DIGITAL WORLD
@TOYNBEE

8.2 Representations

This unit conveys essential knowledge relating to binary representations. The activities gradually introduce learners to binary digits and how they can be used to represent text and numbers. The concepts are linked to practical applications and problems that the learners are familiar with.

Binary	A number system that contains two symbols, 0 and 1. Also known as base 2
Denary	The number system most commonly used by people. It contains 10 unique digits 0 to 9. Also known as decimal or base 10
Hexadecimal	A number system that contains sixteen symbols, 0-9 and A-F. Also known as base 16
Place value / placeholder	The value of the place, or position, of a digit in a number
Character set	A mapping of keyboard characters to numbers used to represent those keyboard characters in a computer system
ASCII	American Standard Code for Information Interchange. A 7-bit character set for representing English keyboard characters.
Pixel	The smallest identifiable area of an image or computer screen
Bit	A single symbol in a binary number. Either 1 or 0
Bit pattern	Any sequence or more than one bit
Nibble	A bit pattern which is four bits long
Byte	A bit pattern with which is eight bits long
Kilobyte	1000 bytes
Megabyte	1000 kilobytes

Convert 8 bit Binary to Denary

Example: convert the Binary number **01000110** into Denary.

1. Create a binary table:

128	64	32	16	8	4	2	1	Answer

2. Add the binary number:

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

3. Add up all the numbers with a 1 underneath them to get the answer!

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

Convert Denary to 8 bit Binary

Example: convert the Denary number **45** into binary .

1. Create a binary table:

128	64	32	16	8	4	2	1	Answer
								45

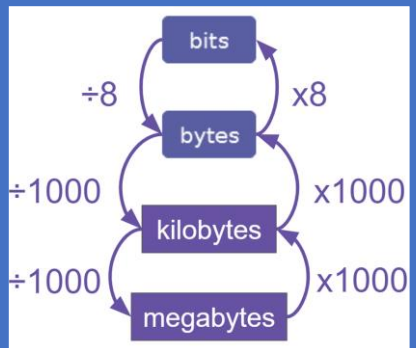
2. Place the number 1 under each number you need to make up 45

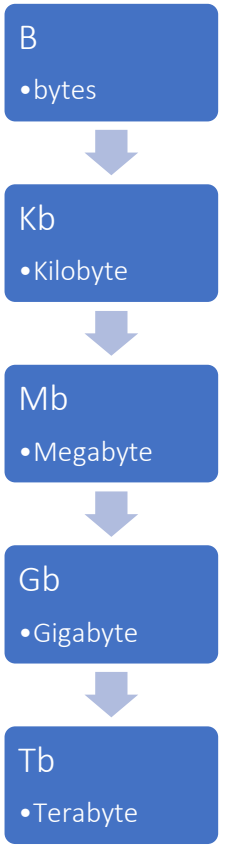
128	64	32	16	8	4	2	1	Answer
		1		1	1		1	45

3. Add a 0 for the unused numbers. The binary number is:

00101101

128	64	32	16	8	4	2	1	Answer
0	0	1	0	1	1	0	1	45





What is Binary?

Binary is a number system that only uses two digits: 1 and 0. All information that is processed by a computer is in the form of a sequence of 1s and 0s. Therefore, all data that we want a computer to process needs to be converted into binary.