Computing Substantive Knowledge – 2023-2024

Computing Systems and Networks	Programming	Creating Media	Data Handling	Online Safety
Identifying hardware and using software, while exploring how computers communicate with each other	Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks	Learning how to use various devices – record, capture ad edit content such as videos, music, pictures, and photographs	Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems.	Understanding the benefits and risks of being online – how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.

	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1	Pentecost 2
Cedar EYFS		**Using a computer** Learning the main parts of a computer and how to use the keyboard and mouse. Learning how to log in and out	**All about instructions** The children learn to receive and give instructions and understand the importance of precise instructions.	**Exploring hardware** Tinkering and exploring with different computer hardware and learning to operate a camera.	**Programming Bee-bots** Children learn about directions, experiment with programming a Bee-bot and tinker with hardware.	**Introduction to data** Children sort and categorise data and are introduced to branching databases and pictograms.
Sycamore Y1/2	**What is a computer?** Exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention. To know what the techniques are for creating a strong password.	**Algorithms and debugging** Developing an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient, introduction of loops. To know that you should tell a trusted adult if you feel unsafe or worried online.	**Word Processing** Developing touch typing skills, learning keyboard shortcuts and simple editing tools. To know that the internet is many devices connected to one another.	**Programming ScratchJr (option 1 - using tablet devices)** Exploring what 'blocks' do' by carrying out an informative cycle of predict > test > review. Programming a familiar story and make a musical instrument. To understand the difference between online and offline.	**Stop Motion** Learning how to create simple animations from storyboarding creative ideas. To know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.	**International Space Station** Learning how data is collected, used and displayed and the scientific learning of the conditions needed for plants and humans, to survive. To understand that not everything I see or read online is true.

Olive Y3	**Networks and the internet (option 2 – Microsoft Office 365)** Learning what a network is and how devices communicate and share information. To know that not everything on the internet is true: people share facts, beliefs and opinions online.	**Programming: Scratch** Exploring the programme Scratch, following the predict > test > review cycle. Learning about 'loops' and programming an animation, story and game. To know that apps require permission to access private information and that you can alter the permissions.	**Emailing (option 2 – Microsoft Office 365)** Sending emails with attachments and understanding what cyberbullying is. To know that privacy settings limit who can access your important personal information, such as your name, age, gender etc.	**Journey inside a computer** Assuming the role of computer parts and creating paper versions of computers to consolidate understanding of how a computer works. To know that the internet is many devices connected to one another	**Video trailers (option 2 – using iPads)** Developing digital video skills to create trailers, with special effects and transitions. To know what social media is and that age restrictions apply.	**Comparison cards databases** Learning about records, files and data and sorting and filtering data. To know what the techniques are for creating a strong password
Willow Y5 Acacia Y4	**Collaborative Learning (option 2 – Microsoft Office 365)** Learning how to work collaboratively and exploring a range of collaborative tools. To know that not everything on the internet is true: people share facts, beliefs and opinions online.	**Further coding with Scratch (option 2 – Microsoft Office 365)** Revisiting the key features and beginning to use 'variables' in code scripts. To know that apps require permission to access private information and that you can alter the permissions.	**Website design (option 2 – Microsoft Office 365)** Learning how web pages and sites are created and how to embed media and links. To know what social media is and that age restrictions apply.	**HTML** Learning about the markup language behind a webpage; becoming familiar with HTML tags, changing HTML and CSS code to alter images and 'remix' a live website. To know that privacy settings limit who can access your important personal information. Information, such as your name, age, gender etc.	**Computational thinking** Solving problems effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition. To understand that technology can be designed to act like or impersonate living things.	**Investigating weather (option 2 – Microsoft Office 365)** Researching and storing data on spreadsheets and designing a weather station. To understand that the internet can affect your moods and feelings.
Juniper Y6	**Search engines (option 2 – Microsoft Office 365)** Learning about how page rank works and how to identify inaccurate information.	**Programming music (option 2 – Scratch)** Building-on programming and music skills to create different sounds, beats and melodies which are put to the test with a Battle	**Mars Rover 1** Learning about the Mars Rover, exploring how and why it transfers data including instructions, and how messages can be sent using binary code.	**Micro:bit** Creating algorithms and programs that are used in the real world. Using the 'predict, test and evaluate' cycle to create and debug programs with specific aims.	**Stop motion animation (option 1 – Stop motion studio)** Creating animations, storyboard ideas and decomposing a story into small parts before putting together to	**Mars Rover 2** Exploring how the Mars rover: moves, follows instructions, collects and sends data; understanding how computers work, what

	To know different ways we can communicate online.	of the Bands performance! To understand how online information can be used to form judgements.	To understand some ways to deal with online bullying.	To know that apps require permission to access private information and that you can alter the permissions.	create the illusion of a moving image. To know where I can go for support if I am being bullied online or feel that my health is being affected by time online	data is and how it is transferred. To understand what it means to have a positive online reputation.