Vocabulary	Attributing, Bulleted lists, Breaks, Caps Lock, Captions, Column (table), Column (newspaper), Copy and paste, Copyright, Creative Commons, Cropping, Cursor, Distributing Columns, Document, Drop Capitals, Editor Options, Font, Grammar Check, Hyperlink, Image Editing, Image Transparency, Merge Cells, Numbered lists, Page Orientation, Readability, Row, Selecting / highlighting, Sharing, Spell check, Styles, Template, text Box, Text Formatting, Text Wrapping, Word Arts, Word Processing Tool, Zoom		

Year 5 Spring 1: Spreadsheets Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y3 Graphing – I know graphing programmes can be used to help solve questions. Y4 Spreadsheets - I know formulas can be added to a spreadsheet to speed up calculations when data is changed.	As a Computer Programmer, I know a formula can be written in a sheet to convert units of length and distance. As a Computer Programmer, I know a spreadsheet tool can be used to investigate if a hypothesis is true. As a Computer Programmer, I know a spreadsheet can be used to model a real-life problem such as area and shape. As a Computer Programmer, I know a spreadsheet can be used to convert days into weeks or years and vice versa. As a Computer Programmer, I know spreadsheets can be created to support the organisation of real-life events such as a school cake sale.	Y5 Databases – I know databases can be created to cover a range of topics or themes. Y6 Spreadsheets - I know a spreadsheet can be used to investigate a problem such as the frequency of a number rolled on a collection of dice.
Disciplinary Knowledge	Y3 Graphing – I can collect data in a suitable table, record the collected data into 2Graph and include accurate labels and a title. Y4 Spreadsheets - I can type cell numbers in and choose an appropriate number option to create a formula.	As a Computer Programmer, I can write a simple formula for converting cm to m and m to cm using cell references. I can complete a similar task for m to km. As a Computer Programmer, I can copy and paste a formula from one cell to another. As a Computer Programmer, I can open a sheet in 2Calculate, add more cells and use the How Many tool to count words and investigate different problems. As a Computer Programmer, I can create simple formulae to work out area and perimeter. I can input this information into a table.	Y5 Databases – I can sort, group and arrange information in a database. I can use a database to answer questions. Y6 Spreadsheets - I can create a table, format cells, add images and calculate totals. I can use this to

	I can use the random number, spin number and timer tool in 2Calculate.	As a Computer Programmer, I can open the advanced mode of 2Calculate, create a table and write formulas to convert units of time. I can use the totaling tool. As a Computer Programmer, I can explain what is meant by the terms profit and loss. I can create a sheet that will calculate the ingredients needed for a number of cakes, and work out the profit that will be made.	work out the difference between income and expenditure.
Vocabulary	Advance Mode, Area, Budget, Columns, Computational Model, Data, Format Cell, Formula, Formula Bar, Formula Wizard, How Many? Tool, Perimeter, Profit, Rows, Spreadsheet, Totalling tool, Variable		

Year 5 Spring 2: Databases Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y3 Branching Databases – I know a database is a collection of data organised in a way that it can be searched, and information found easily. Y3 Graphing – I know that computer programmes such as 2Graph can be used to present data in more meaningful ways. Y4 Spreadsheets – I know a spreadsheet can create a range of graphs and charts and these can be interrogated.	As a Computer Programmer, I know that a database can be used to search for information. As a Computer Programmer, I know users can contribute to a collaborative database. As a Computer Programmer, I know databases can be created to cover a range of topics or themes.	Y6 Spreadsheets - I know a spreadsheet can be used to plan out a school charity day.
Disciplinary Knowledge	Y3 Branching Databases – I can identify questions that can be used to sort physical objects and that when a question is asked, there can only be two possible answers. Y3 Graphing – I can collect data in a suitable table,	As a Computer Programmer, I can open a database in 2Investigate, enter data using words and numbers. As a Computer Programmer, I can use drop down menus to make data entry more efficient. As a Computer Programmer, I can sort, group and arrange information in a database. I can use a database to answer questions.	Y6 Spreadsheets - I can create a table, format cells, add images and calculate totals. I can use this to work out the difference between income and expenditure.

	record the collected data into 2Graph and include accurate labels and a title. Y4 Spreadsheets – I can recall what a line graph is, enter data in a cell and create a correctly labelled graph. Y1/2/3/4 Coding – I can use logical thinking to create code. I can debug my code to fix elements that are not working.	As a Computer Programmer, I can create an avatar for use in a database. As a Computer Programmer, I can enter data in a database. As a Computer Programmer, I can ask three questions to encourage others to interrogate my database. As a Computer Programmer, I can set up a database with appropriate fields and add at least 8 records to the database. As a Computer Programmer, I can write five question using my database for peers to answer. I can answer questions about databases created by my peers.	
Vocabulary	Arrange, Avatar, Chart, Collaborative, Data, database, Database Report, Field, Group, Record, Search, Sort, Statistics		

Year 5 Summer 1: Game Creator Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y2 Creating Pictures – I know that computer drawing programmes may have a choice of painting effects: The size of a tool brush stroke and intensity of colours can be manipulated. Y2 Making Music – I know music can be made digitally using programs like 2Sequence. Y2/3/4 Coding – I know that sequencing programmes can create different themed environments.	As a Computer Programmer, I know it is important to plan out a game before commencing on making it. This includes graphical and sound elements. As a Computer Programmer, I know a game design programme has specific functions for the designer to use. As a Computer Programmer, I know the design of characters and quest items is a key aspect of game creation. As a Computer Programmer, I know a finished game must be playable and possible for the player to complete. As a Computer Programmer, I know that evaluation is important so a game can be improved and made more playable and exciting.	
Disciplinary Knowledge	Y2 Creating Pictures – I can select different colours, change the size of brush strokes and use the dilute tool to change the intensity of a selected colour. Y2 Making Music – I can drag sounds into the	As a Computer Programmer, I can evaluate games highlighting what is working well and what could be improved. As a Computer Programmer, I can use a design document to set the scene of the game. As a Computer Programmer, I can design and add appropriate graphical and sound elements to my game including floor, walls and ceilings.	

	playable area, and experiment with the organisation of sounds on a track. Y2/3/4 Coding - I can select a background in design mode. I can create background themes for coded objects.	As a Computer Programmer, I can consider the appropriate places to locate game hazards which make the game more interesting and add to the playability. As a Computer Programmer, I can add in game music to support the game theme. As a Computer Programmer, I can design a quest item and add in movement, sound effects and actions. As a Computer Programmer, I can add enemies into a game to provide challenge but not make the game impossible to play. As a Computer Programmer, I can write clear instructions that set a scene and provide gameplay instructions for the user. As a Computer Programmer, I can share my game online for others to play. As a Computer Programmer, I can evaluate games made by peers using given criteria. I can make improvements to my own game.	
Vocabulary	Evaluation, Feedback, Image, Instructions, Promotion, Quest, Scene, Screenshot, Texture, Theme		

Year 5 Summer 2: Coding Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Coding – I know an event such as pressing a key or clicking a screen can make a block of code run. Y2 Coding – I know that programmes follow a sequence of instructions (commands) in order. Y3 Coding – I know flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram. Y4 Logo - I know 2Logo has its own language with specific instructions. Y4 Coding - I know IF statements are used to create a selection in 2Code and that they are bits of code that will run only if a condition is true. I know	As a Computer Programmer, I know code can be simplified to complete the same process with less lines of code. Simplified code runs faster and uses less processing memory. As a Computer Programmer, I know a simulation is a model that represents a real or imaginary situation. As a Computer Programmer, I know that the timer every command can be used to make code repeat forever. As a Computer Programmer, I know decomposition is a method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the programme. As a Computer Programmer, I know abstraction is a way of de-cluttering and removing unnecessary details to get a programme functioning. As a Computer Programmer, I know a function is a block or sequence of code that can be accessed when it is needed. This means code doesn't have to be rewritten every time it is needed. Instead, the function can be called each time it is needed. As a Computer Programmer, I know strings are text or a combination of text characters and numbers within programmes. As a Computer Programmer, I know concatenation is the name given to the action of linking things together in a series.	Y6 Binary – I know that binary is a number system using only 1 and 0 and is how data is saved and used. Y6 Coding - I know using functions help with making programmes more efficient. I know flowcharts can represent procedures within a programme. Flowcharts can be references when a programme is executed to test whether a programme is running as expected according to the flowchart.

	IF/ELSE statements are a conditional command that tests a statement.		
Disciplinary Knowledge	Y1 Coding – I can recognise, arrange and run code with a **When Clicked** event. Y2 Coding – I can use the correct code in 2Code to implement an algorithm which includes event 'When Clicked', objects and actions. Y3 Coding – I can follow the flow of a chart and interpret what it is representing. Y4 Logo - I can input directional instructions into 2Logo and leave appropriate spaces. Y4 Coding - I can identify IF statement control blocks. I can recognise how an if statement in 2Code is being used to create selection within a simple programme. I can identify and insert the IF/ELSE command within a programme.	As a Computer Programmer, I can identify that common tags known as computer generated variables can be used in 2Code to control all the objects. As a Computer Programmer, I can create a simplified code that functions exactly the same as the original code by using the common tags objects share. As a Computer Programmer, I can plan an algorithm of a physical system such as traffic light sequences. I can convert this into a programme within 2Code. As a Computer Programmer, I can test and make adaptations to consider variations in real-life situations. As a Computer Programmer, I can recognise when the timer every command could be used in a suitable scenario to make code repeat forever, and incorporate this into a programme. As a Computer Programmer, I can use decomposition during planning to break down a plan into the key parts that are required to get the programme functioning. As a Computer Programmer, I can use abstraction to remove any unnecessary details in code that aren't crucial in getting the programme to function. As a Computer Programmer, I can insert a create function command into a programme for a newly created function. I can insert the call function command as part of an event. As a Computer Programmer, I can create a string variable and initialise it. I can create code that changes the value of the string and use print to screen command to show how the variable value is changing. As a Computer Programmer, I can use print to screen in combination with random words that are joined together to demonstrate concatenation.	Y6 Binary - I can use a programme to convert my age to binary. Y6 Coding - I can create multiple functions within a programme and call them.

Vocabulary	Abstraction, Action, Algorithm, Command, Concatenation, Co-ordinates, Debug / Debugging, Decomposition, Efficient, Event (When Key, when Clicked, when Swiped), Flowchart, Friction, Function, Input, Nest, Object, Output (sound, prompt, alert, print to screen), Physical System, Predict, Print to Screen, properties, Random, Repeat, Selection (if and if/else statements), Sequence, Simplify, Simulation, Strong, Tabs, Timer, Variable

Year 6 Autumn 1: Online Safety Duration: ½ term Big Idea: Digital Literacy 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1/2/3/4/5 Online Safety – Pupils have accumulated knowledge about how to stay safe with passwords, sharing, reliability of sources, digital footprint, plagiarism, SMART rules. Y4 Effective Searching – I know web pages need to evaluated to see if the information contained is true and reliable. Y5 Word Processing - I know images can be edited in Word using Word Wrap.	As a Computer Programmer, I know that a game can be created to encourage the player to think about online safety. As a Computer Programmer, I know a digital footprint leaves a trail online to show their behavior and this can have a negative impact. As a Computer Programmer, I know it is important to balance game and screen time with other parts of our lives.	Y6 Blogging - I know a blog is an online vehicle for displaying thoughts and ideas in an informal style. I know blog posts written by others can be commented on.
Disciplinary Knowledge	Y1/2/3/4/5 Online Safety – Pupils know how to stay safe with strong passwords, sharing of information, reliability of sources, digital footprint, plagiarism, SMART rules. Y4 Effective Searching – I can analyse the content of a web page for clues about	As a Computer Programmer, I can design a game highlighting safe and unsafe behaviour online. As a Computer Programmer, I can look at a range of digital footprints and discuss if the impression left is positive or negative. As a Computer Programmer, I can complete a writing frame about digital footprints. As a Computer Programmer, I can track my screen time for a week and contribute the information to a class database.	Y6 Blogging - I can open the blogging tool, create a blog, write a blog post and publish the post. I can comment on a blog post written by another pupil.

	the reliability of information. Y5 Word Processing - I can edit an image, wrap text around an image and use style options to change the appearance of an image.	As a Computer Programmer, I analyse the data and consider the positive and negative impact of technology on their education, well-being and the environment.	
Vocabulary	Data Analysis, Digital Footprint, Inappropriate, Location sharing, Password, PEGI rating, Phishing, Print Screen, Screen Time, Secure websites, Spoof		

Year 6 Autumn 2: Spreadsheets Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y3 Graphing – I know that computer programmes such as 2Graph can be used to present data in more meaningful ways. Y4 Spreadsheets – I know formulas can be added to a spreadsheet to speed up calculations when data is changed. I know a spreadsheet can create a range of graphs and charts and these can be interrogated. Y5 Spreadsheets – I know a formula can be written in a sheet to convert units of length and distance. Y5 Databases - I know that a database can be used to search for information.	As a Computer Programmer, I know a spreadsheet can be used to investigate a problem such as the frequency of a number rolled on a collection of dice. As a Computer Programmer, I know a formula can be used to work out the new prices in a shop sale. As a Computer Programmer, I know a spreadsheet can be used to plan how to spend pocket money. As a Computer Programmer, I know a spreadsheet can be used to plan out a school charity day.	KS3 – Secondary School

Disciplinary Knowledge	Y3 Graphing – I can collect data in a suitable table, record the collected data into 2Graph and include accurate labels and a title. Y4 Spreadsheets – I can type cell numbers in and choose an appropriate number option to create a formula. Y5 Spreadsheets – I can open the advanced mode of 2Calculate, create a table and write formulas to convert units of time. I can use the totaling tool. Y5 Databases - I can sort, group and arrange information in a database. I can use a database to answer questions.	As a Computer Programmer, I can add dice to a spreadsheet and use the count tool to count the number rolled on the dice and apply this to a table. As a Computer Programmer, I can use the graphing function to display results from a table. As a Computer Programmer, I can format a cell to change number to currency, and write a formula to work out the prices using cell references. I can use a formula to add in and work out a sale price. As a Computer Programmer, I can create a table, format cells, add images and calculate totals. I can use this to work out the difference between income and expenditure. As a Computer Programmer, I can design a sheet with the appropriate formulas to work out costs and income and use the sheet to maximise profit.	KS3 – Secondary School
Vocabulary	Advanced mode, Budget, Chart, Columns, Count (Now Many?) Tool, Data, Dice Tool, Expense, Format Cell, Formula, Formula Bar, Formula wizard, Move Cell Tool, Percentage, Probability, Profit, Rows, Spreadsheet		

Year 6 Spring 1: Networks Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Technology Outside School – I know that technology is used in our school. I know that technology is used outside of school. Y3 Email – I know that emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address. Y4 Effective Searching – I know information can be located on a search engine page. Y4 Hardware Investigators – I know the different parts that make up a computer.	As a Computer Programmer, I know the difference between the World Wide Web and the Internet. As a Computer Programmer, I know that LAN and WAN are different types of networks. As a Computer Programmer, I know the internet has changed our lives in many ways.	Y6 Binary - I know that binary is a number system using only 1 and 0 and is how data is saved and used.

Disciplinary Knowledge	Y1/2/3/4/5/6 Online Safety – Pupils understand the connections and communications between devices and device capabilities. Y1 Technology Outside School – I can identify and describe the function of technology examples within our school. I can identify and describe the function of technology outside of school. Y3 Email – I can compose an email including address, subject and message. Y4 Effective Searching – I can load up a search engine and enter a search enquiry. Y4 Hardware Investigators – I can name the different parts of a computer such as Hard Drive, RAM, Network card etc. I can define what is meant by hardware, components and peripherals.	As a Computer Programmer, I can recall the different ways I use the internet at home and school. As a Computer Programmer, I can recall the difference between the Internet and World Wide Web. As a Computer Programmer, I can talk about all the connected devices I use in school and at home. As a Computer Programmer, I can talk about wired and wireless networks and the key hardware needed for this. As a Computer Programmer, I can explain the difference between LAN and WAN. As a Computer Programmer, I can give examples of well-known search engines and explain what an IP address is. As a Computer Programmer, I can write about the history of the Internet and Tim Berners-Lee. As a Computer Programmer, I can consider how the Internet has changed things over my lifetime.	Y6 Binary - I can explain that computers use a binary system based around 2 integers – 0 and 1. 0 refers to off and 1 refers to on.
Vocabulary	Data, DNS (Domain Name Server), Ethernet, Hosting, Hub/Switch, Internet, IP address, ISP (Internet Service Provider), LAN (Local Area Network), Network, Router, Search Engine, WAN (Wide Area Network), Web Page, Web server, Website, WLAN (Wireless Local Area Network), Wi-Fi, World Wide Web		

Year 6 Spring 2: Understanding Binary Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1/2/3/4/5 Coding – I know that algorithms are sets of instructions for a computer to follow. Y3 Branching Databases – I know objects can be sorted using yes/no questions and relate this to how computer binary databases work. Y4 Logo – I understand that representations of shapes, letters and flowers can be used in 2Logo using the repeat command.	As a Computer Programmer, I know that binary is a number system using only 1 and 0 and is how data is saved and used. As a Computer Programmer, I know all denary numbers can be represented in binary. As a Computer Programmer, I know it is possible to represent the state of an object in a game as active or inactive using the respective binary values of 1 or 0.	KS3 – Secondary School
Disciplinary Knowledge	Y1/2/3/4/5 Coding – I know how to insert objects, actions, collision detector, timers, objects, buttons. I can use IF and IF/ELSE statements in code. I can use efficient coding using decomposition and abstraction.	As a Computer Programmer, I can explain that computers use a binary system based around 2 integers – 0 and 1. 0 refers to off and 1 refers to on. As a Computer Programmer, I can complete a puzzle based around the binary system. As a Computer Programmer, I can represent numbers in binary format and concert binary to denary and vice versa.	KS3 – Secondary School

	Y3 Branching Databases – I can identify questions that can be used to sort physical objects and that when a question is asked, there can only be two possible answers. Y4 Logo – I can input directional instructions into 2Logo and leave appropriate spaces.	As a Computer Programmer, I can use a programme to convert my age to binary. As a Computer Programmer, I can make a simple program where objects are on or off.	
Vocabulary	Binary, Bit, Decimal, Denary, Digit, Game States, Integer, Microprocessor, Nanotechnology, Nibble, Byte, Kilobyte, Megabyte, Gigabyte, Terbytem Switch, Transistor, Variable		

Year 6 Summer 1: Blogging Duration: ½ term Big Idea: Information Technology 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1/2/3/4/5/6 Online Safety – Pupils know how to stay safe online: Strong passwords, digital footprints, sharing safely, phishing, malware, plagiarism, SMART rules and online responsibility. Y3 Email – I know that emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address. I know that pictures, documents and other file types can be attached to emails. Y4 Effective Searching – I know web pages need to evaluated to see if the information contained is true and reliable.	As a Computer Programmer, I know a blog is an online vehicle for displaying thoughts and ideas in an informal style. As a Computer Programmer, I know it is important to plan out the these and content of a blog before writing it. As a Computer Programmer, I know people can contribute to blogs by adding their own posts. As a Computer Programmer, I know blog posts written by others can be commented on.	KS3 – Secondary School

	Y5 Word Processing – I know images can be edited in Word using Word Wrap.		
Disciplinary Knowledge	Y3 Email – I can recognise and report a concerning email / contact. I can select and use the attachment icon and am cautious if I receive an email with an attachment. Y4 Effective Searching – I can analyse the content of a web page for clues about the reliability of information. Y5 Word Processing – I can edit an image, wrap text around an image and use style options to change the appearance of an image.	As a Computer Programmer, I can explain the difference between a blog and vlog. As a Computer Programmer, I can talk about the key features of a blog home page and what makes a good blog. As a Computer Programmer, I can plan out a blog post on a given theme using a concept map. As a Computer Programmer, I can open the blogging tool, create a blog, write a blog post and publish the post. As a Computer Programmer, I can comment on a blog post written by another pupil.	KS3 – Secondary School
Vocabulary	Approval, Archive, Blog, Blog post, Collaborate, Commenting, Connections, Nodes, Vlog		

Year 6 Summer 2: Coding Duration: ½ term Big Idea: Computer Science 			
	Prior Knowledge	**New Knowledge to be explicitly taught**	**Future Knowledge How knowledge will be built upon**
Substantive Knowledge	Y1 Coding – I know an event such as pressing a key or clicking a screen can make a block of code run. Y2 Coding – I know that programmes follow a sequence of instructions (commands) in order. Y3 Coding – I know flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram. Y4 Logo - I know 2Logo has its own language with specific instructions. Y4 Coding - I know IF statements are used to create a selection in 2Code and that they are bits of code that will run only if a condition is true. I know	As a Computer Programmer, I know that number elements combined with a number variable and if/else statement can be used to create an onscreen timer. Selection can be achieved through the use of if/else statements. As a Computer Programmer, I know the coordinates of objects can be used in code such as moving the position of them. (Using x and y terms) As a Computer Programmer, I know the launch command can be used within 2Code to open another Purple Mash file or external website when it is called in a programme. As a Computer Programmer, I know 2Code contains tabs in the coding view. Tabs can be used to help organize code. As a Computer Programmer, I know using functions help with making programmes more efficient. As a Computer Programmer, I know flowcharts can represent procedures within a programme. Flowcharts can be references when a programme is executed to test whether a programme is running as expected according to the flowchart. As a Computer Programmer, I know input is defined be information going into a computer. It could consist of pressing a key, swiping a screen, clicking an object on the screen with a mouse or typing using the keyboard. Prompt for input and get input are both defined as user output.	KS3 – Secondary School

	IF/ELSE statements are a conditional command that tests a statement. Y5 Coding - I know code can be simplified to complete the same process with less lines of code. Simplified code runs faster and uses less processing memory.		
Disciplinary Knowledge	Y1 Coding – I can recognise, arrange and run code with a **When Clicked** event. Y2 Coding – I can use the correct code in 2Code to implement an algorithm which includes event 'When Clicked', objects and actions. Y3 Coding – I can follow the flow of a chart and interpret what it is representing. Y4 Logo - I can input directional instructions into 2Logo and leave appropriate spaces. Y4 Coding - I can identify IF statement control blocks. I can recognise how an if statement in 2Code is being used to create selection within a simple programme. I can	As a Computer Programmer, I can create a number variable command, name it and give it a value. As a Computer Programmer, I can use a timer command with an if/else statement nested within it. As a Computer Programmer, I can use an alert command within else that gives an onscreen message. As a Computer Programmer, I can incorporate a restart command at the end of the if/else statement. As a Computer Programmer, I can set an object's x and y coordinates. As a Computer Programmer, I can incorporate the launch command within a programme as a nested event. As a Computer Programmer, I can assign an activity or choose a webpage for the launch command. As a Computer Programmer, I can recognise, label and organise key parts of code into their relevant tabs. As a Computer Programmer, I can create multiple functions within a programme and call them. As a Computer Programmer, I can interpret, predict, run and test a programme that represents the procedures on a flowchart to see whether the programme is running as expected.	KS3 – Secondary School

	identify and insert the IF/ELSE command within a programme. Y5 Coding - I can use abstraction to remove any unnecessary details in code that aren't crucial in getting the programme to function.	As a Computer Programmer, I can use the prompt for input command within a programme as part of joining strings together. As a Computer Programmer, I can use the get input command as part of an if/else statement.	
Vocabulary	Action, Algorithm, Command, Concatenation, Co-ordinates, Debug / Debugging, Decomposition, Event (when key, when Clicked, when Swiped), Execute / Run, Flowchart, Function, Input (prompt for input / get input), Launch command, Object, Output, Predict, Procedure, Properties, Repeat, Repeat until, Selection, Sequence, Simulation, String, Tabs, text Object, Timer, turtle Object, variable, x and y properties		