TAC – Computing and programming				
National Curriculum Statement	Year 7		Year 8	
	Knowledge	Skill	Knowledge	Skill

Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.
 	
This statement is assessed in:
    Unit 2 year 7
    Unit 4 year 8
	Students will understand the purpose of computational thinking and explain each of the key concepts, abstraction, decomposition, pattern recognition and algorithm design.	Students will use their knowledge to breakdown a given problem, create an algorithm either in pseudocode or flowcharts which can then be programmed into a working soliton.	Students will focus on expanding their knowledge on algorithm design, focusing on the three building blocks that makes an algorithm selection, iteration and sequence.	Students will be able to decompose a problem by creating an algorithm which will show a clear sequence of instructions, selection and sequence.

Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
 	
This statement is assessed in:
    Unit 2 year 7
    Unit 4 year 8
	Students will be able to identify the purpose of algorithms and explain the difference between using a flowchart and pseudocode.	Students will interpret a problem and then create a flowchart or pseudocode with the knowledge they have gained.	Students will be able to explain the difference between searching and sorting algorithms.	Students will be able to demonstrate and create a binary and linear searching algorithm. Students will also be able to demonstrate and create a bubble and merge sorting algorithm.

Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational	Students will be able to explain the key concepts of computing programming. For example,	Students will be able to create a program using scratch or python which will use variables, functions and selection	Students will be introduced to app inventor and build on selection statements for	Students will be able to create an app using app inventor.

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problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions This statement is assessed in unit 1 and unit 2 of the programming carousel. Unit 3 year 7	sequence, selection and iteration.	statements. They will also be able to program definite and indefinite loops.	example nested ifs and Boolean logic. Students will expand on their python knowledge and be introduced to lists.	Students will be able to create a program in python which will manipulate lists.

Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; 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]
 	
This statement is assessed in:
    Unit 1 year 7
    Unit 1 year 8
	Students will be able to describe the difference between and/or statements.	Students will be able to create a program that will ask for an input and makes a decision using and/or statements.	Students will be able to explain the difference between logic gates, truth tables and Boolean expressions and why they are used. They will be able to identify the condition of and, or and not gates.	Students will be able to complete truth tables based on logic gates. They will be able to draw logic gates and complete Boolean expression statements.

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TAC – Computing and programming				
Unit 3 year 8				
Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems. This statement is assessed in Unit 1 year 7	Students will be able to identify the four parts that make up a computer input, memory, processor and output. They will be able to explain the fetch, decode and execute cycle. Students will be able to explain the difference between RAM and ROM.	Students will demonstrate the function of the CPU as a set of fetch and execute instructions stored in memory. Students will be able to demonstrate the purpose of RAM in the fetch, decode, execute cycle. Students will demonstrate the ability to interpret common characteristics of CPUs and what affect their performance in: • Clock Speed • Cache Size • Number of Cores		
Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and	Students will be able to explain the purpose of binary and identify the process of converting between binary numbers and denary numbers.	Students will be able to convert between binary and denary numbers.	Students will be able to explain how a computer processers text, images and sound.	Students will demonstrate binary addition and multiplication (left and right shift patterns) Students will be able to convert between binary and hexadecimal numbers.

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	Knowledge	Skill	Knowledge	Skill
manipulated digitally, in the form of binary digits This statement is assessed in: 　Unit 2 year 8				Students will demonstrate how ASCII and UNICODE represents text into binary. Students will demonstrate how a computer convert analogue signals into digital. They will be calculating bit rate and a file sizes. Students will calculate the size of an image file.
Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users This statement is assessed in: 　Unit 4 year 7 　Unit 5 year 8	Students will be introduced to physical computing where they will be shown microbits.	Students will use the programming concepts to create an induvial project using the microbits.	Students will be introduced to raspberry pis.	Students will develop a project that will use raspberry pis.

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Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability. This statement is assessed in: Unit 2 year 8			Students will learn how to represent digital graphics in binary.	Students will be able to demonstrate how digital artefacts are used. They will be able to explain the difference between bitmap and vector.
Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns. This statement is monitored throughout the year.	Students be introduced to emails, Microsoft teams and one note. Students will cover e-safety through PSHE days.	Students will demonstrate how to use technology safely, respectfully and responsibly by using their emails, teams and one note.		Students will continue to use their emails, Microsoft and one note.