Heating Curves Notes

Name _____

Chemistry

Date _____ Hour _____

Phase Changes	Name of Phase Change	States of Matter	Endo or Exo?	Name of Enthalpy	Variable	Formula used
● Phase changes are _____. ○ This means that there is a change of _____, but the _____ of the substance does not change. ● _____ changes during a phase change ○ Endothermic → Energy _____ = _____ kinetic energy. ○ Exothermic → Energy _____ = _____ kinetic energy. ● But _____ does NOT change during a phase change!	Melting			Heat of		
	Vaporization			Heat of Vaporization		
	Freezing			Heat of	$\Delta H_{solid.}$	
	Condensation			Heat of		$q = \Delta H_{cond.}$

Formulas for the Enthalpy of Phase Changes:

Steps to calculating the heat content (enthalpy) of a phase change:

1. Plot your _____ and _____ points on the heating curve.

2. Determine the _____ you need to use for each segment of the curve.

3. Plug in the _____ _____ into the formulas.

4. Add all _____ _____(___) together (make sure your units match: J and kJ)

Temp (°C)

140
120
100
80
60
40
20
0
-20

Heat Supplied
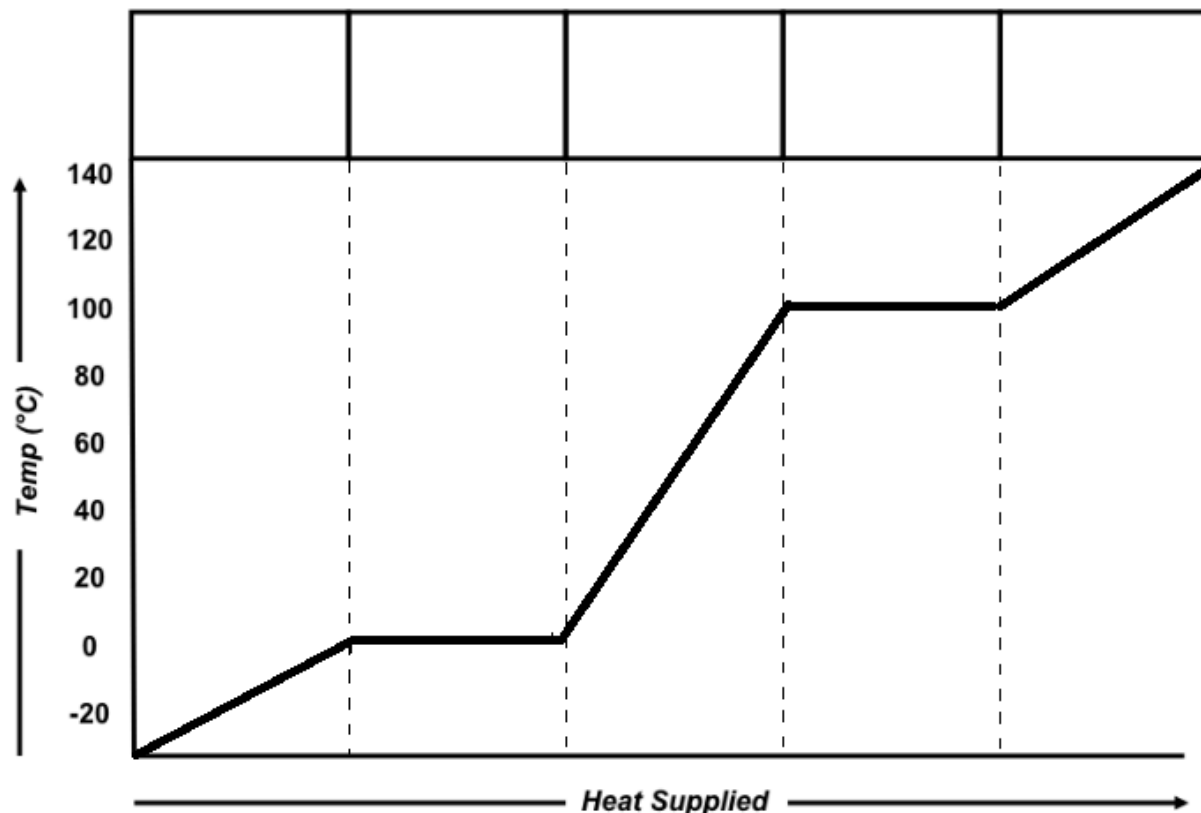
Practice Problems

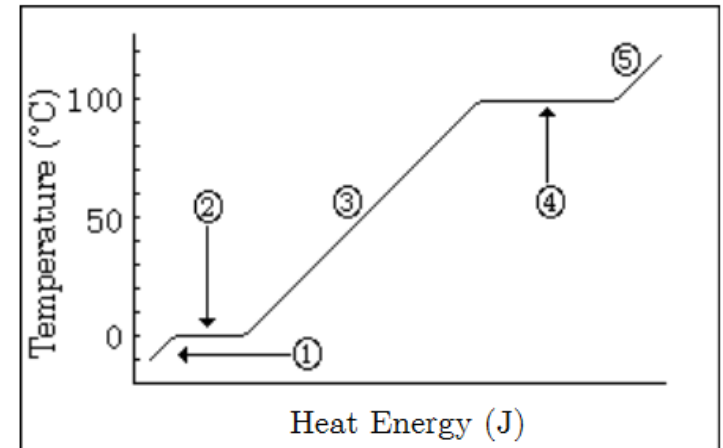*Use the heating curve to the right for the following questions.*

1) If we were to heat up 45.0 g of water from 20.0°C to 80.0°C

   a) What is the boiling point of this curve? What is the freezing point?

   b) What segment(s) would we pass through and in what direction?

   c) Calculate the heat energy released/absorbed due to this change.

Heat Energy (J)

2) If 45.0 g of liquid water was cooled from 100.°C to 50.0°C.

   a) What segment(s) would we pass through and in what direction?

   b) Calculate the heat energy released/absorbed due to this change.

4) If 45.0 g of water vapor is cooled from 102°C to -6.0°C.

   a) What segment(s) would we pass through and in what direction?

   b) Calculate the heat energy released/absorbed in joules due to this change.

3) If 45.0 g of ice at 0.0°C was melted and warmed to its boiling point.

   a) What segment(s) would we pass through and in what direction?

   b) Calculate the heat energy released/absorbed in kilojoules due to this change.