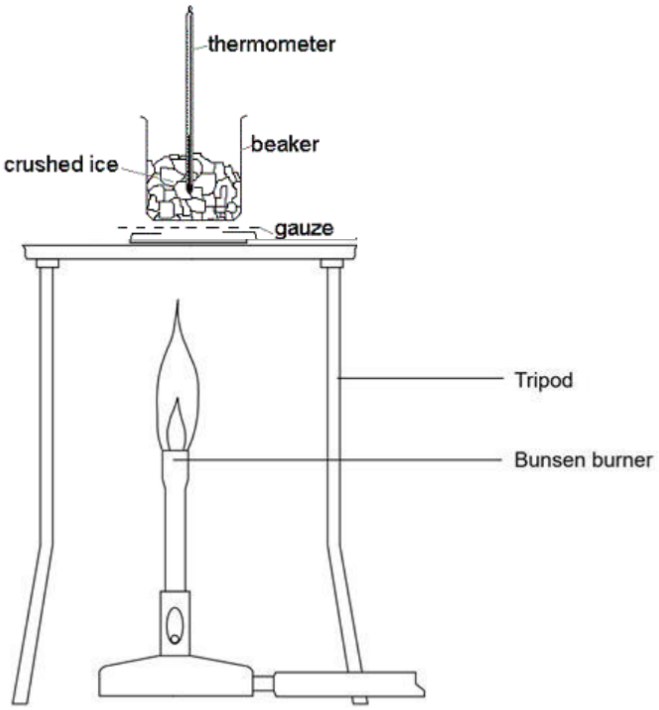
Heating Ice – Change of State



Aim- To investigate how temperature changes when ice is heated and observe the change of state from solid to liquid.

Identify the:

- Independent variable(IV)_____
- Dependent variable (DV) _____

Hypothesis on how the temperature recorded will change over time as heat is applied :
If _____

then _____

Because _____

_____

_____

_____

_____

Apparatus (Tick when collected)

- 250 mL Beaker
- Ice cubes
- Thermometer (0-100 °C)
- Bunsen burner / hot plate
- Tripod and gauze
- Stopwatch

Safety

- Wear safety glasses
- Handle hot equipment carefully
- Do not touch hot glassware
- Keep thermometer off the bottom of the beaker
- Tuck in loose clothing
- Tie back hair

Method

1. Place 5 ice cubes in the beaker.
2. Insert the thermometer into the ice.
3. Record the initial temperature of the ice/water mixture.
4. Begin heating gently using a Bunsen burner. Constantly stirring the ice and water.
5. Record temperature every 30 seconds.
6. Continue until the water starts to boil.

Results Table

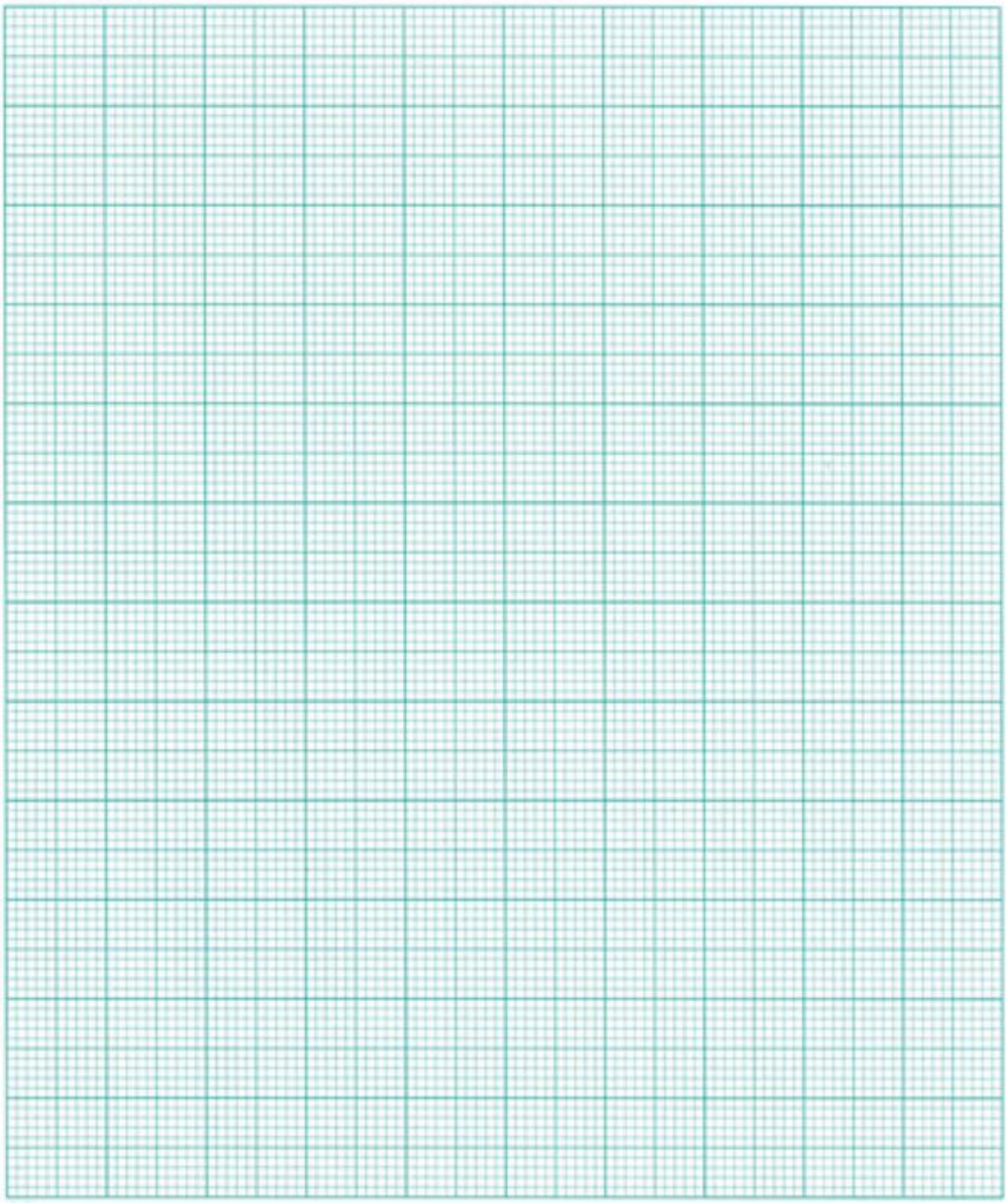
Time (s)	Temperature (°C)	State (solid/liquid/mixed)	Observations
0			
30			
60			
90			
120			
150			
180			
210			
240			
270			
300			
330			
360			
390			
420			
450			
480			
510			

Graph the results

Draw a properly formatted graph of:

- X-axis: Time (s) (IV)
- Y-axis: Temperature (°C) (DV)

(Use graph paper provided below)



Refer to this link to see how to properly draw a graph and a line-of-best-fit

Questions

1. Observations - What happened to the temperature while ice was still melting?

2. Was the hypothesis supported? Explain.

3. When heat was applied to the ice, the heat energy caused an increase in what type of energy of the water particles? How was this change observed?

4. What happened to the temperature after all the ice melted? Explain why.

Extension Questions

5. What is happening to the particles during melting?

6. Explain the difference between heat energy and temperature.

Sources of Error

List TWO possible errors:

Improvements

Suggest ONE improvement:

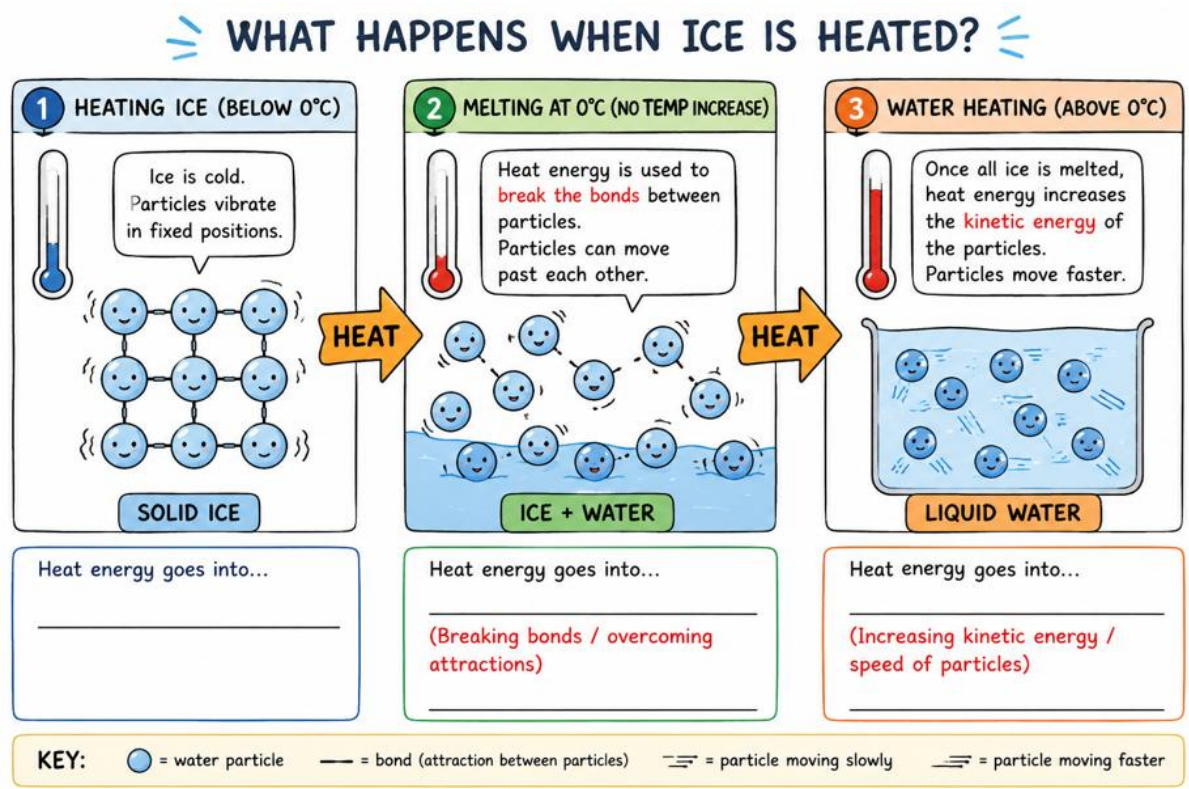
Conclusion (Complete the sentence)

When ice is heated, the temperature _____

because _____

_____

This supported/did not support the hypothesis.



Using the image above explain your results using the words below.
Bond breaking, kinetic energy, speed, particles, vibrations, solid, liquid, gas, temperature.