

Computing

Long-term plan

Mixed-Age

The Computing Long-term plan suggests an order for teaching our Computing units over a school year.

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Suggested long-term plan: Computing

Overview (All year groups)

Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Online safety
Year 1/2	Computing systems and networks: Improving mouse skills	Programming 1: Algorithms unplugged	Skills showcase: Rocket to the moon	Computing systems and networks 1: What is a computer?	Programming 1: Algorithms and debugging	Computing systems and networks 2: Word processing	Online safety: Year 1
Year 3/4	Microsoft Office 365: Computing systems and networks 2: Emailing	Programming: Scratch	Video trailers – Option 1: Using devices other than iPads	Google: Creating media: Website design	Programming 1: Further coding with Scratch	Programming 2: Computational thinking	Online safety: Year 3
Year 5/6	Programming 2: BBC micro:bit	Data handling: Mars Rover 1	Skills showcase: Mars Rover 2	Computing systems and networks: Bletchley Park and the history of computers	Computing systems and networks: Exploring AI	Skills showcase: Inventing a product	Online safety: Year 5
Cycle B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Online safety
Year 1/2	Programming 2: Bee-Bot	Creating media: Digital imagery	Data handling: Introduction to data	Programming 2: MakeCode	Creating media: Stop motion: Using tablets	Data handling: International Space Station	Online safety: Year 2
Year 3/4	Computing systems and networks 1: Networks	Data handling: Comparison cards databases	Computing systems and networks 3: Journey inside a computer	Google: Computing systems and networks: Collaborative learning	Data handling: Investigating weather	Online safety: Year 4	
Year 5/6	Programming 1: Scratch: Music	Stop-motion animation – Option 1: Using Stop Motion Studio	Computing systems and networks: Search engines	Data handling 1: Big Data 1	Data handling 2: Big Data 2	Intro to Python	Online safety: Year 6

Note: Following the closure of the external Trinket platform, the Year 4 unit [Skills showcase: HTML](#) has been archived. Year 4 Online safety has been moved to Cycle B Summer 2 in the Long-term plan. National curriculum coverage is not affected by this change.

Suggested long-term plan: Computing

Overview - Key stage 1

Year 1/2

Unit 1	<u>Computing systems and networks: Improving mouse skills</u> 5 lessons Developing an understanding of how to log in and navigate around a computer while building mouse control skills, including clicking, dragging and dropping. Pupils apply these skills to create digital artwork inspired by Kandinsky and produce their own self-portraits.	Unit 2	<u>Programming 1: Algorithms unplugged</u> 5 lessons Investigating algorithms, decomposition and debugging through unplugged activities linked to familiar contexts such as dressing up and making a sandwich. Pupils apply their understanding by creating and correcting precise instructions to achieve specific outcomes.
Unit 3	<u>Skills showcase: Rocket to the moon</u> 5 lessons Developing keyboard and mouse skills through designing, building and testing digital projects using a range of software tools. Pupils create a digital list of materials, use drawing software to produce designs and record data to support and evaluate their work.	Unit 4	<u>Computing systems and networks 1: What is a computer?</u> 5 lessons Exploring what a computer is by identifying different inputs and outputs and understanding how computers process information. Pupils investigate how computers are used in the wider world before designing their own computerised invention.

Year 1/2

Unit 5	<u>Programming 1: Algorithms and debugging</u> 5 lessons Developing an understanding of what algorithms are, how to program them and how they can be developed to be more efficient through a range of unplugged and plugged-in activities.	Unit 6	<u>Computing systems and networks 2: Word processing</u> 5 lessons Developing word processing skills by learning touch typing, using keyboard shortcuts and exploring how to stay safe online. Pupils apply formatting and editing tools, including bold, italics and font colour, before importing images to create and improve their own digital documents.
Unit 7	<u>Online safety: Year 1</u> 5 lessons Exploring online safety, including how to stay safe online, manage emotions when something causes upset and understand responsibilities as a digital user. Pupils investigate how online actions create a digital footprint and apply their understanding to make safe and responsible choices online.		

Suggested long-term plan: Computing

Overview - Lower key stage 2

Year 3/4

Unit 1	<u>Microsoft Office 365: Computing systems and networks 2: Emailing</u> 5 lessons Learning how to send emails with attachments and understanding the importance of using them safely and responsibly. Pupils also reflect on the content of digital communications and recognise the importance of making responsible decisions as digital citizens.	Unit 2	<u>Programming: Scratch</u> 5 lessons Investigating programming through Scratch by creating animations and learning key coding concepts. Pupils apply their understanding by testing, debugging and evaluating their work to improve and refine digital projects.
Unit 3	<u>Video trailers – Option 1: Using devices other than iPads</u> 5 lessons Developing digital video skills through creating trailers that use special effects, transitions and editing techniques. Pupils apply their understanding by planning, producing and refining video content for a book trailer.	Unit 4	<u>Google: Creating media: Website design</u> 5 lessons Exploring the features of Google Sites and learning how websites are planned, created and organised for different audiences and purposes. Pupils collaborate to design web pages, create their own websites and evaluate how effectively their content communicates information.

Year 3/4

Unit 5	<u>Programming 1: Further coding with Scratch</u> 5 lessons Designing and programming a game using variables, sensors and 'if' statements to control outcomes and interactions. Pupils debug and evaluate their projects to improve functionality, refine gameplay and develop more effective game designs.	Unit 6	<u>Programming 2: Computational thinking</u> 5 lessons Developing computational thinking skills through decomposition, pattern recognition, abstraction and algorithm design to solve problems. Pupils apply these approaches by creating and evaluating a Scratch project, reflecting on how computational thinking improves digital solutions and programming outcomes.
Unit 7	<u>Online safety: Year 3</u> 5 lessons Further exploring online safety, including the difference between beliefs, opinions and facts, privacy settings, protecting personal information and responding to upsetting online content. Pupils identify safe online behaviours and learn how to make responsible choices when using social media and digital platforms.		

Suggested long-term plan: Computing

Overview - Upper key stage 2

Year 5/6

Unit 1	<u>Programming 2: BBC micro:bit</u> 5 lessons Exploring how to program the BBC micro:bit by tinkering with software, creating animations and investigating coding structures. Pupils apply their understanding by designing and programming digital tools, including a pedometer and scoreboard, for specific purposes.	Unit 2	<u>Data handling: Mars Rover 1</u> 5 lessons Exploring how the Mars Rover collects, stores and transmits data back to Earth using binary code and computer systems. Pupils investigate computer architecture, learn how binary represents different types of data and apply their understanding to read and interpret binary numbers and text.
Unit 3	<u>Skills showcase: Mars Rover 2</u> 5 lessons Investigating how computers represent and process digital images through pixels, binary code and image compression. Pupils apply their understanding by creating pixel artwork, experimenting with 3D design tools and designing a functional Mars Rover tyre using Tinkercad.	Unit 4	<u>Computing systems and networks: Bletchley Park and the history of computers</u> 5 lessons Investigating secret codes, secure passwords and the history of computers to understand how technology and cybersecurity have developed over time. Pupils research past computers before designing a computer of the future and creating an audio advert to present their ideas.

Year 5/6

Unit 5	<u>Computing systems and networks: Exploring AI</u> 5 lessons Exploring what AI is and how it generates text, images and code. Pupils learn about creating and refining prompts to improve AI responses while also considering the ethical implications of AI and its potential to replace human roles.	Unit 6	<u>Skills showcase: Inventing a product</u> 5 lessons Designing an electronic product using coding, debugging and computer-aided design to understand how digital technologies support product development. Pupils also create a website and video advert to present and promote their product ideas.
Unit 7	<u>Online safety: Year 5</u> 5 lessons Investigating online communication, personal privacy and the impact technology can have on health and wellbeing. Pupils explore how apps access information, develop strategies to stay safe online and learn how to manage their online reputation and address bullying.		

Suggested long-term plan: Computing

Overview - Key stage 1

Year 1/2

Unit 1	<u>Programming 2: Bee-Bot</u> 5 lessons Exploring programming through the use of a Bee-Bot, including its functions and how commands can be used to control movement. Pupils apply their understanding by creating a world for a Bee-Bot to explore, producing a video about its capabilities and programming Bee-Bots to tell a story.	Unit 2	<u>Creating media: Digital imagery</u> 7 lessons Developing creativity and imagination through planning a miniature adventure story and capturing it using photography techniques. Pupils enhance photographs using editing tools, combine images from different sources and apply their skills to create a high-quality photo collage showcase.
Unit 3	<u>Data handling: Introduction to data</u> 5 lessons Exploring what data is, how it can be represented and why it is useful in everyday life and computing. Pupils investigate different ways data can be gathered and recorded by humans and computers before applying their understanding to organise and interpret information.	Unit 4	<u>Programming 2: MakeCode</u> 5 lessons Exploring how to use 'MakeCode' by investigating what different programming blocks do and how they control outcomes. Pupils apply their understanding by planning, building and testing their own program.

Unit 5	<u>Creating media: Stop motion: Using tablets</u> 5 lessons Creating simple animations, storyboarding creative ideas and decomposing a story into small action steps.	Unit 6	<u>Data handling: International Space Station</u> 5 lessons Exploring how astronauts survive on the International Space Station, including how data is collected, used and displayed through sensor systems and monitoring equipment. Pupils also consider habitable planets, how people live and work in space and how space exploration can benefit life on Earth.
Unit 7	<u>Online safety: Year 2</u> 4 lessons Investigating online safety, including what happens to information posted online, how to keep personal information private and how permission is given or denied in online spaces. Pupils apply their understanding by identifying safe online behaviours and making responsible choices about sharing information online.		

Suggested long-term plan: Computing

Overview - Lower key stage 2

Year 3/4

Unit 1	<u>Computing systems and networks 1: Networks</u> 5 lessons Developing an understanding of computer networks by learning how devices communicate and share information. Pupils investigate network components and explore real-world examples to apply their understanding of how information is transferred between connected devices.	Unit 2	<u>Data handling: Comparison cards databases</u> 7 lessons Exploring the concepts of sorting and filtering by learning about records, fields and data. Pupils apply their understanding by sorting and filtering data to plan a holiday.
Unit 3	<u>Computing systems and networks 3: Journey inside a computer</u> 5 lessons Exploring how computers work by role-playing different computer parts and creating paper models of computer systems. Pupils also investigate similarities and differences between devices to develop their understanding of computer functions and components.	Unit 4	<u>Google: Computing systems and networks: Collaborative learning</u> 5 lessons Developing collaborative working skills through using online software to create and share digital content. Pupils apply their understanding by contributing to shared documents, creating presentations and forms and using shared spreadsheets to organise and explore data.

Year 3/4

Unit 5	<u>Data handling: Investigating weather</u> 5 lessons Investigating how weather data is gathered, recorded and used to create forecasts through researching and using spreadsheets to organise information. Pupils design a weather station, collect and present data, and create their own weather forecast using tablets or digital cameras.	Unit 6	<u>Online safety: Year 4</u> 5 lessons Developing online research skills by learning how to search for information and judge its probable accuracy. Pupils identify adverts and pop-ups, investigate how technology can be distracting and make informed choices about using digital content safely and effectively.
Unit 7	15 lessons		

Suggested long-term plan: Computing

Overview - Upper key stage 2

Year 5/6

Unit 1	<u>Programming 1: Scratch: Music</u> 5 lessons Developing programming and music skills through creating digital sounds, beats and melodies using coding techniques. Pupils apply their understanding by using nested loops to create rhythms and compose a soundtrack with layered musical patterns.	Unit 2	<u>Stop-motion animation – Option 1: Using Stop Motion Studio</u> 5 lessons Developing an understanding of animation by exploring stop-motion techniques and how moving images are created. Pupils plan, create and edit their own stop-motion project, applying digital skills to produce a finished animation.
Unit 3	<u>Computing systems and networks: Search engines</u> 5 lessons Investigating how search engines work and developing effective searching skills to find relevant and accurate information online. Pupils evaluate the reliability of online content, explore how web crawlers organise information and apply their understanding by creating an informative poster.	Unit 4	<u>Data handling 1: Big Data 1</u> 5 lessons Exploring how data is transmitted and used in everyday technology through barcodes, QR codes, infrared communication and RFID systems. Pupils investigate real-world applications of digital data before collecting, analysing and evaluating transport and tracking information.

Year 5/6

Unit 5	<u>Data handling 2: Big Data 2</u> 5 lessons Investigating how data is transferred, collected and used in connected technologies, including the Internet of Things and smart systems. Pupils explore how data can improve everyday life, then design and present ideas for transforming a school into a smart school.	Unit 6	<u>Intro to Python</u> 5 lessons Exploring programming through Logo and Python while learning how loops, nested loops and random numbers control digital outcomes. Pupils experiment with coding techniques and apply their understanding to create algorithmic artwork inspired by Piet Mondrian.
Unit 7	<u>Online safety: Year 6</u> 6 lessons Examining online safety and wellbeing, including how online interactions, sharing content and digital behaviour can affect emotions and reputation. Pupils learn how to manage passwords, report online bullying and make responsible decisions about what they click and share.		