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

CuO CoCl3 Fe2O3

Chemical Formula:

- Polyatomic ions have _____ different atoms.
  - **a. ammonium ion, _____** (the only positive polyatomic ion you need to know)
  - **b. "ATE" ions:** contain an atom bonded to several oxygen atoms:

_____ = NO_3^- _____ = CO_3^{2-}

_____ = PO_4^{3-} _____ = $CH_3CO_2^-$

_____ = SO_4^{2-} _____ = ClO_3^-

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

_____ = NO^{2-} _____ = $SO3^{2-}$

_____ = $PO3^{3-}$ _____ = ClO^{2-}

d. Hydrogen Prefixes:

Bicarbonate: _____

Dihydrogen Phosphate: _____

Hydrogen Sulfate: _____

Hydrogen Phosphate: _____

Hydrogen Sulfite: _____

e. Other common complex ions:

_____ = OH^- _____ = CN^-

- **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^{2+}, and nitrate, $NO3^-$,
    - 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.	KCH_3CO_2
12.	$Mg_3(PO_4)_2$
13.	$Al(ClO_3)_3$
14.	$CaSO_4$
15.	$Sr(HCO_3)_2$
16.	$NaNO_3$
17.	Li_2CO_3
18.	$Ba(NO_3)_2$
19.	Cs_2CrO_4
20.	NH_4OH