

## Chapter 2, Quiz 2, Form A

## Answer Key

1. In an experiment, researchers observe how a response variable behaves when they manipulate one or more factors. However, in an observational study, the researchers do not manipulate any factors. Instead, they observe characteristics of a subset of the members of one or more existing populations.
2. In an experiment, the explanatory variable is the one that researchers manipulate in order to observe changes in the response variable. An extraneous variable is any other variable which is thought to affect the response variable, but is not of interest in the study.
3.
  - a) In each of these experiments we can infer a cause-and-effect relationship because the volunteers were randomly assigned to the two treatments.
  - b) In experiment #1, we can generalize the results of the experiment to the population of River City since the subjects were randomly selected from the population of River City. Thus, the subjects should be representative of the population in general. However, in experiment #2, the random sample came from a group of volunteers from River City, who may not be representative of the general population of River City.
4.
  - (a) The explanatory variable is the deterrent (Levels are: mirrors, snakes, owls).
  - (b) The response variable is the change in damage rate.
  - (c) The amount of rainfall is a potential confounding variable. It may be the case that some of the deterrents work better or worse in the rain. (However, the investigator has eliminated (or at least lessened) this concern by random assignment of homes to treatments.) Thus it might be that the results are at least partly the result of the amount of rainfall, not solely the deterrent.