How many clover (or dandelion or plantain) plants live in one lawn, and how are they spread out?

Name _____ Date _____

MATERIALS

You supply everything. Tick each item as you gather it.

- ☐ A lawn, yard or park of at least 30 square meters where you have permission to work
- ☐ Four straight sticks, or string and four pegs, to make a 50 cm by 50 cm square (a quadrat, area 0.25 square meter)
- ☐ A meter stick or tape measure
- ☐ Paper, pencil and a calculator
- ☐ A way to choose random spots, such as tossing a small stone over your shoulder

SAFETY

Stay in the area you have permission to use. Do not pull up or damage plants. Wash your hands afterward, and watch for stinging insects, thorns and animal droppings in the grass.

PROCEDURE

1. Pick one plant that is easy to recognize, such as white clover, dandelion or plantain. Check three plants against a photo or field guide so you count only that species.
2. Measure the length and width of your sampling area by pacing or tape, and work out its area in square meters.
3. Toss the stone, place the quadrat where it lands, and count every plant of your species with its center inside the square. Plants on the line count only on the top and left sides.
4. Repeat for 10 quadrats. Record each count.
5. Compute the mean count per quadrat, the density per square meter (divide the mean by 0.25), and the estimated total population (density times the area).
6. Do a second set of 10 random quadrats and compute the estimate again. Compare the two estimates.

RECORD YOUR DATA

Quadrat	Set 1 count	Set 2 count
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		
Mean per quadrat		

Write down the area of your lawn, and the species you counted.

LAB REPORT

Write a report that gives both sets of counts, shows all three calculations for each set, compares the two estimates, and says whether your plants look spread evenly, in clumps, or at random. Explain why the two estimates differ even though both used a fair method.

Report the numbers you actually got, even when they disagree with the lesson. Write on the lines, or type your report on the website and send it to a teacher there.

Question and hypothesis *State the question in your own words, what you expect to happen, and why you expect it.*

Method *What you changed, what you measured, what you kept the same, and how many trials you ran.*

Observations *Describe what you saw, including anything unexpected. Your data tables are added to the report automatically.*

Calculations *Show each calculation step by step, with units.*

Claim and reasoning *Answer the question using your numbers, then explain why, using the biology from the unit.*

Limits and next step *What could have affected your results, and one change you would make next time.*