

KEY

# Random Sampling - Inquiry

---

## Inquiry: Why use random sampling?

A vegetable garden has 100 tomato plants arranged in a 10-by-10 array. The gardener wants to know the average number of tomatoes on the plants. Each cell in the attached table represents a plant. The number in the cell tells how many tomatoes are on that particular plant.

1. Because counting the number of tomatoes on all the plants is too time-consuming, the gardener decides to choose 10 plants at random to find the average number of tomatoes on his plants. To simulate the random selection, place your poster on floor. Drop 10 small objects onto the chart. Use these numbers for the 10 random plants.

a. How many tomatoes are on each of the ten random plants you picked?

b. What is the average number of tomatoes on the 10 plants that were randomly selected?

2. The gardener's wife suggests that his method is silly, and he should just average the number of tomatoes on the 10 plants in the first row. What is the average number of tomatoes on these 10 plants?

3. Reflect:

a. How do the averages you got with each sampling method compare?

b. Calculate the average for the entire population \_\_\_\_\_. How do the averages you got with each sampling method compare to the average for the entire population?

c. Why do you think the first method gave a closer average than the second method?

This is An Example of Random Sampling.  
Each Tomato Plant has an equal chance of  
being chosen.

# Random Sampling - Notes

When information is being gathered about a group, the entire group of objects, individuals, or events is called the population. A sample is part of the population chosen to represent the entire group.

A sample in which every person, object, or event has an equal chance at being selected is called a random sample. A random sample is more likely to be representative of the entire population than other sampling methods.

Use the inquiry lab you just completed to answer the questions below:

What is the population?

The farmer or the tomato plants

What is the sample?

10 tomato plants or 100 tomato plants

1. Why was the method of dropping small objects onto the poster considered random sampling?

You don't know for sure  
what will happen.

2. The method of choosing just the first ten plants is considered biased sampling. A biased sample is one in which one or more parts of the population are favored. Why do you think choosing only the first row could be considered a biased sample?

It is not fair to the other  
nine rows of plants behind it.

Read and discuss the three scenarios below with your table. Which of the three scenarios would be considered a biased sample? WHY?

- A. A random sample of students at a middle school shows that 10 students prefer listening to rock, 15 students prefer listening to hip-hop, and 25 students no must while they exercise. It is concluded that half the students prefer no music while exercising.

UnBiased, Everyone is included.

- B. Every tenth person who walks into a department store is surveyed to determine his or her music preference. Out of 150 customers, 70 stated they prefer rock music. The manager concludes that about half the customers prefer rock music.

Biased/UnBiased, Good Representation  
Somewhat.

- C. The customers of a music store are surveyed to determine their favorite leisure time activity. The results show that 85% of people like to listen to music in their leisure time.

UnBiased