

CONDITIONAL LOGIC

➤ **Vocabulary.** There are three kinds of symbols.

1. **Sentence Letters:** P, Q, R, ... , X, Y, Z (perhaps with numerical subscripts)

2. **Logical Symbols:** \sim , \rightarrow

3. **Punctuation Marks:** $)$, $($

➤ **Formation Rules.** The properly formed expressions are called (symbolic) **sentences**. They are specified by the following rules.

R1. Every sentence letter is a **sentence**.

R2. If ϕ and Ψ are **sentences**, then so are

$$\begin{array}{c} \sim\phi \\ \text{and} \\ (\phi \rightarrow \Psi) \end{array}$$

(Nothing is a sentence unless its being so is determined by R1 and R2.)

EXAMPLES

Sentences: P, Q, R, $(P \rightarrow Q)$, $((P \rightarrow (\sim Q \rightarrow R)) \rightarrow ((P \rightarrow \sim Q) \rightarrow (P \rightarrow R)))$

Not a sentence: $P\sim$, $P \rightarrow Q$, $\sim(R)$, $(P\sim \rightarrow R)$

➤ **Proof Rules.** The proof rules are given by using the three forms of derivation and the four rules of inference to box and cancel in accord with the specifications for a *complete derivation* (pp. 24-25 of the text).