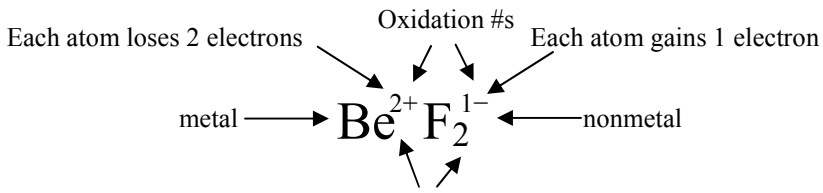
Name: _____

Period: _____

Day 17— Balanced Ionic Compounds

Ionic compounds are formed between metals (which lose electrons) and nonmetals (which gain electrons). Ionic compounds always form in a certain ratio. The number of electrons that are lost by the metal must equal the number of electrons gained by the nonmetal. The number of electrons lost or gained comes from the oxidation numbers.



Electron Arrows — An easy visual aid.

The Symbols

→ Losing 1 electron

≻ Gaining 1 electron

⇉ An ionic bond

Magnesium loses 2 electrons

Mg^{2+} →→

Chlorine gains 1 electron

≻ Cl^{1-}

Magnesium will combine with 2 Chlorines

Mg^{2+} ⇉ Cl^{1-}

Mg^{2+} →≻ Cl^{1-}

Magnesium Chloride: **$MgCl_2$ (a 1:2 ratio)**

Magnesium Sulfide: **MgS**

Mg^{2+} →→ *Loses 2*

≻ S^{2-} *Gains 2*

Mg^{2+} ⇉ S^{2-} **MgS**

1. For each of the following elements tell me how many electrons they gain or lose. The first one is done for you. (*Big Hint: think Oxidation Numbers*)

A. *G 1* Chlorine
B. _____ Oxygen
C. _____ Sodium
D. _____ Argon
E. _____ Nitrogen
F. _____ Calcium

2. Using electron arrows make balanced ionic compounds for the following:

A. Lithium and Oxygen

Formula: _____

B. Calcium and Fluorine.

Formula: _____

3. Write the balanced ionic formula for Calcium and Nitrogen:

Polyatomic ions are combinations of atoms that are not completely balanced. They still have a charge. When balancing ionic formulas, treat the polyatomic ion like any other single atom. The oxidation numbers for the polyatomic ions are found on the charge at the right.

Li^{1+} ⇉≻ SO_4^{2-}

Li^{1+} ⇉≻

4. Using electron arrows make balanced ionic compounds for the following:

A. Magnesium and Nitrate

Formula: _____

B. Sodium and Carbonate.

Formula: _____

Polyatomic Ions

Oxidation #	Name	Formula
1+	ammonium	NH_4^+
1-	acetate	$C_2H_3O_2^-$
2-	carbonate	CO_3^{2-}
2-	chromate	CrO_4^{2-}
1-	hydrogen carbonate	HCO_3^{1-}
1+	hydronium	H_3O^+
1-	hydroxide	OH^{1-}
1-	nitrate	NO_3^{1-}
2-	peroxide	O_2^{2-}
3-	phosphate	PO_4^{3-}
2-	sulfate	SO_4^{2-}
2-	sulfite	SO_3^{2-}