

2.10.1. Translation Problems

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

1. Either Dick is a quiz contestant who knows the history of mixology, or Dora is a ventriloquist who knows the history of mixology.

2. Unless Barbie is a former cheerleader who has low standards, Rex is a logician who won't have a date to the Disjunctive Normal Form.

3a. Both Suki and Trixie passed the exam, though neither of them studied for it.

3b. Though neither Suki nor Trixie studied for the exam, they both passed it.

3c. Suki passed the exam without studying for it, and so did Trixie.

4. Letitia won't get an A unless she's a genius who doesn't need to study.

5. Neko is a cat who loves tuna fish, but Jack's not.

6. Unless Dr. Slim is a physician, he's not a physician who performs surgery.¹

7. Lucretia went out without taking an umbrella, but Letitia didn't.

8. Jack won the surfing prize, and not without deserving it.

(Hint: assume there's deleted repetition between "not" and "without".)

9. Jake didn't pass the exam without studying. Jake didn't study. \therefore Jake neither studied nor passed the exam.²

¹ For more on this sentence see 2.17.1. D, Problem 10.

² See 2.18.1 Problem A22 on the validity of this argument.

B. A Puzzle About “Without” and “Unless”.

“You don’t know about me, without you have read a book by the name of *The Adventures of Tom Sawyer*....”

– Huckleberry Finn, in Mark Twain, **The Adventures of Huckleberry Finn**

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) Suki passed the Psych exam **unless** she slept late.
- (6) Suki passed the Psych 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).³

³ For more on Sentences (3) and (4) see 2.17.1 B, Problems 7a and 7b.