

MLA

LOGIC

	Symbol	English Translation
Negation	$\sim p$	Not p
Conjunction	$p \wedge q$	p and q. p but q <small>(true only when both simple statements are true)</small>
Disjunction	$p \vee q$	p or q <small>(false only when both component statements are false)</small>
Conditional	$p \rightarrow q$	If p, then q
Biconditional	$p \leftrightarrow q$	p if and only if q

p	q	$\sim p$	$\sim q$	$p \wedge q$	$p \vee q$
T	T	F	F	T	T
T	F	F	T	F	T
F	T	T	F	F	T
F	F	T	T	F	T

Ex: Construct a truth table for $(\sim p \vee q) \wedge \sim q$

STEP 1:
Create a table for p & q

p	q
T	T
T	F
F	T
F	F

STEP 2:
Find $\sim p$

p	q	$\sim p$
T	T	F
T	F	F
F	T	T
F	F	T

STEP 3:
Find $\sim p \vee q$

p	q	$\sim p$	q	$\sim p \vee q$
T	T	F	T	T
T	F	F	F	F
F	T	T	T	T
F	F	T	F	T

STEP 4:
Find $\sim q$

p	q	$\sim p$	q	$\sim p \vee q$	$\sim q$
T	T			T	F
T	F			F	T
F	T			T	F
F	F			T	T

STEP 5:
Find $(\sim p \vee q) \wedge \sim q$

p	q	$\sim p$	q	$\sim p \vee q$	$\sim q$	$(\sim p \vee q) \wedge \sim q$
T	T	F	T	T	F	F
T	F	F	F	F	T	F
F	T	T	T	T	F	F
F	F	T	F	T	T	T