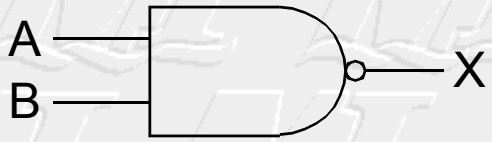
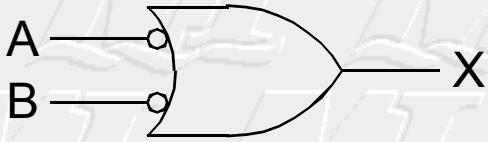
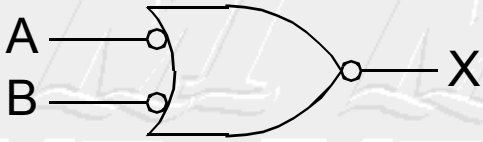
Laws and Theorems of Boolean Algebra

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.	$\overline{\overline{X}} = X$		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	$X = \overline{A \cdot B}$	$X = \overline{A} + \overline{B}$
		
AND	$X = A \cdot B$	$X = \overline{\overline{A} + \overline{B}}$
		
NOR	$X = \overline{A + B}$	$X = \overline{A} \cdot \overline{B}$
		
OR	$X = A + B$	$X = \overline{\overline{A} \cdot \overline{B}}$