Biggest Loser Lab

Background Information:
Diffusion is the movement of molecules from an area of high concentration to an area of low concentration. Osmosis is the diffusion of water. When a solution is **hypertonic** the solution has a greater concentration of solutes, therefore a lower concentration of water. If a solution is **hypotonic** the solution has a lower concentration of solutes, therefore a higher concentration of water.

What factors affect the rate of osmosis? For this lab you are to design an experiment to test a factor that will cause the greatest “weight loss” in a piece of potato.

Materials:
- Potatoes
- Small knives/scalpels
- Salt
- Water
- Scale
- Beakers
- Graduated cylinder
- Paper towels
- Stir rod
- Additional materials? (you may request or bring extra materials-please tell the teacher so they will be ready for you next class period)

Time Allotted: Day 1-You will have the rest of the class period to design your experiment. Day 2-You will have 40 minutes to perform 3 tests/trials of the independent variable. Divide the time between your experiments to allow enough time to complete each test. Please allow 5 minutes before the end of class to wrap-up. Day 3-Record data in the class data sheet so we can select a winner.

Safety issues: Use caution when using sharp objects and hot plates.

IN YOUR NOTEBOOK WRITE THE FOLLOWING:

Testable Question: What variable causes the greatest weight loss in a potato?

Predictions and Reason: I think…because…

Basic Instructions for Biggest Loser Lab:
*The basic procedure of the lab is written below…you will need to re-write your specific lab procedure in your notebook BEFORE you start the lab.*

**DAY 1:**
1. Identify the independent and dependent variables in your experiment. Remember the independent is the variable you will be testing for your experiment.
2. Write a prediction to answer your testable question.
3. Consider what you know about diffusion and osmosis and in your table groups design a procedure you will use to decrease the weight of the potato. Each person in your group must write-up YOUR procedure in their notebook to be checked by the teacher before you leave class today. You must follow this procedure when you perform your lab. Extra materials will not be provided if they are not included in your procedure.

**DAY 2:**
1. Obtain 3 potato pieces from the teacher
2. Gather the materials for your lab procedure from the supplies table.
3. Follow YOUR procedure to test 3 independent variables.

**Collecting Data:**
4. Create data tables to record the data. Include initial and final mass.
5. Record data on your worksheet and on the class data table.

**Data Analysis:**
6. Analyze your data by finding the percentage of weight loss for each potato piece, record data on your paper.
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   \text{% Loss} = \frac{\text{Mass}_{\text{initial}} - \text{Mass}_{\text{final}}}{\text{Mass}_{\text{initial}}} \times 100
   \]
7. Create a statement of your results related to the question. Determine the best graph to represent your data and graph your data. Label your graph and axes.

*To avoid elimination:
   - Potatoes cannot be “cooked”-must maintain intact (no mashed potatoes) for weighing.
   - You may not combine variables to be tested.

**DAY 3:**
1. Please put your data on the class data sheet
2. Class discussion and determining the winner of the Biggest Loser Contest

**Conclusion:** Write your conclusion using your data to verify or deny your prediction. Explain what is happening in your experiment based on your data. Don’t forget to include errors and suggestions for improvement.

What do I turn in? Your final TYPED lab report is due Friday after break. Make sure you include headings for all of the sections of your lab report as outlined in the scoring rubric.