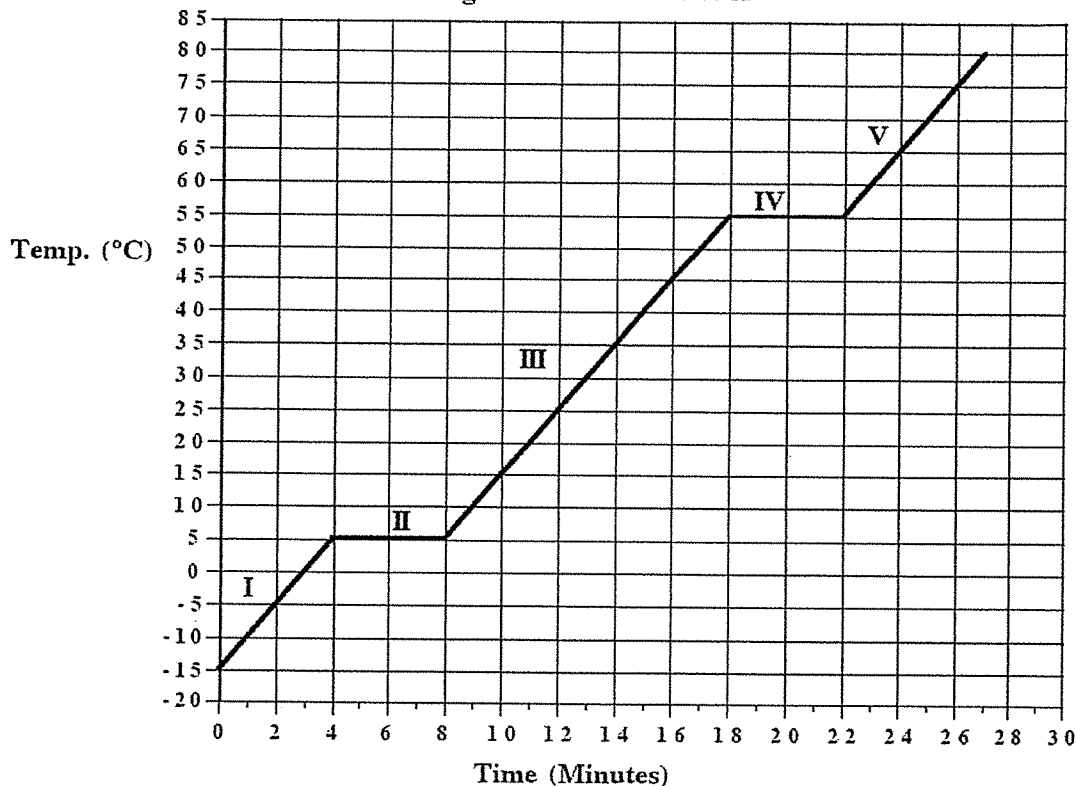


Heating Curves Worksheet

Key

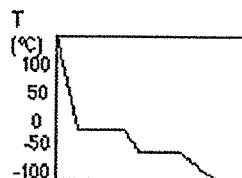
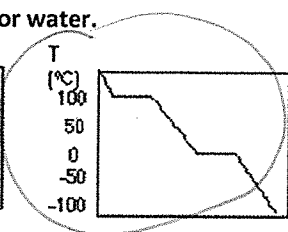
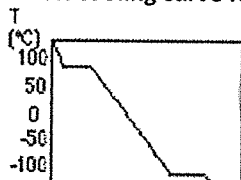
Heating Curve of Substance X



The heating curve shown above is a plot of temperature vs time. It represents the heating of substance X at a constant rate of heat transfer. Answer the following questions using this heating curve:

- I 1. In what part of the curve would substance X have a definite shape and definite volume?
- III 2. In what part of the curve would substance X have a definite volume but no definite shape?
- V 3. In what part of the curve would substance X have no definite shape or volume?
- II 4. What part of the curve represents a mixed solid/liquid phase of substance X?
- IV 5. What part of the curve represents a mixed liquid/vapor phase of substance X?
- 5°C 6. What is the melting temperature of substance X?
- 55°C 7. What is the boiling temperature of substance X?

Circle the correct cooling curve for water.



I, III, IV

8. In what part(s) of the curve would increasing kinetic energy be displayed?

II, IV

9. In what part(s) of the curve would increasing potential energy be displayed?

V

10. In what part of the curve would the molecules of substance X be farthest apart?

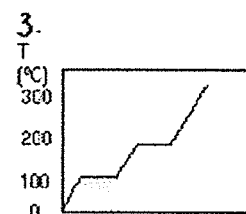
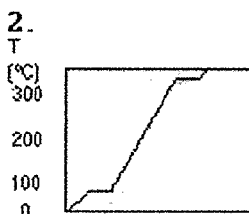
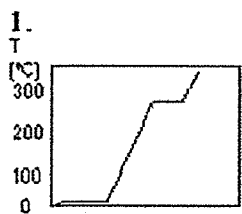
I

11. In what part of the curve would the molecules of X have the lowest kinetic energy?

IV

12. In what part of the curve would the molecules of X have the greatest kinetic energy?

Substance	Melting/Freezing Point (°C)	Boiling/Condensation Point (°C)
ammonia	-77.7	-33.3
carbon dioxide	-78.5	-78.5
copper	1083.0	2566.0
ethanol	-114.4	78.5
glycerin	20.0	290.0
gold	1064.0	2807.0
iodine	113.5	184.4
mercury	-38.9	356.6
sodium chloride	801.0	1413.0
stearic acid	71.5	360.0
tin	232.0	2270.0
pure water	0.0	100.0



13. Which of the graphs above most likely represents iodine? 3

14. Which of the graphs above most likely represents steric acid? 2

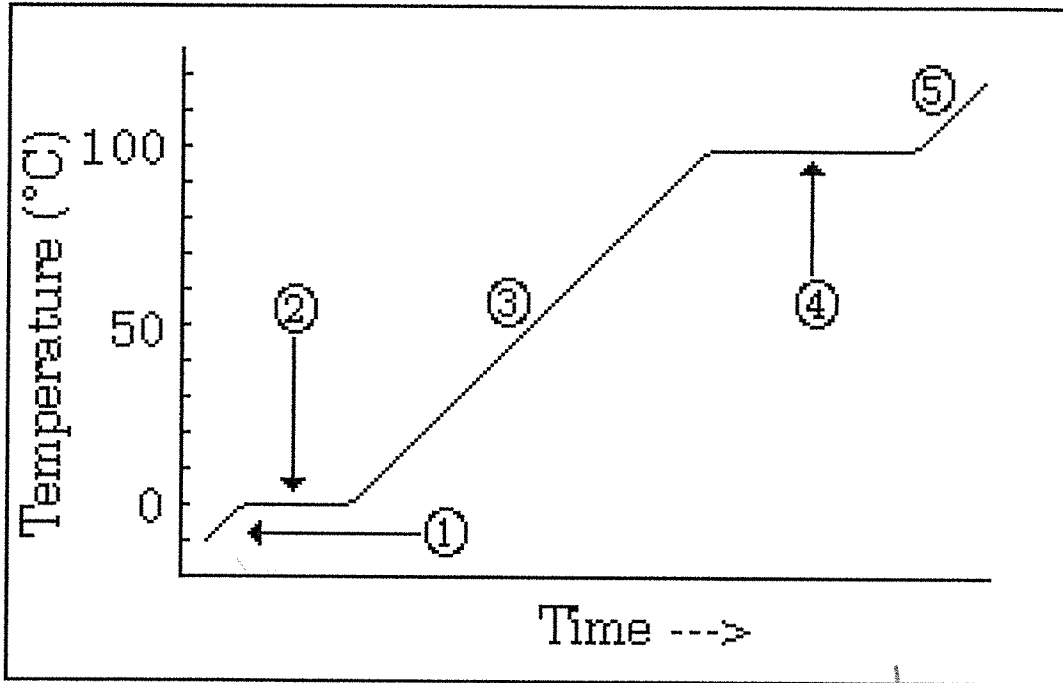
15. Which of the graphs above most likely represents glycerin? 1

Heating Curve and Phase Diagram Worksheet

Name: Key

period: _____

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) solid
 b) What is happening to the energy being absorbed from the heat source?

$\uparrow \text{KE} = \uparrow \text{temp}$

- c) What phase change, if any, is taking place? NONE

- 2) a) What phase or phases are present during segment (2) solid/liquid
 b) What is happening to the energy being absorbed from the heat source?

PE - restructuring particles

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

- 3) a) What phase or phases are present during segment (3) liquid
 b) What is happening to the energy being absorbed from the heat source?

$\uparrow \text{KE} = \uparrow \text{temp}$

- c) What phase change, if any, is taking place? NONE

- 4) a) What phase or phases are present during segment (4) liquid/gas
 b) What is happening to the energy being absorbed from the heat source?

PE - restructuring particles

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

- 5) a) What phase or phases are present during segment (5) gas
 b) What is happening to the energy being absorbed from the heat source?

$\uparrow \text{KE} = \uparrow \text{temp}$

- c) What phase change, if any, is taking place? NONE

- 6) What is the melting point of this substance? 0°C

- 7) At what temperature would this sample finish boiling? 100°C

- 8) When this substance is melting, the temperature of the ice-water mixture remains constant because:

Energy is stored in structure of particles

