Notes #32 **Introduction to GASES-A** AP Chemistry

1. Properties of the states of matter:

	SOLID	LIQUID	GAS
			
Shape/Volume:	definite shape and volume	definite volume, no definite shape	no definite shape or volume
Compressibility:	only slightly compressible	only slightly compressible	highly compressible
Density:	med/high density	med/high density	low density
Movement, speed, distance:	close together, only vibrational movement	particles can slide past each other, still limited movement	particles are FAR apart from each other

2. What factors decide what phase - liquid, gas or solid - something will be?
   a. _____ - is a measure of the average kinetic energy in a substance.

      1. Kinetic Energy - _____ ($KE = 1/2\ mv^2$)
      * The greater the temperature, the_____ the KE (the faster particles are moving)
      * Any two gases at the same temperature will have the _____ KE.

** *IF temp was the ONLY factor, EVERYTHING would be in the same phase at room temp....*

   b. _____- are determined by the strength of attractive forces.

      1. Solids = particles are held together by _____ attractive forces
      2. Liquids = particles are held together by _____ attractive forces
      3. Gases = particles are held together by _____ attractive forces

3. Boiling points are an indication of the strength of attractive forces.
   - The higher the boiling point, the _____ the attractive forces.

   Q: Why are "salts" solids at room temp? _____

   Q: Why are noble gases gases monatomic? _____

1. Measuring Gases:
   a. Amount of Gas (n): measured in _____
   b. Volume (V): Measured in _____ (1 L =)
   c. Temperature (T): measure in Kelvin T(K) = _____
   d. Pressure (P): measured in _____

2. PRESSURE

a. Define as _____

**b. is created as a result of COLLISIONS of particles/ unit of area.

- Gas particles are in constant random motion. They exert pressure on any surface with which they come in contact with.

3. ATMOSPHERIC PRESSURE

a. pressure exerted by Earth's atmosphere.

b. "The air is thinner in Denver." Why? What does this mean?

c. Use a _____ to measure atmospheric pressure.

*Standard atmospheric pressure = 760 mmHg = 1 atm = 760 torr = 101,325 Pa = 101.325 kPa = 14.71 lb/in^2 = 1.01325 bar = 1013.25 millibar (one pascal = 1.0 N/m^2)

*** ***Be sure you can do conversions from one pressure unit to another!!!!***

d. DEMO's.....illustrations of atmospheric pressure!

4. MANOMETERS

a. A device used to measure the pressures of gases other than the atmospheric.

1. Which vessel contains gas w/P > than atmospheric? _____
2. Which vessel contains gas w/P < than atmospheric? _____
3. What would happen in B if the apparatus were carried to the top of a high mountain? _____

4. Calculate the P_{gas} in C? Assume P_{atm} = 760