

Name: \_\_\_\_\_

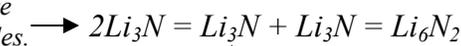
Period: \_\_\_\_\_

## Day 18— The Law of Conservation of Mass

### How to read chemical reactions:

The 2 is a coefficient.

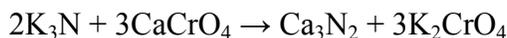
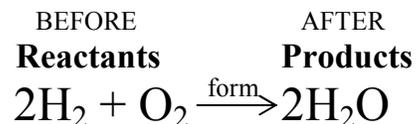
It means there are two  $\text{Li}_3\text{N}$  molecules.



The 3 is a subscript ("sub" means under). It means there are three Lithium atoms in each molecule.

So,  $2\text{Li}_3\text{N}$  really means  $\text{Li}_6\text{N}_2$ .

We will call this reaction notation.

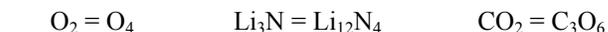


- Circle the second reactant. Underline the first product.
- How many potassium atoms on the reactant side?
- How many oxygen atoms on the product side?

- Write the following in reaction notation:



- What coefficient produces the given reaction notation:



During chemical reactions atoms are recombined into different chemicals, but no atoms are gained or lost. Sometimes liquids and solids can react and form invisible gases, but even when you can see the products—they are still there.



### Open System

Products can escape.



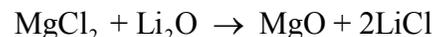
Before:  
54 grams

**Mass seems to be lost.**

After:  
51 grams

3 grams escaped the open reaction.

**The Law of Conservation of Mass states: in any closed reaction the total amount of mass stays the same.**



Since mass must be conserved, 20 g of LiCl must have been produced in this reaction.

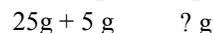
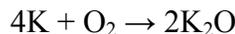
$$35 + 11 = 26 + ?$$

$$46 = 26 + ?$$

$$46 - 26 = ?$$

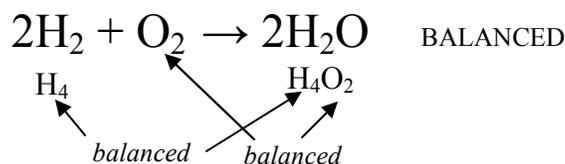
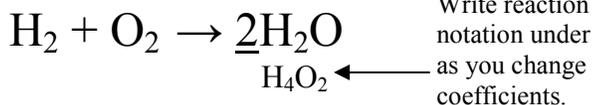
$$? = 20$$


- Is this an open or closed reaction?
  - Will the mass of his products be greater than, less than, or equal to his reactants?
  - Why?

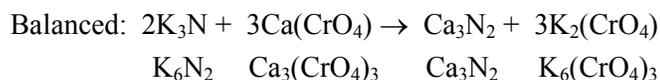


- How much potassium oxide is produced in this reaction?

When balancing chemical reactions remember that subscripts cannot be changed and that coefficients multiply.



Treat polyatomic ions (like the  $\text{CrO}_4$  below) as a single element unless the ion is broken up on one side.



- Balance the following reactions:

