Define **data**: 

Define **statistics**: 

**Example 1.** Draw a picture representing the concepts of sample and population. Then list two specific examples.
Some more vocabulary:

- Individuals who answer a survey are called **respondents**.
- People on whom we experiment are **subjects**.
- **Experimental units** are inanimate subjects such as animals, plants, websites, etc.
- **Records** are rows of a database; the more generic term is **case**.

The 6 W’s:

**Example 2.** For each data description below, identify who and what are being investigated, as well as the population of interest.

(a) Ian Walker, a psychologist at the University of Bath, wondered whether drivers treat bicycle riders differently when they wear helmets. He rigged his bicycle with an electronic sensor that could measure how close each car was that passed him. He then rode on alternating days with and without a helmet. Out of 2500 cars passing him, he found that when he wore his helmet, motorists passed 3.35 inches closer to him, on average, than when his head was bare.

(b) Coffee stations in offices often just ask users to leave money in a tray to pay for their coffee, but many people cheat. Researchers at Newcastle University alternately taped two posters over the coffee station. During one week, it was a picture of flowers; during the other, it was a pair of eyes. They found that the average contribution was significantly higher when the eyes poster was up than when the flowers were there. Apparently, the mere feeling of being watched—even by eyes that were not real—was enough to encourage people to behave honestly.

(c) A look at 474 participants in the San Antonio Longitudinal Study of Aging found that participants who drank two or more diet sodas a day “experienced waist size increases six times greater than those of people who didn’t drink diet soda.”
A variable is a characteristic recorded about an individual. A variable that describes a group or category is called a **categorical** or **qualitative variable**. A variable containing measured numerical values (with measurement units) is called a **quantitative variable**.

**Example 3.** Create a list of examples of qualitative variables and quantitative variables.

<table>
<thead>
<tr>
<th>Categorical (Qualitative) Variables</th>
<th>Quantitative Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>
Example 4. Identify if the following are categorical or quantitative:

(a) zip codes

(b) area codes

An **ordinal variable** is one that reports order without natural units.

Example 5. An example of an ordinal variable is a variable measured with the Likert scale.

(a) Rate ___________________________ in the Google Spreadsheet (see your MyPCC email to access this). Record the frequencies of ratings 1, 2, 3, 4, and 5 below.

(b) Explain how this rating could be considered either a quantitative variable OR a qualitative variable.