CHAPTER 8 Analyzing Data

What You've Learned

- In Chapter 2, you used inverse operations to solve one-step equations.
- In Chapter 4, you used cross products to solve proportions.
- In Chapter 5, you used equations and proportions to solve problems involving percents.

Check Your Readiness

Solving One-Step Equations

Algebra **Solve each equation.**

1. $x + 13 = 28$
2. $n - 3.8 = 8.7$
3. $1.2c = 24$
4. $\frac{s}{4.5} = 10$

Solving Proportions

Algebra **Solve each proportion.**

5. $\frac{3}{4} = \frac{a}{24}$
6. $\frac{2}{b} = \frac{3}{21}$
7. $\frac{n}{52} = \frac{17}{13}$
8. $\frac{12}{5} = \frac{a}{45}$
9. $\frac{5}{12} = \frac{x}{84}$
10. $\frac{r}{16} = \frac{6}{24}$
11. $\frac{12}{m} = \frac{8}{10}$
12. $\frac{5}{7} = \frac{80}{t}$

Finding a Percent

Use an equation to find the percent.

13. What percent of 20 is 8?
14. 9 is what percent of 30?
15. What percent of 150 is 36?
16. 60 is what percent of 480?

8-1 Random Samples and Surveys

CONTENT STANDARDS
7.SP.1

What You'll Learn

To identify a random sample and to write a survey question

New Vocabulary population, sample, random sample, biased question

Why Learn This?

You can use a survey to gather information from a group of people. Pollsters use surveys to understand group preferences.

A **population** is a group of objects or people. You can gain information about a population by surveying a **sample**, or a part of the population.

In a **random sample**, each member of the population has the same chance of being selected. Random sampling tends to produce samples that are representative of the entire population. Generalizations based on representative samples are more likely to be correct.

EXAMPLE 1 Identifying a Random Sample

You survey customers at a mall. You want to know which stores they shop at the most. Which sample is more likely to be random? Explain.

a. You survey shoppers in a computer store.

Customers that shop in a particular store may not represent all the shoppers in the entire mall. This sample is not random.

b. You walk around the mall and survey shoppers.

By walking around, you give everyone in the mall the same chance to be surveyed. This sample is more likely to be random.

1 EXAMPLE Suppose you survey students in your school about their snacking habits. Would you get a random sample if you questioned different English classes? Explain.

Almost every student in the school is probably taking at least one English class.

This sample is likely to be random.

Quick Check table talk about these

1. You survey a store's customers. You ask why they chose the store. Which sample is more likely to be random? Explain.
   a. You survey 20 people at the entrance from 5:00 P.M. to 8:00 P.M.

   b. You survey 20 people outside the entrance throughout the day.

When you conduct a survey, ask questions that do not influence the answer. A **biased question** is a question that makes an unjustified assumption or makes some answers appear better than others.

Vocabulary Tip

Bias means "slant." A biased question slants the answers in one direction.

EXAMPLE 2 Identifying Biased Questions

Music Is each question *biased* or *fair?* Explain.

a. "Do you think that soothing classical music is more pleasing than the loud, obnoxious pop music that teenagers listen to?"

This question is biased against pop music. It implies that all pop music is loud and that only teenagers listen to it. The adjectives "soothing" and "obnoxious" may also influence responses.

b. "Which do you think is the most common age group of people who like pop music?"

This question is fair. It does not assume that listeners of pop music fall into only one age group.

c. "Do you prefer classical music or pop music?"

This question is fair. It does not make any assumptions about classical music, pop music, or people.

2 EXAMPLE Is each question *biased* or *fair*? Explain.

a. Which is a brighter color, pink or green?

This question is *fair*.

The choices are presented equally.

b. Is an electric pink shirt brighter than a green shirt?

This question is *biased*.

It implies that pink is brighter,
thus influencing the responses.

Quick Check

Table talk about these

2. Is each question *biased* or *fair*? Explain.

a. Do you prefer greasy meat or healthy vegetables on your pizza?

b. Which pizza topping do you like best?

Check Your Understanding

Vocabulary **Match each description with the appropriate term.**

1. a group of objects or people
2. makes some answers appear better
3. gives members of a group the same chance to be selected

A. biased question
B. random sample
C. population

You want to determine the favorite spectator sport of seventh-graders at your school. You ask the first 20 seventh-graders who arrive at a soccer game, "Is soccer your favorite sport to watch?"

4. What was the population of your survey? What was the sample?
5. The survey (was, was not) random.
6. You used a (biased, fair) question.

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8-1 • Guided Problem Solving

GPS **Student Page 285, Exercise 19:**

Parks Suppose you are gathering information about visitors to Yosemite National Park. You survey every tenth person entering the park. Would you get a random sample of visitors? Explain.

Understand

1. What is a random sample?

_____

_____

2. What are you being asked to do?

_____

_____

Plan and Carry Out

3. What is the population you are surveying?

_____

4. Does every person in the population have an equal chance of being surveyed? _____

5. Is this a random sample? Why or why not? _____

_____

Check

6. How else could you randomly survey the people at Yosemite National Park?

_____

_____

Solve Another Problem

7. You want to survey the people at the local pool about the food served in the snack shack. You decide to walk around the kiddy pool and survey parents. Is this a random sample? Why or why not?

_____

_____

_____