

# XOR Gate

## Data

IDs:

- 203 [block]
- 459 [item]

Name:

- XOR Gate [block]
- XOR Gate [item]

Texture:

- MoareAI/Blocks/LGOROn.png [block, on] 
- MoareAI/Blocks/LGOROff.png [block, off] 

Icon:

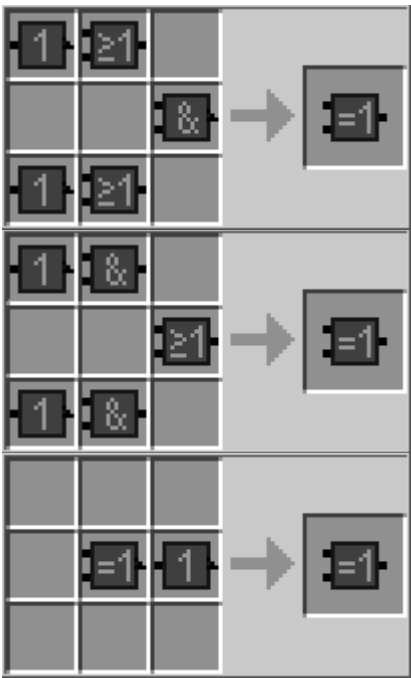
- MoareAI/Items/LGXOR.png [item] 

## Recipes

NOT Gate (Item)	OR Gate (Item)		=>	XOR Gate (Item)
		NAND Gate (Item)		
NOT Gate (Item)	OR Gate (Item)			

NOT Gate (Item)	AND Gate (Item)		=>	XOR Gate (Item)
		OR Gate (Item)		
NOT Gate (Item)	AND Gate (Item)			

XNOR Gate (Item)	NOT Gate (Item)	=>	XOR Gate (Item)
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## Interacting

After crafting the item “XOR Gate” you can place it on the ground as the block “XOR Gate (Off)”, which will automatically power the output if the requirements are met (see function).

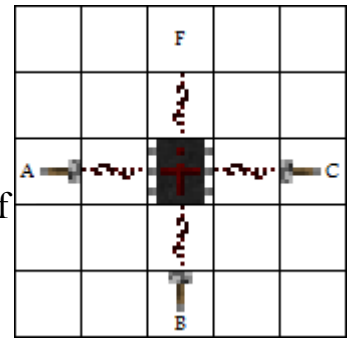
To pick it up again, destroy it by hitting it (one hit is enough) or by destroying the block underneath. This will yield the item “XOR Gate”. This will also happen if the gate comes in contact with water.

In contact with lava, both the item and the block is completely destroyed.

## How to wire the gate

Wire as seen on the image, where “A”, “B” and “C” are the inputs and “F” is the output.

The connection for the output and the inputs may be in form of a direct signal or indirect signal through [Redstone Wires](#).



## The function of the gate

### As description

The output gives a signal when the sum of the the active inputs (A, B and C) is odd

- If the sum of the input signals is even, there is no signal on the output
- If the sum of the input signals is odd, there is a signal on the output

### As Boolean algebra

$$F = A \oplus B \oplus C$$

“Output F” equals “input A” XOR “input B” XOR “input C”

### As truth table

C	B	A	F
0	0	0	0
0	0	1	<b>1</b>
0	1	0	<b>1</b>
0	1	1	0
1	0	0	<b>1</b>
1	0	1	0
1	1	0	0
1	1	1	<b>1</b>