

### 3.10.1. Translation Problems

**Translate** each of the following English sentences into the formal language. (For each translation, first build a **translation table** linking English subject matter sentences with sentence letters.)

1. Either Nick is a quiz contestant who knows about history, or Nora is a ventriloquist who knows about history.
2. Unless Barbie is a cheerleader who has low standards, Rex is a student who won't have a date to the prom.
3. Either the exam will be easy and Rex will pass the class, or the exam won't be easy and Rex won't pass the class.
4. Unless it is both sunny and warm, we will neither have a picnic nor play volleyball.
5. We'll have neither apple cake nor bread pudding nor cherry pie.
6. We're having either ice cream or cake, and we're also having champagne.
7. Dr. Slim won't meet us at the airport unless neither Neko nor Jack are free.
8. Rex will not pass the exam unless he's a genius who doesn't need to study.
9. Suki passed the exam without studying, but Jake didn't.

**B. A Puzzle About “Without” and “Unless”.** Recall that we counted two phrases as translation variations of one another, meaning the same thing, if otherwise identical sentences with the two phrases mean the same thing. For instance, Sentences (1) and (2) seem to mean the same thing – suggesting that “but” and “yet” mean the same thing.

- (1) Logic is challenging, **but** exhilarating.
- (2) Logic is challenging, **yet** exhilarating.

Now, Sentences (3) and (4) also mean the same thing.

- (3) We won’t have a day off **unless** there’s a good reason.
- (4) We won’t have a day off **without** (there being) a good reason.

On the face of it, this suggests that “unless” and “without” mean the same thing.

Yet that suggestion meets a challenge in the next two sentences, which are the same but for one having “unless” where the other has “without”. For here the two sentences *don’t* mean the same thing.

- (5) Rex passed the Calc exam **unless** he slept late.
- (6) Rex passed the Calc exam **without** sleeping late.

**Explain why** “unless” and “without” seem to run perfectly parallel in Sentences (3) and (4), but not in (5) and (6).