Name: _____ Date: _____

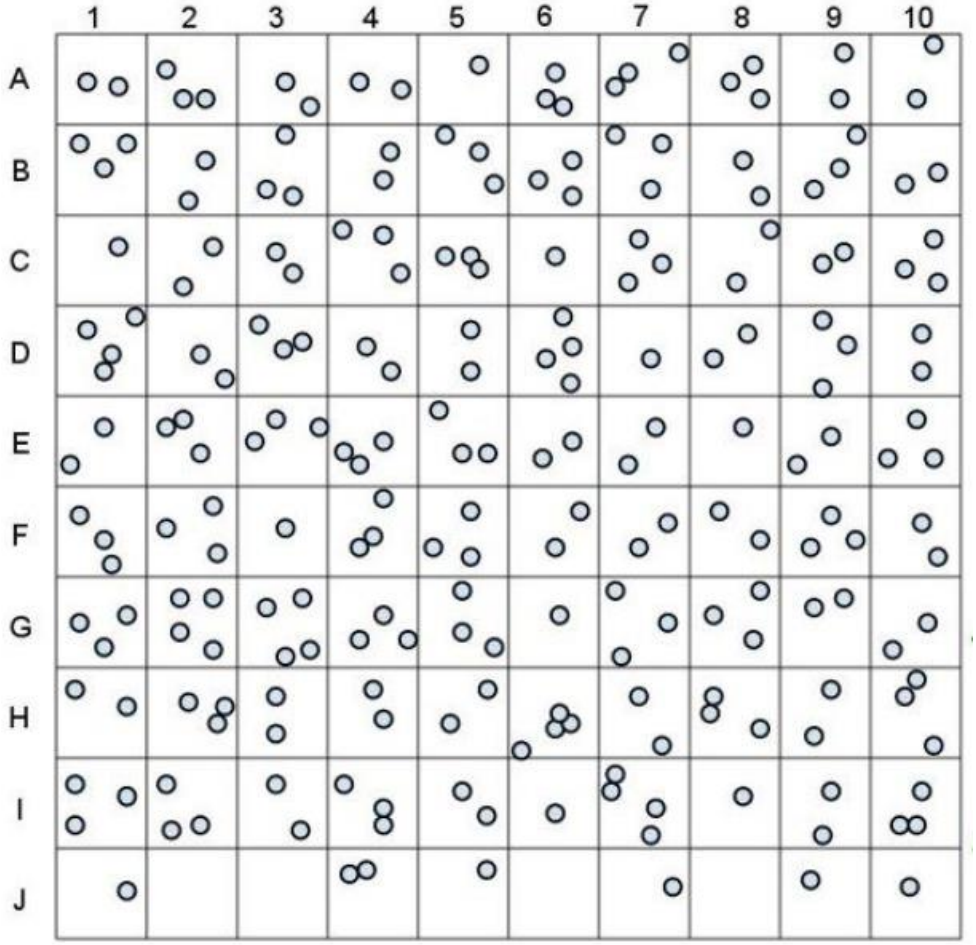
Science 10: Random Sampling

Learning Objectives

1. I can use random sampling to estimate the size of a population.
2. I can identify and explain limitations of the random sampling method.

Background Information

Random sampling, or quadrat sampling, is a way to estimate the size of a population in a particular area. The grid shown below represents a meadow measuring 10 m on each side. Each grid segment is 1 m by 1 m. Each black circle represents one black-eyed Susan, a plant native to Saskatchewan.



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Procedure

1. For each quadrat on your list, count the number of black-eyed Susans in that grid segment and record in the data table. You should have data for **ten** quadrats. These ten points represent a sample.
2. Calculate the total number in the sample by adding the amounts in each of the ten quadrats. Calculate the average number of flowers in each quadrat by dividing by ten. Calculate the total population by multiplying by 100. Record these values in the data table.
3. Count all of the black-eyed Susans actually shown in the meadow. Record this number in the data table, then divide by 100 to determine the average number of plants in each quadrat.

Data

Quadrat (number-letter)	Number of Plants	
		Average per Quadrat
Total in Sample	Add numbers from all 10 quadrats	Divide total in sample by 10
Total in Meadow (from sample)	Multiply average per quadrat (sample) by 100	
Total in Meadow (counted)	Count all flowers in meadow	Divide total in meadow (counted) by 100

Questions

1. Compare your total number from sampling to the actual value. How close are they?

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2. A lazy ecologist collects data from the same field, but he just stops just on the side of the road and just counts the ten segments near the road. These ten segments are located at J 1-10.
    a. When he submits his report, how many black-eyed Susans will he estimate are in the field?

    b. Explain why the ecologist's estimation is different from yours. Which is more accurate?

3. Population sampling is usually more effective when the population has a uniform or random dispersal pattern. Clumped dispersion patterns are the least effective. Explain why this would be the case.

4. In a forest that measures 5 km by 5 km, a sample was taken to count the number of paper birch trees in the forest. The number of trees counted in the grid is shown below. The grids where the survey was taken were chosen randomly. Determine how many birch trees are in the random sampling technique. Show your work!

	7			
				3
			5	
11		9		