Unit: 6.8
Binary

Key Learning

- To know what the terms binary and denary mean and how they relate to the number system, the digital system and the terms base-10 and base-2
- To relate binary to the on and off states of electrical switches.
- To convert numbers from decimal to binary.
- To convert numbers from binary to decimal.
- To represent states of object in their own program using binary.

Key Resources

purple mash

2dos | 2Connect | 2Question | Free code gorilla
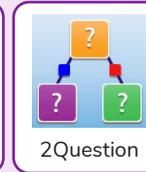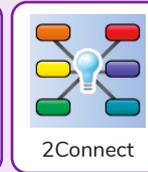
Key Vocabulary

Base 10
The number system commonly used in day-to-day life. Using the digits 0,1,2,3,4,5,6,7,8,9 to make. Also known as decimal or denary.

Base 2
A number system based only on the numerals 0 and 1. Also known as binary. The digits 1 and 0 used in binary reflect the on and off states of transistors.

Binary
See Base-2.

Bit
A single 0 or 1 in the binary system.

Byte
8 bits.

Decimal
See Base-10.

Denary
See Base-10.

Digit
A single integer used to show a number.

Gigabyte (GB)
1024 MB.

Integer
Any whole number. This includes negative and positive numbers but not fractions or decimals.

Kilobyte (KB)
1024 bytes.

Integer
Any whole number. This includes negative and positive numbers but not fractions or decimals.

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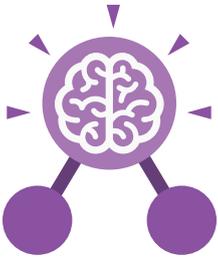
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Key Vocabulary

Machine code
The code that signals to a computer which transistors should be on or off. Machine code is written in binary.

Megabyte (MB)
1024 KB.

Nibble
4 bits.

Switch
A component that can be one of two states at any time: on or off.

Tetrabyte (TB)
1024 GB

Transistor
A tiny switch that is activated by the electronic signals it receives.

Variable
A variable is used in programming to keep track of things that can change while a program is running. A variable must have a name. The value of the variable is the information to store.

Key Images
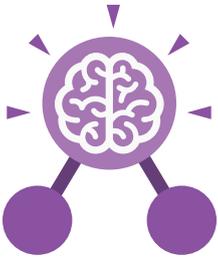
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Key Questions

How does binary relate to the programs that you use or create?

In a computer everything is translated into binary stored by on and off switches that pass electronic signals that the computer interprets. It can then pass the correct signals to the components of the computer such as the sound card to make the requested sound. Or graphics card to make images appear on the screen.

How does binary relate to computer memory.

A single 0 or 1 is called a bit. The word comes from Binary Digit. The bigger the program, the more bits are used so more memory space is taken up. For example, 1 byte is 8 bits, 1 megabyte (Mb) or 8,388,608 bits, 1 gigabyte (GB) is 8,589,934,592 bits!

How would you write the numbers 0 to 10 in binary?

0, 1, 10, 11, 100,101,110,111,1000, 1001, 1010.

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