

Chapter 10

Study Guide

Name: _____

Date: _____ Per: _____

1. Describe the assumptions/postulates of the kinetic-molecular theory of gases:

- _____
- _____
- _____
- _____
- _____

2. How do gas particles diffuse? _____

3. Fill in the following table.

Property	Solid	Liquid	Gas
Compressibility?			
Density (high/low)			
Volume (variable/fixed)			
Shape (variable/fixed)			
Diffusion (fast/slow)			
Expansion (low/high)			
Movement of Particles			
Degree of Organization			
Intermolecular Forces			

4. Temperature is best defined as: _____

5. The state of a substance at a particular temperature depends mostly on: _____

6. List the characteristics of substances with strong intermolecular forces and weak intermolecular forces.

<u>Strong Intermolecular Forces</u>	<u>Weak Intermolecular Forces</u>

7. The fact that liquid water turns into water vapor when heated, rather than turning into hydrogen gas and oxygen gas indicates that _____

8. What are the differences between a dipole and an induced dipole? _____

9. Describe a dipole-dipole intermolecular force: _____

10. Describe a hydrogen bond: _____

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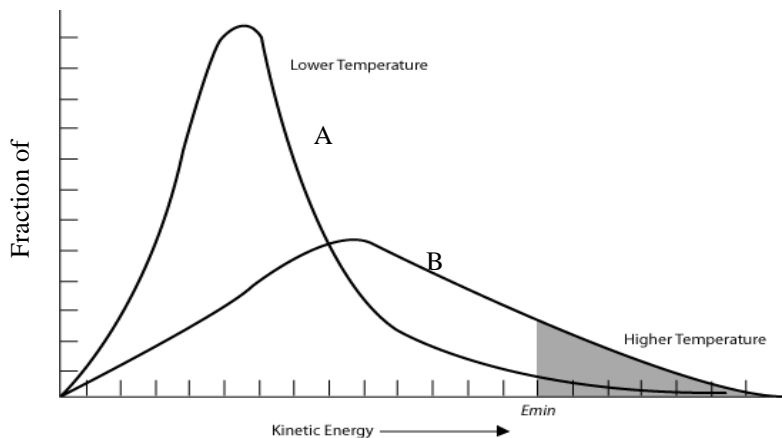
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11. Describe an induced dipole – induced dipole intermolecular force: _____
12. What determines the strength of an induced dipole – induced dipole force? _____
13. Describe the concept of viscosity: _____
14. Name some of the unique properties of water. What accounts for these unique properties?
 Properties: _____
 Cause: _____
15. Describe a unit cell: _____
16. Describe a hydrate: _____
17. Describe each of the 4 types of solid substances:
 Metallic: _____
 Covalent: _____
 Ionic: _____
 Covalent Network: _____
18. Changing the temperature of a substance involves changing the substance's _____ energy.
19. Changing a phase of a substance involves changing the substance's _____ energy.
20. Classify each of the phase changes as either endothermic or exothermic.

Phase Change	Energy Change
Sublimation	
Melting	
Vaporization	
Deposition	
Freezing	
Condensation	

21. Describe the flat portions of a heating curve: _____
22. Describe the sloped portions of a heating curve: _____



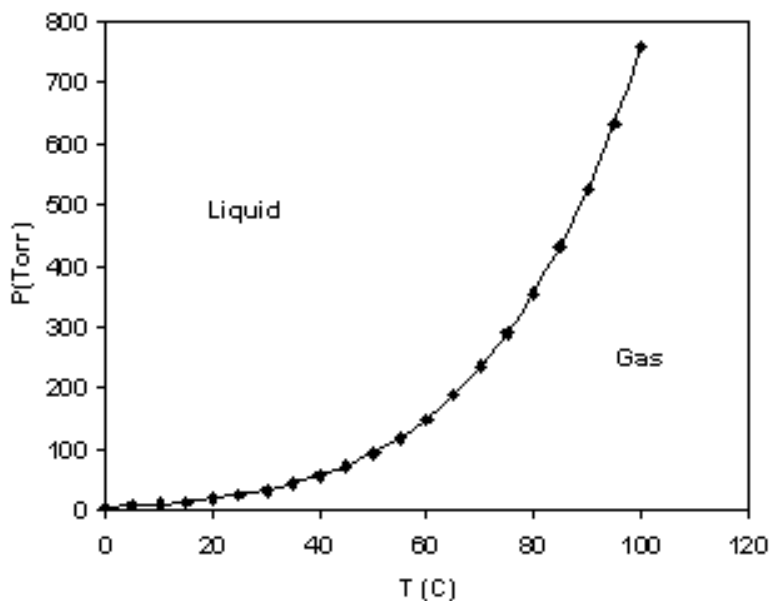
23. Which sample of gas has more particles ready to evaporate? _____
24. Which distribution has the lower average energy? _____

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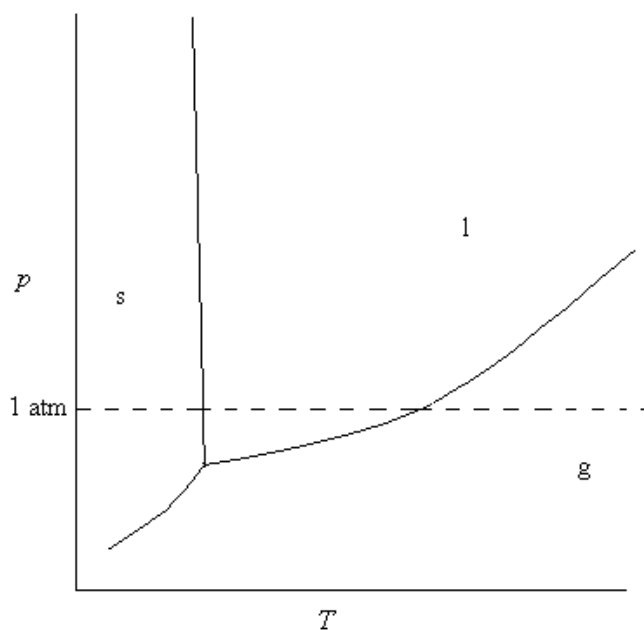
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25. What is the vapor pressure of the substance above at 60°C? _____
26. At what temperature would this substance boil if the atmospheric pressure was 500Torr? _____
27. Draw a line on the graph above showing a substance with higher intermolecular forces than those of the substance shown.
28. Draw a line on the graph above showing a substance with lower intermolecular forces than those of the substance shown.



29. What do the lines on the graph above represent? _____
30. Label each of the six phase changes on the graph.
31. Label the triple point on the graph.
32. How can a solid be converted into a gas without changing its temperature? _____
33. How can a gas be converted into a liquid without changing its pressure? _____

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34. Calculate the amount of heat in joules needed to melt 120.0 g of ice at 0 °C. ($\Delta H_{\text{fus}(\text{H}_2\text{O})} = 6.02 \text{ kJ/mol}$)
35. Calculate the energy absorbed when 195 g of dry ice (CO_2) sublimes. ($\Delta H_{\text{sub}(\text{CO}_2)} = 196.3 \text{ J/g}$)
36. What mass of aluminum metal would absorb 430.0 kJ when melted at its melting point? ($\Delta H_{\text{fus}(\text{Al})} = 396.6 \text{ J/g}$)
37. Calculate the amount of heat in joules needed to vaporize 130.0 g of liquid water at its boiling point. (The molar enthalpy of vaporization of water is 40.7 kJ.)
38. How many joules of energy are required to melt a 10.0 lb bag of ice at 0°C? ($\Delta H_{\text{fus}(\text{H}_2\text{O})} = 6.02 \text{ kJ/mol}$ & 1 lb = 2.205 kg)