LESSON PRACTICE 4-1 & 4-2

1. A large retailer prepares its customers’ monthly credit card bills using an automatic machine that folds the bills, stuffs them into envelopes, and seals the envelopes for mailing. Are the envelopes completely sealed? Inspectors choose 40 envelopes from the 1000 stuffed each hour for visual inspection. Identify the population and the sample.

Population: 1000 envelopes stuffed

Sample: 40 envelopes selected

2. A high school’s student newspaper plans to survey local businesses about the importance of students as customers. From telephone book listings, the newspaper staff chooses 150 businesses at random. Of these, 73 return the questionnaire mailed by the staff. Identify the population and the sample.

Population: All local businesses

Sample: 73 businesses that returned the questionnaire

3. A department store mails a customer satisfaction survey to people who make credit card purchases at the store. This month, 45,000 people made credit card purchases. Surveys are mailed to 1000 of these people, chosen at random, and 137 people return the survey form. Identify the population and the sample.

Population: all 45,000 people who made credit card purchases

Sample: 137 people who returned the survey

4. A newspaper advertisement for an upcoming TV show said: “Should handgun control be tougher? You call the shots in a special call-in poll tonight. If yes, call 1-900-720-6181. If no, call 1-900-720-6182. Charge is 50 cents for the first minute.” Explain why this opinion poll is almost certainly biased.

Voluntary response - people with strong opinions will play to call in.

Another bias would be only people who read the newspaper would know about it.
LESSON PRACTICE 4-1 & 4-2

5. How much sleep do high school students get on a typical school night? An interested student designed a survey to find out. To make data collection easier, the student surveyed the first 100 students to arrive at school on a particular morning. These students reported an average of 7.2 hours of sleep on the previous night.

(a) What type of sample did the student obtain?

Convenience sample - easiest to survey the first 100 to walk in.

(b) Explain why this sampling method is biased. Is 7.2 hours probably higher or lower than the true average amount of sleep last night for all students at the school? Why?

Various answers

The first 100 to come to school could have got the least amount of sleep. 7.2 would probably be lower than the true average by truly were the first group of students to get to school.

6. You want to ask a sample of high school students the question “How much do you trust information about health that you find on the Internet—a great deal, somewhat, not much, or not at all?” You try out this and other questions on a pilot group of 5 students chosen from your class. The class members are listed below.

Anderson # Deng # Glaus # Nguyen # Samuels
Arroyo # De Ramos # Helling # Palmiero # Shen
Batista # Drasin # Husain # Percival # Tse
Bell # Eckstein # Johnson # Prince # Velasco
Burke # Fernandez # Kim # Puri # Wallace
Cabrera # Fullmer # Molina # Richards # Washburn
Calloway # Gandhi # Morgan # Rider # Zabidi
Delluci # Garcia # Murphy # Rodriguez # Zhao

Use line 107 to select a simple random sample of 5 students. Show how you use each of the digits.

20, 11, 38, 31, 07