

For each of the following specify the different variables and whether they are quantitative or categorical.

1. Because of the difficulty of weighing a bear in the woods, researchers caught and measured 54 bears, recording their height, neck size, length and sex. They hoped to find a way to estimate weight from other, more easily determined quantities.
2. The State Education Department requires local school districts to keep these records on all students: age, race or ethnicity, days absent, current grade level, standardized test scores in reading and mathematics, and any disabilities or special education needs.
3. A listing posted by Arby's restaurant chain gives, for each of the sandwiches it sells, the type of meat in the sandwich, the number of calories and the serving size in ounces. The data might be used to assess the nutritional value of the different sandwiches.
4. In performing research for an ecology class, students at a college in upstate New York collect data on streams each year. They record a number of biological, chemical, and physical variables, including the stream name, the substrate of the stream (limestone, shale or mixed), the acidity of the water (pH), the temperature ($^{\circ}\text{C}$) and the BCI (a numerical measure of biological diversity).

For each of the following identify the population and sample as accurately as possible

5. A furniture maker buys hardwood in large batches. The supplier is supposed to dry the wood before shipping (wood that is dry won't hold its size and shape). The furniture maker chooses five pieces of wood from each batch and test their moisture content. If any piece exceeds 12% moisture content, the entire batch is sent back.
6. An insurance company wants to monitor the quality of its procedures for handling loss claims from its auto insurance policyholders. Each month the company selects a sample from all auto insurance claims filed that month to examine the accuracy and promptness with which they were handled.
7. A truckload of apples arrives at an apple juice production plant. The plant's quality control team selects three large buckets of apples from various locations within the truck. These apples are inspected carefully. Based on inspection results, the entire truckload is either accepted or rejected by the plant.