

Conjunction			Disjunction			Implication		
p	q	$p \wedge q$	p	q	$p \vee q$	p	q	$p \Rightarrow q$
V	V	V	V	V	V	V	V	V
V	F	F	V	F	V	V	F	F
F	V	F	F	V	V	F	V	V
F	F	F	F	F	F	F	F	V
Law of noncontradiction					$p \wedge \neg p \Leftrightarrow F$			
Law of the excluded middle					$p \vee \neg p \Leftrightarrow V$			
Double Negation					$\neg(\neg p) \Leftrightarrow p$			
Commutativity	Conjunction		$p \wedge q \Leftrightarrow q \wedge p$					
	Disjunction		$p \vee q \Leftrightarrow q \vee p$					
Associativity	Conjunction		$(p \wedge q) \wedge r \Leftrightarrow p \wedge (q \wedge r)$					
	Disjunction		$(p \vee q) \vee r \Leftrightarrow p \vee (q \vee r)$					
Neutral Element	Conjunction		$p \wedge V \Leftrightarrow p$					
	Disjunction		$p \vee F \Leftrightarrow p$					
Absorbing Element	Conjunction		$p \wedge F \Leftrightarrow F$					
	Disjunction		$p \vee V \Leftrightarrow V$					
Idempotence	Conjunction		$p \wedge p \Leftrightarrow p$					
	Disjunction		$p \vee p \Leftrightarrow p$					
Distributive Property	Conjunction over Disjunction		$p \wedge (q \vee r) \Leftrightarrow (p \wedge q) \vee (p \wedge r)$					
	Disjunction over Conjunction		$p \vee (q \wedge r) \Leftrightarrow (p \vee q) \wedge (p \vee r)$					
Properties of Implication	Transitive		$(p \Rightarrow q) \wedge (q \Rightarrow r) \Rightarrow (p \Rightarrow r)$					
	Implication and Disjunction		$(p \Rightarrow q) \Leftrightarrow \neg p \vee q$					
	Negation		$\neg(p \Rightarrow q) \Leftrightarrow p \wedge \neg q$					
	Contrapositive of an Implication		$(p \Rightarrow q) \Leftrightarrow (\neg q \Rightarrow \neg p)$					
Properties of Equivalence	Double implication		$(p \Leftrightarrow q) \Leftrightarrow [(p \Rightarrow q) \wedge (q \Rightarrow p)]$					
	Transitive		$[(p \Leftrightarrow q) \wedge (q \Leftrightarrow r)] \Rightarrow (p \Leftrightarrow r)$					
	Negation		$\neg(p \Leftrightarrow q) \Leftrightarrow [(p \wedge \neg q) \vee (q \wedge \neg p)]$					
De Morgan's laws	Negation of a Conjunction		$\neg(p \wedge q) \Leftrightarrow \neg p \vee \neg q$					
	Negation of a Disjunction		$\neg(p \vee q) \Leftrightarrow \neg p \wedge \neg q$					
De Morgan's laws	Negation of Universal Quantifier		$\neg(\forall x, p(x)) \Leftrightarrow \exists x: \neg p(x)$					
	Negation of Existential Quantifier		$\neg(\exists x: p(x)) \Leftrightarrow \forall x, \neg p(x)$					