INTENT
Computing Curriculum Year A and B: Planning, Progress and Long-Term Knowledge Growth

YEAR 4 Purple Mash Units	Substantive Computing Content	Recurring substantive themes, ideas and language (Key Concepts) (key vocabulary in bold)	Subject rationale: Supporting pupils' wider Computing curriculum journey	Basic Disciplinary Training in Computational Thinking
Autumn Term **4.2 Online safety (4 lessons)**	**4.2 Digital Literacy (Online Safety):** **Phishing** To understand how children can protect themselves from online identity theft. **Beware Malware** To identify the risks and benefits of installing software including apps. **Plagiarism** To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. **Healthy Screen Time** To understand the importance of balancing game and screen time with other parts of their lives.	Children will learn that a **digital footprint** is the trail of information that exists (often stored via **cookies**) based upon sites that they have visited, **searches** that they have done information that they have shared and other online behaviours. Children will understand the potential dangers from other users of the internet. They will understand how to recognise **phishing emails**, and that **SPAM** is sent for advertising, stealing/extorting money or information, or causing harm to **hardware** through **viruses** via **malware**. Children will understand the idea of orginal work (**copyright**) and that **plagiarism** is passing someone else's work off as your own, which is stealing. Children will know that they must strike a balance between game/screen time and other activities (including sport) to stay healthy.	This unit builds on concepts taught in units: 3.2 (safe passwords, fact or fiction and appropriate content ratings) and; 2.2 (safe searching, digital footprint, using email) It also builds on past learning taught through assemblies, Safer Internet Day and PCSO visits, for example.	Children will understand that computer scientists use **collaboration**, exchange and share ideas to make faster progress.
4.1 Coding (6 Lessons)	**4.1 Coding** **Design, Code, Test and Debug** ●To explore different object types in 2Code. ●To use a background and objects to create a scene. ●To plan an algorithm for their scene ●To use 2Code to program it **IF Statements** • To understand how an **IF statement** works. ●To use a flowchart and then create a program with an **IF Statement** **Co-ordinates**	Children will begin to understand selection in computer programming. This unit will revise and further build on children's knowledge of coding, leading to them designing and coding a simple game. Further vocabulary: A**ction, alert, button, background, command, code block, debug, execute, flowchart, nesting, prompt, predict, properties, repeat until, variable value.**	This unit builds on units: 2.1 – Coding: writing algorithms, timed sequences, button functions; 3.1 – Coding: flowcharts, repeat commands, nesting commands, interactive scenes; 4.5 Logo – this unit will support the	Children will understand that computer scientists make mistakes to improve, persevere to find solutions, and use **abstraction** and **generalisation** to decide what information is necessary and what isn't to achieve their goal. They will understand how computers need language presented so in

	• To understand how and why we use **co-ordinates** in computer programming. **Repeat Until and IF/ELSE Statements** • To understand the **'repeat until' command** and how an **IF/ELSE statement** works. **Number Variables** • To understand what a **variable** is in programming. • To use a **number variable**, building towards gameplay **Making a Playable Game** • To create a playable game.	**PRIMM (Predict, Run, Investigate, Modify (debug), Make (use what you know to create something new).**	teaching of Unit 4,5 which follows it.	a logical format and that this means that every step needs to be described carefully but succinctly.
Unit 4.5 – Logo (4 lessons)	**4.5 Logo** **Introduction to 2Logo** • Children know what the common instructions are in 2Logo and how to type them. • Children can follow simple 2Logo instructions to create shapes on paper. • Children can follow simple instructions to create shapes in 2Logo. **Creating Letters using 2Logo** Children can create 2Logo instructions to draw patterns of increasing complexity. • Children understand the pu and pd commands. • Children can write 2Logo instructions for a word of four letters. **Using the Repeat Command in 2Logo** • Children can follow 2Logo code to predict the outcome. • Children can create shapes using the Repeat command. • Children can find the most efficient way to draw shapes.	Children will learn the structure of the **coding** language of Logo (which doesn't use blocks and is therefore more purely a computer **programming** environment). They will input simple instructions in Logo, using it to create letter shapes initially and then using **repeat commands** and embedded prcedures to create shapes, progressing on to 'flowers and 'crystals'. Children will learn common commands and constructs of the Logo programming language. They will develop their ability to compose **algorithm**s for drawing mathematical. There are strong links between Logo and Mathematics, and it is beneficial to incorporate maths angle and shape work into lessons whilst doing 2Logo work. If children have not used floor turtles or the 2Go program lower down the school, then familiarity with these might be beneficial for some students. Logo uses a number of abbreviated commands e.g. RT=right, FD=forward etc	This builds on: Unit 4.1 – which precedes it. Unit 1.5 which uses 2Go to develop related concepts on screen. It is useful to demonstrate or show the children an old-fashioned floor turtle robot so that they can understand the abstraction to the screen, (or use Bee Bots if unavailable).	As above. Children will also develop the following skills of computational thinking: **Making mistakes;** **Perseverance;** **Pattern recognition;** **Decomposition;** **Algorithm design;** **Abstraction and generalisation.**

	Using Procedures ● Children can program the Procedure feature to create their own commands. • Children can create 'flowers' or 'crystals' using 2Logo			
In February: 1 Lesson	**Digital Literacy (Online Safety):** **Safer internet day**	**The whole school will explore an aspect of staying safe on the internet, depending on the theme**	An annual event, this builds on past learning taught through assemblies/ activities.	
Spring Term **Unit 4.7 Effective Search (3 Lessons)**	**Information Technology:** **Unit 4.7 Effective Search** **Using a Search Engine** • Children can structure search queries to locate specific information. **Use Search Effectively to Answer Questions** Children have used search to answer a series of questions. • Children have written search questions for a friend to solve. **Reliable Information Sources** • Children can analyse the contents of a web page for clues about the credibility of the information.	**Vocabulary:** **Easter egg:** An unexpected or undocumented feature in a piece of computer **software** or on a DVD, included as a joke or a bonus. **Internet:** A global **computer network** providing a variety of information and communication facilities. **Internet browser:** A **software application** used to locate and display **Web pages**. **Search** To look for information. In this case on the Internet. **Search engine** A **program** that searches for and identifies items in a **database**. Used especially for finding sites on the **World Wide Web. Spoof website:** Website spoofing is the act of creating a website, as a hoax, with the intention of misleading readers that the website has been created by a different person or organisation. **Website** A set of related **web** pages located under a single **domain name (**the address where a set of web pages is hosted on the World Wide Web e.g. www.bbc.co.uk).	This unit builds upon the skills and knowledge developed in Year 2 in Unit 2.5 – Effective Searching. The lesson makes use of the Google search engine but could be adapted to be used with an alternative	**Collaboration, Abstraction and genralisation**
Unit 4.4 Writing for Different Audiences (5 Lessons)	**Information Technology:** **Unit 4.4 Writing For Different Audiences** **Font Styles** ●Look at and discuss a variety of written material where the font size and type are tailored to the purpose of the text. • Use text formatting to make a piece of writing fit for its audience and purpose. **Lessons 2 & 3**	In this unit, children learn that technology can be used to organise, reorganise, develop, and explore ideas, and that working with information in this way can aid understanding. It also gives children opportunities to discuss their experiences of using ICT and how it is used in the wider world. Children will be able to apply what they have learnt in this unit when identifying key points in a story or account, writing accounts in which details of	This unit builds on and supports learning from across the curriculum. It teaches children the skills of electronic communication and presentation of ideas and prepares them for	**Collaboration & Communication**

Writing for a Campaign (continued) (2 Lessons)	**Using a Simulated Scenario to Produce a News Report** ● Role-play the job of a journalist in a newsroom. • Interpret a variety of incoming communications and use these to build up the details of a story. • Use the incoming information to write their own newspaper report. **Lessons 4 & 5** **Writing for a Campaign** ● Children can use 2Connect to mind-map ideas for a community campaign. ● Children can use these ideas to write a persuasive letter or poster as part of the campaign. ● Children can assess their texts using criteria to judge their suitability for the intended audience.	character and action are used to interest the reader and using evidence and examples to support key points. **Font:** The style of text used when typing on a computer. **Bold:** Thicker, darker lettering in the current font, used for emphasis or to make characters stand out. **Italic**: A sloping text effect used for emphasis. **Underline**: A text effect that draws a line under that text, used for emphasising text, such as in titles.	presenting their work fluently in UKS2 and beyond.	
Summer Term **4.8 Hardware Investigators (2 Lessons)**	**Computer Science: 4.8 Hardware Investigators** **Lesson 1: Hardware** ● Children learn to name the different parts of a desktop computer. • Children will learn what the function of the different parts of the computer is. **Lesson 2: Parts of a Computer** • Children can recall the different parts that make up a computer	**Vocabulary:** **Hardware:** Physical computer equipment (i.e. not software). **Motherboard:** A printed circuit board containing the main parts of a computer or other device, with connectors for other circuit boards to be slotted into. **CPU:** The part of a computer in which operations are controlled. **RAM:** Allows programs to store information to help the computer run more quickly. **Graphics card:** A printed circuit board that controls the output to a display screen. **Network card:** An electronic device that connects a computer to a computer network. **Monitor**: A screen which displays an image generated by a computer. **Speakers:** a device for letting you hear sounds generated by the computer. **Keyboard and mouse:** external devices that make up the user interface.	This is a standalone unit that will support later learning in UKS2	**Decomposition**
Unit 4.3 Spreadsheets (5 Lessons)	**Information Technology: 4.3 Spreadsheets;** Children learn: ●To format cells as currency, percentage, decimal to different decimal places or fraction.	**Vocabulary:** **Average Symbols** used to represent comparing two values. **Advance mode** A mode of 2Calculate in which the cells have references and can include	This unit builds on previous work in Units 1.8, 2.3, 3.3 and is	**Abstraction and Generalisation; Making Mistakes;**

	• To use the formula wizard to calculate averages. • To combine tools to make spreadsheet activities such as timed times tables tests. • To use a spreadsheet to model a reallife situation. • To add a formula to a cell to automatically make a calculation in that cell.	formulae. **Copy and Paste** A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing. **Cells** An individual section of a spreadsheet grid. It contains data or calculations. **Columns** Vertical reference points for the cells in a spreadsheet. **Charts** Use this button to create a variety of graph types for the data in the spreadsheet. **Equals tool** tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool. **Formula** Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet. **Formula Wizard** The wizard guides you in creating a variety of formulae for a cell such as calculations, totals, averages, minimum and maximum for the selected cells. **Move cell tool** This tool makes a cell's contents moveable by drag-and-drop methods. **Random tool** Click to give a random value between 0 and 9 to the cell. **Spin Tool** Adds or subtracts 1 from the value of the cell to its right. **Rows** Horizontal reference points for the cells in a spreadsheet. **Spreadshee**t A computer program that represents information in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the value to be inserted based on the values in other cells. **Timer** When placed in the spreadsheet, click the timer to adds 1 to the value of the cell to its right every second until it is clicked again	built upon by later Units 5.3, 6.3 & 6.8.	**Perserverance: Collaboration.**
Unit 4.6 Animation (3 Lessons)	**Information Technology: 4.6 Animation;** Children learn: ●To discuss what makes a good animated film or cartoon. • To learn how animations are created by hand. • To find out how 2Animate can be created in a similar way using the computer.	**Vocabulary:** **Animation** A process by which still pictures appear to move. **Flipbook** A book with pictures drawn in a way that makes them appear to move when the pages are flicked. **Frame** A single image in an animation. **Onion skinning** A process where the shadow image of the previous frame is present to	This unit builds on Units 1.6, 2.6	**Imagination; Collaboration; Algorithm Design.**

	• To learn about onion skinning in animation. • To add backgrounds and sounds to animations. • To be introduced to 'stop motion' animation. • To share animation on the class display board and by blogging.	help you line up the objects of the animation correctly. **Background** A non-moving image that appears behind the animated images. **Play** Press this button to make the animation start. **Sound** Music or oral effects that can be added to the animation. **Stop motion** A technique whereby the camera is repeatedly stopped and started, for example to give animated figures the impression of movement. **Video clip** A short piece of film or animation		
Unit 4.9 Making Music (4 Lessons)	**Information Technology: 4.9 Making Music** Children learn: **1 Understanding Music** ●To use appropriate musical language to discuss a piece of music. • Children can identify sounds in a piece of music. • Children can explain how a piece of music makes them feel. **2 Rhythm and Tempo** • Children can identify and recall a simple rhythm. • Children can explain what tempo is, and how changing it can change the mood of a piece of music. • Children can create their own simple rhythm using Busy Beats. **3 Melody and Pitch** • Children can show an understanding of melody. • Children can create a simple melodic pattern using 2Sequence and Busy Beats. • Children can use a variety of notes, experimenting with pitch. **4 Creating Music** • Children can explore and understand how music is created. • Children can experiment with pitch, rhythm, and melody to create a piece of house music on Busy Beats.	**Vocabulary:** **Pitch** How high or low the sound of a note is. **Rhythm** A pattern of long and short sounds and silences. **Pulse** The steady beat of a piece of music. **Tempo** How slow or fast a piece of music is. **Dynamics** How loud or quiet a sound is. **Texture** The way that different sounds and music elements are layered together to create a piece of music. **Melody** A sequence of notes which make up a tune. **Rippler** The tool which when clicked, begins the ripple of sound. **House music** A style of electronic disco music which uses a range of different beats and synth sounds.	This unit builds on Unit 2.7 and links strongly to our Music curriculum	**Imagination; Collaboration; Algorithm Design.**

National Curriculum Objective	Strand	Unit
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Computer Science	1.2 1.4 1.5 1.7
Create and debug simple programs	Computer Science	1.5 1.7
Use logical reasoning to predict the behaviour of simple programs.	Computer Science	1.5 1.7
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information Technology	1.3 1.6 1.7 1.8
Recognise common uses of information technology beyond school	Digital Literacy	1.9
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Digital Literacy	1.1