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13-1

Sampling and Bias (Pages 708–713)

In order to estimate some characteristic within a large group, or **population**, a smaller group that is a subset of the population, known as a **sample**, is often used. Samples can be random or biased. A **random sample** of a population is selected with the goal of finding a representation of the entire population without any preference.

| Types of Random Samples | | | | | | |
|--------------------------|--|--|--|--|--|--|
| Simple Random Sample | A sample that is as likely to be chosen as any other sample from the population | | | | | |
| Stratified Random Sample | The population is divided into similar, nonoverlapping groups. Then a simple sample is chosen from each group. | | | | | |
| Systematic Random Sample | Each item is selected according to a specific time or unit interval. | | | | | |

In a **biased sample** of a population the sample is chosen with some favoritism.

| Types of Biased Samples | | | | |
|---------------------------|--|--|--|--|
| Convenience Sample | Any sample that consists of population items that are easily accessed. | | | |
| Voluntary Response Sample | A sample which includes only willing participants. | | | |

Example

On an assembly line, every 100th hinge is removed and inspected. Identify the sample and suggest a population from which the sample was selected, then classify the sample.

sample- The sample is every 100th hinge.

population- The population consists of every hinge on the assembly line.

classification- This is a systematic random sample.

Practice

Classify each sample.

- 1. The school newspaper asks the students to write letters stating their preferred candidate for student council president.
- **2.** The name of every 7th grade student is placed in one hat and the name of every 8th grade student is placed in another hat, then 5 names are drawn from each hat.
- **3.** A math teacher selects every 5th person in class to complete a problem on the board.
- **4.** Shannon wants to find out which music group is the most liked by students in her school. As a sample, she asks the 10 girls on her basketball team.
- **5.** Standardized Test Practice The name of every employee at a company is placed in one bin. Fifteen names are drawn for a prize. Classify this sample.
 - A Simple Random

B Stratified Random

C Convenience

D Voluntary Response

| 9. ∀ | 4. Convenience | 3. Systematic Random | 2. Stratified Random | Answers: 1. Voluntary Response |
|------|----------------|----------------------|----------------------|--------------------------------|
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