NAME DATE PERIOD

Unit 8, Lesson 12: Larger Populations

Let's compare larger groups.

12.1: First Name versus Last Name

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

1. What are some ways you might get some data to answer the question?

2. The other day, we compared the heights of people on different teams and the lengths of songs on different albums. What makes this question about first and last names harder to answer than those questions?

12.2: John Jacobjingleheimerschmidt

Continue to consider the question from the warm-up: In general, do the students at this school have more letters in their first name or last name? How many more letters?

1. How many letters are in your first name? In your last name?

2. Do the number of letters in your own first and last names give you enough information to make conclusions about students' names in your entire school? Explain your reasoning.

NAME DATE PERIOD

3. 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 first names of the students in your class.

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

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

5. Do the mean numbers of letters in the first 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.

12.3: Siblings and Pets

Consider the question: Do people who are the only child *have more pets*?

1. Earlier, we used information about the people in your class to answer a question about the entire school. Would surveying only the people in your class give you enough information to answer this new question? Explain your reasoning.

2. If you had to have an answer to this question by the end of class today, how would you gather data to answer the question?

NAME DATE PERIOD

3. If you could come back tomorrow with your answer to this question, how would you gather data to 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?

12.4: Sampling the Population

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

1. What is the mean number of pages for novels 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?

NAME DATE PERIOD

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 12 Summary

A **population** is a set of people or things that we want to study. Here are some examples of populations:

- All people in the world
- All seventh graders at a school
- All apples grown in the U.S.

A **sample** is a subset of a population. Here are some examples of samples from the listed populations:

- The leaders of each country
- The seventh graders who are in band
- The apples in the school cafeteria

When we want to know more about a population but it is not feasible to collect data from everyone in the population, we often collect data from a sample. In the lessons that follow, we will learn more about how to pick a sample that can help answer questions about the entire population.

Lesson 12 Glossary Terms

- population
- sample

NAME DATE PERIOD

Unit 8, Lesson 12: Larger Populations

1. Suppose you are interested in learning about how much time seventh grade students at your school spend outdoors on a typical school day.

   Select **all** the samples that are a part of the population you are interested in.

   A. The 20 students in a seventh grade math class.
   B. The first 20 students to arrive at school on a particular day.
   C. The seventh grade students participating in a science fair put on by the four middle schools in a school district.
   D. The 10 seventh graders on the school soccer team.
   E. The students on the school debate team.

2. For each sample given, list two possible populations they could belong to.

   a. Sample: The prices for apples at two stores near your house.

   b. Sample: The days of the week the students in your math class ordered food during the past week.

   c. Sample: The daily high temperatures for the capital cities of all 50 U.S. states over the past year.

3. A school's art club holds a bake sale on Fridays to raise money for art supplies. Here are the number of cookies they sold each week in the fall and in the spring:

fall	20	26	25	24	29	20	19	19	24	24
spring	19	27	29	21	25	22	26	21	25	25

NAME DATE PERIOD

a. Find the mean number of cookies sold in the fall and in the spring.

b. The MAD for the fall data is 2.8 cookies. The MAD for the spring data is 2.6 cookies. Express the difference in means as a multiple of the larger MAD.

c. Based on this data, do you think that sales were generally higher in the spring than in the fall?

(from Unit 8, Lesson 11)

4. If 6 coins are flipped, find the probability that there is at least 1 heads.

(from Unit 8, Lesson 9)

5. A school is selling candles for a fundraiser. They keep 40% of the total sales as their commission, and they pay the rest to the candle company.

price of candle	number of candles sold
small candle: $11	68
medium candle: $18	45
large candle: $25	21

How much money must the school pay to the candle company?

(from Unit 4, Lesson 11)