



**James Madison**  
HIGH SCHOOL

# Samples and Surveys



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*Learn* to recognize biased samples and to identify sampling methods.



# Vocabulary

population

sample

biased sample

random sample

systematic sample

stratified sample

A fitness magazine printed a readers' survey. Statements 1, 2, and 3 are interpretations. Which do you think the magazine would use?

- 1. The average American exercises 3 time a week.**
- 2. The average reader of this magazine exercises 3 time a week.**
- 3. The average reader who responded to the survey exercises 3 time a week.**

The **population** is the entire group being studied. The **sample** is the part of the population being surveyed.

- 1. The average American exercises 3 time a week.**
- 2. The average reader of this magazine exercises 3 time a week.**
- 3. The average reader who responded to the survey exercises 3 time a week.**

For statement 1, the population is all Americans and the sample is readers of the fitness magazine who chose to respond. This is a biased sample because it is not a good representation of the population

- 1. The average American exercises 3 time a week.**
- 2. The average reader of this magazine exercises 3 time a week.**
- 3. The average reader who responded to the survey exercises 3 time a week.**



## **Additional Example 1A: Identifying Biased Samples**

**Identify the population and the sample. Give a reason why the sample could be biased.**

**A. A record store manager asks customers who make a purchase how many hours of music they listen to each day.**

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
Music store customers	Customers who make a purchase	Customers who make a purchase might be more interested in music than others in the store



## **Additional Example 1B: Identifying Biased Samples**

**Identify the population and the sample. Give a reason why the sample could be biased.**

**B. An eighth-grade student council member polls classmates about a new school mascot.**

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
Students in the school	Classmates	She polls more eighth-graders than students in other grades.



## **Additional Example 1C: Identifying Biased Samples**

**Identify the population and the sample. Give a reason why the sample could be biased.**

**C. A television reporter asks people on downtown streets if they support a new city subway system.**

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
People in the city	People on downtown streets	People working downtown might show more support than people who work elsewhere.



## Try This: Example 1A

**Identify the population and the sample. Give a reason why the sample could be biased.**

**A. The first 5 people leaving a movie theater at a sneak preview were asked how they liked the movie.**

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
People that went to the movie	The first five people that left	People that really enjoy a movie are less likely to be one of the first ones to leave.



## Try This: Example 1B

**Identify the population and the sample. Give a reason why the sample could be biased.**

**B. Eighth-grade students with a 3.0 GPA or higher were polled to determine how long students study each day.**

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
Eighth grade students	Students with 3.0 or higher GPA	Students with lower grades are less likely to study as long.

## Try This: Example 1C

**Identify the population and the sample. Give a reason why the sample could be biased.**

**C. People attending a baseball game were asked if they support the construction of a new stadium in the city.**

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
City residents	People attending a game	People that attend a baseball game are more likely to support the construction of a new stadium.



<b>Sampling Method</b>	<b>How Members Are Chosen</b>
Random	By chance
Systematic	According to a rule or formula
Stratified	At random from randomly chosen subgroups

## Additional Example 2A: Identifying Sampling Methods

**Identify the sampling method used.**

**A. In a county survey, Democratic Party members whose names begin with the letter D are chosen.**

systematic

*The rule is to survey members whose names begin with D.*

## **Additional Example 2B: Identifying Sampling Methods**

**Identify the sampling method used.**

**B. A telephone company randomly chooses customers to survey about its service.**

random

*Customers are chosen by chance.*

## Additional Example 2C: Identifying Sampling Methods

**Identify the sampling method used.**

**C. A high school randomly chooses three classes from each grade and then draws three random names from each class to poll about lunch menus.**

stratified

*The three classes are the random subgroups. Names are chosen randomly from within the classes.*

**Try This: Example 2A**

**Identify the sampling method used.**

**A. In a county survey, families with 3 or more children are chosen.**

systematic

*The rule is to survey families with 3 or more children.*

**Try This: Example 2B**

**Identify the sampling method used.**

**B. A retail home improvement store randomly selects customers to take a survey about their shopping experience.**

random

*Customers are chosen by chance.*

**Try This: Example 2C**

**Identify the sampling method used.**

**C. At a basketball game 5 sections are chosen at random and 20 people from each section are randomly polled.**

stratified

*The five sections are the random subgroups. 20 people are chosen randomly from within the sections.*

## Lesson Quiz: Part 1

**Identify the population and sample. Give a reason why the sample could be biased.**

1. A high school principal asks the first three people who leave the school play whether they liked it.

<b>Population</b>	<b>Sample</b>	<b>Possible Bias</b>
People who attended the play	The first 3 people leaving	People that enjoy a play may not leave as early as someone who didn't.

## Identify the sampling method used.

2. At a baseball game, 10 sections are chosen at random and 10 random people from each section are polled. **stratified**
3. A telemarketer calls the people that have a last name beginning with *H*.  
**systematic**