

**INTENT**

**Computing Curriculum Year A and B: Planning, Progress and Long-Term Knowledge Growth**

YEAR 5	Substantive Computing Content	Recurring substantive themes, ideas and language (Key Concepts)	Subject rationale: Supporting pupils' wider Computing curriculum journey	Basic Disciplinary Training in Computational Thinking
<p><b>Autumn Term</b></p> <p><b>Unit 5.2 – Online Safety</b></p>	<p><b>Digital Literacy (Online Safety):</b></p>	<p>The unit of work on online safety will teach the children how to keep themselves safe online. The children will learn that although the Internet is a valuable resource for learning and entertainment, some people may use the Internet for negative purposes which in turn could cause harm for others.</p> <p>Pupils will be secure in their knowledge of the term 'digital footprint' and have an understanding of how digital footprints can be positive as well as negative.</p> <p>The children will develop their knowledge of creating secure passwords; understanding that they act as the first level of security on a device.</p> <p>This unit of work will also investigate ways in which children can communicate, and with whom, if they have viewed material or content that makes them feel upset or scared. This unit will also explore the importance of referencing sources of the work of others' in their own work, specifically understanding the term plagiarism.</p> <p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>online safety, SMART rules, password, reputable, encryption, identify theft, shared image, plagiarism, citations, reference and bibliography.</b></p>	<p>This unit of work on <b>Online Safety</b> is progressive each year as the children move through their school journey. The year 5 unit enhances the learning the children receive in year 4 on an introduction to and awareness of their personal digital footprint. The children also build on their understanding of data security, phishing and spam.</p> <p>This continued embedded learning will support children in becoming global digital citizens and will be integral in their future digital lives.</p> <p>This unit also builds on past learning taught through assemblies, Safer Internet Day and PCSO visits, for example.</p>	<p><b>Perseverance</b></p> <p>I don't give up. I'm prepared to keep having a go to see what happens. I keep going, even when things seem confusing. I'm determined to find solutions.</p> <p><b>Collaboration</b></p> <p>I can use other people's ideas. I can share my ideas. We can talk together to solve a problem. I can teach my peers and they can teach me.</p>
	<p>To gain a greater understanding of the impact that sharing digital content can have.</p>			
	<p>To review sources of support when using technology and children's responsibility to one another in their online behaviour.</p>			
	<p>To know how to maintain secure passwords.</p>			
	<p>To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this.</p>			
	<p>To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.</p>			
	<p>To learn about how to reference sources in their work.</p>			
	<p>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.</p>			
	<p>To ensure reliability through using different methods of communication.</p>			
	<p><b>Online Safety Assembly</b></p> <p><i>N.B. During Anti-bullying week (in the Autumn term), Online Safety will be embedded within discussions and awareness.</i></p>			

<p><b>Autumn Term</b></p> <p><b>Unit 5.8 - Word Processing with Google Docs</b></p>	<p><b>Information Technology:</b></p>	<p>In this unit, children learn that technology can be used as a way to communicate and present ideas in a visual form. Children will have a pre-requisite introductory understanding of word processing and this unit will give children a deeper level of understanding in word processing using Google's word processing software; 'Google Docs'.</p>	<p>This unit of work applies skills developed in the 'touch typing' and 'writing for different audiences' units in LKS2 and progresses to 'blogging' in later UKS2. Most children will have a basic understanding of word processing from the Microsoft Office word processing tool; 'Word'. The children will apply their knowledge and skills from using Word and transfer them to their experiences using Google Docs. They will recognise similarities between the software and identify differences.</p>	<p><b>Collaboration</b></p>
	To know what a word processing tool is for.	<p>They will gain an awareness and understanding of why word processing tools are used and who can use, gain access to, and read them. They will learn different methods to present information e.g. using a table, changing fonts/colours etc.</p>		<p>I can use other people's ideas.</p>
	To add and edit images to a word document.	<p>Children will develop the knowledge of aesthetic features used in the word processing tool and be able to confidently insert images, and edit them where necessary, into a document.</p>		<p>I can share my ideas.</p>
	To know how to use word wrap with images and text.	<p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>copyright, cursor, document, font, in-built styles, merge cells, paragraph formatting, readability, template, text formatting, text wrapping, textbox and word processing tool.</b></p>		<p>We can talk together to solve a problem.</p>
	To change the look of text within a document.			<p>I can teach my peers and they can teach me.</p>
	To add features to a document to enhance its look and usability.			
	To use the sharing capabilities in Google Docs.			
	To use tables within to present information.			
To use tables within to present information.				
To introduce children to templates.				

<p><b>Autumn Term</b></p> <p><b>Unit 5.7 - Concept Maps</b></p>	<p><b>Information Technology:</b></p>	<p>In this unit on <b>Concept Maps</b> children learn that a concept map is a pictorial way of showing relationships between concepts and ideas. They develop an understanding of the purpose of concept maps, which allow individuals to show information, pictures and links to support an idea or concept.</p>	<p>This unit of work builds on learning from LKS2 in ‘<b>presenting information</b>’ and KS1 in ‘<b>presenting ideas</b>’.</p>	<p><b>Collaboration</b></p> <p>I can use other people’s ideas.</p> <p>I can share my ideas.</p> <p>I can teach my peers and they can teach me.</p>
	<p>To understand the need for visual representation when generating and discussing complex ideas.</p>	<p>Children will apply information acquired in other subjects, for example history, to map ideas or concepts. They will learn that concepts are organised in ‘nodes’ which are linked together with lines to show how the concepts and ideas link together.</p>	<p>Children will be able to use the knowledge and understanding gained in this topic to apply it to their learning across the curriculum and use it as a tool/ strategy for helping them with revision. This will be particularly useful for their continued learning in UKS2 and secondary learning and beyond.</p>	<p><b>Decomposition</b></p> <p>Can I break down ideas into small concepts and explain the different parts?</p> <p>How are the parts /ideas connected?</p>
	<p>To understand the uses of a ‘concept map’.</p>	<p>Children will understand that concept maps are another tool, in addition to the previous unit’s work 5.8 on presenting information, utilised to help share ideas.</p>		
	<p>To understand and use the correct vocabulary when creating a concept map.</p>	<p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>audience, collaboratively, concept, concept map, connection, idea, node, thought and visual.</b></p>		
	<p>To create a concept map.</p>			
	<p>To understand how a concept map can be used to retell stories and information.</p>			
	<p>To create a collaborative concept map and present this to an audience.</p>			

<b>Spring Term</b>  <b>Unit 5.1 - Coding</b>	<b>Computer Science:</b>	<p>The unit on <b>Coding</b> will be taught alongside and linked to our quest work. The children will develop their understanding of how to use several functions in a program and understand the effects and implication to the code. They will secure their knowledge of simulating a physical system by creating a program where the objects behave as they would in the real world, e.g. <i>a football program that uses angles, speed and friction to simulate kicking a football</i>. The key computational thinking skill required is decomposition as the physical system will need breaking down into parts that can be realistically coded.</p>	<p>This unit of <b>Coding</b> builds upon the children's prior learning from year 1 through to year 4. The coding units are progressive, therefore the year 5 unit will further develop the children's knowledge of designing, testing and debugging code and working with variables including 'if' and 'repeat' commands.</p>	<p><b>Abstraction and generalisation</b> Which is the information I actually need? What don't I need to know? Have I made this more complicated than I need to? Will this work for other things?</p>
	To begin to simplify code.			
	To create a playable game.			
	To understand what a simulation is.			
	To program a simulation using 2Code.			
	To know what decomposition and abstraction are in computer science.			
	To take a real-life situation, decompose it and think about the level of abstraction.			
	To understand how to use friction in code.			
	To begin to understand what a function is and how functions work in code.	<p>In this unit the children will describe how variables are used to make a timer countdown and a scorepad for a game. These will be key components needed in their games. The children will develop confidence in giving examples of how you could use the 'launch' command in 2Code.</p>		
	To understand what the different variables types are and how they are used differently.			
To understand how to create a string.				
To understand what concatenation is and how it works.	<p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>action, abstraction, algorithm, button, called, co-ordinates, decomposition, event, function, if command, nesting, object, physical system, properties, repeat, run, score, sequence, simplify/simplified, tab, timer and variable.</b></p>	<p>The children will be able to demonstrate their knowledge and understanding of all previous coding work by creating a game for others to play. They will be encouraged to meet as many statements as they can from the success criteria shared with them outlining objectives taught during this unit.</p>	<p><b>Decomposition</b> Can I explain the different parts of this problem and solution? How are the parts of the problem connected?</p> <p><b>Algorithm design</b> What do I need to think about to make this happen? What are the steps I will need to do to solve this problem?</p> <p><b>Perseverance</b> I don't give up. I'm prepared to keep having a go to see what happens. I keep going, even when things seem confusing. I'm determined to find solutions.</p> <p><b>Making mistakes</b> I can enjoy things that go wrong and learn from them. I see mistakes as a normal part of solving problems.</p>	

<p><b>Spring Term</b> Online Safety</p>	<p><b>Digital Literacy (Online Safety):</b> Safer Internet Day (SID) – 8<sup>th</sup> February 2022 Online Safety Assembly for SID and class-based SID lesson</p>	<p>The whole school will explore an aspect of staying safe online, specifically linking to using the Internet. The theme changes each year. 2022 Theme – ‘All fun and games? Exploring respect and relationships online’.</p> <p>All children will be part of the assemblies (EYFS and KS1 or KS2 assembly) and will then have a follow up lesson with their class teacher with the support of the class’ Digital Leaders.</p>	<p>This is an annual event and therefore builds on previous themes and learning taught through assemblies and class-based activities.</p>	<p>Thinking critically</p>
<p><b>Spring Term</b> Unit 5.3 - Spreadsheets</p>	<p><b>Information Technology:</b></p> <ul style="list-style-type: none"> <li>To use formulae within a spreadsheet to convert measurements of length and distance.</li> <li>To use the count tool to answer hypotheses about common letters in use.</li> <li>To use a spreadsheet to model a real-life problem.</li> <li>To use formulae to calculate area and perimeter of shapes.</li> <li>To create formulae that use text variables.</li> <li>To use a spreadsheet to help plan a school event e.g. a cake sale.</li> </ul>	<p>This unit on <b>Spreadsheets</b> will link to the maths curriculum, specifically in; area and perimeter of shapes and conversions in measure. It will teach the children to use and create text variables. The children will develop their knowledge of spreadsheets using 2Calculate as a vehicle of learning. The children will then apply their learning by creating a spreadsheet to model a real-life situation and come up with solutions.</p> <p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>average, advance mode, copy and paste, columns, cells, charts, equals tool, formula, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet and timer.</b></p>	<p>This unit of <b>Spreadsheets</b> builds upon the children’s prior learning as it is revisited and progressed each year throughout school. The year 5 unit will build on the knowledge of formulae and formatting cells from year 4 and give the children the opportunity to embed this learning by making their own spreadsheets for a purpose.</p>	<p><b>Abstraction and generalisation</b></p> <p>Which is the information I actually need? What don’t I need to know? Have I made this more complicated than I need to? Will this work for other things?</p>

<p><b>Summer Term</b></p> <p><b>Unit 5.5 – Game Creator</b></p>	<p><b>Computer Science:</b></p>	<p>During this <b>Game Creator</b> unit, the children will experience using a new piece of software called '2DIY3D'. They will learn that <i>2DIY3D allows users to create a playing area, such as a maze, in 2D and then turn it into a 3D computer game.</i></p>	<p>This <b>Game Creator</b> unit of work on is the first experience that the children will have in using 2DIY3D. However, the computational attitudes and skills required in this unit are those that underpin all of the previous computer science units taught in KS1 and LKS2. This unit will extend the children's learning and prepare them for increasingly challenging coding opportunities in Year 6 and their future learning.</p>	<p><b>Algorithm design</b></p> <p>What do I need to think about to make this happen?</p> <p>What are the steps I will need to do to solve this problem?</p>
	<p>To plan a game.</p>	<p><i>They will think critically and use their imagination to consider what makes a good computer game. They will then consider how they can design their game to allow the player to face continuous challenges in a visually stimulating environment, each of which leads to another challenge, to keep the game challenging and fun.</i></p>		<p><b>Abstraction and generalisation</b></p> <p>Which is the information I actually need?</p> <p>What don't I need to know?</p> <p>Have I made this more complicated than I need to?</p> <p>Will this work for other things?</p>
	<p>To design and create the game environment.</p>	<p>Another key aspect that this unit allows, is the important opportunity to provide and encourage evaluation. The children will experience computational attitudes e.g. making mistakes and perseverance which in turn encourages collaboration and the evaluation of each game will require user feedback in order for opportunities to improve.</p>		<p><b>Pattern recognition</b></p> <p>Is this similar to a problem I've already solved? How is it different?</p> <p>Which parts of the problem are the same?</p> <p>Which parts of the problem are different?</p>
	<p>To design and create the game quest.</p>	<p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>animation, computer game, customise, evaluation, image, instructions, interactive, screenshot, texture, perspective and playability.</b></p>		<p><b>Perseverance</b></p> <p>I don't give up. I'm prepared to keep having a go to see what happens. I keep going, even when things seem confusing. I'm determined to find solutions.</p>
	<p>To finish and share the game.</p>			
<p>To self and peer evaluate.</p>				

<u>Summer Term</u>  <b>Unit 5.4 – Databases</b>	<b>Information Technology:</b> To learn how to search for information in a database.	In this unit, children will learn that ‘database’ is a term used in computing to refer to storing data on a computer. They will understand that a database is a collection of data organised in such a way that it can be searched and information found easily. As with their prior learning this year in unit 5.8, understanding that information can be presented and viewed digitally, they will understand that numerical data can be searched and sorted and also viewed pictorially. This unit refers specifically to key terminology and computational attitude - ‘collaboration’. The children will understand that making a database collaborative allows lots of people to enter information into the database at the same time. This is a lot quicker than one person entering the data by themselves.  Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>avatar, binary tree (branching database), charts, collaborative, data, database, find, record, sort, group, arrange, statistics, reports and table.</b>	This unit on <b>Databases</b> builds upon the children’s prior learning in LKS2 on ‘branching databases’ and knowledge acquired in KS1 during ‘grouping and sorting’ and ‘questioning’ units.  The children will also have the opportunity to apply their mathematics learning to this computing unit.	<b>Abstraction and generalisation</b> Which is the information I actually need? What don’t I need to know? Have I made this more complicated than I need to? Will this work for other things?  <b>Pattern recognition</b> Is this similar to a problem I’ve already solved? How is it different? Which parts of the problem are the same? Which parts of the problem are different?  <b>Collaboration</b> I can use other people’s ideas. I can share my ideas. We can talk together to solve a problem. I can teach my peers and they can teach me.
	To contribute to a class database.			
	To create a database around a chosen topic.			
<u>Summer Term</u> <b>Online Safety</b>	<b>Digital Literacy (Online Safety):</b> <b>Online Safety Assembly</b>	Alongside discrete Online Safety units for each year group, children will receive an enhanced Online Safety education in age-appropriate assemblies delivered once a term.	Online Safety is taught in all year groups throughout primary school and continued in secondary school.	<b>Collaboration</b> Developing the understanding and importance of sharing information with appropriate people.

<p><b>Summer Term</b></p> <p><b>Unit 5.6 – 3D Modelling</b></p>	<p><b>Information Technology:</b></p>	<p>In this unit, children will be introduced to a program (2Design and Make) in order to investigate a new area of learning in Computer Aided Design (CAD). They will gain an understanding of the different viewpoints of a 3D object and how to explore areas when a polygon is moved/moving.</p>	<p>This unit of work on <b>CAD</b> is the first experience that the children will experience in 3D modelling. It will provide a foundation block of learning for the children in order to prepare them for their secondary schooling graphics teaching and learning.</p>	<p><b>Algorithm design</b></p> <p>What do I need to think about to make this happen? What are the steps I will need to do to solve this problem?</p>
	<p>To be introduced to '2Design and Make' and the skills of computer aided design.</p>	<p>This unit will begin by exploring how CAD software is used in a variety of domains, sectors and industries. They will learn that CAD is used to design 3D objects in a 2D environment. Some examples are; <i>Architectural plans for buildings; designing layouts for interiors; designing objects such as packaging and designing mechanical components.</i></p>	<p>The children's prior work on shape in KS1 and LKS2 will support the children in learning a new aspect of computing; CAD.</p>	<p><b>Imagination</b></p> <p>I can look at things in unusual ways.</p>
	<p>To explore the effect of moving points when designing.</p>	<p>The children will apply their Mathematics learning on shape with particular reference to nets. The children will learn how to create nets on the computer and check if they meet the 3D requirements before learning to converting the net file and test their nets by printing using a 3D printer.</p>		<p><b>Pattern recognition</b></p> <p>Is this similar to a problem I've already solved? How is it different? Which parts of the problem are the same? Which parts of the problem are different?</p>
	<p>To design a 3D Model to fit certain criteria</p>	<p>Pupils will be taught specific vocabulary and will demonstrate confidence in using it, including; <b>CAD (Computer Aided Design), modelling, 3D, viewpoint, polygon, 2D, net, 3D printing, points and template.</b></p>		
<p>To refine and print a model.</p>				



National Curriculum Objective	Strand	Units	
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Computer Science	5.1 5.5	
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	5.1	
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Computer Science	5.1	
Understand computer networks, including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.	Computer Science	5.2	
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	Various Search technologies are taught more specifically in unit 4.7. Children will utilize this knowledge in many Internet based sessions in all areas of the curriculum.	
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.	Information Technology	5.1 5.4 5.6 5.8	5.3 5.5 5.7
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Digital Literacy	5.2 and discussed in other units	