KINETIC THEORY AND THE BEHAVIOR OF MATTER
(Ch.10-12)

Kinetic Theory – Tiny particles in all forms of matter are in motion.

An object has energy when it is in motion because of its kinetic energy.

As the temperature (T) of a gas rises, so does its kinetic energy.
Recall: K= ^{o}C + 273

Absolute zero – O K = -273 ^{O}C ; all motion ceases

PRESSURE – When objects are in motion, they exert forces.
ATMOSPHERIC PRESSURE (GAS PRESSURE) – Results from the collisions of air molecules with objects.
At high elevations, like Pikes Peak, the atmospheric pressure is low.

Manometer
Barometer – measures atmospheric pressure.
Units: mm of Hg
atm
kPa (kilopascal)

1 atm = 760 mm = 101.3 kPa

AVOGADRO'S HYPOTHESIS: At STP, equal volumes of GASES contain equal numbers of particles.

CONDENSED STATES OF MATTER: liquids and solids (These particles don't move as freely as gases)

VAPORIZATION – The conversion of a liquid to a gas BELOW its boiling point.
EVAPORATION – The vaporization of an uncontained liquid. It is a cooling process whereby the particles with the highest T escape first.
Caused by:
increase in T
increase in K.E.

VAPOR PRESSURE – The vaporized particles in a closed container collide with one another and the walls of the container causing a pressure build-up.