

## On the Subject of Logical Operators



*Fun Fact: There are 16 different possibilities for 2 inputs to return something. We use only 8 for today's standard logic gates.*

This module presents a column of 8 buttons, 7 chips and a stand for a status light to plug in. Each pair of buttons are connected to a chip. Each chip connected to a pair of buttons are wired to a bigger chip. Those bigger chips are wired to the final chip which is wired to a stand for a status light to plug in. Each chip will display a single character on the front, which are used for determining the what states can the chip output.

The binary digits grabbed from the character on the chip in the table provided are used to determine what the chip should output for the following values: 11, 10, 01, 00, where the first bit in the pair refers to the value on the top and the second bit in the pair refers to the value on the bottom. For the left-most chips, these refer to the state of the top and bottom buttons in that pair, where a button with a lit LED is a 1 and 0 otherwise.

Toggle the LEDs by pressing them to turn them on or off. Submit the correct answer by pressing on the stand to plug in the status light. The status light will turn green if the result of the final chip returns a 1. Otherwise, the status light will flash red and strike if the result of the final chip returns a 0, and then the status light will be unplugged so that the defuser can input a different answer if needed.

Chip Display Conversion					
Character on Chip	Binary Digits	Character on Chip	Binary Digits	Character on Chip	Binary Digits
0	0000	6	0110	B	1011
1	0001	7	0111	C	1100
2	0010	8	1000	D	1101
3	0011	9	1001	E	1110
4	0100	A	1010	F	1111
5	0101				