Name: _____ Group: _____ Date: _____

LAB 18 EXPERIMENT

TEMPERATURE VARIATION DURING A CHANGE OF STATE

STUDENT BOOK	Chapter 2, page 43
TOOLBOX	Page 19

Goal

Determine how temperature varies according to the time needed to heat a pure substance to its boiling point.

1. What is the independent variable in this lab?

_____

2. What is the dependent variable in this lab?

_____

Hypothesis

I think that _____

_____

because _____

Materials

- 100-mL graduated cylinder
- wash bottle of distilled water
- 250-mL beaker
- hot plate
- thermometer
- ring stand
- thermometer clamp *or* universal clamp with perforated cork stopper
- stopwatch *or* watch
- glass stirring rod
- balance (optional)

Procedure

1. Measure into the graduated cylinder 100 mL of distilled water.
2. Pour the water into the beaker.
3. Place the beaker on the hot plate.
4. Insert the thermometer into the beaker and clamp it so the bulb is submerged completely and not touching the beaker. Record the temperature of the water.
5. Turn on the hot plate to a medium setting and start the stopwatch.
6. Stir the water in the beaker continuously with the glass stirring rod.
7. Check and record the temperature every minute.
8. Stop heating when the water boils for 5 minutes.
9. Clean up and put away materials.

Name: _____ Group: _____ Date: _____

Results

Record your results in the table below. Give the table a title.

Title:

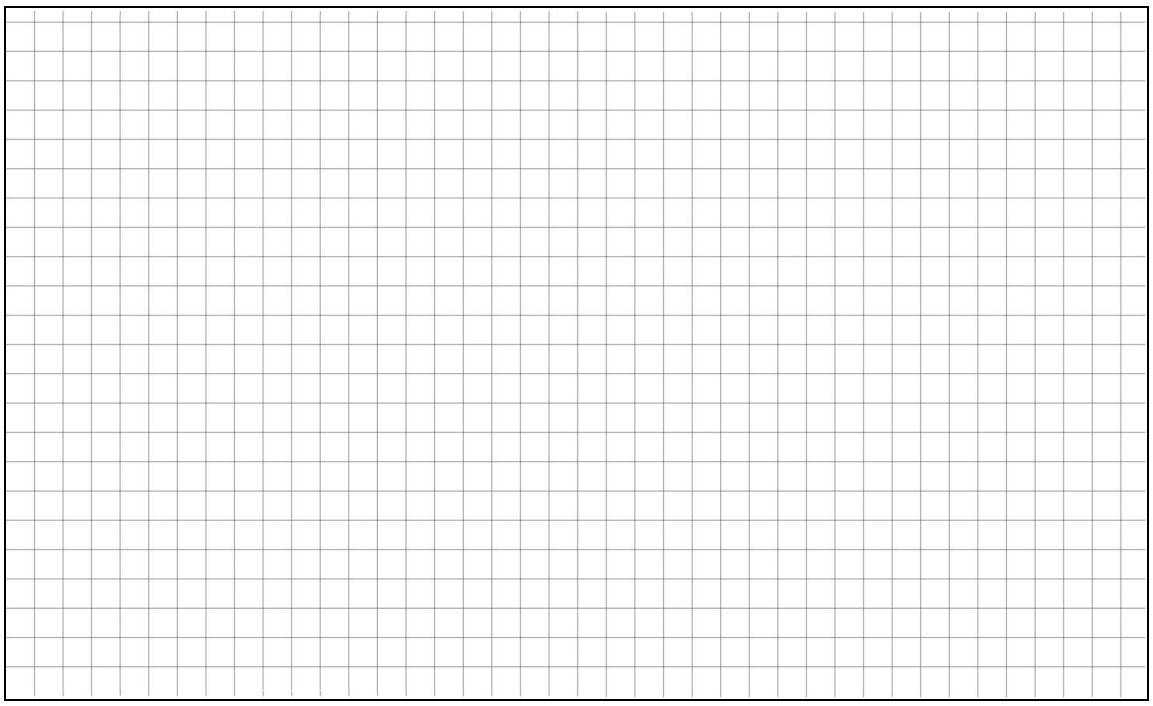
Time (min)	Temperature (^{o}C)

Name: _____ Group: _____ Date: _____

Graph

Plot the variation of temperature according to time. Give the graph a title.

Title:



Analysis of the results

1. Is the variation of temperature constant during the heating time? Explain your answer using your graph.

_____

_____

_____

_____

2. How can the reaching of the boiling point be determined from the graph?

_____

3. Is the boiling point of a pure substance a characteristic property?

_____

_____

4. What form of energy was transferred to the distilled water?

_____

Name: _____ Class: _____ Date: _____

5. What is the name of the change of state observed?

6. Did this change of state absorb or release energy?

7. What is the effect of this energy on the particles of the substance?

8. What are the possible sources of error in this lab?

9. How could you improve the protocol for this lab?

Conclusion

1. Complete the following sentences:

a) In this experiment, the _____ of a pure substance does not vary constantly.

b) The plateau reached when heating a pure substance corresponds _____.

c) A heating curve permits _____.

2. Was your hypothesis confirmed or not? Explain your answer.

Application

Would the heating curve of a solid be similar to the heating curve of a liquid?