Name: _____ Date: _____ Block: ___

Math 9 Mrs. van der Vossen

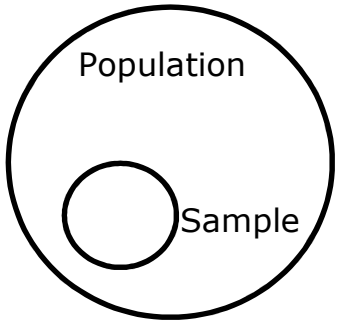
Statistics Notes #1

What is statistics?

The study of ***data***: how to _____, _____, and _____ it.

Population vs Sample

When a population is too _____, it is often necessary to collect a **representative** portion of the population – called a _____.



When collecting data, you should think about:

1. **Bias:** When the question influences responses in favour of, or against the topic of data collection.

   Ex. "Don't you think the school colours should be changed?" – There is already a bias towards changing the colours.

   Make an example of a bias question:

   _____

   _____

2. **Ethics:** The data collected must not be used for other reasons not stated.

   Ex. You survey the class to find out their favourite types of sandwich for the class party, but you then start selling those same sandwich types during lunch.

   Make an example of unethical behaviour when collecting data:

   _____

   _____

3. **Cultural Sensitivity:** The survey must not offend other cultures.

   Ex. A survey about what the Easter Bunny brought may offend those who do not celebrate Easter.

4. **Privacy**: People may not want to share their personal information.

   Example:

   _____

   _____

5. **Time:** The amount of time needed for the survey should be considered.

   Ex. Most students would not want a survey to take up their entire lunch.

6. **Cost:** The cost of collecting data should be considered.

   Ex. Mailing a survey to many people would be expensive.

What is the problem with each of the sampling methods described?

1. John wants to do a survey on 'bullying' in his school. He asked the class to raise their hands if they had been bullied before. No one raised their hand. John concluded that there wasn't any bullying happening in school.

   Problem:

2. Ralph wants to know which sport is most popular in Vancouver. He completes his survey at a Vancouver Canucks game.

   Problem:

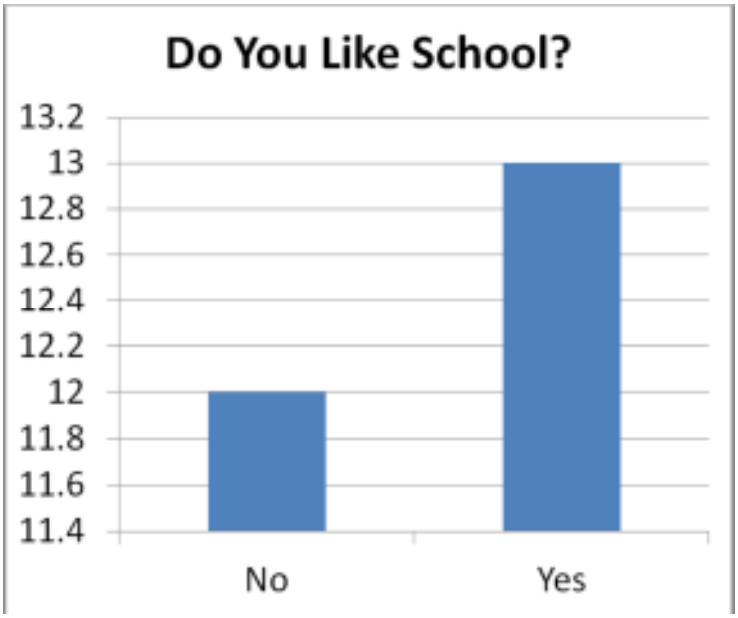
3. Maddie surveys students on their favourite class. Her question is: 'Do you think PE is a way better class than math?'

   Problem:

Misleading Data

Sometimes data can be presented in a way that either supports or opposes a certain view.

Example: Why is this graph misleading?



- _____
  _____
- _____
  _____
- _____
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Selecting a Sample

- **Simple Random Sampling**
  - Each member has an equal chance of being chosen.

- **Systematic Sampling**
  - Every n^{th} (5^{th} or 3^{rd} or 6^{th} etc.) member is chosen.

- **Cluster Sampling**
  - The population is grouped (ex. 3 grade 8 math classes), and one group is chosen.

- **Self-Selected Sampling**
  - Members volunteer to be chosen.

- **Convenience Sampling**
  - Members who are convenient are chosen (ex. First 5 to walk by the class).

- **Stratified Random Sampling**
  - Some members from each group are chosen (ex. Some from each grade).