A **proposition** is a sentence that is true or false, but not both.

It is snowing and it is not Thursday.

A **propositional form** is like a proposition but with content replaced by variables.

p and not q

$p \wedge \sim q$

$\mathbb{Z} = \{\ldots -3, -2, -1, 0, 1, 2, 3 \ldots\}$

$+ - \times \div$

$\times$	0	1	2	3
0	0	0	0	0
1	0	1	2	3
2	0	2	4	6
3	0	3	6	9

$\mathbb{B} = \{T, F\}$

$\vee \wedge \sim$

$\wedge$	T	F
T	T	F
F	F	F

$\wedge$	T	F
T	T	F
F	F	F

$\vee$	T	F
T	T	T
F	T	F

p	$\sim p$
T	F
F	T

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

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

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

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

Commutative laws:	$p \wedge q$	$\equiv$	$q \wedge p$		$p \vee q$	$\equiv$	$q \vee p$
Associative laws:	$(p \wedge q) \wedge r$	$\equiv$	$p \wedge (q \wedge r)$		$(p \vee q) \vee r$	$\equiv$	$p \vee (q \vee r)$
Distributive laws:	$p \wedge (q \vee r)$	$\equiv$	$(p \wedge q) \vee (p \wedge r)$		$p \vee (q \wedge r)$	$\equiv$	$(p \vee q) \wedge (p \vee r)$
Absorption laws:	$p \wedge (p \vee q)$	$\equiv$	p		$p \vee (p \wedge q)$	$\equiv$	p
Idempotent laws:	$p \wedge p$	$\equiv$	p		$p \vee p$	$\equiv$	p
Double negative law:	$\sim\sim p$	$\equiv$	p				
DeMorgan's laws:	$\sim (p \wedge q)$	$\equiv$	$\sim p \vee \sim q$		$\sim (p \vee q)$	$\equiv$	$\sim p \wedge \sim q$
Negation laws:	$p \vee \sim p$	$\equiv$	T		$p \wedge \sim p$	$\equiv$	F
Universal bound laws:	$p \vee T$	$\equiv$	T		$p \wedge F$	$\equiv$	F
Identity laws:	$p \wedge T$	$\equiv$	p		$p \vee F$	$\equiv$	p
Tautology and contradiction laws:	$\sim T$	$\equiv$	F		$\sim F$	$\equiv$	T