

Chapter 2

Linear and Non-Linear Relations

2.1 Hypotheses and Sources of Data

Hypothesis: The Pittsburgh Penguins are the most popular sports franchise.



Discuss the validity of this hypothesis:

Not valid because there is no evidence (proof).

How could this hypothesis be verified?

Survey a variety of people from different towns.

What is a hypothesis?....

A **hypothesis** is a theory or statement that is either true or false

Practice making hypotheses about the relationship between each pair of variables :

1. The number of texts sent per day and the age of a person?

The older the person, the fewer texts sent.

2. How much a person likes the Penguins and their IQ?

The higher a person's IQ, the more they like the Penguins.

3. The size of an animal and its lifespan?

The bigger the size, the longer the lifespan.

Hypotheses and their opposites

Write a hypothesis about a relationship between the variables in each pair. Then, give the opposite hypothesis

4) A driver's age and the risk of having an accident

Hypothesis: As drivers age, their risk of having an accident increases.

Opposite: As drivers age, their risk of having an accident does not increase.

or

As drivers age, their risk of having an accident decreases or stays the same.

5) Homework completion and marks.

Hypothesis: Less homework completion results in lower test marks.

Opposite: Less homework completion does not result in lower test marks.

or

Less homework completion results in higher or the same test marks.

Sources of Data

Primary Data: Original data that a researcher gathers specifically for a particular experiment or survey

Secondary Data: Data that someone else has already gathered for some other purpose

Which of the following is a primary source of data:

6)

- a) an article in a magazine
- b) a database
- c) conducting an experiment to test the effectiveness of a new medication
- d) an entry from an online encyclopedia

Which of the following is a secondary source of data:

7)

- a) conducting a survey amongst your classmates
- b) conducting an experiment to study the effects of pollution
- c) data collected 100 years ago by the Canadian government
- d) counting the makes of cars in a mall parking lot

Explain whether each set of data is primary or secondary. What are the advantages and disadvantages of each person's choice of data source

- 8) Daniel phoned 100 families in his town to ask them how many pets they owned:

Primary data because Daniel performed the survey himself. The telephone survey is easy to do but time consuming.

- 9) Cathy used data from Statistics Canada to determine the proportion of households in Canada that have at least one car.

Cathy is using a secondary source since Statistics Canada gathered the survey data. Stats Canada is an excellent source because it collects data from a huge number of families all across Canada. Cathy could never gather that much data all by herself. Collecting secondary data is usually more time efficient than collecting primary data.

Complete Worksheet