

# Half Adder

## Data




IDs:

- 211 [block]
- 466 [item]

Name:

- Half Adder [block]
- Half Adder [item]

Texture:

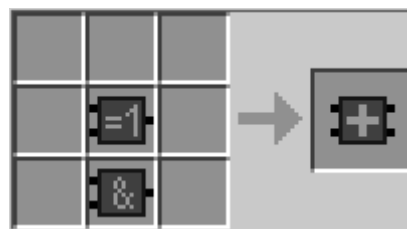
- MoareAI/Blocks/LGSROn.png [block, on, C] 
- MoareAI/Blocks/LGHalfAdder.png [block, on, S] 
- MoareAI/Blocks/LGRSOff.png [block, off] 

Icon:

- MoareAI/Items/LGHalfAdder.png [item] 

## Recipes

XOR Gate	=>	Half Adder (Item)
AND Gate		



## Interacting

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

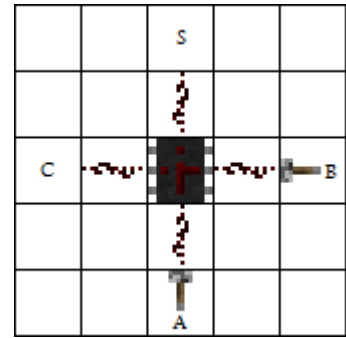
To pick it up again, destroy it by hitting it (one hit is enough) or by destroying the block underneath. This will yield the item “Half Adder”. This will also happen if the gate comes in contact with water.

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” and “B” are the inputs and “S” and “C” are the outputs.

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 S and C give the sum of the input A and B as a 1 bit signal (“S”) and a carry bit (“C”).

### As Boolean algebra

$$S = A \oplus B$$

“Output S” equals “input A” XOR “input B”

$$C = A \cdot B$$

“Output C” equals “input A” AND “input B”

### As truth table

B	A	S
0	0	0
0	1	<b>1</b>
1	0	<b>1</b>
1	1	0

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