

## 2 Census vs Survey (9.3)

November 20, 2019 8:53 PM

### Math 9 Section 9.3 – Using Samples and Population to Collect Data

Date: \_\_\_\_\_

Page 1 of 2

#### Learning Outcomes Covered:

9C: I can use either a population or a sample to answer a question.

When a **CENSUS** is conducted, data are collected from all people or items in the **POPULATION**.

A **population** does not necessarily mean everybody in the **entire world** or in **all of Canada**, it can mean the following:

- all **Grade 9 students** at Burnaby South
- all eligible **voters in Burnaby**
- all people who hold **drivers licenses in British Columbia**

**Example 1:** Identify the **population** of each survey

- (a) A fitness club wants to find out how many members use the hot tub.

all members of the fitness club

- (b) A local restaurant owner wants to know which entrée on the menu is preferred by the restaurant's customers.

all customers

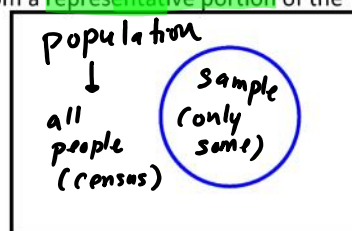
- (c) A city planner wants to know which roads in the Lower Mainland people think are in most need of repair.

all drivers in Lower Mainland

**Census**

When the **population** is just **too large**, it is often **too costly** and **time consuming** to survey the **entire population**. When this happens, we often collect data from a **representative portion** of the population, or a **SAMPLE**.

For example, sample **75 grade 9 students** instead of **all of them at Burnaby South**.



**Example 2:** Identify the population and suggest whether a **census** or **sample** should be used.

- (a) How many hours of homework does a grade 9 student in your school have each week?

Population: grade 9's

census or sample?

↳ too much time + work + \$

- (b) What percent of teenagers in your city have an i-Phone?

Population: Burnaby teens

census or sample?

- (c) Are the trampolines at Xtreme Park safe?

population: trampolines!

Census for safety!

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Page 2 of 2

Although **census data would be exact**, when you use a sample, the data collected should be **a true representation of the population** – the data would be considered **valid**.

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The size of the sample should also be considered. If the sample size is too small, the results may not represent the population – the data would be considered **INVALID**.

**Example 3:** In each case a sample was used to collect data. Do you think the conclusions would be valid? Explain.

- (a) A newspaper conducted a survey to identify the sports its readers wanted to have featured in the sports section. The newspaper ran a survey on a local golf and tennis club's website.

invalid → bias toward golf + tennis  
→ should ask other sports!

- (b) A student government conducted a survey to determine a theme for their next dance, they asked 20 grade 9's and 30 grade 11's.

No, sample size is too small  
• only picked 2 grades

- (c) To find out if more daycare centers are needed in the city, a surveyor asked people leaving a recreation centre on weekdays from 10 am to 2 pm.

invalid → people who need daycare  
are normally working  
at this time

- (d) To determine the number of people who are expected to vote in an election, a company receives a voters list, computer randomly selects 2000, and then calls each of the voters on the list.