

Date: _____

2.1 Hypotheses and Sources of Data & 2.2 Sampling Principles

Key Concepts from 2.1

- A **hypothesis** is a statement that can be tested to determine if it is likely to be true
- **Primary data** is information collected by a researcher (ex/ conducting a survey)
- **Secondary data** is existing information that was collected by someone else (ex/ using Statistics Canada information)

You are often asked to state a hypothesis and its opposite. This means that you need to write a possible relationship between the variables given, and then write the opposite of it as your other prediction.

Example 1: State a hypothesis and its opposite about attendance at school and marks.

H - As your attendance increases, your marks increase.

O - As your attendance increases, your marks decrease.

Example 2: State a hypothesis and its opposite about the relationship between a driver's age and the risk of having an accident.

H - The younger you are the more likely you are to get into an accident.

O - The older you are the more likely you are to get into an accident.

***Keep in mind that there are multiple correct answers for these questions!**

You also must be able to identify data sources as primary or secondary. Remember that the researcher collects primary data themselves, whereas secondary data comes from another source.

Example 3: Identify each set of data as primary or secondary, and explain any advantages or disadvantages to that type of data.

a) Matt telephoned 100 families in LaSalle to ask them how many pets they have.

b) Audrey used a website with survey results to predict the spending habits of teenagers in Canada.



Key Concepts from 2.2

- A **population** is the entire group of people/items being studied. (ex/ students at Sandwich)
- A **sample** is any part of the population. (ex/ our class is part of the population of students at Sandwich, so we are a sample)
- A **census** is a survey of the ENTIRE population (ex/ ask every student)
- Using a **random sampling technique** like a survey ensures that all members of a population are equally likely to be selected to be part of a sample. This means that the results of a random sample should be representative of the whole population.

Random Sampling Techniques

- > A **simple random sample** is when a number of members of the population are chosen at random, with no real strategy.
- > A **systematic random sample** is when members of a population are selected on fixed intervals (ex/ every third name on a list, every fifth boy into the cafeteria, etc.)
- > A **stratified random sample** is when a population is divided into groups, and then a portion of each group is selected (ex/ ten students from each grade)

Example 1: Identify the population and an appropriate sample for a researcher to use for each of the following.

- a) A teacher wants to know how early his students wake up each day.
- b) A principal of a school with 2500 students wants to find out how early the students wake up every day.

Example 2: A principal of a school with 1600 students wants to know whether they favour introducing school uniforms. Describe how they could select

- a) a simple random sample of 200 students.
- b) a systematic random sample of 200 students.
- c) a stratified random sample of 200 students.

Sometimes researchers use **non-random sampling**, which means that they use a method to collect data that is not random (ex/ survey your friends only) and introduces **bias**. Bias means that the results of the data collection are not representative of the population as a whole.