Computer Science – Year 7 – Knowledge Organiser

SPRING TERM: Binary, Flowcharts and Micro:bits

Computers use binary to represent voltage on and off. The binary grid is below. You have to memorize the grid!
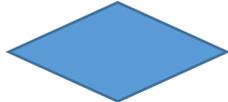
128	64	32	16	8	4	2	1

Binary Code represents text, computer processor instructions, or any other data using a two-symbol system. A Computer is run by a CPU (Central Processing Unit); it is like the computer's brain. The CPU has lots of tiny switches in it that can either be ON (a 1) or OFF (a 0). Everything you put into a computer is converted to Binary code for the CPU to process. Binary code is made up of 1's and 0's. The computer then translates these 1's and 0's into everything else. Even images your see are made up of 1's and 0's.

KEYWORD	DEFINITION
ALGORITHM	A set of instructions that tells a computer what to do.
CODE	Algorithms are written in code. Code is a kind of language that computers can understand.
VARIABLE	The things that we can change in the algorithm, such as size, colour and position.
LOOP	Instructions that get the computer to do something over and over again. A loop or repetition of code.
SEQUENCE	The order of steps in an algorithm
SELECTION	A decision or IF statement in code
BUGS	Problems with algorithms
DEBUGGING	Reading through an algorithm to find errors and fix them.

STORAGE SIZES	
0 or 1	BIT
4 Bits	NIBBLE
8 BITS	BYTE
1024 BYTES	KILOBYTE
1024 KILOBYTES	MEGABYTE
1024 MEGABYTES	GIGABYTE
1024 GIGABYTES	TERABYTE

FLOWCHART SHAPE	FLOWCHART MEANING
	START/FINISH Use this to show when a program starts or ends
	PROCESS Use this to show a process/calculation or action ie: score = 0 (assigning a variable) OR score = score +10
	INPUT/OUTPUT Use this to show an input OR output ie: Name = "Please enter your name?" OR Display = "Welcome to Ossies"
	DECISION Use this for a question for example: Is score >100? Always have 2 arrows from a decision

When creating flow charts:
Look at the question
Break it up into tasks (decomposition)
Use directional arrows
Only 2 arrows from a decision