YEAR 2	Substantive Computing Content	Recurring substantive themes, ideas and language (Key Concepts)	Subject rationale: Supporting pupils' wider Computing curriculum journey	Basic disciplinary training
Autumn Term **2.1 Coding (5)**	**Computer Science:** To understand what an algorithm is To create a computer program using an algorithm. To create a program using a given design. To understand the collision detection event. To understand that algorithms follow a sequence To design an algorithm that follows a timed sequence. To understand that different objects have different properties To understand what different events do in code To understand the function of buttons in a program. To understand and debug simple programs.	The unit of work on coding will further embed the children's knowledge and understanding of what coding is, what an algorithm is and why it is useful in coding and why you need to know how to debug. Pupils will be secure in key vocabulary including e.g. **action, object**, **algorithm**, **button**, **collision detection**, **debug**, **design mode**, **event**, **properties**, **sequence**, **timed.**	To build on prior learning in the EYFS and of planning and making a computer programme in year one. This will support future learning in lower KS2 as children will use their knowledge and skills to further develop their understanding of how to use the repeat command. To understand the importance of nesting. Then in upper KS2 children will use written plans to code a map based adventure in the '2code' programme, which builds on children's prior learning of creating and understanding a computer programming in year two.	Attitudes and Skills: Making mistakes, perseverance, collaboration, pattern recognition, decomposition and algorithm design.
2.3 Spreadsheets (4)	**Information Technology:** 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.	The unit of work on spreadsheets will further embed what a spreadsheet is, then teach the children how to copy and paste when using a spreadsheet, use a spread sheet to plan shopping and use 2calculate to collect data and produce a graph. Pupils will be secure in key vocabulary including e.g**. spreadsheet, copy and paste, columns, cells, count tool,**	To build on prior learning in the EYFS and Year 1. This will support future learning in lower KS2 as children will use their knowledge and skills to further develop their understanding of how to use data this time by using '2Question'. To create a branching database of the children's choice.	Attitudes and Skills: Making mistakes, perseverance, collaboration, pattern recognition and decomposition

	To use the 2Calculate equals tool to check calculations.	**delete key, equals tool, rows, speak tool, image tool, lock tool.**	This also links to the upper KS2 learning as children begin to navigate and enter data into cells. To introduce some basic data formulae for percentages, averages and max and min numbers. To demonstrate how the use of spreadsheets can save time and effort when performing calculations.	
	To use 2Calculate to collect data and produce a graph.			
2.2 Online safety (3)	**Digital Literacy (Online Safety):**	The unit of work on online safety will further embed the children's knowledge and understanding of digital literacy, learning about what an email is, the use of the search bar and what is meant by a digital footprint. Pupils will be secure in key vocabulary including e.g **search, display board, internet, sharing, email, attachment, digital footprint.**	As a whole school children will develop and embed their knowledge of online safety through Anti bullying week and termly online safety assemblies**.** To build on prior learning in the EYFS and Year1. This will support future learning in lower KS2 as children will use their knowledge and skills of online safety when they produce a blog which can communicate with a wider audience. Then in upper KS2 children will identify how to keep themselves safe online by identifying the positive and negative influences of technology on health and the environment.	Attitudes and Skills: Making mistakes, perseverance, collaboration
	To know how to refine searches using the Search tool.			
	To use digital technology to share work on Purple Mash to communicate and connect with others locally.			
	To have some knowledge and understanding about sharing more globally on the Internet.			
	To introduce Email as a communication tool using 2Respond simulations.			
	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.			

	Information Technology	The unit of work on questioning will introduce the children to organising information by constructing a binary tree and using a database to organise information. Pupils will be secure in key vocabulary including e.g. **pictogram, question, data, collate, binary tree, avatar, database.**	This unit will support future learning in lower KS2 as children learn about branching databases. Then in upper KS2 children will continue their learning through another unit on databases.	Attitudes and Skills: Making mistakes, perseverance, collaboration, pattern recognition and decomposition
Spring Term **2.4 Questioning (5)**	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.			
2.6 Creating Pictures (5)	**Information Technology:**	The unit of work on creating pictures introduces children to digital art using the 2paint a picture tool while studying the style, techniques and features of various artists. Pupils will be secure in key vocabulary including e.g. **palette, share, template, impressionism, pointillism, surrealism, eCollage.**	This unit will support future learning in lower KS2 as children learn about simulations. Then in upper KS2 children will continue their learning through the unit of work on 3D modelling. This makes cross curricular links to art, where these artists are studied during KS2.	Attitudes and Skills: Making mistakes, perseverance, collaboration, pattern recognition and decomposition
	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 learn about the work of Piet Mondrian and recreate 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.			
	Digital Literacy (Online Safety): Safer internet day – How to show respect online and have safe online relationships**.**	Safer Internet Day will further embed knowledge of online safety and children can keep themselves safe online.	As a whole school children will develop and embed their knowledge of online safety through Safer Internet Day and termly online safety assemblies.	Attitudes and Skills: Making mistakes, perseverance, collaboration

			This is will also link to future learning as children in lower KS2 will build on what they already know about how to keep safe online and consider the truth of the content of websites and the meaning of age restriction symbols. Then in upper KS2 children will learn about the importance of balancing game and screen time with other parts of their lives. As well as learning ways to identify the positive and negative influences of technology and the risks of giving personal information.	
Summer Term **2.7 Making Music (3)**	**Information Technology:** To make music digitally using 2Sequence.	The unit of work on making music introduces the children to what is meant by music digitally, how they can change music sounds in many ways and what is meant by the tempo of music.	This unit will support future learning in lower KS2 as children learn about making music in Unit 4.9.	Attitudes and Skills: Making mistakes, perseverance, collaboration, pattern recognition and decomposition
	To explore, edit and combine sounds using 2Sequence			
	To edit and refine composed music.		This makes cross curricular links to music.	
	To think about how music can be used to express feelings and create tunes which depict feelings.	Pupils will be secure in key vocabulary including e.g **bpm, instrument, soundtrack, composition, music, tempo, digitally, sound effects, volume.**		
	To upload a sound from a bank of sounds into the Sounds section.			
	To record and upload environmental sounds into Purple Mash.			
	To use these sounds to create tunes in 2Sequence.			
2.8 Presenting Ideas (4)	**Information Technology:** To explore how a story can be presented in different ways.	The unit of work on presenting ideas introduces the children to thinking about what they need to think about	This supports LKS2 unit of work on presenting and UKS2 on word processing.	Attitudes and Skills:

2.5 Effective Searching (3)	To make a quiz about a story or class topic.	when planning a presentation and why they need to make a plan. Pupils will be secure in key vocabulary including e.g **presentation, audience, narrative, mind map, node, animated.**		Making mistakes, perseverance, collaboration, pattern recognition and decomposition
	To make a fact file on a non-fiction topic.			
	To make a presentation to the class.			
	Digital Literacy (Online Safety): To understand the terminology associated with searching.	The unit of work on digital literacy will teach the children how search the internet. Pupils will be secure in key vocabulary including e.g. **internet, search, search engine.**	This supports LKS2 unit of work on email and email safety and UKS2 on online safety.	Attitudes and Skills: Making mistakes, perseverance, collaboration
	To gain a better understanding of searching on the Internet.			
	To create a leaflet to help someone search for information on the Internet.			

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	2.1
Create and debug simple programs	Computer Science	2.1
Use logical reasoning to predict the behaviour of simple programs.	Computer Science	2.1
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information Technology	2.3 2.4 2.5 2.6 2.7 2.8
Recognise common uses of information technology beyond school	Digital Literacy	2.5*
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	2.2*

*And in other units when appropriate