Assignment

Write

Match each definition to the corresponding term.

1. the facts or numbers gathered by a survey
2. the characteristic used to describe a sample
3. the collection of data from every member of a population
4. a method of collecting information about a certain group of people by asking a question or set of questions
5. a sample that is selected from the population in a such a way that every member of the population has the same chance of being selected
6. the characteristic used to describe a population
7. the entire set of items from which data can be selected
8. the data collected from part of a population

a. census
b. data
c. parameter
d. population
e. sample
f. statistic
g. survey
h. random sample

Remember

Statistics obtained from data collected through a random sample are more likely to be representative of the population than those statistics obtained from data collected through non-random samples.

Practice

1. Explain which sampling method is more representative of the population.
   a. Katie and Cole live in Springfield, RI, and are interested in the average number of skateboarders who use their town's Smooth Skate Park in one week. Katie recorded the number of skateboarders who used the park in June. Cole recorded the number of skateboarders who used the park in January.
   b. Fiona and Rachel want to determine the most popular lunch choice in the school cafeteria among seventh graders. They decide to collect data from a sample of seventh graders at school. Fiona surveys twenty seventh graders that are in line at the cafeteria. Rachel surveys twenty seventh graders whose student ID numbers end in 9.
2. The coach of the soccer team is asked to select 5 students to represent the team in the Homecoming Parade. The coach decides to randomly select the 5 students out of the 38 members of the team.
   a. What is the population for this problem?
   b. What is the sample for this problem?
   c. Suggest a method for selecting the random sample of 5 students.

3. Consider the population of integers from 8 to 48.

a. Select a sample of 6 numbers. Is this a random sample? Explain your reasoning.

b. How can you assign random numbers to select a sample using a random number table?

c. Use the random number table to choose 6 numbers from this population.

d. Use a different line of the random number table to choose 6 numbers from this population.

e. Compare the results from each sample. Do the results surprise you? Explain.

4. The manager of the Millcreek Mall wants to know the mean age of the people who shop at the mall and the stores in which they typically shop. Dennis has been put in charge of collecting data for the Millcreek Mall. He decides to interview 100 people one Saturday because it is the mall's busiest shopping day.

a. What is the population for this situation?

b. What is the sample?

c. When Dennis calculates the mean age of the people who shop at the mall, will he be calculating a parameter or a statistic? Explain your reasoning.

d. Describe three different ways Dennis can take a sample. Describe how any of these three possible samples may cause the results of Dennis's survey to inaccurately reflect the average age of shoppers at the mall.

e. Dennis decides to use a random number table to choose the next 10 people to interview. Explain how to choose 10 two-digit numbers between 1 and 80 from a random number table.

f. Record the numbers of the people who would be interviewed. Be sure to specify which line you used to generate your list.

g. Suppose Dennis uses a random number table to generate his sample, resulting in Dennis interviewing 10 people who all go into the gaming store. Does this mean the sample is not random? Explain.

Stretch

Variations of random samples are often preferred to truly random samples. Two variations are called **stratified random samples** and **systematic random samples**. Research each type of random sampling. Define each type of sample and give an example, perhaps from the lesson, of when each might provide a more representative sample than a truly random sample.

Review

1. A soccer player makes 4 out of every 5 penalty shots she attempts.
   a. What might be a good model for simulating the number of shots the soccer player makes in when attempting 4 penalty shots?
   b. Describe how you would assign outcomes and then describe one trial of the simulation.
   c. Conduct 20 trials of the simulation and record your results in a table.
   d. According to your simulation, what is the probability that the soccer player makes exactly 3 out of the next 4 penalty shots?

2. Mike spins two spinners. The first spinner is divided into 4 equal sections and each is labeled with a perfect square (4, 9, 16, 25). The second spinner is divided into 5 equal sections and each is labeled with an even number (2, 4, 6, 8, 10).
   a. Create an array to illustrate the possible products of the result of spinning both spinners.
   b. What is the probability that the product is a perfect square?
   c. What is the probability that the product is a perfect cube?
   d. What is the probability that the product is a multiple of 10?

3. Solve each equation for the unknown.
   a. $7 - 2(3t + 9) = -47$
   b. $-2.5 = \dfrac{(5.5h - 7)}{1.5 + 4}$