For each of the following, write a normal English sentence that it could be a translation of. Assume that the predicates are named rationally, so that tall(x) is true of all and only tall individuals x. Try to use sentences that you could imagine actually saying (that is, like “John likes everyone” rather than like “For every x such that x is a person, John and x stand in a liking relation”). It’s ok if your English sentence is ambiguous, so long as one of its meanings is like the one described formally below.

1. a. □□x [ person(x) □ crazy(x)]
   b. □x [ □y [ person(x) □ truck(y) □ bought(x, y) ] ]
   c. □x[child(x) □ [□y[painting(y)□admired(x, y)] □y[sandwich(y)□ate(x, y)]]]
   d. □□x [ person(x) □ eats(x) ] □ □x[person(x) □ hungry(x)]

For each of the two sentences below, indicate whether the place where a celebrity appears is an upward entailing or downward entailing environment, and briefly indicate how you arrived at your conclusion.

2. I have never met a celebrity.
3. My sister met a celebrity.

In (4) and (5) are two grammatical sentences about imaginary measures, flimen and sterg, measuring slurm (a mass noun). (4) and (5) were true in the early morning, but in a daring daylight robbery, exactly half of everything was stolen. Describe the remaining slurm on the shelf both in terms of flimen and sterg. Explain how you know this.

4. John saw 4 flimen of slurm on the shelf.
5. John saw 10 sterg slurm on the shelf.

Suppose that Mary has just started her own business, and she’s the only employee. First: Only one interpretation of her secretary in (6) is true under this scenario, which is it (de dicto or de re)? Second: Describe a different scenario in which only the other interpretation would make (6) true.

6. Mary dreamt that John had a business lunch with her secretary.
Accepting (7) as a true statement about the way things are, does (8) imply (9)? Does (9) imply (8)?

(7) Every dog is carnivorous.
(8) Fido is a dog.
(9) Fido is carnivorous.

For each sentence in (10), indicate what type of event it describes (state, activity, accomplishment, or achievement).

(10)  
   a. John tripped over a branch.
   b. John tripped over branches.
   c. Mary despises artichokes.
   d. John devoured his pudding.
   e. John devoured pudding.

The adverbial phrase a little sounds fine in (11a–d) and not in (11e–f). Based on these facts, identify a single criterion that distinguishes the kinds of events that a little is compatible with from those that it isn’t (that is, don’t just name types of events that a little is compatible with, but indicate what they have in common that differentiates them from other types of events with which a little is incompatible).

(11)  
   a. Mary swam a little.
   b. Mary drove her car a little.
   c. Mary is a little crazy.
   d. Mary likes John a little.
   e. #Mary drove her car to New York a little.
   f. #Mary swam the English Channel a little.
   g. #Mary discovered a quarter a little.

The sentence in (12) is ambiguous in (at least) the three ways indicated by the followup sentences in (12a–c). For each of the readings, name the modal base being used for that interpretation, describe the contents of the modal base, and provide a paraphrase of the sentence that does not use a modal.

(12) The lion must sleep tonight.
    a. All lions always sleep nightly.
    b. I see that they’ve prepared a bed for it.
    c. It’s got a big day tomorrow.
For questions like (13), we have represented it as a set of propositions. If we assume that the only individuals under consideration for having been bought by Mary are coffee, milk, and vodka, what are the propositions in the set?

(13) What did Mary buy?

Write the characteristic function for the set of numbers less than 5 (\{0, 1, 2, 3, 4\}) in lambda notation. Assume that this function is only applied to natural numbers (integers greater than or equal to zero: 0, 1, 2, 3, 4, 5, 6, …). That is, this is a function that takes a natural number as its argument. You can assume that for a natural number \(n\), \(n < 5\) is true if and only if \(n\) is less than 5.

Suppose John called from Europe and asked Mary to tape a bunch of TV shows during May sweeps. The only store Mary ever buys anything from carries videotapes, but only 6-hour tapes (and John knows this). John said he’d email the details, but Mary wanted to know how many blank videotapes she needed to buy for the project. John tells her she needs 4 videotapes. Explain why Mary concludes that John wants her to tape no more than 24 hours of television, having assumed that John was responding cooperatively according to Grice’s maxims.