

CHAPTER 8 — Statistics and Sampling

Random Sampling

A good survey asks clear questions and identifies good procedures for taking a representative sample of a population. A population is the group we wish to describe in our survey results; in our survey, the population is the student body. A representative sample is the number of people in the population that are asked the questions; in our survey, the representative sample is made up of other students.

There are three different ways to obtain a representative sample from a population.

Simple random selection. Students are selected by pure chance. One way to select students by pure chance is to draw their names from a hat.

Stratified selection. A stratified selection could, for example, take every twentieth name from the school's master attendance list. Every twentieth name represents a 5% sample of 50 students out of 1,000.

Stratified random selection. One or two students are randomly selected from each room in the school at a given period of the day.

Here is the question for the survey:

Which of the following three journeys of discovery do you consider the most important for the human race at this time?
Which do you consider the least important?

_____ A journey to Mars with human beings aboard the spacecraft.

_____ An exploration of the ocean floor to discover new life forms.

_____ An investigation to complete mapping the human genome.

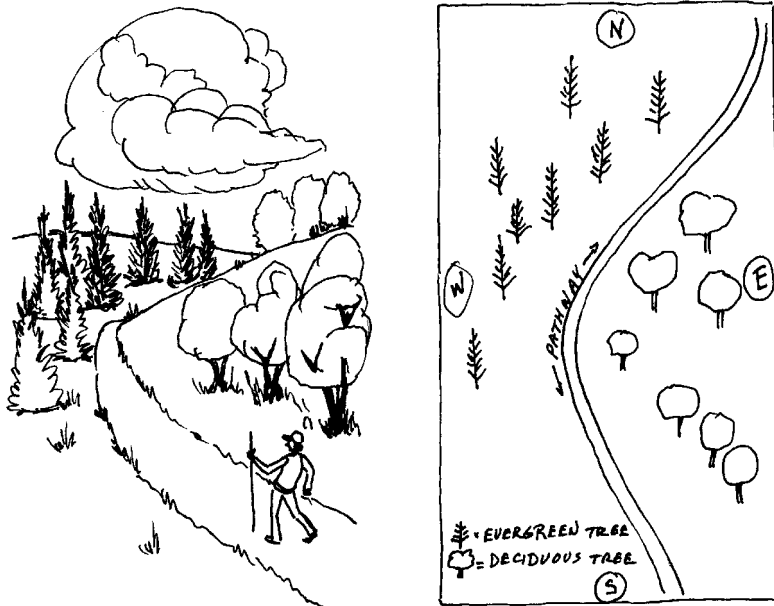
1. Divide the class into three teams. One team will select samples by random selection, another team by stratified selection, and the third team by stratified random selection.
2. Ask students to respond by deciding the most and least important journey of discovery.

- When the teams have collected the survey data, each team will make a bar graph to show the results. How are the results different? How are they similar?

Spatial Sampling

A technique for taking a spatial sample is known as a *traverse*. A traverse is basically a pathway or route through space, whether the space is over land or over water. As Lewis and Clark traveled to and from the Pacific Northwest, they collected specimens of animals, vegetation, and minerals. Their route was a sample of the northern areas of what became the United States west of the Mississippi River.

Study the following illustrations which show three stages of a traverse map.



Here is how you can do a traverse map or spatial sample.

- Select a walk of about one kilometer in length. The route can be through a forest, a park, along a sidewalk in town, basically anywhere.
- As you walk, take field notes. Your field notes should include rough sketches of anything significant that you see such as trees, other plants, birds, or animals and comments about them.