

## Statements in Logic

A **statement** in logic is a *declarative* sentence that is either true or false. A **simple statement** contains a single idea. A **compound statement** contains several ideas combined together. The words that join the ideas of a compound sentence are called **connectives**.

**Negation** is a statement expressing the idea that something is not true or not false. (Symbol:  $\sim$ )

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

A **conjunction** expresses the idea of *and*. (Symbol:  $\wedge$ )

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

A **disjunction** conveys the notion of *or*. (Symbol:  $\vee$ )

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

A **conditional** conveys the notion of *if... then*. (Symbol:  $\rightarrow$ )

$p$	$q$	$p \rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

A **biconditional** represents the idea of *if and only if*. (Symbol:  $\leftrightarrow$ )

The biconditional combines the ideas: *if p then q* and *if q then p*.

$p$	$q$	$p \leftrightarrow q$
T	T	T
T	F	F
F	T	F
F	F	T