



## COMPUTING CURRICULUM

### Our Curriculum Rationale

As a school, we have chosen to deliver the National Curriculum through the Purple Mash Computing Scheme of Work from Reception to Year 6. The scheme of work supports our teachers in delivering fun and engaging lessons which help to raise standards and allow all pupils to achieve to their full potential. We are confident that the scheme of work more than adequately meets the national vision for Computing. It also gives excellent supporting material for less confident teachers.

To ensure our curriculum is taught to develop cumulatively sufficient knowledge by the end of each Key Stage we follow the stages outlined below:

- **Declarative** knowledge for each subject is mapped from EYFS to Year 6 to ensure our children learn cumulatively sufficient knowledge by the end of each Key Stage.
- **Procedural** knowledge such as implementing a ‘repeat’ command when coding or how to perform an advanced web search is mapped from EYFS to Year 6 to enable children to apply their knowledge as skills.
- Explicit teaching of **vocabulary** is central to children’s ability to connect new knowledge with prior learning. **New vocabulary** is highlighted in red – any *vocabulary being revisited* is included in italic.
- **Spaced retrieval** practice, through questioning, quizzes and peer-explanations, further consolidates the transfer of information from working memory to long-term memory. Quizzing etc are primarily learning strategies to improve retrieval practice – the bringing of information to mind.

#### Declarative Knowledge

This is the subject knowledge and explicit vocabulary used to learn about the content. It consists of facts, rules and principles and the relationships between them. It can be described as ‘knowing that.’

#### Procedural Knowledge

This is knowledge of methods or processes that can be performed. It can be described as ‘knowing how’. It is through procedural knowledge that children gradually become more expert in their computational thinking and as creative, safe users of ICT.

### National Curriculum Key Aspects

#### Digital Literacy

The skills and knowledge required to be an effective, safe and discerning user of a range of computer systems.

#### Information Technology

How computers are used in different sectors and the methods used to create digital artefacts such as presentations, spreadsheets and videos.

#### Computer Science

The knowledge of computers and computation including system architecture, algorithms and programming.

|               | Computing Unit Focus              |                                       |   |  |                                     |  |  |                                      |  |
|---------------|-----------------------------------|---------------------------------------|---|--|-------------------------------------|--|--|--------------------------------------|--|
| <b>EYFS</b>   | <b>Unit 1</b><br>Using a computer |                                       | <b>Unit 2</b><br>All about instructions |  | <b>Unit 3</b><br>Exploring hardware |  | <b>Unit 4</b><br>Introduction to data  | Online Safety throughout             |  |
| <b>Year 1</b> | <b>Unit 1.1</b><br>Online Safety  | <b>Unit 1.2</b><br>Grouping & Sorting | <b>Unit 1.3</b><br>Pictograms           | <b>Unit 1.4</b><br>Lego Builders       | <b>Unit 1.5</b><br>Maze Explorers   | <b>Unit 1.6</b><br>Animated Storybooks | <b>Unit 1.7</b><br>Coding              | <b>Unit 1.8</b><br>Spreadsheets      | <b>Unit 1.9</b><br>Technology outside school |
| <b>Year 2</b> | <b>Unit 2.2</b><br>Online Safety  |                                       | <b>Unit 2.1</b><br>Coding               |  | <b>Unit 2.3</b><br>Spreadsheets     | <b>Unit 2.4</b><br>Questioning         | <b>Unit 2.5</b><br>Effective Searching | <b>Unit 2.6</b><br>Creating Pictures | <b>Unit 2.8</b><br>Presenting Ideas          |
| <b>Year 3</b> | <b>Unit 3.2</b><br>Online Safety  | <b>Unit 3.1</b><br>Coding             | <b>Unit 3.3</b><br>Spreadsheets         | <b>Unit 3.4</b><br>Touch Typing        | <b>Unit 3.5</b><br>Emailing         | <b>Unit 3.6</b><br>Branching Databases | <b>Unit 3.7</b><br>Simulations         | <b>Unit 3.8</b><br>Graphing          |  |
| <b>Year 4</b> | <b>Unit 4.2</b><br>Online Safety  | <b>Unit 4.1</b><br>Coding             |   | <b>Unit 4.7</b><br>Effective Searching | <b>Unit 4.8</b><br>Hardware         | <b>Unit 4.3</b><br>Spreadsheets        | <b>Unit 3.10</b><br>micro:bit          | <b>Unit 4.10</b><br>Intro to AI      |  |
| <b>Year 5</b> | <b>Unit 5.2</b><br>Online Safety  |                                       | <b>Unit 5.1</b><br>Coding               |  | <b>Unit 5.3</b><br>Spreadsheets     | <b>Unit 5.4</b><br>Databases           | <b>Unit 5.8</b><br>Word Processing     | <b>Unit 5.9</b><br>External Devices  |  |
| <b>Year 6</b> | <b>Unit 6.2</b><br>Online Safety  | <b>Unit 6.1</b><br>Coding             |   | <b>Unit 6.3</b><br>Spreadsheets        | <b>Unit 6.4</b><br>Blogging         | <b>Unit 6.5</b><br>Text Adventures     | <b>Unit 6.6</b><br>Networks            | <b>Unit 6.7</b><br>Quizzing          |  |

**National Curriculum Coverage**

| Digital Literacy  |                   | Information Technology          |   | Computer Science                       |             |                   |                   |
|---|-------------------|---------------------------------|---|--|-------------|-------------------|-------------------|
| Key Stage 1   |                   |                                 | Key Stage 2   |  |             |                   |                   |
| National Curriculum Objective   | Unit Covered      |                                 | National Curriculum Objective   | Unit Covered                           |             |                   |                   |
|   | Y1                | Y2                              |   | Y3                                     | Y4          | Y5                | Y6                |
| Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. | 1.2               | 2.1                             | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.   | 3.1                                    | 4.1         | 5.1               | 6.1               |
|   | 1.4<br>1.5<br>1.7 |                                 | Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.   | 3.10                                   |             | 5.9               |                   |
| Create and debug simple programs.   | 1.5<br>1.7        | 2.1                             | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.   | 3.1<br>3.10                            | 4.1         | 5.1<br>5.9        | 6.1               |
| Use logical reasoning to predict the behaviour of simple programs.  | 1.5<br>1.7        | 2.1                             | Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.  | 3.5                                    | 4.7<br>4.8  | 5.2               | 6.4<br>6.6<br>6.7 |
| Use technology purposefully to create, organise, store, manipulate and retrieve digital content.  | 1.3<br>1.6<br>1.8 | 2.3<br>2.4<br>2.5<br>2.6<br>2.8 | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.   | 3.2                                    | 4.2<br>4.7  | 5.2               | 6.2               |
|   |                   |                                 | Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. | 3.3<br>3.4<br>3.5<br>3.6<br>3.7<br>3.8 | 4.3<br>4.10 | 5.3<br>5.4<br>5.8 | 6.3<br>6.4<br>6.5 |
| Recognise common uses of information technology beyond school.  | 1.9               | 2.5                             | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.  | 3.2<br>3.5<br>3.7<br>3.8               | 4.2<br>4.7  | 5.2               | 6.2<br>6.4        |
| Use technology purposefully to create, organise, store, manipulate and retrieve digital content.  | 1.1               | 2.2                             |   |  |             |                   |                   |

| EYFS   | Declarative Knowledge  | Procedural Knowledge   | By the end of this unit pupils will:  | Vocabulary   | Tools       |
|--|--|--|---|--|-------------|
| <b>Unit 1</b><br><br><b>Using a computer</b><br><br><b>5 lessons</b>       | By the end of the unit pupils will <b>know that</b> : <ul style="list-style-type: none"> <li>What a keyboard is and how to locate relevant keys.</li> <li>Why we need to log in and log out.</li> <li>What a mouse is and what is used for.</li> </ul>   | By the end of the unit pupils will <b>know how to</b> : <ul style="list-style-type: none"> <li>Log in and log out of a computer.</li> <li>Use a mouse and develop basic skills such as moving and clicking.</li> <li>Use a simple online paint tool to create digital art.</li> </ul>                  | <ul style="list-style-type: none"> <li>Be able to log in and out of a computer.</li> <li>Know what a keyboard is and explain what some of the keys do.</li> <li>Know what a mouse is and use it to be able to move a cursor and click on objects.</li> <li>Use a simple online paint tool to create digital art.</li> </ul> | <b>Computer</b><br><b>Keyboard</b><br><b>Mouse</b><br><b>Letters</b><br><b>Numbers</b><br><b>Uppercase</b><br><b>Lowercase</b><br><b>Type</b><br><b>Computer safety</b><br><b>Protect</b><br><b>Password</b><br><b>Private</b> | Paint       |
| <b>Unit 2</b><br><br><b>All about instructions</b><br><br><b>5 lessons</b> | By the end of the unit pupils will <b>know that</b> : <ul style="list-style-type: none"> <li>An algorithm is a set of instructions to carry out a task in a specific order.</li> <li>Know that instructions can be 'fixed'.</li> </ul>   | By the end of the unit pupils will <b>know how to</b> : <ul style="list-style-type: none"> <li>Follow instructions as part of practical activities and games.</li> <li>Give simple instructions.</li> <li>'Debug' when instructions go wrong.</li> <li>Predict the outcome of an algorithm.</li> </ul> | <ul style="list-style-type: none"> <li>Be able to give and follow simple instructions.</li> <li>Know that instructions have to be given and followed in a particular order.</li> <li>Know that an algorithm is a set of instructions.</li> </ul>  | <b>Instruction</b><br><b>Algorithm</b><br><b>Instructional words such as:</b><br><b>walk, left, right, stand still, stop, hop etc.</b>   |             |
| <b>Unit 3</b><br><br><b>Exploring Hardware</b><br><br><b>4 lessons</b>     | By the end of the unit pupils will <b>know that</b> : <ul style="list-style-type: none"> <li>A range of technology is used in places such as homes and schools.</li> </ul>   | By the end of the unit pupils will <b>know how to</b> : <ul style="list-style-type: none"> <li>Develop familiarity with hardware and the associated vocabulary.</li> <li>Operate a camera and/or iPad and use it to take photographs.</li> <li>Take photographs that are clear.</li> </ul>             | <ul style="list-style-type: none"> <li>Name a range of technology used in home and school.</li> <li>Know how to operate a camera and/or iPad to take a picture.</li> <li>Know whether a picture is blurry or clear.</li> </ul>  | <b>Camera, ipad, tablet, lens, point, shoot, capture, picture, image, gallery, record, photograph, still, blurred, clear</b>   |             |
| <b>Unit 4</b><br><br><b>Introduction to data</b><br><br><b>4 lessons</b>   | By the end of the unit pupils will <b>know that</b> : <ul style="list-style-type: none"> <li>Items can be sorted and categorised.</li> <li>Branching databases are a way of sorting items or objects.</li> </ul>   | By the end of the unit pupils will <b>know how to</b> : <ul style="list-style-type: none"> <li>Sort and categorise objects.</li> <li>Explain how items have been sorted and categorised.</li> <li></li> </ul>  | <ul style="list-style-type: none"> <li>Be able to sort items into categories.</li> <li>Say how items have been sorted.</li> <li>Begin to understand how branching databases work.</li> </ul>  | <b>Sort, object, category, group, database, branching</b>  |             |
| <b>Online Safety</b><br><br><b>Throughout</b>                              | By the end of the unit pupils will <b>know that</b> : <ul style="list-style-type: none"> <li>It is important to keep our passwords safe.</li> <li>We can log in to systems such as the laptop and Purple Mash.</li> <li>It is important to log out when we have finished using a machine.</li> <li>We must not talk to people we don't know when using technology.</li> <li>If something upsets them, they must talk to an adult.</li> </ul> | By the end of the unit pupils will <b>know how to</b> : <ul style="list-style-type: none"> <li>Log in and out of a laptop/Purple Mash.</li> <li>Begin to know how to keep their password safe.</li> </ul>  | <ul style="list-style-type: none"> <li>Be able to log in to the computer and to Purple Mash.</li> <li>Know why they should keep their login information private.</li> <li>Know how to share their concerns.</li> </ul>  | <b>Log in, password, private, log out, stranger, trusted adult</b>   | Purple Mash |

| Year 1  | Declarative Knowledge  | Procedural Knowledge  | By the end of this unit pupils will:   | Vocabulary  | Tools  |
|---|--|---|--|---|--|
| <p><b>Unit 1.1</b><br/><b>Online Safety and Exploring Purple Mash</b></p> <p><b>4 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>It is important to log in to a site safely and the importance of keeping passwords safe.</li> <li>Many online sites, including Purple Mash, have an area for their work that only a user can access.</li> <li>An avatar is a virtual representation of them suitable for use online.</li> <li>Work can be loaded and saved in an online area in platforms children have access to.</li> <li>Online platforms, such as Purple Mash, allows users to use a search bar to find resources and tools.</li> <li>Different icons in a tools bar carry out different functions.</li> <li>Tool icons share a common design across different applications.</li> <li>It is important to log out when they have finished working as a way of securing personal accounts.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Access Purple Mash from home and school.</li> <li>Give reasons why it is important to keep a password safe and not share it with other people.</li> <li>Access their work area and save work in folders using an appropriate file name.</li> <li>Make and edit their own avatar, considering why an avatar is better than a photo for an online account.</li> <li>Locate work they have saved previously in their work folder.</li> <li>Locate the search bar and search for a given resource on Purple Mash.</li> <li>Use a variety of tools within Purple Mash.</li> <li>Add images to their work.</li> <li>Recognise the common icons for New, Open, Save, Export, Print and Share.</li> <li>Log out of a program as a way of protecting their work and stopping others using their account.</li> </ul> | <ul style="list-style-type: none"> <li>Be able to log in to the computer and to Purple Mash.</li> <li>Know why they should keep their login information private.</li> <li>Be able to save their work and know why this is important.</li> <li>Be able to access previously saved work.</li> <li>Be able to use a search bar to find specific tools.</li> </ul> | <p><b>login, password, private, home screen, work area, avatar, icon, type, save, log out, notification, device, search, filter, folders, file name, textbox, toolbar, menu, click/double click, image, clipart, keys, keyboard</b></p> | <p>Paint<br/>Projects<br/>2Connect<br/>2Count<br/>2Explore</p> |
| <p><b>Unit 1.2</b><br/><b>Grouping and Sorting</b></p> <p><b>2 lessons</b></p>                    | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Items can be sorted using a range of criteria. When sorting items, a logical process should be used.</li> <li>Computer programs need clear instructions, in steps, to follow.</li> <li>The instructions written for a computer program are called algorithms.</li> <li>Humans can follow algorithms to sort items such as shapes, just as computer programs can.</li> <li>Computers can be used as a way of sorting on screen objects.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Identify criteria that can be used to sort items into two groups.</li> <li>Explain how items have been sorted.</li> <li>Follow a human algorithm to sorting shapes.</li> <li>Follow a computer program algorithm checking shapes have been sorted correctly.</li> <li>Open a sorting activity within Purple Mash and understand the layout.</li> <li>Identify what each criterion container is.</li> <li>Sort objects into the correct criterion container.</li> <li>Recognise some objects may fit into an overlap criterion.</li> </ul>  | <ul style="list-style-type: none"> <li>Be able to apply a logical process when sorting and grouping a range of objects.</li> <li>Be able to sort objects into clearly defined groups within 2DIY.</li> </ul>   | <p><b>sort, criteria, describe, more than, less than, equal, groups, algorithm</b></p>  | <p>2DIY</p>  |
| <p><b>Unit 1.3</b><br/><b>Pictograms</b></p> <p><b>3 lessons</b></p>                              | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Data is a collection of information, used to help answer questions.</li> <li>A pictogram is a visual way of representing data.</li> <li>We can ask questions as a way of interrogating data in pictograms.</li> <li>Programs such as 2Count enable people to create pictograms on a computer.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Collect data on a common theme such as how children travel to school.</li> <li>Recognise that there are efficient ways of collecting data such as writing it down or entering it into a computer program.</li> <li>Represent data collected as a class using physically created pictograms.</li> <li>Interrogate a pictogram by thinking of questions that we would like answers to.</li> <li>Use 2Count as a tool to create pictograms</li> <li>Increase or decrease amounts of items from a column by using the plus or minus buttons.</li> <li>Change an image representing a piece of data.</li> <li>Create a suitable title for a pictogram and save their work.</li> </ul>   | <ul style="list-style-type: none"> <li>Know that collected data can be presented in picture format.</li> <li>Be able to use 2Count to present class data in a pictogram.</li> <li>Be able to use appropriate images within a pictogram.</li> <li>Be able to ask questions about the data they have presented.</li> </ul>                                       | <p><b>data, pictogram, visual, title, collect, record, compare, totals</b></p>  | <p>2Count</p>  |

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| <p><b>Unit 1.4</b><br/><b>Lego Sorters</b></p> <p><b>3 lessons</b></p>   | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>To achieve a specific effect when building something, accurate instructions must be followed.</li> <li>Computer programs need precise instructions to follow, and these are called algorithms. If instructions are vague, outcomes will vary for any given task.</li> <li>The order of instructions for a task affects the results.</li> <li>Correcting errors in an algorithm or program is called debugging.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Give clear, precise and concise building instructions for someone to follow.</li> <li>Recognise how important it is to have clear, precise and concise instructions and the implications of this.</li> <li>Open a painting activity on Purple Mash.</li> <li>Follow a simple instruction as well as a more detailed set and discuss the different outcomes.</li> <li>Explore the possible outcomes of following incorrectly sequenced instructions.</li> <li>Find simple errors in a simple algorithm and correct the algorithm sequence by re-ordering it.</li> <li>Recognise when an algorithm has been debugged.</li> </ul>   | <ul style="list-style-type: none"> <li>Be able to follow and give clear and precise instructions.</li> <li>Know that an algorithm is a set of instructions.</li> <li>Know that a computer program turns an algorithm into code that the computer can understand.</li> <li>Be able to work out what is wrong when the steps are out of order in instructions.</li> <li>Know that fixing instructions given to a computer is called debugging.</li> </ul> | <p><b>instructions, program, machine, computer, debug, code, sequence</b></p> <p>algorithm</p>                                 | <p>Paint Projects<br/>2Quiz</p> |
| <p><b>Unit 1.5</b><br/><b>Maze Explorers</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>You can move a character (turtle) within specific computer programs around a computer screen such as 2Go by using direction keys. When a direction key is used it is known as a command.</li> <li>On screen direction keys can have eight possible directions which includes diagonal movements.</li> <li>Number keys can be combined with direction keys to give a program more accurate instructions and avoid less command clicks. Each square on a grid relates to 1 unit and that when using number keys this should be referenced.</li> <li>Lists can be made with directional instructions within 2Go and these are known as algorithms.</li> <li>These lists can be changed to improve the instructions which is known as debugging.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Open 2Go and be familiar with its environment.</li> <li>Use the direction keys to make a character (turtle) on the screen move in different directions.</li> <li>Make use of diagonal key commands when moving a character to help move the character to a desired location with the least number of commands.</li> <li>Combine diagonal commands with standard four direction commands and number keys to efficiently move a character to a desired location.</li> <li>In 2Go use the direction keys combined with number keys to get an object to a specific place on a screen.</li> <li>Reference an onscreen grid with number keys when creating commands.</li> <li>Formulate a list of instructions to move the character from the start to end point.</li> <li>Drag instructions into the algorithm box.</li> <li>Run the instructions and test they achieve the correct result.</li> <li>Debug by modifying the instructions so that the character moves to the correct location.</li> <li>Make use of the undo button to help with changes to commands.</li> <li>Use the extend algorithm button when more than five commands are needed.</li> </ul> | <ul style="list-style-type: none"> <li>Be able to move a character in 2Go using direction keys.</li> <li>Be able to anticipate where a character might end up.</li> <li>Be able to create a simple algorithm.</li> <li>Be able to debug an algorithm.</li> <li>Know that commands can be changed using the undo button.</li> </ul>  | <p><b>direction forwards backwards left right keys challenge undo rewind route delete diagonal</b></p> <p>algorithm, debug</p> | <p>2Go</p>                      |
| <p><b>Unit 1.6</b><br/><b>Animated Storybooks</b></p>                    | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>What an e-book is.</li> <li>Images can be created within e-book software.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Identify 2Create a Story as an e-book creator tool.</li> </ul>   | <ul style="list-style-type: none"> <li>Know how an e-book is different to a traditional book.</li> </ul>  | <p><b>e-book, sound, undo, redo, paint tools, text, overwrite</b></p>  | <p>2Create a story</p>          |

|   |  |   |   |  |                   |
|---|--|---|---|--|-------------------|
| <p><b>5 lessons</b></p>                                     | <ul style="list-style-type: none"> <li>• Effects such as animations, sound effects and voice recordings can be included in e-books.</li> <li>• E-book software allows pages to be added and overwriting of work.</li> <li>• Features such as backgrounds, font and text sizes can be changed to suit content and audience.</li> <li>• The copy and paste feature can speed up creation of additional pages.</li> </ul>   | <ul style="list-style-type: none"> <li>• Open 2Create a Story and explain what the common tools such as eraser, undo/redo do and the textured pens.</li> <li>• Save their work and open previously saved work from within 2Create a Story.</li> <li>• Use tools such as animation, sound effect, voice recordings and clip art within their e-book.</li> <li>• Overwrite any work that was done previously if needed.</li> <li>• Add additional pages and speed this up using the copy and paste function.</li> <li>• Modify copied content.</li> <li>• Change backgrounds, font and text size.</li> </ul>  | <ul style="list-style-type: none"> <li>• Be able to use 2Create a story to create an interactive story.</li> <li>• Know how to change font, text size and backgrounds.</li> <li>• Be able to change images and adding animations and sound.</li> <li>• Be able to copy and paste pages to speed up the creation of their e-book.</li> </ul>   | <p><b>animation, play mode, sound effect, voice recording, drop-down menu, category, background, font, copy, paste, features, edit, audience save, clip art</b></p>  |                   |
| <p><b>Unit 1.7 Coding</b></p> <p><b>6 lessons</b></p>       | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Tasks can be given to people and computers by using instructions.</li> <li>• <b>Recall</b> that computer programs work by following instructions called code known as algorithms.</li> <li>• There are objects and action code block in the 2Code environment and that you can make a simple program using these.</li> <li>• Each single instruction is called a command.</li> <li>• An event is something that makes a block of code run such as a user pressing a key or clicking a screen.</li> <li>• Event, object and action code blocks can be used together.</li> <li>• When code is run this is known as code being executed.</li> <li>• <b>Recall</b> that debugging is when we fix code that isn't working how it was designed to.</li> <li>• Scenes can be made using backgrounds and objects.</li> <li>• Backgrounds can be changed as well as objects and that these have attributes (properties) that can be modified.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Give and receive clear instructions that others can follow.</li> <li>• Can recognise an object and an action in code block form in 2Code.</li> <li>• Can recognise the set of code blocks arranged to create actions is known as an algorithm.</li> <li>• Make a command in 2Code by using an object and action together.</li> <li>• Execute code by clicking the Run button and stop it by clicking the Stop button.</li> <li>• See what happens when a command they have made is executed.</li> <li>• Create and run code with a When Clicked event and observe what happens when the event occurs.</li> <li>• Analyse a simple code to find errors.</li> <li>• Execute code and test if changes have debugged a simple program.</li> <li>• Use Design View within 2Code to change backgrounds and objects.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to create a simple program within 2Code using code blocks.</li> <li>• Know what event, action and object code blocks are.</li> <li>• Be able to identify when their code executes when running in a programme.</li> <li>• Be able to debug a simple program.</li> <li>• Be able to change the look of their program using Design Mode in 2Code, changing backgrounds and objects.</li> </ul> | <p><b>code, programmer, coding, software, code blocks, object, action, 2Do, command, Design View, Code view, run, event, sound, when clicked, output, execute, background, scale scene, properties, plan</b></p> <p><i>instructions<br/>algorithm<br/>debug\<br/>debugging<br/>click</i></p> | <p>2Code</p>      |
| <p><b>Unit 1.8 Spreadsheets</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• There are specific features and purposes of a spreadsheet, and they can navigate around and enter data.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Talk about the function of a spreadsheet and give examples.</li> <li>• Open a new spreadsheet within 2Calculate and save their work.</li> </ul>  | <ul style="list-style-type: none"> <li>• Know what a spreadsheet is.</li> <li>• Know what rows and columns are within a spreadsheet.</li> </ul>   | <p><b>spreadsheet, row column, cell, delete, calculations, button, move</b></p>  | <p>2Calculate</p> |

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|---|---|--|--|--|--|
|   | <ul style="list-style-type: none"> <li>• Specific features in spreadsheets such as 2Calculate allow user to insert content such as images into a cell.</li> <li>• The cells content can be locked or moved using additional features.</li> <li>• The Speak and Count tools serve a specific purpose in 2Calculate.</li> </ul> | <ul style="list-style-type: none"> <li>• Enter numbers and words into a sheet.</li> <li>• Navigate from cell to cell using the arrows or by clicking in the cell.</li> <li>• Add background colour to cells.</li> <li>• Navigate around the sheet and are aware of what is meant by rows and columns.</li> <li>• Insert an image into a single cell and multiple cells.</li> <li>• Use the Move tool to move an image from one cell to another.</li> <li>• Lock an image to a cell so it can't be moved.</li> <li>• Give an image a specific value.</li> <li>• Use the count tool to count how many of the images are in the sheet.</li> <li>• Use the Speak tool in their sheet.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to move data around in a spreadsheet using the move tool.</li> <li>• Be able to insert images into a cell.</li> <li>• Be able to use the count tool.</li> </ul> | <p><b>tool, lock cell, select, count tool, speak tool, value</b></p> <p><i>data clip-art image</i></p> |  |
| <p><b>Unit 1.9</b><br/><b>Technology Outside School</b><br/><br/><b>2 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Technology is science and engineering knowledge put into practical use to solve problems or invent useful tools.</li> <li>• Technology is used within school and outside of school.</li> </ul>                           | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Recognise technology.</li> <li>• Identify common types of technology within and outside of school such as electronic devices.</li> <li>• Describe the function of common types of technology within and outside of school.</li> <li>• Explain how this technology is helpful.</li> </ul>  | <ul style="list-style-type: none"> <li>• Know what technology is.</li> <li>• Be able give examples of technology in and out of school.</li> </ul>  | <p><b>technology</b></p> <p><i>computer</i></p>  |  |



| Year 2  | Declarative Knowledge  | Procedural Knowledge   | By the end of this unit pupils will:   | Vocabulary  | Tools                                |
|---|--|--|--|---|--------------------------------------|
| <p><b>Unit 2.2</b><br/><b>Online Safety</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Searches can be refined so it is easier to find something.</li> <li>Work can be shared in a variety of ways.</li> <li>Email is a way of communicating and know that in this form of communication, as with others, you need to be considerate of the user.</li> <li>The term digital footprint relates to information that a user puts online, and that this footprint may remain even when we think we have removed the information.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Locate the search bar and type in simple terms.</li> <li>Say why a Purple Mash search is known as a safe search and explain why a search on the Internet may not be a safe search.</li> <li>Narrow down the search to a specific year group or subject.</li> <li>Carry out search terms using specific parameters.</li> <li>Tell a trusted adult if they search for something that the results are inappropriate or upsetting.</li> <li>Share work on Purple Mash in a variety of ways.</li> <li>Explain what email is and advantages of it over other forms of communication.</li> <li>Use the email program within Purple Mash to reply to an email.</li> <li>Talk about what a Digital Footprint is.</li> <li>Explain what kind of information may be left on a digital footprint and how this could be used to identify them.</li> <li>Keep personal information private and stop posting information that may lead others to identify them.</li> </ul>   | <ul style="list-style-type: none"> <li>Be able to find the information they need using a search engine.</li> <li>Know the consequences of not searching online safely.</li> <li>Know the concept of a digital footprint and that they must consider this when using the internet.</li> <li>Know how to share their work electronically via email.</li> <li>Know to report unkind behaviour/things that upset them online to a trusted adult.</li> </ul>  | <p><b>Filter, internet, sharing, display board, email, attachment, reply, personal information, private information, digital footprint, protection, identifying, secure</b></p> <p><i>search</i></p>  | <p>2Email<br/>2Publish<br/>2Quiz</p> |
| <p><b>Unit 2.1</b><br/><b>Coding</b></p> <p><b>6 lessons</b></p>        | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li><b>Recall</b> that in computing, a set of instructions is known as an algorithm.</li> <li>Steps in an algorithm must be followed in order to achieve the intended outcome.</li> <li>Code can be created that detects when two objects have collided. This code can have an action associated with it.</li> <li>Programs follow a sequence of instructions (commands) in order. Timers can be introduced into programs to make parts of the program run after a set time.</li> <li>A computer program in 2Code can include objects that are different types. Each object type will have attributes (properties) that can be modified.</li> <li>Events in computer programs cause a block of code to be run.</li> <li>Event commands in 2Code are used to create blocks of code that are run when an event happens.</li> <li>Buttons are an object type in 2Code and that they use the 'When Clicked' event and will run a piece of code when they are clicked on.</li> <li>Bugs when referring to computer programs, are bits of code that are stopping a program from working how it was intended.</li> <li>Debugging is the process of looking for any problems in code, fixing the problems and repeatedly testing them.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Follow a written algorithm on a plan and interpret it, identifying events, objects and actions in a plan of an algorithm.</li> <li>Use the correct code within 2Code to implement the algorithm which includes event 'when clicked', objects and actions.</li> <li>Recognise the collision detection block as part of the event category blocks.</li> <li>Drag a collision detection block into a program.</li> <li>Assign two objects within the collision detection command for it to detect collisions.</li> <li>Assign an event for when the two objects collide.</li> <li>Recognise the timer block as part of the control category blocks and drag a timer command block into a program.</li> <li>Place code within a timer after command that will run once the timer has reached the set seconds after execution.</li> <li>Go into design mode of 2Code and find the different objects.</li> <li>Place up to four different objects into a design scene of a program including the 'Turtle' object.</li> <li>Change an object image and its size by clicking on an object and selecting image/scale from the attributes table.</li> <li>Recognise the event command blocks – When Key Event, When Swiped Event, When Clicked Event and Collision Detection and include these in a program.</li> </ul> | <ul style="list-style-type: none"> <li>Know an algorithm is a set of instructions to complete a task.</li> <li>Be able to design a simple program using 2Code that achieves a purpose.</li> <li>Be able to use event, action and object code blocks to code their program.</li> <li>Be able to use collision detection and when clicked code blocks.</li> <li>Be able to say what will happen in their program.</li> <li>Be able to spot something in a program that has an action or effect (does something).</li> <li>Be able to find and correct some errors in their program.</li> </ul> | <p><b>collision detection, predict, interaction, collision detection event, collision detection action, implement, timer interval, sequence, output, turtle object, when key event, when swiped event, when clicked event</b></p> <p><i>instruction, algorithm, event, object, action, command, scene, background, properties, scale, click events, image, text, button, bug,</i></p> | <p>2Code</p>                         |

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|  |  | <ul style="list-style-type: none"> <li>• Run code and test that when the event occurs e.g. 'click up arrow', all four objects move.</li> <li>• Enter design mode and locate the button object under 'Form/Text' tab.</li> <li>• Insert a button into design mode scene that contains other object types.</li> <li>• Nest code within the When Clicked Button that makes an object carry out an action when the button is clicked.</li> <li>• If anything hasn't worked correctly, the code responsible for the area is located.</li> <li>• Stop the program and make changes to the broken code, run the program again and test it until the program is running as intended.</li> </ul>   |  | <i>debugging, properties</i>  |  |
| <p><b>Unit 2.3</b><br/><b>Spreadsheets</b></p> <p><b>4 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> that spreadsheet files can be opened, saved and edited.</li> <li>• There are keyboard shortcuts for copy, past and cut.</li> <li>• The totalling tool counts all the cells behind the tool.</li> <li>• A spreadsheet will automatically work out how much various items will cost when bought.</li> <li>• Data in a table can be edited and then use this data to create a block graph.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Explain what a row and column is in spreadsheets.</li> <li>• Open and save a sheet and give it an appropriate name, including adding a title.</li> <li>• Add a given image to a sheet or draw their own.</li> <li>• Allocate a value to an image and then recap the use of the count tool.</li> <li>• Make a simple spreadsheet counting machine.</li> <li>• Use CTRL + C for copy, CTRL + V for paste and CTRL + X for cut.</li> <li>• Know what is meant by totalling numbers in a row or column.</li> <li>• Know how to use the totalling tool.</li> <li>• Practically apply the knowledge to make a magic number square where the totalling tool automatically adds up rows and columns.</li> <li>• Edit the spreadsheet by adding images and formatting cells.</li> <li>• Use the + and – to create simple formulas to calculate an amount.</li> <li>• Label the columns in a table and enter data into it.</li> <li>• Use the table data and graphing tool to create a block graph.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to use 2Calculate to create a spreadsheet that organises data.</li> <li>• Know how to edit a spreadsheet by adding images and formatting cells.</li> <li>• Be able to use the count tool and totalling tool.</li> <li>• Be able to use copy, paste and cut to help make a spreadsheet.</li> <li>• Be able to use a spreadsheet to solve a mathematical puzzle.</li> </ul> | <p><b>Toolbox, drag, image value, equals, addition, equals tool, table, block graph, label</b></p> <p><i>Row, column, cell, cut, copy, paste, total, data, count tool, speak tool</i></p> | <p>2Calculate</p>                            |
| <p><b>Unit 2.4</b><br/><b>Questioning</b></p> <p><b>5 lessons</b></p>  | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Pictograms created through software or physically are of limited use beyond answering simple questions.</li> <li>• Information can be separated by using yes/no questions.</li> <li>• A binary tree is a simple way of sorting information into two categories. When using a binary tree, users can only ask yes/no questions to find a specific piece of information.</li> <li>• Databases are a computerised system that make it easy to search, select and store information.</li> <li>• Databases contain records which have a variety of information about a specific entry.</li> <li>• Users can search a database using simple and more complex search questions.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Create a class pictogram using 2Count.</li> <li>• Identify questions we can and can't ask and find the information for on the pictogram.</li> <li>• Create suitable yes/no questions for a collection of physical data.</li> <li>• Use yes/no questions to find individual records recognising that this information can be limited.</li> <li>• Design a binary tree physically using paper to sort simple pieces of information such as animals or children.</li> <li>• Use a pre-populated binary tree program such as 2Investigate to find answers to yes/no questions.</li> <li>• Use 2Investigate to open a database and find specific records that meet a search query by: Locating the find tool, using the drop-down lists for record fields in the search tool, combining more than one identifier.</li> </ul>  | <ul style="list-style-type: none"> <li>• Be able to find data using specific searches.</li> <li>• Know what a binary tree is and that they are limited to yes and no answers.</li> <li>• Be able to design a binary tree to sort data.</li> <li>• Know what is meant by a database.</li> <li>• Be able to use a database to answer questions.</li> </ul>   | <p><b>binary tree, field, question</b></p> <p><i>search, database, pictogram, data, information, sort, avatar, record</i></p>   | <p>2Count<br/>2Investigate<br/>2Question</p> |

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| <p><b>Unit 2.5</b><br/><b>Effective Searching</b><br/><br/><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>The Internet is a global network of connected computers around the World.</li> <li>The World Wide Web refers to the documents and pages someone sees when using a browser.</li> <li>Websites can be found using a browser that contains a search engine.</li> <li>Search engines use millions of people’s digital footprints to help provide more accurate results.</li> <li>To find results that we want on a search engine, we need to search effectively.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Explain the difference between the Internet and the World Wide Web, recognising that the World Wide Web is powered by the Internet.</li> <li>Open a web browser and enter a search query into a search engine.</li> <li>Find the number of results from a search query and review the results.</li> <li>With guidance, use some of the search tools on a search engine such as: all, images and news.</li> <li>Discuss with others that a digital footprint is a record of individuals interactions online and that this is used to help search engines provide better results for individuals.</li> <li>Compare using words to questions in a search engines results page.</li> <li>Share information about searching effectively with others.</li> </ul>  | <ul style="list-style-type: none"> <li>Be able to find the information they need using a search engine.</li> <li>Know the meaning of key internet and searching terms.</li> <li>Know the basic parts of a web search engine page.</li> <li>Be able to search the internet, reviewing their results.</li> </ul>                       | <p><b>World Wide Web, network, device, web page, browser, website, domain, web address, URL, search engine, Digital Footprint</b></p> <p><i>internet, device</i></p>       | <p>Microsoft Edge</p>     |
| <p><b>Unit 2.6</b><br/><b>Creating Pictures</b><br/><br/><b>5 lessons</b></p>   | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Computer drawing programs contain palettes. Palettes are the range of colours or shapes available to the users.</li> <li>Computer drawing programs may have a choice of painting effects. Painting effects can be combined to help a user make pictures.</li> <li>The size of an onscreen painting tool brush stroke and intensity of colour can be manipulated.</li> <li>Outline features in drawing programs help a user with the formation of paintings.</li> <li>Fill tools speed up the process of colouring enclosed areas on a painting.</li> <li>Pattern tools can be used to create repeating patterns and manipulate how a pattern is arranged.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Use 2Paint within Purple Mash to create a picture.</li> <li>Use a colour palette and painting effects to give different results.</li> <li>Produce a range of paintings using different effects.</li> <li>Use tools to change the size of brush strokes and intensity of colour within 2Paint.</li> <li>Use the outline tool including resizing to create a shape.</li> <li>Use the fill tool to colour in a shape quickly.</li> <li>Create patterns using the pattern tool.</li> <li>Manipulate patterns to create a repeating pattern in a painting.</li> </ul>  | <ul style="list-style-type: none"> <li>Be able to use 2Paint to create a picture in a given style.</li> <li>Know the main features of the 2Paint program – fill, outline, pattern tool, scaling, dilute.</li> <li>Be able to combine more than one effect to create an image within 2Paint.</li> </ul>                               | <p><b>Palette, style, dilute, line, fill, vertical, horizontal, repeating pattern, parallel, rotated, symmetry, e-collage, stamps</b></p> <p><i>clip-art, diagonal</i></p> | <p>2Paint a picture</p>   |
| <p><b>Unit 2.8</b><br/><b>Presenting Ideas</b><br/><br/><b>4 lessons</b></p>    | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Digital content can be presented in many forms.</li> <li>Quizzes can be made using programs such as 2Quiz.</li> <li>Digital content should be presented using a suitable format</li> <li>Digital content in one format can be re-used in other formats to present to audiences</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Compare a traditional book with an e-book and can talk about the differences.</li> <li>Recognise digital concept maps and their use for organising ideas.</li> <li>Discuss the differences between a traditional book, e-book, concept map and digital quiz including the advantages and limitations of each format.</li> <li>Use 2Quiz and identify the key areas such as introductory screen, delete, clone, add questions, preview and play quiz.</li> <li>Add a question type to 2Quiz and recognise some of the differences between question types.</li> <li>Open a 2Connect file with information on it.</li> <li>Open a 2Publish file.</li> <li>Use the 2Connect file to support creating content in the 2Publish file.</li> <li>Use font tools, clipart, page settings and images to enhance digital content in the digital publishing file.</li> </ul> | <ul style="list-style-type: none"> <li>Know that digital content can be presented in many forms.</li> <li>Be able to use a variety of software to manipulate and present digital content and information – 2Connect and 2Quiz.</li> <li>Be able to collect, organise and present data and information in digital content.</li> </ul> | <p><b>mind map, node, quiz, multiple-choice, presentation</b></p> <p>e-book</p>  | <p>2Connect<br/>2Quiz</p> |

| Year 3  | Declarative Knowledge  | Procedural Knowledge   | By the end of this unit pupils will:  | Vocabulary   | Tools                                |
|---|--|--|---|--|--------------------------------------|
| <p><b>Unit 3.2</b><br/><b>Online Safety</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> that passwords are private and should never be shared.</li> <li>• Blogs can help us to communicate our thoughts and ideas.</li> <li>• Not everything online is factually correct, and some websites can be referred to as spoof websites.</li> <li>• PEGI / BBFC ratings exist to keep young people safe and steps can be taken should students see inappropriate content.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Take steps to keep a password safe including creating a password featuring a mix of letters, numbers and special characters and setting different passwords for different sites.</li> <li>• Use a blog to communicate ideas and thoughts.</li> <li>• Ascertain which information in a website maybe fake.</li> <li>• Look for alternative ways to check the validity of information.</li> <li>• Consider why spoof websites exist.</li> <li>• Consider what content may be deemed inappropriate.</li> <li>• Check PEGI / BBFC ratings to see if chosen media are suitable.</li> <li>• Talk to a trusted adult about what they have seen or heard if inappropriate content or contact makes them feel uncomfortable.</li> </ul>  | <ul style="list-style-type: none"> <li>• Know what makes a secure password and the risks of unsecure passwords.</li> <li>• Be able to communicate with a wider audience via a blog.</li> <li>• Know about spoof websites and how they can check the reliability of information.</li> <li>• Know that some games/content is inappropriate based on age and have strategies for dealing with this.</li> </ul>   | <p><b>permission, vlogs, appropriate, spoof, verify, reputable source, inappropriate</b></p> <p><i>password, personal information, blog, internet, website</i></p>   | <p>2Connect<br/>2Blog<br/>2Write</p> |
| <p><b>Unit 3.1</b><br/><b>Coding</b></p> <p><b>6 lessons</b></p>        | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram.</li> <li>• Timers are used in coding to help control when a block of commands are run.</li> <li>• Timer commands can be run after a timed delay or at regular intervals. These can be altered by changing the number of seconds/quarter seconds.</li> <li>• Repeat is a control block and blocks of commands can be set to repeat a specified number of times using the repeat control block.</li> <li>• <b>Recall</b> that testing, debugging and fixing are an important part of the process of making computer programs.</li> <li>• Understanding what nesting is and the effect it has on a program can help when trying to debug a program.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Identify features of a flowchart: the point it starts, parts that represent an input or output or timers and processes.</li> <li>• Follow the flow of the chart and interpret what it is representing.</li> <li>• Create a representation of the flowchart by using 2Code.</li> <li>• Insert a timer after command in code view and specify number of seconds.</li> <li>• Insert code within the timer that will action after specified seconds.</li> <li>• Nest a second timer within a timer after command knowing that the second (nested timer) will run only after the first timer has finished.</li> <li>• Begin to distinguish the difference between “timer every” command from the “timer after” command.</li> <li>• Use a timer every command to make an event happen such as a ticking sound for a clock every second.</li> <li>• Understand that the repeat command is useful for avoiding lots of unnecessary coding repetition.</li> <li>• Identify and insert a repeat command into the coding area and set it a specified number of times to repeat.</li> <li>• Add a block of commands to a repeat command.</li> <li>• Execute the code and check that it has operated as intended.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to use a flowchart to create a computer program that uses click timers and events.</li> <li>• Be able to create a computer program that uses timer every and timer after commands.</li> <li>• Be able to use repeat commands within a computer program.</li> <li>• Be able to run, test and debug their programs considering nesting when debugging.</li> <li>• Be able to plan their scene and code before making their program, confidently making several things happen.</li> </ul> | <p><b>implement, flowchart, timer, sequenced, nested, input, right angle, degrees,</b></p> <p><i>algorithm, background, object, predict, run, properties, when clicked, when key, repeat, command, button, test, debug, action, object type, alert</i></p> | <p>2Code</p>                         |

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| <p><b>Unit 3.3</b><br/><b>Spreadsheets</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Graphs can be generated from data within a sheet. If data is changed on the sheet, then the graph automatically updates to recognise these amendments.</li> <li>• The more than, less than and equals tools serve a purpose to define a number.</li> <li>• Cells all have their own individual address. They are referenced using letters and numbers.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Recall the different range of graphs and charts they have come across in other subjects as well as computing including bar charts.</li> <li>• Enter data into a table format in a spreadsheet.</li> <li>• Select all the data in the table.</li> <li>• Select the chart tool.</li> <li>• Give the table and chart a title.</li> <li>• Label the chart axis.</li> <li>• Edit data in a table and see how the chart changes automatically.</li> <li>• Link their knowledge of and = to spreadsheets.</li> <li>• Use the move tool.</li> <li>• Solve problems using the and = tool.</li> <li>• Switch to advanced or formula mode in a spreadsheet program.</li> <li>• Read a cell address using column: row.</li> <li>• Click in a given cell by using the cell address.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to create a table of data on a spreadsheet and create charts and graphs from this data.</li> <li>• Be able to use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations.</li> <li>• Be able to describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row.</li> <li>• Be able to find specified locations in a spreadsheet.</li> </ul> | <p><b>pie chart, spinner tool, advanced mode, cell address, posture</b></p> <p><i>data, table, bar graph, typing, keys</i></p>  | <p>2Calculate</p> |
| <p><b>Unit 3.4</b><br/><b>Touch Typing</b></p> <p><b>4 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Typing is the action or skill of writing something by means of a keyboard (physical or virtual) and that it is important to have a good posture when typing.</li> <li>• Home, top and bottom row keys are areas on a keyboard where specific keys are located.</li> <li>• To be an efficient at typing hands should be positioned correctly on a keyboard and that the left and right hands should work independently of each other.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Check that posture is correct when typing.</li> <li>• Position equipment correctly so that eyes are level with monitor.</li> <li>• Position wrists so that they are not touching anything when typing.</li> <li>• Locate the home, top and bottom keys.</li> <li>• Position and use the left and right hands correctly to type letters.</li> <li>• Build up to combining left and right-hand use to type words.</li> </ul>  | <ul style="list-style-type: none"> <li>• Know what is meant by the home, bottom, and top rows.</li> <li>• Be able to begin to develop the ability to touch type the home, bottom, and top rows.</li> <li>• Be able to use two hands to type.</li> </ul>   | <p><i>posture, typing, keys, keyboard</i></p>   | <p>2Type</p>      |
| <p><b>Unit 3.5</b><br/><b>Emailing</b></p> <p><b>6 lessons</b></p>     | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> that there are different methods of communication and they each have strengths and weaknesses.</li> <li>• Emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address.</li> <li>• It's important to use email systems safely and that there are things people can do to try to keep themselves safe.</li> <li>• Pictures, documents and other file types can be attached to emails.</li> <li>• Address books can be made in email clients which store known contacts' email addresses. When sending an email we can use an address and send to multiple people.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Recall different methods of communicating and explain the advantages and disadvantages of each method.</li> <li>• Identify key areas and functions: Inbox, alerts, reply, formatting tools.</li> <li>• Open an email and reply to it.</li> <li>• Compose an email including address, subject and message.</li> <li>• Identify what a trusted contact is and recognise a concerning email/contact.</li> <li>• Report a concern to a teacher using the report to teacher feature in 2Email.</li> <li>• Recognise personal and private information and how to distinguish between them.</li> <li>• Attach an item to an email and recognise the dangers in receiving attachments.</li> <li>• Use the contacts list to select recipients and use the cc/bcc feature.</li> </ul>       | <ul style="list-style-type: none"> <li>• Know a range of ways to communicate including email.</li> <li>• Be able to open an email and respond to it.</li> <li>• Know the rules of keeping safe while sending/receiving emails.</li> <li>• Be able to add attachments to email and understand their risks.</li> <li>• Be able to use the cc/bcc feature to add multiple recipients.</li> </ul>   | <p><b>link, address book, inbox, trusted contact, draft, attachment, carbon copy, blind carbon copy</b></p> <p><i>communication, mind mapping, node, email, compose, personal information, password</i></p> | <p>2Email</p>     |

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| <p><b>Unit 3.6</b><br/><b>Branching Databases</b></p> <p><b>4 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> that a database is a collection of data organised in a way that it can be searched, and information found easily.</li> <li>• Objects can be sorted using yes/no questions and relate this to how computer binary databases work.</li> <li>• Branching databases can be created using programs such as 2Question.</li> <li>• It is important to test and debug if needed when creating branching databases so that they work as intended.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Explain what a database is and provide examples of common uses of a database.</li> <li>• Explain binary databases are also known as branching databases due to the branch like structure.</li> <li>• Identify questions that can be used to sort physical objects and use these, developing into using more/less as answers.</li> <li>• Add record cards within 2Question using a plan.</li> <li>• Insert question texts and choice button texts for each card.</li> <li>• Include an image for each card.</li> <li>• Use the final answer card option for end of a branch.</li> <li>• Use 2Question to create own branching database.</li> <li>• Work through all routes on the database and test whether it works as intended.</li> <li>• Identify errors, fix them and test again.</li> </ul> | <ul style="list-style-type: none"> <li>• Know what a database is and understand the structure of yes/no questions.</li> <li>• Be able to complete a prepopulated branching database.</li> <li>• Be able to create their own branching database.</li> <li>• Be able to save and select images for their branching database.</li> <li>• Know how to use and debug their own and others branching databases.</li> </ul> | <p><b>branching database</b></p> <p><i>data, database, debugging</i></p>  | <p>2Question</p> |
| <p><b>Unit 3.7</b><br/><b>Simulations</b></p> <p><b>3 lessons</b></p>         | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Computer simulations are programs that model real-life situations. They allow people to test various scenarios out that might be too expensive or dangerous to do in real life.</li> <li>• Computer simulations can be realistic and also unrealistic depending on how well thought out they are.</li> <li>• Simple simulations can be created using familiar software such as 2Create a Story.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Explain what computer simulations are and why they are useful.</li> <li>• Provide examples of computer simulations.</li> <li>• Give positives and negatives for simulations.</li> <li>• Explore a simulation in 2Simulate.</li> <li>• Find solutions to problems encountered when exploring a simulation.</li> <li>• Evaluate the realism of a simulation.</li> <li>• Plan and create a simple simulation in 2Create a Story.</li> <li>• Consider the relationships and rules in which the simulation uses</li> </ul>  | <ul style="list-style-type: none"> <li>• Know that a computer simulation can represent real and imaginary situations and give examples.</li> <li>• Evaluate simulations and consider their usefulness.</li> <li>• Be able to create their own simulation.</li> </ul>   | <p><b>simulation, modelling, advantages, disadvantages, point of view, realistic, unrealistic, solution, analysis, decision, evaluation</b></p> | <p>2Simulate</p> |
| <p><b>Unit 3.8</b><br/><b>Graphing</b></p> <p><b>2 lessons</b></p>            | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Computer programs such as 2Graph can be used to present data in more meaningful ways.</li> <li>• It's important to use the most appropriate graph type according to the information entered into it.</li> <li>• Graphing programs can be used to help solve questions.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Open 2Graph file with prepopulated data and edit.</li> <li>• Compare how the data is presented in the table and the graph.</li> <li>• Recognise the different types of charts that can be used to display data recorded within 2Graph.</li> <li>• Explain why some charts are more suitable than others for displaying the data.</li> <li>• Investigate a topic such as the number of times a particular number lands when a dice is rolled x times.</li> <li>• Record the collected data into 2Graph including accurate labels and a title.</li> <li>• Answer questions from the investigation using the graph created.</li> </ul>  | <ul style="list-style-type: none"> <li>• Be able to produce and share graphs made on the computer.</li> <li>• Be able to solve a maths question using graphing and present the results in a range of graphical formats.</li> <li>• Be able to use the sorting option to make analysis of their data easier.</li> </ul>   | <p><b>axis, investigation, tally chart, survey</b></p> <p><i>graph, chart, title, sort, data, row, column</i></p>                               | <p>2Graph</p>    |



| Year 4  | Declarative Knowledge   | Procedural Knowledge  | By the end of this unit pupils will:   | Vocabulary   | Tools                                   |
|---|---|---|--|--|---|
| <p><b>Unit 4.2</b><br/><b>Online Safety</b><br/><br/><b>4 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Safe protocols can be developed to protect people when using email.</li> <li><b>Recall:</b> Everything put online leaves a trail known as a digital footprint.</li> <li>There are risks and benefits of installing software including apps.</li> <li>Copying the work of others and presenting it as their own is called 'plagiarism'.</li> <li>There are positive and negative influences of technology on health and the environment.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Identify emails that may be phishing emails and another name for these emails is spam emails.</li> <li>Identify these emails through looking at the sender details.</li> <li>Ignore these emails and not reply to them.</li> <li>Use the padlock on the web address bar which indicates the site will be safe.</li> <li>Use the terminology Digital Footprint for this personal digital content and be aware that a digital footprint can be positive or negative depending upon what they posted.</li> <li>Download apps and programs in the safest possible way but that even reputable stores can have invasive software on there.</li> <li>Define the words malware and computer virus.</li> <li>Identify plagiarism in text and talk about what plagiarism means.</li> <li>Correctly reference someone else's work when they are using it for their writing.</li> </ul> | <ul style="list-style-type: none"> <li>Know the meaning of the terms malware, phishing, scam and computer virus.</li> <li>Know ways they can protect themselves from these.</li> <li>Be able to identify things they wouldn't want in their digital footprint.</li> <li>Be able to determine whether activities that they undertake online, infringe another's' copyright.</li> <li>Know the difference between researching and using information and copying it.</li> </ul> | <p><b>report, SMART rules, spam, phishing, malware software, virus, ransomware, cookies, plagiarism, watermark, citation, copyright, collaborating, data analysis, collaborative database</b></p> <p><i>digital footprint, attachment</i></p>                            | <p>2Email<br/>2Connect<br/>2Publish</p> |
| <p><b>Unit 4.1</b><br/><b>Coding</b><br/><br/><b>6 lessons</b></p>        | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li><b>Recall</b> that there are objects in 2Code and that there are different types and these have attributes (properties) that can be changed.</li> <li>Selection is a term used in computer programming. That it is a decision command that will be run dependent on whether a condition is met.</li> <li>"If" statements are used to create selection in 2Code and that they are bits of code that will run only if a condition is true.</li> <li>Coordinates are used in computer programming to determine the position of a point, shape or object and that these change according to where they are positioned on the screen.</li> <li>"Repeat until" is a control block and that blocks of code will repeat until a condition is met.</li> <li>"If/else" statements are a conditional command that tests a statement.</li> <li>Variables are a virtual container (a place in computer memory) that contain a value that can change.</li> <li>Variables are used in programming to keep track of things that can change.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>In Design Mode, distinguish between the object types and change attributes such as image, name, allow off screen, angle and movement.</li> <li>Design their own scene by changing backgrounds and editing objects.</li> <li>Recognise flowchart nodes and use flowcharts to help them visualise a simple program.</li> <li>Identify and use "If" statement control block, recognising how an if Statement in 2Code is being used to create selection within a simple program.</li> <li>Identify where coordinates x and y can be changed and change them.</li> <li>Identify and use "repeat until" within the control blocks of block code view.</li> <li>Identify and use the "if/else" block within the control blocks of block code view.</li> <li>Identify and use the "create variable" command from the variables blocks within code view.</li> </ul>                  | <ul style="list-style-type: none"> <li>Be able to plan and create a computer program within 2Code that includes an "If" statement.</li> <li>Be able to plan and create a computer program within 2Code that includes an "If/else" statement.</li> <li>Know what a variable is in programming</li> <li>Be able to create and use variables when programming.</li> </ul>   | <p><b>selection, if statement, decision, coordinate, repeat until, if/else statement, variable, number variable</b></p> <p>inputs, execute, flowchart, command, background, button, object, properties, code block, predict, event, debugging, action, alert, prompt</p> | <p>2Code</p>                            |

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| <p><b>Unit 4.7</b><br/><b>Effective Searching</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> that information can be located on a search engine page.</li> <li>• There are different skills needed to research effectively.</li> <li>• <b>Recall</b> that web pages need to be evaluated to see if the information contained is true and reliable.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Load up a search engine onto their device and give the name of a well-known search engine.</li> <li>• Enter the search enquiry.</li> <li>• Research the different types of information one can get from a search engine.</li> <li>• Correctly interpret the information outputted.</li> <li>• Enter more advanced effective enquiries without the need for full sentences.</li> <li>• Analyse the contents of a web page for clues about the reliability of information.</li> <li>• Appreciate that the search engine will give results tailored to the interests of the searcher.</li> </ul>   | <ul style="list-style-type: none"> <li>• Be able to structure search queries to locate specific information.</li> <li>• Be able to use a search engine to find accurate answers to a range of questions.</li> <li>• Be able to analyse the contents of a web page for clues about the credibility of the information.</li> <li>• Know why it is important to review the results of any internet search.</li> </ul> | <p><b>results page, key words, reliability, easter eggs, balanced view</b></p> <p><i>internet, search engine</i></p>  | <p>Microsoft Edge</p>        |
| <p><b>Unit 4.8</b><br/><b>Hardware</b></p> <p><b>2 lessons</b></p>            | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Different parts make up a computer.</li> <li>• The terms: hardware, software, components, peripherals, motherboard, CPU, RAM, hard drive, graphics card, network card, monitor, mouse, keyboard.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Name the different parts of a computer such as Hard Drive, RAM, Network Card etc.</li> <li>• Define what is meant by hardware, components and peripherals.</li> <li>• Describe the function of these different parts.</li> <li>• Share their knowledge with others.</li> </ul>  | <ul style="list-style-type: none"> <li>• Know the name of the different parts of a desktop computer.</li> <li>• Know what the function of the different parts of a computer is.</li> </ul>   | <p><b>hardware, software components, peripherals, motherboard, CPU RAM, hard drive, graphics card, network card, monitor, mouse</b></p> <p><i>input, output, keyboard</i></p>   | <p>2Connect<br/>2Publish</p> |
| <p><b>Unit 4.3</b><br/><b>Spreadsheets</b></p> <p><b>6 lessons</b></p>        | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• It is possible to input numbers into a spreadsheet in different formats including the use of a decimal point.</li> <li>• Formulas can be added to a spreadsheet to speed up calculations when data is changed.</li> <li>• There is specific functionality of some of the tools within 2Calculate.</li> <li>• <b>Recall</b> that a spreadsheet can create a range of graphs and charts and these can be interrogated.</li> <li>• Spreadsheets can be used to model a real-life situation and improve the efficiency of day-to-day tasks.</li> <li>• A value can be added to images in 2Calculate to make a resource to teach place value.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Enter data in cells within 2Calculate and format the cell.</li> <li>• Understand what a formula is in a spreadsheet and use the formula wizard box in 2Calculate.</li> <li>• Use the random number tool, spin number tool and timer tool in 2Calculate for a specific purpose.</li> <li>• Enter appropriate data in tabular format in a spreadsheet and use this to create graphs.</li> <li>• Interpret the data contained within the graph including estimating values between given data sets.</li> <li>• Recall what is meant by a budget and why budgeting is important.</li> <li>• Create their own budget template on 2Calculate, making amendments to it to see what impact that has on the totals.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to format cells.</li> <li>• Be able to enter formula into cells.</li> <li>• Be able to use the timer, random number and spin button tools.</li> <li>• Be able to use a series of data in a spreadsheet to create a graph.</li> <li>• Be able to make practical use of a spreadsheet to help them plan actions.</li> </ul>   | <p><b>formula wizard, percentages, decimal place, average, equal tool, random number tool, resize, budget, calculation, place value, 'is equals to' tool, set image</b></p> <p><i>spinner tool, timer, format cell, line graph, data, chart, totals</i></p> | <p>2Calculate</p>            |



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| <p><b>Unit 3.10<br/>micro:bit</b></p> <p><b>4 lessons</b></p>   | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• A micro:bit is a tiny computer which needs instructions in code to make it work.</li> <li>• A micro:bit can produce outputs and receive inputs.</li> <li>• Code from the coding environment can be transferred onto a micro:bit.</li> <li>• The order (sequence) of instructions is important when coding.</li> </ul>    | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Explain that a micro:bit is a piece of hardware that can have code created for it that makes use of its inputs and outputs.</li> <li>• Recognise and locate key hardware components on the micro:bit such as its display, speaker and accelerometer.</li> <li>• Use display text, show LEDs and play music outputs in program to meet specific intentions, identifying the relevant code blocks.</li> <li>• Code a micro:bit to make different outputs happen depending on different inputs.</li> <li>• Use event commands: when micro:bit button, when gesture in programs to meet specific intentions, identifying relevant code blocks.</li> <li>• Make a program that requires inputs (event commands as above) that produce an output.</li> <li>• Use the simulator within the Freecode micro:bit environment to test code before transferring to micro:bit.</li> <li>• Recognise how the order of code is essential in order to meet a program's intentions.</li> <li>• Use sleep command within a sequence of code to temporarily pause a program e.g. when creating an animation effect using LEDs.</li> <li>• Use the repeat forever command within a sequence of code to produce an infinite looping sequencing such as a beating heart animation.</li> </ul> | <ul style="list-style-type: none"> <li>• Know what inputs and outputs are.</li> <li>• Be able to give the micro:bit instructions in code to make a name badge using the LED display output.</li> <li>• Be able to create a micro:bit animation using a sequence of images in a loop.</li> <li>• Be able to make the micro:bit show different pictures on the LED display output depending on which button input is pressed.</li> <li>• Know that an accelerometer is a sensor, an input that senses movement.</li> <li>• Be able to create code that makes sounds play using different movement gestures</li> </ul> | <p><b>LED, accelerometer, gestures, sound output, speaker</b></p> <p><i>hardware, software, program, hardware, repeat, animation, infinite loop, output, sequence, data, input, selection,</i></p> | <p>Free Code micro:bit</p> |
| <p><b>Unit 4.10<br/>Intro to AI</b></p> <p><b>4 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Artificial intelligence is having an impact already in day-to-day life.</li> <li>• Artificial intelligence can assist and benefit us in our everyday life</li> <li>• The potential of artificial intelligence is limitless.</li> <li>• Artificial intelligence is already being used to create music and art.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Define artificial intelligence in their own words.</li> <li>• Recall artificial intelligence in news stories and talk about positives and negatives.</li> <li>• Talk and write about real life applications of artificial intelligence.</li> <li>• Discuss how these applications are making life better for us.</li> <li>• Consider if there are negatives associated with artificial intelligence.</li> <li>• Decide if art and music are created by humans or artificial intelligence.</li> <li>• Use various artificial intelligence programs to create music and art to meet a description.</li> </ul>   | <ul style="list-style-type: none"> <li>• Know what artificial intelligence is and give examples of this in their everyday life.</li> <li>• Be able to express their ideas on the future of AI and think about this critically.</li> <li>• Be able to differentiate between music/art that has been created by humans and by AI applications.</li> <li>• Be able to use artificial intelligence to create images and music.</li> </ul>   | <p><b>artificial intelligence</b></p> <p><i>algorithm, data</i></p>  | <p>2Publish</p>            |

| Year 5  | Declarative Knowledge  | Procedural Knowledge  | By the end of this unit pupils will:  | Vocabulary  | Tools                 |
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| <p align="center"><b>Unit 5.2</b><br/><b>Online Safety</b></p> <p align="center"><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>The five SMART rules and that they are designed to keep children safe online.</li> <li><b>Recall</b> that passwords need to be kept secure.</li> <li>Care needs to be given when sharing content online.</li> <li><b>Recall</b> that sources should be referenced in work.</li> <li>Different forms of communication are best used for specific purposes.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Recover forgotten emails normally using email.</li> <li>Create a good password involving letters, numbers and characters.</li> <li>Consider what information should be shared online.</li> <li>Use an avatar as a virtual representation of themselves rather than a photograph.</li> <li>Reference sources that they may have used in their work – written work and images.</li> <li>Look at the advantages of online and face to face communication.</li> <li>Think about when online communication has made them feel uncomfortable.</li> </ul>   | <ul style="list-style-type: none"> <li>Be able to use the SMART rules to keep themselves safe online.</li> <li>Be able to think critically about what they share online, even when asked by a usually reliable person to share something.</li> <li>Be able to cite all sources when researching and explain the importance of this.</li> <li>Know the advantages and disadvantages of different forms of communication and when it is appropriate to use each.</li> </ul>   | <p><b>responsibility, encrypt, critical thinking, image manipulation, validity, bibliography, creative commons licence</b></p> <p><i>SMART rules, avatar, citation, plagiarism, copyright, communications</i></p>   | <p>Microsoft Edge</p> |
| <p align="center"><b>Unit 5.1</b><br/><b>Coding</b></p> <p align="center"><b>6 lessons</b></p>        | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>Code can be simplified to complete the same process with less lines of code and that this code is more efficient as it runs faster and uses less processing memory.</li> <li>Computer generated variables in 2Code are tags given to objects and these can be used to control object types meaning less lines of code are needed.</li> <li><b>Recall</b> that a simulation is a model that represents a real or imaginary situation.</li> <li>The timer every command can be used to make code repeat forever.</li> <li>Decomposition is a method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program.</li> <li>Abstraction is a way of de-cluttering and removing unnecessary details to get a program functioning.</li> <li>A function is a block or sequence of code that can be accessed and recalled when it is needed. This means code doesn't have to be rewritten every time it is needed.</li> <li>Strings are text or a combination of text characters and numbers within programs</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Identify that common tags known as computer generated variables can be used in the program to control all the objects.</li> <li>Create a simplified code structure that functions exactly the same as the original code by using the common tags objects share.</li> <li>Plan an algorithm of a physical system such as traffic light sequences considering essential details such as the sequence of traffic lights and when each light colour will display and for how long.</li> <li>Convert their plan into a computer program in 2Code and make adaptations to the program to consider variations in real-life situations.</li> <li>Incorporate the timer every command into a program such as a traffic light sequence.</li> <li>During planning, use decomposition to break down the plan into the key parts that are required to get the program functioning considering if there are any unnecessary details in the plan that aren't essential for the functioning of the intended program (abstraction).</li> <li>Recognise the create function command as part of the create and change variable group of blocks, insert it into a program and name it.</li> <li>Insert the call function command and assign the function created.</li> </ul> | <ul style="list-style-type: none"> <li>Be able to use simplified code to make their programming more efficient.</li> <li>Be able to plan an algorithm modelling the sequence of traffic lights and use their plan to program the simulation to work in 2Code.</li> <li>Know that code can be simplified through decomposition and be able to make good attempts to break down their task into smaller achievable steps.</li> <li>Be able to create and use functions and strings in their code to make their</li> </ul> | <p><b>efficient, computer generated variable, simplify, physical system, decomposition, abstraction, friction, function, string, tab, concatenation, print to screen tabs</b></p> <p><i>event, key press, collision, object, action, variable, selection, if/else statements, coordinates, algorithm, properties, predict, values, when key, random, output</i></p> | <p>2Code</p>          |

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|  | <ul style="list-style-type: none"> <li>Concatenation is the name given to the action of linking things together in a series.</li> </ul>   | <ul style="list-style-type: none"> <li>Recognise what a string is in a program and all instances of a string including how it is used.</li> <li>Create a string variable and initialise it (give it a value).</li> <li>Create code that changes the value of the string such as setting the string variable to a random word every 1 second.</li> <li>Recognise where concatenation can be useful in programs and begin to use this in their own programs.</li> </ul>  | programming more efficient.   |  |              |
| <b>Unit 5.3</b><br><b>Spreadsheets</b><br><br><b>6 lessons</b> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>A formula can be written in a sheet to convert units of length/distance/time.</li> <li>A spreadsheet tool can be used to investigate if a hypothesis is true.</li> <li>Spreadsheets can be created to support the organisation of real-life events.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Know the short cuts for copy, paste and cut.</li> <li>Write a simple formula for converting units.</li> <li>Copy and paste a formula from one cell to another using appropriate shortcuts.</li> <li>Use the How Many tool within 2Calculate to test a hypothesis e.g. e is the most frequent letter.</li> <li>Create a sheet which calculates for example the ingredients needed for a number of cakes produced and use this to calculate a projected profit.</li> </ul>  | <ul style="list-style-type: none"> <li>Be able to create a spreadsheet to efficiently convert units of measurement – time, distance, length etc.</li> <li>Be able to create simple formulae that use different variables.</li> <li>Know how to use a spreadsheet to model a real-life situation and come up with solutions that can be practically applied.</li> </ul>                              | <b>formulae, conversion, profit, totalling tool</b><br><br><i>formula, advanced mode, variable, simulation, modelling, text variables, cell format, budget</i> | 2Calculate   |
| <b>Unit 5.4</b><br><b>Databases</b><br><br><b>4 lessons</b>    | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>A database can be used to search for information.</li> <li>Users can contribute to a collaborative database.</li> <li>Databases can be created to cover a range of topics or themes.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Enter data using words and numbers as well as drop down menus into an existing database.</li> <li>Sort, group and arrange information in a database.</li> <li>Search for information in a database.</li> <li>Choose a suitable topic for a database.</li> <li>Set up the database with appropriate fields.</li> <li>Ask at least 8 records to the database.</li> <li>Write five questions using their database for their peers to answer.</li> <li>Use databases created by their peers to answer questions.</li> </ul> | <ul style="list-style-type: none"> <li>Be able to search a database to answer questions correctly.</li> <li>Be able to create their own database on a chosen topic and add records to it.</li> <li>Know what a database field is and can correctly add field information.</li> <li>Know how to word questions so that they can be effectively answered using a search of their database.</li> </ul> | <b>statistics, arrange, reports</b><br><br><i>database, search, record, fields, sort, group, charts, avatar, collaborative</i>                                 | 2Investigate |

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| <p><b>Unit 5.8</b><br/><b>Word Processing</b></p> <p><b>8 lessons</b></p>  | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• A word processing tool (Microsoft Word) can be used to create a range of documents.</li> <li>• Images can be added to a document and edited.</li> <li>• The appearance of text can be changed within a document.</li> <li>• Various features within the program will enhance the documents look and usability.</li> <li>• Tables can be used to present information within a document.</li> <li>• A template can be used to create a document.</li> <li>• Page layout can be improved by using headings and columns.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Open a blank document or a premade template and navigate around the toolbar at the top of the screen.</li> <li>• Save a document into a specific folder.</li> <li>• Use the SHIFT or CAPS LOCK to write capital letters.</li> <li>• Type sentences and then format them accordingly.</li> <li>• Change the orientation of the document – portrait/landscape.</li> <li>• Insert an image and edit it using the image handles.</li> <li>• Apply a style to the document.</li> <li>• Add in headings and subheadings to a document.</li> <li>• Use a range of bullet points including numbered lists.</li> <li>• Insert text boxes and shapes to a document.</li> <li>• Layer objects within a document.</li> <li>• Add in hyperlinks to a document to link to an external website.</li> <li>• Add in WordArt to a document in a range of styles.</li> <li>• Insert and edit a table.</li> <li>• Insert columns into a blank document.</li> </ul> | <ul style="list-style-type: none"> <li>• Know what a word processing tool is for.</li> <li>• Be able to create a word processing document, adding in and altering the look of the text, images, orientation, tables.</li> <li>• Be able to add text boxes and shapes.</li> <li>• Be able to add hyperlinks to an external website.</li> <li>• Be able to add tables to present information and edit the properties of tables including borders, colours, merging cells, adding and removing rows and columns.</li> <li>• Be able to format a page using a combination of images, headers and columns</li> </ul> | <p><b>Word Processing Tool, document, front screen, zoom, selecting\highlighting, formatting, page orientation, attributing, image editing, cropping, image transparency, text wrapping, styles, bulleted list, numbered list, caption, hyperlink, WordArt, merge cells, template</b></p> <p><i>font, copy and paste, copyright, creative commons, text box, row, column</i></p> | <p>Microsoft Word</p> |
| <p><b>Unit 5.9</b><br/><b>External Devices</b></p> <p><b>6 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• External devices can be used to control a coded program.</li> <li>• An external device can be used as a game controller.</li> <li>• Text can be outputted to an external device.</li> <li>• An external device can be used to model real life situations.</li> <li>• A program can be written for the external device to meet a specific design brief.</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Define what an external device is.</li> <li>• Start coding using the new external device code blocks.</li> <li>• Use the QR code to connect the external device or emulator.</li> <li>• Play their simple code.</li> <li>• Complete a partially made game and debug their code if it isn't working.</li> <li>• Write a program to code text to the device.</li> <li>• Find blocks relating to sensors in the external device namely shake, tilt and sound detected.</li> <li>• Plan and then code their program.</li> <li>• Share the program with others.</li> <li>• Evaluate the program and make improvements where needed.</li> </ul>  | <ul style="list-style-type: none"> <li>• Be able to make a program that responds to an external device being tilted and shaken with visual effects and sounds.</li> <li>• Be able to write a program that uses the sounds and motion sensors of an external device to trigger a response on the computer.</li> </ul>  | <p><b>QR code, external device, simulator\emulator, host, chip show text, sensor</b></p> <p><i>design view, code view, input, output, URL, algorithm, event, debug, variable, print to screen, alert, function, if/else</i></p>  | <p>2Code</p>          |

| Year 6  | Declarative Knowledge   | Procedural Knowledge   | By the end of the unit pupils will:   | Vocabulary   | Tools  |
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| <p style="text-align: center;"><b>Unit 6.2</b><br/><b>Online Safety</b></p> <p style="text-align: center;"><b>2 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• A digital footprint leaves a trail online to show their behaviour and this can have a negative impact.</li> <li>• It is important to balance game and screen time with other parts of our lives.</li> <li>•</li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Recap learning from previous years about digital footprint.</li> <li>• Consider whether a digital footprint is positive or negative.</li> <li>• Look at digital footprints of various people and ascertain if the impression left is positive or negative.</li> <li>• Consider the positive and negative impact of technology on their education, well-being and the environment.</li> </ul>  | <ul style="list-style-type: none"> <li>• Know how what they share impacts upon themselves and upon others in the long-term.</li> <li>• Know about the consequences of promoting inappropriate content online and how to put a stop to such behaviour when they experience it or witness it as a bystander.</li> <li>• Be able to talk about the positives and negative aspects of technology and balance these opposing views.</li> </ul>   | <p><b>secure websites, location sharing, PEGI, screen time</b></p> <p><i>spoof websites, phishing, password, digital footprint, inappropriate, print screen, data analysis</i></p>   | <p>2DIY 3D<br/>2Publish<br/>2Investigate</p> |
| <p style="text-align: center;"><b>Unit 6.1</b><br/><b>Coding</b></p> <p style="text-align: center;"><b>6 lessons</b></p>        | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• Number elements combined with a number variable and an “if/else” statement can be used to create an onscreen countdown timer.</li> <li>• Selection can be achieved through the use of “if/else” statements.</li> <li>• The position of an object on the screen in 2Code is referenced using x and y coordinates.</li> <li>• The <b>launch command</b> can be used within 2Code to open another Purple Mash file or an external website when it is called in a program.</li> <li>• 2Code contains tabs in the coding view. Tabs can be used to help organise code.</li> <li>• Using functions helps with making programs more efficient.</li> <li>• Flowcharts can represent procedures within a program and referenced to check a program is running as expected.</li> <li>• Computer inputs can be used to increase user interaction within a program.</li> <li>• Text adventures are computer games that have been created using text instead of graphics. Players use text commands to control characters and influence the environment.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Create a number variable command, name it and give it a value.</li> <li>• Use a “timer every” command set at 1 second with an “if/else” statement nested within it.</li> <li>• Create a sequence of code within the “if/else” statement that subtracts the number variable value by 1 each time.</li> <li>• Use an alert command within else that gives an onscreen message.</li> <li>• Incorporate a restart command at the end of the if/else statement.</li> <li>• Identify the coordinates of any given object and an object’s x and y coordinates to equal those of another object.</li> <li>• Identify and incorporate the launch command within a program such as nested within an event.</li> <li>• Recognise how tabs are useful when creating programs and during the debugging process.</li> <li>• Create a function within 2Code that makes an onscreen turtle draw regular shapes when called x number of times.</li> <li>• Interpreting flowcharts which show procedures, predict how a program will run when specific events are met.</li> <li>• Run and test a program that represents the procedures shown in flowcharts.</li> <li>• Use the prompt for input command within a program as part of joining strings together. <b>Recall</b> that when strings are combined it is referred to a concatenation.</li> <li>• Use the get input command as part of an if/else statement.</li> <li>• Plan own text adventures and adapt given code to support in creating own text adventure.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to create a program that uses multiple functions with the code arranged in tabs.</li> <li>• Know how their code executes when their program is run.</li> <li>• Be able to follow and create flowcharts to create and debug code.</li> <li>• Be able to code programs that take text input from the user and use this in the program.</li> <li>• Be able to design their own text-based adventure game based on one they have played</li> </ul> | <p><b>x and y, launch, function call</b></p> <p><i>algorithm, action, output, selection, variables, repeat, timer, command, debug, alert, string, properties, coordinates, decomposition, object, event, function, turtle object, text object, execute, tabs, flowchart, simulation, procedure, input, concatenation</i></p> | <p>2Code</p>                                 |

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| <p><b>Unit 6.3</b><br/><b>Spreadsheets</b></p> <p><b>5 lessons</b></p>    | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>A spreadsheet can be used to investigate a problem such as: <ul style="list-style-type: none"> <li>the frequency of a number rolled on a collection of die.</li> <li>plan how to spend pocket money.</li> <li>plan out a school charity day.</li> </ul> </li> </ul>   | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>In advanced mode: add in extra columns and rows, add dice to the sheet, use the click and drag functionality, use the count tool to count the number rolled on the dice and apply this to a table.</li> <li>Create a spreadsheet with formula.</li> <li>Use the graphing functionality to display the results on screen.</li> <li>Create a table, populate it with given information and format the cells.</li> <li>Add images to the cells – either premade or drawn.</li> <li>Calculate totals using appropriate formula.</li> <li>Design a sheet with appropriate formulas to work out costs and income and use the sheet to maximise profit.</li> </ul>                                    | <ul style="list-style-type: none"> <li>Be able to create a spreadsheet to answer a mathematical question relating to probability.</li> <li>Be able to use the formula wizard to create formulae.</li> <li>Be able to use a spreadsheet to solve a problem.</li> <li>Be able to use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life.</li> </ul>  | <p><b>dice tool, computational model</b></p> <p>move tool, percentage, format, count tool, chart, Formula wizard, budget, Advanced mode, expenses, profit</p> | <p>2Calculate</p>                                |
| <p><b>Unit 6.4</b><br/><b>Bloggng</b></p> <p><b>4 lessons</b></p>         | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>A blog is an online vehicle for displaying thoughts and ideas in an informal style.</li> <li>It is important to plan out the theme and content of a blog before writing it.</li> <li>People can contribute to blogs by adding their own posts.</li> <li>Blog posts written by others can be commented on.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Explain the difference between a blog and vlog.</li> <li>Talk about the key features of a blog home page and what makes a good vlog post.</li> <li>Create and publish their own blog using a blogging tool.</li> <li>Write and publish a blog post.</li> <li>Add a comment to a blog post written by another student.</li> </ul>   | <ul style="list-style-type: none"> <li>Know the key features of a blog and how one can be used considering the impact of its content on their audience.</li> <li>Be able to create a blog and blog post with a specific purpose.</li> <li>Know the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying.</li> </ul>   | <p><b>archive, connections, commenting, approval</b></p> <p><i>blog, blog post, vlog, collaborate, nodes</i></p>  | <p>2Blog</p>                                     |
| <p><b>Unit 6.5</b><br/><b>Text Adventures</b></p> <p><b>5 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li><b>Recall</b> that a text adventure is a computer game that uses text instead of graphics</li> <li>Concept map plans for a story adventure can be used to plan the text-based adventure game.</li> <li>It is important to have a good level of coding comprehension in order the understand how a text adventure works.</li> <li>Debugging is a key part of coding and essential if code is to run properly.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>Play a simple text-based adventure game on their device.</li> <li>Plan out a text adventure game using a concept mapping tool.</li> <li>Use 2Create a Story to create an e-book text-based adventure using the overview button to see how the pages link together.</li> <li>Identify when commands are executed.</li> <li>Identify variables in a program and what their function is in a text adventure program.</li> <li>Explain the purpose of a control loop including what selections it is checking for and which function is called.</li> <li>Debug a piece of code for a text-based adventure game and use the information to improve the code and add extra functionality.</li> </ul> | <ul style="list-style-type: none"> <li>Know what a text adventure is and be able to map out their own text adventure.</li> <li>Be able to use the full functionality of 2Create a Story Adventure mode to create, test and debug using their plan.</li> <li>Be able to explain the features and purpose of each line of code and follow the flow of execution.</li> <li>Be able to make logical attempts to debug more complex code involving a combination of functions, variables and a loop.</li> </ul> | <p><b>text adventure, sprite, step through, flow of control</b></p> <p><i>link, functions, selection, variables, repeat, debugging, QR code</i></p>           | <p>2Connect<br/>2Create a story<br/>2Publish</p> |

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| <p><b>Unit 6.6<br/>Networks</b></p> <p><b>3 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> the difference between the World Wide Web and the Internet.</li> <li>• LAN and WAN are different kinds of networks.</li> <li>• The Internet has changed our lives in many ways.</li> </ul>  | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• <b>Recall</b> the different ways they use the Internet at home and school.</li> <li>• <b>Recall</b> the difference between the Internet and World Wide Web.</li> <li>• Talk about all the connected devices they use in school and at home.</li> <li>• Talk about wired and wireless networks and the key hardware needed for this.</li> <li>• Explain the difference between LAN and WAN.</li> <li>• Give examples of well-known search engines.</li> <li>• Explain what an IP address is.</li> <li>• Consider how the Internet has changed things on their lifetime.</li> </ul>   | <ul style="list-style-type: none"> <li>• Know the difference between the World Wide Web and the internet.</li> <li>• Know about their school network.</li> <li>• Know some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult.</li> </ul>  | <p><b>web server, hosting, LAN, WLAN, WAN, router, switch, hub, ethernet, IP address, ISP, DNS</b></p> <p><i>internet, World Wide Web, website, network, web page, data, WiFi, search engine</i></p> | <p>2Connect<br/>2Chart<br/>2Write<br/>2Quiz<br/>2Publish</p> |
| <p><b>Unit 6.7<br/>Quizzing</b></p> <p><b>6 lessons</b></p> | <p>By the end of the unit pupils will <b>know that</b>:</p> <ul style="list-style-type: none"> <li>• The level, interests and capability of the audience need to be considered when making a game for younger children.</li> <li>• A good quiz to appeal to younger students and their peers should have a range of different question types.</li> <li>• There are a range of software tools for creating quizzes.</li> <li>• A quiz can be made to teach students how to interrogate a database.</li> </ul> | <p>By the end of the unit pupils will <b>know how to</b>:</p> <ul style="list-style-type: none"> <li>• Contribute to a collaborative concept map about what makes a good quiz and the different types of quizzes there are.</li> <li>• Design a quiz to meet a specific brief and then share the game with a wider audience.</li> <li>• Use the range of question types in the software to create a quiz on 10 questions with a diverse range of questions.</li> <li>• Add in a front screen with clear instructions and sounds.</li> <li>• Share the quiz for others to play.</li> <li>• Evaluate their quiz and quizzes produced by others.</li> <li>• Recall what a database is.</li> <li>• Complete a ready-made quiz using a ready-made database.</li> <li>• Write a quiz of their own that involves searching a database.</li> </ul> | <ul style="list-style-type: none"> <li>• Be able to create a picture-based quiz using 2Quiz that considers the audience's ability levels and interests.</li> <li>• Know what sort of questions are best suited to the different question types.</li> <li>• Be able to give and respond to feedback on their own and others' quizzes.</li> <li>• Be able to design their own quiz based on one of the 2Investigate example databases.</li> </ul> | <p><b>selfie, image filter, preview, case sensitive, cloze, participants</b></p> <p><i>quiz, audience, copy\paste, undo\redo, audio, clipart, database, record, field, statistics</i></p>            | <p>2DIY<br/>2Quiz<br/>2Investigate</p>                       |