

**11-3**

# Study Guide and Intervention

## Making Predictions

A survey is a method of collecting information. The group being surveyed is the **population**. To save time and money, part of the group, called a **sample**, is surveyed.

A good sample is:

- selected at **random**, or without preference,
- representative of the population, and
- large enough to provide accurate data.

**EXAMPLE 1** Every sixth student who walked into the school was asked how he or she got to school. Determine whether the sample is a good sample.

This sample is good because it is random (every sixth student), representative of the population (students coming to school), and large enough to provide accurate information.

### EXAMPLES

**2** Using the information from Example 1, what is the probability that a student at the school rode a bike to school?

School Transportation	
Method	Students
walk	10
ride bike	10
ride bus	15
get ride	5

$$P(\text{ride bike}) = \frac{\text{number of students that rode a bike}}{\text{number of students surveyed}}$$

$$= \frac{10}{40} \text{ or } \frac{1}{4} \text{ So, } P(\text{ride bike}) = \frac{1}{4}, 0.25, \text{ or } 25\%.$$

**3** There are 360 students at the school. Predict how many bike to school.

Write a proportion. Let  $s$  = number of students who will ride a bike.

$$\frac{10}{40} = \frac{s}{360}$$

You can solve the proportion to find that of the 360 students, 90 will ride a bike to school.

### EXERCISES

Determine whether the following sample is a good sample. Explain.

1. 300 people at the opera were surveyed to find their favorite type of music.

**SCHOOL** Use the following information and the table shown. Every tenth student entering the school was asked which one of the four subjects was his or her favorite.

2. Find the probability that any student attending school prefers science.

Favorite Subject	
Subject	Students
Language Arts	10
Math	10
Science	15
Social Studies	5

3. There are 400 students at the school. Predict how many students would prefer science.

**Practice: Word Problems****Making Predictions**

**MOVIES** For Exercises 1–3, use the table of results of Jeremy’s survey of favorite kinds of movies.

Favorite Movie Type	
Type	People
Drama	12
Foreign	3
Comedy	20
Action	15

**SLEEP** For Exercises 4–7, use the table of results of the Better Sleep Council’s survey of Americans to find the most important factors for good sleep.

Most Important Factors for Good Sleep	
Good Mattress	32
Daily Exercise	20
Good Pillows	8
Healthy Diet	11
Other Factors	29

1. <b>MOVIES</b> How many people did Jeremy use for his sample?	2. If Jeremy were to ask any person to name his or her favorite type of movie, what is the probability that it would be comedy?
3. If Jeremy were to survey 250 people, how many would you predict would name comedy?	4. <b>SLEEP</b> Predict how many people out of 400 would say that a good mattress is the most important factor.
5. What is the probability that any person chosen at random would not say that a healthy diet is the most important factor?	6. Suppose 250 people were chosen at random. Predict the number of people that would say good pillows are the most important factor.
7. What is the probability that any person chosen at random would say that daily exercise is the most important factor for a good night sleep?	8. <b>ICE CREAM</b> Claudia went to an ice cream shop to conduct a survey. She asked every tenth person who entered the shop to name his or her favorite dessert. Did Claudia select a good sample? Explain.