Pensilva Primary School

Subject coverage map – Computing

	Autumn 1	Autumn 2	Spring	Summer
Year 1/2 Year A	**Computing systems and networks 1: What is a computer?** • Naming the key parts of a computer and explaining what they do • Understanding that technology is controlled • Identifying items that might have a computer inside and what the technology does • Creating a design for an invention, making a detailed plan, including inputs and outputs and explaining how it works • Understanding the role of computers, explaining where computers are used and what their job is.	**Programming: Algorithms and debugging** • Decomposing a game to predict the algorithms that are used • Knowing that computers can use algorithms to make predictions and writing a clear and precise algorithm • Creating algorithms to solve problems, including loops • Understanding what abstraction is and giving examples of when abstraction might be useful • Planning an algorithm using different types of loops	**Online safety Year 2** • Children can discuss whether given information is safe or unsafe to be shared online • Can follow the guidance to create a strong password • Able to explain why it is important to ask permission before sharing content and talk about how people may feel if content is shared without their permission • Are able to identify a trusted adult who they can ask for help.	**Data handling: International Space Station** • Retrieving digital content from an interactive map and learning how a computer can be used to monitor data relating to human survival needs • Considering how computers would monitor items aboard the ISS and using mouse and keyboard skills to draw and add text to a project • Understanding the role of sensors on the ISS and designing a display to show the data that the sensors collect • Creating an algorithm for growing a plant in space • Interpreting data and identifying temperatures within a range to decide if they are a Goldilocks planet.
Year B	*Online safety lesson 1 (Year 1)* **Computing systems and networks: Improving mouse skills** • *Discuss whether given information is safe or unsafe to be shared online* • Using mouse skills to draw and manipulate shapes, dragging objects to change their size or position and moving shapes in front of behind one another. • Using a range of tools to create desired effects, using drag and drop to resize and reposition	*Online safety lesson 2 (Year 1)* **Programming 1: Algorithms unplugged** • *Recognising that internet use may affect mood or emotions and linking this to specific online activity* • Understanding that an algorithm is a clear set of instructions to be carried out in a specific order to achieve a given task and that computers use algorithms • Following instructions precisely to carry out an action	*Online safety lesson 3 (Year 1)* **Programming 2: Bee-bots** • *Able to explain why it is important to ask permission before sharing content and talk about how people may feel if content is shared without their permission* • Exploring a new device, predicting what it might do, trying it out and then explaining their findings • Creating a demonstration video to explain how to use a Bee-Bot • Planning and following a set of instructions precisely, assuming	*Online safety lesson 4 (Year 1)* **Data handling: Introduction to data** • *Are able to identify a trusted adult who they can ask for help* • Representing data in different ways and answering questions about the data • Comparing and ordering values in a spreadsheet or table and suggesting interpretations • Collecting and recording data and representing this data digitally

	objects and a variety of digital painting tools to create different effects. • Identifying key features of an object and breaking it down into simple shapes. • Using click and drag to create and layer shapes to make an image; repositioning, resizing and changing the order of shapes.	• Understanding that computers and devices around us use inputs and outputs and identifying some of these • Explaining that decomposition refers to the breaking down of a problem into smaller parts to help solve a problem more easily • To know how to debug an algorithm Spotting and fixing bugs in algorithms and explaining the problem that caused it.	roles of: Bee-Bot (following instructions given by the controller), Controller (giving instructions to the Bee-Bot) and Judge (checking that the instructions given by the 'controller' are correct) • Programming a device, considering how it moves from one place to another and planning its route • Programming using clear instructions and debugging them if they go wrong by identifying and correcting the mistake.	• Identifying questions to sort data in the most efficient way and creating branching databases • Designing a computerised invention to gather data and understanding that computers interpret different types of input.
Year 3/4 Year A	*Online safety lesson 1&2 (Year 4)* **Computing systems and networks: Collaborative learning** • *Being able to search on a search engine* • *Describing some of the methods used to persuade people to buy online* • Learning that software can be used collaboratively online to work as a team • Learning how to share work with others, access shared documents and comment on someone else's work effectively • Plan a simple Microsoft Form survey with at least one question type • Learning why a survey might be useful and how to create and share it with others • Using a shared spreadsheet to explore data	*Online safety lesson 3 (Year 4)* **Programming 1: Further coding with Scratch** • *Using examples to explain the difference between fact, opinion and beliefs found online and describe why it is important to create your own judgements about what you have read* • Revisiting and exploring further a programming application independently, identifying the key features and writing a simple code script • Decomposing a Scratch game to understand which code blocks have been used • Knowing what a variables is and using the 'say' and 'ask' blocks • Exploring how to make a variable in Scratch using specific code blocks • Using knowledge of how variables work to help create a quiz in Scratch	*Online safety lesson 4 (Year 4)* **Skills showcase: HTML** • *Can explain what a bot is and give examples of different bots* • Adding text between the heading and paragraph tags. Finding some of the tags found in the treasure hunt. • Identifying and remixing HTML code to alter the text size and content of a web page • Changing the colours of their object elements. • Changing the sizes of some of the elements. • Explaining how they created their story. • Adapting the basic elements of a story within a web page using the 'Inspect Elements' tool. • Finding images that are permitted for reuse and changing at least one image and text in a web page to create a new story.	*Online safety lesson 5 (Year 4)* **Programming 2: Computational thinking** • *Children can describe strategies for being safe online and give examples of how to be respectful. They know how to respect the thoughts and beliefs of others* • Understanding that computational thinking is made up of four key strands: decomposition, pattern recognition, abstraction and algorithm design • Understanding what decomposition is and how to apply it to solve problems • Understanding the terms 'pattern recognition' and 'abstraction' and how they help to solve a problem as well as making some changes to the existing code. • Understanding how to abstract key information • Creating a Scratch program which draws a square and at least one other shape.

				• Combining computational thinking (decomposition, pattern recognition, abstraction and algorithm design) skills to solve a problem
Year B	***Online safety lesson 1 (Year 3)*** ***Computing systems and networks 1: Networks and the internet*** • *Know the difference between an opinion, belief and a fact and know that not everything on the internet is factual* • Learning that a network joins things together and that it can be wired or wireless. Creating an informative poster about what a network is • Understanding how information moves around a network, explaining what a server does and what it is connected to and discussing the journey of a file • Understanding that computers have to locate websites, which are files saved on a computer • Exploring the role and purpose of routers • Understanding the role of packets and that they take their own routes to get to their destination.	***Online safety lesson 2 (Year 3)*** ***Programming: Scratch*** • *Able to recall some of the 7 tips for dealing with upsetting online content* • Using repetition (a loop) in a program • Exploring a programming application independently, predicting what the code will do and explaining what they found • Programming an animation, decomposing a project; planning what is going to happen and selecting the blocks to make it happen • Programming a story, choosing appropriate blocks, debugging a program and continuing someone else's program • Programming a game, explaining the purpose of an algorithm, decomposing a problem and using an algorithm to code a program.	***Online safety lesson 3 (Year 3)*** ***Computing systems and networks 3: Journey inside a computer*** • *Understanding that digital devices share personal information amongst each other* • Recognising basic inputs and outputs and understanding that a computer follows instructions • Understanding that a laptop is made up of many parts and using logic to explain the purpose of some of these parts • Suggesting the purpose of different parts of a computer and following an algorithm • Understanding the purpose of computer parts and using a QR code • Decomposing a tablet computer, describing similarities and differences across different types of computer.	***Online safety lesson 4 (Year 3)*** ***Creating media: Video trailers*** • *Understanding what social media is and being able to name some social media platforms and some of the features of those platforms* • Planning a book trailer, picking out the key events in a story • Using digital devices to record video or take photos to tell a story • Editing videos and photos using film editing software, recording sounds using digital devices and adding sound effects and music • Adding text and transitions to a video • Evaluating video editing, explaining what makes a successful video and book trailer.
Year 5/6 Year A	***Online safety lesson 1&2 (Year 6)*** ***Computing systems and networks: Bletchley Park*** • *Can discuss how they would feel in different situations online* • *Can discuss whether sharing online has a positive or negative impact in different scenarios*	***Online safety lesson 3&4 (Year 6)*** ***Programming: Intro to Python*** • *Discussing what their 'digital footprint' is* • *Understand the importance of capturing evidence of online bullying and can demonstrate*	***Online safety lesson 5 (Year 6)*** ***Data handling 1: Big Data 1*** • *Describing ways to manage passwords and strategies to add extra security such as two-factor authentication.* • *Explaining what to do if passwords are shared, lost or stolen*	***Online safety lesson 6 (Year 6)*** ***Creating media: History of computers*** • *Describing strategies to identify scams. Explaining ways to increase privacy settings and understanding why it's important to keep software updated*

	• Explaining that codes can be used for a number of different reasons and decoding messages. • Explaining how to ensure a password is secure and how this works. Understanding why a longer password is more secure than a short one. • Create a simple poster with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. • Understanding about some of the historical figures that contributed to technological advances in computing • Identifying why historical figures were influential in creating modern computers. Researching and presenting information about historical figures in computing	*some of these methods on the devices at school* • Predicting what I think something new will do when I tinker • Using nested loops in their designs, explaining why they need two repeats. • Beginning to draw the house using Python commands; using comments to show a level of understanding around what their code does. • Using loops in Python and explaining what the parts of a loop do and suggesting an appropriate place to use a loop • Recognising that computers can choose random numbers; decomposing the program into an algorithm and modifying a program to personalise it.	• A firm understanding of why barcodes and QR codes were created and how the data contained within barcodes and QR codes can be used by computers. • Create (and scan) their own QR code using a QR code generator website. • Explaining how infrared can be used to transmit a Boolean type signal. • Explain how RFID works • Typing formulas into cells using a spreadsheet • Taking real time data and entering it effectively into a spreadsheet. • Presenting the data collected as an answer to a question (Which ride is the best choice for a FastPass?). • Recognising the value of analysing real time data. • Sorting data within an Excel spreadsheet by inserting a table.	• Tinkering with sound by using sound recording software and identifying the key features of a radio play. • Recording, editing and adding sound effects to a radio play • Understanding and identifying how computers have changed and the impact this has had on the modern world • Researching about one of the computers that changed the world and present information about it to the class • Understanding of historic computers in order to design a computer of the future.
Year B	*Computing systems and networks: Search engines* • Understanding what a search engine is and how to use it to navigate the web • Suggesting that things online aren't always true and recognising what to check for. Understanding that anyone can create a website • Searching effectively and understanding the importance of keywords • Creating an informative poster with appropriate images, colours, design and a clear title	*Programming 1: Music* • Iterating ideas, testing and changing throughout the lesson. • Explaining what the basic commands do: 'play', 'sleep', '2.times do' • Correcting their own simple mistakes in their code • Decomposing the story • Including a live loop and explaining its function. • Using samples effectively to enhance music • The ability to code a piece of music that combined a variety of structures.	*Data handling: Mars Rover 1* • Identifying how and why data is collected from space. Understanding the challenges of transmitting data over large distances • Identifying how messages can be sent using binary code. Reading and calculating numbers using binary code • Identifying input, processing and output on the Mars Rovers. Explaining how the size of RAM affects the processing of data. • Recognising that computers use binary mathematically and using	*Online safety Year 5* • Understanding that passwords need to be strong and that apps do require some form of passwords • Recognising two of the types of online communication and knowing who to go to if they need help with any communication matters online • Searching for simple information about a person such as their birthday or key life moments • Knowing what bullying is and that it can occur both online and in the real world • Recognising when health and wellbeing are being affected in

	• Making parallels between book searching and internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank.	• Recognising that programming music is a way to apply their skills	simple operations to calculate bit patterns • Relating binary signals (Boolean) to a simple character based language, ASCII.	either a positive or negative way through online use. • Offering a couple of advice tips to combat the negative effects of online use.