

Boolean Algebra Laws and Identities

Fundamental Laws

OR	AND	NOT	
$A + 0 = A$	$A \cdot 0 = 0$		
$A + 1 = 1$	$A \cdot 1 = A$		
$A + A = A$	$A \cdot A = A$	$\overline{\overline{A}} = A$	(double inversion)
$A + \overline{A} = 1$	$A \cdot \overline{A} = 0$	(double inversion)	

Commutative Laws

$$A + B = B + A \quad (6.11)$$

$$A \cdot B = B \cdot A \quad (6.12)$$

Associative Laws

$$(A + B) + C = A + (B + C) \quad (6.13)$$

$$(A \cdot B) \cdot C = A \cdot (B \cdot C) \quad (6.14)$$

Distributive Laws

$$A \cdot (B + C) = (A \cdot B) + (A \cdot C) \quad (6.15)$$

$$A + (B \cdot C) = (A + B) \cdot (A + C) \quad (6.16)$$

De Morgan's laws

$$A + B + C + \dots = \overline{\overline{A} \cdot \overline{B} \cdot \overline{C} \cdot \dots} \quad (6.27)$$

$$A \cdot B \cdot C \cdot \dots = \overline{\overline{A} + \overline{B} + \overline{C} + \dots} \quad (6.28)$$