

Example 8: Binary Addition

We want to add the binary numbers:

$$a = (1110)_2 \quad \text{and} \quad b = (1011)_2$$

Worked Example

Step 1: Add the rightmost digits: $0 + 1 = 1$. No carry. Step 2: Next column: $1 + 1 = 0$ with carry 1. Step 3: Next column: $1 + 0 + 1 = 0$ with carry 1. Step 4: Leftmost column: $1 + 1 + 1 = 1$ with carry 1.

Thus, the result is:

$$(1110)_2 + (1011)_2 = (11001)_2$$

Practice Problems

1. Easier: Add $(101)_2$ and $(11)_2$.
2. Easier: Add $(111)_2$ and $(1)_2$.
3. Harder: Add $(11011)_2$ and $(11101)_2$.