Name _____ Date _____ Class _____

SECTION 7B

Ready to Go On? Skills Intervention

7-6 Population and Samples

A **population** is an entire group of objects or individuals that is considered for a survey. A **sample** is a part of a population. In a **random sample**, each member of the population has an equal chance of being selected.

Vocabulary
population
sample
random sample

Deciding When to Use a Sample

For each situation, explain whether it makes sense to use a sample.

A. You want to know how far from school members of the Spanish Club live.

What is the population? _____

Is it possible to survey every member of the population? _____

Does it make sense to use a sample? _____

B. An Internet company that rents DVDs wants to determine how many movies middle-school students in the U.S. watch on average each month.

What is the population? _____

Is it possible to question every member of the population? _____

Does it make sense to use a sample? _____

Comparing Samples

About 29% of all households in the United States have two televisions. Luanda surveys a random sample of households from two cities. Compare the samples with the national percent.

Televisions in Home		
Sample	**2 TVs**	**0, 1, or more than 2 TVs**
City A	2	23
City B	7	18

City A: $\frac{\text{number of households with 2 TVs}}{\text{total number of households}} = \frac{2}{(2 + 23)}$ Write a fraction.

$= \frac{\quad}{\quad}$ Simplify the fraction.

$=$ _____ Write as a percent.

City B: $\frac{\text{number of households with 2 TVs}}{\text{total number of households}} = \frac{7}{(\quad)}$ Write a fraction.

$= \frac{\quad}{\quad}$ Simplify the fraction.

$=$ _____ Write as a percent.

According to the data, the number of televisions per household in which city is close to the national percentage? _____

Name _____ Date _____ Class _____

SECTION 7B

Ready to Go On? Problem Solving Intervention

7-6 Population and Samples

A psychologist wants to estimate the number of U.S. adults over the age of 80 who have Alzheimer's disease. In a random sample of 1,000 adults over 80, 550 of them were diagnosed with the disease. There are approximately 5 million people in the U.S. who are older than 80. Based on the results of the survey, about how many people over 80 in the United States have Alzheimer's disease?

Understand the Problem

1. What are you asked to find?

_____

_____

2. How many people over 80 are there in the United States? _____

Make a Plan

3. How many people are in the sample? _____

4. How many people in the sample were diagnosed with Alzheimer's disease? _____

5. Write a proportion. Let x represent the number of people over 80 who have Alzheimer's disease.

$$\frac{\text{people with disease in sample}}{\text{size of sample}} = \frac{\text{people with disease in population}}{\text{size of population}}$$

$$\frac{550}{\_\_\_\_} = \frac{x}{\_\_\_\_}$$ Find the sample size and population size.

Solve

6. To find the number of people over 80 years old with Alzheimer's disease, solve the proportion.

$\frac{550}{1{,}000} = \frac{x}{5{,}000{,}000}$ Write the proportion.

550 • _____ = _____ • x The cross products are equal.

_____ = x Solve for x.

7. About how many people in the United States over the age of 80 have Alzheimer's disease? _____

Check

8. Make sure your answer is reasonable. Is your answer less than 5 million? _____

9. Is your answer greater than $\frac{1}{2}$ of 5 million? _____