Laws and Theorems of Boolean Algebra

1a.	$X \cdot 0 = 0$	1b.	$X + 1 = 1$	Annulment Law
2a.	$X \cdot 1 = X$	2b.	$X + 0 = X$	Identity Law
3a.	$X \cdot X = X$	3b.	$X + X = X$	Idempotent Law
4a.	$X \cdot \overline{X} = 0$	4b.	$X + \overline{X} = 1$	Complement Law
5.	$X = X$			Double Negation Law
6a.	$X \cdot Y = Y \cdot X$	6b.	$X + Y = Y + X$	Commutative Law
7a.	$X\ (Y\ Z) = (X\ Y)\ Z = (X\ Z)\ Y = X\ Y\ Z$			Associative Law
7b.	$X + (Y + Z) = (X + Y) + Z = (X + Z) + Y = X + Y + Z$			Associative Law
8a.	$X \cdot (Y + Z) = X\ Y + X\ Z$	8b.	$X + Y\ Z = (X + Y) \cdot (X + Z)$	Distributive Law
9a.	$\overline{X \cdot Y} = \overline{X} + \overline{Y}$	9b.	$\overline{X + Y} = \overline{X} \cdot \overline{Y}$	de Morgan's Theorem
10a.	$X \cdot (X + Y) = X$	10b.	$X + X\ Y = X$	Absorption Law
11a.	$(X + Y) \cdot (X + \overline{Y}) = X$	11b.	$X\ Y + X\ \overline{Y} = X$	Redundancy Law
12a.	$(X + \overline{Y}) \cdot Y = XY$	12b.	$X\ \overline{Y} + Y = X + Y$	Redundancy Law
13a.	$(X + Y) \cdot (\overline{X} + Z) \cdot (Y + Z) = (X + Y) \cdot (\overline{X} + Z)$			Consensus Law
13b.	$X\ Y + \overline{X}\ Z + Y\ Z = X\ Y + \overline{X}\ Z$			Consensus Law
14a.	$X \oplus Y = (X + \overline{Y}) \cdot (\overline{X} + Y)$	14b.	$X \oplus Y = \overline{X}\ Y + X\ \overline{Y}$	XOR Gate
15a.	$X \odot Y = (X + Y) \cdot (\overline{X \cdot Y})$	15b.	$X \odot Y = \overline{X}\ \overline{Y} + X\ Y$	XNOR Gate
15c.	$X \odot Y = (X + Y) \cdot (\overline{X} + \overline{Y})$			XNOR Gate

Gates

	Standard	DeMorgan's
NAND	$X = \overline{A \cdot B}$	$X = \overline{A} + \overline{B}$
	NAND Gate	
AND	$X = A \cdot B$	$X = \overline{\overline{A} + \overline{B}}$
	AND Gate	

NOR	$X = \overline{A + B}$ NOR Gate	$X = \overline{A} \bullet \overline{B}$
OR	$X = A + B$ OR Gate	$X = \overline{\overline{A} \bullet \overline{B}}$