Consider the following sentence:

1) The girl ate rice with shrimp.

There are multiple different things that this sentence could mean. It could mean that the girl ate rice which contained shrimp; with this meaning, the phrase *with shrimp* modifies the noun *rice*. On the other hand, it could instead mean that the girl used shrimp as tools that allowed her to eat the rice; with this meaning, *with shrimp* modifies the verb *ate*. For this sentence, it is obvious to a human reader that the intended meaning is the one where *with shrimp* modifies the noun rather than the verb, because it is common for shrimp to appear in rice while it is uncommon for people to use shrimp as eating implements. However, this changes if we change the word *shrimp* to *chopsticks*:

2) The girl ate rice with chopsticks.

Now it is much more likely that *with chopsticks* modifies the verb *ate* rather than the noun *rice* because chopsticks are usually eating implements rather than ingredients.

*With chopsticks* and *with shrimp* are examples of prepositional phrases, which modify other phrases to provide more information about those phrases. Prepositional phrases always start with a preposition, such as *to*, *for*, *of*, or *with*. In ambiguous sentences (such as 1 or 2), it is usually easy for humans to tell whether the prepositional phrase is intended to modify the noun or the verb, but for computers this task can be much harder because the computers might not have all of the background knowledge that humans use to make this judgment. In the following article about Annie, a circus performer, each italicized component contains a prepositional phrase that could potentially be describing a noun or a verb:

A computer would struggle to predict the correct labels for these instances, but you can help it by giving it some rules to guide its decisions. These rules will be interpreted in a specified order such that, once an instance has been labeled by one rule, its label cannot be changed by any later rules, even if those rules would apply if it had not yet been labeled.

You are considering using the following rules:
A. If the Verb is a form of “to like” (e.g., likes, like, liked), label the instance as N.
B. If the Preposition is “with” and Noun2 contains a food item, label the instance as N.
C. If Noun1 is “act”, label the instance as V.

For Algorithm1, you order the rules as follows:
1. __A__
2. __B__
3. __C__

Fill in the label that Algorithm1 would assign to each instance in the “Algorithm1” column of the table above. If the algorithm does not produce a label for an instance, leave that cell blank.
L3. A baseline is a starting point (the default predictions) that can be used to determine whether an algorithm improves labelling prediction. Because it is a default, the baseline consists of only one rule and applies to all instances (i.e., there will be no blank labels). If you were a computer scientist developing Algorithm1, before testing Algorithm1, you should have already made a baseline algorithm for the article about Annie, and you found that Algorithm1 gets 10 labels right, gets 1 label wrong, and leaves 4 blank. The baseline gets 8 right and 7 wrong, leaving 0 blank. State a single rule that could have been the rule you used as your baseline.

Then, in the “Baseline” column of the table on the previous page, fill in the label for that instance given by your baseline.

L4. What order should the rules A, B, and C be placed in an algorithm in order to obtain the highest accuracy possible? Write the letter of the rule next to the number of the order that it is placed in.

1. [ ] 2. [ ] 3. [ ]

L5. Explain how you chose the baseline in L3 and why you ordered the rules the way that you did in L4.