Computing

“When you learn to code, you’re not just learning to code – you’re learning to think creatively, reason systematically, and work collaboratively.” – Mitch Resnick

At Castle Carrock Primary School, our computing curriculum equips pupils with the knowledge and skills to thrive in an increasingly digital world. Through a structured and progressive approach, based on the Kapow Primary Computing Scheme of Work, we ensure that every child becomes a confident, creative, and responsible user of technology.

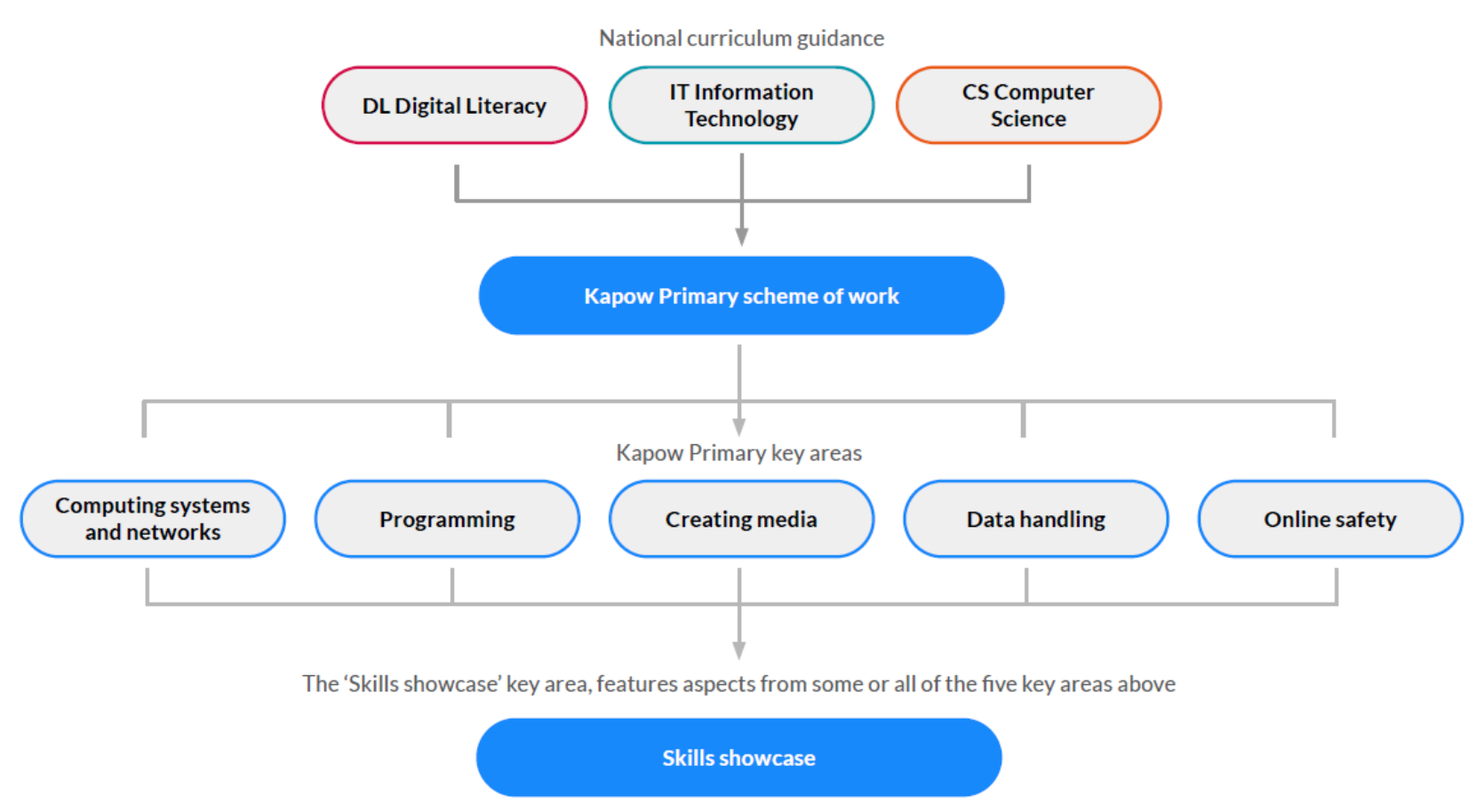
Our curriculum is designed around three core strands – Computer Science, Information Technology and Digital Literacy – providing pupils with opportunities to design, create, and problem-solve through hands-on learning experiences. Computing lessons nurture creativity, encouraging children to express their ideas through coding, multimedia projects and digital storytelling.

We promote resilience by encouraging pupils to explore, debug and refine their work independently and collaboratively. Mistakes are viewed as opportunities for growth, helping children to develop perseverance and problem-solving skills essentials for lifelong learning.

Through strong focus on responsibility and respect, pupils learn to use technology safely, respectfully and ethically. Online safety is embedded throughout the curriculum and revisited regularly, ensuring children understand how to protect themselves and others in the digital world.

By the end of Key Stage Two, our pupils are digitally literate and equipped to participate actively, safely and creatively in a technology-rich society. They understand not only how technology works, but also how to use it purposefully to make a positive impact on their learning and the wider world.

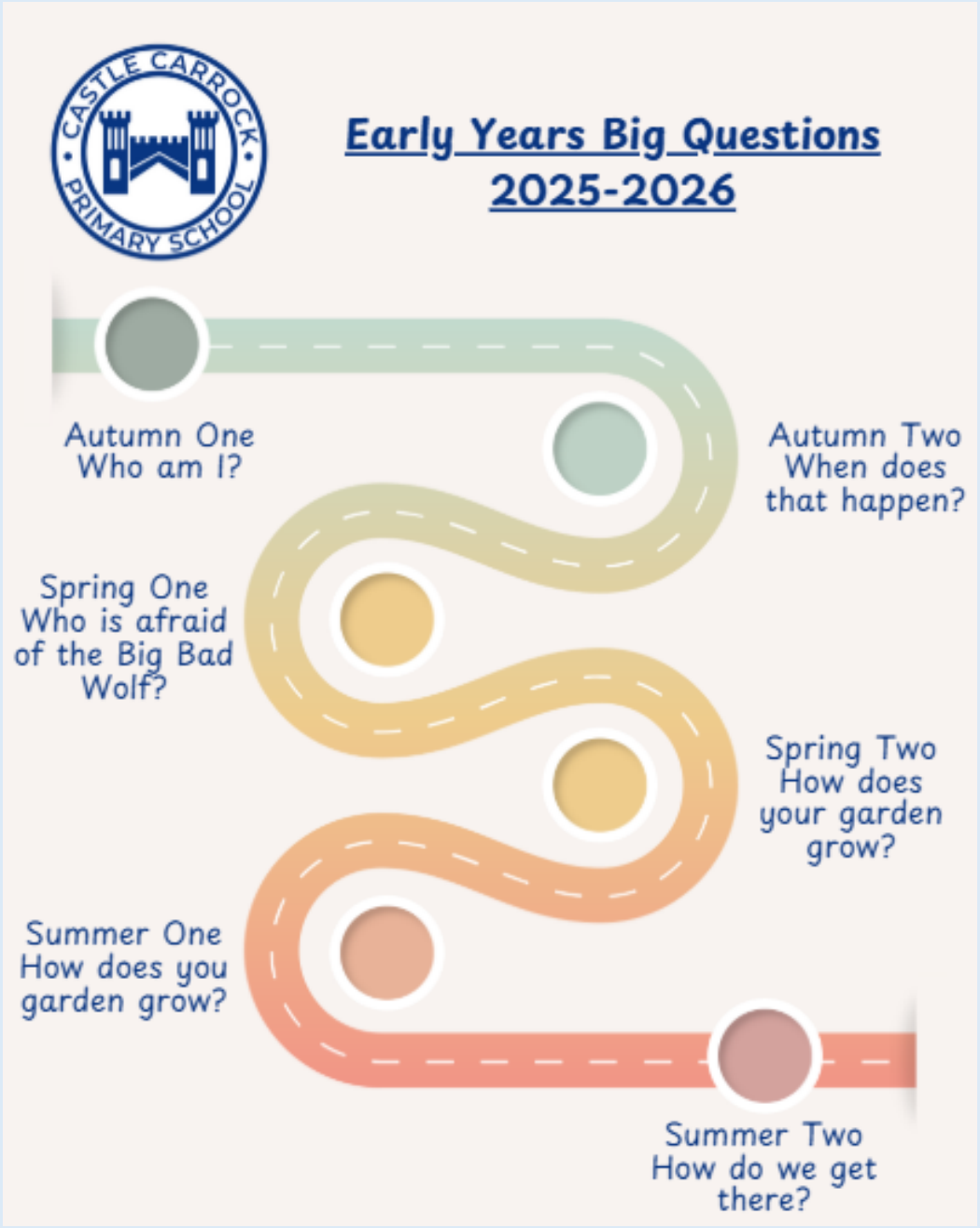
How is the Computing scheme of work organised?



Computing in EYFS

Computing is embedded throughout EYFS rather than taught as a separate subject. It supports the development of skills across all areas of learning, especially in Understanding the World and Expressive Arts and Design.

EYFS Big Questions 2025-2026



Understanding the World

At Castle Carrock, computing is clearly embedded within the Understanding the World area, as children notice and explore how technology shapes their everyday experiences. Through hands-on play with digital devices and programmable toys, children learn that technology can be used to find information, solve problems, and create. They develop early computational thinking by predicting what will happen when they press a button or give a set of instructions. Activities such as using tablets to document learning, operating a class interactive whiteboard, or programming a Bee-Bot to move to a specific location help children understand cause and effect, sequencing, and logical reasoning. These experiences lay the foundations for later computing and digital literacy skills.

Expressive Arts and Design

At Castle Carrock, computing supports Expressive Arts and Design by offering children new, creative ways to express their ideas. Digital tools such as drawing apps, music software, or digital cameras allow children to experiment with colour, sound, and movement in ways that might not be possible with traditional materials. They might record a song they have composed, take photographs of their artwork, or create simple animations to tell a story. By using technology creatively, children learn to make design choices, evaluate outcomes, and take pride in sharing their digital creations with others. These activities foster imagination, originality, and confidence in using technology as a tool for self-expression.

Communication and Language

At Castle Carrock, computing can enhance how children communicate and tell stories. Digital story-making apps, voice recorders, or sequencing programs enable children to plan and retell stories in an interactive way. By sequencing images, recording dialogue, or using simple text on screen, they practise the same logical and narrative skills used in early coding — thinking about order, structure, and meaning. Technology also supports speaking and listening, as children record and replay their voices or use digital tools to collaborate on storytelling projects. Through these experiences, children strengthen both their language development and their understanding of how information can be created and shared using technology.

Characteristics of Effective Learning

At Castle Carrock, computing activities naturally align with the Characteristics of Effective Learning, encouraging children to play, explore, and think critically. When interacting with technology, children show curiosity and persistence, testing ideas to see what works and adjusting their actions when outcomes differ from their expectations. For example, programming a robot to follow a path promotes resilience and problem-solving they debug their sequence of instructions. These experiences develop the ability to plan, predict, and reflect — key aspects of computational thinking. By engaging in purposeful digital play, children become confident learners who see technology not just as entertainment but as a powerful tool for exploration and creation.

Computing: KS1

By the end of KS1, pupils at Castle Carrock will understand that computers are tools that follow instructions to help us create, communicate and solve problems – but they must be used safely and thoughtfully.

Strand	Year 1 Skills	Year 2 Skills
Computer Systems & Networks / Hardware & Basics	• Use a mouse: click, drag, drop; control the cursor. • Recognise, identify, and explore basic hardware (tablets, cameras etc.). • Log in / navigate around a computer.	• Have confidence with using keyboard: home row, space, backspace etc. • Greater control over devices (camera/tablet) when taking photos/videos. • Understand input vs output devices.
Programming / Computational Thinking	• Begin to understand what algorithms are (unplugged), following and giving simple instructions. • Use simple programmable toys (Bee-Bot etc.) to plan paths. • Debug – spot when an instruction doesn't work as expected and try again.	• Use block-based tools (like ScratchJr) to write simple programs. • More complex debugging: test and refine algorithms. • Understand that programs execute by following precise instructions.
Creating Media	• Use simple drawing tools – shape, colour; create basic digital images. • Take photos or record simple digital artefacts.	• Import and edit images in text documents; use basic formatting (bold, italics, font colour) etc. • Combine media types to produce a digital outcome (images + text etc.).
Data Handling	• Begin to collect simple data (e.g. survey, tally) and present it in simple ways. • Recognise that data can be stored and used to find out information.	• Present data in more structured ways (charts, simple graphs). • Analyse basic data: compare, draw conclusions from simple data presentations.
Online Safety / Digital Literacy	• Understand what is safe to share online; knowing who to talk to if they see something worrying. • Explore basic digital tools safely.	• More nuanced understanding of personal data, privacy; recognising risks. • Apply safety practices: e.g., safe searching, evaluating sources, staying safe when using media and communication tools.

Core Knowledge for KS I
Autumn 2025-2026

Topic	Core knowledge
Computing Systems and Networks I – What is a computer?	I know that a computer is a machine that follows instructions to do tasks. I know that computers come in many forms, such as laptops, tablets, and phones. I know that technology means tools and devices that help us in everyday life. I know that an input device puts information into a computer, like a keyboard, mouse, or microphone. I know that an output device shows or gives back information, like a screen, printer, or speaker. I know that computers need electricity or batteries to work. I know that computers follow instructions carefully and do exactly what they are told. I know that computers are used to store, process, and share information. I know that computers are used in lots of places — at home, in school, and in the wider world. I know that I can design an invention that uses inputs and outputs to solve a problem.
Programming I – Algorithms and debugging	I know that an algorithm is a set of clear, step-by-step instructions to solve a problem. I know that we can predict what a program will do if we follow its algorithm. I know that an error in an algorithm or program is called a bug. I know that debugging means finding and fixing bugs (errors) in an algorithm or program. I know that decomposition means breaking down a task into smaller, manageable steps. I know that using a loop can help make algorithms shorter or more efficient by repeating steps. I know that abstraction means ignoring unnecessary details and focussing on the important parts for a given task. I know that algorithms must be precise and unambiguous for a computer or person to follow them correctly. I know that computers / programs will do exactly what the instructions (algorithm) tell them — they don't guess. I know that we can test our algorithm, see if it works as expected, and improve it by adjusting steps.

Core Knowledge for KS I
Spring 2025-2026

Topic	Core knowledge
Computing systems and Networks 2 – Word processing	I know that touch typing means using the keyboard with correct finger placement to type without looking. I know that the home row keys are the middle row of letters on a keyboard, and I can find them when typing. I know that the spacebar creates a space between words and the backspace deletes text before the cursor. I know how to use formatting tools like bold, italics, underlining, and font colour to change how text looks. I know that I can import images into a text document and alter them to suit my work (for example, size or position). I know how to copy text from one place and paste it into another document. I know that I can modify text — change its style, size, spacing, etc., to make it look better or clearer. I know what keyboard shortcuts are and how they can help me edit text more efficiently. I know how to create a digital "piece of writing" using a word processor, combining text and images. I know what information is safe to share online and what should be kept private — even when I'm using the internet to find pictures or content.
Programming 2 – Scratch junior	I know that ScratchJr is an app where I can build programs using blocks rather than typing code. I know that a block is an instruction I can drag and drop, and I can combine blocks to make something happen. I know how to create an algorithm in ScratchJr by putting blocks together in the right order to tell characters what to do. I know that I can predict what my program will do before I run it, and then test and review it to see if the result is as I expected. I know what a loop is (repeating a sequence of instructions) and when using loops can make my programs more efficient. I know how to make things happen "on tap" (i.e. when I touch or click something in ScratchJr). I know I can use different block types—motion, looks, sound, control—to create animations or tell stories. I know that debugging means looking for mistakes (bugs) in my block sequences and correcting them if the program doesn't work as planned. I know that each block in my program has a role, and I can explain what that role is in the program I create. I know that programs must follow clear, precise instructions for the computer (or app) to execute them properly.

Core Knowledge for KS I
Summer 2025-2026

Topic	Core knowledge
Creating media – Stop motion	I know that animation is the process of creating moving images by displaying a series of pictures or frames. I know that stop-motion animation involves taking photographs of objects in small movements and playing them in sequence to create the illusion of movement. I know that a storyboard is a plan that shows the sequence of events in an animation, helping to organize and visualize the story. I know that to create a smooth animation, I need to make small, consistent changes between each photograph. I know that lighting and camera stability are important to ensure clear and consistent images in my animation. I know that I can use digital tools to edit my stop-motion animation, adding effects, titles, or sound. I know that collaboration with others can enhance the creativity and quality of a stop-motion project. I know that feedback from peers can help me improve my animation by identifying areas for enhancement. I know that I can use various materials and backgrounds to create different scenes and effects in my animation. I know that sharing my stop-motion animation with others allows me to showcase my creativity and storytelling skills.
Data Handling – International Space Station	I know that data is information collected to help us understand and make decisions. I know that astronauts on the International Space Station (ISS) collect data to monitor their health and the environment. I know that data can be collected in various forms, such as numbers, pictures, or sounds. I know that computers can help us organize and display data in charts and graphs. I know that analysing data helps us find patterns and make predictions. I know that the ISS uses sensors to collect data about air quality, temperature, and humidity. I know that astronauts use the data collected to make decisions about their daily activities and well-being. I know that data collected on the ISS is sent back to Earth for scientists to study. I know that presenting data clearly helps others understand the information. I know that I can collect data, organize it, and present it to answer questions or solve problems.

Computing in KS2

At Castle Carrock, Computing is taught across Years 3-6 simultaneously, but the curriculum is carefully designed to ensure that each year group develops the skills appropriate to their age. We follow a four-year cycle to cover all key strands – computing systems, programming, creating media, data handling, and online safety – while tailoring activities to the development level of each year group. This approach allows children to work collaboratively in mixed-age settings while still focussing on the progression of their own year group, building confidence and independence in digital skills, while older pupils are challenged with more complex applications, such as advanced coding, multi-media creation, or data analysis, ensuring all children make meaningful progress within their own curriculum expectations.

Computing: KS2

By the end of KS2, pupils at Castle Carrock will be able to use technology confidently to create media, collect and analyse data, program with increasing sophistication, understand computing systems and networks, and behave safely, responsibly, and ethically online.

Strand	Key Skills	Progression (Y3 → Y6)
Computing Systems & Networks	Understand how computers connect; identify hardware (input/output); explore networks and the internet; collaborate digitally	Year 3: Explore networks & devices → Year 4: Share work safely → Year 5: Investigate search engines & data flow → Year 6: Evaluate large-scale systems & computing history
Programming & Computational Thinking	Write algorithms, debug, use loops, events, conditions; decompose tasks; Scratch & Python coding	Year 3: Simple Scratch sequences → Year 4: Complex Scratch projects → Year 5: Simulations, games, music → Year 6: Python programming, variables, loops, debugging
Creating Media	Plan, create, and edit digital media; combine text, images, audio, video; evaluate work	Year 3: Video trailers & images → Year 4: Simple websites → Year 5: Stop-motion animation → Year 6: Multimedia product creation & presentations
Data Handling	Collect, organize, analyze, present data; identify patterns & draw conclusions	Year 3: Small databases → Year 4: Investigate & visualize real-world data → Year 5: Analyze scientific datasets → Year 6: Work with large datasets & advanced analysis
Online Safety & Digital Citizenship	Stay safe online; evaluate content; manage digital footprint; communicate respectfully & ethically	Year 3–4: Basic safety & responsible use → Year 5: Online risks & footprints → Year 6: Ethical digital behaviour, critical evaluation of online information

Core Knowledge for KS2
Autumn 2025-2026

Topic	Core knowledge
Computing systems and Networks – Collaborative Learning	I know that collaborative online tools allow multiple people to work on the same document at the same time. I know that real-time collaboration means changes made by one person can be seen instantly by others. I know that version history (or document revision history) lets you see earlier versions and who made which changes. I know that comments and suggestions are features that help teams discuss, review, and improve shared work. I know that permissions settings control who can view, comment on, or edit a shared document. I know that cloud storage enables access to shared documents from multiple devices and locations. I know that good collaboration requires clear roles, communication, and shared responsibility. I know that conflicts may occur when people edit the same part of a document, and that resolving these changes is part of collaborative work. I know that collaborative learning tools enhance creativity, efficiency, and teamwork in digital projects. I know that being respectful and responsible when collaborating online includes giving credit, being kind in feedback, and maintaining digital etiquette.
Programming I – Further coding with scratch	I know that in Scratch I can create a simple script that makes a sprite do something (for example, move, speak, or change appearance). I know that I can stop a sprite from rotating so that it always faces the same direction. I know what a variable is: a storage inside my program that can change (for example, to record a score). I know how to use the “ask” and “say” blocks in Scratch to interact with the user. I know that decomposition means breaking down a big problem (like a quiz game) into smaller, nicer manageable parts. I know that conditional statements let my program make decisions (“if … then …”) depending on what is true. I know what loops (repeat blocks) are and how they help me repeat actions without re-writing the same code many times. I know that code blocks can control sprites’ motion, appearance (costume), looks (speech/thought bubbles), sounds, and responses to events. I know that the “sensing” blocks allow the program to respond to things like touching the mouse pointer, clicking, or timers. I know that I can use variables in Scratch to track things like scores, set values, and change what happens depending on user input or actions.

Core Knowledge for KS2
Spring 2025-2026

Topic	Core knowledge
Creating media – website design	I know that a website is made up of web pages, which together form a website structure or hierarchy. I know what a homepage is, and that it acts as the main page from which users can navigate to other pages. I know what a hyperlink is, and how users click links to move from one web page to another. I know that you can embed media (such as images, videos, or other content) into a web page to make it more interesting. I know that website design includes considering the audience, so the style, layout, and content are chosen to meet the needs and expectations of the people who will view it. I know that design includes selecting and applying a theme or template, consistent colours, fonts, and style so the website looks professional and usable. I know that planning is important: sketching a site structure and using checklists can help ensure the website is well-organised. I know that when creating a website one can use tools like Google Sites (or similar) to build pages, insert content, edit layout, and publish online. I know that usability matters: a good website is easy to read, easy to navigate, and the navigation should be clear for the user. I know that after building a website one can evaluate it: check if it meets its purpose, works well, looks good, and perhaps improve it.
Skills showcase - HTML	I know that HTML (HyperText Markup Language) is the standard language used to create and structure web pages. I know that HTML uses tags (e.g. <h1>, <p>, <img>) to define different elements on a web page. I know that the <a> tag is used to create hyperlinks, which link one page or resource to another. I know that attributes (such as src or href) inside tags provide additional information or functionality (e.g. where an image is located, where a link should go). I know that HTML pages have a structure made up of elements like headings, paragraphs, images, links, and lists. I know that editing HTML allows me to change layout or content—for example, adding or removing elements, changing text, or embedding media. I know that CSS (Cascading Style Sheets) can be used alongside HTML to style pages (e.g. colours, fonts, spacing). I know that “remixing” existing HTML allows me to adapt and improve a page by changing its structure or styling. I know that viewing the source code of a web page enables me to see how HTML is written and structured. I know that after designing an HTML page, I can evaluate it by checking whether it is clear, usable, functional, and meets its intended purpose.

Core Knowledge for KS2
Summer 2025-2026

Topic	Core knowledge
Programming 2 – Conceptual thinking	I know that computational thinking is a problem-solving approach made up of four key skills: decomposition, pattern recognition, abstraction, and algorithm design. I know that decomposition means breaking a complex problem down into smaller, more manageable parts. I know that pattern recognition is noticing similarities or repeated actions in problems or data that can help simplify solutions. I know that abstraction means focusing on the important details of a problem and ignoring those that are not relevant. I know that algorithm design involves planning a clear sequence of steps to solve a problem. I know that computational thinking can help make solving problems easier and more logical. I know I can combine the computational thinking skills (decomposition, pattern recognition, abstraction, algorithm design) to solve everyday or programming problems. I know that evaluating my algorithms and revising them helps improve the effectiveness of my solution. I know that I can use these skills in Scratch to create programs with logical sequences. I know the vocabulary related to computational thinking: algorithm, decomposition, abstraction, pattern recognition.
Data Handling – Investigating Weather	I know that weather data can be collected from online sources and recorded in a spreadsheet. I know that a spreadsheet lets me organise, sort, and compare weather measurements (e.g. temperature, rainfall) from different places. I know that sensors and weather stations are devices that collect real-time data about weather conditions. I know that satellites are used for weather forecasting and gathering data about Earth from space. I know that forecasts are predictions made using current and past weather data. I know what the vocabulary terms “data logging”, “sensor”, “spreadsheet”, “forecast”, “extreme weather” mean. I know that data must be accurate and consistent for predictions and comparisons to be reliable. I know that visual representations (charts, graphs) help show patterns in weather data over time. I know that extreme weather events are part of weather data and can be investigated for their causes and effects. I know that I can present weather information (e.g. forecasts) clearly using digital tools to communicate findings.

Online Safety

Online safety is the heart of our computing curriculum at Castle Carrock, ensuring pupils can use digital technology safely, responsibly and effectively. Pupils are taught to protect personal information, manage their digital footprint, communicate respectfully and critically evaluate online content. They develop the skills to identify online risks, respond appropriately to unsafe situations, and make informed choices.

Online safety education fosters responsible digital citizenship, promoting both wellbeing and ethical use of technology across all aspects of school life.