

Curriculum Outcomes:

(SP2) Select and defend the choice of using either a population or a sample of a population to answer a question.

Student Friendly:

What is the difference between a “Sample” and “Population”?

Section 9.3
Using Samples & Populations to Collect Data



When Collecting Data...



Population - *is the group about which you are getting information*

Census - *is conducted when data is collected from each member of the population*

Ex) Suppose you test brake systems in cars that are made in a factory for defects, then ALL the cars made in that particular factory are the population. If you test each car's brakes, then you conducted a census.

Can we think of problems associated with Census?

- cost
- time consuming
- difficult to complete



When do we conduct a census?

-when an issue is important or population is small

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Sample - *Is when a small portion of the population is used to collect data*

One draws conclusions about the population based on data collected from a sample

Testing a sample of water from a well



When the sample chosen is REPRESENTATIVE of the population, the data collection provides **VALID CONCLUSIONS**

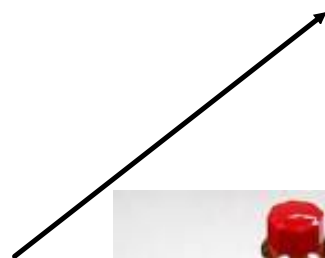
Ex) Testing the brakes on 20 out of 100 car's made each day for defected brakes is a sample. If those car's tested represent the typical quality of the car's brakes made in the factory, the conclusion of the data collection will be valid.

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**Sample -
a portion
of the
population**

Sample -



A sample represents the population.



There is an advertisement...
(making hot sauce.. advance to 3:58)

Sampling (i.e. selecting a sub-set of a whole population) is often done for reasons of

cost (it's less expensive to sample 1,000 television viewers than 100 million TV viewers) and **practicality** (e.g. performing a crash test on every automobile produced is impractical).



Topic:
Favorite TV show of
grade 9 MVHS students



Population? Who do you want to ask?

Census:

Answer

Sample:

Example 1) **Explaining Why Data Are Collected from Populations**

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In each case explain why populations is surveyed instead of a sample

a) To determine the average number of siblings of his classmates, Carlos surveyed each person in the class.

Answer

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"A baby brother? — I'm not ready to make a *commitment* like that!"

b) Every 5 years, Statistics Canada conducts a census. One question in the survey is used to determine the ages of the people in each household

Answer

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Example 3)

Identifying & Critiquing the Use of Samples



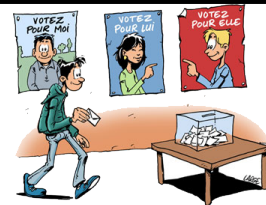
Identify if the data was collected from a sample or a population. Explain if you think the conclusion would be valid.



a) A province considers banning cell phones in all of its schools. To determine the opinions of students on this issue, you poll each student in your school.

Solution

b) To determine which politician is expected to win the municipal election, every person over 18 and who is eligible to vote in the election is polled.



Solution

c) To determine the average lifetime of a type of light bulb, 150 light bulbs were selected randomly from production line and tested.

Solution



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Methods of Collecting Data...

There are many methods used to collect or obtain data for statistical analysis. Three of the most popular methods are:

- **Direct Observation**
- **Experiments**, and
- **Surveys.**

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Class/ Homework

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