

Examining the Physical States of Matter Lab

Objective: To observe what happens as the water changes from one state to another.

Materials:

- Hot plate
- Ice Cubes (100 mL)
- Celsius Thermometer
- Stirring Rod
- 250 mL Beaker
- Stop Watch or Wall Clock

Safety Precautions:

To avoid burnings, do not touch the hot plate or beaker at any moment when you are performing this experiment.

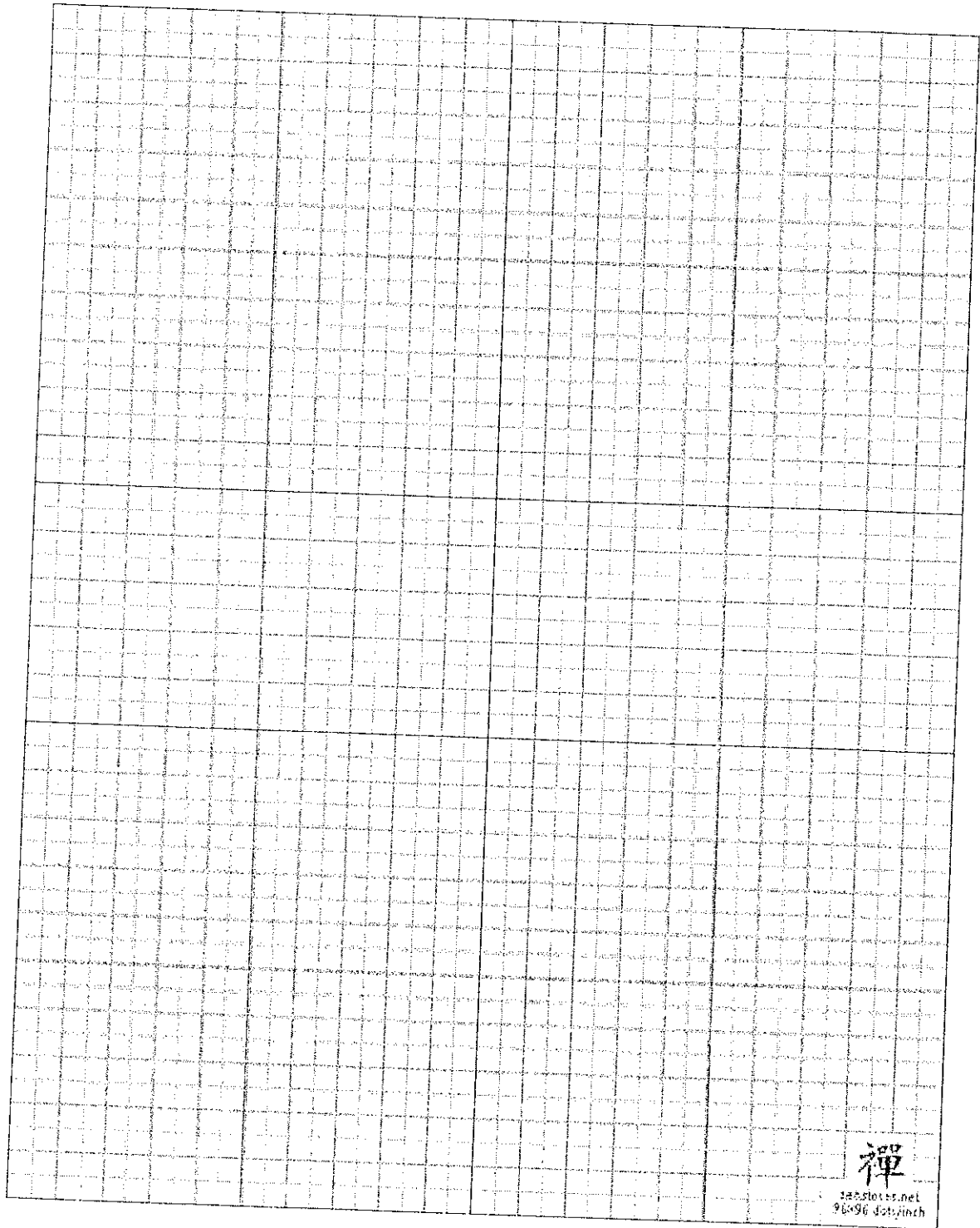
Procedure:

1. Put 150 mL of water and 100 mL of ice into a beaker and place the beaker on the hot plate.
2. Put the thermometer into the ice/water mixture. Do not stir with the thermometer or allow it to rest on the bottom of the beaker.
3. Record the temperature of the ice/water mixture.
4. Put the ice water on the hot plate and record the temperature every minute in the table below including the physical state of the water.
5. Continue doing this until water begins to boil.
6. NOTE: Before making each temperature measurement, stir the ice/water mixture with the stirring rod.
7. Use your data to plot a graph of temperature (oC) vs. time (sec).

Data Table:

Time (min)	Temperature (°C)	Physical State
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Graph:



Questions:

1. Describe what you saw in the ice/water mixture before and after water boils. You can use a drawing to explain what you saw.

2. How did the temperature of the ice/water mixture change as you heated the beaker (added thermal energy)? Why did this happen?

3. What happens with the water molecules as the temperature increases?

4. When water starts boiling, you observed bubbles in the beaker. Can you describe what those bubbles are made of?

5. When water changes from ice to liquid what do you call this process? At what temperature did the ice melt?

6. When water changes from liquid to gas what do you call this process? At what temperature did the water boil?

7. Describe the shape of the graph during any changes of state.

8. Can you describe a real-life process in which this happens daily?
