

Vocabulary of SL (Sentential Logic)

- Sentences (sentence letters)
 - Can have subscripts if more are needed
 - Truth-Functional Connectives
 - Conjunction
 - Disjunction
 - Conditional
 - Negation
 - Biconditional
- Truth value of resulting sentence is **entirely dependant** on **input values** and **Truth Table** of connective
- Punctuation (,)

Grammar of SL

* P is just a placeholder for any sentence, **atomic** or **molecular**

- Every sentence letter is a sentence
- If P is a sentence, so is $\sim P$.
- If P and Q are sentences, then $P \& Q$, $P \vee Q$, $P \supset Q$, and $P \equiv Q$ are all sentences.
- Nothing is a sentence unless it can be reduced to atomic sentences according to these rules.

Main Connective

- Determines what kind of sentence a sentence is.
- Determines, in the end, the Truth Value of a sentence.

definition

- If P is atomic, it has no main connective.
- If P is the negation of another sentence, P's main connective is \sim .
- If P is $Q \& R$, $Q \vee R$, $Q \supset R$, $Q \equiv R$, then that connective is the main connective.

Ex.

$\sim ((D \equiv F) \vee M)$

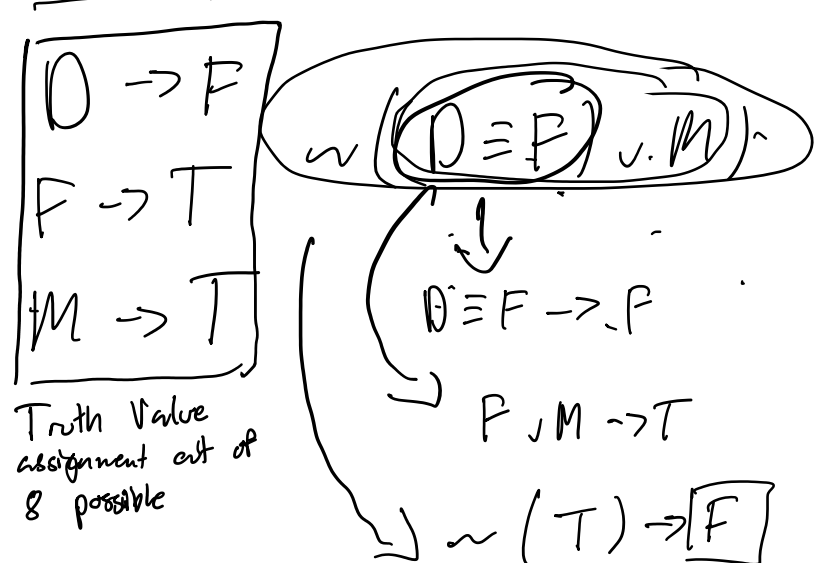
F not D and only if F or M

Main connective is negation
 • Truth-value is dependent on the input and output of the \sim .

M $((D \equiv F) \vee M) \rightarrow$ Main connective is disjunction.

$(D \equiv F) \rightarrow$ Main connective is biconditional

Example with TV assignment



Given these truth-values, this sentence as a whole is false.