Homework 1 “Key”  Problems are from Chapter 3.

1. In general, the question is whether you think the sample represents the population for the particular question of interest. This can be a subjective judgment that varies from student to student, but sometimes the answer is quite clear.

   a. The sample is from a specific (and unusual) occupation so it may not be representative for the question which doesn’t mention a specific occupation.
   b. The “rule” probably holds here. I can’t think of any reason why the pulse rates (and responses to smoking) would be much different for a specific class than in the population of college age people.
   c. This is a random sample, so it should work well. The “rule” should hold.
   d. The sample may be biased here. Parents of high school students may be much more concerned about the drinking age than other adults are.

2. The TAs say there was some confusion between “randomized experiment” and “random sample.” A randomized experiment doesn’t necessarily involve a random sample from a population. In a randomized experiment, the participants (often volunteers) are randomly divided into treatment groups. As with question 1, the answers in some cases are opinion rather than fact.

   a. An experiment could be considered, but I wonder whether it would be feasible for the experimenter to follow-up on those who are assigned to “long-term” use of meditation. And, I also think that people may not really agree to be randomized to long-term meditation. I think you would end up doing an observational study using those who are meditators as one group and others as a second group.
   b. An experiment seems possible. Some would be randomly assigned to the program and others would not.
   c. Again I think an experiment would be possible, but I worry that most participants wouldn’t comply with what you assigned them to do.
   d. This would definitely be an observational study. You can’t randomly assign people to age groups for instance.

3. a. explanatory = meditation (or not) ; response =blood pressure
   b. explanatory = training program (or not) ; response = test score
   c. explanatory = program response = how often people drive to work
   d. explanatory = age response = opinion about marijuana

8. Number all of the songs from 1 to 50, randomly pick four numbers, and listen to the song with those numbers.

9. a. This is not a simple random sample because with this method not every possible group of five songs could be the sample. (This type of sample is called a stratified random sample.)
   b. At this point this could be a subjective opinion. But, the method of part a of this question could give a better representation of the musician’s work.
10. a. This is an observational study. The researchers have observed naturally occurring groups.

b. Income is a possible confounding variable. It could affect overall health because higher income could allow a person to have better living conditions, a better diet, and better medical care.

c. Anything that might affect health: smoking habits, exercise habits, diet, etc.