

Vision 3.1 - A Sensible Selection

STATISTICAL STUDY

Statistics is the branch of mathematics that deals with gathering, classifying, analyzing and interpreting data in order to draw conclusion and make predictions.

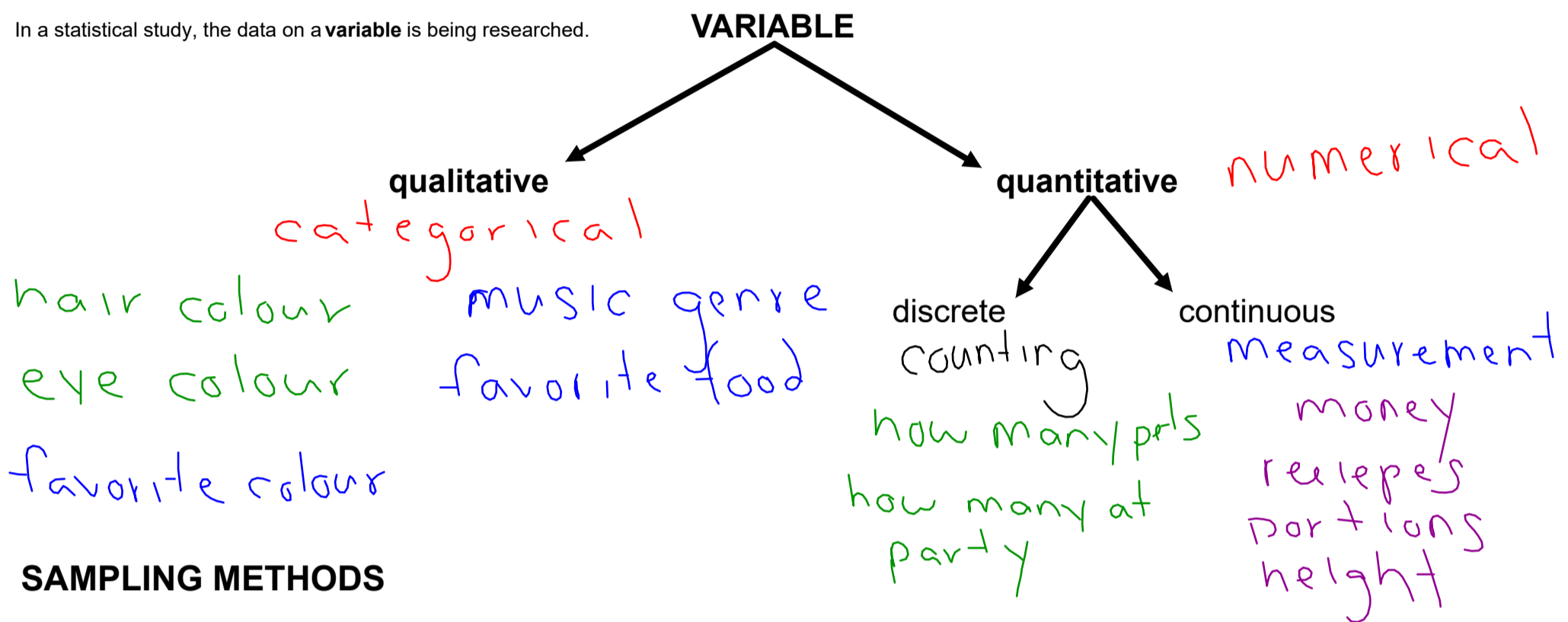
The **population** consists of all beings, objects, or facts on which we conduct a statistical study.

A **census** is a statistically study which is conducted on a whole population

A **survey** is a statistically study which is conducted on a subset of a population, called a **sample**.

The **size** of a population or a sample is the number of elements it has.

In a statistical study, the data on a **variable** is being researched.



SAMPLING METHODS

A sample is representative of a population if it has the same characteristics as the population. To form a sample, every element of a population must have an equal opportunity of being chosen. Below are four methods of forming a **representative sample**.

Simple random Method in which elements of the population are randomly chosen to form the sample.

Systematic Method in which we use a list of all the elements of a population to choose the n th element after randomly choosing the first element, in order to form a random sample.

Cluster Method used when a population made up of similar elements is composed of groups, called **clusters**, which are subsets of the population. The sample is formed of all the elements of a few randomly chosen clusters.

Stratified Method used when a mainly a population has differences between the elements and is divided into categories, called **strata**. Each stratum is represented in the sample according to the ration:

$$\frac{\text{size of the stratum}}{\text{size of the population}}$$

The elements of each stratum are randomly chosen.

Situation:

Conduct a survey to find the cost of buying books for CEGEP students. The CEGEP has 3 000 students in 105 different programs.

simple
random

everyone's name
in a hat and
draw

list of all students
with numbers and
use a random number
generator

stratified

10% of each program
↑
any percentages

systematic

list of all students
pick every 10th
person

cluster

pick 3 programs
at random and
ask all students
in that program

Check Your Understanding

Textbook Volume 1

pgs. 121 - 125

questions 1, 3, 4, 8, 9, and 14