



Warm-Up

Identify the potential problem: bias, use of language, ethics, culture, cost, time, timing, privacy

A. To determine people's reactions to a possible increase in minimum wage, a student asked: "Don't you agree minimum wage should be increased?"

Use of language
Bias

B. For a class project, a student needed to determine if college students were maintaining healthy weights. After the student completed the project, she gave a weight loss company the addresses of any overweight participants

i) problem? Ethic

ii) population? college students

6. Courtney surveys her friends and finds that 68% of them have an MP3 player. She reports that 68% of the grade 9 students have an MP3 player. James surveys the entire grade 9 population and discovers that 51% have an MP3 player.

a) Whose conclusion is more likely to be valid? Explain.

b) Why might the other student's conclusion not be valid?

- 6. a)** James; Courtney only surveyed a small sample.
b) Courtney's friends may not be representative of the grade 9 students.



7. For each situation, explain why data are collected from a sample and not a census.
- a) to determine the number of hours an AAA battery will last in a calculator
 - b) to determine the number of First Nations children in Canada who speak Cree



8. Should a census or sample be used to collect data about each topic? Explain your choice.
- a) the effectiveness of a new suntan lotion
 - b) the popularity of a fruit-flavoured yogurt
 - c) the number of grade 9 students in your school with braces *
 - d) the number of your friends who like to play computer games

- 7. a) Testing every AAA battery would mean they would all be destroyed—there would be none left to sell.
- b) It would be difficult to find every single First Nations child in Canada, requiring a lot of time and people.
- 8. a) Sample. It would be impossible to determine and contact everyone who used the suntan lotion. Testing the lotion in each bottle would leave none left to sell.
- b) Sample. It would be too time-consuming and costly to ask every person who tries the yogurt what he or she thinks.
- c) Sample. Even if your school is small, a sample will likely give a close estimate.
- d) Census. It is not difficult to ask each of your friends a single question.

9. In each case, do you think the conclusion is valid? Justify your answers.

- a) Irina surveyed 20 students to find out if they eat breakfast. All the students said yes. Irina concluded that everyone in the school eats breakfast.
- b) To test for pesticide pollution, a scientist collects and tests one vial of water from a river. From the results, a local newspaper reporter concludes that there are dangerous levels of pesticide in the river.

- 9. a) Invalid. A sample of 20 people is not large enough to be representative of all students in Irina's school.
- b) Invalid. Further testing should be done to make sure results are not related to timing or location.

Section 9.4 Selecting a Sample

- **Representative sample:** the chosen sample represents the population.

We are going to look at 6 sampling methods:

1. **Simple Random Sampling**-- each member of the population has an equal chance of being picked [Example: drawing a name from a hat]

2. **Systematic or interval sampling**--Every "nth" person of the population is selected

[Examples: testing products like chocolate, appliances]

3. **Cluster sampling**-- every member of each randomly selected group from a population is selected

[Example: favorite ice cream in school choose one grade and ask all students in that grade]

4. **Self-selected sampling**-- members of the population volunteer

[Example: choose to participate in a survey on line]

5. **Convenience sampling**-- members of the population who are convenient to include

[Example: For a survey about how many hours are spent at the rink during winter months, ask people who are at the rink]

6. **Stratified random sampling**--some members from each group of the population are randomly selected.

[Example: 5 students from each grade selected to answer a survey.]

The basketball team and soccer team are getting new jerseys. To see what color is preferred all of the players on the basketball team were asked the color they wanted.) What type of sample is this?



Population

Basketball & soccer team

←
all of them



2) Is it a representative sample?

What type of sampling is being used.

[simple random sampling, interval sampling, cluster sampling, stratified random sampling, convenience sampling, self-selected sampling]

A. A car factory subjects every 100th vehicle to a crash test.

systematic/interval



B. 6 students from each team [soccer, basketball, golf and volleyball] are selected to complete a survey.

Stratified random sample



C. A juice company sets up a booth in a local mall and allows anyone who wishes to participate in the taste test to try the juice.

self selected



D. 15 people from a youth group are chosen by drawing their name from a hat.

simple random



E. To determine who will win the Stanley cup a survey is conducted at a local hockey rink

Convenience



VS



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