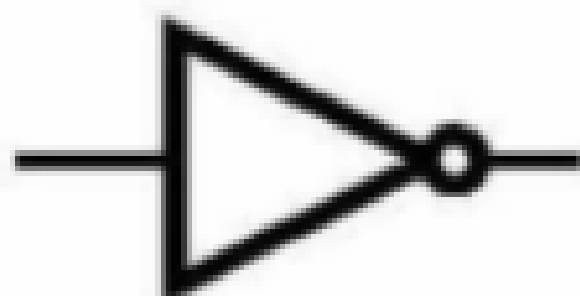








| | GATE | CIRCUIT REPRESENTATION | TRUTH TABLE | | | | | | | | | | |
|-------|---|---|---|-------|--------|-----|---|-----|---|-----|---|-----|---|
| NOT | The output is 1 when the input is 0 and 0 when the input is 1. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td></tr></table> | Input | Output | 0 | 1 | 1 | 0 | | | | |
| Input | Output | | | | | | | | | | | | |
| 0 | 1 | | | | | | | | | | | | |
| 1 | 0 | | | | | | | | | | | | |
| AND | The output is 1 only when both inputs are 1, otherwise the output is 0. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0 0</td><td>0</td></tr><tr><td>0 1</td><td>0</td></tr><tr><td>1 0</td><td>0</td></tr><tr><td>1 1</td><td>1</td></tr></table> | Input | Output | 0 0 | 0 | 0 1 | 0 | 1 0 | 0 | 1 1 | 1 |
| Input | Output | | | | | | | | | | | | |
| 0 0 | 0 | | | | | | | | | | | | |
| 0 1 | 0 | | | | | | | | | | | | |
| 1 0 | 0 | | | | | | | | | | | | |
| 1 1 | 1 | | | | | | | | | | | | |
| OR | The output is 0 only when both inputs are 0, otherwise the output is 1. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0 0</td><td>0</td></tr><tr><td>0 1</td><td>1</td></tr><tr><td>1 0</td><td>1</td></tr><tr><td>1 1</td><td>1</td></tr></table> | Input | Output | 0 0 | 0 | 0 1 | 1 | 1 0 | 1 | 1 1 | 1 |
| Input | Output | | | | | | | | | | | | |
| 0 0 | 0 | | | | | | | | | | | | |
| 0 1 | 1 | | | | | | | | | | | | |
| 1 0 | 1 | | | | | | | | | | | | |
| 1 1 | 1 | | | | | | | | | | | | |
| NAND | The output is 0 only when both inputs are 1, otherwise the output is 1. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0 0</td><td>1</td></tr><tr><td>0 1</td><td>1</td></tr><tr><td>1 0</td><td>1</td></tr><tr><td>1 1</td><td>0</td></tr></table> | Input | Output | 0 0 | 1 | 0 1 | 1 | 1 0 | 1 | 1 1 | 0 |
| Input | Output | | | | | | | | | | | | |
| 0 0 | 1 | | | | | | | | | | | | |
| 0 1 | 1 | | | | | | | | | | | | |
| 1 0 | 1 | | | | | | | | | | | | |
| 1 1 | 0 | | | | | | | | | | | | |
| NOR | The output is 1 only when both inputs are 0, otherwise the output is 0. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0 0</td><td>1</td></tr><tr><td>0 1</td><td>0</td></tr><tr><td>1 0</td><td>0</td></tr><tr><td>1 1</td><td>0</td></tr></table> | Input | Output | 0 0 | 1 | 0 1 | 0 | 1 0 | 0 | 1 1 | 0 |
| Input | Output | | | | | | | | | | | | |
| 0 0 | 1 | | | | | | | | | | | | |
| 0 1 | 0 | | | | | | | | | | | | |
| 1 0 | 0 | | | | | | | | | | | | |
| 1 1 | 0 | | | | | | | | | | | | |
| XOR | The output is 1 only when the two inputs have different value, otherwise the output is 0. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0 0</td><td>0</td></tr><tr><td>0 1</td><td>1</td></tr><tr><td>1 0</td><td>1</td></tr><tr><td>1 1</td><td>0</td></tr></table> | Input | Output | 0 0 | 0 | 0 1 | 1 | 1 0 | 1 | 1 1 | 0 |
| Input | Output | | | | | | | | | | | | |
| 0 0 | 0 | | | | | | | | | | | | |
| 0 1 | 1 | | | | | | | | | | | | |
| 1 0 | 1 | | | | | | | | | | | | |
| 1 1 | 0 | | | | | | | | | | | | |
| XNOR | The output is 1 only when the two inputs have the same value, otherwise the output is 0. |  | <table><tr><th>Input</th><th>Output</th></tr><tr><td>0 0</td><td>1</td></tr><tr><td>0 1</td><td>0</td></tr><tr><td>1 0</td><td>0</td></tr><tr><td>1 1</td><td>1</td></tr></table> | Input | Output | 0 0 | 1 | 0 1 | 0 | 1 0 | 0 | 1 1 | 1 |
| Input | Output | | | | | | | | | | | | |
| 0 0 | 1 | | | | | | | | | | | | |
| 0 1 | 0 | | | | | | | | | | | | |
| 1 0 | 0 | | | | | | | | | | | | |
| 1 1 | 1 | | | | | | | | | | | | |