Lecture 2

Atomic Propositions (primitive)

-truth as falsity is independent of truth as falsity of another proposition

Compound Proposition

-depends on another proposition > w/connectives - assembly of multiple atomic propositions

CONNECTIVES

1) Not (-)
2) And (N)
5) iff (if and only if) (->)
8) Or (V)

ex) If its raining & you're outside then you will get wet.

PROPOSITIONAL VARIABLES

- P, Q, R, etc.

P → "it is raining,

Q → " you're outside"

R → "you get wet"

P ∧ Q → R

Problems w/ Natural Language

- words can mean different things

- I took a plane and went to chicago

L, i) one led to another

2) two different events

- use astificial language for Math & CS

Truth Tables

-Logical Operators

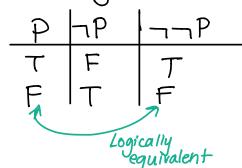
- negation, and, or, conditional, biconditional

1) <u>Negation</u>

P rP
T F
T

* does not mean the opposite

2) Double Negation



Logical Equivalence

Truth values are identical

$$P = Q$$
 $P \Leftrightarrow Q$
 $P = 77P$

P	Q	PNQ
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P	Ø	PVQ
T	7	7
F	T	T
T	F	T
F	F	F

Lone or both can be the

5) XOR - exclusive OR -

P	Q	POQ
T	1	7
F	T	T
I	F	T
F	F	F

only one can be true