Church Lane Primary School and Nursery

Computing Curriculum



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The Church Lane Primary School and Nursery Computing Curriculum is split in to 3 aspects:

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| **Computer Science** |
| **Information Technology** |
| **Digital Literacy** |

These overarching concepts will be covered in a variety of milestones as shown on the next page.

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| Computer Science | Year 1 | | | Year 2 | | |
| Statement | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions | Create and debug simple programs | Use logical reasoning to predict the behaviour of simple programs | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. | Create and debug simple programs | Use logical reasoning to predict the behaviour of simple programs |
| Outcomes | Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand | Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code | When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program. | Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code | Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges: Chimp. Children’s program designs display a growing awareness of the need for logical, programmable steps. | Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program |

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| Information Technology | Year 1 | Year 2 |
| Statement | Use technology purposefully to create, organise, store, manipulate and retrieve digital content | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. |
| Outcomes | Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count. | Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within 2Sequence. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound |

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| Digital Literacy | Year 1 | | Year 2 | |
| Statement | Recognise common uses of information technology beyond school. | Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies | Recognise common uses of information technology beyond school. | Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies |
| Outcomes | Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chai | Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash | Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template. Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs | Children know the implications of inappropriate online searches. Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult |

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| Computer Science | Year 3 | | | | Year 4 | | | |
| Statement | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | Use sequence, selection and repetition in programs; work with variables and various forms of input and output | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | 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 | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | Use sequence, selection and repetition in programs; work with variables and various forms of input and output. | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | 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. |
| Outcomes | Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it | Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects | Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, repetition and use of timers. They make good attempts to ‘step through’ more complex code in order to identify errors in algorithms and can correct this. e.g. In programs such as Logo, they can ‘read’ programs with several steps and predict the outcome accurately | Children can list a range of ways that the Internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way | When turning a real-life situation into an algorithm, the children’s design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs | Children’s use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They understand ‘IF statements’ for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Children can make use of user inputs and outputs such as ‘print to screen’. e.g. 2Code. | Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, ‘IF’ statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. In programs such as Logo, they can ‘read’ programs with several steps and predict the outcome accurately | Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving |

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| Information Technology | Year 3 | | Year 4 | |
| Statement | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | 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 | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | 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 |
| Outcomes | Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines. | Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond. | Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. | Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. Children share digital content within their community, i.e. using Virtual Display Boards. |

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| Digital Literacy | Year 3 | Year 4 |
| Statement | Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact | Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact. |
| Outcomes | Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact | Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others |

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| Computer Science | Year 5 | | | | Year 6 | | | |
| Statement | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | Use sequence, selection and repetition in programs; work with variables and various forms of input and output | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | 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 | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | Use sequence, selection and repetition in programs; work with variables and various forms of input and output. | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | 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 |
| Outcomes | Children may attempt to turn more complex reallife situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code. | Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design. | When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables | Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards | Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. | Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions | Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole. | Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the Internet in school. |

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| Information Technology | Year 5 | | Year 6 | |
| Statement | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. | 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 | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | 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. |
| Outcomes | Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication. | Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the Internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements | Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication | Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the Internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements. |

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| Digital Literacy | Year 5 | Year 6 |
| Statement | Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact. | Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact |
| Outcomes | Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people’s safety | Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people’s safety |

September 2022 – introduction to the new curriculum across school

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| Predominant Area of Computing | | | | | |
|  | Computer Science |  | Information technology |  | Digital literacy |

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| **Year 1** | | | | | | | | | | | | | | | | | |
| Number of lessons  Main Tool | **Unit 1.1**  **Online safety & Exploring Purple Mash**  **4** | | **Unit 1.2**  **Grouping & Sorting**  **2** | | **Unit 1.3**  **Pictograms**  **2**  **2count** | | **Unit 1.4**  **Lego Builders**  **3** | | **Unit 1.5**  **Maze Explorers**  **3**  **2Go** | | **Unit 1.6**  **Animated Story Books**  **5**  **2create A Story** | | **Unit 1.7**  **Coding**  **6**  **2Code** | | **Unit 1.8**  **Spreadsheets**  **3**  **2Calculate** | | **Unit 1.9**  **Technology Outside School**  **2** |
| **Year 2** | | | | | | | | | | | | | | | | | |
| Number of lessons  Main Tool | | **Unit 2.1**  **Coding**  **6**  **2Code** | | **Unit 2.2**  **Online safety**  **3** | | **Unit 2.3**  **Spreadsheets**  **4**  **2Calculate** | | **Unit 2.4**  **Questioning**  **5**  **2Question**  **2Investigate** | | **Unit 2.5**  **Effective Searching**  **3** | | **Unit 2.6**  **Creating Pictures**  **5**  **2Paint A PIcture** | | **Unit 2.7**  **Making Music**  **3**  **2Sequence** | | **Unit 2.8**  **Presenting Ideas**  **4** | |

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| **Year 3** | | | | | | | | | | | | | | | | |
| Number of lessons  Main Tool | **Unit 3.1**  **Coding**  **6**  **2Code** | **Unit 3.2**  **Online Safety**  **3** | | **Unit 3.3**  **Spreadsheets**  **4**  **2Calculate** | | **Unit 3.4**  **Touch Typing**  **4**  **2Type** | | **Unit 3.5**  **E-mail (inc. email safety)**  **6**  **2Email** | | **Unit 3.6**  **Branching Databases**  **4**  **2Question** | | **Unit 3.7**  **Simulations**  **3**  **2Simulate** | | **Unit 3.8**  **Graphing**  **3**  **2Graph** | | **Unit 3.9**  **Presenting**  **5/6**  **PowerPoint or Google Slides** |
| **Year 4** | | | | | | | | | | | | | | | | |
| Number of lessons  Main Tool | **Unit 4.1**  **Coding**  **6**  **2Code** | **Unit 4.2**  **Online Safety**  **4** | | **Unit 4.3**  **Spreadsheet**  **6**  **2Calculate** | | **Unit 4.4**  **Writing for audiences**  **5** | | **Unit 4.5**  **Logo**  **4**  **2Logo** | | **Unit 4.6**  **Animation**  **3**  **2Animate** | | **Unit 4.7**  **Effective Searching**  **3** | | **Unit 4.8**  **Hardware Investigators**  **2** | | **Unit 4.9**  **Making Music**  **4**  **Busy Beats** |
| **Year 5** | | | | | | | | | | | | | | | | |
| Number of lessons  Main Tool | **Unit 5.1**  **Coding**  **6**  **2Code** | | **Unit 5.2**  **Online Safety**  **3** | | **Unit 5.3**  **Spreadsheets**  **6**  **2Calculate** | | **Unit 5.4**  **Databases**  **4**  **2Investigate** | | **Unit 5.5**  **Game Creator**  **5**  **2DIY 3D** | | **Unit 5.6**  **3D Modelling**  **4**  **2Design & Make** | | **Unit 5.7**  **Concept Maps**  **4**  **2Connect** | | **Unit 5.8**  **Word Processing**  **8**  **MS Word or Google Docs** | |
| **Year 6** | | | | | | | | | | | | | | | | |
| Number of lessons  Main Tool | **Unit 6.1**  **Coding**  **6**  **2Code** | **Unit 6.2**  **Online Safety**  **2** | | **Unit 6.3**  **Spreadsheets**  **5**  **2Calculate** | | **Unit 6.4**  **Blogging**  **4**  **2Blog** | | **Unit 6.5**  **Text Adventures**  **5** | | **Unit 6.6**  **Networks**  **3** | | **Unit 6.7**  **Quizzes**  **6**  **2Quiz** | | **Unit 6.8**  **Understanding Bianry**  **4** | | **Unit 6.9**  **Spreadsheets**  **8**  **Excel or Google Sheets** |

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|  | Units | | | | | | | | | |
| Year 1 |  |  |  |  |  |  |  |  |  |
| Year 2 |  |  |  |  |  |  |  |  |  |
| Year 3 |  |  |  |  |  |  |  |  |  |
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Year 1

Progression document

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| **Aspect** | **Statement** |
| **Computer Science** | Understand what algorithms are; how they are implemented as programs on digital devices; and those programs execute by following precise and unambiguous instructions. |
| Create and debug simple programs. |
| Use logical reasoning to predict the behaviour of simple programs. |
| **Information Technology** | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. |
| **Digital Literacy** | Recognise common uses of information technology beyond school. |
| Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the Internet or other online technologies. |

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| **Year 1** |
| Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand |
| Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code. |
| When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program. |
| Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count. |
| Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair. |
| Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash. |

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| Unit 1.1 – Online Safety & Exploring Purple Mash | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to log in safely and the importance of doing that as well as having time to discover how Purple Mash works and how to use it effectively. | | |
| 1. How and why do I log in safely online?   Children will log in safely and understand why that is important. They will create an avatar and understand what this is and how it is used. Children will create a picture and add their own name to it as well as start to understand the idea of ‘ownership’ of creative work. Finally, the children will save work to ‘My Work’ area and understand that this is a private space. | Key Learning:   * To log in safely. * To learn how to find saved work in the Online Work area and find teacher comments. * To learn how to search Purple Mash to find resources. * To become familiar with the icons and types of resources available in the Topics section. * To start to add pictures and text to work. * To explore the Tools and Games section of Purple Mash. * To learn how to open, save and print. * To understand the importance of logging out | |
| 1. What is My Work area?   Children will learn how to find saved work in the Online Work area and learn what the teacher has access to in Purple Mash. Children will learn how to see messages left by the teacher on their work. Finally, the children will learn how to search Purple Mash to find resources. |
| 1. What are Purple Mash Topics?   Children will begin to become familiar with the types of resources available in the Topics section. Children will become more familiar with the icons used in the resources in the Topics section and finally they will start to add pictures and texts to work. | Key Vocabulary:  Log in  Avatar  Username  My Work  Password  Topics  Log Out  Save  Notifications  Tools | Key Questions:   1. What is a password and why should we keep them safe? 2. What is a digital avatar? 3. Where is my work stored on Purple Mash? |
| 1. What are Purple Mash Tools?   Children will explore the Tools area of Purple Mash and learn about common icons used in Purple Mash for Save, Print, Open and New. Children will explore the Games area on Purple Mash and will understand the importance of logging out when they have finished. |

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| Unit 1.2 - Grouping and Sorting | | |
| Knowledge that must be taught in this unit:  In this unit, the children will sort items by different criteria away from the computer. At the computer, they will use Grouping on Purple Mash to sort items. | | |
| 1. How do you sort away from the Computer?   Children will be able to sort items, on Purple Mash, using a range of criteria whilst offline. | Key learning:   * To sort items using a range of criteria * To sort items on the computer using the ‘Grouping’ activities in Purple Mash | |
| 1. How do you sort on the Computer?   Children will sort items on the computer using the ‘Grouping’ activities in Purple Mash whilst online. | Key Vocabulary:  Sort  Criteria | Key questions:   1. In what ways can we sort objects? |

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| Unit 1.3 - Pictograms | | |
| Knowledge that must be taught in this unit:  This unit is an introduction to pictograms and looking at how they can be used to represent data using 2Connect and 2Count. | | |
| 1. How can you represent data in pictures?   Children will understand that data can be represented in picture format. Children will be able to discuss and illustrate the transport used to travel to school. Children will contribute to the collection of class data and use illustrations to create simple pictograms. | Key learning:   * To understand that data can be represented in picture format * To contribute to a class pictogram * To use a pictogram to record the results of an experiment | |
| 1. How do we collaborate?   Children will contribute to a class pictogram. Children will be able to discuss what the pictogram shows and be able to explain. | Key vocabulary:  Pictogram  Data  Collate | Key questions: |
| 1. What ways can you record results?   Children will use pictograms to record the results of an experiment. Children will collect data from rolling a die 20 times and recording the results. Children will then represent the results as a pictogram. |

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| Unit 1.4 - Lego Builders | | |
| Knowledge that must be taught in this unit:  This unit encourages children to begin to think logically about scenarios. Children will be introduced to the term ‘algorithm’. This concept is at the core of coding. The next unit (Maze Explorers), builds upon this, linking logical thought processes to the way that computers are programmed. | | |
| 1. Do I need to follow instructions?   Children will understand the importance of following instructions. They will know that to achieve the effect they want when building something, they need to follow instructions. Children will know that by following the instructions correctly, they will get the correct results and they will know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective. | Key learning:  • To compare the effects of adhering strictly to instructions to completing tasks without complete instructions.  • To follow and create simple instructions on the computer.  • To consider how the order of instructions affects the result. | |
| 1. How do I follow and create instructions?   Children will follow and create simple instructions on a computer. They will be able to explain the effect of carrying out a task with no instructions and know thar computers need precise instructions to follow. Children will know that an algorithm written for a computer to follow is called a program. | Key vocabulary:  Instruction  Algorithm  Computer  Program  Debug | Key questions:   1. What is an instruction? 2. Why do we need to debug code? |
| 1. Is order important?   Children to consider how the order of instructions affects the results. Children will understand how the order in which the steps of a recipe are presented affects the outcome. Next, children will show they can organise instructions for a simple recipe and know that correcting errors in an algorithm or program is called debugging. |

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| Unit 1.5 - Maze Explorers | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you move through a maze?   Children will know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children will also know how to add a unit of measurement to the direction in 2Go. They will know how to undo their last move and know how to move a character back to the starting point. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How do you debug a set of instructions?   Children will be able to use diagonal direction keys to move characters in the right directions. They will know how to create a simple algorithm and know how to debug that algorithm. |
| 1. How do you change or extend an algorithm?   Children will use the additional direction keys to create a new algorithm and will be able to challenge themselves by using longer algorithms. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What ways can I complete challenges?   Children will be able to change the background images in their chosen challenge and save their new challenge. Children will also use this lesson to trial each other’s challenges. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.7 – Coding | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. What are instructions?   Children will understand what instructions are and predict what will happen when instructions are followed. | Key Learning:  • To understand what instructions are and predict what might happen when they are followed.  • To use code to make a computer program.  • To understand what object and actions are.  • To understand what an event is.  • To use an event to control an object.  • To begin to understand how code executes when a program is run. • To understand what backgrounds and objects are.  • To plan and make a computer program. | |
| 1. How do you make a computer program?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. What is an event?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Action  Algorithm  Background  Code  Command  Debug/Debugging  Event  Execute  Input  Instructions  Object  Output  Properties  Run  Scale  Scene  Sound  When clicked | Key Questions:   1. What is coding? 2. Why is it useful to design before coding? 3. How can you make characters move in a 2Code program? |
| 1. What does execute mean?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is a background and how do you scale?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |
| 1. How do you use a plan when programming?   Children will plan a computer program and then continue to make that computer program. They will create the plan using the Free Code Scene program and will use code and ensure it will work. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.9 – Technology Outside School | | |
| Knowledge that must be taught in this unit:  This unit encourages the children to consider how technology is used outside of the school environment. It will involve children going for a walk around their local community to see these in action. | | |
| 1: What is technology?  Children will find and understand examples of where technology is used in the local community. Children will first understand what is meant by technology and consider types of technology used in school and out of school. | Key learning:   * To walk around the local community and find examples of where technology is used. * To record examples of technology outside school. | |
| 2: Where can I see technology outside of school?  Children will record examples of technology outside school. Children will have recorded 4 examples of where technology is used away from school. | Key vocabulary:  Technology | Key questions:   1. What is technology? 2. How does technology make our lives easier? |

Year 2

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| **Aspect** | **Statement** |
| **Computer Science** | Understand what algorithms are; how they are implemented as programs on digital devices; and those programs execute by following precise and unambiguous instructions. |
| Create and debug simple programs. |
| Use logical reasoning to predict the behaviour of simple programs. |
| **Information Technology** | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. |
| **Digital Literacy** | Recognise common uses of information technology beyond school. |
| Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the Internet or other online technologies. |

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| **Year 2** |
| Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. |
| Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges: Chimp.Children’s program designs display a growing awareness of the need for logical, programmable steps. |
| Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program. |
| Children demonstrate an ability to organise data using, for example, a database such as 2Invesitigate and can retrieve specific data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within 2Sequence. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound. |
| Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template. Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs. |
| Children know the implications of inappropriate online searches. Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult. |

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| Unit 2.1 – Coding | | | | |
| Knowledge that must be taught in this unit:  In this unit, children will use the 2Code tool on Purple Mash to Predict, Run code, Investigate, Modify and Make (PRIMM). This is to ensure a breadth of the knowledge is covered and children can not only create but debug and evaluate. | | | | |
| 1. What is an algorithm?   Children will understand what an algorithm is and will create a computer program using an algorithm. Children will be able to explain that an algorithm is a set of instructions. They will be able to describe created algorithms and can explain that an algorithm needs to be accurate. | | Key Learning:   * To understand what an algorithm is. * To create a computer program using an algorithm. * To create a program using a given design. * To understand the collision detection event. * To understand that algorithms follow a sequence. * To design an algorithm that follows a timed sequence. * To understand that different objects have different properties. Key Resources. * To understand what different events do in code. * To understand the function of buttons in a program. * To understand and debug simple programs. | | |
| 1. What is Collision Detection?   Children will create a program using a given (pre-made) design. The children will need to understand what a collision detection is so that they can plan an algorithm that includes a collision detection. Children will read a block of code and predict what will happen. | |
| 1. What is a timer when coding?   Children will understand that algorithms follow a sequence and will then design an algorithm that follows a timed sequence. Children will create a program with a timer-after command and then explain what that does to their program. | | Key Vocabulary:  Action  Algorithm  Background  Button  Collision Detection  Debug/Debugging  Design Mode  Event  Key Pressed  Nesting  Object  Predict  Properties  Run  Scale  Scene  Sequence  Sound  Test  Text  Timer  When clicked/swiped | Key Questions:   1. What is an algorithm? Why is it useful in coding? 2. Why is it important to know there are different object types? 3. If you are good at coding | |
| 1. Why are there different ‘events’ in code?   Children will need to understand that different objects, within code, have different properties. They will understand what different events do in code and then create a computer program using different object types. Children will then modify the properties of those objects. | |
| 1. What is a button and why do we need them?   Children to create a program using a given design that includes buttons. They will need to understand the function of buttons in a program. Children will then be able to explain what their button does and can then modify the button to fit their program design. | |
| 1. What is ‘smelly code’?   Children will need to know what debugging means and will need to understand the need to test and debug a program repeatedly. Children will also need to explain what debugging it and have the ability to debug simple pre-made programs. | |
| Unit 2.2 – Online Safety | | | | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | | | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know how to refine searches using the Search tool. * To use digital technology to share work on Purple Mash to communicate and connect with others locally. * To have some knowledge and understanding about sharing more globally on the Internet. * To introduce Email as a communication tool using 2Respond simulations. * To understand how we should talk to others in an online situation. * To open and send simple online communications in the form of email. * To understand that information put online leaves a digital footprint or trail. * To identify the steps that can be taken to keep personal data and hardware secure. | | | | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Search  Displayboard  Internet  Sharing  Email  Attachment  Digital Footprint | | | Key questions:   1. Why is a search bar useful? 2. What is an email? 3. What is meant by my Digital Footprint? | |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 2.3 - Spreadsheets | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Calculate on Purple Mash in order to lock, move, cell, speak and count tools to make a counting machine. | | |
| 1. How do we use spreadsheets?   Children will review the work done in 2Calculate in Year 1. They will revise spreadsheet related vocabulary and use some 2Calculate tools that were introduced in Year 1. Children will be able to explain what rows and columns are. They will be able to open, save and edit. Children will be able to include images from the image toolbox and allocate them a value as well as using the count tool, to count. | Key Learning:   * To use 2Calculate image, lock, move cell, speak and count tools to make a counting machine. * To learn how to copy and paste in 2Calculate. * To use the totalling tools. * To use a spreadsheet for money calculations. * To use the 2Calculate equals tool to check calculations. * To use 2Calculate to collect data and produce a graph. | |
| 1. How do you copy, cut and paste?   Children will be able to use copying, cutting and pasting to help make a spreadsheet. Children will be able to use tools in a spreadsheet to automatically total rows and columns. Finally, children will be able to use spreadsheet to solve a mathematical puzzle. |
| 1. Can you use a Spreadsheet to add amounts?   Children will use images in a spreadsheet. Children will work out how much they need to pay using coins by using a spreadsheet to help calculate. | Key Vocabulary:  Block Graph  Copy  Drag  Label  Table  Cell  Count Toll  Equals  Row  Total  Column  Data  Equals tool  Speak tool | Key Questions:   1. Why would you copy and paste when using a spreadsheet? 2. How could a spreadsheet help you when you are planning some shopping? 3. Look at the graph made in 2Calculate showing the class’s favourite pets. Which is the most popular? |
| 1. How do you make a table and block graph?   Children will create a table of data on a spreadsheet. Children will also use the data to create a block graph manually. |

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| Unit 2.4 – Questioning | | |
| Knowledge that must be taught in this unit:  In this unit the children will use the program 2Dos. This unit is designed to help children learn about the importance of phrasing questions and that certain data-handling resources are limited in the answers they can provide. | | |
| 1. How do you use and create pictograms?   Children will show that the information provided on pictograms is of limited use beyond answering simple questions. The children will understand that the information on pictograms cannot be used to answer more complicated questions. | Key Learning:   * To learn about data handling tools that can give more information than pictograms. * To use yes/no questions to separate information. * To construct a binary tree to identify items. * To use 2Question (a binary tree database) to answer questions. * To use a database to answer more complex search questions. Key Resources 2Count * To use the Search tool to find information. | |
| 1. Why ask yes/no questions?   Children will need to use 2Do and use yes/no questions to separate information. Children will then be able to separate the items in to different sections. |
| 1. What is a Binary Tree?   Children will understand what is meant by a binary tree and have designed a binary tree to sort pictures of children or animals. | Key Vocabulary:  Binary Tree  Field  Record  Data  Pictogram  Search  Database  Question  Sort | Key Questions:   1. How does a Pictogram show information? 2. How is information organised in a binary tree? 3. How can a database help organise information? |
| 1. Can you use a binary tree to answer questions?   Children will understand that answers are limited to yes and no in a binary tree. Children will understand that the user cannot use 2Question to answer more complicated questions. Children will have matched the 2Simple item pictures to names, using Binary Tree. |

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| Unit 2.5 – Effective Searching | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Internet, web, browsers and search engines after becoming acquainted with the basics of the Internet and how it works. Children will become skilful searches, which is essential for 21st Century learning and information literacy. | | |
| 1: What is the Internet and what does searching mean?  Children will understand the terminology associated with the Internet and searching. Children will be able to recall the meaning of key Internet and searching terms as well as successfully completing a quiz about the Internet. | Key Learning:   * To understand the terminology associated with searching. * To gain a better understanding of searching on the Internet. * To create a leaflet to help someone search for information on the Internet. | |
| 2: How do you search the Internet?  Children will be able to identify the basic parts of a web search engine search page. Children will have learnt to read a web search results page and will search the Internet for answers to a quiz. | Key vocabulary:  Digital Footprint  Network  Web Page  Domain  Search Engine  World Wide Web  Internet  Web Address  Web Site | Key questions:   1. How can I search the Internet |
| 3: Can you effectively use the information searched on the Internet?  Children will create a leaflet to consolidate knowledge of effective Internet searching. |

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| Unit 2.6 – Creating Pictures | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Paint a Picture from Purple Mash resources alongside learning about artists and art movements. | | |
| 1. What is Impressionism?   Children will be able to describe the main features of Impressionist art and will use 2Paint a Picture to create their own art based upon this style. | Key Learning:   * To learn the functions of the 2Paint a Picture tool. * To learn about and recreate the Impressionist style of art (Monet, Degas, Renoir). * To recreate Pointillist art and look at the work of pointillist artists such as Seurat. * To learn about the work of Piet Mondrian and recreate the style using the lines template. Key Resources * To learn about the work of William Morris and recreate the style using the patterns template. * To explore surrealism and eCollage. | |
| 1. What is Pointillist Art?   Children will look at the work of pointillist artists such as Seurat. Children will be able to explain what pointillism is and can then use 2Paint a Picture to create their own art based upon this style. |
| 1. Who was Piet Mondrian?   Children will look at the work of Piet Mondrian and describe the main features of his work. Children will recreate using the Lines template in 2Paint a Picture. | Key Vocabulary:  Art  Palette  Style  Fill  Pointillism  Impressionism  Surrealism | Key Questions:   1. What are the main features of Impressionism? 2. What are the main features of Pointillism? 3. What are the main features of Surrealism? |
| 1. Who was William Morris?   Children to look at the work of William Morris and recreate it using the Patterns Template. Children will describe the main features of art that uses repeating patterns. Children will then use 2Paint a Picture to create their own repeating patterns in a variety of ways. Children will attempt to combine more than one effect to enhance their patterns. |
| 1. What is Surrealism?   Children to look at some surrealist art and describe features of it. Children will then use the eCollage function in 2Paint a Picture to create their own surrealist art using drawing and clipart. |

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| Unit 2.7 – Making Music | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Sequence’ to create simple and more complex animations as well as explore harmony and build up musical scores. | | |
| 1: What is 2Sequence?  Children will be introduced to making music digitally using 2Sequence. Children will understand what 2Sequence is and how it works. They will use different sounds within 2Sequence to create a tune. Children will explore how to speed up and slow down tunes as well as understand what happens to a tune when sounds are moved. | Key Learning:   * To make music digitally using 2Sequence. * To explore, edit and combine sounds using 2Sequence. * To edit and refine composed music. * To think about how music can be used to express feelings and create tunes which depict feelings. * To upload a sound from a bank of sounds into the Sounds section. * To record and upload environmental sounds into Purple Mash. Key Resources * To use these sounds to create tunes in 2Sequence. | |
| 2: How do you make music?  Children should add sounds to a tune to improve it. Children should consider how music can be used to express feelings. Children can change the volume of the background sounds as well as creating two tunes which depict two feelings. | Key vocabulary:  Beat  Tune  Speed  Compose  Sound Effect  Tempo  Note  Soundtrack  Volume | Key questions:   1. What is meant by digital music? 2. How can I change how my music sounds? 3. What is it meant by the tempo of music? |
| 3: What is a soundtrack?  Children will upload a sound from a bank of sounds and will have created, uploaded and use their own recorded sound. Children will finally create their own tune using some of the chosen sounds. |

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| Unit 2.8 – Presenting Ideas | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Quiz, 2Connect and 2Create a Story on Purple Mash to present their ideas in many different ways. | | |
| 1. How do you present a story in three ways?   Children will examine a traditional tale presented as a mind map, as a quiz, as an e-book and as a fact file. Children will know that digital content can be represented in many forms. | Key Learning:   * To explore how a story can be presented in different ways. * To make a quiz about a story or class topic. * To make a fact file on a non-fiction topic. * To make a presentation to the class. | |
| 1. Can you present your ideas as a quiz?   Children will make a quiz using 2Quiz and can talk about their work and make improvements based on feedback received. |
| 1. How do you make a non-fiction fact file?   Children will have extracted information from a 2Connect file to make a publisher fact file on a non-fiction topic. They will add appropriate clipart and photos. Children will know that data can be structured in tables to make it useful. | Key Vocabulary:  E-Book  Mind Map  Presentation  Fact File  Node  Quiz  Fiction  Non-Fiction | Key Questions:   1. What do we need to think about when planning a presentation? 2. Why should I plan out my presentation? |
| 1. Can you make a presentation?   Children can use a variety of software to manipulate and present digital content and information. Children can create digital content to achieve a given goal by combining software packages. |

Year 3

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| **Aspect** | **Statement** |
| **Computer Science** | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. |
| Use sequence, selection and repetition in programs; work with variables and various forms of input and output. |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. |
| 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. |
| **Information Technology** | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. |
| 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. |
| **Digital Literacy** | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. |

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| **Year 3** |
| Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it. |
| Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. |
| Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, repetition and use of timers. They make good attempts to ‘step through’ more complex code in order to identify errors in algorithms and can correct this. e.g. In programs such as Logo, they can ‘read’ programs with several steps and predict the outcome accurately. |
| Children can list a range of ways that the Internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way. |
| Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines. |
| Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond. |
| Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact. |

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| Unit 3.1 – Coding | | | | |
| Knowledge that must be taught in this unit:  In this unit, children will be taught to use flowcharts, timers, and repeat. They will code, test and debug as well as design and make interactive scenes. | | | | |
| 1. How do you use a Flowchart?   Children will read and explain a flowchart as well as using a flowchart to create a computer program. Children will create a computer program that uses click events and timers. | | Key Learning:   * To understand what a flowchart is and how flowcharts are used in computer programming. * To understand that there are different types of timers and select the right type for purpose. * To understand how to use the repeat command. * To understand the importance of nesting. Key Resources * To design and create an interactive scene | | |
| 1. Can you create a timer command?   Children will create a program that uses a ‘*timer-after command*’ as well as creating a ‘’timer-every command’*.* Children will then find different ways to problem solve. | |
| 1. What is meant by ‘Using Repeat’?   Children will understand how the ‘turtle object’ moves and can use the ‘repeat command’ with an object. The children will create a computer program that includes use of the ‘repeat program’. | | Key Vocabulary:  Action  Alert  Algorithm  Background  Bug  Button  Click Event  Code  Collision Detention Event  Command  Debug/Debugging  Event  Flowchart  Implement  Input  Interval  Nesting  Object  Predict  Properties  Repeat  Run  Sequence  Scene  Test  Timer  Turtle Object | Key Questions:   1. Why is it useful to use a flowchart to design a computer program? 2. What does repeat mean in computer programming? 3. What is the difference between ‘timer after’ and ‘timer every’? | |
| 1. Can you code, test and debug a program?   Children will create a computer program using prior knowledge. They will run, test and debug the programs. Children will consider ‘nesting’ when ‘debugging’ their programs. | |
| 1. And 6. Can you design and make an interactive scene?   Children use the properties table to set the properties of objects. Children will plan their scene and algorithms before they create their program. Finally, children will confidently make several different things happen in a program. | |
| Unit 3.2 – Online Safety | | | | | |
| Knowledge that must be taught in this unit:  In this unit, the children must be taught about safety online specifically what do to when/if they feel unsafe. Children must be taught the understanding between fact or fiction as well as the appropriate content seen. | | | | | |
| 1: How do I keep my passwords safe  Children will know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away. Children will understand how the Internet can be used to help us to communicate effectively. Children will understand how a blog can be used to help us communicate with a wider audience. Children need to understand what makes a good password for use on the Internet. | Key Learning:   * To know what makes a safe password. * To learn methods for keeping passwords safe. * To understand how the Internet can be used in effective communication. * To understand how a blog can be used to communicate with a wider audience. * To consider the truth of the content of websites. * To learn about the meaning of age restrictions symbols on digital media and devices | | | | |
| 2: Is everything we read on the Internet true?  Children will consider if what they can read on websites is always true. They will look at a ‘spoof’ website and then create one themselves. The children will think about why these sites might exist and how to check that the information is accurate. | Key vocabulary:  Appropriate  Blog  Inappropriate  Password  Personal information  Internet  Spoof  Reputable source  Permission  Reliable source  Vlog  Websire  Verify | | | Key questions:   1. What is a password and why should we keep them safe? 2. Is everything I read on the Internet true? 3. How do I know if I am old enough to play a computer game? | |
| 3: Should we pay attention to age restrictions?  Children will learn about the meaning of age restrictions and the symbols on digital media and devices. They will discuss why PEGI restrictions exist. Children will need to know where to turn to for help if they see inappropriate content or have inappropriate contact from others. |

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| Unit 3.3 - Spreadsheet | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Calculate on Purple Mash to create pie charts and bar graphs. They will use symbols more than, less than and equal to, to compare values. They will collect data and produce graphs. They will also learn about cell references. | | |
| 1. How do you create pie charts and Bar Graphs?   Children will add and edit data in a table layout. They will find out how spreadsheet programs can automatically create graphs from data. | Key Learning:   * To use the symbols more than, less than and equal to, to compare values. * To use 2Calculate to collect data and produce a variety of graphs. * To use the advanced mode of 2Calculate to learn about cell references | |
| 1. How do you use ‘more than’ and ‘spin button’ tools?   Children will be introduced to the ‘more than’, ‘less than’ and ‘equals’ tools. They will use the ‘spin’ tool and show how it can be used to count through times tables. | Key Vocabulary:  Advance mode  Data  Less than  Pie chart  Spreadsheet  Bar graph  Cell address  Columns  More than  Quiz tool  Table  Equals  Rows  More than, Less than & Equals tool  Spin tool | Key Questions:   1. Explain how you would collect data to find out children’s favourite school subjects. What sort of graph would you create? 2. How can you make a 3 times table machine using the spin tool? Could you use the equals tool to check your answers? 3. Explain how you would locate a cell in the advanced mode? |
| 1. What is cell location?   Children will be introduced to the Advanced Mode of 2Calculate and learn about describing cells using their addresses. Children will be able to describe a cell location using the notion of a letter for the column followed by a number for the row. Children will be able to find specific locations in a spreadsheet. |

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| Unit 3.4 – Touch Typing | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2type on Purple Mash to find home, top and bottom row keys without looking (touch typing) as well as the left and right keys. | | |
| 1. What are the Home, Top and Bottom row keys?   Children will be introduced to the typing terminology. They will understand the correct way to sit at the keyboard. The children will learn how to use the home, top and bottom row keys. | Key Learning:   * To introduce typing terminology. * To understand the correct way to sit at the keyboard. * To learn how to use the home, top and bottom row keys. * To practise typing with the left and right hand. | |
| 1. Can we improve our typing ability?   Children will practice and improve typing for home, bottom and top rows. Children should use two hands to type the letters on the keyboard. |
| 1. Can you type efficient with the left keys?   Children will practice the keys typed with the left hand. Children should touch type using the left hand only. | Key Vocabulary:  Posture  Keys  Space bar  Typing | Key Questions:   1. Why should I have a good posture at the computer? 2. Why should I type certain keys with certain fingers? |
| 1. Can you type efficient with the right keys?   Children will practice the keys typed with the right hand. Children should touch type using the right hand only. |

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| Unit 3.5 - Email | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to think about the different methods of communication and list a range of different ways to do it. Children will use 2Connect to highlight the strengths and weaknesses of each method. | Key Learning:   * To think about different methods of communication. * To open and respond to an email using an address book. * To learn how to use email safely. * To add an attachment to an email. * To explore a simulated email scenario | |
| 2: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Address book  CC  Email  Personal Information  Attachment  Communication  Inbox  Save to draft  BCC  Compose  Password  Trusted Contact | Key questions:   1. What is email? 2. What should I do if I receive an email that makes me upset or scared? 3. What information can I send in an email? |
| 4: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. |
| 5: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |
| 6: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.5 - Maze Explorers | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you move through a maze?   Children will know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children will also know how to add a unit of measurement to the direction in 2Go. They will know how to undo their last move and know how to move a character back to the starting point. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How do you debug a set of instructions?   Children will be able to use diagonal direction keys to move characters in the right directions. They will know how to create a simple algorithm and know how to debug that algorithm. |
| 1. How do you change or extend an algorithm?   Children will use the additional direction keys to create a new algorithm and will be able to challenge themselves by using longer algorithms. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What ways can I complete challenges?   Children will be able to change the background images in their chosen challenge and save their new challenge. Children will also use this lesson to trial each other’s challenges. |

Year 4

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| **Aspect** | **Statement** |
| **Computer Science** | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. |
| Use sequence, selection and repetition in programs; work with variables and various forms of input and output. |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. |
| 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. |
| **Information Technology** | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. |
| 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. |
| **Digital Literacy** | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. |

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| **Year 4** |
| When turning a real-life situation into an algorithm, the children’s design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs. |
| Children’s use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They understand ‘IF statements’ for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Children can make use of user inputs and outputs such as ‘print to screen’. e.g. 2Code. |
| Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, ‘IF’ statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. In programs such as Logo, they can ‘read’ programs with several steps and predict the outcome accurately. |
| Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the Internet can be used to provide different methods of communication is improving. |
| Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. . |
| Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. Children share digital content within their community, i.e. using Virtual Display Boards. |
| Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact. |

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| Unit 4.1 – Coding | | |
| Knowledge that must be taught in this unit:  In this unit, children will use the 2Code tool on Purple Mash to Predict, Run code, Investigate, Modify and Make (PRIMM). This is to ensure a breadth of the knowledge is covered and children can not only create but debug and evaluate. | | |
| 1. How do you design, code, test and debug a program?   Children will review coding vocabulary and knowledge before creating a simple computer program. The children will explore different object types in 2Code and will change a background and objects to create a scene. Children will plan an algorithm for their scene and use 2Code to program it. | Key Learning:   * To begin to understand selection in computer programming. * To understand how an IF statement works. * To understand how to use co-ordinates in computer programming. * To understand the 'repeat until' command. * To understand how an IF/ELSE statement works. * To understand what a variable is in programming. * To use a number variable * To create a playable game. | |
| 1. What is an ‘IF’ statement and how do you use them?   Children will begin to understand selection in computer programming. They will understand how an IF statement works. Children will create a program that includes an IF statement and will be able to interpret a flowchart that depicts and IF statement. |
| 1. Why do we use co-ordinates when coding?   Children will understand how to use co-ordinates in computer programming and will understand how an IF statement works. Children will make use of the X and Y properties of objects in their coding and will create a program that includes an IF statement. | Key Vocabulary:  Action Run  Alert Properties  Algorithm Selection  Background Sequence  Button Timer  Code Blocks Variable  Command  Debug / Debugging  Design  Execute  Event  Flowchart  ‘If’ statement  If/else statement  Input  Nest  Object  Prompt  Implement  Repeat until  Predict  Repeat | Key Questions:   1. Explain the stages of the design, code, test, debug coding process? 2. How can variables and if/else statements be useful when coding programs with selection? 3. What does selection mean in coding and how can you achieve this in 2Code? 4. What is the difference between the different object types in 2Code Gibbon level? |
| 1. What does the Repeat until command do?   Children will understand the Repeat until command and begin to understand selection in computer programming. Children will understand how an IF/ELSE statement works. Children will be able to read code that includes repeat until and IF/ELSE and explain how it works. Children can create a program that includes an IF/ELSE statement and will interpret a flowchart. |
| 1. What is a number variable in programming?   Children to understand what a variable is in programming and to use a number variable. Children will be able to explain what a variable is in programming and can create and use variables when programming. |
| 1. How do you create a playable game?   Children will review vocabulary and concepts learnt in Year 4 coding. They will be able to create a playable game. Children will read code that includes repeat until and IF/ELSE and explain how it works. Children will create a program that includes an IF/ELSE statement and can interpret a flowchart that depicts an IF/ELSE statement. |

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| Unit 2.2 – Online Safety | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know how to refine searches using the Search tool. * To use digital technology to share work on Purple Mash to communicate and connect with others locally. * To have some knowledge and understanding about sharing more globally on the Internet. * To introduce Email as a communication tool using 2Respond simulations. * To understand how we should talk to others in an online situation. * To open and send simple online communications in the form of email. * To understand that information put online leaves a digital footprint or trail. * To identify the steps that can be taken to keep personal data and hardware secure. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Search  Displayboard  Internet  Sharing  Email  Attachment  Digital Footprint | Key questions:   1. Why is a search bar useful? 2. What is an email? 3. What is meant by my Digital Footprint? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.5 - Maze Explorers | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you move through a maze?   Children will know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children will also know how to add a unit of measurement to the direction in 2Go. They will know how to undo their last move and know how to move a character back to the starting point. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How do you debug a set of instructions?   Children will be able to use diagonal direction keys to move characters in the right directions. They will know how to create a simple algorithm and know how to debug that algorithm. |
| 1. How do you change or extend an algorithm?   Children will use the additional direction keys to create a new algorithm and will be able to challenge themselves by using longer algorithms. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What ways can I complete challenges?   Children will be able to change the background images in their chosen challenge and save their new challenge. Children will also use this lesson to trial each other’s challenges. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.5 - Maze Explorers | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you move through a maze?   Children will know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children will also know how to add a unit of measurement to the direction in 2Go. They will know how to undo their last move and know how to move a character back to the starting point. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How do you debug a set of instructions?   Children will be able to use diagonal direction keys to move characters in the right directions. They will know how to create a simple algorithm and know how to debug that algorithm. |
| 1. How do you change or extend an algorithm?   Children will use the additional direction keys to create a new algorithm and will be able to challenge themselves by using longer algorithms. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What ways can I complete challenges?   Children will be able to change the background images in their chosen challenge and save their new challenge. Children will also use this lesson to trial each other’s challenges. |

Year 5

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| **Aspect** | **Statement** |
| **Computer Science** | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. |
| Use sequence, selection and repetition in programs; work with variables and various forms of input and output. |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. |
| 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. |
| **Information Technology** | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. |
| 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. |
| **Digital Literacy** | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. |

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| **Year 5** |
| Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code. |
| Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design. |
| When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables. |
| Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards. |
| Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains. |
| Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief using 2Code. They objectively review solutions from others. Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email. |
| Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others. |

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| Unit 5.1 – Coding | | | | |
| Knowledge that must be taught in this unit:  In this unit, children will use the 2Code tool on Purple Mash to Predict, Run code, Investigate, Modify and Make (PRIMM). This is to ensure a breadth of the knowledge is covered and children can not only create but debug and evaluate. | | | | |
| 1. How can we code more efficiently?   Children will review existing coding knowledge and begin to be able to simplify code. Children will create a playable game. Children can use simplified code to make their programming more efficient. Children can use variables in their code and will use this to create a simple playable game. | | Key Learning:   * To begin to simplify code. * To create a playable game. * To understand what a simulation is. * To program a simulation using 2Code. * To know what decomposition and abstraction are in computer science. * To a take a real-life situation, decompose it and think about the level of abstraction. * To understand how to use friction in code. To begin to understand what a function is and how functions work in code. * To understand what the different variables types are and how they are used differently. * To understand how to create a string. * To understand what concatenation is and how it works. | | |
| 1. What is simulating a physical system?   Children will understand what a simulation is and will program a simulation using 2Code. Children will be able to plan an algorithm modelling the sequence of traffic lights. Children can select the right images to reflect the simulation they are making. Children will use their plan to program the simulation to work in 2Code. | |
| 1. What is decomposition and Abstraction?   Children will know what decomposition and abstraction are in Computer Science. Children will take a real-life situation, decompose it and think about the levels of abstraction. They will also use decomposition to make a plan of a real-life situation. Children should be able to make good attempts to break down their task into smaller achievable steps. | | Key Vocabulary:  Abstraction  Action  Algorithm  Concatenation  Debug/ Debugging  Decomposition  Efficient  Flowchart  Event  Function  Input  Nesting  Object  Output  Physical system  Properties  Repeat  Selection  Sequence  Simplify  Timer  Variable | Key Questions:   1. What does simulating a physical system mean? 2. Describe how you would use variables to make a timer countdown and a scorepad for a game 3. Give examples of how you could use the Launch command in 2Code 4. What do the terms decomposition and abstraction mean? Use examples to explain them. | |
| 1. How do you use friction and function in code?   Children will understand how to use friction in code and begin to understand what a function is and how functions work in code. Children should be able to create a program which represents a physical system. Children will create and use functions in their code to make the program more efficient. | |
| 1. What are strings and how do you use them?   Children to understand what the different variable types are and how they are used differently. They will understand how to create a string. Children should create and use strings in programming as well as set/change variable values. | |
| 1. What is a text variable and concatenation?   Children will begin to explore text variables when coding and understand what concatenation is and how it works. Children should create a string and use it in their program as well as use strings to produce a range of outputs in their program. | |
| Unit 5.2 – Online Safety | | | | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | | | | |
| 1: How can I be responsible online and what support do I have?  Children will gain greater understanding of the impact that sharing digital content can have. They will review sources of support for using technology. Children will also review their responsibility to one another in their online behaviour. Children will be able to critically think about the information they share online about themselves and others. Children will know who to tell if they are upset by something online. Children will use the SMART guidance. | Key Learning:   * To gain a greater understanding of the impact that sharing digital content can have. * To review sources of support when using technology and children’s responsibility to one another in their online behaviour. * To know how to maintain secure passwords. * To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. * To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. * To learn about how to reference sources in their work. To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. * To ensure reliability through using different methods of communication. | | | | |
| 2 How do I protect my privacy?  Children will know how to maintain a secure password. They will be able to talk about the advantages and disadvantages, permissions and purposes of altering images digitally. Children will be aware of appropriate and inappropriate text, photograph and videos as well as the impact of sharing these. Children will see how they can use images and digital technology for effect. |
| 3. What does citing a source mean and how do you do it?  Children will learn about how to reference sources in their work. They will search the Internet with consideration for the reliability of the results and check validity. They will also understand the impact of incorrect information. Children will cite sources when researching and explain the importance of this. Children will select keywords and search techniques to find relevant information. | Key vocabulary:  Citation  Collaborate  Communication  Copyright  Creative Commons Licence  Encrypt  Identify theft  PEGI ratings  Malware  Ownership  Password  Personal information  Phishing  Reliable source  SMART rules  Spoof  Validity | | | Key questions:   1. Who do I tell if I see anything online that makes me upset or scared? 2. Why are passwords so important? 3. Why is it important to reference sources in my work? | |
| 4: What is meant by ‘reliability’?  Children will ensure reliability through using different methods of communication. Children will show an understanding of the advantages and disadvantages of different forms of communication and when it is appropriate to use each. |

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| Unit 5.3 - Spreadsheets | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Calculate on Purple Mash to use formulae within a spreadsheet. They will use a count tool to answer hypotheses about common letters. Children will use spreadsheet to model a real life problem. | | |
| 1. How do you convert measurements?   Children will use formulae within a spreadsheet to convert measurements of length and distance. | Key Learning:   * To use formulae within a spreadsheet to convert measurements of length and distance. * To use the count tool to answer hypotheses about common letters in use. * To use a spreadsheet to model a reallife problem. * To use formulae to calculate area and perimeter of shapes. * To create formulae that use text variables. * To use a spreadsheet to help plan a school cake sale | |
| 1. How do you use the Count Tool?   Children will use the count tool to answer hypotheses about common letters in use. Children will use a spreadsheet to work out which letters appear most often and then use the ‘how many’ tool to help them complete their task. |
| 1. Can you use spreadsheet to work out real life problems?   Children will use a spreadsheet to model a real-life problem (work out the area and perimeter of rectangles). They will use formulae to calculate area and perimeter of shapes. | Key Vocabulary:  Rows  Spreadsheet  Columns  Data  Advance mode  Formula Wizard  Format  ‘How Many?’ Tool  Variable  Formula  Formula Bar  Totalling tool | Key Questions:   1. How would you add a formulae so that the cell shows the product of two other cells? 2. What would you use in 2Calculate to have a cell that automatically calculates the number of days since a certain date? 3. Explain what a spreadsheet model of a real-life situation is and what it can be used for? |
| 1. What is a text variable and how are they used?   Children will create formulae that use text variables. They will work out how many days there are in ‘x’ number of weeks or years. |
| 1. Can you plan an event?   Children will use a spreadsheet to help plan a school cake sale. They will model the real-life situation and come up with solutions that can be practically applied. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.5 - Maze Explorers | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you move through a maze?   Children will know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children will also know how to add a unit of measurement to the direction in 2Go. They will know how to undo their last move and know how to move a character back to the starting point. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How do you debug a set of instructions?   Children will be able to use diagonal direction keys to move characters in the right directions. They will know how to create a simple algorithm and know how to debug that algorithm. |
| 1. How do you change or extend an algorithm?   Children will use the additional direction keys to create a new algorithm and will be able to challenge themselves by using longer algorithms. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What ways can I complete challenges?   Children will be able to change the background images in their chosen challenge and save their new challenge. Children will also use this lesson to trial each other’s challenges. |

Year 6

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| **Aspect** | **Statement** |
| **Computer Science** | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. |
| Use sequence, selection and repetition in programs; work with variables and various forms of input and output. |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. |
| 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. |
| **Information Technology** | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. |
| 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. |
| **Digital Literacy** | Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. |

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| **Year 6** |
| Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs.Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. |
| Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions. |
| Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole. |
| Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school. |
| Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication. |
| Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements. |
| Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people’s safety. |

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| Unit 6.1 – Coding | | |
| Knowledge that must be taught in this unit:  In this unit, children will use the 2Code tool on Purple Mash to Predict, Run code, Investigate, Modify and Make (PRIMM). This is to ensure a breadth of the knowledge is covered and children can not only create but debug and evaluate. | | |
| 1. And 2. How can you make your program more complex?   Children will design a playable game with a timer and a score. They will plan and use selection and variables as well as understanding how the launch command works. Children will plan the program, follow their plans and then debug when things do not run as expected. | Key Learning:   * To design a playable game with a timer and a score. * To plan and use selection and variables. * To understand how the launch command works. * To use functions and understand why they are useful. * To understand how functions are created and called. * To use flowcharts to create and debug code. * To create a simulation of a room in which devices can be controlled * To understand how user input can be used in a program. * To understand how 2Code can be used to make a text-adventure game. | |
| 1. What is a function and why are they useful?   Children will use functions and understand why they are useful. They will understand how functions are created and called. Children will create a program that makes use of functions and will create a program that uses multiple functions with code arranged in tabs. |
| 1. How do you use a flowchart and control simulations?   Children will use flowcharts to test and debug a program. They will create a simulation of a room in which devices can be controlled. Children will follow the flowchart to create and debug code. Children will use flowcharts for procedures and be creative with the way they code to generate novel visual effects. | Key Vocabulary:  Action  Algorithm  Command  Co-ordinates  Event  Decomposition  Execute/Run  Debug/ Debugging  Flowchart  Function  Input  Launch Command  Object  Output  Procedure  Properties  Predict  Repeat  Selection  Sequence  Repeat until  Simulation  Tab  Timer  Variable | Key Questions:   1. How can you use Tabs in 2Code Gorilla? 2. What is a function in coding? Give an example that you have used in 2Code Gorilla. 3. In 2Code Gorilla, how can a program receive user input? |
| 1. What is User input?   Children will understand the different options of generating user input in 2Code. They will also understand how user input can be used in a program. Children can code programs that take text input from the user and use this in the program. Children will attribute variables to user input. Children are aware of the need to code for all possibilities when using user input. |
| 1. Can you create a text-based adventure game?   Children will understand how 2Code can be used to make a text-based adventure game. Children can follow through the code of how a text adventure can be programmed in 2Code. Children will design their own text-based adventure game based on one they have played. Children will then adapt an existing text adventure so it reflects their own ideas. |

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| Unit 6.2 – Online Safety | | |
| Knowledge that must be taught in this unit:  In this unit children will understand the risks of using online but how it is an excellent platform when used safely. Children will think about what they put online, their behaviour online and their screen time. | | |
| 1: What are the risks of giving out personal information online?  Children will identify the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. Children will identify secure sites by looking for privacy seals of approval, e.g., https, padlock icon. Children will identify the benefits and risks of giving personal information and device access to different software. | Key Learning:   * To identify benefits and risks of mobile devices broadcasting the location of the user/device. * To identify secure sites by looking for privacy seals of approval. * To identify the benefits and risks of giving personal information. * To review the meaning of a digital footprint. * To have a clear idea of appropriate online behaviour. * To begin to understand how information online can persist. * To understand the importance of balancing game and screen time with other parts of their lives. * To identify the positive and negative influences of technology on health and the environment | |
| 2: How important is my online behaviour?  Children will review the meaning of digital footprint and understand how and why people use their information and online presence to create a virtual image of themselves as a user. Children will have a clear idea of appropriate behaviour online and how this can protect themselves and others from possible online dangers, bullying and inappropriate behaviour. Children will understand how information online can persist and give away details of those who share or modify it. | Key vocabulary:  Date analysis  Digital footprint  Inappropriate  Location sharing  Password  PEGI rating  Phishing  Print screen  Screen time  Secure websites  Spoof | Key questions:   1. Why do I need to be aware of the dangers of being online? 2. What is meant by my digital footprint? 3. Why is it important to think about how much time I use a screen for? |
| 3: Should I limit my screen time?  Children will understand the importance of balancing game and screen time with other parts of their lives, e.g., explore the reasons why they may be tempted to spend more time playing games or find it difficult to stop playing and the effects this has on their health. Children will identify the positive and negative influences of technology on health and the environment. |

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| Unit 6.3 - Spreadsheets | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Calculate to investigate the probability of the results of throwing many dice. Children will calculate the discount of final prices, how to spend pocket money and the effect of saving money. | | |
| 1. How do you find the probability using spreadsheets?   Children will use spreadsheet to investigate the probability of the results of throwing many dice. Children will create a spreadsheet to answer mathematical questions relating to probability. Children will use copy and paste shortcuts. | Key Learning:   * To use a spreadsheet to investigate the probability of the results of throwing many dice. * To use a spreadsheet to calculate the discount and final prices in a sale. * To use a spreadsheet to plan how to spend pocket money and the effect of saving money. * To use a spreadsheet to plan a school charity day to maximise the money donated to charity. | |
| 1. How do you create a Computational Model?   Children will use a spreadsheet to calculate the discount and final prices in a sale. They will create a formula to help work out the prices of items in the sale. |
| 1. How do you use Spreadsheets to plan spending money?   Children will use a spreadsheet to plan how to spend pocket money and the effect of spending money. | Key Vocabulary:  Rows  Data  Spreadsheet  Columns  Formula  Advance mode  Count (How Many) Tool  Format Cell  Move Cell tool  Budget  Dice Tool  Formula Bar  Probability  Chart  Expense  Formula Wizard  Profit | Key Questions:   1. How would you add a formula so that the cell shows the total of a column of cells? 2. What is a computational model and what it can be used for? 3. If you were going to use a spreadsheet to plan your dream holiday , what data would you collect to cost the trip? |
| 1. And 5. Can you plan a school event?   Children will use a spreadsheet to plan a school charity day to maximise the money donated to charity. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.6 – Animated Story Books | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you draw on Purple Mash?   Children will understand and know the difference between traditional books and e-books. Children will use different tolls to create a picture on a page whilst exploring tools on 2Create. Children will add text to a page and save the page they have created. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How can you animate a picture?   Children will add animation to a picture they have previously saved. Children will then play pages that have been created so far. Children will save additional changes and overwrite the file they created previously. |
| 1. How do you add a sound effect to a picture?   Children will add a sound effect to a picture on a page. They will then add a voice recording to the picture and then add pre-created music to the picture. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What is a background and how do you add one?   Children add backgrounds to the story they have created and demonstrate a good understanding of all the tools they have used in 2Create a Story. Children will then create their own story. |
| 1. What is Copy and Paste and how do you use it?   Children to use Copy and Paste feature to create additional pages and continue to complete their animated stories. The children should add to a class display board of the story books created by the class. |

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| Unit 1.8 - Spreadshets | | |
| Knowledge that must be taught in this unit:  In this unit children will use the Purple Mash App ‘2Calculate’, which is a simple-to-use version of MS Excel, to build knowledge and skills to enter and evaluate data. They will navigate around a spreadsheet, learn about rows and columns as well as entering data in to cells. | | |
| 1: What are spreadsheets?  Children will begin to understand what a spreadsheet is and what one looks like. Children will be able to navigate around a spreadsheet and enter data. Children will also learn new vocabulary related to spreadsheets. | Key Learning:   * To know what a spreadsheet program looks like. * To locate 2Calculate in Purple Mash. * To enter data into spreadsheet cells. * To use 2Calculate image tools to add clipart to cells. * To use 2Calculate control tools: lock, move cell, speak and count. | |
| 2: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. | Key vocabulary:  Arrow keys  Backspace key  Cursor  Columns  Cells  Clipart  Count Tool  Delete key  Image Toolbox  Lock Tool  Move cell tool  Rows  Speak Tool  Spreadsheet | Key questions:   1. What does a spreadsheet look like? 2. How could you use a spreadsheet to add values? 3. How could you use the count and speak tools? |
| 3: How do you add sounds to projects to make a melody?  Children should start a new ‘Live Loop’ project using GarageBand. Children should also understand the meaning of the word ‘structure’. Pupils will have started a ‘Live Loop’ project and created one melody consisting of four instruments. |

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| Unit 1.5 - Maze Explorers | | |
| Knowledge that must be taught in this unit:  In this unit the children will be taught to use 2Go on Purple Mash to create, and debug maze creations. Children will also use specific keys to navigate the mazes. | | |
| 1. How do you move through a maze?   Children will know how to use the direction keys in 2Go to move forwards, backwards, left and right. Children will also know how to add a unit of measurement to the direction in 2Go. They will know how to undo their last move and know how to move a character back to the starting point. | Key Learning:   * To understand the functionality of the direction keys. * To understand how to create and debug a set of instructions (algorithm). * To use the additional direction keys as part of an algorithm. * To understand how to change and extend the algorithm list. * To create a longer algorithm for an activity. * To set challenges for peers. * To access peer challenges set by the teacher as 2Dos. | |
| 1. How do you debug a set of instructions?   Children will be able to use diagonal direction keys to move characters in the right directions. They will know how to create a simple algorithm and know how to debug that algorithm. |
| 1. How do you change or extend an algorithm?   Children will use the additional direction keys to create a new algorithm and will be able to challenge themselves by using longer algorithms. | Key Vocabulary:  Direction  Challenge  Arrow  Undo  Rewind  Forward  Backwards  Right Turn/Left Turn  Debug  Instruction  Algorithm | Key Questions:   1. What is 2Go? 2. How do I undo a mistake on 2Go? |
| 1. What ways can I complete challenges?   Children will be able to change the background images in their chosen challenge and save their new challenge. Children will also use this lesson to trial each other’s challenges. |