Name: _____Per: _____ Date: _____

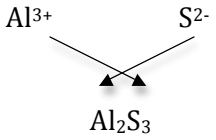
Ionic Compound Shortcut: The Criss-Cross Method

Now that you know how ionic compounds are predicted (using Lewis Dot Diagrams), you can easily predict the formula of an ionic compound based on the charge of the cation and the anion. Here's how:

1. Given a name, write out the ions involved including the ionic charges that they would naturally have.

Example: aluminum sulfide — Al would have a charge of 3+, thus Al^{3+}
S would have a charge of 2-, thus S^{2-}

2. Criss-cross the NUMBER associated with the charges so that the number of the anion's charge becomes the subscript of the cation and the number of the cation's charge becomes the subscript of the anion. NOTE: DO NOT carry down the charges. Your final formula should not have any charges!



3. Words of warning:

a. If the subscripts you criss-crossed can be reduced, REDUCE THEM! Example: barium oxide: Ba^{2+} and O^{2-} becomes Ba_2O_2 but should be written (reduced) as BaO

b. If there is more than one polyatomic ion, add parentheses around that ion. Example: iron (III) nitrate: Fe^{3+} and NO_3^- so write is as $Fe(NO_3)_3$

Homework: Fill in the following chart:

	Name	Symbol of the cation	Symbol of the anion	Formula
1	barium nitrate	Ba^{2+}	NO_3^-	$Ba(NO_3)_2$
2	potassium hydroxide			
3				$NaClO_3$
4	aluminum phosphate			
5				$Ca(MnO_4)_2$
6	lead (II) iodide			
7				$(NH_4)_2O$
8	iron (III) sulfide			
9				$Sr(C_2H_3O_2)_2$
10	ammonium sulfate			

Mixed practice: Fill in the following chart:

	Name	Type of bond:	Formula
1	perchloric acid	Covalent (acid)	$HClO_4$
2	sodium acetate	Ionic	$NaC_2H_3O_2$
3	carbon dioxide		
4			NO_2
5	potassium nitride		
6			$AlCl_3$
7	copper (II) nitrate		
8			FeF_2
9	zinc phosphate		
10			Agl
11	hydrochloric acid		
12			H_2SO_4
13	nitric acid		
14			C_2H_6