Chapter 4 – Basic propositional logic
Answers to select "Getting familiar with…" exercises.

Getting familiar with… translation.

a.
1. (C v S)
complex; disjunction

3. F
simple

5. ((B & D) v (P & S))
complex; disjunction

7. ~P
complex; negation

9. H
simple

11. G
simple

13. (F ⊃ (P v S))
complex; conditional

15. ((T v M) v Y)
complex; disjunction

17. (~S & (S ⊃ ~H))
complex; conjunction

19. ((A & T) ⊃ (D v C))
complex; conditional

b.
1. If I throw the ball, then the window will break.

3. If it is the case that, if it is raining, the sidewalks are wet, and it is raining, then the sidewalks are wet.

5. If it is raining and it is not the case that I bring my umbrella, then I get wet.

7. If it isn't the case that if I don't pay for the ticket, I get kicked out, then I do not pay for the ticket.

9. He either went to the park or he went to the restaurant, and if he went to the park, then he is either on the swings or he is on the jungle gym.

Getting familiar with… more difficult translations.

1. (T & D)

3. (P iff G)

5. ((L & N) & (A ⊃ F))

7. (~A ⊃ ~R)
If you interpret R as, "There is a real reason to care about morality," then translate it as ~R, as we have done: (~A ⊃ ~R). If you interpret R as "There is no real reason to care about morality," then translate it as R. We prefer the former as it allows for a more sophisticated analysis of an argument in which this claim may play a role.

9. (N & ~S)

This one is particularly tricky because of the word "sometimes." This is a quantifier, and we had a way of dealing with this in categorical logic, namely, translating it into an I-claim, "Some lies are things you should do." In propositional logic, you will need a whole new vocabulary to translate claims this like, "There is an x, and there is an F, such that x is a lie and F is a thing you should do, and x is an F, Fx." We will not cover anything that complicated in this book, so we translate the claim containing it as a simple claim—S: "It is the case that both 'You shouldn't lie' and 'Sometimes, you should lie.'"

11. (~S v G) or (~G ⊃ ~S)

13. (~M & S)

15. (T & ~C)

17. (C & ~T)

19. (~H ⊃ ((~R v ~C) v ~M)))

This one is tricky because of the word "possible." There is another type of deductive logic that deals with "possibility" and "necessity," called *modal logic*. We will not cover modal logic in this book, so we just include "possibility" as part of the propositional claim.