

# Computing Key Skills

## Key Stage One National Curriculum Statements

Computer science	Information Technology	Digital Literacy
<p>Understand what algorithms are, how they are implemented as programs on digital devices, and that program execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p>	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p>	<p>Use technology safely an 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.</p> <p>Recognise common uses of information technology beyond school.</p>

## Year 1

### Coding and Computational Thinking

Year 1		
Coding and Computational Thinking		
<p><b>Computer Science</b></p>	<ul style="list-style-type: none"> <li>• Children can explain what is meant by coding.</li> <li>• Children can explain what a block of code is.</li> <li>• Children can read through combined blocks of code.</li> <li>• Children know that for the computer to make something happen, it needs to follow clear instructions</li> <li>• Children can use Design Mode to have control over how their game looks.</li> <li>• Children can write a program that controls how a character moves.</li> <li>• Children can explain what is happening and write down/ talk through their code.</li> <li>• Children can write a program that controls how a character moves and stops when clicked.</li> <li>• Children can write a program where objects can stop moving and a sound is played when the objects collide.</li> </ul>	<ul style="list-style-type: none"> <li>• Children have sorted items using a range of criteria on the carpet as a class and in pairs, using a variety of criteria.</li> <li>• Children know that to achieve the effect they want when building something, they need to follow accurate instructions.</li> <li>• Children know that by following the instructions correctly, they will get the correct result.</li> <li>• Children know that an algorithm is a precise, step-by step set of instructions used to solve a problem or achieve an objective.</li> <li>• Children can follow instructions in a computer program.</li> <li>• Children can explain the effect of carrying out a task with no instructions.</li> <li>• Children know that computers need precise instructions to follow.</li> <li>• Children know that an algorithm written for a computer to follow is called a program</li> <li>• Children understand how the order in which the steps of a recipe are presented affects the outcome.</li> <li>• Children can organise instructions for a simple recipe.</li> <li>• Children know that correcting errors in an algorithm or program is called 'debugging'.</li> <li>• Children know how to use the direction keys to move forwards, backwards, left and right.</li> <li>• Children know how to undo their last move.</li> <li>• Children know how to move their character back to the starting point.</li> <li>• Children can use diagonal direction keys to move the characters in the right direction.</li> <li>• Children know how to create a simple algorithm.</li> <li>• Children know how to debug their algorithm.</li> <li>• Children can use the additional direction keys to create a new algorithm.</li> <li>• Children can challenge themselves by using the longer algorithm to complete challenges.</li> <li>• Children can change the background images in their chosen challenge and save their new challenge.</li> </ul>

Information Technology	Creating content		
	Spreadsheets	- Data Bases and Graphing -	Writing and Presenting
	<ul style="list-style-type: none"> <li>Children can navigate around a spreadsheet.</li> <li>Children can explain what rows and columns are.</li> <li>Children can save and open sheets.</li> <li>Children can enter data into cells.</li> <li>Children can open the Image toolbox and find and add clipart.</li> <li>Children can use the 'move cell' tool so that images can be dragged around the spreadsheet.</li> <li>Children can use the 'lock' tool to prevent changes to cells</li> <li>Children can give images a value that the spreadsheet can use to count them.</li> <li>Children can add the count tool to count items.</li> <li>Children can add the speak tool so that the items are counted out loud.</li> <li>Children can use a spreadsheet to help work out a fair way to share items.</li> </ul>	<ul style="list-style-type: none"> <li>Children can discuss and illustrate the transport used to travel to school.</li> <li>Children can contribute to the collection of class data.</li> <li>Children have used these illustrations to create a simple pictogram.</li> <li>Children can contribute to a class pictogram.</li> <li>Children can discuss what the pictogram shows.</li> <li>Children can collect data from rolling a die 20 times and recording the results.</li> <li>Children can represent the results as a pictogram</li> </ul>	<ul style="list-style-type: none"> <li>Children know the difference between a traditional book and an e-book.</li> <li>Children can use the different drawing tools to create a picture on the page.</li> <li>Children can add text to a page and change the colour, font and size of the text.</li> <li>Children can save their work.</li> <li>Children can open work that they saved in their last lesson.</li> <li>Children can add an animation to their picture.</li> <li>Children can play the pages they have created.</li> <li>Children can save their changes and overwrite the file.</li> <li>Children can add a sound to the page.</li> <li>Children can add their own voice recording to the page.</li> <li>Children can create their own music and add it to their page.</li> <li>Children can add a background to the page.</li> <li>Children can copy and paste a page in the book.</li> <li>Children can enhance the features of their story book by adding additional pages and animations.</li> <li>Children can share their story book on a class story book display board.</li> </ul>
Digital Literacy	Online Safety -Using IT beyond school- - Internet and Email - Communication and Networks		
	<ul style="list-style-type: none"> <li>Children can login to using their own login.</li> <li>Children have created their own avatar and understand why it is useful.</li> <li>Children can add their name to a picture they created on the computer.</li> <li>Children are beginning to develop an understanding of ownership of work online.</li> <li>Children can save work into the My Work folder and understand that this is a private saving space just for their work.</li> <li>Children can find their saved work.</li> <li>Children can find messages that their teacher has left on Purple Mash.</li> </ul>		<ul style="list-style-type: none"> <li>Children can use a simple search to find information or files.</li> <li>Children will be confident with the functionality of icons.</li> <li>Children will know how to use the different icons and writing cues to add pictures and text to their work.</li> <li>Children understand what is meant by 'technology'.</li> <li>Children have considered types of technology used in school and out of school</li> <li>Children have recorded 4 examples of where technology is used away from school.</li> </ul>

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## Year 2

Coding & Computational Thinking					
<b>Computer Science</b>	<ul style="list-style-type: none"> <li>Children can explain that an algorithm is a set of instructions.</li> <li>Children can explain that for the computer to make something happen, it needs to follow clear instructions.</li> <li>Children can show their computer program and point out the algorithms they created</li> <li>Children can explain how to use the following terms in a computer program: Command, Repeat, Input, Output, Event, Collision Detection and Timer.</li> <li>Children can create a computer program including at least four of the above new coding vocabulary terms.</li> <li>Children can explain what debug (debugging) means.</li> <li>Children can explain what they did so that their computer program did not work.</li> <li>Children can debug simple programs</li> <li>Children can create a computer program using different objects.</li> <li>Children can predict what the objects in classmates' programs will do, based on their knowledge of the objects' limitations, e.g. a turtle can only move in specific ways.</li> </ul>			<ul style="list-style-type: none"> <li>Children can explain how they know that certain objects can only move in certain ways.</li> <li>Children can plan and use algorithms in programs successfully to achieve an end result.</li> <li>Children can code a program using a variety of objects, actions, events, and outputs successfully.</li> <li>Children have used different sounds to create a tune.</li> <li>Children have explored how to speed up and slow down tunes.</li> <li>Children understand what happens to the tune when sounds are moved.</li> <li>Children have added sounds to a tune they've already created to change it.</li> <li>Children have considered how music can be used to express feelings.</li> <li>Children can change the volume of the background sounds.</li> <li>Children have created two tunes which depict two feelings.</li> <li>Children have uploaded and used their own sound chosen from a bank of sounds.</li> <li>Children have created, uploaded and used their own recorded sound.</li> <li>Children have created their own tune using some of the chosen sounds</li> </ul>	
<b>Information Technology</b>	<b>Creating content</b>				
	<b>Spreadsheets</b>	<b>– Data Bases and Graphing –</b>	<b>Writing and Presenting</b>		
	<ul style="list-style-type: none"> <li>Children can explain what rows and columns are in a spreadsheet.</li> <li>Children can open, save and edit a spreadsheet.</li> <li>Children can add images from the image toolbox and allocate them a value.</li> <li>Children can add the count tool to count</li> </ul>	<ul style="list-style-type: none"> <li>Children understand that the information on pictograms cannot be used to answer more complicated questions.</li> <li>Children have used a range of yes/no questions to separate different items.</li> </ul>	<ul style="list-style-type: none"> <li>Children can explain what is meant by</li> <li>Children can use online programs and apps to create their own art based upon a taught style such as impressionist art, pointillism, Piet Mondrian's</li> <li>Children can use the Collage functions in programs and apps to create their own surrealist art using drawing and clipart.</li> </ul>		

	<ul style="list-style-type: none"> <li>items</li> <li>Children can use copying and pasting to help make spreadsheets.</li> <li>Children can use tools in a spreadsheet to automatically total rows and columns.</li> <li>Children can use a spreadsheet to solve a mathematical puzzle.</li> <li>Children can use images in a spreadsheet.</li> <li>Children can work out how much they need to pay using coins by using a spreadsheet to help calculate.</li> <li>Children can create a table of data on a spreadsheet.</li> <li>Children can use the data to create a block graph manually</li> </ul>	<ul style="list-style-type: none"> <li>Children understand what is meant by a binary tree.</li> <li>Children have designed a binary tree to sort pictures</li> <li>Children understand that questions are limited to 'yes' and 'no' in a binary tree.</li> <li>Children understand what is meant by a database.</li> <li>Children have used a database to answer simple and more complex search questions</li> </ul>	<ul style="list-style-type: none"> <li>Children know that digital content can be represented in many forms.</li> <li>Children can use a range of programs to publish work such as Quiz programs/apps, Publisher, a mind map, e-book or fact file.</li> <li>Children can talk about their work and make improvements to solutions based on feedback received.</li> <li>Children have added appropriate clipart.</li> <li>Children have added an appropriate photo.</li> <li>Children know that data can be structured in tables to make it useful.</li> <li>Children can use a variety of software to manipulate and present digital content and information.</li> <li>Children can collect, organise and present data and information in digital content.</li> <li>Children can create digital content to achieve a given goal by combining software packages.</li> </ul>
<b>Digital Literacy</b>	<b>Online Safety - Using IT beyond school – Internet and Email</b>		
	<ul style="list-style-type: none"> <li>Children can use the search facility to refine searches.</li> <li>Children can share the work they have created to an online display board (Purple Mash)</li> <li>Children understand that the teacher approves work before it is displayed.</li> <li>Children are beginning to understand how things can be shared electronically for others to see both on Purple Mash and the Internet</li> <li>Children understand how 2Repond can teach about how to use email.</li> <li>Children can open and send an email to a 2Respond character.</li> <li>Children have discussed their own experiences and understanding of what email is used for.</li> </ul>	<ul style="list-style-type: none"> <li>Children can recall the meaning of key Internet terms.</li> <li>Children have completed a quiz about the Internet.</li> <li>Children can identify the basic parts of a web search engine search page.</li> <li>Children have learnt to read a web search results page.</li> <li>Children can search for answers to a quiz on the Internet.</li> <li>Children have created a leaflet to consolidate their knowledge of effective Internet searching.</li> <li>Children can navigate the web to carry out simple searches using suitable search engines and begin to understand that not everything on the internet is true.</li> </ul>	

# Computing Key Skills

## Key Stage Two National Curriculum Statements

Computer science	Information Technology	Digital Literacy
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>Understand computer networks including the internet; how they can provide multiple services, such as the world wide web;</p>	<p>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</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p>	<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p>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</p>

## Year 3

Year 3		
<b>Computer Science</b>	<b>Coding &amp; Computational Thinking</b>	
	<ul style="list-style-type: none"> <li>Children can explain what Object, Action, Output, Control and Event are in computer programming.</li> <li>Children can explain which commands they included in their program and what they achieve.</li> <li>Children can explain how their program simulates a physical system, i.e. my vehicles move at different speeds and angles.</li> <li>Children can describe what they did to make their vehicle change angle.</li> <li>Children can show that their vehicles move at different speeds</li> <li>Children can show how their character repeats an action and explain how they caused it to do so.</li> <li>Children are beginning to understand how the use of the timer differs from the repeat command and can experiment with the different methods of repeating blocks of code.</li> <li>Children can explain how they made objects repeat actions.</li> <li>Children can create an 'if' statement in their program.</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Children can use a timer and 'if' statement to respond to the actions of a character and change their actions.</li> <li>Children can explain what steps to follow to debug a program.</li> <li>Children can explain how they debugged a partner's program.</li> <li>Children can explain what a variable is in programming.</li> <li>Children can explain why variables need to be named.</li> <li>Children can create a variable in a program.</li> <li>Children can set/change the variable values appropriately to create a timer</li> <li>Children understand the names of the fingers</li> <li>Children understand what is meant by – top row, home row, bottom row.</li> <li>Children develop the ability to touch type the home, bottom and top row keys.</li> <li>Children can use two hands to type the letters on the keyboard.</li> </ul>
<b>Information Technology</b>	<b>Creating content</b>	
	<b>Spreadsheets</b>	<b>– Data Bases and Graphing –</b>
	<ul style="list-style-type: none"> <li>Children can create a table of data on a spreadsheet.</li> <li>Children can use a spreadsheet program to automatically create charts and graphs from data.</li> <li>Children can use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to sums.</li> <li>Children can use the 'spin' tool to count through times tables</li> <li>Children can describe a cell location in a spreadsheet using the</li> </ul>	<ul style="list-style-type: none"> <li>Children understand how YES / NO questions are structured and answered.</li> <li>Children have used YES/NO questioning to play a simple game with a friend.</li> <li>Children have contributed to a class branching database.</li> <li>Children have completed a branching database.</li> <li>Children can choose a suitable topic for a branching database.</li> <li>Children can select and save appropriate images.</li> <li>Children can create a branching database.</li> <li>Children know how to use and debug their own branching database.</li> <li>Children can set up a graph with a given number of fields.</li> </ul>
		<b>Writing and Presenting</b>

	<p>notation of a letter for the column followed by a number for the row.</p> <ul style="list-style-type: none"> <li>Children can find specified locations in a spreadsheet.</li> </ul>	<ul style="list-style-type: none"> <li>Children can enter data for a graph.</li> <li>Children can produce and share graphs made on the computer.</li> <li>Children have solved a maths investigation.</li> <li>Children can present the results in a range of graphical formats.</li> </ul>
<b>Digital Literacy</b>	<b>Online Safety - Using IT beyond school – Internet and Email</b>	
	<ul style="list-style-type: none"> <li>Children understand what makes a good password for use on the Internet.</li> <li>Children are beginning to realise the outcomes of not keeping passwords safe.</li> <li>Children can contribute to a concept map of all the different ways they know that the Internet can help us to communicate.</li> <li>Children have contributed to a class blog about Internet use</li> <li>Children understand that some information held on websites may not be accurate or true.</li> <li>Children have accessed and assessed a 'spoof' website.</li> <li>Children have created and shared their own 'spoof' webpage mock-up.</li> <li>Children can list a range of different ways to communicate.</li> <li>Children can use programs such as 2Connect to highlight strengths and weaknesses of each method.</li> <li>Children can open an email and respond to it.</li> <li>Children have sent emails to other children in the class.</li> <li>Children have written rules about how to stay safe using email.</li> <li>Children have created a quiz about email safety that explores scenarios that they could come across in the future</li> <li>Children have developed their search strategies further by refining their use of keywords and starting to use appropriate key phrases and questions.</li> </ul>	<ul style="list-style-type: none"> <li>Children can attach work to an email.</li> <li>Children know what CC means and how to use it.</li> <li>Children can read and respond to a series of email communications.</li> <li>Children can attach files appropriately and use email communication to explore ideas.</li> <li>Children can give some examples of simulations used for fun and for work.</li> <li>Children can give suggestions of advantages and problems of simulations.</li> <li>Children know that a computer simulation can represent real and imaginary situations</li> <li>Children can use a simulation to try out different options and to test predictions.</li> <li>Children can begin to evaluate simulations by comparing them with real situations and considering their usefulness.</li> <li>Children can recognise patterns within simulations and make and test predictions.</li> <li>Children can identify the relationships and rules on which the simulations are based and test their predictions.</li> <li>Children can evaluate a simulation to determine its usefulness for purpose.</li> </ul>

# Computing Key Skills

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Computer science	Information Technology	Digital Literacy
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>Understand computer networks including the internet; how they can provide multiple services, such as the world wide web;</p>	<p>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</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p>	<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p>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</p>

## Year 4

### Coding & Computational Thinking

	Coding & Computational Thinking	
<b>Computer Science</b>	<ul style="list-style-type: none"> <li>• Children can create an 'If/else' statement.</li> <li>• Children understand what a variable is in programming.</li> <li>• Children can set/change the variable values appropriately.</li> <li>• Children can show how a character repeats an action and explain how they caused it to do so.</li> <li>• Children can make a character respond to user keyboard input.</li> <li>• Children can explain what steps I need to follow to debug a program.</li> <li>• Children can explain what they did so that their computer program would not work.</li> <li>• Children can explain how they debugged their partner's program.</li> <li>• Children can explain what a variable is when used in programming.</li> <li>• Children can create a timer that prints a new number to the screen every second.</li> <li>• Children can explain how they made their program change the number every second.</li> <li>• Children can create an algorithm modelling the sequence of a simple event.</li> <li>• Children can manipulate graphics in the design view to achieve the desired look for the program.</li> </ul>	<ul style="list-style-type: none"> <li>• Children can use an algorithm when making a simulation of an event on the computer.</li> <li>• Children know what the different instructions are in Logo and how to type them.</li> <li>• Children can follow simple Logo instructions to create shapes on paper.</li> <li>• Children can follow simple instructions to create shapes in Logo.</li> <li>• Children can create Logo instructions to draw letters of increasing complexity.</li> <li>• Children can write Logo instructions for a word of four letters.</li> <li>• Children can predict what shapes will be made from Logo instructions.</li> <li>• Children can create shapes using the Repeat function.</li> <li>• Children can find the most efficient way to draw shapes.</li> <li>• Children can use the Build feature.</li> <li>• Children can create 'flowers' using Logo.</li> <li>• Children can name the different parts of a desktop computer.</li> <li>• Children know what the function of the different parts of a computer is</li> <li>• Children have created a leaflet to show the function of computer parts.</li> </ul>

<b>Information Technology</b>	<b>Creating content</b>	
	<b>Spreadsheets</b>	<b>– Data Bases and Graphing –</b>
	<ul style="list-style-type: none"> <li>• Children can use the number formatting tools to appropriately format numbers.</li> <li>• Children can add a formula to a cell to automatically make a calculation in that cell.</li> <li>• Children can use the timer, random number and spin button tools.</li> <li>• Children can combine tools to make fun ways to explore number.</li> <li>• Children can use a series of data in a spreadsheet to create a line graph.</li> <li>• Children can use a line graph to find out a result such as when the temperature in the playground will reach 20°C.</li> <li>• Children can make practical use of a spreadsheet to help them plan actions.</li> <li>• Children can use the currency formatting in a spreadsheet.</li> <li>• Children can allocate values to images and use these to explore place value.</li> <li>• Children can use a spreadsheet to check their understanding of a mathematical concept.</li> <li>• Children have put together a simple animation using paper to create a flick book.</li> <li>• Children have an understanding of animation frames.</li> <li>• Children have made a simple animation.</li> <li>• Children know what the Onion Skin tool does in animation.</li> <li>• Children can use the Onion Skin tool to create an animated image.</li> </ul>	<ul style="list-style-type: none"> <li>• Children can use backgrounds and sounds to make more complex and imaginative animations</li> <li>• Children know what ‘stop motion’ animation is and how it is created.</li> <li>• Children have used ideas from existing ‘stop motion’ films to recreate their own animation.</li> <li>• Children have shared their animations and commented on each other’s work using tools and programs such as display boards and blogs.</li> <li>• Children have looked at and discussed a variety of written material where the font size and type are tailored to the purpose of the text.</li> <li>• Children have used text formatting to make a piece of writing fit for its audience and purpose</li> <li>• Children have interpreted a variety of incoming communications and used these to build up the details of a story.</li> <li>• Children have used the incoming information to write their own newspaper report.</li> <li>• Children have used a program or app to mind-map ideas.</li> <li>• Children have used these ideas to write a persuasive letter or poster as part of the campaign.</li> <li>• Children have assessed their texts using criteria to judge their suitability for the intended audience.</li> </ul>
<b>Digital Literacy</b>	<b>Online Safety</b>	
	<b>--Using IT beyond school –</b>	<b>Internet and Email</b>
	<ul style="list-style-type: none"> <li>• Children have contributed ideas about online safety to a class concept map.</li> <li>• Children have planned a range of resources to help parents and children to understand online safety.</li> <li>• Children have decided upon key online safety messages as part of a presentation to parents.</li> <li>• Children have created some online safety materials.</li> <li>• Children have helped to plan a presentation on online safety.</li> </ul>	<ul style="list-style-type: none"> <li>• Children have investigated ways to share this information online.</li> <li>• Children can structure search queries to locate specific information.</li> <li>• Children have used search to answer a series of questions.</li> <li>• Children have written search questions for a friend to solve</li> <li>• Children can analyse the contents of a web page for clues about the credibility of the information.</li> <li>• Children understand how search operation (e.g. Boolean Operators) and modifiers can change searches and select appropriate information for their tasks.</li> </ul>



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Year 5		
<b>Computer Science</b>	<b>Coding &amp; Computational Thinking</b>	
	<ul style="list-style-type: none"> <li>Children can explain what Object, Action, Output, Control and Event are in computer programming.</li> <li>Children can explain which commands they included in their program and what they achieve.</li> <li>Children can explain how their program simulates a physical system, i.e. objects move at different speeds and angles.</li> <li>Children can describe what they did to make their vehicle change angle.</li> <li>Children can show that their vehicles move at different speeds.</li> <li>Children can explain what a variable is in programming.</li> <li>Children can set/change the variable values appropriately.</li> <li>Children know some ways that text variables can be used in coding.</li> <li>Children can create a game which has a timer and score pad.</li> <li>Children can use variables to control the objects in the game.</li> <li>Children can create loops using the timer and If/else statements.</li> <li>Children can explain what internet safety is.</li> <li>Children can include two buttons that launch windows to two separate websites that provide further information in their program.</li> <li>Children can use their coding knowledge to create a program that explains internet safety.</li> </ul>	
<b>Information Technology</b>	<b>Creating content</b>	
	<b>Spreadsheets</b>	<b>– Data Bases and Graphing –</b>
	<ul style="list-style-type: none"> <li>Children can create a formula in a spreadsheet to convert m to cm.</li> <li>Children can apply this to creating a spreadsheet that converts miles to km and vice versa.</li> <li>Children can use a spreadsheet to work out which letters appear most often.</li> <li>Children can use the 'how many' tool.</li> <li>Children can use a spreadsheet to work out the area and perimeter of rectangles.</li> <li>Children can use these calculations to solve a real-life problem</li> </ul>	<b>Writing and Presenting</b>
		<ul style="list-style-type: none"> <li>Children can upload images or use the drawing tools to create the walls, floor and roof.</li> <li>Children can design characters for their game.</li> <li>Children can decide upon, and change, the animations and sounds that the characters make.</li> <li>Children can make their game more unique by selecting the appropriate options to maximise the playability.</li> <li>Children can write informative instructions for their game so that other people can play it</li> </ul>

	<ul style="list-style-type: none"> <li>• Children can create simple formulae that use different variables.</li> <li>• Children can create a formula that will work out how many days there are in x number of weeks or years.</li> <li>• Children can use a spreadsheet to model a real-life situation and come up with solutions that can be practically applied</li> <li>• Children understand the different ways to search a database.</li> <li>• Children can search a database in order to answer questions correctly.</li> <li>• Children have designed an avatar for a class database.</li> <li>• Children have successfully entered information into a class database.</li> <li>• Children can create their own database on a chosen topic.</li> <li>• Children can add records to their database.</li> <li>• Children know what a database field is and can correctly add field information.</li> <li>• Children understand how to word questions so that they can be effectively answered using a search of their database.</li> <li>• Children can review and analyse a computer game.</li> <li>• Children can describe some of the elements that make a successful game.</li> <li>• Children can begin the process of designing their own game.</li> <li>• Children can design the setting for their game so that it fits with the selected theme.</li> </ul>	<ul style="list-style-type: none"> <li>• Children can evaluate their own and peers' games to help improve their design for the future.</li> <li>• Children know what the 2Design and Make tool is for.</li> <li>• Children have explored the different viewpoints in 2Design and Make whilst designing a building.</li> <li>• Children have adapted one of the vehicle models by moving the points to alter the shape of the vehicle while still maintaining its form</li> <li>• Children have explored how to edit the polygon 3D models to design a 3D model for a purpose.</li> <li>• Children have refined one of their designs to prepare it for printing.</li> <li>• Children have printed their design as a 2D net and then created a 3D model.</li> <li>• Children have explored the possibilities of 3D printing.</li> <li>• Children can make connections between thoughts and ideas.</li> <li>• Children can see the importance of recording concept maps visually.</li> <li>• Children understand what is meant by 'concept maps', 'stage', 'nodes' and 'connections'.</li> <li>• Children can create a basic concept map.</li> <li>• Children have used 2Connect Story Mode to create an informative text.</li> <li>• Children have used 2Connect collaboratively to create a concept map.</li> <li>• Children have used Presentation Mode to present their concept maps to an audience.</li> </ul>
<b>Digital Literacy</b>	<b>Online Safety &amp; Using IT beyond school</b>	
	<ul style="list-style-type: none"> <li>• Children know what Childnet SMART CREW is and have used their resources to gain an understanding of keeping safe online.</li> <li>• Children know who to tell if they are upset by something that happens online.</li> <li>• Children have made a comic strip to share knowledge about online safety.</li> <li>• Children understand about the use of operators in searching and continue developing their effective search techniques by using different operators in their searches.</li> </ul>	

# Computing Key Skills

Key Stage Two National Curriculum Statements		
Computer science	Information Technology	Digital Literacy
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>Understand computer networks including the internet; how they can provide multiple services, such as the world wide web;</p>	<p>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</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</p>	<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p> <p>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</p>

Year 6		
<b>Computer Science</b>	<b>Coding and Computational Thinking</b>	
	<ul style="list-style-type: none"> <li>• Children can plan a program before coding to anticipate the variables that will be required to achieve the desired effect.</li> <li>• Children can follow through plans to create the program.</li> <li>• Children can debug when things do not run as expected.</li> <li>• Children can explain what functions are and how they can be created and labelled in 2Code.</li> <li>• Children can explain how to move code from one tab to another in 2Code.</li> <li>• Children can explain how they organised code in a program into functions to make it easier to read.</li> <li>• Children are familiar with the vocabulary used throughout 2Code.</li> <li>• Children can describe coding using the appropriate terms.</li> <li>• Children can include buttons that launch other programs, including their own.</li> <li>• Children can include buttons that launch windows to external websites.</li> <li>• Children can follow through the code of how a text adventure can be programmed in 2Code.</li> </ul>	<ul style="list-style-type: none"> <li>• Children can adapt an existing text adventure to make it unique to their requirements.</li> <li>• Children can describe what a text adventure is.</li> <li>• Children can map out a story-based text adventure.</li> <li>• Children can use 2Connect to record their ideas.</li> <li>• Children can split their adventure-game design into appropriate sections to facilitate coding it.</li> <li>• Children can code, test and debug the sections, using 2Code.</li> <li>• Children can use the 'launch' command in 2Code to bring all the sections of their game together into a playable adventure game.</li> <li>• Children can map out an existing text adventure.</li> <li>• Children can contrast a map-based game with a sequential story-based game.</li> <li>• Children can create their own text-based adventure based upon a map.</li> <li>• Children can use coding concepts of functions, two-way selection (if/else statements) and repetition in conjunction with one another to code their game.</li> <li>• Children make logical attempts to debug their code when it does not work correctly.</li> </ul>
<b>Information Technology</b>	<b>Creating content</b>	
	<b>Spreadsheets</b>	<b>– Data Bases and Graphing –</b>
	<ul style="list-style-type: none"> <li>• Children can create a spreadsheet to answer a mathematical question relating to probability.</li> <li>• Children can take copy and paste shortcuts.</li> <li>• Children can problem solve using the count tool.</li> <li>• Children can create a machine to help work out the price of different items in a sale.</li> </ul>	<ul style="list-style-type: none"> <li>• Children can comment on and respond to other blogs.</li> <li>• Children can assess the effectiveness and impact of a blog.</li> <li>• Children have used the 2DIY activities to create a picture-based quiz.</li> <li>• Children have considered the audience's ability level and interests when setting the quiz.</li> <li>• Children have shared their quiz and responded to feedback.</li> </ul>
		<b>Writing and Presenting</b>

	<ul style="list-style-type: none"> <li>• Children can use the formula wizard to create formulae.</li> <li>• Children can use a spreadsheet to solve a problem.</li> <li>• Children can use a spreadsheet to model a real-life situation and come up with solutions.</li> <li>• Children can make practical use of a spreadsheet to help plan actions.</li> <li>• Children can use a spreadsheet to model a real-life situation and come up with solutions that can be applied to real life.</li> <li>• Children understand how a blog can be used as an informative text.</li> <li>• Children understand the key features of a blog.</li> <li>• Children can work collaboratively to plan a blog.</li> <li>• Children can create a blog with a specific purpose.</li> <li>• Children understand that the way in which information is presented has an impact upon the audience.</li> <li>• Children understand that blogs need to be updated regularly to maintain the audience’s interest and engagement.</li> <li>• Children can post comments and blog posts to an existing class blog.</li> <li>• Children understand the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying.</li> </ul>	<ul style="list-style-type: none"> <li>• Children understand the different question types within 2Quiz.</li> <li>• Children have ideas about what sort of questions are best suited to the different question types.</li> <li>• Children have used 2Quiz to make and share a science quiz.</li> <li>• Children have considered the audience’s ability level and interests when setting the quiz.</li> <li>• Children have shared their quiz with peers.</li> <li>• Children have given and responded to feedback.</li> <li>• As a class, children have collaborated on a quiz.</li> <li>• Children have tried out the different types of Text Toolkit grammar games.</li> <li>• Children have chosen an appropriate Text Toolkit tool to make their own grammar game.</li> <li>• Children have used a 2Investigate quiz to answer quiz questions.</li> <li>• Children have designed their own quiz based on one of the 2Investigate example databases.</li> <li>• Children have used their knowledge of quiz types to create a quiz show quiz based on a curriculum area.</li> </ul>
<b>Digital Literacy</b>	<b>Online Safety - Using IT beyond school – Internet and Email – Communication and Networks</b>	
	<ul style="list-style-type: none"> <li>• Children have a good understanding of the various areas of online safety that they have studied throughout school.</li> <li>• Children can apply their computing skills and knowledge to plan a game to teach online safety rules.</li> <li>• Children understand safety aspects of blogging and how blogs like 2Blog can protect them from online safety issues that blogs on the Internet do not.</li> </ul>	<ul style="list-style-type: none"> <li>• Children know the difference between the World Wide Web and the internet.</li> <li>• Children know about their school network.</li> <li>• Children have researched and found out about Tim Berners-Lee.</li> <li>• Children have considered some of the major changes in technology which have taken place during their lifetime and the lifetime of their teacher/another adult.</li> <li>• Children use advanced searches including the use of operators.</li> </ul>