

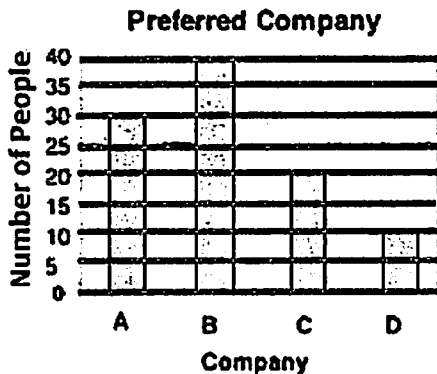
Practice: Random Sampling

Determine whether each situation calls for a *survey*, an *experiment*, or an *observational study*. Explain your reasoning.

1. You want to compare the health of students who walk to school to the health of students who ride the bus.
2. You want to find out if people who eat a candy bar immediately before a math test get higher scores than people who do not.

Determine whether each situation describes a *survey*, an *observational study*, or an *experiment*. Explain your reasoning.

3. **RESTAURANT** The manager of a restaurant is trying to reduce the menu by removing items that are infrequently ordered. For an entire month, the manager records the number of times that each item on the menu is ordered.
4. **PHONES** A software company wants to determine if a new GPS application for their cell phones will be more user-friendly than the original version. The company divides a sample of 100 subscribers into two groups. They give the first group use of the original application and give the second group use of the new application. They observe and record the subscribers' actions as they use the applications.
5. **COMMUNITY** The board members of the home owners association for a community randomly call a sample of the residents to determine what improvements should be made to the community.
6. **TELECOMMUNICATIONS** A random sample of the 250,000 people who purchase a telecommunications package (internet, cable, satellite, etc.) were surveyed about the company they prefer. Based on the results in the graph, what is the most reasonable inference about the number of people who prefer Company B?



7. **ONLINE PURCHASES** A statistician chose a random sample of 12% of the customers who purchase items online. He found that 360 of the items received positive feedback. What is the most reasonable inference about the number of items that received positive feedback?

Data Gathering

Decide whether the sampling method could result in a biased sample.

Explain your reasoning.

1. A representative of a mall surveys every fifth person walking into an electronics store to ask if they would like there to be a new store that sells audio equipment in the mall.

2. A representative of a mall surveys every fifth person walking into the main mall entrance to ask if they would like there to be a new store that sells audio equipment in the mall.

3. A researcher wants to know the average amount of student debt people who are earning degrees expect to have. She surveys 100 randomly-selected students at an expensive medical school.

4. A researcher wants to know the average amount of student debt people who are earning degrees expect to have. She surveys 50 randomly-selected students on several college campuses with very different tuitions and with many different kinds of programs.

Decide whether the results of the survey are likely to be representative of the population. Explain.

5. The manager of a movie theater wants to know what type of movies his customers prefer. He asks every third customer coming out of a comedy movie.

6. The manager of a movie theater wants to know what type of movies his customers prefer. He asks every tenth customer who enters the theater over a period of time when the theater is showing an assortment of movie types.

7. The chef at a restaurant wants to get feedback on the quality of his food. He has the servers at the restaurant survey every customer on a night when all family members and friends of the restaurant employees get a discount.

One hundred students out of 2000 at a school have been surveyed. The results are recorded in each problem below. Predict the number of students in the population that would answer similarly.

8. Fifty said they ride the bus to school.

9. Ten said they had transferred from another school.
