

The problems below give more practice similar to a few from the book. I like to ask these kinds of translation problems on exams, so you deserve more opportunities to practice.

1. Use the variables  $p$  = Jackie likes tea,  $q$  = Jackie likes coffee, and  $r$  = Robert likes tea to translate the following statements into statement form. Use  $\sim$ ,  $\wedge$ ,  $\vee$ , and parentheses as necessary. DON'T try to simplify your symbols or reason out a different verbal statement first: convert EXACTLY I've given you.

(a) Jackie likes tea and she likes coffee, while Robert dislikes tea.

(b) It's not the case that Jackie doesn't like tea.

(c) Robert likes tea, and Jackie likes tea or she dislikes coffee.

*Hint: in notation, we can use parentheses to show grouping, but in grammar, we often have to use punctuation for grouping instead. Use the comma above to help you choose good parenthesis placement in your translation.*

(d) Jackie likes neither tea nor coffee.

(e) Jackie and Robert like tea.

2. Declare the variables  $p$  = Sam is a dog,  $q$  = Sam is a cat,  $r$  = Sam likes pizza, and  $s$  = Sam likes green eggs. Use these to translate the following statement forms into ordinary English sentences, staying as close as possible to the wording the forms indicate. (Use punctuation or "it is not the case that" to preserve grouping.)

(a)  $\sim p \wedge r$

(b)  $\sim (p \wedge r)$

(c)  $\sim q \vee (r \wedge s)$

(d)  $p \wedge \sim r \wedge \sim s$

(e)  $p \vee q \wedge \sim s$

(f)  $\sim r \vee \sim s$