Unit 8, Lesson 8

Larger Populations

Let's compare larger groups.

8.1 How Many Letters?

Consider the question: In general, do the students at this school have more letters in their preferred name or last name? How many more letters?

1. How many letters are in the name you prefer to be called? How many letters are in your last name?

2. Do the number of letters in your names give you enough information to figure out what is typical for students' names at your school? Explain your reasoning.

3. What might it take to figure out the typical lengths of names for all the students at your school?

8.2 John Jacobjingleheimerschmidt

Consider the question: In general, do the students at this school have more letters in their preferred name or last name? How many more letters?

1. Your teacher will provide you with data from the class. Record the mean number of letters as well as the mean absolute deviation for each data set.

   a. the preferred names of the students in your class

   b. the last names of the students in your class.

2. Which mean is larger? By how much? What does this difference tell you about the situation?

3. Do the mean numbers of letters in the preferred names and last names for everyone in your class give you enough information to make conclusions about students' names in your entire school? Explain your reasoning.

8.3 Stop Signs

Consider the question: Do people who ride to school (in a car or bus or train) see more stop signs than people who walk or bike?

1. How would you gather data to answer the question?

2. What might cause some difficulty in collecting data?

3. What are some examples of groups that you could actually use to collect data from that might help answer the question?

4. If someone else in the class came back tomorrow with an answer that was different than yours, what would that mean? How would you determine which answer was better?

8.4 Sampling the Population

For each question, identify the **population** and a possible **sample**.

1. What is the mean number of pages for books that were on the best-seller list in the 1990s?

2. What fraction of new cars sold between August 2010 and October 2016 were built in the United States?

3. What is the median income for teachers in North America?

4. What is the average lifespan of Tasmanian devils?

Are you ready for more?

Political parties often use samples to poll people about important issues. One common method is to call people and ask their opinions. In most places, though, they are not allowed to call cell phones. Explain how this restriction might lead to inaccurate samples of the population.

Lesson 8 Summary

A **population** is a set of people or things that is studied. For example, if we want to know how many apples grow on a typical orchard tree, the population might be all apple trees grown in orchards.

A **sample** is a part of a population. Using the apple tree example, a sample might be 100 randomly selected apple trees grown in orchards in the United States.

When we want to know more about a population but it is not easy to collect data from the entire population, we often collect data from a sample. It might cost too much time, money, or effort to count the number of apples on trees in all of the orchards around the world, but using a sample to count a few trees might give a good idea of what is typical for the entire population.