

Year 5: Computing



Predominant Area of Computing*		
	Computer Science	
	Information Technology	
	Digital Literacy	

*Most units will include aspects of all strands.

Autumn Term –

5.1 - Coding efficiently, 5.2 - Online safety, 5.3 - Spreadsheets.

Overview of unit	Substantive Knowledge	Disciplinary Knowledge
<p>5.1 - Coding efficiently: In this unit students further develop their coding ability by looking at ways of simplifying code to make it more efficient, by working with simulations and by understanding how 'strings' work.</p>	<ul style="list-style-type: none"> To know what the concepts of decomposition and abstraction are. To use these two concepts to produce a plan of a real-life situation. Know what Strings are used for in coding, and how to apply these. Know what concatenation is and how it works. 	<ul style="list-style-type: none"> Know how to use simplified code to make programs more efficient. Know how to use variables in code. Know how to plan an algorithm to model a sequence of traffic lights. Break down tasks into achievable steps. Use functions and strings in code to make use of text variables.
<p>5.2 - Online Safety: Pupils learn the SMART rules for computing, developing their understanding of their role in digital society, their responsibility to others and how to protect themselves. They develop their understanding of privacy and protecting their vital information and passwords.</p>	<ul style="list-style-type: none"> Understand key security concepts about what the dangers are of sharing users, passwords or access. Be critical of content that may ask for personal data. Reflect on how sharing information with friends could cause problems if relationships break down. Recognise the risks of sharing images and other data online. 	<ul style="list-style-type: none"> Know who to tell if we are upset by something that happens online. Know and relay the SMART rules. <p>S for Safe: Keep personal details away from strangers. M for Meet: Don't meet people that you know online unless you're with a trusted adult. A for Accept: Don't click any links that you're unsure about. ... R for Reliable: Don't believe everything people tell you. ... T for Tell: If you see something online that upsets you, tell a trusted adult straight away!</p> <ul style="list-style-type: none"> Know what a good password requires. Understand the risks of sharing images and of image manipulation or misuse.
<p>5.3- Spreadsheets: In this unit pupils will develop further understanding of using spreadsheets using more automation tools and developing more complex calculations. They will build their own spreadsheets to accomplish given mathematical tasks, using the tools and skills taught to date so far. They will use these skills to plan a school cake sale, applying the skills to a real-world situational model.</p>	<ul style="list-style-type: none"> Understand how a formula can allow for random variables, applying the same process to the new value to get a valid outcome. Know and extrapolate how spreadsheets can help us to model real world situations. Know how to use spreadsheets to solve problems. 	<ul style="list-style-type: none"> Learn to use simple formulae in a spreadsheet to convert M to CM Use the skill to create a spreadsheet that can convert Miles to KM and vice versa. Know how to calculate area and perimeter of shapes on a spreadsheet. Explore other formula for different effects. Know how to present the findings of our spreadsheets in visually interesting and valid ways.

Spring Term -

5.4 - Databases, 5.5 - Game Creator, 5.6 - 3D Modelling

Overview of unit	Substantive Knowledge	Disciplinary Knowledge
<p>5.4 - Databases: Children will revise databases, beginning to recognise their real-world application, with opportunity to build a class database on a given subject. They will then interrogate the database for information.</p>	<ul style="list-style-type: none"> Know what a database is. Know why and how databases can be useful. Know how databases are used in real life situations. Know how to contribute to a database with valid entries. 	<ul style="list-style-type: none"> Know the different ways to search a database. Search a database to answer questions correctly. Know how to design an avatar. Know how to enter information into a database. Know how to enter data into a database field.

		<ul style="list-style-type: none"> Know how to word questions carefully to effectively answer lines of enquiry.
<p>5.5 - Game Creator: Children are introduced to the 2DIY 3D tool and plan a game. They design the 3D world of the game and add game elements into the construct. They finish the game, then play each other's games and evaluate them.</p>	<ul style="list-style-type: none"> Reflect on elements of a successful game. Recognise the entertainment value of computer gaming and the technology involved behind it, relating it to coding. Know that complex coding procedures can be built into a simple visual interface and that this can help designers take very complex procedures down to a few mouse clicks to achieve complex results. 	<ul style="list-style-type: none"> Know how to use the game builder interface. Analyse computer games. Know how to design a game involving key elements. Know how to design characters and backgrounds for the game. Work with the tools to develop a gaming environment. Know the key features of good gaming in order to evaluate both our own and someone else's game.
<p>5.6 - 3D Modelling: During this unit pupils are introduced to 3D modelling software and can relate this to CAD design. They will design shapes that can be printed and made using the software.</p>	<ul style="list-style-type: none"> Know how 3D modelling can help with manufacturing processes. Identify how 3D modelling can produce models virtually that save production costs. Know that 3D modelling means that designs can be quickly adapted, explored and experimented with in a virtual environment, costing the manufacturer less time, money and effort. 	<ul style="list-style-type: none"> Know the toolset of the 2Design software. Explore different viewpoints and know that these can be used for exploring a model in the virtual environment. Know the terms of 3D modelling, such as polygon, virtual and splines. Know how to adapt and test ideas within the models. Know how to print the models and assemble them.

**Summer Term –
5.7 - Concept maps, 5.8 - Word processing (Microsoft Word)**

Overview of unit	Substantive Knowledge	Disciplinary Knowledge
<p>5.7 - Concept maps: Children are introduced to the use of concept maps as a way of sharing information and exploring complex ideas with others. They will create concept maps to share ideas collaboratively and use presentations to present to an audience.</p>	<ul style="list-style-type: none"> Understand that presenting information often needs support, particularly when concepts are complex. Know how images and diagrams can support thinking and understanding. Understand how technology, and software can aid this. 	<ul style="list-style-type: none"> Know how to make connections between thoughts and ideas. Know the importance of recording concepts visually. Know what 'stages' and 'nodes' are. Create concept maps. Present using concept maps. Evaluate the use of presentations and concept maps.
<p>5.8 - Word Processing (Microsoft Word:) Pupils learn to use a wider range of word processing skills using Microsoft Word. They recognise the common toolset and relate this to working on other packages, with awareness of 'industry standard' ideas. They present information using a variety of the tools available.</p>	<ul style="list-style-type: none"> Know what 'Industry Standard' means and relate this to common packages of software they are aware of. Identify commonalities between different packages that do the same thing. Know that certain tools are almost essential to digital life. 	<ul style="list-style-type: none"> Know how to open, file and manage files. Know the core tools for writing, editing and navigating around documents. Know how to identify and add images that are copyright free to a document. Know how to search for copyright free material and images. Understand the wrapping tools. Add boxes and shapes to documents. Know how to add and manage a table in documents. Know how to save, send and print documents.