THE BINARY NUMBERS

A binary number is made up of values 0 and 1. The BINARY PLAYING CARDS® carry 4 bit index binary numbers.

CONVERSION FROM BASE-2 TO BASE-10

In the binary system, we have the one's place, the two's place, the four's place, the eight's place, the sixteen's place, and so on. Each successive place in the number represents a power of two. That is to say, going from right to left: 256, 128, 64, 32, 16, 8, 4, 2, 1. For example, the binary number 010011110 is equal to 158. Each place where there is a we add the number in that place to the total, there is a 1 in each of these places: 2, 4, 8, 16, and 128, so, 2+4+8+16+128=158.

CONVERSION FROM BASE-10 TO BASE-2

We use a base 2 table from right to left: 512, 256, 128, 64, 32, 16, 8, 4, 2, 1. To convert a decimal number, we must find the greatest power of 2 that can be included in it. We write 1 for the binary digit first on the left and then we subtract that number from the decimal one. Moving to the next power of two, we can complete the number with 0 (if the rest cannot contain the next power of two) or 1 (if it can contain it).We go on making the same comparison and subtractions until we have nothing left. Let's convert the

BOOLEAN ALGEBRA

Computer and digital circuits process sequences of "0" and "1" bit, the carried out operations apply the rules of Boolean algebra where the values of variables are "0" or "1" and the main operations are: AND (·), OR (+), NOT ($\overline{\ }$) e XOR($\oplus$).

LOGIC GATE

They are electronic components performing the operations of Boolean algebra. The truth tables show how each logic gate operates.

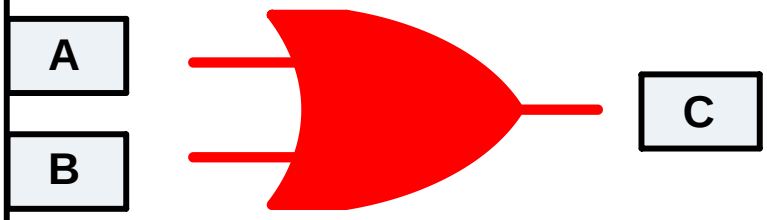
CONVERSION TABLE

BIN	DEC	BIN	DEC	BIN	DEC	BIN	DEC
0000	0	0100	4	1000	8	1100	12
0001	1	0101	5	1001	9	1101	13
0010	2	0110	6	1010	10	1110	14
0011	3	0111	7	1011	11	1111	15

TRUTH TABLES

OR C = A + B

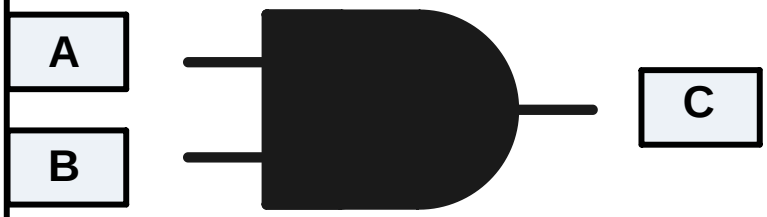
INPUT OUTPUT



INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	1

AND C = A * B

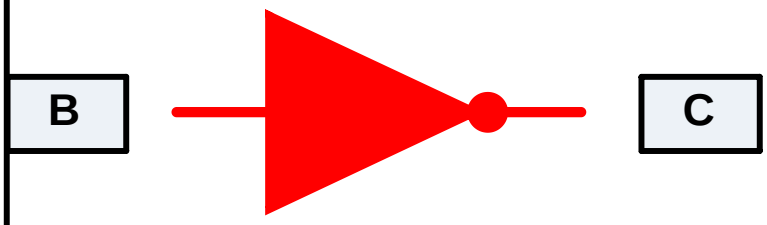
INPUT OUTPUT



INPUT		OUTPUT
A	B	C
0	0	0
0	1	0
1	0	0
1	1	1

NOT C = $\overline{B}$

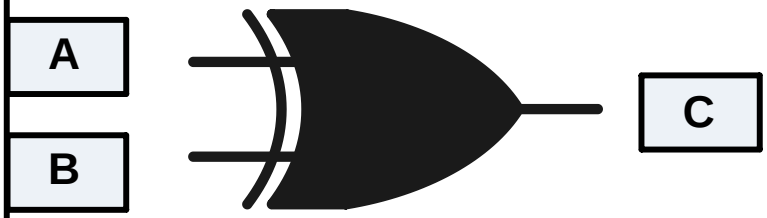
INPUT OUTPUT



INPUT	OUTPUT
B	C
0	1
1	0

XOR C = A * $\overline{B}$ + $\overline{A}$ * B

INPUT OUTPUT



INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

Visit the official website **www.binaryplayingcards.com**