Logic Cheat Sheet

- Truth Tables for the five basic connectives

		negation	conjunction	disjunction	conditional	biconditional
p	q	$\sim p$	$p \wedge q$	$p \vee q$	$p \implies q$	$p \iff q$
T	T	F	T	T	T	T
T	F	F	F	T	F	F
F	T	T	F	T	T	F
F	F	T	F	F	T	T

- Truth tables for conditional and equivalents

		Conditional	or not form	negation
p	q	$p \implies q$	$\sim p \vee q$	$p \wedge \sim q$
T	T	T	T	F
T	F	F	F	T
F	T	T	T	F
F	F	T	T	F

- Truth tables for Conditional and related

		Conditional	Converse	Inverse	Contrapositive
p	q	$p \implies q$	$q \implies p$	$\sim p \implies \sim q$	$\sim q \implies \sim p$
T	T	T	T	T	T
T	F	F	T	T	F
F	T	T	F	F	T
F	F	T	T	T	T

- Standard forms of Four Valid Arguments

Modus ponens	Modus tollens	Law of syllogism	Disjunctive syllogism
$p \implies q$	$p \implies q$	$p \implies q$	$p \vee q$
$\underline{p}$	$\underline{\sim q}$	$\underline{q \implies r}$	$\underline{\sim p}$
$\therefore q$	$\therefore \sim p$	$\therefore p \implies r$	$\therefore q$

- Standard Forms of two invalid Arguments.

Fallacy of the converse	Fallacy of the inverse
$p \implies q$	$p \implies q$
$\underline{q}$	$\underline{\sim p}$
$\therefore p$	$\therefore \sim q$