# Boolean Laws Reference Sheet

| Name of Law / Theorem | Form | Equivalent/Dual form (interchange AND and OR, and 0 and 1) |
|---|---|---|
| **Identity** | $0+A = A$ | $1*A = A$ |
| **Inverse** (or **Complements**) | $A\overline{A} = 0$ | $A + \overline{A} = 1$ |
| **Commutativity** | $A + B = B + A$ | $AB = BA$ |
| **Associativity** | $(AB)C = A(BC)$ | $(A + B) + C = A + (B + C)$ |
| **Idempotent** | $A + A = A$ | $AA = A$ |
| **Null** (or **Null Element**) | $0*A = 0$ (**the Zero Law**) | $1 + A = 1$ (**the One Law**) |
| **DeMorgan's** | $\overline{A} + \overline{B} + \overline{C} + ... = \overline{ABC...}$ | $\overline{A + B + C + ...} = \overline{A}\ \overline{B}\ \overline{C}...$ |
| **Absorption 1 (Covering)** | $A + AB = A$ | $A(A + B) = A$ |
| **Absorption 2** | $A + \overline{A}B = A + B$ | $A(\overline{A} + B) = AB$ |
| **Involution** (or double negation) | $\overline{\overline{A}} = A$ | none |
| **Distributive** | $A + BC = (A + B)(A + C)$ | $A(B + C) = AB + AC$ |
| **Combining** | $AB + A\overline{B} = A$ | $(A + B)(A + \overline{B}) = A$ |
| **Consensus** | $AB + \overline{A}C + BC = AB + \overline{A}C$ | $(A + B)(\overline{A} + C)(B + C) = (A + B)(\overline{A} + C)$ |