Truth Tables and Logic Gates Worksheet

**Term Symbol(s) Definitions**

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| **Term** | **Symbol(s)** | **Definition** |
| and | ^  | Both have to be true for the compound statement to be true |
| or | v  | One or the other or both have to be true for the compound statement to be true |
| Negation | ~¬ | The opposite truth value |
| Conditional | p=>qp→q | p implies q, stated as “if…, then…” |
| Converse | q=>pq→pp←q | The order of the hypothesis and conclusion is reversed |
| Inverse | ~p=>~q~p→~q | Both hypothesis and conclusion are negated |
| Contrapositive | ~q=>~p~q→~p | Hypothesis and conclusion are negated and reversed |
| Biconditional | p<=>qp↔q | When both a conditional and its converse are true; stated as “if and only if” (or iff) |

OR gate: true if either or both inputs are true

AND gate: true if both inputs are true

NOT gate: reverses the logic state

NOR gate: true if both inputs are false

NAND gate: false if both inputs are true

