# Year 8 Computing: Spring 1

## Binary

	Key term	Definition
1	Data	Information that has no context
2	Binary	A number system that contains two symbols, 0 and 1. Also known as base 2.
З	Denary	The number system most commonly used by people. It contains 10 unique digits 0 to 9. Also known as decimal or base 10.
4	Place value	The value of the place, or position, of a digit in a number.
5	ASCII	American Standard Code for Information Interchange A 7-bit character set used for representing English keyboard characters.
6	Bit	The smallest unit of data in computing represented by a 1 in binary
7	Byte	A unit of data containing 8 bits.
8	Nibble	4 bits or half a byte

#### **Converting binary to decimal**

Convert the **4-bit** binary number 1001 into decimal (denary)

8	4	2	1
1	0	0	1

**8+1=9** therefore the binary number 1001 is equal to 9

Convert the 8-bit binary number 01011001

12 8	64	32	16	8	4	2	1
0	1	0	1	1	0	0	1

Computers only process **binary data**, which means that all data is stored, and calculated using just **0s** and **1s**. But luckily you can **convert** binary numbers into normal (**decimal**) numbers. We call this **Base 2**.

People use the **denary** (or decimal) number system in their day-to-day lives. This system has **10 digits** that we can use: 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. We call this **Base 10.** 

### **Binary Addition**

Binary addition involves adding two or more binary numbers together.

When adding two numbers, you will have the following possible outcomes:

- 0+0 = 0
- 0+1 = 1
- 1+1 = 11

When adding binary numbers, do so right to left.

### Example: add 0100 and 0101



Overflow Error: An overflow error occurs when the largest number that a CPU register can hold is exceeded.

64+16+8+1=89 therefore the binary number 01011001 is equal to 89