SUBJECT: Computing

YEAR GROUP	Year 7					
Rationale	The year 7 computing curriculum is designed to develop the resilience and independent learning abilities of our pupils. Giving them a broad experience of the different strands of computing including; Digital Literacy, Computer Science and Information Technology. The curriculum is designed to give pupils confidence in the IT systems of school such as: email, teams and OneDrive to enable them to successfully use them in other curriculum areas.					
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic/Unit	Make Code Arcade Programming		E-Safety and presentation	Data Representation		Spreadsheet Modelling
Knowledge	Computer Science Pupils will learn how to solve a range of computational programming problems using a block based programming language (Makecode arcade). **Declarative Knowledge:** Initially, pupils learn about the main programming concepts. This foundational understanding encompasses the nature of input and output operations, controlling sprites, the pivotal role of variables and constants, the logical underpinnings of selection (If statements), the efficiency derived from iteration (loops), and how arrays can be used to organise data. Alongside this pupils will learn the rules which govern each programming concept. **Procedural Knowledge**: After learning the foundational knowledge of a programming concept, pupils progress to procedural knowledge, empowering them to apply their understanding of the concept in practical scenarios. This transition enables them to translate logical thinking into executable code, honing their ability to solve computational problems. The ultimate goal is to equip pupils with the skills to create programs mirroring real-world physical systems. These programs are designed to not only react to input but also systematically process the information before producing meaningful output		Digital Literacy and IT **Declarative Knowledge**: Initially pupils develop foundational understanding of the prevalent issues associated with the use of social networks, technology and the internet. This includes an awareness of the key challenges: cyberbullying, potential risks tied to sharing personal information online, and the dangers posed by interactions with online strangers and exploitation. In parallel, pupils acquire knowledge about e-safety principles, understanding best practices to navigate the digital landscape safely and securely as well as how to respond to such incidents. The second component aims to develop pupil understanding of components of a professional presentation and how to appeal present information for a given target audience. They will become acquainted with elements such as layout, color schemes, and effective visual communication. **Procedural Knowledge**: Pupils will be able learn how to apply the knowledge to a range of scenarios including how to protect themselves online, recognising signs of cyberbullying, implementing strategies to safeguard personal information, and responding effectively to online threats. Simultaneously, pupils develop presentation skills using PowerPoint. Where they will use their knowledge of design principles to craft professional presentations with a consistent house style. Furthermore, they extend this skill set to adapt and present an e-safety story in the form of an interactive book for a given audience.	Computer Science **Declarative Knowledge**: Pupils explore computer fundamentals, focusing on how computers operate using the binary number system. They gain foundational knowledge about the distinctions between binary, denary, and hexadecimal number systems, understanding the contexts in which each is employed. Additionally, pupils learn the methods used to convert between these number systems. This extends to elucidate how data, including images and text, is stored in computers using binary code. Pupils delve into the foundational principles of logic gates and how they interpret binary information. Concluding with an introduction to the significance of authentication and cryptography in keeping data safe. **Procedural Knowledge:** Pupils will actively engage in converting between binary, decimal, and hexadecimal numbers, honing practical skills in manipulating different number systems. This extends to understanding how data representation in binary relates to logic gates, reinforcing the connection between computer architecture and information processing. Pupils also explore issues associated with data storage and delve into specific authentication and cryptography methods. Practical applications involve learning how to keep data secure using these techniques.		Information Technology **Declarative Knowledge:** Pupils begin their exploration of spreadsheets by gaining foundational knowledge about what spreadsheets are, how they function, and the benefits they offer to organisations. This includes understanding the role of spreadsheets in organising, analysing, and visualising data to facilitate efficient decision-making. **Procedural Knowledge:** They acquire the skills necessary to create spreadsheets in Excel, starting from adding data and formatting the spreadsheet to more advanced tasks such as incorporating functions and formulae. Practical applications involve creating spreadsheets tailored to specific scenarios, providing hands-on experience in applying spreadsheet skills to real-world situations. Additionally, pupils learn how to enhance the professional appearance of a spreadsheet by creating a simple logo.

	Autumn Term 1 and Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Skills	**Abstraction and Decomposition** Pupils learn to break down complex worded 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. **Design and Creativity** Simultaneously, students enhance their design and creativity as they craft the front end of their programs, ensuring not only functionality but also an engaging user interface..	**Analytical** skills will be developed through analysing a range of scenarios and deciding what the best outcome would be. **Debating** skills will be developed through discussion and debate with peers on what outcome should be taken in particular scenarios. **Digital Literacy** **Literacy** skills will be developed as students produce a dialogue for a comic strip/story on the topic of e-safety. **Presentation** skills will be developed as pupil use software to produce an interactive comic/storybook	**Analytical** skills will be developed as pupils analyse and decrypt a range of cryptography challenges. **Computational thinking** skills will be developed as pupils develop understanding of how computers actually work. **Numeracy** skills will be developed as pupils are introduced to 2 new number bases and learn to covert between these. **Resilience** will be developed as pupils tackle a range of **problem solving** tasks.		**Analytical** skills will be developed as pupils analyse a scenario in order to formulate the best IT solution. **Abstraction** skills will be developed as pupils read and scenarios and get rid of the unnecessary detail in order to identify what IT solution needs producing. **Design** skills will be developed as pupils create spreadsheets that look professional and as they learn how to presentation information in more ways. **Numeracy** skills will be developed as pupils create formulae and functions.

	Autumn Term 1 and Autumn Term 2	Spring Term 1	Spring Term 2 Summer Term 1	Summer Term 2
Assessment: Formative	**Formative**: 1)Pupils will independently code a solution to a problem using make code arcade (password interface) 1)Pupils will complete a key word quiz assessing their declarative knowledge of programming concepts	**Formative**: - Pupils will produce a plan for their interactive comic strip/story book that tells a story of how to stay safe online. This will be assessed based on the quality of content and digital literacy skills. Pupils will get chance to improve their plan based on feedback	**Formative –** Pupils will complete a series of questions where they will be required to carry out binary, denary and hexadecimal conversions	**Formative** Pupils will produce a spreadsheet for a given problem assessing their ability to carry out formatting, conditional formatting as well as use key formulae and functions used for basic arithmetic.
Assessment: Summative		**Summative Assessment 1** Summative test on the computer consisting of multiple choice questions 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.	**Summative Assessment 2 –** Summative test completed on the computer compromising of a range of multiple choice and short answer questions that will assess the cumulative knowledge developed throughout year 7 including knowledge of block-based programming, e-safety, data representation. This assessment will assess both declarative knowledge and how they apply this knowledge to different problems.	
Homework	**Application –** Pupils given the task to remember their username and password and log in to office365 from home and send an email. **Extension –** Pupils given the task to extend their learning further by completing a skills map within the make code arcade platform. **Preparation and Practice –**Produce a revision resource for on a range of key words.	**Preparation and Practice –** Pupils given the task to revise for their end of topic summative assessment. Suggested revision strategies provided to pupils and a knowledge organiser to aid revision. **Preparation –** Pupils are given the task to gather/take photographs and produce a plan for their comic strip ready for completing the formative assessment task. **Completion and practice –** Pupils tasked with completing their interactive story and gathering user feedback from someone outside of class.	**Practice –** Pupils given a Microsoft forms quiz consisting of a range of binary conversion questions to practice and aid retention. **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.	**Research -** Pupils given the task to survey parents/carers/family/teacher to investigate how different people use spreadsheets to support them in work or other activities