Naming - Ionic Compounds

Charges or Oxidation Numbers

- Group 1A → _____
- Group 2A → _____
- Group 3A → _____
- Group 4A → _____
- Group 5A → _____
- Group 6A → _____
- Group 7A → _____
- Group 8A → _____

- The charges of _____, or ions containing only one atom, can often be determined by referring to the periodic table

Ions

- An _____ is an atom or group of combined atoms that has a charge.
- A compound that is composed of ions is called an _____.
- Ionic compounds are usually start with a _____ or _____
- In ionic compounds, you will _____ valence electrons

Ions

- A _____, or positive ion, is formed when an atom _____ one or more electrons.
- An _____, or negative ion, is formed when an atom _____ one or more electrons.
- A _____ ion is one element with a charge
- A _____ ion is more that one element with a charge

Formation of Ionic Compounds

- Remember that objects with opposite charges _____ .
- The strong attractive force between ions of opposite charge is called an _____.
- Don't forget that even though the ions have charges, the overall charge of the compound will be …
- _____

Examples of Formula Writing

- Write the formula for the compound formed between sodium and chloride

More examples

- Write the formula between Mg and Br

More examples

- Write the formula for the compound formed between Ca and S

Polyatomic Ions

- Polyatomic ions are groups of covalently bonded atoms that have a charge
- For example:
- SO_4^{-2}
- NO_3^{-1}
- ClO_3^{-1}
- NH_4^{+1}

Polyatomic Ions

- Writing formulas with polyatomic ions is the same.
- You just have to keep the polyatomic ions grouped together
- When you bring a number down to a polyatomic ion you MUST use parentheses!

~~Formula writing with polyatomic Ions~~

- Write the formula for the compound formed between sodium and nitrate

~~Formula writing with polyatomic Ions~~

- Write the formula between ammonium and sulfate

More examples

- Copper (II) and chlorine
- Silver and Nitrate
- Magnesium and sulfite
- Calcium and sulfur
- Potassium and oxygen
- Ammonium and phosphate
- Ammonium and chlorine

Don't Forget!

- You have to remember the elements that form multiple charges (the ones with the roman numerals)
- That roman numeral will tell you the _____!
- For example: Copper (II) → Cu^{+2}

Naming ionic compounds

- In naming ionic compounds, name the _____ first, then the _____.
- Monatomic _____ use the element name.
- Monatomic _____ use the root of the element name plus the suffix -*ide*.
- (This means 1 element with a negative charge will end in –*ide*).

Oxyanions

- Certain polyatomic ions, called _____, contain oxygen and another element.
- If **two** different oxyanions can be formed by an element, the suffix -*ate* is used for the oxyanion containing more oxygen atoms, and the suffix -*ite* for the oxyanion containing fewer oxygens.

For example

- SO_4^{-2}
- SO_3^{-2}
- PO_4^{-3}
- PO_3^{-3}
- NO_3^{-1}
- NO_2^{-1}

Oxyanions

- Four oxyanions can be formed by the halogens
- In this case:
- Most – Per (root) – ate
- 1 less – (root) – ate
- 1 less – root – ite
- 1 less – hypo (root) - ite

For example

- ClO_4^{-1}
- ClO_3^{-1}
- ClO_2^{-1}
- ClO^{-1}

Simply put..

- All you have to do is name the 1st thing then name the 2nd thing

Examples

- $NaCl$
- $MgSO_4$
- K_3PO_4
- $Ca(ClO_3)_2$
- NH_4NO_2
- $Al(ClO)_3$
- $CuSO_3$
- $Fe(NO_3)_2$

More examples

- Lead (IV) Oxide
- Ammonium Permanganate
- Cobalt (II) chloride
- Calcium sulfide
- Lithium nitrate
- Sodium acetate
- Tin (II) chloride