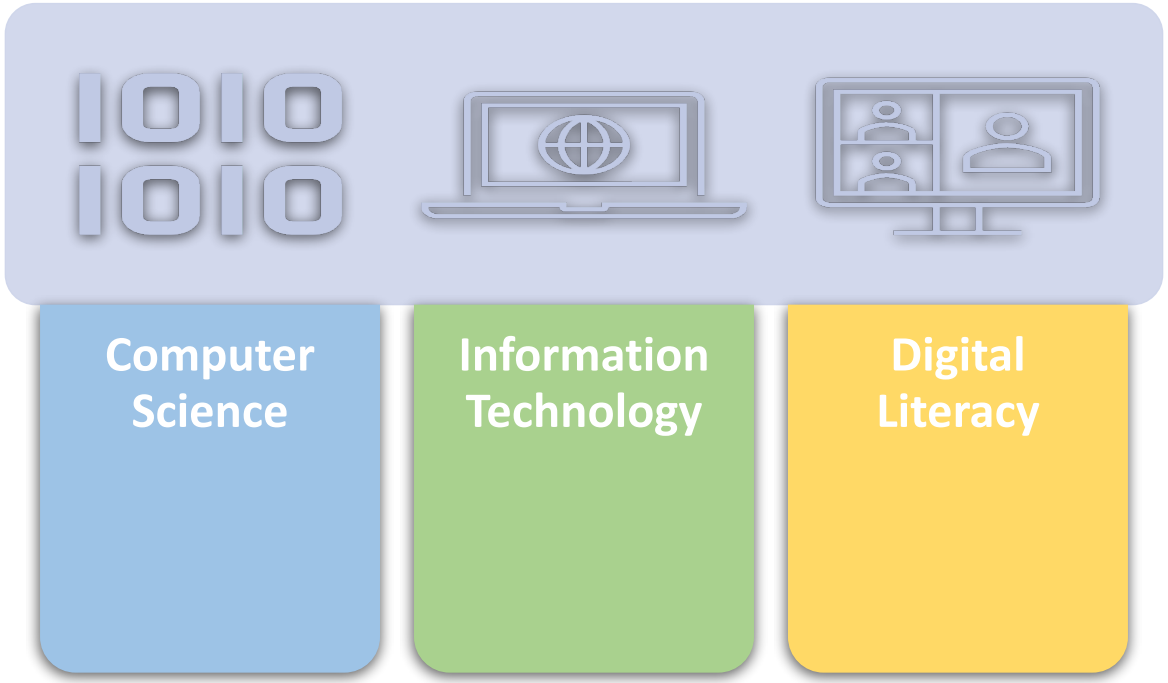
Computing Curriculum Overview

"A caring community: Serious about learning."

Our Approach

We follow the **Purple Mash** Computing framework as the basis of our curriculum. Our **cyclical** curriculum focuses on the 3 aspects below and our pupils develop their knowledge and understanding of **computational concepts** through exploring the different applications of them within real world contexts. Each time they revisit an aspect within a theme, it is with **increasing complexity** and **depth** to build on their **prior knowledge**. From Summer 2 in Year 1 through to Year 6 it is taught **in a 3 week block** in a discreet 1 hour session. In Early Years and the rest of Year 1 there is teacher input followed by opportunities in adult directed or continuous provision. This develops our pupils key knowledge and skills and our **pupils apply their learning across the curriculum** through the products they create in different subject disciplines and for homework through the Purple Mash platform. From year 1, computing is currently evidenced through **individual digital pupil portfolios** where pupils are taught to name and save examples of their learning across the 3 aspects. In EYFS Evidence Me is used. In addition, each unit has its own **knowledge organiser** and **vocabulary overview**.



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pre skills	* opportunities to explore everyday technology in roleplay (phones, cameras, tills etc) * opportunities to use IWB to make marks and explore tools * opportunities to use an ipad to explore simple age appropriate APPs * opportunities to use toys with moving parts, lights and sounds * opportunities to use cause and effect toys

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Knowledge & Skills	**Experimenting with drawing** • To be able to select colours. • To be able to mark make purposefully on the screen. • To be able to control the pencil width. • To be able to choose tools to experiment with. • To be able to use the undo button. • To be able to erase parts of pictures. • To be able to draw using a touch screen. **Introduction to online safety & looking after hardware** • To be able to explain what 'private' means when using technology. • To be able to express how it feels to be uncomfortable with something. • To be able to name 5 people who can help with negative feelings. • To be able to think about how to show kindness to others. • To begin to be aware of the impact of a lot of screen time. • To be able to take appropriate actions before using technology. • To know safe ways to transport portable devices. • To be able to relate being gentle and sharing to the use of devices. • To be able to understand what technology is. **Introduction to programmable toys** • To be able to describe a route that is in progress. • To be able to describe a route taken by another person while it is being enacted. • To be able to follow a route taken by another person after it has been enacted. • To plan routes for toy vehicles. • To follow a plan for a toy vehicle. • To use the buttons on a floor robot to make it move. • To purposefully use the buttons on a floor robot to make it move one step at a time. • To be able to input a program of 2 or 3 steps into a floor robot and then run the program to make it move. • To be able to interpret simple instructions to predict the outcome. • To be able to plan and input instructions for a floor robot one step at a time. • To be able to plan and input instructions for a floor robot more than one step at a time.		
Vocab	cursor, screen, touch pad, undo, login	Private, screen time, safe	Forwards, backwards, left, right, path, route
	Continuous Provision Enhancements To have role play opportunities for exploring technology around them: ➢ in the home such as toy microwave, cameras & clocks to talk about use of technology in role. ➢ in the outdoors such as traffic lights, walkie talkies and construction sites to talk about outdoor technology such as a farmer or police officer. ➢ in the wider world such as a toy shopping till, calculator, barcode reader, QR code, spacecraft or doctors set to talk about technology in different job roles. To experiment with creating and recording sound and or images through the use of Mash cams, 2Beat, 2Explore, Mini Mash, Digital Cameras & 2Create a story.		

Y1		Summer	
Know ledge & Skills	**Unit 1-1-Onine Safety & Exploring Purple Mash** • To understand what a program is. • To learn how to open, save. • To be able to type own username and password to log in and out. **Unit 1.4 Maze Explorers** • To understand the functionality of the basic direction keys in Challenges 1 and 2. • To be able to use the direction keys to complete the challenges successfully. • To understand the functionality of the basic direction keys in Challenges 3 and 4. • To understand how to create and debug a set of instructions (algorithm). • To use the additional direction keys as part of their algorithm. • To understand how to change and extend the algorithm list. **Unit 1.9-Technology Outside School** • To walk around the local community and find examples of where technology is used. • To record examples of technology outside school. **Unit 1.3-Pictograms. (Easter)** • To understand that data can be represented in picture format. • To contribute to a class pictogram. And record results of an experiment.	**Unit 1.6-Animated Story Books** • To introduce e-books and the 2Create a Story tool. • To add animation to a story. • To add sound to a story, including voice recording and music the children have composed. • To work on a more complex story, including adding backgrounds and copying and pasting pages. To share e-books on a class display board.	**Unit 1.7-Coding** • To understand what instructions are and predict what will happen when instructions are followed. • To understand that computer programs work by following instructions. • To use code to make a computer program. • To understand what objects/actions are and understand what an event is. • To use an event to control an object. • To understand what an event is. • To begin to understand how code executes when a program is run. • To understand what backgrounds and objects are. • To understand how to use the scale property. • To plan and make a computer program.
E-safety	**Online Reputation/Self-image & identity** **Managing Online Information** **Privacy & Security/Copyright & Ownership**		
Vocab	Login, log out, alert , avatar , file name, notification , private, button , icon, menu, password, technology Computer , programme, algorithm , code , debugging , instructions, direction, route , undo, command, left and right	Animation , eBook, sound, edit, sound effect, clip- art gallery, font	Action , event, background , execute

Y2	Autumn		Spring		Summer	
Knowledge & Skills	**Unit 2.7-Making Music** **5 weeks** • To be introduced to making music digitally using 2Sequence. • To explore, edit and combine sounds using 2Sequence. • To add sounds to a tune to improve it. • To think about how music can be used to express feelings and create tunes which depict feelings. • To upload a sound from a bank of sounds into the Sounds section. • To record their own sound and upload it into the Sounds section. • To create their own tune using the sounds which they have added to the Sounds section.	**Unit 2.5-Effective Searching** **3 weeks** • To know how to refine searches using the Search tool. • To have some knowledge and understanding about sharing more globally on the Internet. • To open and send simple online communications in the form of email. **Unit 2.2-Online Safety** **3 weeks** • To understand that information put online leaves a digital footprint or trail. • To have some knowledge and understanding about sharing more globally on the Internet. • To understand how we should talk to others in an online situation. • To open and send simple online communications in the form of email. • To understand that information put online leaves a digital footprint or trail. • To identify the steps that can be taken to keep personal data and hardware secure.	**Unit 2.8-Presenting Ideas** **4 weeks** • To explore how a story can be presented in different ways. • To make a quiz about a story or class topic. • To make a fact file on a non-fiction topic. (Year 2 Literacy) • To make a presentation to the class.	**Unit 2.6-Creating Pictures** **5 weeks** • To learn the functions of the 2Paint a Picture tool. • To learn about and recreate the Impressionist style of art (Monet, Degas, Renoir). • To recreate Pointillist art and look at the work of pointillist artists such as Seurat • To recreate the work of Piet Mondrian (Year 1 Art) in the style using the lines template. • To learn about the work of William Morris and recreate the style using the patterns template. • To explore surrealism and eCollage.	**Unit 2.3-Spreadsheets** **4 weeks** • To use 2Calculate image, lock, move cell, speak and count tools to make a counting machine. • To learn how to copy and paste in 2Calculate. • To use the totalling tools. • To use a spreadsheet for money calculations. • To use the 2Calculate equals tool to check calculations. • To use 2Calculate to collect data and produce a graph. (Year 1 science) **Unit 2.4-Questionning** **4 weeks** • To learn about data handling tools that can give more information than pictograms. • To use yes/no questions to separate information. • To construct a binary tree to identify items. • To use 2Question (a binary tree database) to answer questions. • To use a database to answer more complex search questions. • To use the Search tool to find information.	**Unit 2.1-Coding** **5 weeks** • To understand what an algorithm is and that they follow a sequence. • To create a computer program using an algorithm. • To create a program using a given design. • To understand the collision detection event. • To design an algorithm that follows a timed sequence. • To understand what different events do in code. • To understand the function of buttons in a program. • To understand and debug simple programs.
E-safety		**Managing Online Information**	**Privacy & Security/Copyright & Ownership**	**Online Relationships & Bullying**	**Health, Wellbeing & Lifestyle**	
Vocab	Beat, Tune, Speed, Compose, Tempo, Note , Soundtrack, Volume	Attachment, digital footprint, email, filter, protection, reply, search, secure, sharing, Internet, web address, web site, web page, search engine, digital footprint, domain	Login, Log out, Alert , Avatar , File name, Notification , Private, Button , Icon, Menu, Password Mind map, Presentation, Node, Quiz	Criteria, Sort , Groups, Art , Palette, Style, Fill	Block graph, Copy, Drag, Label, Table, Total, Equals tool, avatar, binary tree, data, database, field, information, pictogram, question, record, search, sort	Bug, Collision detection , Click events

Y3	Autumn		Spring		Summer	
Knowledge & Skills	**Unit 3.1-Coding Lesson 5 weeks** • To understand what a flowchart is and how flowcharts are used in computer programming. • To understand that there are different types of timers and select the right type for purpose. • To understand how to use the repeat command. • To understand the importance of nesting. **Unit 3.4 Touch Typing 3 weeks** • To introduce typing terminology. • To understand the correct way to sit at the keyboard. • To learn how to use the home, top and bottom row keys. • To practise typing with the left and right hand.	**Unit 3.7-Simulations 6 weeks** • To consider what simulations are. • To explore a simulation. • To analyse and evaluate a simulation • To enter data into a graph and answer questions. • To solve an investigation and present the results in graphic form.	**Unit 3.2-Online Safety 3 weeks** • To know what makes a safe password and how to keep it safe. • To understand how the Internet can be used in communication. • To understand how a blog can be used to communicate with a wider audience. • To consider the truth of the content of websites. • To learn about the meaning of age restrictions symbols on digital media and devices. **Unit 3.5-Email-including email safety 4 weeks** • To think about the different methods of communication. • To open and respond to an email. • To write an email to someone from an address book. • To learn how to use email safely. • To add an attachment to an email. • To explore a simulated email scenario.	**Unit 3.3-Spreadsheets 4 weeks** • To use the symbols more than, less than and equal to, to compare values. • To use 2Calculate to collect data and produce a variety of graphs. • To use the advanced mode of 2Calculate to learn about cell references.	**Unit 3.6-Branching Databases 4 weeks** • To sort objects using just 'yes' or 'no' questions. • To complete a branching database using 2Question. • To create a branching database of the children's choice. **Unit 3.8- Graphing 3 weeks** • To enter data into a graph and answer questions. • To solve an investigation and present the results in graphic form.	**Unit 3.9-Presenting 5 weeks** • To understand the uses of PowerPoint. • To create a page in a presentation. • To add media to a presentation. • To add animations to a presentation. To add timings to a presentation. • To use the skills learnt to design and create an engaging presentation.
E-safety	**Online Reputation/Self-image & identity**		**Managing Online Information**		**Privacy & Security/Copyright & Ownership**	**Health, Wellbeing & Lifestyle**
Vocab	Flowchart, run , procedure, timer, interval , nesting, selection , 'If' statement , coordinate	Analysis, simulation, axis	Appropriate, spoof, blog, vlog, personal information, reputable source, reliable source, permission , verify, CC, email, attachment, inbox, save to draft, BCC	Pie chart, Cell address, Spin tool	Branching database, axis	Slide, transition, media, slideshow, font formatting

Y4	Autumn		Spring		Summer	
Knowledge & Skills	**Unit 4.7-Effective Researching 4 weeks** • To locate information on the search results page. • To use search effectively to find out information. • To assess whether an information source is true and reliable **Unit 4.10-Artificial Intelligence 3 weeks** • To understand the basic concept of AI and real-life examples. • To recognise the impact of AI in daily life. • To recap what is meant by the terminology AI. • To explore how AI can assist and benefit us in various aspects of daily life. • To understand the potential applications and impact of AI in the future. • To encourage critical thinking and creativity when thinking future AI. • To understand how AI is being used to create music. • To use AI to create	**Unit 4.1- Coding 6 weeks** • To understand how an IF statement works. • To understand how to use co-ordinates in computer programming. To understand the 'repeat until' command. • To understand how an IF/ELSE statement works. • To design and create an interactive scene. • To begin to understand selection in computer programming. • To understand what a variable is in programming. • To use a number variable. • To create a playable game.	**Unit 4.2-Online Safety 4 weeks** • To understand how children can protect themselves from online identity theft. • To understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • To identify the risks and benefits of installing software including apps. • To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. • To identify appropriate behaviour when participating or contributing to collaborative online projects for learning. • To identify the positive and negative influences of technology on health and the environment. • To understand the importance of balancing game and screen time with other parts of their lives. **Unit 4.4-Writing for Different Audiences 4 weeks** • To explore how font size and style can affect the impact of a text. • To use a simulated scenario to produce a news report. • To use a simulated scenario to write for a community campaign	**Unit 4.6-Animation 4 weeks** • To decide what makes a good, animated film or cartoon and discuss favourite animations. • To learn how animations are created by hand. • To find out how 2Animate animations can be created in a similar way using technology. To learn about onion skinning in animation. • To add backgrounds and sounds to animations. • Introducing 'stop motion' animation. • To share animation the class blog.	**Unit 4.9-Making Music 4 weeks** • To identify and discuss the main elements of music: Pulse, Rhythm, Tempo, Pitch, Texture • To understand and experiment with rhythm and tempo. • To create a melodic phrase. • To compose a piece of electronic music.	**Unit 4.5 & 4.8-Logo & Hardware Investigators 6 weeks** • To learn the structure of the coding language of Logo. • To input simple instructions in Logo. • Using 2Logo to create letter shapes. • To use the Repeat function in Logo to create shapes. • To use and build procedures in Logo.
E-safety	**Online Reputation/Self-image & identity**		**Managing Online Information**		**Privacy & Security/Copyright & Ownership**	**Health, Wellbeing & Lifestyle**
Vocab	Onion skinning, FPS (Frame per Second), pause, frame, stop motion, Easter eggs, results page, search engine, algorithm, data, artificial intelligence	Repeat, repeat until , inputs, variable, prompt, selection , 'If' statement , Coordinate	Spam, cookies, malware, ransomware, virus, citation, copyright, phishing, SMART rules, campaign, format, font, genre, opinion, reporter, viewpoint	FPS, frame, pause, stop motion,	BPM, dynamics, harmonious, melody, pitch, pulse, rhythm, tempo, texture, synths	LOGO, multi-line mode, components, CPU, graphics cards, hard drive, input, motherboard, network card, output, peripherals, RAM, software

Y5	Autumn		Spring		Summer	
Knowledge & Skills	**Unit 5.8-Word Processing 4 weeks** • To know what a word processing tool is for. • To add and edit images to a word document • To know how to use word wrap with images and text. • To change the look of text within a document. • To add features to a document to enhance its look and usability. • To use tables within MS Word to present information. • To introduce children to templates. • To consider page layout including heading and columns.	**Unit 5.6-3D Modelling 4 weeks** • To be introduced to 2Design and Make and the skills of computer aided design. • To explore the effect of moving points when designing. • To design a 3D Model to fit certain criteria. • To refine and print a model.	**Unit 5.2-Online Safety 2 weeks** • To gain a greater understanding of the impact that sharing digital content can have. • To review sources of support when using technology and children's responsibility to one another in their online behaviour. • To know how to maintain secure passwords. • To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. • To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. • To learn about how to reference sources in their work. • To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. • To ensure reliability through using different methods of communication. **Unit 5.4-Databases 4 weeks** • To learn how to search for information in a database. • To contribute to a class database. • To create a database around a chosen topic	**Unit 5.7-Concept Maps 4 weeks** • To understand the need for visual representation when generating and discussing complex ideas. • To understand the uses of a 'concept map'. • To understand and use the correct vocabulary when creating a concept map. • To create a concept map • To understand how a concept map can be used to retell stories and information. • To create a collaborative concept map and present this to an audience.	**Unit 5.1-Coding 6 weeks** • To design a playable game with a timer and a score. • To plan and use selection and variables. • To understand how the launch command works. • To use functions and understand why they are useful. • To understand how functions are created and called. • To use flowcharts to create and debug code. • To create a simulation of a room in which devices can be controlled. • To understand how user input can be used in a program. **Unit 5.5-Game Creator 5 weeks** • To plan a game. • To design and create the game environment. • To design and create the game quest. • To finish and share the game. • To self and peer	**Unit 5.3-Spreadsheets 4 weeks** • To use formulae within a spreadsheet to convert measurements of length and distance. • To use the count tool to answer hypotheses about common letters in use. • To use a spreadsheet to model a real life problem. • To use formulae to calculate area and perimeter of shapes. • To create formulae that use text variables. • To use a spreadsheet to help plan a school cake sale. **Unit 5.9 Using External Devices Weeks 2** • To be able to upload a program to an external device. • To adapt a program and operate it using Purple Chip. • To understand how a device can be programmed to be used as a game controller. • To explore the text functions available and appraise uses. • To create a simple quiz program that can be answered. • To create a program in which an external device can be used to monitor real world conditions. • To code, test, debug and share a program for the Purple Chip.
E-safety	**Online Reputation/Self-image & identity** **Managing Online Information** **Privacy & Security/Copyright & Ownership** **Online Relationships & Bullying**					
Vocab	Attributing, bullet lists, breaks, caps lock, captions, columns, copy/ paste, copyright, cropping, distributing columns, drop capitals, editor options.	CAD – Computer Aided Design, pattern fill , 3D printing, story mode,	Identity theft, PEGI rating, creative commons license, malware, encrypt, arrange, avatar, chart, data, database, database report, field, group, record, search, sort, statistics	concept map, connection , presentation mode	Simplify , efficient, computer generated variable, physical system, abstraction , function , tabs, concatenation , print to screen	Formula, formula bar, formula wizard, alert, algorithm, chip show text, code view, debug, design, emulator, event, external device, function, host, If/else, input, sensor, URL, output

Y6	Autumn		Spring		Summer	
Knowledge & Skills	**Unit 6.1-Coding** **6 weeks** • To examine how whole numbers are used as the basis for representing all types of data in digital systems. • To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems). • To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics.	**Unit 6.4-Blogging** **3 weeks** • To identify the purpose of a blog. • To identify the features of successful blog writing. • To plan the theme for a blog. • To understand how to write a blog and a blog post. • To consider the effect upon the audience of changing the visual properties of the blog. • To understand how to contribute to an existing blog. • To understand the importance of commenting on blogs. • To understand how and why blog posts and comments are approved by the teacher.	**Unit 6.2-Online Safety** **2 weeks** • To identify benefits and risks of mobile devices broadcasting the location of the user/device. • To identify secure sites by looking for privacy seals of approval. • To identify the benefits and risks of giving personal information. • To have a clear idea of appropriate online behaviour. • To begin to understand how information online can persist. • To understand the importance of balancing game and screen time with other parts of their lives. • To identify the positive and negative influences of technology on health and the environment. **Unit 6.8-Binary** **4 weeks** • To examine how whole numbers are used as the basis for representing all types of data in digital systems. • To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s. • To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics. • To examine how whole numbers are used as the basis for representing all types of data in digital systems.	**Unit 6.6-Networks** **3 weeks** • To discover what the children know about the Internet. • To find out what a LAN and WAN • To find out how we access the internet in school. • To research and find out about the age of the internet. • To think about what the future might hold.	**Unit 6.5-Text Adventures** **6 weeks** • To find out what a text adventure is. • To use 2Connect to plan a story adventure. • To make a story-based adventure using 2Create a Story. • To introduce an alternative model for a text adventure which has a less sequential narrative. • To use written plans to code a map-based adventure in 2Code.	**Unit 6.7-Quizzing** **5 weeks** • To create a picture-based quiz for young children. • To learn how to use the question types within 2Quiz. • To explore the grammar quizzes. • To make a quiz that requires the player to search a database. • To make a quiz to test your teachers or parents.
E-safety	**Online Reputation/Self-image & identity**		**Managing Online Information**	**Privacy & Security/Copyright & Ownership**	**Online Relationships & Bullying**	**Health, Wellbeing & Lifestyle**
Vocab	Launch command, flowchart, text adventure	Blog post, archive,	Location sharing, print screen, secure websites, screen time, binary, bit, decimal, denary, digit, integer, microprocessor, nanotechnology, nibble, byte, switch, transistor, variable, value	DNS, Ethernet, hosting, hub, switch, IP address, ISP, LAN, network, router, WAN, web server, WLAN	Hub/switch, Wide area network (WAN), Local area network (LAN), Router, WI-FI	Audio, clone, cloze, preview