OUTLINE & NOTES
LESSON 17B: KINETIC MOLECULAR THEORY, PART 1

I. Properties of Matter

A. Solids

1. Very _____ , _____ arrangement of particles
2. Most _____ state of matter
3. _____ are arranged in a particular order:
   _____
4. There are _____ between molecules
   a. Holds the molecules _____
   b. Particles have very _____ , but they do have slight _____ around fixed points

B. Liquids

1. Intermolecular forces are strong enough to limit the _____ of the particles and _____ , but not strong enough to keep the particles _____
2. Definite _____ : they will always take up the same amount of _____
3. Indefinite _____ : takes on the _____ of whatever _____ it's in
4. More _____ and _____ than solids
5. Particles of a liquid are able to _____

C. Gases

1. Particles are very _____
2. Particles are in _____ , _____ giving them lots of _____
3. Very _____ between gas molecules

4. Not _____

5. Indefinite _____ and _____

D. Exception: _____

1. Solids _____

2. Atoms are not arranged in a _____

3. They can act like a _____ or _____ , depending on the _____ they're in

4. Examples: _____ , _____ , _____

II. State Changes

A. _____ reactions

1. Require _____ to be _____

2. Types of endothermic state changes

   a. Melting: _____

   b. Evaporation: _____

   c. Sublimation: _____

B. _____ reactions

1. Require _____ to be _____

2. Types of exothermic state changes

   a. Condensation: _____

   b. Freezing or solidification: _____

   c. Deposition: _____

III. Calculating Energy Requirements of Reactions

A. What we need to know to calculate the total energy absorbed or released

1. _____ of the substance

2. How much _____ it takes to _____ or _____ one mole of the substance

B. Melting/Freezing Reactions

Molar enthalpy/heat of fusion: the _____ as

heat needed to _____

or the amount of energy needed to _____

one mole of _____

3. Example: How much energy would it take to melt 35.42 g of ice, given we know the molar heat of fusion of water is 6.009 kJ/mol?

   a. Convert _____ of ice into _____

   b. Convert _____ into _____ to find the _____ _____

C. Vaporization/Condensation Reactions

1. Molar heat of vaporization: the _____ as heat needed to _____ or the amount of energy needed to _____ one mole of _____

2. Example: How much energy would it take to vaporize 35.42 g of liquid water, given we know the molar heat of vaporization of water is 40.79 kJ/mol?

   a. Convert _____ of liquid to _____

   b. Convert _____ into _____ to find the _____