Problem 1

In (a)-(c), determine whether the given value is a parameter or a statistic.

(a) In studying the effect of geese near an airport, a random sample of Canadian geese includes 12 males.

(b) A sample of wolves who mate is observed and the average (mean) number of offspring is 3.8.

(c) In a study of all cloned sheep it is found that their average (mean) age is 2.7 years.

Problem 2

In (a)-(c), determine whether the given values are from a discrete or continuous data set.

(a) In a study of birds in Buldir, Alaska, 312 breeding adult red-legged kittiwakes are banded.

(b) A sample of broad-billed hummingbirds is observed and their mean length is 3.25 inches.

(c) In a survey of 1059 adults, it is found that 39% of them have guns in their homes (based on a Gallup poll).

Problem 3

In (a)-(d), determine whether the variable is a quantitative or qualitative. If it is quantitative, is it discrete or continuous? If it is qualitative, is it ordinal or nominal?

(a) Lengths of broad-billed hummingbirds.

(b) Ratings of excellent, good, average, or poor for the racing ability of thoroughbred horses.

(c) The numbers of manatees killed by boats in each of the last 10 years.

(d) Blood types of A, B, AB, and O.
Problem 4

“A Florida newspaper runs a health survey and obtains 750 responses.”

Identify (a) the sample and (b) the population. Also, identify whether the sample is likely to be representative of the population.

Problem 5

In (a)-(d), determine whether the given description corresponds to an observational study or a designed experiment.

(a) Patients are given Lipitor to determine whether this drug has the effect of lowering cholesterol.

(b) The Federal Drug Administration randomly selects a sample of Bayer aspirin tablets. The amount of aspirin in each tablet is measured for accuracy.

(c) Much controversy arose over a study of patients with syphilis who were not given a treatment that could have cured them. Their health was followed for years after they were found to have syphilis.

(d) The Centers for Disease Control obtains current flu data by polling 3000 people this month.
Problem 6

In (a)-(e), identify which of these types of sampling is used: simple random, systematic, convenience, stratified, or cluster.

(a) A medical student researches the prevalence of aspirin usage by questioning all of the patients who enter her clinic for treatment.

(b) A pharmacist thoroughly mixes a container of 1000 Bufferin tablets, then scoops a sample of 50 tablets that are to be measured for the exact aspirin concentration.

(c) A John Hopkins University researcher surveys all cardiac patients in each of 30 randomly selected hospitals.

(d) The Connecticut Department of Health obtains an alphabetic list of 2,537,243 adults Connecticut residents and constructs a pool of survey subjects by selecting every 1000th name on the list.

(e) A dietitian has grouped people into age categories of under 18, 18–49, 50–69, and over 69. She is surveying 200 members from each category.

Problem 7

Cervical cancer is more common among women who have been exposed to the herpes virus, according to many observational studies. Is it fair to conclude that that virus causes cervical cancer?