Unit #8 **Regents Chemistry**

Chemical Bonding

1. ***Electronegativity*** is a measure of an element's attraction for electrons.
2. Energy is *released* when a chemical bond *forms*. The more energy that is released, the more stable the bond is.
3. The last digit of an element's group number is equal to its ***number of valence electrons***.
4. Draw one dot for each valence electron when drawing an element's or ion's ***Lewis diagram***.
5. The ***kernel*** of an atom includes everything in an atom *except* the atom's valence electrons.
6. Metallic bonds can be thought of as a crystalline lattice of kernels surrounded by a "sea" of mobile valence electrons.
7. Atoms are most stable when they have 8 valence electrons (an ***octet***) and tend to form ions to obtain such a configuration of electrons.
8. ***Covalent bonds*** form when two atoms ***share*** a pair of electrons.
9. ***Ionic bonds*** form when one atom ***transfers*** an electron to another atom when forming a bond with it.
10. ***Nonpolar covalent bonds*** form when two atoms of the *same element* bond together.
11. ***Polar covalent bonds*** form when the electronegativity difference between two bonding atoms is between 0.4 and 1.7.
12. ***Ionic bonds*** form when the electronegativity difference between two bonding atoms is *greater than* 1.7.
13. Substances containing mostly covalent bonds are called ***molecular substances***.
14. Substances containing mostly ionic bonds are called ***ionic compounds***.
15. Memorize this table.

Substance Type	Properties
Ionic	Hard High melting and boiling points Conduct electricity when molten or when aqueous
Covalent (Molecular)	Soft Low melting and boiling points Do not conduct electricity (insulators)

16. ***Hydrogen bonds*** form when hydrogen bonds to the elements N, O, or F and gives the compound unusually high melting and boiling points.

USE THE REFERENCE TABLES!!!