

# Progression in Computing

| National Curriculum   | Possibilities<br><i>This driver helps pupils to build aspirations and identify available opportunities for their future lives</i>   | Initiative<br><i>This driver helps pupils to grow as independent learners and develops resourcefulness in a variety of situations</i> | Community & Environment<br><i>This driver develops a sense of belonging and nurtures curiosity about, and empathy for, local, national and global issues</i>   | Health & Well-being<br><i>This driver underpins every aspect of our curriculum. It helps to guide children's life choices and nurtures emotional growth</i>  |   |  |
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|   | Digitally literate<br>Use, express and develop ideas through ICT  | Decision making<br>Logical reasoning – predicting behaviour of simple programmes  | Active participation in a digital world<br>Collaboration   | Keeping safe online<br>Screen time management  |   |  |
|   | Pupils should be taught to: <ul style="list-style-type: none"> <li>- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>- create and debug simple programs</li> <li>- use logical reasoning to predict the behaviour of simple programs</li> <li>- use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>- recognise common uses of information technology beyond school</li> <li>- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</li> </ul> |   |  |  |   |  |
|   | Year 1  |   |  | Year 2   |   |  |
|   | Autumn  | Spring  | Summer   | Autumn   | Spring  | Summer   |
| 1   | <b>Unit 1.1 – Online Safety and Exploring Purple Mash</b><br><br><b>Unit 1.4 – Lego Builders</b>  | 1.5 Maze Explorers  | <b>Unit 1.6 – Animated Story Books</b>   | Unit 2.1 Coding  | Unit 2.4 Questioning  | <b>Unit 2.6 Creating Pictures (Cont)</b><br><b>Unit 2.7 Making Music</b>   |
| 2   | <b>Unit 1.3 – Pictograms</b><br><br><b>Unit 1.2 – Sorting and Grouping</b><br><br><b>Mash Cams – make Christmas stories</b>   | Unit 1.7 - Coding   | <b>Unit 1.8 – Spreadsheets</b><br><br><b>Unit 1.9 – Technology Outside School</b>  | <b>Unit 2.2 Online Safety</b><br><b>Unit 2.3 Spreadsheets</b>  | <b>Unit 2.5 Effective Searching</b><br><b>Unit 2.6 Creating Pictures</b>  | Unit 2.8 Presenting Ideas  |
| <b>Key Skills Information Technology</b><br>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br><br>Outcome:<br>Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources. | <b>Unit 1.2</b><br>Programs – 2DIY<br>Children can sort and group items using a range of criteria.<br><b>Outcome:</b><br>Children can sort various items offline using a variety of criteria. Children have used Purple Mash activities to sort various items online using a variety of criteria.<br><br><b>Unit 1.3</b><br>Programs – 2Count<br>Children understand that data can be represented in picture format. They contribute to a class pictogram and use a pictogram to record the results of an experiment.   |   | <b>Unit 1.6</b><br>Programs – 2Create A Story<br>Children understand the differences between traditional books and Ebooks. Children can explore saving a created page, add animation or sound effects to a picture, add a background to the story and save the additional changes by overwriting the file. Children demonstrate a good understanding of all the tools they have use in 2Create a Story and use these successfully to create their own story.<br><b>Outcome:</b><br>Children to use a range of features to create and edit an | <b>Unit 2.3</b><br><b>Program - 2Calculate</b><br>To review and revise the vocabulary and work done in 2Calculate in year 1. To use copying, cutting and pasting shortcuts, to use totalling tools and solve simple puzzles. To explore the capabilities of a spreadsheet, add and edit data in a table layout and use the data to manually create a block graph.<br><br><b>Outcomes:</b><br>Children can explain terminology including rows and columns.<br>Children can use tools in a spreadsheet to automatically create a total, solve a puzzle | <b>Unit 2.4</b><br><b>Programs – 2Question &amp; 2Investigate</b><br>To show that the information provided on pictograms is of limited use beyond answering simple questions. To use yes/no questions to separate information. To construct a binary tree to separate different items and use a binary tree to answer questions. To use a database to answer more complex search questions. To use the Search tool to find information.<br><b>Outcome:</b><br>Children understand what is meant by a binary tree. Children understand that pictograms and binary trees provide limited information. | <b>Unit 2.6</b><br><b>Program – 2PaintAPicture</b><br>Continued from Spring 2<br><br><b>Unit 2.7</b><br><b>Program – 2Sequence</b><br>To be introduced to making music digitally using 2Sequence. Then explore, edit, combine sounds and sounds to a tune to improve it. Children to upload a sound from a bank of sounds, record their own sound and upload it into the Sounds section and then create their own tune using the sounds which they have added to the Sounds section.<br><b>Outcome:</b><br>Children understand what 2Sequence is and how it works, use the different sounds within |

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| <p><b>To collect</b></p> | <p><b>Outcome:</b><br/>Children can interpret and discuss the information in a pictogram, as well as contributing to the collection of class data. Children can use date and the 2Count program to create their own pictogram.</p> |  | <p>E-storybook and share it on a display board.</p> <p><b>Unit 1.8</b><br/><b>2Calculate</b></p> <p>Children will understand what a spreadsheet looks like, navigate the spread sheet and enter data. Children will use clipart to add images to a spreadsheet, use the 'move cell' and 'lock' tools and use the 'speak' and 'count' tools in 2Calculate to count items.</p> <p><b>Outcome:</b><br/>Children will be able to navigate a spreadsheet and explain different features. Children will be able to add data and clip art to cells. Children will be able to 'move' cells and use the 'lock' feature to prevent any further changes. Children will be an to use the count tool to find the total of items.</p> | <p>or help calculate. Children can use spreadsheet data to create a graph.</p> | <p>Children have used and designed a binary tree to sort pictures of children. Children understand what is meant by a database. Children use a database to answer simple and more complex search questions.</p> <p><b>Unit 2.6</b><br/><b>Program – 2PaintAPicture</b><br/>Children can explore 2Paint A Picture and use a template and the influence of different artistic styles to create different types of art. Styles include; impressionism, pointillism (Seurat, lines (Piet Mondrian, patterns (William Morris) and Collage.</p> <p><b>Outcome:</b><br/>Children can describe the main features of different artistic styles. Children can create their own work using the features and tools in 2Paint a Picture, including combining more than one effect to enhance their work.</p> | <p>2Sequence to create a tune. Children will have explored how to speed up and slow down tunes, understand what happens to the tune when sounds are moved and added sounds to a tune they have already created to change it. Children have created, uploaded and used their own recorded sound in their work.</p> <p><b>Unit 2.8</b><br/><b>Programs – Various</b><br/>Children will explore how a story can be presented in different ways, make a quiz about a story or class topic, make a fact file on a non-fiction topic and make a presentation to the class.</p> <p><b>Outcome:</b><br/>Children will know that digital content can be represented in many forms. Children can talk about their work and make improvements to solutions based on feedback received. Children can use a variety of software to manipulate and present digital content and information. Children can collect, organise and present data and information in digital content.<br/>Children can create digital content to achieve a given goal by combining software packages.</p> |
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| <p><b>Digital Literacy</b></p> <p><b>To communicate &amp; To connect</b></p> | <p><b>Unit 1.1 Programs – Various</b><br/>           Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.<br/> <b>Outcome:</b><br/>           Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.</p> |  | <p><b>Unit 1.9 Programs – Various</b><br/>           Recognise common uses of information technology beyond school.<br/> <b>Outcome:</b><br/>           Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.</p> | <p><b>Unit 2.2 Programs – Various</b><br/>           Children can refine searches using filters, understand more about the internet being global and that what they do online leaves a digital footprint. Children can share work electronically, use a simple email system and can respond appropriately in a simulated communication. Children can identify the steps that can be taken to keep personal data and hardware secure<br/> <b>Outcome:</b><br/>           Children use the search facility to refine sources. Children understand Email and Display Boards as way of sharing information and ways that there are controls to keep us and our information safe online, but how to get help and support if they need it. Children can explain what a digital footprint is and give examples of things that they would not want to be in their digital footprint.</p> | <p><b>Unit 2.5 Programs – Browser</b><br/>           Children can understand the terminology associated with the Internet and searching and gain a better understanding of searching the Internet.<br/> <b>Outcome:</b><br/>           Children can recall the meaning of key Internet and searching terms. Children can identify the basic parts of a web search engine search page, read a web search results page and search the Internet for answers to a quiz.</p> |  |
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| <p><b>Computer Science</b></p> <p><b>To code</b></p> | <p><b>Unit 1.4</b><br/><b>Programs – 2DIY</b><br/>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br/><b>Outcome:</b><br/>Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand</p>                               | <p><b>Unit 1.5</b><br/><b>Maze explorers</b><br/>Create and debug simple programs.<br/><b>Outcome:</b><br/>Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code.</p> <p><b>Unit 1.7</b><br/><b>Coding</b><br/><b>Programs – 2Code</b><br/>Use logical reasoning to predict the behaviour of simple programs.<br/><b>Outcome:</b><br/>When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program.</p> |  | <p><b>Unit 2.1</b><br/><b>Program - 2Code</b><br/>To build on knowledge from Year 1. To create a program using a given design and controls. To understand the need to test and debug a program.<br/><b>Outcome:</b><br/>Children can describe the algorithms they created. Children can plan algorithms with different controls. Children can explain what debugging is and can 'fix' an algorithm by debugging.</p>  |  |  |
| <p><b>Vocabulary</b></p>                             | <ul style="list-style-type: none"> <li>• Activities, criteria, describe, equal, groups, less / more than &amp; sort.</li> <li>• Collect data, pictogram, record results, title, totals &amp; visual.</li> <li>• Alert, avatar, button, device, file name, filter, home screen, icon, login / out, menu, notification, password, private, saving, search, shared folder, textbox, tool bar, tools &amp; typing.</li> <li>• Algorithm, code, computer, debugging, instructions, machine,</li> </ul> | <ul style="list-style-type: none"> <li>• Algorithm, challenge, command, delete, direction, instruction, left, right, route, undo &amp; unit.</li> <li>• Action, algorithm, background, click, code / code blocks, coding, code view, command, debug / debugging, design view, event, execute, instruction, object, output, plan, programmer, properties, run, scale, scene, software, sound &amp; when clicked.</li> </ul>   | <ul style="list-style-type: none"> <li>• Animation, background, category, clip-art gallery, copy, drop-down menu, E-book, edit, eraser, features, font, sound, overwrite, paint tools, paste, play mode, redo, save, sound effect text, undo &amp; voice recording.</li> <li>• Button, calculation, cell, clip-art, column, count tool, data, delete, image, lock cell, move cell, row, select, speak</li> </ul> | <ul style="list-style-type: none"> <li>• Action, algorithm, bug, events, command, execute, implement, interval, output, predict, properties, run, sequence, test &amp; timer.</li> <li>• Attachment, digital footprint, display board, email, filter, internet, personal / private information, protection, reply, secure &amp; share / sharing.</li> <li>• Block graph, cell, column, count tool, data, equals / equals tool, image value, row &amp; table.</li> </ul> | <ul style="list-style-type: none"> <li>• Avatar, binary tree, data / database, field, information, pictogram, question, record, search &amp; sort.</li> <li>• Browser, device, digital footprint, domain, internet, network, search engine, URL, web address / page / site &amp; world wide web.</li> <li>• Art, clip art, dilute, fill, horizontal, impressionism, line, palette, parallel, pointillism, repeating pattern, rotated, stamps, style, surrealism, symmetry &amp; vertical.</li> </ul> | <ul style="list-style-type: none"> <li>• Art, clip art, dilute, fill, horizontal, impressionism, line, palette, parallel, pointillism, repeating pattern, rotated, stamps, style, surrealism, symmetry &amp; vertical.</li> <li>• Bars, beat, compose, note, tune, repeat, sound effect, soundtrack, speed, tempo &amp; volume.</li> <li>• E-book, fact file, fiction, mind map, multiple-choice, node, non-fiction, presentation &amp; quiz.</li> </ul> |

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|  | program, recipe & sequence.  |   | tool, spreadsheet & value.<br>• Computer & technology.  |  | style, surrealism, symmetry & vertical.  |   |
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| <b>Key questions</b>   | <ul style="list-style-type: none"> <li>• In what way can we sort objects?</li> <li>• What is a password and why should we keep them safe?</li> <li>• What is a digital avatar?</li> <li>• Where is my work stored on purple mash?</li> <li>• What is an instruction?</li> <li>• Why do we need to debug code?</li> </ul> | <ul style="list-style-type: none"> <li>• What is 2Go/</li> <li>• How do I undo a mistake in 2Go?</li> <li>• What is coding?</li> <li>• Why is it useful to design before coding?</li> <li>• How can you make characters move in a 2Code program?</li> </ul> | <ul style="list-style-type: none"> <li>• What is 2Create a Story?</li> <li>• What is an animated story?</li> <li>• How can I make my story better?</li> <li>• What does a spreadsheet look like?</li> <li>• How could you use a spreadsheet to add up values?</li> <li>• How could you use the count and speak tools?</li> <li>• What is technology?</li> <li>• How does technology make our lives easier?</li> </ul> | <ul style="list-style-type: none"> <li>• What is an algorithm? Why is it useful in coding?</li> <li>• Why is it important to know there are different object types?</li> <li>• If you are good at coding, you don't need to debug. Is this true?</li> <li>• Why is a search bar useful?</li> <li>• What is an email?</li> <li>• What is meant by a digital footprint?</li> </ul> | <ul style="list-style-type: none"> <li>• How does a pictogram show information?</li> <li>• How is information organised in a binary tree?</li> <li>• How can a database help organise information?</li> <li>• How can I search the internet?</li> <li>• What are the main features of impressionism / pointillism / surrealism?</li> </ul> | <ul style="list-style-type: none"> <li>• What are the main features of impressionism / pointillism / surrealism?</li> <li>• What is meant by digital music?</li> <li>• How can I change how my music sounds?</li> <li>• What is meant by the tempo of music?</li> <li>• What do we need to think about when planning a presentation?</li> <li>• Why should I plan out my presentation?</li> </ul> |
| <b>Key resources</b>   | Purple Mash<br>Computer suite<br>iPads   | Purple Mash<br>Computer suite<br>iPads  | Purple Mash<br>Computer suite<br>iPads  | Purple Mash<br>Computer suite<br>iPads   | Purple Mash<br>Computer suite<br>iPads   | Purple Mash<br>Computer suite<br>iPads  |
| <b>Visits and Visitors</b>   |  |   |   |  |  |   |
| <b>Whole School Projects (assemblies)</b><br><br><b>Link with PSHE weeks</b> |  | E-safety day/week – scarf workshop  |   |  | E-safety day/week  |   |

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|                       | Nursery   |        |        | Reception  |        |        |
|-----------------------|---|--------|--------|--|--------|--------|
|                       | Autumn  | Spring | Summer | Autumn   | Spring | Summer |
| <b>Nursery Year A</b> | <ul style="list-style-type: none"> <li>- IWB</li> <li>- iPads</li> <li>- Bee-Bots</li> <li>- Interactive chalkboards</li> <li>- Children's mobile phones</li> </ul> |        |        | <ul style="list-style-type: none"> <li>- Desktop computer and/or laptop</li> <li>- IWB</li> <li>- Exploring 'Purple Mash'</li> <li>- iPads – White Rose Maths 1-Minute Maths, Photos/videos, Purple Mash</li> <li>- Bee-Bots</li> </ul>  |        |        |
| <b>Reception ELGs</b> |   |        |        | <p>There are no early learning goals that directly relate to computing objectives, though it is still expected that children will be introduced to appropriate technology and use it within the provision.</p> <ul style="list-style-type: none"> <li>• To show an interest in technological toys such as IWB, iPads, toys with knobs, pulleys and buttons.</li> <li>• To learn about e-safety.</li> <li>• To begin to give reasons why we need to stay safe online.</li> <li>• To know how to operate simple equipment.</li> <li>• To draw pictures on IWB and begin to change colours.</li> <li>• To use the iPad to take pictures.</li> <li>• To access, understand and interact with a range of technology within the environment.</li> <li>• To draw pictures on IWB, changing colour and pen size.</li> <li>• To use the IWB, changing games and programmes.</li> <li>• To explore how a Bee-Bot works.</li> <li>• To use the Bee-Bots and program them to go forwards and backwards.</li> <li>• To use the internet with adult supervision to find and retrieve information.</li> <li>• To log in to and type their name using a desktop computer and/or laptop.</li> </ul> |        |        |