POPPY SCHOLARS · BIOLOGY: THE LIVING EARTH

Home lab 1 · Unit 1 · about 45 minutes

Does the temperature of water change how fast sugar dissolves?

Name _____ Date _____

MATERIALS

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

- ☐ 3 clear glasses or jars of the same size
- ☐ Granulated sugar and a level teaspoon
- ☐ A measuring cup (100 mL or 1/2 cup is close enough if you use the same one each time)
- ☐ A kitchen timer or phone stopwatch
- ☐ A thermometer (a cooking or aquarium thermometer works)
- ☐ Ice, a spoon, and access to hot tap water

SAFETY

Hot tap water only. Do not use boiling or kettle water. An adult should handle any water hotter than the tap. Wipe up spills so the floor is not slippery. Do not taste anything.

PROCEDURE

1. Prepare three water temperatures: cold (ice water, about 5 °C), room temperature (about 20 °C), and hot tap water (no hotter than about 50 °C). Measure and write down each temperature.
2. Put 100 mL of one water temperature in a glass. Read the temperature again just before you start.
3. Add one level teaspoon of sugar and start the timer at the same moment.
4. Stir at a steady pace of about one turn per second. Stop the timer when you cannot see any sugar grains at the bottom or in the water. Write the time in seconds.
5. Rinse the glass and repeat until you have three trials at each temperature. Mix the order up (cold, hot, room, hot, and so on) so that a tired arm or a warming kitchen does not fall on one temperature only.
6. Compute the mean time for each temperature and the range (highest minus lowest).

RECORD YOUR DATA

Temperature (°C, measured)	Trial 1 (s)	Trial 2 (s)	Trial 3 (s)	Mean (s)	Range (s)
Cold					
Room					
Hot					

LAB REPORT

Write a report that states a hypothesis about temperature and dissolving time, lists what you held the same, gives your table, computes how many times faster the hot water was than the cold, and explains the result in terms of moving particles.

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.*