POPPY SCHOLARS · BIOLOGY: THE LIVING EARTH

Home lab 4 · Unit 4 · 20 minutes of setup, then 2 minutes a day for 5 days

How long does water stay in a small 'reservoir' before it cycles out, and what controls that?

Name _____ Date _____

MATERIALS

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

- ☐ 3 identical cups or jars
- ☐ A kitchen scale that reads to the nearest gram
- ☐ Water, measured to 100 g in each cup (1 mL of water has a mass of 1 g)
- ☐ Plastic wrap and a rubber band
- ☐ A sunny windowsill and a shaded shelf in the same room

SAFETY

Use only water. Keep the cups where they cannot be knocked over onto electronics. Do not drink water that has been sitting for days.

PROCEDURE

1. Subtract the empty cup's mass, or zero (tare) the scale with the empty cup on it, and pour in exactly 100 g of water in each cup.
2. Place cup A on a sunny windowsill uncovered, cup B on a shaded shelf uncovered, and cup C on the shaded shelf covered tightly with plastic wrap.
3. At about the same time each day for 5 days, weigh each cup and write down the mass of the water. Do not move the cups except to weigh them.
4. Compute the loss per day for each cup: (starting mass minus final mass) divided by 5.
5. Compute the residence time of the water in each cup: 100 g divided by the loss per day.

RECORD YOUR DATA

Day	A sun, open (g)	B shade, open (g)	C shade, covered (g)
0			
1			
2			
3			
4			
5			
Loss per day (g)			
Residence time (days)			

LAB REPORT

Write a report that gives your table, shows the loss per day and residence time for each cup, and uses your results to explain two things: what changed how fast water left the cup, and what your covered cup shows about what a closed system does with water.

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.*