Subject: Computing

Year Group	**Year 8**				
Rationale	**The year 8 computing curriculum is designed to build resilient learners who have strong programming and problem-solving skills with an enhanced knowledge of how computers operate, focusing on both hardware and software components. It is also designed to develop the creative thinking that is required in a lot of areas of Computer Science when producing sophisticated and well-designed computer programs.**				
	Autumn Term 1	**Autumn Term 2**	**Autumn 2/ Spring Term 1**	**Spring 2/ Summer Term 1**	**Summer Term 2**
Topic/Unit	**Small Basic**		**Computer Systems.**	**Web Development**	
Knowledge	**Computer Science** **Declarative Knowledge:** Building on their previous experience with block-based coding in Y7 MakeCode Arcade, pupils will deepen their understanding by transitioning to text-based programming. They will explore key programming concepts such as variables and constants, input and output operations, and the logic behind controlling program flow through selection (if statements) and iteration (loops). Pupils will also learn how to break down complex problems by creating sub-programs (functions or procedures), which promote modularity and code reuse. A strong emphasis will be placed on adhering to the specific syntax of the programming language, ensuring they understand how these concepts work together to create effective solutions. **Procedural Knowledge:** After gaining a strong understanding of the core concepts, pupils will apply their knowledge by solving real-world problems through practical coding tasks. They will learn to organise their code for clarity and readability. By combining different programming techniques—such as using sub-programs to break down tasks, choosing the right loops for repetition, and applying if statements for decision-making—they will create programs that respond to inputs and produce useful outputs. This hands-on practice will help pupils build the skills needed to solve various problems by integrating different coding techniques effectively.		**All Strands** This unit encompasses all strands of the computing curriculum including; computer science, IT and digital literacy **Declarative Knowledge** This unit is designed to build up pupil knowledge and understanding of computer systems and their components in more detail from the year 7 binary unit. As part of this unit pupils will learn about the different internal components of a computer system and how they work together and the devices that can be used with computer systems and computer networks. Students will gain knowledge about input, storage, and output devices, as well as the essential software that enables computers to function effectively.. Pupils will develop an understanding of some of the key cyber security issues and risks. **Procedural Knowledge** Pupils knowledge of computer hardware and software will be enhanced further by looking at how the components of computers and networks connect together to communicate forming the internet and world wide web. Pupils will learn why being connected to a network increases the risk of cyber-attacks and what can be done to prevent and reduce the risks of them.	**Computer Science and Information Technology** **Declarative Knowledge** This unit is designed to give pupils the opportunity to under-take a creative project. In this unit pupils will develop their understanding of web design and develop knowledge of what makes a good/successful website and how to code one. Pupils will develop knowledge of the scripting language HTML including what it is and how to structure the code to make a simple website. Pupils will develop knowledge of specific HTML elements and what they do such as <p>, <i>, <b>, <href>, <nav>, <img>, <iframe>, <marquee>, <font>. Pupils will develop knowledge of how to style a website and how the can code CSS to improve the look of a website. The unit will develop pupil knowledge of design principles and pupils will learn how to create a portfolio including key pre-production documents such as mind maps, mood boards and visualisation diagrams. **Procedural knowledge** Pupils will use their knowledge to create a website with design principles in mind. Combining both HTML and CSS to create a website for a specific purpose by re-using, revising and re-purposing digital artefacts for a given audience, with attention to trust-worthiness, design and usability.	

	Autumn Term 1	Autumn Term 2	Autumn 2/ Spring 1	Spring 2/ Summer Term 1	Summer Term 2
Skills	**Abstraction and Decomposition** Pupils learn to break down problems into simpler components, honing their ability to abstract and decompose challenges for more effective problem-solving. **Debugging** As they actively work on writing and implementing code, students develop crucial debugging skills, learning to identify and fix errors in their programs. **Programming, Computational Thinking, and Problem-Solving Skills** The process of producing code for a range of different problems sharpens their programming skills, computational thinking, and overall problem-solving capabilities. **Numeracy Skills:** Numeracy skills come into play as pupils create coded solutions that rely on simple arithmetic operators and expressions, reinforcing their understanding of mathematical concepts in a practical context. **Resilience and Perseverance** Programming often involves trial and error. As pupils encounter bugs or challenges in their code, they develop resilience and perseverance by continuously refining their work until they achieve the correct result. **Creativity** Coding also fosters creativity. Pupils are encouraged to think creatively to design unique solutions or innovative programs, developing their ability to approach problems from different perspectives and come up with novel ideas.		**Presentation and ICT Skills** Pupils will use various ICT tools to present information effectively and creatively**.** **Computational Thinking** Understanding how hardware and software work together, with connections to binary concepts. **Analytical Skills** Identifying and analysing different types of cybersecurity threats, to identify commonalities **Research Skills** Pupils will carry out research using the WWW of cyber-attacks and security issues that have happened in recent years **Literacy and Evaluation** Enhancing written and verbal skills through discussions and reports on networking themes.	**Programming and Creativity** Students will build programming skills by coding their own websites using HTML, developing both technical abilities and creative expression. **Design Skills** As students add content, colour, and layout features, they will learn to design websites tailored to a specific audience, focusing on visual appeal and user engagement. **Numeracy Skills** Numeracy will be enhanced as students work with proportions, ratios, and percentages to achieve balanced and visually cohesive designs. **Analytical and Evaluation Skills** Students will develop analytical skills by assessing websites, identifying strengths and areas for improvement, and learning how to evaluate both functionality and aesthetics. **Computational Thinking and Resilience** Through scripting their websites, students will strengthen computational thinking and resilience, along with metacognitive skills, as they plan, troubleshoot, and reflect on their work throughout the unit.	

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Assessment: Formative	**Formative** : 1) Pupils will complete a programming task where they will need to code a solution to a problem using selection		**Formative:** 1)Pupils will complete a programming keywords quiz. In response to this pupils will need to produce a revision resource and the keywords they got wrong.. 2) Pupils will complete a short task where they need to identify a network component from an image. They also need to identify whether a statement is linked to a wired or wireless network. Pupils will need to produce a revision resource of the areas they got wrong.	**Formative:** 1) Web design portfolio – Mind maps and mood boards – Mid point check – a rubric will be used to give pupils feedback, pupils with have access the rubric and will be expected to use this to make improvements 2) Pupils will complete a practical project where they will need to design and develop a webpage to match a given coding specification for a theme of their choice. Pupils will have the opportunity to gain peer and teacher feedback on this before getting a further opportunity to make improvements.	
Assessment: Summative	**Summative Assessment 1** Summative test on the computer consisting of multiple choice and short answer questions which will asses pupil understanding of the programming key words, their ability to debug code, their ability to read and trace code As well as an extended independent practical programming questions where pupils will be expected to produce a coded solution for a given problem. Pupils will also be assessed on their			**Summative assessment 2 :** Summative test on the computer consisting of multiple choice and open-ended questions on programming techniques, evaluating code and debugging it, it will also check pupil knowledge of computer systems, networks and security issues, by assessing their understanding of key words and ability to recognise different hardware. There will also be some questions assessing pupil understanding of basic HTML constructs. Pupils will all be expected to produce a pre-production document for a given brief.	
Homework	**Practice and Application –** Students will complete a debugging activity, identifying errors in code and suggesting fixe **Preparation and Practice –** Pupils given the task to revise for their summative assessment. Suggested revision strategies provided to pupils and a knowledge organiser to aid revision.		**Completion –** Pupils asked to use their creative, design, digital literacy and literacy skills along with their knowledge of effective web searching to produce a leaflet on how to search the web effectively. **Research and preparation –** Pupils need to research the components of a computer system including the cost and the advantages. Pupils should save an image/link to the component	**Improvement –** Pupils will need to use the completed cheat sheet to check and assess their own, and make suitable improvements. **Integration –** Pupils asked to use their creative, design, digital literacy and literacy skills along with their knowledge of effective web design to produce a design portfolio to present their final web design plans. **Preparation and Practice –** Pupils given the task to revise for their end of year summative assessment. Suggested revision strategies provided to pupils and a knowledge organiser to aid revision.	