Computing Skills and Knowledge Overview

KS1 and KS2 National Curriculum

Computing is taught using a blocked curriculum approach outlined in our Curriculum Overviews, ensuring balanced coverage of computer science, information technology, and digital literacy. At its core is computer science, where pupils learn about information, computation, digital systems, and programming. This foundation supports the use of information technology to create programs, systems, and digital content. We follow the Purple Mash scheme, which aligns with the National Curriculum and offers engaging, curriculum-focused activities, tools, and games that promote cross-curricular learning. Throughout the year, children complete projects in areas such as programming, computational thinking, creativity, networks, communication, collaboration, and productivity.

Aims: The Computing curriculum aims to equip children with concrete skills and understanding of both procedural and declarative knowledge, enabling confident use of future technologies. Using the Purple Mash scheme, tools are matched to cognitive load, allowing pupils to build complexity without relearning basic functions. This supports progression through computer science, information technology, and digital literacy, with meaningful cross-curricular links and skill development in programming, creativity, and collaboration.

Attainment Targets: The scheme is closely aligned with the 2014 National Curriculum to ensure clear progression and coverage. Discreet lessons allow children to develop depth in knowledge and skills within each computing topic

Teaching Sequence in Computing

Starter Activity:
Lessons begin with a focused task to revisit prior learning, introduce key vocabulary, or explore a concept, activating pupils' knowledge and setting the context.

Assessment for Learning:
Teachers assess understanding through questioning, discussion, and observation, addressing misconceptions and encouraging pupils to explain their thinking using computing vocabulary.

Skill Development:
Skills are built progressively through hands-on tasks that introduce new tools and techniques in steps, reinforcing knowledge and leading to a purposeful digital outcome.

Being introduced to the key terms and vocabulary encouraging use of correct vocabulary. Key Stage 1 In many units, children will be furthering online understanding and concepts of technology (DL) through making digital content (IT and CS)

Key Stage 2 Children will be understanding of the capabilities of the World Wide web (CS) while searching online (IT). They will be developing their understanding of appropriate behaviour online (DL) skills while learning about searching the Internet (IT).

Concepts	Explanation
Digital Literacy	Key aspects: how devices can be used effectively, safely and responsibly Key aspects: - how to use the device (computer, iPad, programmable toy) - searching and selecting information - online safety
Computer Science	Key aspects: - computation, algorithms and programming, data (input, process, output), systems -Knowledge of programming is hierarchical and sequential. Begin with a secure base. -Give children practical programming experience that begins with tinkering – in EYFS and at the start of a new unit/program. -Our pupils have told us they find coding hard, so they need time to learn by exploring first.
Information Technology	Key aspects: - The creation of digital artefacts (anything created on a device) – presentations, videos, animations, spreadsheets - Understanding computing contexts – how computing is used in various ways; how and what technology underpins those uses

EYFS								
General Computing Skills			**Communication and Language**			**Expressive Arts and Design**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Click, drag and scroll with a mouse or trackpad Type names and simple text on a keyboard Navigate Mini Mash menus and select tools	Recognise common icons (save, open, new) Understand cause and effect in digital tools Know why passwords keep work private	Log in, open and save 2Dos independently Use floor robots with directional commands Take photos, record sound and draw using digital pens	Discuss images and slideshows in Simple City Use Mashcams to record and share speech Create and narrate simple stories in 2Create a Story	Understand how multimedia (images, audio, text) tells a story Know to listen and respond to questions Recognise the role of sequencing in narratives	Retell stories using digital slideshows Record clear voice clips for a character Publish a short-animated story and answer reader questions	Draw and paint with 2Paint tools Add sound effects and music in 2Explore, 2Beat and 2Sequence Compose and animate in 2Create a Story	Understand how colour, texture and brush tools work digitally Know how layering images and audio enhances design Recognise how animation uses frames and timing	Produce a digital painting with multiple tools Create a short animated story with synced sound Compose a simple soundtrack using loops and samples
Literacy			**Mathematics**			**Physical Development**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Record and playback voice in Mashcams and Talking Stories Combine text and images in 2Create a Story Use 2Write for mark-making and simple sentences	Understand the structure of a story (beginning, middle, end) Know that print carries meaning and letters represent sounds Recognise safe ways to share writing online	Create and publish an illustrated storybook Record narration and sound to match pages Write a simple sentence and share it via Purple Mash	Play pairing and sorting games in Mini Mash Count and label objects with 2Count Create simple patterns in 2Paint Projects	Understand number recognition and one-to-one correspondence Know how grouping and sorting reveal similarities and differences Recognise that data can be organised visually	Complete jigsaws and pairing games with accuracy Build a pictogram of favourite items Sort objects by attribute and explain the rule used	Click and drag accurately with mouse or touchscreen Use arrow keys and buttons to control floor robots Scroll and zoom with precision	Understand fine-motor control improves with practice Know how to follow on-screen prompts Recognise cause and effect in robotic commands	Operate digital devices safely and independently Program a robot to follow a simple path Zoom and pan on a map without error
Personal, Social & Emotional Development			**Understanding the World**					
Skills	Knowledge	End Points	Skills	Knowledge	End Points			
Choose and launch activities in Mini Mash Work alongside peers to explore tools Persist with tasks and ask for help when stuck	Understand respectful online behaviour and sharing protocols Know how to request assistance in a digital setting Recognise frustration as part of learning new skills	Demonstrate resilience by completing a debugging task Support a peer with a login or tool problem Share work thoughtfully in a gallery and respond to feedback	Explore Simple City slideshows to compare environments Use camera and image-import tools to document observations Navigate virtual role-play areas (farm, café, vets)	Understand similarities and differences in everyday and community settings Know how to capture and view photos in Purple Mash Recognise interactive maps and simulations mirror real places	Identify and describe features of home, school and community Create a photo journal of a topic walk Build a simple floor-robot map of a familiar environment			
Year 1								
Online Safety & Exploring			**Grouping & Sorting**			**Pictograms**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Navigate Purple Mash tools Save and retrieve work Use	Understand login safety and personal information Recognise safe and	Log in independently and explain why passwords are	Drag and drop objects to sort Use 2DIY to sort items Follow	Understand how to group items by attributes Recognise similarities and	Create and explain simple groupings using digital tools Complete sorting	Create pictograms using 2Count Input data into a digital	Understand data representation Know that data can be shown visually	Make and interpret simple pictograms Explain what a pictogram shows

basic icons and menus	unsafe online behaviours Know what to do if something online makes them uncomfortable	important Demonstrate safe choices when using technology Use Purple Mash confidently to complete tasks	instructions to complete tasks	differences Know how digital sorting mirrors real-world categorisation	activities with increasing independence Apply sorting logic in other contexts (e.g. maths, science)	tool Compare quantities visually	Recognise patterns in data	Use pictograms to answer questions about data
Lego Builders			**Maze Explorers**			**Animated Story Books**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Sequence instructions Use 2DIY to build models Debug simple sequences	Understand the importance of order Know that computers follow instructions exactly Recognise errors and fix them	Follow and create simple sequences of instructions Explain why order matters in instructions Improve a sequence to make it work correctly	Navigate mazes using directional commands Plan routes using 2Go Debug incorrect routes	Understand basic positional language Know how to give clear instructions Recognise and correct errors	Use digital tools to complete maze challenges Create and follow a sequence of directional steps Explain how they solved a maze problem	Create digital stories using 2Create A Story Add sound and animation Save and share work	Understand how text and images combine Know how to enhance digital content Recognise audience and purpose	Make a simple animated story with text and pictures Use features to make stories engaging Present a story to others using technology
Year 2								
Coding			**Online Safety**			**Spreadsheets**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Create simple programs using 2Code Use timers and repeat commands Debug and improve code Use selection (if statements)	Understand what algorithms are Know how to plan and test a program Recognise the role of variables and selection in coding	Design and build a simple program with clear logic Explain how their code works and how they debugged it Use basic coding structures like repetition and selection	Recognise safe and unsafe online behaviours Use search tools responsibly Understand how to report concerns	Know what personal information is and why it should be protected Understand the concept of a digital footprint Recognise trusted sources and websites	Make safe choices when using technology Explain how to stay safe online and who to talk to Use search tools with guidance and awareness of risks	Enter data into cells Create simple formulas Use tools like count and total Interpret spreadsheet outputs	Understand what a spreadsheet is used for Know how to perform basic calculations Recognise patterns and relationships in data	Create and use a simple spreadsheet to solve problems Explain how data is organised and calculated Use spreadsheet tools to answer questions
Questioning			**Effective Searching**			**Creating Pictures**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Build binary and branching databases Use yes/no questions to sort data Use 2Question and 2Investigate	Understand how data can be organised Know how to ask effective questions Recognise how databases help us find information	Create and use a branching database Explain how questions lead to answers Use digital tools to sort and retrieve information	Use search engines to find information Refine search terms Evaluate sources	Understand how search engines work Know how to choose keywords Recognise reliable vs unreliable sources	Search for information with increasing independence Explain how they found and selected information Use search tools responsibly and effectively	Use different styles in 2Paint A Picture Experiment with digital art tools Save and share artwork	Understand how digital tools can replicate artistic styles Know how to use software creatively Recognise the impact of visual choices	Create digital artwork using a range of styles Explain their artistic choices Use digital tools to express ideas visually

Making Music			Presenting Ideas					
End Points	Skills	Knowledge	End Points	Skills	Knowledge			
Compose simple tunes using 2Sequence Layer sounds and adjust tempo Experiment with musical patterns	Understand how digital tools can be used to create music Know basic musical elements (beat, tempo, pitch) Recognise how music conveys mood	Create and share a digital composition Explain musical choices and patterns Use software to explore sound creatively	Combine text, images, and sound Use different presentation formats Organise content for an audience	Understand how to communicate ideas digitally Know how to structure information clearly Recognise the importance of audience and purpose	Create a digital presentation using appropriate tools Explain how their presentation communicates ideas Use multimedia elements effectively			
Year 3								
Online Safety			**Spreadsheets**			**Touch Typing**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Recognise safe and unsafe online behaviours Understand how to protect personal information Use search tools responsibly	Know what a digital footprint is Understand how to report concerns Recognise trusted sources and websites	Make safe choices when using technology Explain how to stay safe online and who to talk to Use search tools with guidance and awareness of risks	Enter and format data Create simple formulas Use tools like count and total Interpret spreadsheet outputs	Understand what a spreadsheet is used for Know how to perform basic calculations Recognise patterns and relationships in data	Create and use a simple spreadsheet to solve problems Explain how data is organised and calculated Use spreadsheet tools to answer questions	Position hands correctly on the keyboard Use home-row keys effectively Increase speed and accuracy	Understand the importance of posture and technique Know which fingers control which keys Recognise the value of typing fluency	Type a short paragraph using correct finger placement Reach a class-set words-per-minute target Show measurable improvement over time
Email			**Branching Databases**			**Simulations**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Compose and send emails Attach files and images Manage inbox: sorting, flagging and deleting	Understand email etiquette and safety Know how to identify spam and phishing Recognise the importance of secure communication	Send a correctly formatted email to a classmate Attach a document and explain safe sharing Organise a mock inbox and respond appropriately	Design and build a branching database Use yes/no questions to sort data Test and refine question sets	Understand how data can be organised Know how to ask effective questions Recognise how databases help us find information	Create and use a branching database Explain how questions lead to answers Use digital tools to sort and retrieve information	Explore and evaluate simulations Adjust variables to test outcomes Discuss accuracy and realism	Understand input, process, output Know how simulations model real-world systems Recognise limitations of digital models	Run multiple scenarios and explain differences Build a simple simulation (e.g. traffic lights) Reflect on how realistic their simulation is
Graphing								
Skills	Knowledge	End Points						
Input data and select chart types Label axes and title graphs Analyse trends and outliers	Understand discrete vs continuous data Know how units and labels guide interpretation Recognise peaks, troughs and anomalies	Create bar and line graphs from a dataset Produce a correctly labelled chart Use graphs to make data-driven observations						
Year 4								

Coding			Online Safety			Spreadsheets		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Plan and write programs using 2Code Use sequence, selection, repetition and variables Organise code into tabs and functions Debug and improve code	Understand how to use functions to simplify code Know how to use selection and repetition effectively Recognise the role of variables and user input	Create a program using functions and variables Explain how their program works and how they debugged it Use logical reasoning to improve and refine code	Identify secure websites and apps Understand digital footprints and online behaviour Recognise risks of sharing personal information	Know how to protect personal data online Understand consequences of inappropriate online behaviour Recognise signs of phishing and scams	Make safe choices when using technology Explain how to protect themselves and others online Use SMART rules to guide online behaviour	Enter and format data Create formulas including SUM, AVERAGE, MIN, MAX Use tools like count, total, and graphing Interpret spreadsheet outputs	Understand how spreadsheets can be used to solve problems Know how to perform calculations and visualise data Recognise patterns and relationships in data	Create and use a spreadsheet to solve a real-world problem Explain how data is organised and calculated Use spreadsheet tools to answer questions and present findings
Writing for Different Audiences			**Logo**			**Animation**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Create digital content for different audiences Use formatting tools to improve readability Combine text, images, and hyperlinks	Understand how purpose and audience affect writing style Know how to structure information clearly Recognise the importance of layout and design	Create two versions of the same content for different audiences Explain how their choices support communication Use digital tools to present ideas effectively	Write and debug Logo procedures Use commands to draw shapes Use repetition and procedures to simplify code	Understand how Logo uses commands to control movement Know how to use loops and procedures Recognise how to break down tasks into steps	Create a complex shape using Logo Use procedures to simplify and organise code Explain how their Logo program works	Create frame-by-frame animations using 2Animate Use onion skinning and timing tools Add sound and export animations	Understand how animations are created digitally Know how to control timing and transitions Recognise how multimedia elements enhance storytelling	Create a short animation with sound and transitions Explain how timing affects the animation Use digital tools to tell a story visually
Year 5								
Effective Searching			**Hardware Investigators**			**Coding**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Use search engines with keywords Evaluate sources for reliability Use advanced search techniques	Understand how search engines rank results Know how to identify trustworthy sources Recognise bias and misinformation	Search for information with increasing independence Explain how they found and selected information Use search tools responsibly and effectively	Identify components of a computer Understand input and output devices Compare hardware specifications	Know the function of CPU, RAM, storage, and peripherals Understand how hardware affects performance Recognise different types of devices	Label a diagram of a computer system Explain how different components work together Choose appropriate hardware for a given task	Use sketching or storyboarding to plan programs Simulate physical systems using code Use number and text variables Combine loops, selection, and variables Use launch commands and buttons	Understand how to design and reflect on a program Know how to simulate systems using decomposition Recognise how variables control program behaviour Understand how to use selection and repetition together Know how to link programs to external content	Create a playable game using variables and logic Explain how their code simulates a system Use launch buttons to create informative programs Debug and improve code based on testing
Online Safety			**Spreadsheets**			**Databases**		

Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Use SMART rules to guide online behaviour Maintain secure passwords Recognise and respond to inappropriate content Reference sources and evaluate reliability Choose appropriate communication methods	Understand the impact of sharing digital content Know how to protect personal information Recognise manipulated images and misinformation Understand the importance of citing sources Know when and how to communicate online	Make safe and respectful choices online Explain how to protect themselves and others Use critical thinking when evaluating online content Reference sources accurately in digital work	Create formulas for conversions and calculations Use count and how-many tools Apply advanced formulae Use variables in calculations Plan and manage events using spreadsheets	Understand how spreadsheets solve real-world problems Know how to use formulae to automate tasks Recognise how variables can simplify calculations Understand how to use spreadsheets for planning	Build a spreadsheet to solve a practical problem Use formulae and tools to analyse data Explain how their spreadsheet supports decision-making	Create and edit records in a database Use avatars and fields to personalise data Search and sort using multiple criteria Interpret and present database findings	Understand how databases store and organise information Know how to use queries to find specific data Recognise how databases support decision-making	Build and use a database to answer questions Explain how queries work and what they show Present findings from a database search
Game Creator			**3D Modelling**			**Concept Maps**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Design 3D game environments Script interactions and game logic Use scoring, timers, and levels Test and refine gameplay	Understand game design principles Know how to use coding to create interactivity Recognise how feedback improves user experience	Create a playable game with interactive elements Explain how their game works and how it was improved Use design features to enhance engagement	Create and manipulate 3D shapes Apply textures and colours Export models for use or printing	Understand how 3D models are built from shapes Know how textures affect appearance Recognise file formats for 3D content	Build a detailed 3D model using digital tools Explain design choices and features Export a model in a usable format	Create multi-node concept maps Link ideas with annotated connectors Reorganise maps for clarity	Understand how concept maps show relationships Know how to structure ideas visually Recognise how maps support planning and thinking	Build a concept map to explore a topic Explain connections between ideas Use concept maps to support learning or presentation
Year 6								
Coding			**Online Safety**			**Spreadsheets**		
Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Plan and design programs using flowcharts Use functions to organise code Use variables to track user input and object properties Debug and test using logical reasoning Create simulations and text-based games	Understand how functions simplify and structure code Know how to use variables and user input to control outcomes Recognise how flowcharts support planning and debugging Understand how to simulate systems and create interactive stories	Create a program using functions, variables, and user input Explain how their code works and how it was debugged Design and build a simulation or text-based adventure game	Identify secure websites and apps Understand risks of location sharing and personal data Recognise phishing, scams, and spoof websites Reflect on digital footprints and online behaviour	Know how to protect personal information and devices Understand how online actions can have long-term consequences Recognise signs of unsafe or manipulative online content	Make safe and respectful choices online Explain how to protect themselves and others Use critical thinking to evaluate online risks and behaviours	Use advanced formulas and functions Create graphs and charts to present data Plan and manage budgets or events Use spreadsheets to solve real-world problems	Understand how spreadsheets support decision-making Know how to use formulas to automate calculations Recognise how to present and interpret data effectively	Build a spreadsheet to solve a practical problem Use formulas and graphs to analyse and present data Explain how their spreadsheet supports planning or budgeting
Blogging			**Text Adventures**			**Networks**		

Skills	Knowledge	End Points	Skills	Knowledge	End Points	Skills	Knowledge	End Points
Create and publish blog posts Embed images, videos, and hyperlinks Manage comments and interact with readers	Understand how blogs communicate ideas and opinions Know how to use multimedia to enhance writing Recognise the importance of respectful online interaction	Publish a blog post with multimedia elements Respond to comments appropriately Use blogging to share ideas with a wider audience	Design branching story structures Use variables and conditions to control narrative Build interactive text-based games	Understand how to use logic and structure in storytelling Know how to use variables to track user choices Recognise how to create immersive digital experiences	Create a playable text adventure with multiple paths Use variables and conditions to control outcomes Explain how their game responds to user input	Map network topologies Identify components of a network Discuss how data travels across networks	Understand how networks connect devices and share data Know the difference between LAN and WAN Recognise the role of routers, switches, and servers	Create a labelled diagram of a network Explain how data moves through a network Compare different types of networks and their uses
Quizzing								
Skills	Knowledge	End Points						
Create quizzes using multiple question types Use branching logic and scoring Analyse quiz results and give feedback	Understand how quizzes assess knowledge Know how to structure questions and feedback Recognise how to use data to improve learning	Build a digital quiz with varied question types Use logic to guide users through the quiz Evaluate quiz results and suggest improvements						