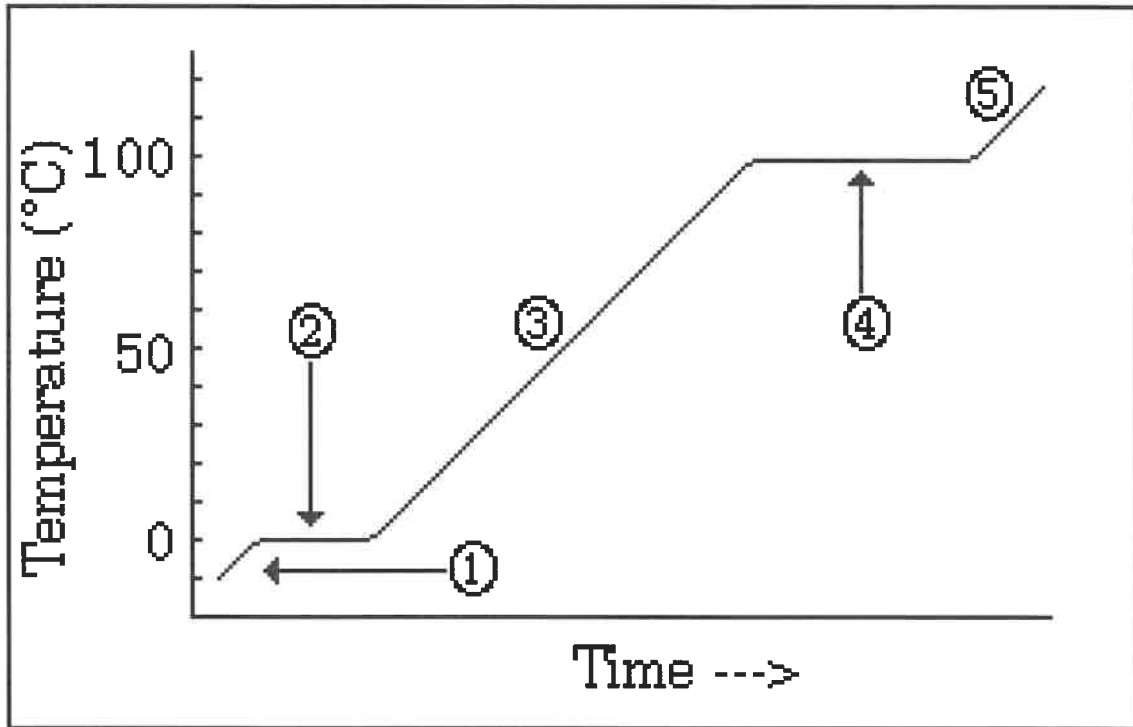# Heating Curve Worksheet

Name:_____ **period:**_____ **Date:**_____

The diagram below is a plot of temperature vs. time. It represents the heating of what is initially ice at -10°C at a near constant rate of heat transfer.

1) a)What phase or phases are present during segment (1) _____

   b) What is happening to the energy being absorbed from the heat source? (answer in terms of potential and/or kinetic energy) _____
   _____

   c) What phase change, if any, is taking place? _____
   _____

2) a)What phase or phases are present during segment (2) _____

   b) What is happening to the energy being absorbed from the heat source? (answer in terms of potential and/or kinetic energy) _____
   _____

   c) What phase change, if any, is taking place? _____

3) a)What phase or phases are present during segment (3) _____

   b) What is happening to the energy being absorbed from the heat source? (answer in terms of potential and/or kinetic energy) _____
   _____

   c) What phase change, if any, is taking place? _____

4) a)What phase or phases are present during segment (4) _____

b) What is happening to the energy being absorbed from the heat source? (answer in terms of potential and/or kinetic energy) _____

_____

c) What phase change, if any, is taking place? _____

_____

5) a)What phase or phases are present during segment (5) _____

b) What is happening to the energy being absorbed from the heat source? (answer in terms of potential and/or kinetic energy) _____

_____

c) What phase change, if any, is taking place? _____

_____

6) What is the melting point of this substance?_____

7) At what temperature would this sample finish boiling?_____

8) When this substance is melting, the temperature of the ice-water mixture remains constant because:
a. Heat is not being absorbed
b. The ice is colder that the water
c. Heat energy is being converted to potential energy
d. Heat energy is being converted to kinetic energy

9) When a given quantity of water is heated at a constant rate, the phase change from liquid to gas takes longer than the phase change from solid to liquid because
a. The heat of vaporization is greater than the heat of fusion
b. The heat of fusion is greater than the heat of vaporization
c. The average kinetic energy of the molecules is greater in steam than in water
d. Ice absorbs energy more rapidly than water does

The heat of fusion for water (H_f) is 334 joules/gram and the heat of vaporization (H_v) for water is 2260 joules/gram.

10)

a) How much energy would be required to melt 500 grams of ice at $0°C$ to water at $0°C$?

b) How much energy would be required to convert 36 grams of water at $100°C$ to water vapor at $100°C$?