8.1 Knowledge Organiser

Coding Scheme:	A set standard to help understand code
Binary:	base-2 number system invented that is made up of only two numbers: 0 and 1.
Bit:	A single Binary Unit (1 or 0)
Byte:	8 Bits Digits (10101010)
ASCII:	Used in computers for encoding characters. It employs the binary digits 0 and 1. In its original form, each character corresponds to 7 bits.

Decimal to Binary

To convert 70 to binary place a 1 under each number needed to make the number 70 starting at the largest first.
For Example:
Put a 1 under 64, then
70-64 = 6 So put a 1 under 4 and a 1 under 2 which makes 6.

128	64	32	16	8	4	2	1	Answer
0	1	0	0	0	1	1	0	70
	6				2	0		

Binary to Decimal

To convert 00100110 place a 1 under each number, (Go from right to left).

Add all the 1's together 32+8+4+2=46.

128	64	32	16	8	4	2	1	Answer
0	0	1	0	0	1	1	0	46

Unit	Capacity
Bit	1 / 0
Byte	8 Bits (e.g. 01010101)
Kilobyte **(Kb)**	1000 Bytes
MegaByte **(Mb)**	1000 Kilobytes
GigaBytes **(Gb)**	1000 MegaBytes
TeraByte **(Tb)**	1000 Gigabytes

/ X

As the file size increases divide by 1000 as it decreases Multiply by 1000.

Try converting these decimal number to binary

128	64	32	16	8	4	2	1	
								15

128	64	32	16	8	4	2	1	
								81

Try converting this binary to decimal

128	64	32	16	8	4	2	1	
	1	0	0	1	1	1		

128	64	32	16	8	4	2	1	
	1	1	0	1	0	1	1	

Converting between Units

Convert 5Tb to Gb =	**5Tb x 1000 =**	**5000GB**
Convert 500Kb to Mb =	**500Kb / 1000 =**	**0.5 Mb**
Try doing these		
Convert 500Mb to Kilobytes	**500Mb x 1000=**	
Convert 10Gb to Terabytes	**10Gb / 1000=**	

Character	Binary Representation	Number of bits	Number of bytes
A	01000000	8	
A B	11000010 10100011	16	
A B C	11100010 10000001 10000010	24	
A B C D	11110000 10011101 10000100 10011110	32	

8.1 Data Representation

What I need to know:

Data sizes			
Define the term bit.			
How many bits are in a byte?			
I can name the file sizes and put them into order			
I know how to convert between the file types by multiplying or dividing by 1000			
Binary			
I know what the two binary number are			
I can apply Binary logic to other applications			
Order the Binary units from smallest to largest.			
I know how to make a binary table of numbers			
I can convert binary numbers to a decimal number			
I can convert a number into Binary			