

COMPUTER SCIENCE: Unit 5.1 Coding				
Lesson	Objectives	Working towards	Meeting expectations	Exceeding expectations
L1 Coding Efficiently	To review existing coding knowledge. To begin to be able to simplify code. To create a playable game.	□ With support, children can begin to create more complex programs that include different types of events in their code (Unit 5.1 Lesson 1).	□ Children can create more complex programs and are beginning to understand that there are ways to simplify code to make their programming more efficient. They are able to recall and apply previous coding knowledge in their code. (Unit 5.1 Lessons and 4). □ Children understand what simulations are and can formulate and program an algorithm for an observed traffic light sequence. (Unit 5.1 Lesson 2). □ Children understand the processes of decomposition and abstraction and can apply this knowledge when planning algorithms for a program. (Unit 5.1 Lesson 3). □ Children can include sequence, selection and repetition into code as well as use functions to make their programming more efficient. (Unit 5.1 Lesson 4). □ Children understand what a physical system is and can consider how they can program objects to behave like the would in 'real life'. Children test and debug their program as they go and can use logical methods to identify the approximate cause of any bugs but might need support to identify the specific line of code that is causing the problem. Children begin to understand how functions work (Unit 5.1 Lesson 4). □ Children understand that there are different variable types and begin to explore how they can be used (Unit 5.1 Lesson 5). □ Children can 'read' others' code and predict what will happen in a program which helps them to correct errors. □ They can also make good attempts to fix their own bugs as their coding becomes more complex (Unit 5.1 Lesson 6). Throughout this unit, children will demonstrate that they are open to feedback from both the teacher and fellow peers on their programs, specifically where they are expected to improve or create a game.	□ Children can create more complex programs and understand that there are ways to simplify code to make their programming more efficient. With ease, they are able to recall and apply previous coding knowledge in their code (Unit 5.1 Lesson 1). □ Children can write algorithms for and program simulations, they easily adapt their code to (Unit 5.1 Lesson 2). □ Children understand the processes of decomposition and abstraction and naturally apply this knowledge when planning algorithms for programs beyond the point at which it was taught (Unit 5.1 Lesson 3). □ Children intuitively grasp the concepts of selection, repetition and variables. They like to challenge themselves to combine these with other coding structures to personalise and to improve their programs. They understand how to use functions to improve efficiency (Unit 5.2 Lessons 4-5). □ Children understand and can apply mathematical concepts including co-ordinates, angles and negative numbers with ease when coding (Unit 5.1 Lesson 4). □ They are also thinking about good structure to their code with a view to debugging such as the use of tabs to organise code and the naming of variables. (Unit 5.1 Lesson 5). □ Children understand that there are different variable types, can see purpose for them and create and use them with ease when coding. (Unit 5.1 Lesson 5). □ Children can 'read' others' code and predict what will happen in a program which helps them to correct errors (Unit 5.1 Lesson 6). □ Children are usually successful when attempting to fix their own bugs as their coding becomes more complex.
L2 Simulating a Physical System	To understand what a simulation is. To program a simulation using 2Code.	□ They are beginning to understand what simulations are and with support they have formulated an algorithm for a simple traffic light sequence (Unit 5.1 Lesson 2).		
L3 Decomposition and Abstraction	To know what decomposition and abstraction are in Computer Science. To take a real-life situation, decompose it and think about the level of abstraction. To use decomposition to make a plan of a real-life situation.	□ As their coding becomes more complex, they will require support to tackle debugging in a logical rather than a trial-and-error method. □ Children are beginning to understand how decomposition and abstraction are used in computer programming and with support can break a given process down into parts. (Unit 5.1 Lesson 3) □ They will usually require support to make use of co-ordinates and variables in their code (Unit 5.1 Lesson 4-6).		
L4 Friction and Functions	To understand how to use friction in code. To begin to understand what a function is and how functions work in code			
L5 Introducing Strings	To understand what the different variable types are and how they are used differently. To understand how to create a string.			
L6 Text Variables and Concatenation	To begin to explore text variables when coding. To understand what concatenation is and how it works.			

	DIGITAL LITERACY: 5.2 Online safety			
Lessons	Objectives	Working towards	Meeting expectations	Exceeding expectations
L1 Responsibilities and Support when Online	To gain a greater understanding of the impact that sharing digital content can have. To review sources of support when using technology. To review children's responsibility to one another in their online behaviour.	- Children demonstrate a developing understanding of their responsibility to others as well as to themselves when communicating and sharing content online. - They know what to do if they are upset by online content and know that there are rules such as the SMART rules to protect them (lesson 1). - With support throughout, children demonstrate an understanding of what the SMART rules are but may find it difficult to apply all of these to using technology safely and respectfully (Unit 5.1 Lesson 1). - They can create a simple comic strip to teach other children about online safety (Unit 5.2 Lesson 2).	- Children demonstrate an understanding of their responsibility to others as well as to themselves when communicating and sharing content online. - Children demonstrate a clear understanding of what the SMART rules are and how they should be applied to using technology safely and respectfully (Unit 5.1 Lesson 1). - In lesson 1, children demonstrate that they are developing critical thinking skills in their online experience and know what sorts of inappropriate content should be reported. - They can apply their knowledge in the creation of a comic strip to teach other children about online safety (Unit 5.2 Lesson 2). - When doing image editing in lesson 2, they were able to see both the positive and negative consequences of technological developments including altering images both in terms of impact upon themselves and impact upon others. - In lesson 3, children can explain why citations must be considered when using the work of others. They know that there is a convention for recording citations and can put this into practice in their work. - In lesson 3, children's contributions demonstrate a growing awareness of the context of communication and an ability to view the communication from the intended audience's point-of-view. - Most children will be able demonstrate that they understand what is meant by reliable and can build on their ability to identify reliable content. - In lesson 3 while completing the citation writing frame, they were able to recognise that it is not a good idea to rely upon only 1 source for information.	- Children are developing a deeper understanding of the interaction of the positive benefits and negative risks of innovative technology. They take advantage of these technologies in their work but are mindful of protecting themselves and others from harm. - Children demonstrating greater depth have a detailed knowledge of what the SMART rules are and understand how these are applied to using technology safely and respectfully. Furthermore, they understand the implications of improper use of technology and the internet (Unit 5.1 Lesson 1). - They can apply their knowledge in the creation of a detailed comic strip to teach other children about online safety (Unit 5.2 Lesson 2).
L2 Protecting Privacy	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.			
L3 Citing Sources	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.			
L4 Reliability	Ensuring reliability through using different methods of communication.			

INFORMATION TECHNOLOGY: Unit 5.3 Spreadsheets

Lessons	Objective	Working towards	Meeting expectations	Exceeding expectations
L1 Conversions of Measurements	To use formulae within a spreadsheet to convert measurements of length and distance.	☐ With support throughout, children can create a simple formula with limited success using 2Calculate that converts metres into centimetres (Lesson 1).	☐ Children can create a formula using 2Calculate that converts metres into centimetres (Lesson 1). ☐ Children can program different variables to convert data from one format and present it in an alternative way (Lesson 4). Furthermore, they can convert their data into a graphical format (Lesson 2).	☐ Children demonstrating greater depth can use their understanding of converting metres into centimetres and apply this to other mathematical conversions (Lesson 1).
L2 The Count Tool	To use the count tool to answer hypotheses about common letters in use.	☐ Children understand what a variable is and can program a variable that converts weeks into years (Lesson 4).	☐ Throughout this unit, children will be tasked with creating spreadsheets which are contextualised and evaluating them.	☐ Furthermore, they choose the most appropriate way to convert and represent their data and can give their reasons behind this choice (Lesson 2).
L3 Formulae Including the Advanced Mode	To use a spreadsheet to model a real-life problem. To use formulae to calculate area and perimeter of shapes.	☐ Furthermore, they can represent their data as a simple graph (Lesson 2).	☐ Most children can use suitable layouts and content (and explain this) which achieve a specific goal, such as creating a spreadsheet to work out the area and perimeter of rectangles (Lesson 3). ☐ Their layouts and contents will be fit for purpose for their intended audience, such as applying graphs to represent data (Lesson 2). Children will use, manipulate, and create spreadsheets within this unit.	
L4 Using Text Variables to Perform Calculations	To create formulae that use text variables.		☐ Their improving skill of using text variables to perform calculations, advanced mode and count tools will lead to the creation of their own purposeful spreadsheet.	
L5 Event Planning with a Spreadsheet	To use a spreadsheet to help plan a school cake sale.		☐ Children will invite feedback through sharing their spreadsheets, focusing on the functionality, layout, clear purpose and whether it achieve it. ☐ Most children can use 2Calculate to produce functional spreadsheets with clear purpose and their spreadsheets are set up so that interrogation of data is easily achieved. ☐ They demonstrate they can use formulae such as converting between measures and incorporating text variables to perform calculations. Automatic graph creation from data sets is easily achieved by the children, including appropriate labelling and graph type for data type.	

INFORMATION TECHNOLOGY: Unit 5.4 Databases				
Lessons	Objective	Working towards	Meeting expectations	Exceeding expectations
L1 Searching a Database	To learn how to search for information in a database.	□ With support, children can contribute to the design of a collaborative (Unit 5.4 Lesson 2) and individual database, although this may be with limited success (Unit 5.4 Lesson 3 and 4). □ They can design and enter information accurately into their own simple database and create basic questions about their database for their classmates to answer. □ Furthermore, they can use the search functionalities to answer simple questions (Unit 5.4 Lesson 1, Lesson 3 and 4).	□ Children can contribute to the design of a collaborative (Unit 5.4 Lesson 2) and individual database (Unit 5.4 Lesson 3 and 4). They can design and enter information accurately into their own database and create questions about their database for their classmates to answer. □ Furthermore, they can use the search functionalities to answer questions (Unit 5.4 Lesson 1 and Lesson 3 and 4). □ Most children will be able to create a database within 2Investigate which contains contextualised information relating to a topic. □ They can add fields which are appropriate for the topic choice and present data using graphical tools, table views, and search for appropriate content to be displayed to answer a question (Unit 5.4. Lessons 3 & 4). □ Throughout this unit, children will be learning how to effectively utilise a database. They will respond to feedback from peers and the class teacher. □ Most children can interrogate a database, including the different ways the data can be sorted and displayed – Table view, Find, Sort, Charts (Unit 5.4 Lesson 1). □ They can use more advanced features such as the 'statistics tool' to display multiple pieces of statistical information at the same time and produce reports on specific criterion (Unit 5.4 Lesson 1 & 2).	□ Children demonstrating greater depth will lead a small group in the design and creation of a collaborative (Unit 5.4 Lesson 2) database. □ They can create an individual database with a greater number of fields and create complex search questions about their database for their classmates to answer (Questions using and/or statements). □ Furthermore, they can seamlessly use the search functionalities to answer complex questions (Unit 5.4 Lesson 1 and lesson 3 and 4.)
L2 Creating a Class Database	To contribute to a class database.			
L3 & 4 Creating a Topic Database	To create a database around a chosen topic.			

COMPUTER SCIENCE: Unit 5.5 Game Creator				
Lessons	Objective	Working towards	Meeting expectations	Exceeding expectations
L1 Setting the scene.	To Introduce the 2DIY 3D tool. • To begin planning a game	☐ When creating their games, children think about the component parts and design these as components in a theme rather than completely isolated parts. They increase playability through trial-and-error methods rather than a planned strategy for the design. ☐ With support and in small groups, children can use a given success criteria to verbally review and analyse what makes a successful computer game (Unit 5.5 Lesson 1). ☐ When creating their own game, limited consideration is given to the end user, but the game does demonstrate simple functionality (Unit 5.5 Lesson 2/3). Furthermore, children can say what they like and do not like about a game (Unit 5.5 Lesson 5).	☐ Most children can plan a computer game (2DIY3D) using a template. They carefully use the 'Think about' feature in the planning templates to assess their progress against the tasks and how well they have considered key criteria (Unit 5.5. All lessons). ☐ When creating their games, children think about the component parts and design these as components in a theme rather than completely isolated parts. They consider aspects such as the movement of the characters and goal objects to increase playability. ☐ When designing the game environment, they do this with the end-user experience in mind. Most children can combine text, sound, and graphic components within a 2DIY3D game. Their games demonstrate a well-planned approach, with appropriate use of text, sound, and graphic components. They easily mix their approaches for image use such as uploading and using the drawing tools. Successful application of animation features to objects is applied to enhance their games (Unit 5.5. Lessons 2, 3 & 4). ☐ Children can use a given success criteria to review and analyse what makes a successful computer game (Unit 5.5 Lesson 1). ☐ Children consider the end user of their game by designing appropriate settings and characters that maintain the user's interest and engagement levels (Unit 5.5 Lesson 2/3). ☐ Furthermore, children demonstrate the ability to objectively review and evaluate a range of completed games (Unit 5.5 Lesson 5). ☐ Children can evaluate their own and others' games with 2DIY3D for content and design. They use this peer and self-assessment opportunity to make improvements to their own game (Unit 5.5. Lesson 5). Feedback which focuses on the design elements of their game against key criteria such as playability challenge, engagement, use of advanced features and suitability for intended audience.	☐ Children think about the entirety of their game at the design stage and can consider the game environment, objects and characters and the interactions of these components and their impact on playability to design a good end-user experience before proceeding with the construction stage. ☐ Children demonstrating greater depth can create their own success criteria to review, analyse and verbally justify what makes one computer game more successful than another (Unit 5.5 Lesson 1). ☐ Throughout the design and creation of their game, the needs of the end user have been considered. The game creator evaluates and reviews their game during the process and makes amendments where necessary and justifies their edits verbally (Unit 5.5 Lesson 2/3/5).
L2 Creating the Game Environment	To design the game environment.			
L3 The Game Quest	• To design the game quest to make it a playable game.			
L4 Finishing and Sharing	To finish and share the game.			
L5 Evaluation	To self- and peerevaluate			

	INFORMATION TECHNOLOGY: Unit 5.6 Modelling			
Lessons	Objective	Working towards	Meeting expectations	Exceeding expectations
L1 Introducing 2Design and Make	To be introduced to the 2Design and Make tool.	☐ With support, children can use the ready-made templates within using 2Design and Make to design the recognisable form of a building (Lesson 1). They will evaluate, refine, edit, and adapt models to suit a design brief (Lesson 2, 3 & 4)	☐ Children will use the ready-made templates within 2Design and Make to design the recognisable form of a building (Lesson 1). ☐ They will evaluate, refine, edit, and adapt models to suit a design brief (Lessons 2, 3 and 4). ☐ Most children can design a 3D model to fit certain criteria using a template from 2Publish. They can present their work making use of screenshots incorporated within their template (Lesson 3). ☐ Children designs demonstrate that they have considered the brief and can discuss changes they intend to make to their designs to refine them for printing (Lesson 4). ☐ Most children will invite feedback which focuses on how well their designs meet an intended purpose, explicitly, the skill of editing existing polygons.	☐ Using 2Design and Make, children demonstrating great depth can use the geometric shapes and the addition of up to 24 points to design the recognisable form of a building (Lesson 1). ☐ They will evaluate, refine, edit, and adapt models to suit a design brief (Lesson 2, 3 and 4).
L2 Moving Points	To explore the effect of moving points when designing.			
L3 Designing for a Purpose	To design a 3D model to fit certain criteria.			
L4 Printing and Making	To refine and print a model.			

INFORMATION TECHNOLOGY: Unit 5.7 Concept Maps				
Lessons	Objective	Working towards	Meeting expectations	Exceeding expectations
L1 Introduction to Concept Mapping	To understand the need for visual representation when generating and discussing complex ideas. • To understand the uses of a 'concept map'.	☐ With support and in a small group, children can use 2Connect to design and create concept maps that collect and present a range of ideas, although at times these might not be linked (Lessons 1 and 2). ☐ With help, children can use the additional features of the software in 2Connect to present their concept maps as a visual whole class presentation (Lesson 4) and as simple written text (Lesson 3).	☐ Children can use 2Connect to design and create concept maps that collect and present a range of linked ideas (Lessons 1 and 2). ☐ Children can use the additional features of the software in 2Connect to present their concept maps as a visual whole class presentation (Lesson 4) and as written text (Lesson 3). ☐ Most children will be able to work successfully with others to create an online collaborative concept map using 2connect (Lesson 4) which has been well thought out for layout and content, using features such as image and node layout choices appropriately. ☐ They can reflect on these choices and discuss the rationale for them. During presentations (Lesson 4), children can give constructive feedback sensitively and respond well to others' feedback.	☐ Children demonstrating greater depth use the full functionality of 2Connect to create detailed concept maps which contain appropriate images and additional links between nodes (Lessons 1 and 2). ☐ Children can use the additional features of the software in 2Connect to present their concept maps as a visual whole class presentation (Lesson 4) and as written text (Lesson 3).
L2 Using 2Connect	To understand and use the correct vocabulary when creating a concept map. • To create a concept map.			
L3 2Connect Story Mode	To understand how a concept map can be used to retell stories and information.			
L4 Collaborative Concept Maps	To create a collaborative concept map and present this to an audience.			

INFORMATION TECHNOLOGY: Unit 5.8 Word processing (with Microsoft Word or Google Docs)				
Lessons	Objective	Working towards	Meeting expectations	Exceeding expectations
L1 Making a Document from a Blank Page	To know what a word processing tool is for.	☐ Children know what a word processing tool is for and they can create a word processing document. They can alter the look of the text and navigate around the document (lesson 1). They might need support when navigating the various menus and icons. ☐ With support and guidance, children can add an image to a word document, they can resize the image but will find it harder to visualise the effect of using the wrap options (lesson 2 & 3). ☐ They make good attempts to include other objects such as shapes (lesson 5) and tables (lesson 7), though they might struggle to achieve the effect that they want. ☐ Children understand that they should not simply copy images from the internet but that the correct way is to consider copyright and attribute the creator for images used. They will need support to find and include such citations (lesson 2). ☐ Children can add page breaks to their document but might need to print the document, mark-up the printed file with edits and then effect the changes to their file.	☐ Children know what a word processing tool is for and they can create a word processing document. They can alter the look of the text and navigate around the document. They pay attention to the readability of the text and its function when formatting text (lesson 1). ☐ They know how to find icons for the functionality that they wish to use. Children can use bullet points and numbering (lesson 4). ☐ They consider the overall structure of the document using paragraph formatting, page breaks, headers and footers to increase the usefulness and visual appeal of a document (lesson 5). ☐ Children can add images (lesson 2), text boxes and shapes (lesson 5) to a word document, they can resize and reposition objects using wrapping options (lesson 2 & lesson 3). ☐ Children understand that they should not simply copy images from the internet and routinely consider copyright and attributions when they use images created by others (lesson 2). ☐ Children can insert tables and edit the properties to include the information that they wish to; they can add and delete rows with guidance. ☐ Children know that word processors have template documents that can be used to same time, improve visual aspects and support writing (lessons 7 & 8).	☐ Children demonstrating exceeding expectations explore the full functionality of the word processor realising that there is often a function that will help them to perform the task that the wish to accomplish. ☐ Children experiment with different ways to wrap images and text so that they can achieve the effect that they have visualised for their work (lesson 3). ☐ When using images or text, children have a well-developed understanding of the correct way to use any material created by another person (lesson 2). ☐ Children' consideration of the visual appeal and function of their document includes a variety of objects, hyperlinks and automated contents pages (lesson 5). ☐ They can conceptualise that a document created using a word processing programme can be more effective than a paper-based document by making use of the powerful tools within a word processor.
L2 Inserting Images: Considering Copyright	To add and edit images to a word document.			
L3 Editing Images in Word	To know how to use word wrap with images and text			
L4 Adding the Text	To change the look of text within a document			
L5 Finishing Touches	To add features to a document to enhance its look and usability.			
L6 Presenting Information Using Tables	To use tables within MS Word to present information.			