Singleton Church of England Primary School
Progression of Skills and Knowledge
Computing - Y3

	Year 3 – Unit 3.1 Coding	Year 3 – Unit 3.2 Online Safety	Year 3 - Unit 3.3 Spreadsheets	Year 3 – Unit 3.4 Touch typing
KEY VOCABULARY	Action, alert, algorithm, background, bug, button, click event, code, Collison detected, command, debug, event, flowchart, implement, input, interval, nesting, object, predict, run, properties, repeat, scene, sequence, test, timer,	Appropriate, blog, inappropriate, password, personal information, internet, spoof, reputable source, permission, reliable source, verify, vlog, website	Advance mode, bar graph, equals, data, cell address, rows, columns, less than, more than, pie chart, quiz tool, spin tool, spreadsheet, table	Posture, keys, space bar, typing
SUBSTANTIVE KNOWLEDGE	• Knows what a flowchart is and how flowcharts are used in computer programming. • Knows how to use a flowchart to create a computer program. • Knows that there are different types of timers used in coding environments such as 2Code. • Knows which timer should be used for a given purpose. • Know what a repeat command is and how to use the repeat command. • Know how to create a range of programs using coding knowledge. • Know how to run, test and debug their own programs. • Know what nesting is and that this should be considered when debugging. • Know how to change attributes/properties of any objects in a program they have made.	• Knows what makes a safe password and how to keep it safe. • Knows the main outcomes of not keeping passwords safe. • Knows all the common ways the Internet enables people to effectively communicate. • Know that a blog can be used to help communicate with a wider audience. • Know how to contribute to a blog with clear and appropriate messages. • Know that some information held on websites may not be accurate or true. • Beginning to know how to search the Internet and how to think critically about the results returned. • Know why there are age restrictions on digital media and devices. • Know where to turn to for help if they see inappropriate content or have inappropriate contact from others.	• Know how to create tables of data within a spreadsheet. • Know how to use a spreadsheet program to automatically create charts and graphs from data. • Know how to use various features within a spreadsheet to support solutions to calculations. For example, 'more than', 'less than', and 'equals'. • Know how to describe a cell location in a spreadsheet. • Know how to find specified locations in a spreadsheet.	• Know typing terminology including names of fingers. • Know the home, top and bottom row sections on a keyboard • Knows the keys typed with left hand. • Knows the keys typed with right hand. • Knows the correct way to sit at a keyboard.
MAKING CONNECTIONS **Key knowledge / key questions**	**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. • To design and create an interactive scene. **Key Questions** **Why is it useful to use a flowchart to design a computer program?** Using a flowchart to design a computer program is helpful as you can see it in its simplest form as inputs and outputs. You can see where the program is going which will prevent mistakes when creating the code. **What does repeat mean in computer programming?** Using the repeat command will make a block of commands run for a set number of timers or forever. These saves rewriting the code many times. **What is the difference between 'timer after' and 'timer every'?** A 'timer after' means after a certain amount of seconds, the action will occur. 'Timer every' means that the action will re-occur every certain amount of seconds on a loop. **Prior Learning Year 2** **Unit 2.1 Coding** • Algorithms • Collision detection • Timers • Object types • Buttons • Debugging **Unit 2.4 Questioning** • Logical decision processing. • Forward planning to achieve a solution **Future Learning Year 4** **Unit 4.1 Coding** • Code, test, debug process • IF statements • Repeat Until and IF/ ELSE Statements • Number Variables **Unit 4.5 Logo** • Text-based coding • Utilize understanding of coding structures **Unit 4.6 Animation** • Sequencing and animation in logical steps	**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. **Key Questions** **What is a password and why should we keep them safe?** A password is a secret word or phrase that allows a user to access a website. Passwords are like toothbrushes in that they should not be shared with anyone else. **Is everything I read on the Internet true?** Just because something is on the Internet doesn't mean that it is true. Some people create spoof websites that pretend to be something else such as a bank website or to provide misleading information. **How do I know if I am old enough to play a computer game?** Computer games, like films, are often not suitable for children. PEGI ratings will show how old a person must be to play a game. **Prior Learning Year 2** **Unit 2.2 Online Safety** • Share to a display board • Approval process • Sharing online • Email simulations • emotional impact of communications • digital footprint **Unit 2.5 Effective Searching** • Search engine • Digital footprint • Privacy **Future Learning Year 4** **Unit 4.2 Online Safety** • Phishing • Digital footprint • Malware and viruses • Plagiarism • Screen time **Unit 4.7 Effective Searching** • Reliable sources • Search algorithms - impact on what you see	**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. **Key Questions** **Explain how you would collect data to find out children's favourite school subjects. What sort of graph would you create?** Label one column 'Subject' and list the subjects in this column. In the cells to the right put in the number of children who like this subject. Use the chart button to automatically create a chart. A pie chart would be a suitable choice. **How can you make a 3 times table machine using the spin tool?** Could you use the equals tool to check your answer Put the spin tool in the left most cell of a row. Type 0 x 3 in the next three cells. Put an equal's tool in the next cell in the row. When you spin the spin tool, the question will change. Enter the answer and the equals tool will tell you if it is correct. **Explain how you would locate a cell in the advanced mode?** Cells in advanced mode have rows labelled with numbers, and columns labelled with letters. So, each cell has a number and letter. For example, A1 or D7 **Prior Learning Year 2** **Unit 2.3 Spreadsheets** • Copying and pasting • Totalling tools • Addition • Table layout • Block graph **Unit 2.4 Questioning** • Copying and pasting • Totalling tools • Addition • Table layout • Block graph • Ways to represent data • Pictograms (2Count) • Binary trees (2Question) • Databases (2Investigate) **Future Learning Year 4** **Unit 4.3 Spreadsheets** • Formula wizard • Cell formatting • Timer, random number and spin buttons • Budget planner sheet • Line graphs	**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. **Key Questions** **Why should I have a good posture at the computer?** A good posture is important to help you avoid any injuries that come from repeatedly using the computer incorrectly **Why should I type certain keys with certain fingers?** Using specific fingers for specific keys allows you to type more quickly. **Prior Learning Year 2** **Unit 2.5 Effective Searching** • Efficient use of a search engine • Leaflet creation **Unit 2.8 Presenting Ideas** • Presenting ideas in a variety of styles including through typed text **Future Learning Year 4** **Unit 4.4 Writing for different audiences** • Discussion of effectiveness of different written material • Opportunities to type in a variety of styles **Unit 4.7 Effective searching** • Efficient structure of search queries • Answering written questions

Year 3 Knowledge Overview

Key Assessment Opportunity	**Task: To design and create an interactive scene.** • Children can create computer programs using prior knowledge. • Children can run, test and debug their programs. • Children can consider nesting when debugging their programs. • Children can use the properties table to set the properties of objects. • Children can plan their scene and code before they create their program. • Children can confidently make several different things happen in a program.	**Task: Create a 'spoof' webpage and share on class display board.** • Children understand that some information held on websites may not be accurate or true. • Children are beginning to understand how to search the Internet and how to think critically about the results that are returned. • Children have accessed and assessed a 'spoof' website. • Children have created their own 'spoof' webpage mock-up. • Children have shared their 'spoof' web page on a class display board.	**Task: Children collect data from their peers e.g favourite ice cream flavour. They must then transfer their data to a chart and create a table using 2graph.** • Most children can create a table of data on a spreadsheet and can use this to automatically create charts/graphs from data. • Children will be able to select the most suitable type of chart to use for their data, edit headers and apply axis labels. • Children can create their own number lines within 2Calculate including 'more than', 'less than' and 'equal' tools. • Children can collect and enter data within 2Calcualte, they are able to use the graphing tool to create suitable graphical representations of the data they have within a table	**Task : Children to use skills learnt throughout the unit to type out a short piece of literacy work.** • Children have developed their touch-typing skills and understand how to touch type using the home, bottom and top row keys using both hands. • Children can apply these skills to all units. • Most children will be able to reflect upon how successful they have been with their typing skills and are able to compare their current progress against previous
Key Skills	• I can make a real-life situation into an algorithm for a program. • I can design an algorithm carefully, thinking about what I want it to do and how I can turn it into code. • I can identify an error in my program and fix it. • I can experiment with timers in my programs. • I can identify the difference in using between the effect of a timer or repeat command in my code. • I know that a variable stores information while a program is running (executing). • I can identify 'If' statements, repetition and variables. • I can read programs with several steps and predict what it will do.	• I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. • I can consider what the most appropriate software to use when given a task by my teacher. • I can create a secure password. • I can explain the importance of having a secure password and not sharing it with others. • I understand the importance of keeping safe online and behaving respectfully. • I can use communication tools such as 2Email respectfully and use good etiquette. • I can report unacceptable content and contact online in more than one way to a trusted adult.	• I can collect data and input it into software. • I can analyse data using features within software to help such as, formula in 2Calculate (spreadsheets). • I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). • I can create purposeful (appropriate) content and attach this to emails.	

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	Year 3 – Unit 3.5 Emailing	Year 3 – Unit 3.6 Branching databases	Year 3 – Unit 3.7 Simulations	Year 3 – Unit 3.8 Graphing
KEY VOCABULARY	Address book, attachment, BCC, CC, communication, compose, email, inbox, password, personal information, save to draft, trusted contact	Binary tree, branching database, data, database, debugging	Analysis, simulation, evaluation, modelling, decision	Axis, chart, column, data, graph, investigation, row, sorting, tally chart
SUBSTANTIVE KNOWLEDGE	• Know the different methods of communication and know the strengths and weaknesses of his form. • Know how to open and responding to email. • Know how to use an address book to write an email. • Know how to use an email environment safely including the importance of the draft feature. • Know how to add attachments to an email. • Know what CC means and how to use it.	• Know how to sort objects using just YES/NO. • Know how YES/NO questions are structured and answered. • Know how to complete a branching database. • Know how to edit and adapt a branching database. • Know how to create a branching database including debugging it.	• Know that a computer simulation can represent real and imaginary situations. • Know advantages and problems of using simulations. • Know how to use a simple simulation to try out different options and test predictions. • Begin to know how to evaluate simulations by comparing them with real simulations and considering their usefulness.	• Know how to set up a graph with a given number of fields using graphing software (2Graph). • Know how to enter data for a graph. • Know how to select the most appropriate chart type for their data and explain reasoning. • Know how to sort data in graphing software to enable easier analysis.
MAKING CONNECTIONS **Key knowledge / key questions**	**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. **Key Questions** **What is email?** Email is a method of sending electronic communication from one device to another. **What should I do if I receive an email that makes me upset or scared?** If you are at school, you should tell the teacher immediately. If you receive the message at home, then you should tell a parent or guardian. **What information can I send in an email?** As well as sending a message, files such as photographs, videos, music and other resources can be attached to the email and sent to the receiver. **Prior Learning Year 2** **Unit 2.2 Online safety** Sharing online • Email simulations • Emotional impact of communications • Digital footprint **Unit 2.5 effective searching** • Exploration of what the Internet is • Accessing the World Wide Web • Digital Footprint • Searching and sharing **Future Learning Year 4** **Unit 4.2 Online Safety** • Phishing • Digital footprint • Plagiarism • Screen time **Unit 4.7 Effective Searching** • Reliable sources • Search algorithms - impact on what you see	**Key Learning** • To sort objects using just 'yes' or 'no' questions. • To complete a branching database using 2Question. • To create a branching database of the children's choice. **Key Questions** **What is meant by data?** Facts about something; data can be words, numbers or pictures. For example, the class register contains data about the names, addresses and attendance of the children in the class. **What is a database?** A collection of data organised in such a way that it can be searched, and information found easily. Database usually refers to data stored on computers. **What is a branching database?** Used to classify groups of objects. It is used to help identify the objects by answering questions with either 'yes' or 'no'. Branching databases can also be called binary trees. **Prior Learning Year 2** **Unit 2.3 Spreadsheets** • Use of 2Calculate to collect data and produce a graph **Unit 2.4 Questioning** • Enquiry into different data handling tools • Use of questioning to separate and group data Future Learning Year 4 **Unit 4.3 Spreadsheets** • Inputting and examining data • Presenting data through line graphs	**Key Learning** • To consider what simulations are. • To explore a simulation. • To analyse and evaluate a simulation. **Key Questions** **What is a computer simulation?** A program that models a real-life situation. They let you try things out that would be too difficult or dangerous to do in real life. **What kind of simulations are there?** Some simulations represent dangerous situations for training such as flying in space, carrying out medical operations or piloting an aeroplane. Others simulate activities for fun, such as racing simulations. **Are there any problems with simulations?** Simulations are often too simple; and unexpected problems can still occur in real life that are difficult to simulate. Simulations can also be very expensive. **Prior Learning Year 2** **Unit 2.1 Coding** • Algorithms • Collision detection - simulating air traffic control • Object types • Debugging **Future Learning Year 4** **Unit 4.1 Coding** • Code, test, debug process • IF statements • Repeat Until and IF/ ELSE Statements in simulations	**Key Learning** • To enter data into a graph and answer questions. • To solve an investigation and present the results in graphic form. **Key Questions** **What is a graph?** A diagram representing part of a set of data. Graphs can be drawn by hand or on the computer. There are different types of graphs. **What are the frame lines on the graph called?** They are the axes. The axis that goes up and down (vertical) is called the 'y' axis and usually shows the amount. The axis that goes across (horizontal) is called the 'x' axis and shows what is being measured. **What different kinds of graphs are there?** There are lots of different types of graphs including line graph, bar chart and pie chart. **Prior Learning Year 2** **Unit 2.3 Spreadsheets** • Use of 2Calculate to collect data and produce a graph **Unit 2.4 Questioning** • Enquiry into different data handling tools • Use of questioning to separate and group data **Future Learning Year 4** **Unit 4.4 Spreadsheets** • Inputting and examining data • Presenting data through line graphs
Key Assessment Opportunity	**Task: Children read and respond to a simulated email.** • Children can list a range of ways the internet can be used to provide different methods of communication. • Most children will be able to exchange email communications using 2Email. This will take the form of both simulated email communication scenarios and real email communication with their peers. • Most children will be able to open and respond to an email, altering the size of the font, as well as the formatting of the text. They will be able to select a person from their address	**Task: Create a branching database linked to a topic of children's choice.** • Children can choose a suitable topic for a branching database. • Children can select and save appropriate images. • Children can create a branching database. • Children know how to use and debug their own and others branching databases.	**Task: Evaluate simulations by comparing them with real situations. Present your evaluation orally to the class.** • Using 2Simulate, children can analyse and evaluate information relating to the situations in the activities). They present their findings as part of a discussion and give reasons for the choices they made. They will understand the importance of simulations to replicate events that could occur in real and hypothetical situations Most children can effectively assess their own and others' progress and achievements through a simulation.	**Task: Use 2graph to create a graph using data children have collected as a class. Data could be linked to topic being studied.** • Children have solved a maths investigation. • Children can present the results in a range of graphical formats. • Children can use the sorting option to make analysis of their data easier. • Extension: Children can select most appropriate style of graph for their data and explain their reasoning.

	book and compose a suitable email to send them. Children will be able to add attachments to an email they compose and use the CC functionality correctly		Additionally, they can evaluate the effectiveness of the simulation	

Key Skills	• I can identify different ways that the internet can be used for communication.
	• I can use email such as 2Email to respond to others appropriately and attach files.
	• I can create purposeful (appropriate) content and attach this to emails.
	• I can explain the importance of having a secure password and not sharing it with others.
	• I can explain the negative consequences of not keeping passwords safe and secure.
	• I can use communication tools such as 2Email respectfully and use good etiquette.
		• I can collect data and input it into software.
		• I can analyse data using features within software to help such as, formula in 2Calculate (spreadsheets).
		• I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool).
		• I can create purposeful (appropriate) content and attach this to emails.
			• I can explore a simulation.
			• I can use a simulation to try out different options and to test predictions.
			• I can begin to evaluate simulations by comparing them with real situations and considering their usefulness.
			• I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine.
			• I can consider what the most appropriate software to use when given a task by my teacher.
			• I can create purposeful (appropriate) content and attach this to emails.
				• I can create purposeful (appropriate) content and attach this to emails.
				• I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool).
				• I can analyse data using features within software to help such as, formula in 2Calculate (spreadsheets).
				• I can collect data and input it into software.
				  • I have solved a maths investigation.
				  • I can present the results in a range of graphical formats.
				  • I will use the sorting option to make analysis of my data easier.
				  • I can select most appropriate style of graph for my data and explain my reasoning.

Year 3 Knowledge Overview

	Year 3 – Unit 3.9 **Presenting**
KEY VOCABULARY	Animation, border properties, font formatting, layer, media, presentation, slide, slideshow, textbox, transition, wordart
SUBSTANTIVE KNOWLEDGE	• Know what presentation is and how it can be used. • Know how to add pages/slides, text and shapes to pages, and also format them. • Know how to add media such as images, audio and videos. • Know how to use effects and features such as animations and slide transitions. • Know how timings can help when presenting and know how to include them in presentations. • Know how to effectively present to an audience using presentation software.
MAKING CONNECTIONS **Key knowledge / key questions**	**Key Learning** • To understand the uses of PowerPoint. • To create a page in a presentation. • To add media to a presentation. • To add animations to a presentation. • To add timings to a presentation. • To use the skills learnt to design and create an engaging presentation. **Key Questions** **What is a presentation program used for?** A presentation program is used to present information to an audience in an engaging way, such as including text, pictures and videos. PowerPoint is an example of a presentation program. **How do you add a transition to a presentation?** Click on 'Transitions' at the top of the screen and select the transition you wish to use. You can preview the transition by pressing 'preview' on the left-hand side. **What features can you use to make a presentation more engaging?** You can give your presentation an engaging look and feel by using different fonts, colour schemes and using an interesting layout. Adding pictures, sound, and videos would also make a presentation more interesting to an audience. Using animations and interesting transitions between slides would also be engaging. **Prior Learning Year 2** **Unit 2.6 Creating Pictures** • Presenting ideas in art form • 2Paint a Picture: art effects, collage effects **Unit 2.8 presenting ideas** • Creating work for a variety of purposes and different genres • Presenting the same information in different styles: animated story, quiz based on a story, concept map of a story, writing template **Future Learning Year 4** **Unit 4.4 Writing for different audiences** • Considering different audiences and genres • Understanding importance of text formatting • Transferring information from a concept map into a written report
Key Assessment Opportunity	**Task ; Design and present and effective presentation. This could link to other curriculum topics being studied.** • Children can create a presentation including formatted text. • Children can include different media. • Children can add transitions and animations. • Children can add timings to the presentation. • Children can present effectively
Key Skills	• I can create a presentation including formatted text. • I can include different media. • I can add transitions and animations. • I can add timings to the presentation. • I can present effectively.