

# REVIEW (EXAM I)

## Chapter 1

1. For the studies described, identify the population, sample, population parameters, and sample statistics:

- e) The Gallup Organization conducted a poll of 1003 Americans in its household panel to determine what percentage of people plan to cancel their summer vacation because of the increase in gasoline prices.
- f) Harris Interactive surveyed 2435 U.S. adults nationwide and asked them to rate quality of American public schools.
- g) The American Institute of Education conducts an annual study of attitudes of incoming college students by surveying approximately 261,000 first-year students at 462 colleges and universities. There are approximately 1.6 million first-year college students in this country.

2. Determine whether the numerical value is a parameter or a statistics (and explain):

- d) A survey of 1103 students were taken from the university with 19,500 students.
- e) The 2006 team payroll of the New York Mets was \$101,084,963.
- f) In a recent study of physics majors at the university, 15 students were double majoring in math.

3. Identify whether the statement describes inferential statistics or descriptive statistics:

- a) Based on previous clients, a marriage counselor concludes that the majority of marriages that begin with cohabitation before marriage will result in divorce.
- b) 78% of electricity used in France is derived from nuclear power.

4. Determine whether the data are qualitative or quantitative:

- a) the social security numbers of the employees in the law firm
- b) the zip codes of a sample of 270 customers at a local grocery store
- c) the number of complaint letter received by the USPS in a given month

5. Identify the data set's level of measurement (nominal, ordinal, interval, ratio):

- p) numbers of touchdowns scored by a major university in five randomly selected games : 1 2 5 1 2
- q) the average daily temperatures (in degrees Fahrenheit) on seven randomly selected days
- r) manuscripts rated as "acceptable" or "unacceptable"
- s) the lengths (in minutes) of the top ten movies with respect to ticket sales in 2007
- t) the size-class for a sample of automobiles:  
subcompact   compact   midsize   large   compact   large
- u) the four departments of a car dealership:  
sales   financing   parts and service   customer service
- g) the years of birth for students in this class

6. Decide which method of data collection you would use to collect data for the study (observational study, experiment, simulation, or survey):

- f) A study where a drug is given to 57 patients and placebo to another group of 57 patients to determine if the drug has an effect on a patient's illness.
- g) The ages of people living within 300 miles of your home
- h) The effect of stopping the cooling process of a nuclear reactor

7. Identify the sampling technique used (random, cluster, stratified, convenience, systematic):

- k) 32 sophomores, 35 juniors and 49 seniors are randomly selected from 230 sophomores, 280 juniors, 577 seniors at a certain high school.
- l) To ensure customer satisfaction, every 35<sup>th</sup> phone call received by customer service will be monitored.
- m) A journalist goes to a campground to ask people how they felt about air pollution.
- n) Calling randomly generated telephone numbers, a study asked 855 U.S. adults which medical conditions could be prevented by their diet.
- o) A pregnancy study in Chicago, randomly selected 25 communities from the metropolitan area, then interviewed all pregnant women in these communities.

8. Would sampling technique used in 7c) lead to a biased study? Explain why.

9. A report by the California Citrus Commission stated that cholesterol levels can be lowered by drinking at least one glass of a citrus product each day.

Determine whether the survey questions is biased and why.

## SOLUTIONS:

1. a) population: all Americans; sample: 1003 Americans surveyed;  
population parameter: percentage of all Americans who plan to cancel their vacation;  
sample statistic: percentage of those in the sample who plan to cancel their vacation  
b) population: all Adult Americans; 2435 selected adults  
population parameter: opinions of all American adults on public schools;  
sample statistics: opinions of those in the sample on public schools  
c) population: 1.6 million first-year college students; sample: 261,000 selected first-year college students; population parameters: attitudes of all first-year college students;  
sample statistics: attitudes of those in the sample (261,000 selected)
  2. a) statistics – only 1103 students were surveyed (not all students)  
b) parameter – the entire team payroll is included  
c) parameter – all physics majors were included in the study
  3. a) inferential    b) descriptive
  4. a) qualitative    b) qualitative    c) quantitative
  5. a) ratio    b) interval    c) ordinal    d) ratio    e) ordinal    f) nominal    g) interval
  6. a) experiment    b) survey    c) simulation
  7. a) stratified    b) systematic    c) convenience    d) random    e) cluster
  8. Yes – most likely people who go camping do not approve of air pollution.
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9. Yes – a report sponsored by the citrus industry is much more likely to reach conclusions favorable to the industry.