

Chapter Three Semantics

1. Principle of Bivalence: In any possible situation, a sentence is either true or false (not both).

2. Negation Rule

●	\sim ●
1	0
0	1

3. Conjunction Rule

●	▲	$(\bullet \wedge \blacktriangle)$
1	1	1
1	0	0
0	1	0
0	0	0

4. Disjunction Rule

●	▲	$(\bullet \vee \blacktriangle)$
1	1	1
1	0	1
0	1	1
0	0	0

5. Conditional Rule

●	▲	$(\bullet \rightarrow \blacktriangle)$
1	1	1
1	0	0
0	1	1
0	0	1

- A sentence of the form “P **if and only if** Q” is a **biconditional**. Its formal translation, “ $(P \leftrightarrow Q)$ ”, is logically equivalent to “ $((P \rightarrow Q) \wedge (Q \rightarrow P))$ ”. (The **biconditional sign** “ \leftrightarrow ” is called “**bicon**”.)
- Other English biconditional phrases are “**exactly on condition that**” and “**in just those cases where**”.
- The semantic rule for the biconditional is as follows.

6. Biconditional Rule

●	▲	$(\bullet \leftrightarrow \blacktriangle)$
1	1	1
1	0	0
0	1	0
0	0	1