### Section 1.2

1. Which of the following is not a continuous number:
   b. The total time spent at traffic lights for a cab driver during an 8-hour shift is 47.3 min.
   c. Among all SAT scores last year 27 were perfect.
   d. The number of pounds lost by a person on a weight-training program for the month of May was 6.7 pounds.
   e. None of these.

2. Which of the following is an Ordinal level of measurement
   a. Final course Grades (A, B, C, D, F).
   b. Social Security numbers
   c. Colors of cars in a car dealer’s lot.
   d. Annual incomes of college professors.
   e. The temperatures of all animals examined by a Veterinarian on a certain day.
   f. None of these

3. A Study was conducted to investigate the length of time it takes a chain smoker to quit. A group of 120 former chain smokers were randomly selected and it was found that it took an average of 6.75 months to quit smoking. It is believed that the true length of time for a chain smoker to quit is 9.5 months. Which value(s) in the study refer to statistics? Which value(s) in the study refer to parameters?

### Section 1.3

1. A study conducted by the Insurance Institute for Highway Safety found that the Chevrolet Corvette had the highest fatality Rate – “5.2 deaths for every 10,000.” The car with the lowest fatality rate was the Volvo, with only 0.6 deaths per 10,000. Does this mean that the Corvette is not as safe as the Volvo?

2. A survey includes the question: “Enter you height in inches” Why might the results of such a question be suspect?

3. Try to identify each of the four major flaws in the following: A daily newspaper ran a survey by asking readers to call in their response to this question: “Do you support the development of atomic weapons that could kill millions of innocent people?” It was reported that 20 readers responded, and 87% said “no”, while 13% said “yes.”
Section 1.4

1. Which of the following is an Experimental study
   a. The heart rates of chain smokers are taken after each smoker finishes a pack of cigarettes during a 24-hour period.
   b. Chain smokers are asked to smoke half of their normal number of cigarettes for a 24-hour period, their heart rates are taken after each smoker finishes a pack of cigarettes during that 24 hour period.
   c. The amount of insulin that Type II diabetics take during a 72-hour period is noted.
   d. The commute time of people who live more than 5 miles from school is noted for a week long period.
   f. None of these.

2. Which of the following is an example of cluster sampling
   a. Mail carriers of a large city are divided into four groups according to gender (male or female) and according to whether they walk or ride on their routes. Then 10 are selected from each group and interviewed to determine whether they have been bitten by a dog in the last year.
   b. Nursing supervisors are selected using random numbers in order to determine annual salaries.
   c. In a large school district, all teachers from two buildings are interviewed to determine whether they believe the students have less homework to do now than in previous years.
   d. Every seventh customer entering a shopping mall is asked to select his or her favorite store.
   e. A prison guard surveys all prisoners in his ward.
   f. None of these.
Answers Section 1.2

1. Which of the following is not a continuous number:
   a. An American Airlines altimeter reports a height of 23,456 ft. *The height is the thing you are looking at, that is a measurement, so this is a continuous number.*
   b. The total time spent at traffic lights for a cab driver during an 8-hour shift is 47.3 min. *The time is the variable you are looking at, it is a measurement, so this is a continuous number.*
   c. Among all SAT scores last year 27 were perfect. *The number of SAT scores that were perfect is the variable of interest, it is a count, so this is a discrete number.*
   d. The number of pounds lost by a person on a weight-training program for the month of May was 6.7 pounds. *The amount of weight lost is the variable here, it is a measurement, so this is a continuous number.*
   The correct answer is c.

2. Which of the following is an Ordinal level of measurement
   a. Final course Grades (A, B, C, D, F). *This is an Ordinal level of measurement.*
   b. Social Security numbers. *This is a Nominal level of measurement.*
   c. Colors of cars in a car dealer’s lot. *This is a Nominal level of measurement.*
   d. Annual incomes of college professors. *This is a Ratio level of measurement.*
   e. The temperatures of all animals examined by a Veterinarian on a certain day. *This is an Interval level of measurement*
   The correct answer is a.


Answers Section 1.3

1. Not necessarily as corvettes may attract a more reckless driver. (However, Volvos may in fact be a safer car – this study just doesn’t prove it).

2. People tend to lie about their height. A person may not know their height in inches. People may think they are taller than they actually are.

3. a. The questions is leading, encourages a negative response.
   b. The sample size is small, 20 is generally considered too small for most cases.
   c. The sample was self-selected.
   d. The percentages should be multiples of 5, you can’t get 87% to agree if you are using whole people, notice 1/20 yields 5%, 2/20 yields 10%, 3/20 yields 15%.
**Answers Section 1.4**

1. **Which of the following is an Experimental study**

   a. The heart rates of chain smokers are taken after each smoker finishes a pack of cigarettes during a 24-hour period.  *Not interfering with the subjects in anyway – Observational.*

   b. Chain smokers are asked to smoke half of their normal number of cigarettes for a 24-hour period, their heart rates are taken after each smoker finishes a pack of cigarettes during that 24 hour period.  *You are altering the smokers natural habits and then observing their behavior – Experimental.*

   c. The amount of insulin that Type II diabetics take during a 72-hour period is noted.  *You are not interfering with the subjects normal habits - Observational*

   d. The commute time of people who live more than 5 miles from school is noted for a week long period.  *You are not interfering with the subjects normal habits – Observational*

   The correct answer is b.

2. **Which of the following is an example of cluster sampling**

   a. Mail carriers of a large city are divided into four groups according to gender (male or female) and according to whether they walk or ride on their routes. Then 10 are selected from each group and interviewed to determine whether they have been bitten by a dog in the last year.  *Stratified*

   b. Nursing supervisors are selected using random numbers in order to determine annual salaries.  *Random*

   c. In a large school district, all teachers from two buildings are interviewed to determine whether they believe the students have less homework to do now than in previous years.  *Cluster*

   d. Every seventh customer entering a shopping mall is asked to select his or her favorite store.  *Systematic*

   e. A prison guard surveys all prisoners in his ward.  *Convenience*

   The correct answer is c.