BONDING, RESONANCE, CHEMICAL EQUATIONS (5, 6, 7, 8)

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-reactivity does not equal rate (lithium does not react quickly)

Bonds and Geometry (183 - 193)

-All bonds display some portion of covalent character. That is, when electron clouds overlap, the resulting bond-pair of electrons can be claimed by either ion.

ALL BONDS ARE COVALENT!!!

Bonds tend to be...

Covalent if...	Ionic if...
-the absolute difference in charge is large, 4 or greater -the bonded cation is very small when compared to the bonded anion	-the absolute difference in charge is small (3 or less) -the bonded cation is similar in size to the bonded anion (very metallic)

If difference in charge is 0, then it's covalent

-group 13 atoms will be happy with 6 electrons

-polar covalent bond if one is satisfied, but not the other (most bonds)

-However, the 3d structure of molecules depends not only on the types of bonds, but also the # of bonds and lone electrons in the valence shell of the central atom.

-The structure of molecules is dictated by VSEPR (valence shell, electron pair repulsion theory) of chemical bonds (area of high electron density that repel each other) and their number

Repulsion	Type of Interacting Electrons
strong	Lone pair - lone pair
↑	Lone pair - bond pair
weak	Bond pair - bond pair

-this causes molecules to be linear, bent, trigonal planar, tetrahedral...etc... (table 6.5)

Resonance Structures

-occurs when a lone pair bonds with something

-confusion between single and double bond

Law of Conservation of Mass

-really an expression of 1st law of thermodynamics ($e = mc^2$)

-masses of reactants and products are always equal (except in nuclear reactions)

Law of Constant Composition/Proportions

-states that the proportions of the elements in a compound are always the same, no matter how the compound is made

-Avagadru's hypothesis: any given temp/pressure, atoms of any gas have the same volume as any other gas

-Dalton said water was HO, cuz one O plus one H yielded $2H_20$

Stoich:

volume/moles are not conserved

Dimensional Analysis

-the units/dimensions method! Let your units be your guide.
-only change 1 dimension with each step

The Mole Web
-a method for using dimensional analysis in chemistry
-provides a script or algorithm for solving stoichiometry problems