Name: _____ **Date:** _____

Chemistry *~ Ms. Hart* **Class:** Anions or Cations

THE URBAN ASSEMBLY SCHOOL FOR CRIMINAL JUSTICE

6.5 Balancing Equations

Example 1:
Balance the following equation:

$$NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$$

***For these more complicated equations, it is best to draw a square around each polyatomic ion before moving on so that you don't change the formula!**

Step 1: Draw a square around each polyatomic ion and take inventory

$$NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$$

Elements/Polyatomic Ions	Reactant side	Product side

Step 2: Add coefficients (Let's do sodium first)

$$\_\_\_\_\_NaOH + \_\_\_\_\_H_2SO_4 \rightarrow \_\_\_\_\_Na_2SO_4 + \_\_\_\_H_2O$$

Step 3: Re-inventory and double check

Elements	Reactant side	Product side

Step 4: Add coefficients (Let's worry about oxygen first)

_____NaOH + _____H_2SO_4 → _____Na_2SO_4 + ____H_2O

Step 5: Re-inventory and double check

Elements	Reactant side	Product side

Step 6: Add coefficients (Let's do hydrogen.)

_____NaOH + _____H_2SO_4 → _____Na_2SO_4 + ____H_2O

Step 7: Re-inventory and double check

Elements	Reactant side	Product side

Final answer:

_____NaOH + _____H_2SO_4 → _____Na_2SO_4 + ____H_2O

Tips for Balancing Equations

Example:

$$NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$$

1. Before starting to balance an equation, draw a box around each chemical formula in the problem. *The boxes will make sure you don't change the formula.* Looks like this:

$$\boxed{NaOH} + \boxed{H_2SO_4} \rightarrow \boxed{Na_2SO_4} + \boxed{H_2O}$$

2. Make the chart showing the atoms of each element on each side.

$$\boxed{NaOH} + \boxed{H_2SO_4} \rightarrow \boxed{Na_2SO_4} + \boxed{H_2O}$$

Element	Before	After
Na	1	2
O	5	5
H	3	2
S	1	1

3. Balance each atom one at a time.
   Advice: try to balance in the following order:
   1. *Non-Metals*
   2. *Metals*
   3. *Oxygen*
   4. *Hydrogen*

4. If you are having trouble balancing an equation, try multiplying **the largest most complex molecule** on either side of your equation by **2**.

5. If you are still having trouble, START OVER AGAIN COMPLETELY

Try this on your own.

Example 2:

$$\_\_\ Ag(NO_3)_2 + \_\_\ LiOH \rightarrow \_\_\ Ag(OH)_2 + \_\_\ LiNO_3$$

Show your work below:

Final Answer:

$$\_\_\ Ag(NO_3)_2 + \_\_\ LiOH \rightarrow \_\_\ Ag(OH)_2 + \_\_\ LiNO_3$$