

# Reteach

## Unbiased and Biased Samples

Data gathered from a representative sample can be used to make predictions about a population. An **unbiased sample** is selected so that it is representative of the entire population. In a **biased sample**, one or more parts of the population are favored over others.

### Examples

**Determine whether each sample is valid. Justify your answer.**

- 1. To determine the favorite dog breed of people who enter dog shows, every fifth person entering a dog show is surveyed.**

Since the people are selected according to a specific pattern, the sample is a systematic random sample. It is a valid unbiased sample.

- 2. To determine what type of pet people prefer, the spectators at a dog show are surveyed.**

The spectators at a dog show probably prefer dogs. This is a biased sample that is not valid. The sample is a convenience sample since the people surveyed are in one location.

### Examples

**COOKIES** Students in the eighth grade surveyed 50 students at random about their favorite cookies. The results are in the table at the right.

Flavor	Number
Oatmeal	15
Peanut butter	11
Chocolate chip	16
Sugar	8

- 3. What percent of students prefer chocolate chip cookies?**

16 out of 50 students prefer chocolate chip cookies.

$$16 \div 50 = 0.32 \quad 32\% \text{ of the students prefer chocolate chip cookies.}$$

- 4. If the students order 500 boxes of cookie dough, how many boxes should be chocolate chip?**

Find 32% of 500.

$$0.32 \times 500 = 160 \quad \text{About 160 boxes of cookie dough should be chocolate chip.}$$

### Exercises

**Determine whether each sample is valid. Justify your answer.**

- 1. To determine if the tomatoes in 5 boxes stacked on a pallet are not spoiled, the restaurant manager checks 3 tomatoes from the top box.**

**A random survey of the students in eighth grade shows that 7 prefer hamburgers, 5 prefer chicken, and 3 prefer hot dogs.**

- 2. Is the sample valid? What percent prefer hot dogs?**

- 3. If 120 students will attend the eighth grade picnic, how many hot dogs should be ordered for each student to get one?**