Boolean Identities and Laws

The symbols used are the ones AQA exam board uses: + for OR, · for AND and a bar for NOT. Other exam boards (eg OCR) may use V for OR, ^ for AND and ¬ for NOT

The order of precedence in Boolean Algebra is Brackets > Not > AND > OR

(You can sort of treat AND operations as *multiplication* and OR operations as *addition*)

Name	**AQA**	**OCR**
Identity Law	$A + 0 = A$ $A \cdot 1 = A$	A v 0 = A A ^ 1 = A
Identity (Domination) Law	$A + 1 = 1$ $A \cdot 0 = 0$	A v 1 = 1 A ^ 0 = 0
Idempotent Law	$A + A = A$ $A \cdot A = A$	A v A = A A ^ A = A
Complement Law	$A + \overline{A} = 1$ $A \cdot \overline{A} = 0$	A v ¬A = 1 A ^ ¬A = 0
Double Negation Law	$\overline{\overline{A}} = A$	¬¬A = A
Commutative Law	$A + B = B + A$ $A \cdot B = B \cdot A$	A v B = B v A A ^ B = B ^ A
Associative Law	$(A + B) + C = A + (B + C)$ $(A \cdot B) \cdot C = A \cdot (B \cdot C)$	(A v B) v C = A v (B v C) (A ^ B) ^ C = A ^ (B ^ C)
Distributive Law	$A \cdot (B + C) = (A \cdot B) + (A \cdot C)$ $A + (B \cdot C) = (A + B) \cdot (A + C)$	A ^ (B v C) = (A ^ B) v (A ^ C) A v (B ^ C) = (A v B) ^ (A v C)
Absorption Law	$A + (A \cdot B) = A$ $A \cdot (A + B) = A$	A v (A ^ B) = A A ^ (A v B) = A
De Morgan's Theorems	$\overline{(A \cdot B)} = \overline{A} + \overline{B}$ $\overline{(A + B)} = \overline{A} \cdot \overline{B}$	¬(A ^ B) = ¬A v ¬B ¬(A v B) = ¬A ^ ¬B
Redundancy Laws (Consensus Theorem)	$A + (\overline{A} \cdot B) = A + B$ $A \cdot (\overline{A} + B) = A \cdot B$	A v (¬A ^ B) = A v B A ^ (¬A v B) = A ^ B