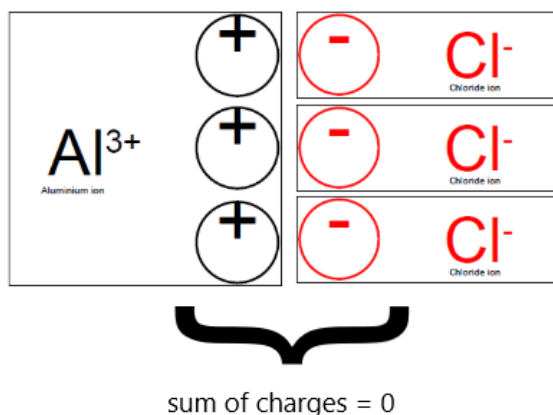


Naming and Formula Writing Investigation

Procedure:

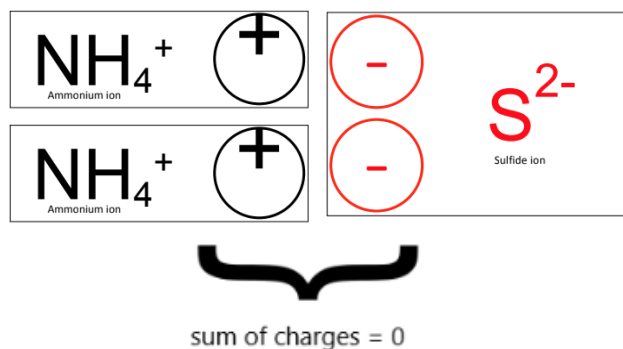
1. Empty the contents of both bags on the table (keep the colors separated).
2. Using the table of compounds below, you will combine the two ions listed in the first box. Locate those ions in the card piles (the first ion is in the blue pile and the second ion is in the pink pile). Add as many of each ion that you need in order to make a neutral compound (the sum of the charges must equal 0).

Example: To make a compound with Al^{+3} and Cl^{-1} you would need $1Al^{+3}$ and $3Cl^{-1}$ ions to make a neutral compound (sum equals 0)



3. Write the resulting chemical formula for the compound in the table by writing the positive ion first then the negative ion second. Use subscripts to indicate how many of each ion you need (excluding 1's).
Example: The resulting formula for $1Al^{+3}$ and $3Cl^{-1}$ would be $AlCl_3$.
4. Write the resulting name of the compound formed in the table by using the names on the cards (name of positive ion written first followed by name of negative ion).
Example: Al^{+3} is aluminum and Cl^{-1} is chloride so the resulting name of the compound formed between them is aluminum chloride.
5. Polyatomic ions are groups of elements that contain more than 1 element and carry a charge such as NH_4^{+1} . When more than one polyatomic ion is needed, parentheses are placed around the polyatomic ion and a subscript indicating the number of ions used is placed outside of the parentheses.

Example: To make a compound with NH_4^{+1} and S^{2-} you would need 2NH_4^{+1} and 1S^{2-}



The resulting formula would be $(\text{NH}_4)_2\text{S}$.

6. Now use the cards to complete the table below.

Table of Compounds:

Combine the ions	Ion Symbols	Formula of Compound	Name of Compound
Aluminum and chloride	Al^{+3} Cl^{-1}	AlCl_3	aluminum chloride
Ammonium and sulfide	NH_4^{+1} S^{-2}	$(\text{NH}_4)_2\text{S}$	ammonium sulfide
Silver and sulfide			
Magnesium and fluoride			
Potassium and nitride			
Lithium and iodide			
Iron (III) and bromide			

Lead (IV) and sulfide			
Copper (II) and bromide			
Sodium and sulfate			
Hydrogen and nitrate			
Zinc and carbonate			

1. How does an element form a positive ion?
2. How does an element form a negative ion?
3. What is the overall (net charge) of all compounds?
4. What do the subscripts indicate about the compound?
5. What does the roman numeral in parentheses such as Iron (III) indicate?
6. Look at the charges for iron and magnesium on the periodic table. Why do you think Iron needs a roman numeral in its name and magnesium does not?