



SUNNYDOWN SCHOOL

COMPUTER SCIENCE CURRICULUM PLAN

Subject	Computer Science	Year group	Y8
Subject Intent	<p>The aim of computer science at KS3 is to ensure learners become confident and proficient in the use of technology. The KS3 curriculum focus is to equip learners with the knowledge required to stay safe in the digital world and builds on the topics covered at KS2. It creates a solid foundation for learners to progress to Computer Science and other Computing disciplines at KS4. We cover the key concepts of Computational thinking, Programing, Software development, Computer Architecture and Online safety. Computing ensures digital literacy and aids communication skills, key as a COIN setting.</p>		

Term	Topic	Core learning	Key concepts	Sequencing
Autumn 1	<p>Working safely with digital applications.</p> <p>Data Representation</p>	<p>Recap on Algorithm</p> <p>E-safety: Recap on E-Safety and safe computing practices.</p> <p>Data Representation</p> <p>Binary</p>	<ul style="list-style-type: none"> • Binary • Denary • Algorithm • Mind Map • Flow Charts • Boolean Logic 	<p>Building on E-safety from Year 7. The safe use of technology and respectful practices online.</p> <p>Data representation will build from computer systems and data modelling in year 7.</p> <p>Building towards.... Students will begin to appreciate that computer systems are composed of circuits and switches. They will begin to understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] These skills are required at KS4 for computing.</p>
Autumn 2	Computational thinking.	Create simple Flow Charts	<ul style="list-style-type: none"> • BOOLEAN • AND 	<p>Building on..... Building on from year 7, students will develop a better</p>

		<p>Use BOOLEAN Logic to create a simple Algorithm</p> <p>Design a simple flow chart to sequence events in an Algorithm</p>	<ul style="list-style-type: none"> ● OR ● NOT ● Mind Map ● Flow Chart 	<p>understanding of the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.</p> <p>Computational thinking in year 8 is the next step from year 7 where students were introduced to sequencing and structured Mind Maps</p> <p>Building towards.... Students will understand simple Boolean logic [for example, AND, OR and NOT] and its use in simple circuits and programming; They will begin to appreciate the link between binary as a machine language and various data representations.</p> <p>Students will be introduced to flow charts.</p> <p>This knowledge will help students progress to the KS4 curriculum.</p>
Spring 1	<p>Computational Thinking</p> <p>Introduction to small Basic</p>	<p>Learn the different types of data.</p> <p>Define Data</p> <p>Create a basic program utilising more than one data type.</p>	<ul style="list-style-type: none"> ● Events ● Variable ● Constant ● Function ● Sequences ● Selection ● Iteration ● Functions ● Data Type 	<p>Building on..... BOOLEAN Logic, sequencing, flow charts and data representation covered in Y7 and Y8 Autumn 1.</p> <p>Building towards..... Students will begin programming in text language to solve a variety of computational problems and make appropriate use of data structures.</p> <p>Small Basic will introduce students to a text based programming language. Students will build their confidence to code in a text language.</p>
Spring 2	<p>Introduction to Python</p>	<p>Define Data types</p> <p>Create a simple array</p> <p>Select data from an array</p> <p>Understand Loops</p>	<ul style="list-style-type: none"> ● Events ● Variable ● Constant ● Function 	<p>Building on.... With some coding experience in Small Basic, students will progress to Python.</p>

		<p>Understand functions and Procedures Define a simple function Perform calculations with Python</p>	<ul style="list-style-type: none"> ● Sequences ● Selection ● Iteration ● Functions ● Data Types ● Arrays 	<p>Building towards.... Students will continue making use of appropriate data structures [for example, lists, tables or arrays]; design and begin to develop modular programs that use procedures or functions. This knowledge and skill will later be required in K3 and KS4</p> <p>Working with Python will further develop understanding of data types in a scripting environment and develop students' ability to debug code.</p>
Summer 1	Introduction to the Internet	<p>Understand how the internet works. Understand how internet content is displayed. Understand basic HTML Tags. Create a basic web page using HTML Code</p>	<ul style="list-style-type: none"> ● HTML ● Packets ● Protocol ● Binary ● Data Types ● Sever 	<p>Building on.... Students will build on their Knowledge of networking, systems design and data representation acquired in year 7. They will begin to appreciate the link between these topics in more detail.</p> <p>Building towards.... Students will gain a basic understanding of Protocol, storage and movement of data. They will further understand the link between binary, data and information.</p>
Summer 2	Summer Computing Project	<p>Design and develop and develop a simple application against a given framework.</p>	<ul style="list-style-type: none"> ● Systems life cycle ● Development ● Testing ● Evaluation ● End User ● Analysis ● Decomposition 	<p>Students will consolidate their learning from Year 7 and Year 8.</p> <p>Building on.. Students will use the knowledge acquired practically to develop an app. Using their knowledge of programming, data types, data representation and decomposition; students will create an app that is appropriate for an end user.</p> <p>Building towards..... Students will begin to understand the importance of the system life cycle in addition to collecting and analysing data. Students will work towards gaining the skills required to design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.</p>