

## *Polyatomic Ions Notes*

Review:

- Ionic compounds are between \_\_\_\_\_ and \_\_\_\_\_ types of elements.
- \_\_\_\_\_ form a positively charged ion, known as a \_\_\_\_\_.
- \_\_\_\_\_ form a negatively charged ion, known as an \_\_\_\_\_.
- \_\_\_\_\_ are always written first in the formula and/or name.

Transition Metals

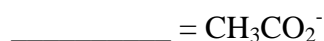
- Elements that have more than 1 charge use \_\_\_\_\_ within parentheses.
- They represent the \_\_\_\_\_ of the element.
- Transition metals always have a \_\_\_\_\_ charge.
- Within Ionic Compounds, Transition Metals must be bonded with a \_\_\_\_\_.
- The charge of a transition metal can be identified by working backwards.

Examples



Chemical Formula:

- Polyatomic ions have \_\_\_\_\_ different atoms.
  - ammonium ion**, \_\_\_\_\_ (the only positive polyatomic ion you need to know)
  - “ATE” ions**: contain an atom bonded to several oxygen atoms:



c. "ITE" ions: remove one oxygen from the "ATE" ion and keep the same charge:



d. Hydrogen Prefixes:

Bicarbonate: \_\_\_\_\_

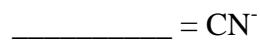
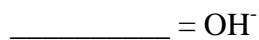
Dihydrogen Phosphate: \_\_\_\_\_

Hydrogen Sulfate: \_\_\_\_\_

Hydrogen Phosphate: \_\_\_\_\_

Hydrogen Sulfite: \_\_\_\_\_

e. Other common complex ions:



➤ **CAUTION:** If ions are written as a group, \_\_\_\_\_.

➤ Writing multiple polyatomic compounds:

• If we need two sulfates in a compound, we write: \_\_\_\_\_

• If we need three nitrates in a compound, we write: \_\_\_\_\_

➤ Similar to Binary Ionic Compounds, the **net charge** of the compound must be \_\_\_\_\_.

• Example:

▪ For a compound containing calcium ion, Ca<sup>2+</sup>, and nitrate, NO<sub>3</sub><sup>-</sup>,

▪ The ratio must be \_\_\_\_\_ (one calcium ion for every two nitrates).

▪ So, the formula would be \_\_\_\_\_.

## Ionic Compounds Containing Polyatomic Ions

Please complete the following table:

Name of Ionic Compound	Formula of Ionic Compound
1. Sodium chromate	
2. Calcium carbonate	
3. Magnesium nitrate	
4. Aluminum sulfate	
5. Lithium phosphate	
6. Ammonium chloride	
7. Cesium chlorate	
8. Potassium sulfate	
9. Barium acetate	
10. Rubidium cyanide	
11.	$\text{KCH}_3\text{CO}_2$
12.	$\text{Mg}_3(\text{PO}_4)_2$
13.	$\text{Al}(\text{ClO}_3)_3$
14.	$\text{CaSO}_4$
15.	$\text{Sr}(\text{HCO}_3)_2$
16.	$\text{NaNO}_3$
17.	$\text{Li}_2\text{CO}_3$
18.	$\text{Ba}(\text{NO}_3)_2$
19.	$\text{Cs}_2\text{CrO}_4$
20.	$\text{NH}_4\text{OH}$