





Style upper-case letter (w/ numeric subscript

↳ Proposition

P Q R S T

· True statement

· false statement

P_{103}

$2 < 3$

L

$2 > 3$

the moon is denser than Venus

Predicate

Proposition w/ variables

$x < 3$

x is denser than y

Propositions

atomic

compound
(composite)

M is denser than V

class is canceled and it is snowing

Truth table

C	S	C \wedge S
0	0	0
0	1	0
1	0	0
1	1	1

P, Q, ...

\neg

\perp

\wedge

\vee

\neg

and

or

not

C \wedge S

here or no go

frigs or a drink

P	Q	and $P \wedge Q$	(inclusive) or $P \vee Q$	exclusive or $P \oplus Q$	if and only if bi-implication iff $P \leftrightarrow Q$	conditional implication if $P \rightarrow Q$
0	0	0	0	0	1	1
0	1	0	1	1	0	1
1	0	0	1	1	0	0
1	1	1	1	0	1	1

P	$\neg P$
0	1
1	0

if it snows, then I am happy

~~snow causes happiness~~

S	H	S \rightarrow H
0	0	1
0	1	1
1	0	0
1	1	1

only happy if snows

$$H \rightarrow S$$

$$H \leftrightarrow S$$

Tautology - always T

P	P	$\neg P$	$(\neg P)$
0	1	1	1
1	1	0	0

\neg first

$$\neg P \vee Q$$

$$(\neg P) \vee Q$$

$$P \vee \neg P$$

T