

CHAPTER 2 Relations  
2.2 Sampling Principles  
Sampling methods and bias

**Example:**

**a)** Identify each of the following sampling methods as simple random, systematic random, stratified random, or non-random.

i) A company selected 5 employees by lot from each its 6 divisions to serve on a committee. Each division has the same number of employees.

ii) The organizers of an agricultural fair surveyed every 10th person leaving the fair as to what they thought of the layout of attractions.



iii) Bernie is in charge of organizing a class outing to celebrate the end of the school year. He asked 5 of his male friends in the class what kind of outing would be best.

iv) Patrons of a theatre were each given a numbered ticket. Five tickets were blind-selected from the same numbers that had been placed in a hat.

**b)** Shoppers at an expensive shopping outlet were randomly selected and asked whether municipal taxes should be raised to provide better public transit. Identify any bias in this sample.

**Solution:**

**a)** i) This is a stratified random sample. Each division is equally represented on the committee.

ii) This is a systematic random sample. The interval between selections is constant.

iii) This is a non-random sample. Bernie only asked friends who were male.

iv) This is a simple random sample. Every patron had the same chance of being selected.

**b)** Shoppers at an expensive shopping outlet will likely own automobiles, and are less likely to use public transit.

**Practice:**

1. Identify each of the following sampling methods as simple random, systematic random, stratified random, or non-random.

a) Guests at a birthday party were each given a card from a deck. Cards were then drawn at random from a similar deck to give away three door prizes.

b) The service clubs in a city were asked to randomly select one representative for every 20 members to advise the municipal council on the design of a new civic centre.

c) Every 15th pilot landing at a fly-in was asked whether the next fly-in should offer a barbeque lunch.

d) Marta was planning to open a fabric store in a small town. To get an estimate as to the customer potential in the town, she visited a sewing circle and surveyed the members.



2. In order to determine the makeup of fish in a lake, Giselle stood on her dock and fished for 3 h. She caught 9 perch and 1 bass. She concluded that there were almost 10 times as many perch as bass in the lake. Identify any sources of bias.



**Answers:**

1. a) simple random   b) stratified random   c) systematic random   d) non-random

2. Answers will vary. One possible problem is that all of the fish were caught in the same location. The area around the dock may be suitable habitat for perch, but not for bass. If she caught the fish elsewhere in the lake, she might obtain quite a different result.