

# 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:<br>Improving mouse skills           | Programming 1: Commands<br>unplugged                          | Skills showcase: Rocket to the moon                            | Computing systems and networks 1:<br>What is a computer?                          | Programming 1: Algorithms and<br>debugging      | Computing systems and networks 2:<br>Word processing | Online safety: Year 1 |
| Year 3/4 | Microsoft Office 365: Computing<br>systems and networks 2: Emailing | Programming: Scratch                                          | Video trailers – Option 1: Using<br>devices other than iPads   | Google: Creating media: Website<br>design                                         | Programming 1: Further coding with<br>Scratch   |                                                      | 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:<br>Bletchley Park and the history of<br>computers | Computing systems and networks:<br>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-Bots                                             | Creating media: Digital imagery                               | Data handling: Introduction to data                            | Option 1: Programming 2: MakeCode                                                 | Creating media: Stop motion: Using<br>tablets   | Data handling: International Space<br>Station        | Online safety: Year 2 |
| Year 3/4 | Computing systems and networks 1:<br>Networks                       | Data handling: Comparison cards<br>databases                  | Computing systems and networks 3:<br>Journey inside a computer | Google: Computing systems and<br>networks: Collaborative learning                 | Data handling: Investigating weather            | Skills showcase: HTML                                | Online safety: Year 4 |
| Year 5/6 |                                                                     | Stop-motion animation – Option 1:<br>Using Stop Motion Studio | Computing systems and networks:<br>Search engines              | Data handling 1: Big Data 1                                                       | Data handling 2: Big Data 2                     | Programming: Exploring Python                        | Online safety: Year 6 |

# Suggested long-term plan: Computing

Overview - Key stage 1

Year 1/2

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| <b>Unit 1</b> | <p><u>Computing systems and networks: Improving mouse skills</u></p> <p>5 lessons</p> <p>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.</p> | <b>Unit 2</b> | <p><u>Programming 1: Commands unplugged</u></p> <p>5 lessons</p> <p>Exploring commands and instructions through a range of unplugged games and activities while developing an understanding of key programming vocabulary. Pupils apply their learning by following and creating simple instructions to predict and control outcomes.</p> |
| <b>Unit 3</b> | <p><u>Skills showcase: Rocket to the moon</u></p> <p>5 lessons</p> <p>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.</p>                          | <b>Unit 4</b> | <p><u>Computing systems and networks 1: What is a computer?</u></p> <p>5 lessons</p> <p>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.</p> |

## Year 1/2

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| <b>Unit 5</b> | <p><u>Programming 1: Algorithms and debugging</u></p> <p>5 lessons</p> <p>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.</p>                                                                                                   | <b>Unit 6</b> | <p><u>Computing systems and networks 2: Word processing</u></p> <p>5 lessons</p> <p>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.</p> |
| <b>Unit 7</b> | <p><u>Online safety: Year 1</u></p> <p>5 lessons</p> <p>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.</p> |               |                                                                                                                                                                                                                                                                                                                                                                                    |

# Suggested long-term plan: Computing

Overview - Lower key stage 2

Year 3/4

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| <b>Unit 1</b> | <p><u>Microsoft Office 365: Computing systems and networks 2: Emailing</u></p> <p>5 lessons</p> <p>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.</p> | <b>Unit 2</b> | <p><u>Programming: Scratch</u></p> <p>5 lessons</p> <p>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.</p>                                                                        |
| <b>Unit 3</b> | <p><u>Video trailers – Option 1: Using devices other than iPads</u></p> <p>5 lessons</p> <p>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.</p>                                            | <b>Unit 4</b> | <p><u>Google: Creating media: Website design</u></p> <p>5 lessons</p> <p>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.</p> |

## Year 3/4

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| <b>Unit 5</b> | <p><u>Programming 1: Further coding with Scratch</u></p> <p>5 lessons</p> <p>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.</p>                                                         | <b>Unit 6</b> | 0 lessons |
| <b>Unit 7</b> | <p><u>Online safety: Year 3</u></p> <p>5 lessons</p> <p>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.</p> |               |           |

# Suggested long-term plan: Computing

Overview - Upper key stage 2

Year 5/6

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| <b>Unit 1</b> | <p><u>Programming 2: BBC micro:bit</u></p> <p>5 lessons</p> <p>Investigating how to program the BBC micro:bit by creating interactive projects using sensors, variables and conditional statements. Pupils experiment with variables, apply conditional statements and develop an understanding of how coding brings digital devices to life.</p>  | <b>Unit 2</b> | <p><u>Data handling: Mars Rover 1</u></p> <p>5 lessons</p> <p>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.</p>                                |
| <b>Unit 3</b> | <p><u>Skills showcase: Mars Rover 2</u></p> <p>5 lessons</p> <p>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.</p> | <b>Unit 4</b> | <p><u>Computing systems and networks: Bletchley Park and the history of computers</u></p> <p>5 lessons</p> <p>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.</p> |

## Year 5/6

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| <b>Unit 5</b> | <p><u>Computing systems and networks: Exploring AI</u></p> <p>5 lessons</p> <p>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.</p>          | <b>Unit 6</b> | <p><u>Skills showcase: Inventing a product</u></p> <p>5 lessons</p> <p>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.</p> |
| <b>Unit 7</b> | <p><u>Online safety: Year 5</u></p> <p>5 lessons</p> <p>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.</p> |               |                                                                                                                                                                                                                                                                                                                            |

# Suggested long-term plan: Computing

## Overview - Key stage 1

### Year 1/2

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| <b>Unit 1</b> | <p><u>Programming 2: Bee-Bots</u></p> <p>5 lessons</p> <p>Exploring commands, instructions and errors through programming a Bee-Bot and learning how sequences control movement. Pupils practise debugging and apply logical thinking to predict, test and improve simple programs.</p>                                                                 | <b>Unit 2</b> | <p><u>Creating media: Digital imagery</u></p> <p>7 lessons</p> <p>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.</p> |
| <b>Unit 3</b> | <p><u>Data handling: Introduction to data</u></p> <p>5 lessons</p> <p>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.</p> | <b>Unit 4</b> | <p><u>Option 1: Programming 2: MakeCode</u></p> <p>5 lessons</p> <p>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.</p>                                                                                    |

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| <b>Unit 5</b> | <p><u>Creating media: Stop motion: Using tablets</u></p> <p>5 lessons</p> <p>Creating simple animations, storyboarding creative ideas and decomposing a story into small action steps.</p>                                                                                                                                                                                             | <b>Unit 6</b> | <p><u>Data handling: International Space Station</u></p> <p>5 lessons</p> <p>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.</p> |
| <b>Unit 7</b> | <p><u>Online safety: Year 2</u></p> <p>4 lessons</p> <p>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.</p> |               |                                                                                                                                                                                                                                                                                                                                                                                           |

# Suggested long-term plan: Computing

Overview - Lower key stage 2

Year 3/4

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| <b>Unit 1</b> | <p><u>Computing systems and networks 1: Networks</u></p> <p>5 lessons</p> <p>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.</p>     | <b>Unit 2</b> | <p><u>Data handling: Comparison cards databases</u></p> <p>7 lessons</p> <p>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.</p>                                                                                                                      |
| <b>Unit 3</b> | <p><u>Computing systems and networks 3: Journey inside a computer</u></p> <p>5 lessons</p> <p>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.</p> | <b>Unit 4</b> | <p><u>Google: Computing systems and networks: Collaborative learning</u></p> <p>5 lessons</p> <p>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.</p> |

## Year 3/4

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| <b>Unit 5</b> | <p><u>Data handling: Investigating weather</u></p> <p>5 lessons</p> <p>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.</p> | <b>Unit 6</b> | <p><u>Skills showcase: HTML</u></p> <p>5 lessons</p> <p>Investigating how websites are created by exploring HTML and CSS code and learning how markup language controls the layout and appearance of web pages. Pupils edit text, images and page design before remixing and adapting a live website using their coding skills.</p> |
| <b>Unit 7</b> | <p><u>Online safety: Year 4</u></p> <p>5 lessons</p> <p>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.</p>                           |               |                                                                                                                                                                                                                                                                                                                                     |

# Suggested long-term plan: Computing

Overview - Upper key stage 2

Year 5/6

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| <b>Unit 1</b> | 0 lessons                                                                                                                                                                                                                                                                                                                                                                         | <b>Unit 2</b> | <u>Stop-motion animation – Option 1: Using Stop Motion Studio</u><br><br>5 lessons<br><br>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.               |
| <b>Unit 3</b> | <u>Computing systems and networks: Search engines</u><br><br>5 lessons<br><br>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. | <b>Unit 4</b> | <u>Data handling 1: Big Data 1</u><br><br>5 lessons<br><br>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

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| <b>Unit 5</b> | <p><u>Data handling 2: Big Data 2</u></p> <p>5 lessons</p> <p>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.</p>   | <b>Unit 6</b> | <p><u>Programming: Exploring Python</u></p> <p>5 lessons</p> <p>Exploring text-based programming with Python, pupils learn how syntax and nested loops control program outcomes and develop their ability to identify and fix syntax and logic errors through careful debugging.</p> |
| <b>Unit 7</b> | <p><u>Online safety: Year 6</u></p> <p>6 lessons</p> <p>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.</p> |               |                                                                                                                                                                                                                                                                                      |