

The Leys Primary School Subject Overview for Computing - 2023-24 becoming a computer scientist

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	

SMSC and British Values	• enable students to develop their self-knowledge, self-esteem and self-confidence							
Global Goals and School 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		
The Leys Pathways			Explore	& Solve				
	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	2. 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 3. Lego Builders To compare the effects of adhering strictly to instructions to	4. 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	5. 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 objects and actions are. To understand what an event is. To use an event to control an object. To begin to understand how	6. 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.	7. 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.		

	Topics section. To start to add pictures and text to work. To explore the Tools and Games section of Purple Mash. To learn how to open, save and print. To understand the importance of logging out.	completing tasks without complete instructions. To follow and create simple instructions on the computer. To consider how the order of instructions affects the result.	copying and pasting pages. To share e-books on a class display board.	code executes when a program is run. To understand what backgrounds and objects are. To plan and make a computer program.		
Key Skills	1. Can recognise a username and password, and use these to log in to a device or website. Knows that buttons/icons can represent different functions e.g. record, pause, play. Can create a text based document, adding basic effects to	2. Can create graphs and pictograms. 3. Understands that devices respond to commands. Follow instructions and create precise instructions for others to follow.	4. Can create a text based document, adding basic effects to sections of text.	5. Understands that devices respond to commands. Creates scenes and backgrounds. Creates characters on which commands can be run. Constructs algorithms that cause characters to perform actions. Uses collision detection to prevent characters from colliding.	6. Can use ICT to begin to organise items. Use tools to begin to create simple formulae.	7. Knowing the names of different types of technology. Understanding what counts as technology.

	sections of text. Explore e-safety by: Understanding why having an avatar is better than using a real picture.						
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, open, save, print, avatar	2. Data, pictogram 3. Instructions, code, algorithm, bug, debug	4. Animation, font, sound effect, copy, paste	5. Code blocks, code design, background, character, input, when clicked	6. Spreadsheet, cell, row, column, count tool	7. Technology	
SMSC and British Values		s to develop their so				and services in	
Global Goals and School values		9 INDUSTRY, INNOVATION AND INFRASTRUCTURE					

The Leys Pathways	Explore, Understand & Solve							
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 sequence. To understand that different objects have different properties. To understand what different events do in code. To understand the	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 collect data and produce a graph.	4. 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.	Fictures 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.	6. Making Music To make music digitally using 2 Sequence. To explore, edit and combine sounds using 2 Sequence. 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 upload environmental sounds into Purple Mash. To use these sounds to create tunes in 2 Sequence. 7. Presenting Ideas To explore how a			

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 instructions for a variety of programmable devices. Can continue to develop an understanding of how a computer processes instructions and	3. Use the copy and paste functions. Use the count and total tools to begin to write simple formulae across several cells. Create a graph.	4. Can understand and talk about how the internet can be 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	5. Can use the computer to create basic images.	6. Can explore sound and music in ICT using keyboards, and on screen music software. 7. Can use word processing software and use editing tools. Can create basic presentations. Can use skills and

commands. Can understand that devices or on screen turtles are controlled by sequences of instructions or actions.	information.	techniques to organise, reorganise and communicate ideas for a specific purpose in different contexts.
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 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, Personal Information, Digital Footprint, Cyber Bullying, Email, Instant Message	3. Copy and Paste, Lock Tool, Equals Tool, Block Graph, Backspace Key		5. Internet, Search Engine, Search	5. Palette, Template, Brush, Pen Thickness Tool, Fill Tool, Undo Tool, Redo Tool	6. Composition, Instrument, Sound Effect (SFX), Tempo, Volume. 7. Presentation, Mind Map, Node, Quiz
SMSC and British Values	· enable students	s to develop their so	elf-knowledge, self	esteem and self-co	onfidence	

	• enable students to acquire a broad general knowledge of and respect for public institutions and services in England								
Global Goals and School values	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE								
The Leys Pathways			Explore, unde	erstand & Solve					
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 programme that simulates a real situation	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 you can help yourself to get true facts understand what different PEGI symbols mean	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 3.Give a cell reference such as A2 or C9 4. Sit correctly at a computer	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. Simulations Think about different kinds of simulations Explore a simulation and understand how it shows a real life situation Analyse a simulation and understand the rules that make it work Evaluate how closely a simulation matches real life	7. Graphing Enter data into a spreadsheet Generate graphs using the data entered			

		explain why ignoring PEGI symbols is bad	4. Know which hand to use to reach which keys on the keyboard 4. Type using more than one finger on each hand		
Key Skills	Can create, edit and refine more complex sequences of instructions for a variety of programmable devices. Can develop my understanding of how computers and technology works and how computers process instructions. Can use a range of increasingly	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 truth of the content of websites knowing the meaning of age restriction symbols on digital	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 3. Can activate Advance Mode 3. Can begin to try to build formulae in	Children understand what an email is and how to communicate using one. Children know what to do if they receive an email that makes them upset or scared. Children know what information they can send in an email.	Can generate graphs and charts from a premade database. Can select the appropriate graph form for the data being represented

	complex simulations to represent real life situations. Uses a range of increasingly complex simulations to represent real life situations.	media and devices Can use desktop publishing tools effectively by creating a blog to communicate with a wider audience	Advance Mode 4. Can type with increasing speed and accuracy			
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 4. Top row keys 4. Home row keys 4. Bottom row keys 4. Space bar	Communication Email Compose Send Attachment Password CC Formatting	Simulation	Spreadsheet Graph Bar Chart Block Graph Line Graph Pie Chart

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The Leys Pathways			Explore, communicat	re, understand & solve			
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 commands and Variables to have a computer respond to input and decide for itself what the output should be.	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 have found online into my own words and leave signs in my work to show when I have found information online.	3. Spreadsheets Create spreadsheets that use formulae to calculate. Activate standard formatting such as currency formatting, decimal formatting or fraction formatting in some cells on the spreadsheet. Generate line graphs from existing data in a spreadsheet.	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 generated animations using existing preprepared pictures. 6. Add sound 	7. Hardware investigations Know the names of the different parts that make up a computer. Know the functions of different parts that make up a computer.	

	Decompose a real life situation into steps and abstract away unnecessary details to plan a simulation.				effects to animations. 6.Set an animation against a background. 6. Create a stopmotion animation film	
Key Skills	1. Understands how computers 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 external inputs, changing parameters and algorithms and investigating the effect this has on the response.	2. Knows how emails work and can send an email. 2. Can share and exchange ideas using e-mail and electronic communicationinside the school environment. 2. Understands that information needs to be appropriate for the audience.	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 to perform calculations (Such as adding two cells)	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 activate the tools if we decide later that some text needs to be bold, italic or underlined 4. Able to change	5. To understand how computers process commands, needing clear and specific instructions as the computer will follow instructions literally. 5. Understand how to write an algorithm in Logo that involves multiple steps, that archives a set task (such as make a square and a triangle at separate ends of the sheet without connecting the two (using the command	To be able to understand the purpose of a range of different technologies and how these all fit together both physically and through software to make a computer run. To know how to handle and safely work with a range of different computer components.

				the size and style of text to help a reader's understanding	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 be able to edit, apply basic effects and transitions to this video. In order to share this video.	
Key People	Linus Torvalds		Dan Bricklin		6. Walt Disney (early career)	
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	Motherboard Central Processing Unit (CPU) Random ACcess Memory (RAM) Graphics and network cards

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The Leys Pathways			Explore, communicat	e, understand & solve			
Year 5	1. Coding Create a flowchart that explains how a real life situation works With the help of 2Code, write a programme that simulates a real life situation	2. Online Safety 3. Spreadsheets 2. React to inappropriate things that I find on the internet in a way that keeps me safe 2. Set passwords for online accounts	4. Database Search a multi-field dinformation Add data to an existin database Create a multi-field do	g multi-field	5. 3D Modelling Choose the best template 3D shape to create a 3D model Add and move points to change the shape of a 3D model	6. Using google sites to create a website to record something that interests them Create a concept map Familiarise them with what can be accomplished using	

		_
and documents that	Draw and colour	google sites
keep my information	designs onto a net	(showing digibooks
secure	to alter the	for both classes and
	appearance of the	clubs)
2. Search the	3D model	,
internet to find out		Researching a topic
about a topic and	Print and construct	that interests them
make sure that the	a 3D model	and creating a
information I have		skeleton of a site
found is reliable		with the heading and
		rough information
2. Put information		that they will need
into my own words,		to find to complete.
and then add		, i
references to show		Spend time doing
where I got the		effective research
information from		to populate their
		site with
3. Use formulae to		information.
make the		
spreadsheet		Work collaboratively
perform maths		and share their work
calculations		with others
Use formulae to		(through google
make the		classroom)
spreadsheet tally		
how many times		To publish their
letters or numbers		work for others to
appear		read and look at
		(through google
3. Use variables in		classroom)

		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 address the different steps of a problem. Creating	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 different forms of information (text, images, sound, multimodal) and understands some	Using and searching databases to find information Entering data into a premade database Creating a multi-field database from the ground up	Using software to model 3D objects.	Effective planning and researching to create a website that others can view Working collaboratively on a project Understanding how to share their work safely and securely (making sure that they have selected to only share within the organisation)

	algorithms that involve infinite loops, external triggers, variables and conditional statements. Testing and debugging algorithms until they produce the results that are expected.	are more useful than others. Recognises that the Internet may contain material that is irrelevant, biassed, 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		
Key People	Sir Tim Berners- Lee			
Key subject links		PSHE Online safety week	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	3	Computer Aided Design (CAD) 2D 3D Points Template Net 3D Printing	Sharing with organisation Connection Collaboratively	
SMSC and British Values		s to develop their so s to acquire a broad				and services in	
Global Goals and School values		9 INDUSTRY, INNOVATION AND INFRASTRUCTURE					
The Leys Pathways		Explore, communicate, understand & solve					
Year 6	1. Coding	2. Online safety	4. Blogging	5. Text Adventures	6. Networks	7. Quizzing	

		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 programming software to create more complex software which interacts with external controllers, and elements on screen, creating algorithms and using logic and	2. Identifying secure sites by looking for privacy seals of approval. 2. Identifying the benefits and risks of giving personal information. 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.	Using forms of communication to share information or ideas. Using collaborative tools to produce a joint piece. Creating/editing a website.	Knowing how computers process instructions and commands, including the use of coding languages. Using assisted programming software to create more complex software which interacts with external controllers, and elements on screen, creating algorithms and using logic and calculations.	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. Mapping a network	Using forms of communication to share information or ideas. Using collaborative tools to produce a joint piece. 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.

	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.	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.		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.		
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	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

	3. Advance Mode 3. Formula 3. Formula Wizard 3. Average				
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