

Solids and Liquids and Gases, Oh My!

Name:

Teacher:

Class:

Physical Science
Unit 2
Lab Notebook

Lesson 1: Ice Cream, Anyone?

Procedure: Write a procedure for making ice cream using the materials provided.

Analysis Questions:

Reflect on the outcome of your experiment in the lines below. Did you successfully make ice cream? Why or why not?

Lesson 1

Brainstorm any questions you need to answer before attempting to make ice cream again.

Additional Notes:

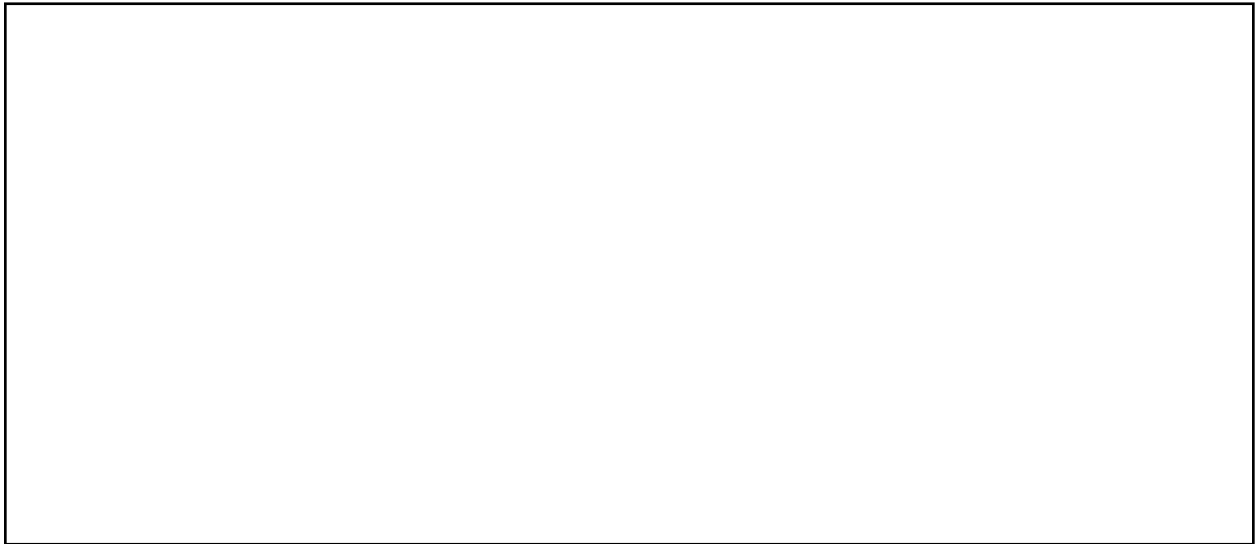
Lesson 2:

Molecular Dances, Day One

Directions: Create a model below of each state of matter using notes and illustrations on the behavior of the molecules. Models must include for each scenario:

- The spacing of molecules
- The movement of the molecules
- Appropriate labels and captions

Liquid

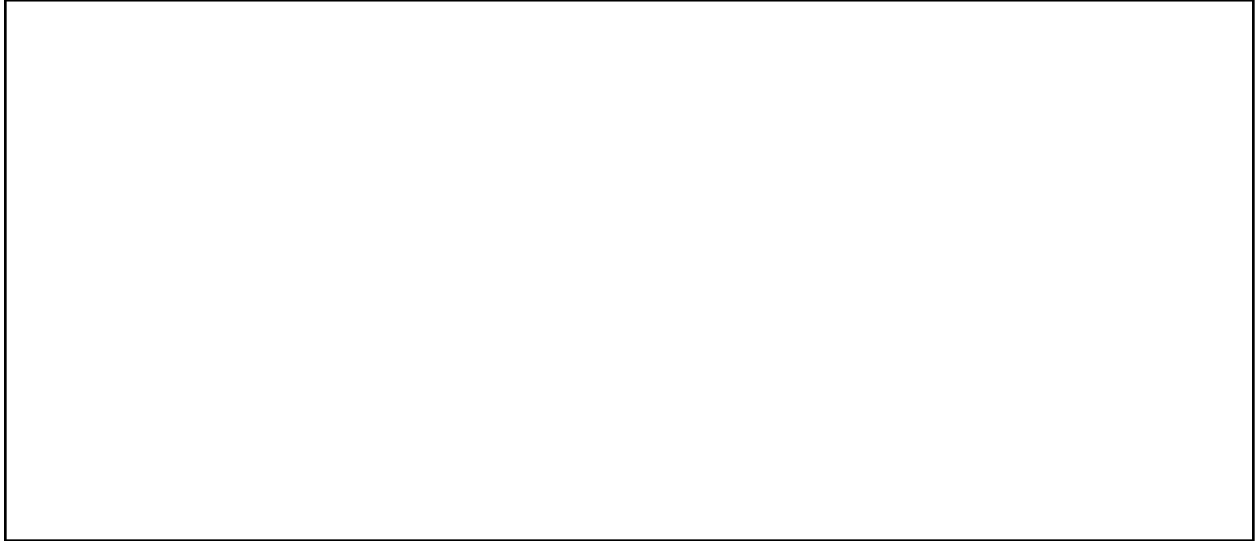


Gas



Lesson 2, Day One

Solid



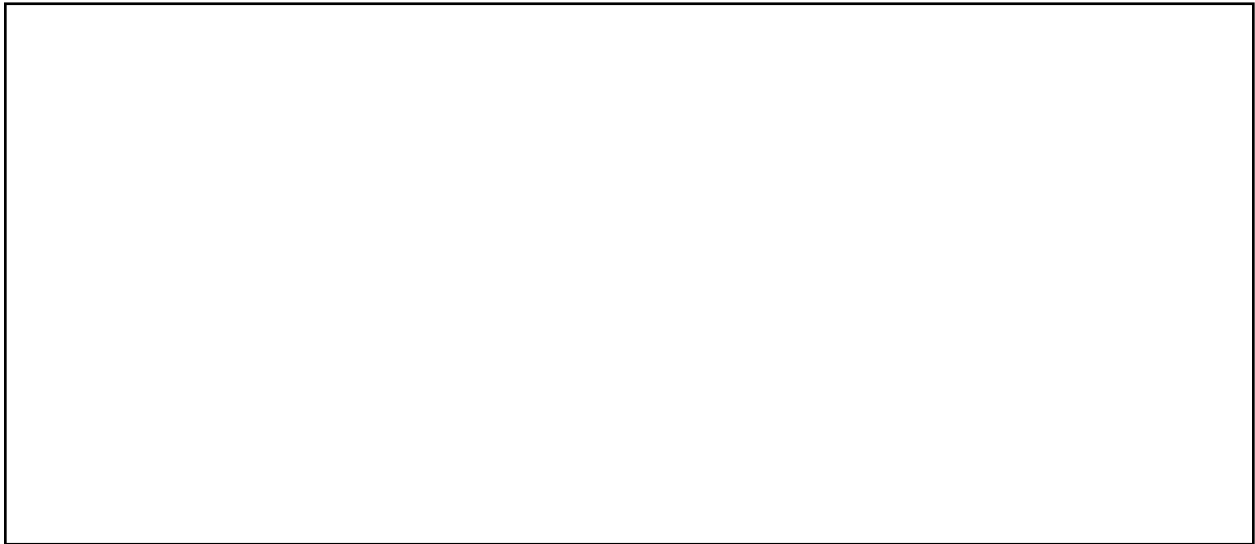
Lesson 2:

Molecular Dances, Day Two

Directions: Create a model below of each phase change using notes and illustrations on the behavior of the molecules. Models must include:

- The spacing of molecules before and after they transition to a new state of matter
- The movement of the molecules before and after they transition to a new state of matter
- Appropriate labels and captions

Phase Change:

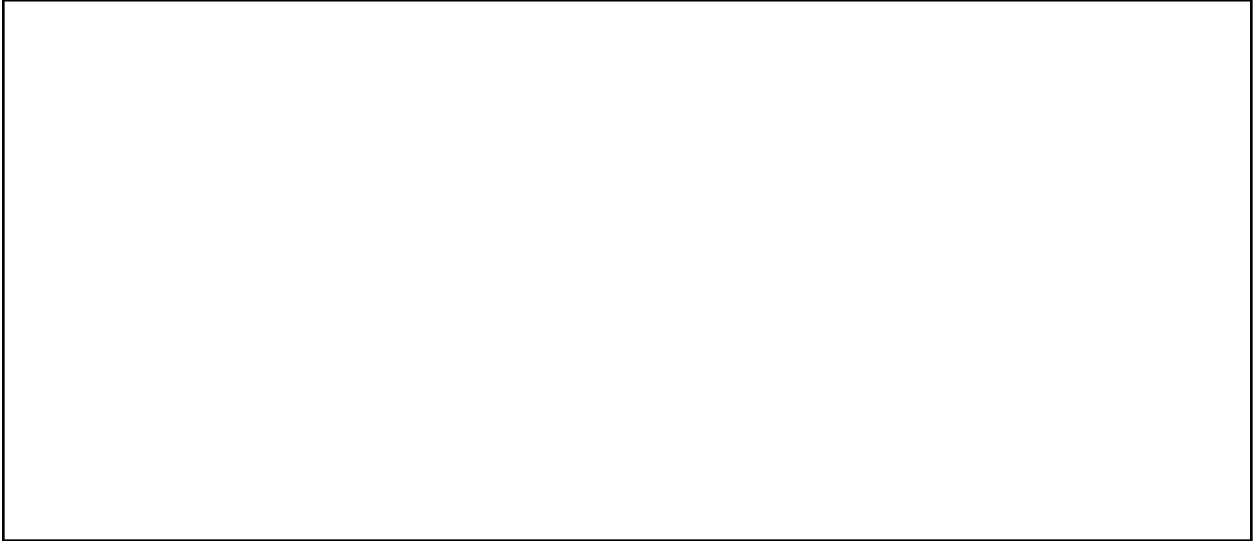


Phase Change:



Lesson 2, Day Two

Phase Change:



Lesson 3:

Achieving Balance

Directions: Using the materials provided, design an experiment to test the effects of combining substances of different temperatures and/or states.


Experimental Design:



Procedure:

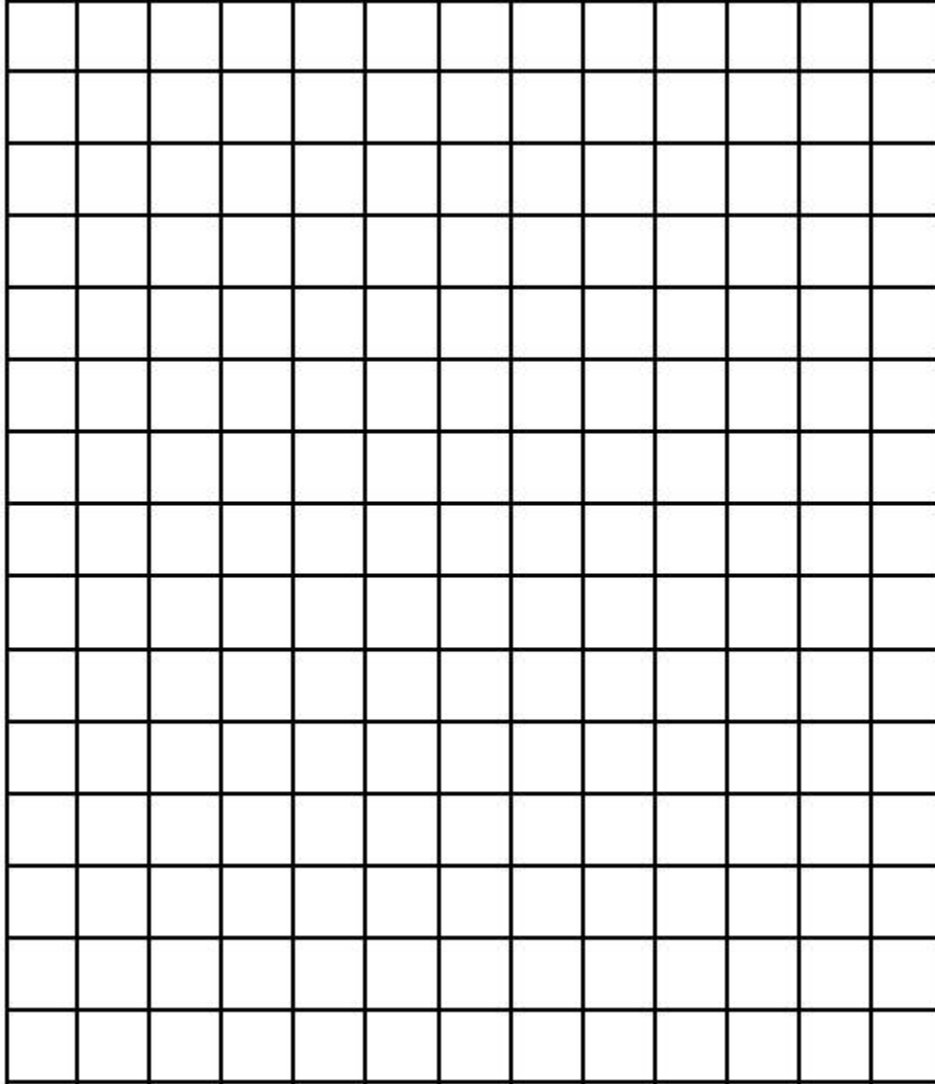
Lesson 3

Data:

A large, empty rectangular box with a thin black border, intended for students to enter data. The box is positioned below the 'Data:' label and occupies most of the page's width and a significant portion of its height.

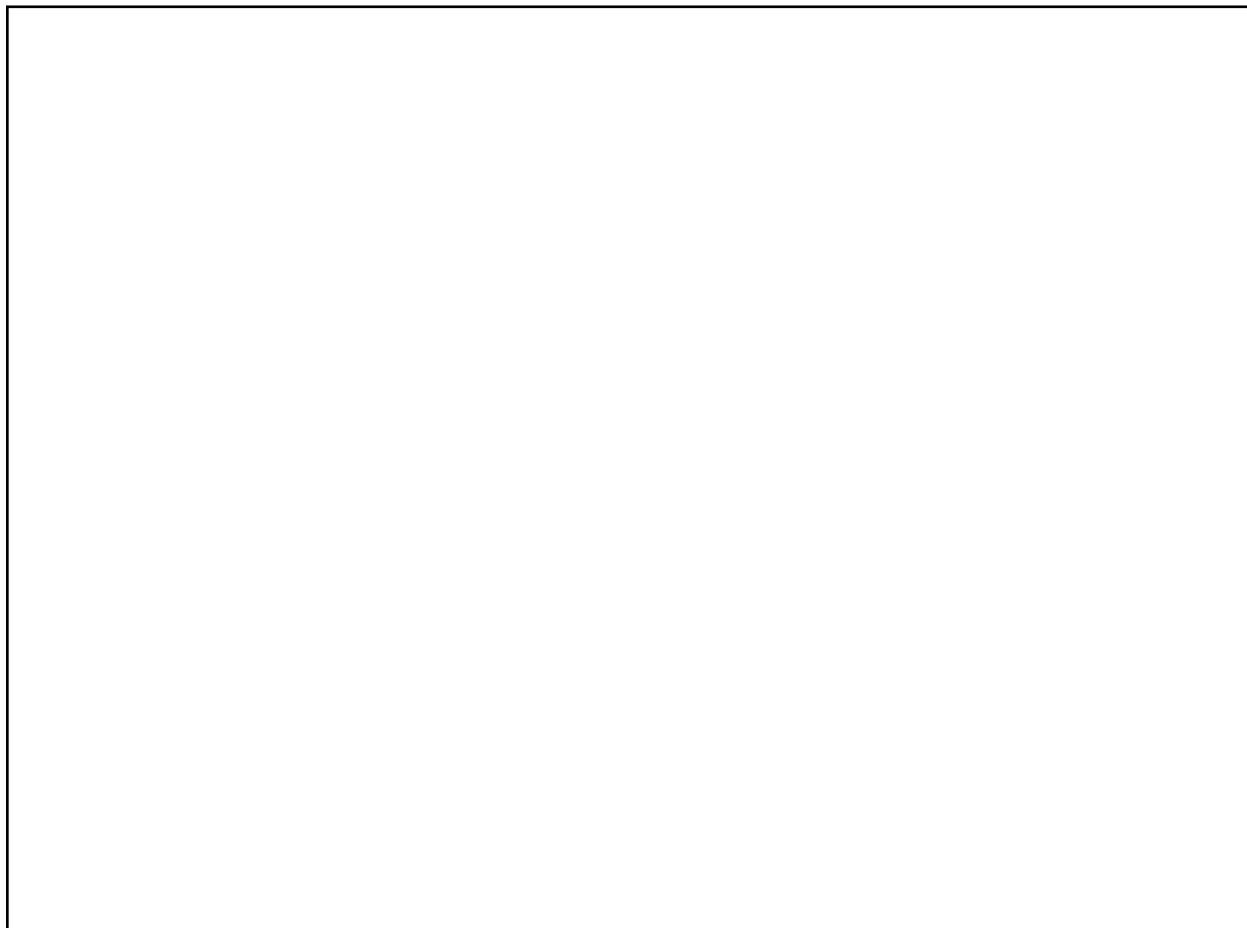
Lesson 3

Graph your data below:



Lesson 3**Analysis Question:**

Create a model displaying what is happening during your experiment on a macroscopic and molecular level below.

**Additional Notes:**

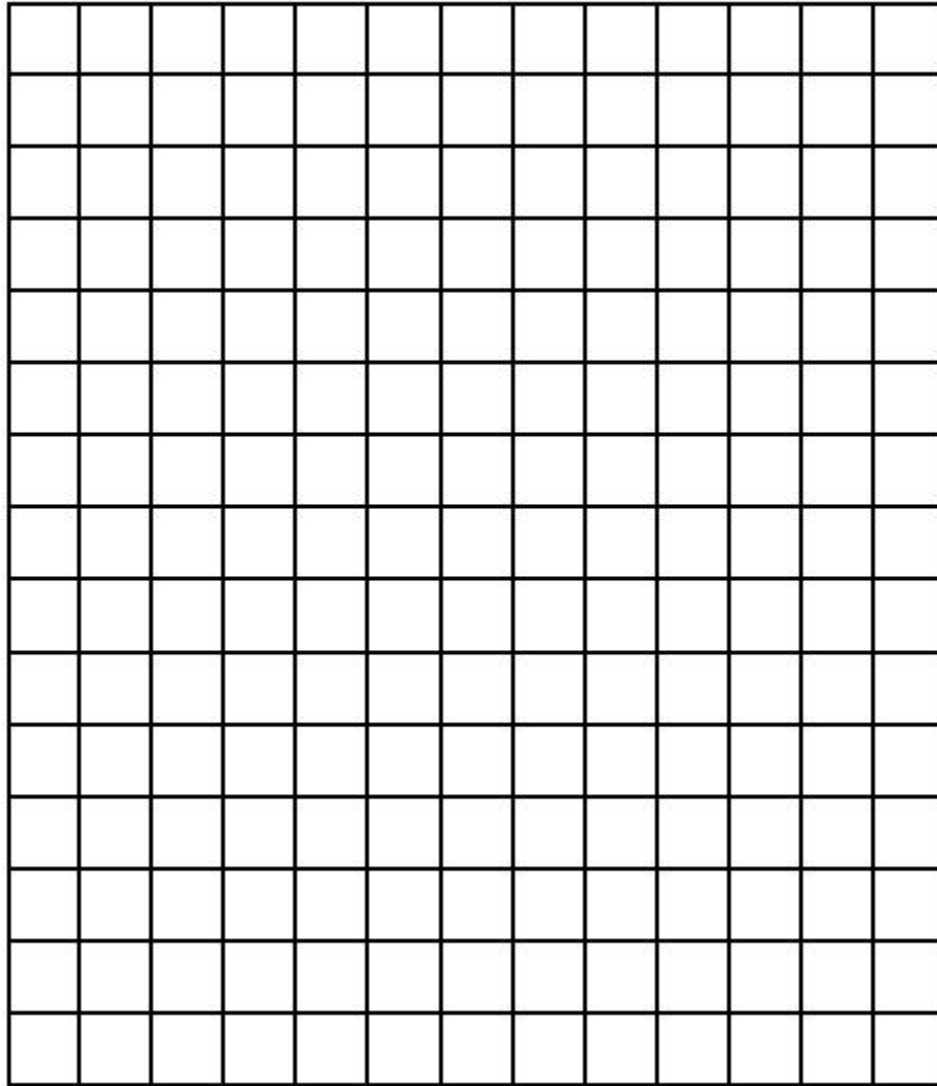
Lesson 4

Data:

Additional Notes:

Lesson 5: Graphing Phase Changes

Directions: Use your data from the last investigation to graph the heating curves of chocolate and wax.



Lesson 6:

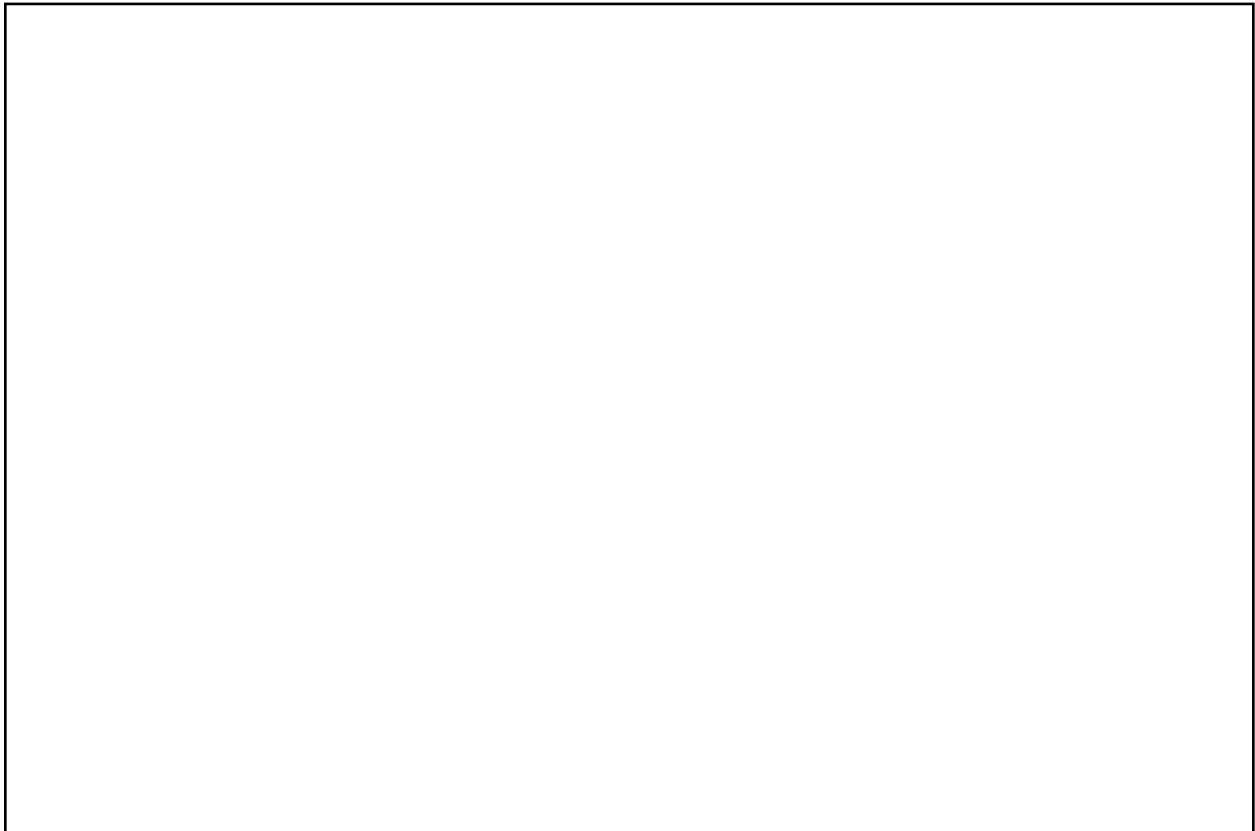
A Pinch of Salt

Directions: Follow the procedure below to find the boiling point of plain water, sugar water, or salt water.

Procedure:

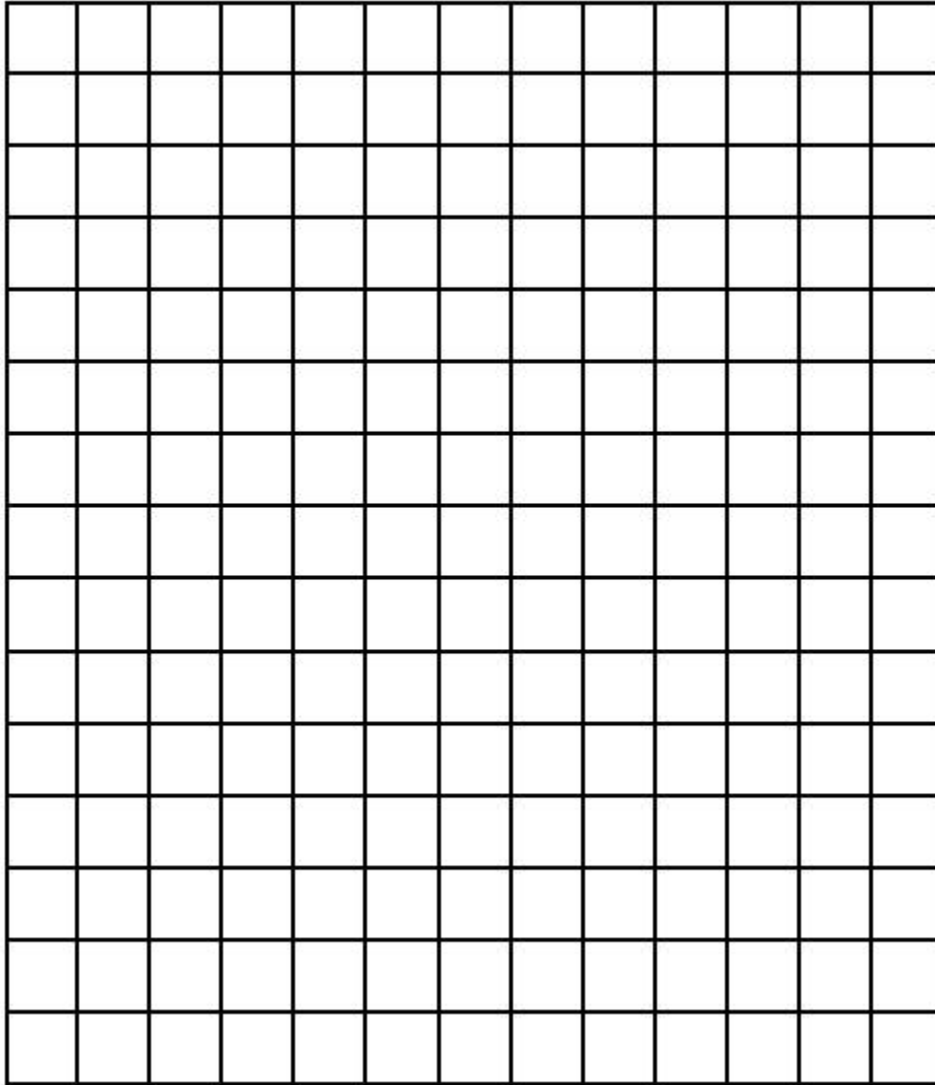
1. Pour 150mL of water into a beaker and place it on the hotplate.
2. Turn the hotplate on and dial it to a predetermined level.
3. Record the temperature of the water every minute and find its boiling point.
4. Once the water is fully boiling, turn off the hotplate and let the materials cool down.
5. After getting your results, graph the data below using a triple line graph.

Data:



Lesson 5

Graph your experimental data below.



Lesson 7:

An Icy Experiment

Directions: Follow the procedure below to see how adding salt or sugar affects the rate of melting.

Procedure:

1. Label three containers as “salt,” “sugar,” and “control.”
2. Place one ice cube into each container. Place one ice cube into each cup or beaker. Make sure the ice cube is oriented the same way in each.
3. Measure $\frac{1}{4}$ teaspoon of salt onto the ice cube in the container labeled “salt.”
4. Measure $\frac{1}{4}$ teaspoon of sugar onto the ice cube in the container labeled “sugar.”
5. Leave the ice cube in the container labeled “control” as is.
6. Observe each ice cube over 20 minutes, stopping every 5 minutes to record notes.

Data:

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Lesson 7**Analysis Question:**

Which was the first cube to melt completely? Which was the last to melt? Why do you think that is (think on a macro level and on a molecular level)?

Additional Notes:

Lesson 8: Why Do Boiling, Melting, and Freezing Points Vary?

Directions: Follow the procedure below to complete today's lab.

Procedure:

1. Set a penny on the table, heads up.
2. Fill an eyedropper with water.
3. While counting, slowly drop the water onto the penny, one drop at a time, until the water spills over the edge of the penny.
4. Repeat with acetone on the second penny.
5. Wipe down the pennies to remove any extra liquid.

Data:

Lesson 8

Hypothesis:

What is the relationship between a substance's intermolecular forces and boiling point?

Additional Notes:

Lesson 9:

Ice Cream Party, Take Two, Day One

Directions: Draft a plan to create ice cream using the space below.

Procedure:

Lesson 9: Ice Cream Party, Take Two, Day Two

Directions: Make any final updates to your procedure from the last lab and implement it to create ice cream! Record your data below.

Data:

Additional Notes:
