

5.1.x. Exercise questions

- Analyze each of the following sentences in as much detail as possible.
 - If it was raining, the roads were slippery.*
 - He was home if the light was on.*
 - Ann and Bill helped if Carol was away*
 - Sam will help—and Tom will, too, if we ask him.*
 - If it was warm, they ate outside provided it didn't rain.*
 - If the new project was approved, Carol started work on it and so did Dave if he was finished with the last one.*
 - If he found the instructions, Tom set up the new machine; otherwise, he packed up the old one.*
- Restate each of the following forms, putting English notation into symbols and vice versa and indicating the scope of connectives in the result by underlining:
 - $A \wedge (B \rightarrow C)$ **c.** if A then both B and if C then D
 - $(A \wedge B) \rightarrow C$ **d.** both if A then B and if not A then not B
- Synthesize idiomatic English sentences that express the propositions that are associated with the logical forms below by the intensional interpretations that follow them.
 - $\neg S \rightarrow \neg B$
S: *I'll see it*; B: *I'll believe it*
 - $S \rightarrow \neg (R \vee N)$
S: *it was sunny*; R: *it rained*; N: *it snowed*
 - $\neg W \leftarrow \neg (P \wedge \neg B)$
W: *the set works*; P: *the set is plugged in*; B: *the set is broken*
 - $\neg (A \vee B) \rightarrow (G \leftarrow \neg (C \vee D))$
A: *Adams will back out*; B: *Brown will back out*; G: *the deal will go through*; C: *Collins will have trouble with financing*; D: *Davis will have trouble with financing*
- Calculate truth values for all components of the forms below on each possible extensional interpretation. Since the first two each have two unanalyzed components, there will be 4 interpretations and your table will have 4 rows of values; with three components, as in the third and fourth, there will be 8 interpretations giving 8 rows of values.
 - $(A \rightarrow B) \wedge (B \rightarrow A)$
 - $\neg (A \wedge B) \rightarrow (\neg B \vee A)$
 - $(A \rightarrow C) \wedge (B \rightarrow \neg C)$
 - $\neg (A \rightarrow C) \wedge (\neg B \rightarrow C)$