

## Unit 9 Study Guide

Skill	Description	Example
Determine if a decision is based on theoretical probability, experimental probability, or subjective judgment.	Is the decision based on: – results of a survey or experiment, – theoretical probability, or – personal thoughts or feelings?	Brorwyn takes her umbrella to school today because, despite the sunny weather forecast, she is sure it is going to rain.  This is a decision based on subjective judgment.
Identify potential problems with data collection.	Consider: – timing – privacy – cultural sensitivity – cost – time – use of language	Martin surveys the students in his class to find out what costume they will wear for Halloween. He conducts the survey in March.  There are 2 potential problems: The survey is insensitive to those who do not celebrate Halloween. The timing of the survey is wrong. Halloween is in October.
Decide whether to use a census or survey to collect data.	When the population is large, it is often too costly or time consuming to survey the entire population (a census), so we collect data from a portion of the population (a sample).	To find out the favourite Olympic event of students in his class, Ali surveyed all of his classmates.  Ali conducted a census because the population (Ali's classmates) is not large.
Decide if a sample would provide valid conclusions.	Ask: – is the sample size appropriate? – does the sample represent the population?	To find out the favourite NHL hockey team of Canadians, Jocelyn surveyed all residents of Calgary.  Most residents of Calgary would choose the Calgary Flames. The sample does not represent all Canadians.
Identify which sampling method was used to collect data.	– simple random sampling – systematic sampling – cluster sampling – self-selected sampling – convenience sampling – stratified random sampling	Every 5th car entering the parking lot was stopped. (systematic sampling)  The names of all team members were put in a hat and 5 names were drawn. (simple random sampling)

## Unit 9 Review

**9.1** 1. Explain how this decision is based on theoretical probability, experimental probability, or subjective judgment.

Craig observed his hamster for a science project. His hamster ran on the wheel at 3:00 P.M. on each of the last four days. Craig predicts his hamster will run on the wheel at 3:00 P.M. on the fifth day.



Circle the statement that best describes how Craig made his prediction.

- Craig made his prediction based on the results of a survey or experiment.
- Craig made his prediction based on theoretical probability.
- Craig made his prediction based on his personal thoughts or feelings.

Explain your thinking.

---



---



---

**2.** What assumptions are being made?

The mayor won each of the last two elections. So, Carrie is sure the mayor will win the election this year.

Assumptions: - \_\_\_\_\_  
 - \_\_\_\_\_  
 \_\_\_\_\_

**9.2** 3. a) Identify a potential problem with this survey.

To find out how many students will need help completing their high school course-selection forms in February, the guidance department surveys all Grade 9 students in September.

- Is there a problem with cost? \_\_\_\_\_
- Is there a problem with timing? \_\_\_\_\_
- Is there a problem with privacy or cultural sensitivity? \_\_\_\_\_

Explain your thinking.

---



---

b) Describe how the problem could be avoided.

---



---

4. Explain why this survey might be problematic.

- a) A tourist attraction employs 500 students for the summer. They want to find out how much money students save from each pay cheque. They plan to survey each student as he or she is given the next pay cheque.

Is there a problem with time or cost? \_\_\_\_\_

Is there a problem with privacy? \_\_\_\_\_

Is there a problem with cultural sensitivity? \_\_\_\_\_

Explain. \_\_\_\_\_

- b) Describe how the problem could be avoided.

\_\_\_\_\_

\_\_\_\_\_

9.3 5. Should a sample or a census be used to collect the data?

- a) A car manufacturer is switching to a new battery provider.

The manufacturer wants to test the new batteries to make sure they are reliable in very cold weather.

Would it take a long time to test each battery? \_\_\_\_\_

Would it cost a lot of money to test each battery? \_\_\_\_\_

Should a sample or a census be used? \_\_\_\_\_

- b) The Canadian Standards Association wants to survey approximately 2000 people in Alberta who purchased a defective child car seat.

Would it take a long time to survey each person who purchased a defective car seat? \_\_\_\_\_

Could using a defective child car seat lead to a serious problem? \_\_\_\_\_

Is it important that each of the purchasers be notified? \_\_\_\_\_

Should a sample or a census be used? \_\_\_\_\_

6. A sample was used to collect these data. Do you think the conclusions would be valid? Explain.

To find out if a local swimming pool should extend its hours, all people who use the pool before noon on weekdays were surveyed.

Do you think most people who use the pool in the morning would care whether the pool was open later on a night? \_\_\_\_\_

Do you think the conclusions would be valid? \_\_\_\_\_

**9.4** 7. Identify the sampling method used for each survey.

- a) Ten students from each class are chosen to participate in a survey about the eating habits of teenagers.

---



---

- b) A market researcher wants to find out the favourite brand of sunglasses of beach goers. He surveys people who walk in front of his deck chair as he sits on the beach.

---



---



---

8. Identify a potential problem with this sampling method.

To find out whether more residents of Vancouver drive an American-made car or an import, every 5th person entering a Ford dealership was surveyed.

---



---



---



---

9. Which sampling method do you think is better? Why?

Martina wants to find out whether residents would like to see more parks built.

Method A: Survey all families with children under 10.

Method B: Randomly survey every 50th person in the local phone book.

Method A: Do families with young children often go to a park? \_\_\_\_

Who do you think is more likely to want more parks built: families with young children or people without children? \_\_\_\_\_

Do people with pets often use a park? \_\_\_\_

Is the sample representative of all residents? \_\_\_\_

Method B: Does each resident have an equal chance of being surveyed? \_\_\_\_

Is the sample representative of all residents? \_\_\_\_

Better method: \_\_\_\_\_