**How to Convert a Binary Number to Decimal**

Converting a binary number to decimal is straightforward once you understand the base-2 system. In binary, each digit represents an increasing power of 2, starting from the rightmost digit. Here's how you can convert any binary number to its decimal equivalent.

**Step 1**

Write down the binary number and list its digits from right to left, associating each with its corresponding power of 2. The rightmost digit is associated with 2⁰, the next with 2¹, then 2², and so on, moving left. For a binary number with n digits, the sequence goes like ..., 2³, 2², 2¹, 2⁰.

**Step 2**

For each digit in the binary number:

* If the digit is a '1', multiply the associated power of 2 by this digit (which will just be the power of 2 itself, since 1 × anything = anything).
* If the digit is a '0', the result of the multiplication will be 0 (since 0 × anything = 0).

**Step 3**

Add up all the results of these multiplications to get the decimal equivalent.

**Step 4**

The sum is the decimal number corresponding to the binary input.

**Example: Convert 101101 from Binary to Decimal**

1. Write down the binary number and associate each digit with its power of 2, starting from the right: 1(2⁵) + 0(2⁴) + 1(2³) + 1(2²) + 0(2¹) + 1(2⁰)
2. Calculate the value of each multiplication:
   * 1(2⁵) = 32
   * 0(2⁴) = 0
   * 1(2³) = 8
   * 1(2²) = 4
   * 0(2¹) = 0
   * 1(2⁰) = 1
3. Add up all the results: 32 + 0 + 8 + 4 + 0 + 1 = 45

Therefore, the binary number 101101 is equal to 45 in decimal.