High Tunstall College of Science Curriculum Intent

Topic:	Principles of Computer Science Topic 2: Data ***Binary***	Year:	10	Half Term:	1

	Progress		
Key Ideas	**R**	**A**	**G**
I understand that computers use binary to represent data (numbers, text, sound, graphics) and program instructions and be able to determine the maximum number of states that can be represented by a binary pattern of a given length			
I understand how computers represent and manipulate unsigned integers and two's complement signed integers			
I can convert between denary and 8-bit binary numbers (0 to 255, -128 to +127)			
I can add together two positive binary patterns and apply logical and arithmetic binary shifts			
I understand the concept of overflow in relation to the number of bits available to store a value			
I understand why hexadecimal notation is used and be able to convert between hexadecimal and binary			

Lesson	**Learning Focus**	**Assessment**	**Key words**
1	Define what is meant by the term 'digital computer' Give examples of different types of computer	OneNote work Socrative	Computer, Digital, Embedded, Laptop, Peripheral,
2	Define what is meant by the terms: 'binary' and 'bit' Explain why binary is used to represent data and program instructions in a computer Describe the relationship between the number of bits and the range of values that can be represented by them.	OneNote work Socrative	2^n, Binary, Bit, Component, Denary, Encoding, Off, On, Transistors
3	Define the terms nibble and byte Convert between denary and binary numbers	OneNote work Socrative	Binary, Byte, Denary, Integer, Most Significant Bit (MSB), Negative, Nibble, Place value, Positive, Signed binary, Unsigned binary
4	Add together two positive 8-bit binary patterns Define what is meant by the term 'overflow' error Describe the effects of an overflow error	OneNote Socrative	Addition, Binary, Error, Overflow, Place value, Unsigned binary
5	Differentiate between signed and unsigned integers Describe how positive and negative numbers are represented in two's complement Find the two' complement of a signed binary number	OneNote work Socrative	Conversion, Negative numbers, Sign and Magnitude, Signed binary, Two's complement, Unsigned binary,
6	Revision lesson All of the above	Evidence in Teams End of topic assessment	All of the above
7	End of topic Assessment	End of topic assessment	All of the above
8	Assessment feedback lesson	Evidence in Teams	All of the above