

2.9.1 Translation and Construction Problems

A. For each of the English sentences on the left, state its correct **formal translation** (from the sentences listed on the right). Then **state the translation key** used (the same for all four translations).

English Sentences:

a. Unless the check's in today's mail, we won't have *both* truffles *and* grog.

b. Though the check's in today's mail we're not having truffles, and we're also not having grog.

c. Unless the check's in today's mail, we won't have truffles and we won't have grog.

d. The check's in today's mail and we are having truffles, but we're not having grog.

Formal Sentences:

1. $(P \vee (\sim Q \wedge \sim R))$

2. $((P \wedge Q) \wedge \sim R)$

3. $(P \vee \sim(Q \wedge R))$

4. $((P \wedge \sim Q) \wedge \sim R)$

Translation Key:

P:

Q:

R:

B. Translate each of the following English sentences into the formal language (providing a **translation key** for that translation). Then build a **construction tree** for the formal sentence.

1. Letitia and Lucretia won't both enjoy the movie.
2. Either both Dick and Dora went out for happy hour or Elvis didn't dial the right number.
3. We're having grog or grappa, and we're also having truffles.
4. Either Rex got up early, or he went to class without grading the exams.
- 5a. Trixie passed the exam, but she didn't study unless she was nervous about her grade.
- 5b. Trixie passed the exam without studying unless she was nervous about her grade.
- 6a. It's not the case that even though Jake graduated from Pitt he's wise.
- 6b. Even though it's not the case that Jake graduated from Pitt, he's wise.
7. Though Neko is neither strong nor a skilled fighter, she won't back down unless Jack apologizes.
8. Unless the buffet isn't serving fish, both Suki and Neko will go to dinner.
9. Jezebel scheduled a séance without consulting either Trixie or Lucretia.
10. Dick and Dora searched the sommelier's apartment without either of them getting caught.
11. Suki made either gyoza or sushi without telling Neko.
12. Jack is a skydiver who neither wears a helmet nor buys extra insurance.
13. Neither Barbie nor Trixie will assist with the trade show, though they both need money.

14. Either Dick is hung over and so is Dora, or Dick’s sick and Dora is too.

15a. Gambling on logic is either illegal or unsatisfying.

15b. Gambling on logic is neither legal nor satisfying.

16a. Neither Kitty nor Dr. Slim have both a law degree and a medical license.

16b. Neither Kitty nor Dr. Slim have either a law degree or a medical license.

17a. Jack isn’t tall and also skinny.

17b. Jack isn’t tall and he’s also skinny.

18a. Lucretia didn’t study and go to the movies too.

18b. Lucretia didn’t study and she went to the movies too.

19. Jake didn’t study yet not pass the exam. Jake didn’t pass the exam. \therefore Jake neither studied nor passed the exam¹.

¹ See 2.18.1 Problem A21 on the validity of this argument.

C. Translate each of the following arguments into the formal language (using the **same translation key** for all of the arguments); then state whether or not that English argument **seems valid**.

(1a)

1. Barbie doesn't drink and she drives.

∴ Barbie doesn't drink.

(Does this argument seem valid?)

(1b)

1. Barbie doesn't drink and she drives.

∴ Barbie drives.

(Does this argument seem valid?)

(2a)

1. Barbie doesn't drink and drive.

∴ Barbie doesn't drink.

(Does this argument seem valid?)

(2b)

1. Barbie doesn't drink and drive.

∴ Barbie drives.

(Does this argument seem valid?)