

Section 1.1 Deductive Reasoning and Logical Connectives

A statement is a sentence that has exactly one truth value: true, which we denote by T , or false, which we denote by F .

A paradox is a situation in which, from premises that look reasonable, one uses apparently acceptable reasoning to derive a conclusion that seems to be contradictory.

The negation of a statement P , denoted $\sim P$, is the statement “not P .” The statement $\sim P$ is true exactly when P is false.

Given statements P and Q , the conjunction of P and Q , denoted $P \wedge Q$, is the statement “ P and Q .” $P \wedge Q$ is true exactly when both P and Q are true.

The disjunction of P and Q , denoted $P \vee Q$, is the statement “ P or Q .” $P \vee Q$ is true exactly when at least one of P or Q is true.