COMPUTING Year 9 Curriculum End Points and Key Vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Ethos Links	**STEM** - problem solving, programming, making links & applying knowledge **Character** - risk-taking, resilience, perseverance & learning from mistakes, critical thinking, reasoning & making judgements	**STEM** - problem solving, making links & applying knowledge, adding binary numbers, converting between different number bases **Character** - risk-taking, resilience, perseverance & learning from mistakes, critical thinking, reasoning & making judgements	**STEM** - problem solving, programming, making links & applying knowledge **Character** - risk-taking, resilience, perseverance & learning from mistakes, critical thinking, reasoning & making judgements	**STEM** - problem solving, making links & applying knowledge **Character** - critical thinking, reasoning & making judgements	**STEM** - problem solving, making links & applying knowledge **Character** - critical thinking, reasoning & making judgements	**STEM** - researching **Character** - planning and organisation, analysis & evaluation, communication, creating, imagining & innovating, risk-taking **Sustainability** - creating a radio advert for a given scenario

Learning End Points	**Python Programming** By the end of this unit students will know and understand:
	• How to use a text-based programming language to create programs using sequence, variables, selection and iteration
	• The rules for creating variables
	• What a syntax error is and how to interpret an error message within the small basic environment
	• The use and value of using comments
	• The importance of using correct data types
	• How to use different comparison operators
	• How to use different logical operators
	• When to use a For Loop
	• When to use a While Loop
		Data Representation By the end of this unit students will know and understand:
		• Why computer systems use binary
		• How to convert numbers to and from binary
		• Define the terms bit, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, petabyte
		• Understand that data needs to be converted into a binary format to be processed by a computer
		• The rules when adding binary numbers together
		• What a binary overflow error is
		• How to convert denary numbers into Hexadecimal and vice versa
		• Why Hexadecimal is used by programmers over binary
		• The term 'character set'
		• The relationship between the number of
			Advanced Python Programming By the end of this unit students will know and understand:
			• The advantages of functions for reusable sections of program code
			• Why using a list can be more efficient than using single variables
			• How to read data from a file
			• How to interrogate data
			• What "append" means
			• How to append data to a file
			• What a procedure is
			• Why procedures are useful
			• What a function is
				Computational Thinking & Logic By the end of this unit students will know and understand:
				• The common Boolean operators:
				  ○ AND
				  ○ OR
				  ○ NOT
				• Different logic gates including:
				  ○ AND gates
				  ○ OR gates
				  ○ NOT gates
				• What an algorithm is
				• How Boolean operators can be represented in written expressions and Venn diagrams
				• How logic is used in different situations
				• How loops can be used to reduce the amount of code required for a solution
				• The difference between lossy and lossless compression
				• Why compression is needed for video
					A.I. By the end of this unit students will know and understand:
					• The origin and uses of AI
					• How rules are used in AI decision making
					• What ethics is
					  ○ Consider some simple ethical hypothetical problems
					• How intelligence can be measured in humans and computers
					• What the Turing test is and how it works
					• The difference between facts and rules
					• Describe uses of machine learning
					• What ethics is
					  ○ Understand and discuss ethical issues as they relate to AI
					• How jobs can be affected by AI and automation
					• Issues that make facial recognition difficult
						Sound By the end of this unit students will know and understand:
						• How sound is digitized
						• To understand job roles in sound editing
						• To understand the use of sound effects
						• To understand stereo effects
						• How their product meets the given brief

Key Vocabulary		bits per character in a character set, and the number of characters that can be represented using:
		  ○ ASCII
		  ○ Extended ASCII
		  ○ Unicode
				transmission and photo storage
				• How abstractions are used in everyday life
				• How networks are used to make an abstraction of a maze
				• How decomposition can be used to break down problems into more manageable components
				• How nested loops can be used to improve solutions further
				• Network (graph) theory terms including:
				  ○ Nodes
				  ○ Edges
					• How images are stored as binary data
					• A technique for detecting patterns in a grid of pixels
					• The analysis of text to rate an attitude or opinion
					• Discuss the strengths and weaknesses of machine learning
					• How bias can be introduced into AI algorithms and machine learning
					• The opportunities and problems of using AI for sentiment analysis
					• Why interpreting patterns is not as useful a skill as 'thinking'	

	Python Programming Keywords for the topic can be found by clicking here	**Data Representation** Keywords for the topic can be found by clicking here	**Advanced Python Programming** Keywords for the topic can be found by clicking here	**Computational Thinking & Logic** Keywords for the topic can be found by clicking here	**AI** Keywords for the topic can be found by clicking here	**Sound** Keywords for the topic can be found by clicking here