

Name \_\_\_\_\_

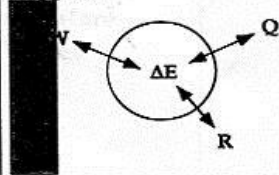
## Chemistry – Unit 3 Review

To prepare to do well on the Unit 3 test, you should assemble your notes, the 4 worksheets and the quiz and review them, preferably in a small group where you can draw from each other's understanding. Here are the key points you should know.

1. Tell what temperature scale must be used to solve gas problems.
2. Suppose that you lowered the temperature of a gas from 100°C to 50 °C. By what factor do you change the volume of the gas? (Half? All the way? None? etcetera...)
3. Suppose that 25.0 mL of a gas at 725 mm Hg and 20°C is converted to standard pressure and temperature. What would be the new volume?

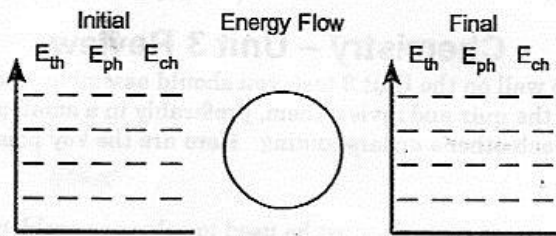
## Energy

Describe something happening at your home or elsewhere in Madison that could cause the following to happen.

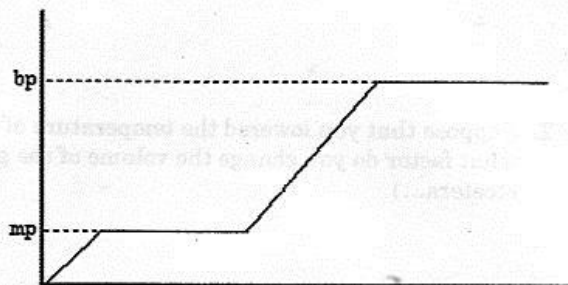


1. Q leaves a system
2. Q enters a system
3. R leaves a system
4. R enters a system

5. Draw energy bar graphs to account for energy storage and transfer in all sorts of changes. Make up a sample situation and sketch the bar graph. (next page)

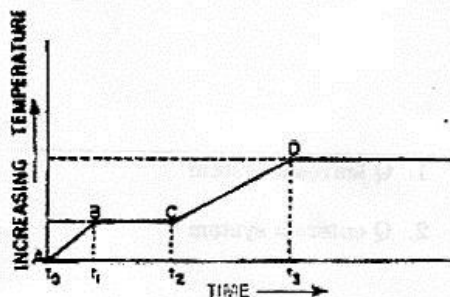


When energy is transferred to a sample of matter, *either* the particles speed up (temperature increases) *or* they get pulled apart (phase change), but *not* both at the same time. This helps account for the shape of the warming curve you got in the Icy Hot lab.



6. Label which phases are present in each portion of the curve above.
7. Label the sections in which the thermal energy ( $E_{th}$ ) of the sample is changing. Label the sections where the phase energy ( $E_{ph}$ ) is changing.

Base your answers to questions 12 and 13 on the diagram below which represents a substance being from a solid to a gas, the pressure remaining constant

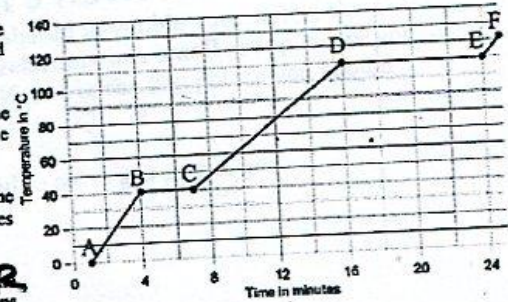


12. The substance begins to boil at point (1) E (2) B (3) C (4) D
13. Between points B and C the substance exists in (1) the solid state, only (2) the liquid state, only (3) both the solid and liquid states (4) neither the solid nor the liquid state

14. Which sample contains particles arranged in regular geometric pattern? (1) LIQUID? (2) SOLID? (3) GAS?

**LIQUID? SOLID? GAS?**

- \_\_\_\_\_ 1. What is the temperature at which the substance can be both in the solid and the liquid phase?
- \_\_\_\_\_ 2. During which lettered intervals is the **SEPARATION** of the substance increasing?
- \_\_\_\_\_ 3. During which lettered intervals is the **VIBRATION** of the particles increasing?
- \_\_\_\_\_ 4. How much **TIME FOR** substance from the time it stops melting to the time that it begins to boil?
- \_\_\_\_\_ 5. What is the total **time** needed to melt the substance (~~starting at time~~)?
- \_\_\_\_\_ 6. What is the total **time** needed to vaporize the substance (~~starting at time~~)?
- \_\_\_\_\_ 7. ~~What is the total of vaporization of the substance?~~
- \_\_\_\_\_ 8. During which lettered intervals is the substance solid?
- \_\_\_\_\_ 9. During which lettered intervals is the substance in the liquid phase?
- \_\_\_\_\_ 10. During which lettered intervals is the substance in the vapor phase?
- \_\_\_\_\_ 11. What is the temperature at which the substance can be both in the liquid and the vapor phase??



1. Label neatly on the graph of each of the following:
 

a. solid	b. liquid	c. gas
d. melting point	e. freezing point	f. boiling point
<del>g. condensation</del>	h. melting	i. freezing
<del>j. first appearance of solid in heating</del>		
m. last appearance of solid in heating		
n. first appearance of liquid in heating		
o. last appearance of liquid in heating		
p. first appearance of vapor in heating		

