

Boolean Algebra

- **Boolean Algebra** is used to analyze and simplify the digital (logic) circuits.
- It **uses** only the binary numbers i.e. 0 and 1. It is also called as **Binary Algebra** or logical **Algebra**.

Laws and Theorems

Boundness law:	$A + 1 = 1$	$A \bullet 0 = 0$
Identity law:	$A + 0 = A$	$A \bullet 1 = A$
Idempotent Theorem:	$A + A = A$	$A \bullet A = A$
Involution Theorem:	$(A')' = A$	
Theorem of complementarity:	$A + A' = 1$	$A \bullet A' = 0$
Commutative law:	$A + B = B + A$	$AB = BA$
Associative law:	$A + (B + C) = (A + B) + C$	$A(BC) = (AB)C$
Distributive law:	$A(B + C) = AB + AC$	$A + BC = (A+B)(A+C)$
DeMorgan's Theorem:	$(A + B)' = A'B'$	$(AB)' = A' + B'$
Absorption law:	$A + AB = A$	$A(A + B) = A$
Consensus Theorem:	$AB + BC + A'C = AB + A'C$	$(A+B)(B+C)(A'+C) = (A+B)(A'+C)$