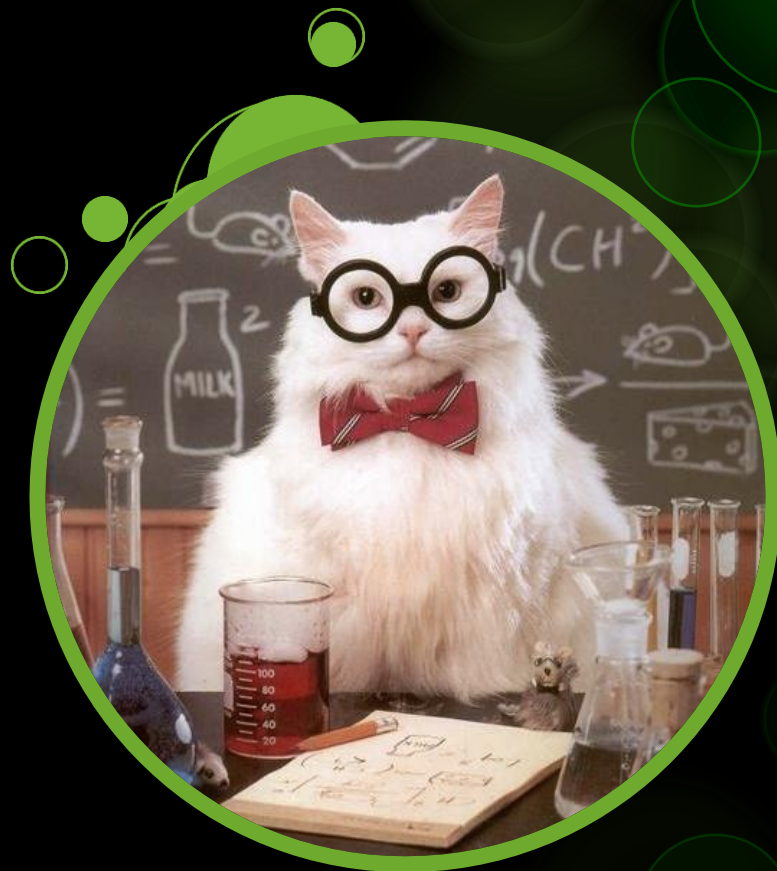


Ionic Compounds + Ionic Compounds with Multivalent Metals

Names and Formulas

Ionic Compounds



Do you know any positive ions?

Na^+

Ionic Bonding

1. What is an ionic bond?

- Involves **ELECTRON TRANSFER**
- **Electrons move from one atom to another atom in an attempt to obtain a stable outer shell**
- **Electrons move from metals to non-metals**

Ionic Bonding

2. Which element becomes positive?

- The **metallic element** becomes the positive ion

3. Which element becomes negative?

- The **non-metallic element** becomes the negative ion

Ionic Bonding

4. How are elements bonded in an ionic bond?
 - The elements are **attracted** to each other as they are now ions. The **metallic** element has a **positive charge** and the **non-metallic** element has a **negative charge**.

Combining Capacity

5. What is combining capacity?

- Combining capacity is the number of electrons an atom will gain, lose, or share in an attempt to obtain a stable outer shell

Writing Ionic Formulas

- When writing ionic compound formulas we use the following steps

Step 1

- Write down the symbols for each element with the metal one first
- Example:

Aluminum	Oxygen
Al	
Al	O

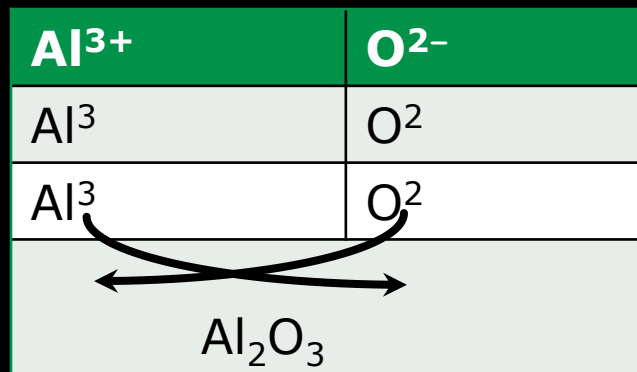
Step 2

- Determine the ion charge or combining capacity for each element and place it to the top right of the symbol

Al	O
Al ³⁺	
Al ³⁺	O ²⁻

Step 3

- Drop the signs and crisscross down



Step 4

- Reduce if possible

Practice

- Magnesium and nitrogen
- Calcium and chlorine
- Lithium and phosphorus
- Potassium and sulfur

Naming Chemical Compounds

- Write down the names of each element with the metal first
- Na_3N
- Sodium nitrogen

- Drop the ending of the non-metal name and **ADD IDE**
- Sodium nitrogen
- Sodium nitr
- Sodium nit**ide**

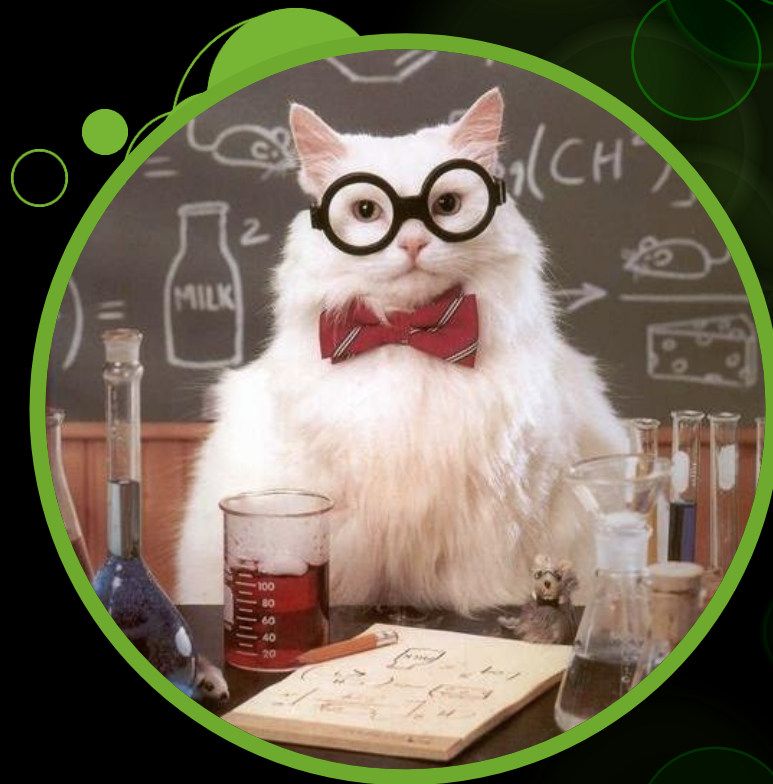
How is the name of the non-metal changed in an ionic compound?

Element name	Ion name	Ion symbol
chlorine	chloride	Cl ⁻
fluorine	fluoride	F ⁻
bromine	bromide	Br ⁻
iodine	iodide	I ⁻
oxygen	oxide	O ²⁻
sulfur	sulfide	S ²⁻
selenium	selenide	Se ²⁻
nitrogen	nitride	N ³⁻
phosphorus	phosphide	P ³⁻

Practice

- K_2S
- Mg_3O_2
- AgF
- $AlCl_3$

Ionic Compounds with Multivalent Metals



OMG more chemistry



MoO (Matter of Opinion)

Step 1

- Write down the symbols for each element with the metal one first
- Example:

Titanium (IV)	Oxygen
Ti	
Ti	O

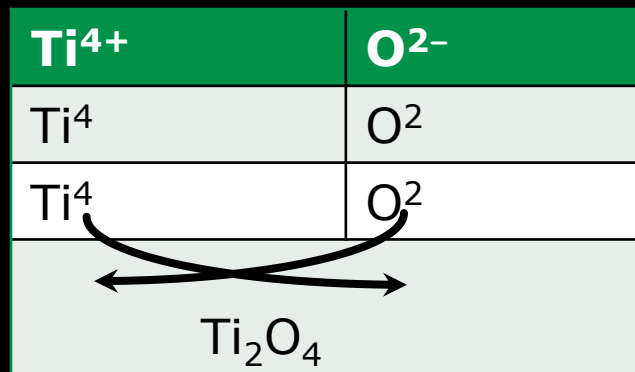
Step 2

- Determine the ion charge or combining capacity for each element and place it to the top right of the symbol

Ti	O
Ti ⁴⁺	
Ti ⁴⁺	O ²⁻

Step 3

- Drop the signs and crisscross down



Step 4

- Reduce if possible
 - Ti_2O_4
 - TiO_2

Roman Numerals

Number	Roman Numeral
1	I
2	II
3	III
4	IV
5	V
6	VI
7	VII

Practice

- Manganese (IV) and nitrogen
- Tin (II) and chlorine
- Gold (I) and phosphorus
- Uranium (VI) and sulfur

Naming Chemical Compounds

- Write down the names of each element with the metal first
- Mn_3N_4
- Manganese (IV) nitrogen

- Drop the ending of the non-metal name and **ADD** **IDE**

- Manganese (IV) nitrogen
- Manganese (IV) nitr
- Manganese (IV) nitri**de**