

Study Guide and Intervention

6SDAP2.2, 6SDAP2.5

Using Data to Predict

Data gathered by surveying a random sample of the population may be used to make predictions about the entire population.

Example 1 In a survey, 200 people from a town were asked if they thought the town needed more bicycle paths. The results are shown in the table. Predict how many of the 28,000 people in the town think more bicycle paths are needed.

More Bicycle Paths Needed?	
Response	Percent
yes	39%
no	42%
undecided	19%

Use the percent proportion.

$$\begin{array}{l} \text{part of the population} \quad \longrightarrow \quad \frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100} \quad \text{Percent proportion} \\ \longrightarrow \quad \frac{n}{28,000} = \frac{39}{100} \quad \text{Let } n \text{ represent the number.} \\ \text{Whole population} \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \text{Survey results: } 39\% = \frac{39}{100} \\ 100n = 38,000(39) \quad \text{Cross products} \\ n = 10,920 \quad \text{Simplify.} \end{array}$$

So, about 10,920 people in the town think more bicycle paths are needed.

Exercises

- VOTES** In a survey of voters in Binghamton, 55% of those surveyed said they would vote for Armas for city council. If 24,000 people vote in the election, about how many will vote for Armas? **13,200 people**
- LUNCH** A survey shows that 43% of high school and middle school students buy school lunches. If a school district has 2,900 high school and middle school students, about how many buy school lunches? **1,247 students**
- CLASS TRIP** Students of a seventh grade class were surveyed to find out how much they would be willing to pay to go on a class trip. 24% of the students surveyed said they would pay \$21 to \$30. If there are 360 students in the seventh grade class, about how many would be willing to pay for a trip that cost \$21 to \$30? **about 86 students**

Study Guide and Intervention

Using Sampling to Predict

6SDAP2.1, 6SDAP2.2,
6SDAP2.5

In an **unbiased sample** the whole population is represented. In a **biased sample** one or more parts of the population are favored over the others.

Example 1

Look at the following table to determine the favorite sport of middle school students.

Favorite Sports of Middle School Students			
Basketball	Baseball	Football	Soccer
10	5	17	52

Based on the table, it would appear that soccer is the favorite sport of middle school students. However, suppose the data collected for this survey was taken at a World Cup soccer match. It can then be concluded that our sample is **biased** because students who are at a soccer match may be more likely to choose soccer as their favorite sport.

To receive an **unbiased** sample of middle school students, the sports survey could be completed at randomly selected middle schools throughout the country.

Exercises

Determine whether the given situations represent a *biased* or *unbiased* sample. Then tell the type of sample.

1. Writers of a popular teen magazine want to write a story about which movies their readers like. The writers decide to interview the first 50 people that walk out of a movie theater.
Biased; convenience sample
2. The student council wanted to raise money for their school by selling homemade cookies during lunch time. To find out the favorite kind of cookie for the majority of their school, they conducted a survey. They gave the survey to 20 randomly selected students from each grade level.
Unbiased; stratified random sample
3. To determine the most frequently used gas station, a researcher randomly selected every 10th person from a drive-through fast food restaurant and asked them where they last filled up with gas.
Unbiased; systematic random sample