GCSE Bitesize Computer Science

Two's complement – video subtitles

Computers sometimes need to work with negative numbers, and as binary is only made up of 0s and 1s, showing negative numbers could be a problem.

Most computers use 'two's complement' to solve this.

With this method, the most significant bit – the bit on the far left of the sequence - is used to indicate positive or negative – 0 is positive, 1 is negative.

To work out a negative number with two's complement, you first have to find its equivalent positive binary number.

Let's say we want to show -1. The number 1 is represented as 001 in binary.

You then add another 0 to the front of that number to show it is positive, and then you invert, or 'find the complement of', each bit in that number.

Then add 1.

As the most significant bit is a 1, we know that this is a negative number.

That's two's complement!