**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Chapter 5-The Structure of Matter and Bonding**

**Guided Notes**

**I-Molecules and Compounds**

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a substance made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that are chemically combined by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are made of different substance that are just placed together, each substance in the mixture \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is a chemical Bond?

* An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_ of different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that binds them together
* Bonds form in order to
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Stability

* Most atoms form bonds in order to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Like the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Stability is the driving force behind \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Becoming Stable

* All neutrons want to be stable like a noble gas
* They either \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_charged
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_charged
* CATIONS: they have more \_\_\_\_\_\_\_\_\_\_\_\_\_\_charge than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, they \_\_\_\_\_\_\_\_\_\_ electrons
* ANION: they have more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_charge than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_they \_\_\_\_\_\_\_\_\_\_ electrons

**II: Ionic and Covalent Bonding**

**Covalent Bonds**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bonds form by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons



**Ionic Bonds**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bonds form by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of electrons



Review cations + anions

* What is the charge of Na\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What is the charge of Cl\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The final compound must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Na+1 + Cl-1 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ It takes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to balance \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cs+1 + O-2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ It takes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to balance the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ We use the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to depict how many atoms of each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ must be used for this compound

The criss-cross method

* Write an addition problem with the charges included with your element
* Switch the superscripts to make new subscripts

Practice:

Different ions

* Not all ions are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Some are made of more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
	+
	+
	+
	+

**Naming ionic compounds**

* Steps
	+ Write the name of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, just the way it is
	+ Write the name of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, change the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Nitrogen=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Oxygen=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Chlorine=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Carbon\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Name the following compounds:
	+ MgCl
	+ CaO
	+ CaBr2
	+ SrF2
* Give the compound formulas for the following compounds:
	+ Potassium Iodide
	+ Aluminum sulfide
	+ Sodium chloride
	+ Magnesium nitride



Naming compounds with Polyatomic Ions

* Write the name of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, just the way it is
* Isolate the polyatomic anion-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Write the name of the polyatomic ion, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name the following compounds:

* Ca(OH)2
* Na2(CO3)
* Na(C2H3O2)
* Ca(SO4)
* Na(NO3)
* Na (ClO3)
* Mg3(PO4)2
* Mg(OH)2

Stock System of Nomenclature

* Some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carry more than \_\_\_\_\_\_\_\_\_\_\_
	+ Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Depicted with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Some metals always have a definite charge
	+ Ex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Transition metals charge can \_\_\_\_\_\_\_\_, so it is always written in the formula:
	+ Ex: Copper (II) Chloride

Name the following Compounds or give formulas:

* CuBr2
* FeS
* Fe2O3
* Copper (II) Oxide
* Tin (IV) Iodide
* Iron (II) Chloride

More Practice:

* K2O
* Ca(OH)2
* Na(NO3)
* KClO3
* NaI
* CaCl2
* K2S
* Ca3(PO4)2

**Covalent Bonds**

* Compounds that are made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bonds that are formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Electrons are shared from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, still want it \_\_\_\_\_\_\_\_\_\_\_
* But electrons are not always shared \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ When two chlorine atoms bond, they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the positive nucleus of each atom=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_covalent bond
	+ When not shared equally= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_covalent bond



* Can share more than \_\_\_\_\_\_\_\_\_\_\_\_\_ of electrons
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_shares \_\_\_\_\_\_\_\_\_ pair of electrons
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_shares \_\_\_\_\_\_\_\_pair of electrons
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_shares \_\_\_\_\_\_\_\_\_\_ pair of electrons

**Naming Covalent Compounds**

* Different rules than ionic compounds
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are only used for the first atom if it is more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Second element is named using a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to indicate how many
* Second element’s name ending chaned to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The \_\_\_\_\_\_\_\_\_\_\_\_\_ at the end of a prefix is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when used in the name, followed by a vowel
* Two nonmetal atoms form a covalent bond because they have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ after they bonding

Diatomic Molecules:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that exist as diatomic (come in 2)
* Are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the name of the element to name the following diatomic molecules

* H2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* N2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cl2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* O2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* I2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Naming Binary Covalent Compounds

* Two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ End the last element in \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Add prefixes to show more than one (don’t use \_\_\_\_\_\_\_\_\_\_\_\_\_ on \_\_\_\_\_ element, but on all others)
* Prefixes
	+ Mon=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Di=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Tri=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Tetra=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Penta=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Hexa=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­
* Practice:
	+ CO=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ CO2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ PCl3=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ CCl4=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ N2O=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* P2O5=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cl2O7=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Cl2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

More examples!!!!

* SO3=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* ICl3=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* PBr5=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

AND MORE!

* CI4=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* PCl3=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* N2O3=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* P2O3=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* CSe2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* S2Cl2=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Now backwards!

* Phosphorous pentabromide=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Sulfur trioxide=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Trinitrogen pentachloride=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Naming Acids (Honors Only)**

* Acid: Compounds that form \_\_\_\_\_\_\_\_\_\_\_\_\_\_in water
* Formula usually begins with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Examples: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Anion ending** | **Acid Name** |
|  | -(stem)- |
|  | (stem)- |
|  | (stem) |

* Practice
* HBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* H2CO3\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* H2SO3\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Hydrofluoric acid: \_\_\_\_\_\_\_\_\_\_\_\_\_
* Sulfuric Acid: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Nitrous Acid: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Periodic Table Charges**