The Leys Primary School Subject Overview - Computing 2022-23

EYFS	**Communication and language** Listening, attention and understanding.	**Expressive arts.** Being imaginative and expressive.	**Literacy**	**Mathematics**	**PSED** Personal, social and emotional development, building relationships.	**Understanding the world.** People, culture and communities.
Key Skills	Being able to use technology as a way to communicate and discuss new information that is being presented to them. Understand that technology can help people communicate.	Using technology to create pieces of art. Exploring the ability to digitally alter their artwork either through adding more detail or changing the composition.	Understanding that speech can be displayed in different ways, for example in speech bubbles when presented digitally. Using technology to aid in the learning of graphemes.	Being able to solve mathematics problems that are being presented digitally, this could involve moving items about a board to solve a question.	Being able to share the technology that is available to them and use it in a constructive manner that benefits all. Understanding that their use of technology may upset someone if they are not being sensible with it.	Using technology to learn about the wider world. Understanding that there are resources available to them that will let them see many different parts of the world. Technology can be used to help celebrate different cultural events and festivals.
Key subject links					PSHE Online safety week	
Key Texts					The ABCs of Gaming	

Key themes and values	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Year 1	**1. Online Safety & Exploring Purple Mash** To log in safely. To learn how to find saved work in the Online Work area and find teacher comments. To learn how to search Purple Mash to find resources. To become familiar with the icons and types of resources available in the Topics section. To start to add pictures and text to work. To explore the	**3. Pictograms** To understand that data can be represented in picture format. To contribute to a class pictogram. To use a pictogram to record the results of an experiment **4. Lego Builders** To compare the effects of adhering strictly to instructions to completing tasks without complete instructions. To follow and create simple instructions on the computer.	**5. Maze Explorers** To understand the functionality of the direction keys. To understand how to create and debug a set of instructions (algorithm). To use the additional direction keys as part of an algorithm. To understand how to change and extend the algorithm list. To create a longer algorithm for an activity. To set challenges for peers. To access peer challenges set by	**7. Coding** To understand what instructions are and predict what might happen when they are followed. To use code to make a computer program. To understand what object and actions are. To understand what an event is. To use an event to control an object. To begin to understand how code executes when a program is run. To understand what backgrounds and objects are. To plan and make a	**8.Spreadsheets** To know what a spreadsheet program looks like. To locate 2Calculate in Purple Mash. To enter data into spreadsheet cells. To use 2Calculate image tools to add clipart to cells. To use 2Calculate control tools: lock, move cell, speak and count.	**9. Technology Outside of School** To walk around the local community and find examples of where technology is used. To record examples of technology outside school.

	Tools and Games section of Purple Mash. To learn how to open, save and print. To understand the importance of logging out. **2. Grouping and Sorting** To sort items using a range of criteria. To sort items on the computer using the 'Grouping' activities in Purple Mash.	To consider how the order of instructions affects the result.	the teacher as 2Dos. **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.	computer program.		
Key Skills	1. Can recognise a username and password, and use these to log in to a device or website.	3. Can create graphs and pictograms. 4. Understands that devices respond to	5. Understands that devices respond to commands. Begin to use coding blocks.	7. Understands that devices respond to commands. Creates scenes and backgrounds.	8. Can use ICT to begin to organise items. Use tools to begin to create simple	9. Knowing the names of different types of technology. Understanding what counts as

	Knows that buttons/icons can represent different functions e.g. record, pause, play. Can create a text based document, adding basic effects to sections of text. Explore e-safety by: Understanding why having an avatar is better than using a real picture. 2. Can use ICT to begin to organise items.	commands. Follow instructions and create precise instructions for others to follow.	6. Can create a text based document, adding basic effects to sections of text.	Creates characters on which commands can be run. Constructs algorithms that cause characters to perform actions. Uses collision detection to prevent characters from colliding.	formulae.	technology.
Key People				Grace Hopper		
Key subject links	PSHE Online safety week Maths	STEAM week Maths	English - story writing	STEAM week	Maths	STEAM week
Key Vocabulary	1. Username, password, login,	3. Data, pictogram 4. Instructions,	5. Direction, arrow key, algorithm, bug,	7. Code blocks, code design, background,	8. Spreadsheet, cell, row, column, count	9. Technology

	open, save, print, avatar 2. Criteria, sort	code, algorithm, bug, debug	debug 6. Animation, font, sound effect, copy, paste	character, input, when clicked	tool	
Key Texts						
Key themes and values	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Year 2	**1. Coding** 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	**3. Spreadsheets** 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	**4. Questioning** 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	**5. Effective Searching** To understand the terminology associated with searching. To gain a better understanding of searching on the Internet. To create a leaflet to help someone search for information on the Internet.	**6. Creating Pictures** 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	**7. Making Music** To make music digitally using 2Sequence. To explore, edit and combine sounds using 2Sequence. To edit and refine composed music. 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 and

	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. **2. Online Safety** 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	collect data and produce a graph.	complex search questions. To use the Search tool to find information.		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.	upload environmental sounds into Purple Mash. To use these sounds to create tunes in 2Sequence. **8.Presenting Ideas** 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. To make a presentation to the class

	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.					
Key Skills	1. Can create, edit and refine sequences of	3. Use the copy and paste functions. Use the count and	4. Can create branching databases using ICT.	5. Can understand and talk about how the internet can be	6. Can use the computer to create basic images.	7. Can explore sound and music in ICT using keyboards, and

	instructions for a variety of programmable devices. Can continue to develop an understanding of how a computer processes instructions and commands. Can understand that devices or on screen turtles are controlled by sequences of instructions or actions. 2. Has discussed e-safety in class and is aware of how to keep themselves safe by: understanding how we should talk to others in an online situation understanding what counts as personal	total tools to begin to write simple formulae across several cells. Create a graph.		used to answer specific questions. Knows that the internet contains a large amount of information and recognises the need to use search tools and search engines to begin to find information.		on screen music software. 8. Can use word processing software and use editing tools. Can create basic presentations. Can use skills and techniques to organise, reorganise and communicate ideas for a specific purpose in different contexts.

	information and how this information leaves a trail online. Understands that messages can be sent electronically over distances. Understands that email can be used to send messages electronically and people can reply to emails.					
Key People	Bill Gates					
Key subject links	PSHE Online safety week	STEAM week Maths		STEAM week History & Geography - using internet to search fo	Art - artist study	STEAM week Music
Key Vocabulary	1. Algorithm, Object, Repeat, Timer, Bug, Debug, Turtle 2. Network, Internet, Sharing,	3. Copy and Paste, Lock Tool, Equals Tool, Block Graph, Backspace Key	4. Data, Database, Binary Tree, Binary Tree Database, Search	5. Internet, Search Engine, Search	6. Palette, Template, Brush, Pen Thickness Tool, Fill Tool, Undo Tool, Redo Tool	7. Composition, Instrument, Sound Effect (SFX), Tempo, Volume. 8. Presentation, Mind Map, Node, Quiz

	Personal Information, Digital Footprint, Cyber Bullying, Email, Instant Message					
Key Texts					Digitally illustrated book (The Land of Nod)	
Key themes and values	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
Year 3	1. Coding Use If commands to make my programme decide by itself what should happen. Create variables and use them in my algorithms Learning Plan and create a	2. Online Safety create appropriate messages for a class blog find a search engine website and search for information explain whether you should trust facts that you find on the internet and how	3. Spreadsheets 4. Touch typing 3.Enter data into a spreadsheet and generate graphs 3.Use the 'more than', 'less than' and 'equals' tools to compare numbers and complete calculations	5. Email Open and read emails Decide whether the contents of an email are safe or not Write respectful, safe emails and attach files to an email	6. Branching Databases 7. Simulations 6. Add data to an existing branching database 6. Create a branching database from scratch 7. Think about different kinds of	8. Graphing Enter data into a spreadsheet Generate graphs using the data entered

	programme that simulates a real situation	you can help yourself to get true facts understand what different PEGI symbols mean explain why ignoring PEGI symbols is bad	3.Give a cell reference such as A2 or C9 4. Sit correctly at a computer 4. Know which hand to use to reach which keys on the keyboard 4. Type using more than one finger on each hand		simulations 7. Explore a simulation and understand how it shows a real life situation 7. Analyse a simulation and understand the rules that make it work 7. Evaluate how closely a simulation matches real life	
Key Skills	Can create, edit and refine more complex sequences of instructions for a variety of programmable devices. Can develop my understanding of how computer and technology works	Has discussed e-safety in class and is aware of how to keep themselves safe by knowing how to create a strong password to protect information considering the	3. Can create graphs and charts. 3. Can use the Move Cell tool to move values around on a spreadsheet 3. Can use the Chart Control Tools to generate graphs and charts	Children understand what an email is and how to communicate using one. Children know what to do if they recive an email that makes them upset or scared. Children know what	6. Understands the basic structure of a database. 6. Can add data to a pre-made database. 7. Can use a range of increasingly complex simulations to represent real life situations.	Can generate graphs and charts from a pre-made database. Can select the appropriate graph form for the data being represented

	and how computers process instructions. Can use a range of increasingly complex simulations to represent real life situations. Uses a range of increasingly complex simulations to represent real life situations.	truth of the content of websites knowing the meaning of age restriction symbols on digital media and devices Can use desk top publishing tools effectively by creating a blog to communicate with a wider audience	3. Can activate Advance Mode 3. Can begin to try to build formulae in Advance Mode 4. Can type with increasing speed and accuracy	information they can send in an email.		
Key People	Markus "Notch" Persson		Dan Bricklin	Ray Tomlinson		
Key subject links		PSHE Online safety week				
Key Vocabulary	If Command Code Design Variable Selection Simulation Controls	Username Password Concept map Search Web page Website Reliable PEGI Rating	3. Copy and Paste 3. Delete key 3. Advance mode 3. Equals tool 3. Move cell tool 3. <,>,= Symbols 4. Posture	Communication Email Compose Send Attachment Password CC Formatting	6. Data 6. Database 6. Binary Tree Database 6. Branching Database 7. Simulation	Spreadsheet Graph Bar Chart Block Graph Line Graph Pie Chart

			4. Top row keys 4. Home row keys 4. Bottom row keys 4. Space bar			
Key Texts	My First Coding Book: Packed with Flaps and Lots More to Help you Code without a Computer!					
Key themes and values						
Year 4	1. Coding create a flowchart that shows the decisions and actions a computer can take in a programme that I am designing. Use If/Else commands, Repeat commands, Timer	2. Online safety React to phishing emails in the right way (using simulation). Explain why installing apps and downloading files can be dangerous. Put facts that I	3. Spreadsheets Create spreadsheets that use formulae to calculate. Activate standard formatting such as currency formatting decimal formatting or fraction formatting in some	4. Writing for different audiences Change the size and style of the text being typed. Understand when it is appropriate to use certain fonts and styles.	5. Logo 6. Animation 5. Write algorithms that will operate in Logo. 5. Write algorithms in Logo that use the repeat command to create shapes. 6. Create computer	7. Effective searching 8. Hardware investigations 7. Search using keywords instead of typing out a whole question. 7. Find clues that show whether information on a

	commands and Variables to have a computer respond to input and decide for itself what the output should be. Decompose a real life situation into steps and abstract away unnecessary details to plan a simulation.	have found online into my own words and leave signs in my work to show when I have found information online.	cells on the spreadsheet. Generate line graphs from existing data in a spreadsheet.		generated animations using existing pre-prepared pictures. 6. Add sound effects to animations. 6.Set an animation against a background. 6. Create a stop-motion animation flim	website is probably true or not 8. Know the names of the different parts that make up a computer. 8. Know the functions of different parts that make up a computer.
Key Skills	1. Understands how computer and technology works and how computers process instructions and commands. 1. Can use templates on a computer to create a game, which can be controlled by	2. Knows how e-mails work and can send an e-mail. 2. Can share and exchange ideas using e-mail and electronic communication- inside the school environment. 2. Understands that information needs to be appropriate	3. Can use spreadsheets to create graphs and present data in different ways 3. Understand standard maths symbols such as <, >, =, +, -, * and / 3. Refer to cells by their cell reference e.g. A1, C5 or D9 3. Create formulae	4. Be able to identify the bold, italic and underlining tools in a variety of programmes. 4. Be able to activate these tools when we know that the writing needs to be bold, italic or underlined. 4. Be able to highlight text and	5. To understand how computer process commands, needing clear and specific instructions as the computer will follow instructions literally. 5. Underssatnd how to write an algorithm in Logo that involves multiple steps, that	7. To understand the features of different search engine and to understand why people might use one over another. 7. To Know that anyone can author on the internet and can produce information that is untrue 'fake news',

	external inputs, changing parameters and algorithms and investigating the effect this has on the response.	for the audience.	to perform calculations (Such as adding two cells)	activate the tools if we decide later that some text needs to be bold, italic or underlined 4. Able to change the size and style of text to help a reader's understanding	archives a set task (such as make a square and a triangle at septerate ends of the sheet without connecting the two (using the command PU and PD)). 6. To create a basic stop motion animation. 6. To apply the effects to the images that are being used in the animation. 6. To record a basic video and being able to edit, apply basic effects and transitions to this video. In order to shair this video.	unkind or harmful. To also know that if something like this is found then this needs to be reported to an appropriate adult 8. To be able to understand the purpose of a range of different technlogy and how these all fit together both physically and through software to make a computer run. 8. To know how to handle and safely work with a range of different computer components.
Key People	Linus Torvalds		Dan Bricklin		6. Walt Disney (early carer)	
Key subject links		PSHE Online safety week	Science / Maths - Plotting information and creating graphs.	English - Lesser spotted animals write up,		

Key Vocabulary	Flowchart If/Else Command Variable Repeat Command Decompose Abstract	Phishing Identity Theft Computer Virus Software Malware Plagiarism	Advance Mode Formula Formula Wizard Timer Tool Spin Tool Random Tool	Font Bold Italics Underline	5. LOGO 5. SETPC 5. PU 5. PD 5. FD 5. BK 5. RT 5. LT 5. Repeat 6. Animation 6. Frame 6. Background 6. Onion Skinning 6. Stop Motion	7. Webpage 7. Domain Name 7. Website 7. Spoof Website 8. Motherboard 8. Central Processing Unit (CPU) 8. Random ACcess Memory (RAM) 8. Graphics and network cards
Key Texts					The Person Controller	
Key themes and values						
Year 5	1. Coding Create a flowchart that explains how a real life situation works With the help of	2. Online Safety 3. Spreadsheets 2. React to inappropriate things that I find on the internet in a way	4. Database Search a multi-field database for information	5. Game Creator Write a game design that lets the reader know the setting and quest of the game	6. 3D Modelling Choose the best template 3D shape to create a 3D model	7. Concept maps Create a concept map Use a concept map to show the

	2Code, write a programme that simulates a real life situation	that keeps me safe 2. Set passwords for online accounts and documents that keep my information secure 2. Search the internet to find out about a topic and make sure that the information I have found is reliable 2. Put information into my own words, and then add references to show where I got the information from 3. Use formulae to make the spreadsheet perform maths calculations Use formulae to make the spreadsheet tally how many times	Add data to an existing multi-field database Create a multi-field database from scratch	Use a game creator app to customise settings and characters Write instructions that allow a new player to understand how to play the game Give constructive feedback to another person about a game they have made	Add and move points to change the shape of a 3D model Draw and colour designs onto a net to alter the appearance of the 3D model Print and construct a 3D model	progression of a story Use a concept map to show connections between bits of information about a topic Work collaboratively on a concept map

		letters or numbers appear 3. Use variables in formulae to make a spreadsheet self-updating so that if the input is changed, the output answer is also changed 3. Explore how the functions of a spreadsheet can help us in a real life situation				
Key Skills	Breaking a problem down into steps that can be addressed in sequence. Creating and editing flowcharts to show the sequence of steps. Designing algorithms to	2. Knowing how to maintain secure passwords. 2. Reviewing sources of support when using technology and children's responsibility to one another in their online behaviour. 2. Talking about the	Using and searching databases to find information Entering data into a premade database Creating a multi-field database from the ground up	Planning a thematic game including a setting and characters Thinking about how existing icons, images and assets can be customised to fit the chosen theme Thinking about what	Using software to model 3D objects.	Creating a concept map Using a concept map to show the progression of a story Using a concept map to show connections between bits of information about a topic

	address the different steps of a problem. Creating algorithms that involve infinite loops, external triggers, variables and conditional statements. Testing and debugging algorithms until they produce the results that are expected.	different forms of information (text, images, sound, multimodal) and understands some are more useful than others. Recognises that the Internet may contain material that is irrelevant, bias, implausible and inappropriate. 2. Understanding the issues of copyright and how they apply to information on the internet. 3. Use formulae to perform a variety of calculations and other functions 3. Create variables to make a spreadsheet self-updating		needs to be said to allow a new player to play the designed game Thinking about how to make a game entertaining through the use of animation, in-game challenges and progression Engaging in the software design process		Working collaboratively on a concept map

Key People	Sir Tim Berners-Lee			Maddy Thorson		
Key subject links		PSHE Online safety week		PSHE link with key person as Maddy Thornson is trasgender. Link to RSE with different families and challenging gender roles and identity.	Design Technology - Design a product in 3D rather than by drawing multiple views	
Key Vocabulary	Simulate Decomposition Algorithm Input Output Object If/Else	2. SMART Rules 2. Encryption 2. Plagiarism 2. Reference 2. Quote 2. Bibliography 2. Citation 3. Advance Mode 3. Formula 3. Formula Wizard 3. Average 3. Equals Tool	Database Field Record Find Sort, Group, Arrange Statistics and Reports Table Collaborative	Interactive Customise Image Playability Instructions Screenshot	Computer Aided Design (CAD) 2D 3D Points Template Net 3D Printing	Concept Map Concept Node Connection Collaboratively
Key Texts				Level Up: 1		

Key themes and values						
Year 6	1. Coding Use functions to reduce the amount of coding needed to complete a programme or streamline the code of an existing programme Create algorithms that will allow users to put in more complicated input and have the computer work with it Combine all of my coding skills to create a text-based	2. Online safety 3. Spreadsheets 2. Explain what personal information is and give examples of situations where it is safe and appropriate to share this information 2. Respond to cyber-bullying appropriately and communicate in a way that keeps me safe from being accused of being a cyber-bully 2. Explain how spending a long time on activities that	4. Blogging Plan and collaboratively create a blog about a topic Update a previously created blog Comment on blog posts	5. Text Adventures Plan a multi-stage text-based adventure game Create a multi-stage text-based adventure game Plan a map-based adventure game Create a map-based adventure game	6. Networks Know the different types of network, including LAN, WAN and the Internet Understand how networks work and why they are useful	7. Quizzing Answer quizzes created using 2Quiz Create quizzes using 2Quiz for others to answer Do research to find information that can be turned into quiz questions

	adventure game	mean using a device can be bad for me 3. Use formulae to perform mathematical calculations such as finding a percentage increase or decrease 3. Use formulae to perform automatically count items on a spreadsheet 3. Use spreadsheet operations to help solve real-life problems				
Key Skills	Knowing how computers process instructions and commands, including the use of coding languages. Using assisted	2. Identifying secure sites by looking for privacy seals of approval. 2. Identifying the benefits and risks of giving personal information.	Using forms of communication to share information or ideas. Using collaborative tools to produce a joint piece.	Knowing how computers process instructions and commands, including the use of coding languages. Using assisted programing	Knowing that the internet contains a large amount of information and recognises the need to use search tools and search engines to begin to find information.	Using forms of communication to share information or ideas. Using collaborative tools produce a joint piece.

	programming software to create more complex software which interacts with external controllers, and elements on screen, creating algorithms and using logic and calculations. Controlling an on screen icon using text based programing, including writing complex written algorithms which involve sensors. Understanding that ICT allows for complex situations to be modelled.	2. Having a clear idea of appropriate online behaviour. 2. Understanding the importance of balancing game and screen time with other parts of their lives. 3. Knowing that ICT allows changes to be made easily once a spreadsheet is set up. 3. Using spreadsheets to create graphs and present data in different ways.	Creating/editing a website.	software to create more complex software which interacts with external controllers, and elements on screen, creating algorithms and using logic and calculations. Controlling an on screen icon using text based programing, including writing complex written algorithms which involve sensors. Understanding that ICT allows for complex situations to be modelled.	Mapping a network	Knowing that the internet contains a large amount of information and recognises the need to use search tools and search engines to begin to find information.
Key People	Ada Lovelace		Alex Stringer (Alexknowsitall7) Blogged about her			

			family's travels around the world.			
Key subject links		PSHE Online safety week				
Key Vocabulary	Event Function Input Variable Debug	2. SMART Rules 2. PEGI Rating 2. Screen Time 2. Digital Footprint 2. Phishing 3. Advance Mode 3. Formula 3. Formula Wizard 3. Average	Blog Blog Page Blog Post	Concept Map Text Based Adventure Function Sprite Debug	Network Local Area Network (LAN) Wide Area Network (WAN) Internet	Quiz Concept Map Database
Key Texts			My Embarrassing Dad's Gone Viral!			
Key themes and values						

Ensure you consider - diversity, gender. age, recent/old etc of key people, include whole school theme weeks e.g. STEAM, Healthy Living and enough detail to support an NQT, Check this with current year group staff before sending to AB and posting on the website

Discussion point: Most of the key people for coding identify as male, it has only been recently that those who identify as women have started to get recognition for their work in computing such as Ada Lovlace who is now widely known for being the first computer programmer.

There is a gender gap in the tech workforce with one study suggesting that just under 29% identify as women.