

Name: _____

Date: _____ Hr: _____

Balancing Chemical Equations Activity

Objectives :

- to read chemical equations
- to identify elements by their chemical symbol
- to count atoms
- to identify the coefficients and subscripts in a chemical equation.
- to label the reactants and products of a chemical equation
- to balance chemical equations

Materials: These account for one complete set.

4 red 2's

4 blue 3's

4 green 4's

2 purple 5's

2 orange 6's

2 black 7's

2 blue "+"

1 black "yield" sign "→"

1 purple "Products"

1 red "Reactants"

Al

Al₂O₃

C

CO₂CH₄

Fe

N₂Na₂SO₄Fe₃O₄NH₃O₂C₂H₆H₂

Na

P₄CaCl₂H₂O

NaCl

P₄O₁₀CaSO₄H₂O₂Na₂O

Pre Lab Questions: Answer the following before you begin the activity:

- 5 H₂**
- 1) What number represents the **Coefficient**? _____
 - 2) What number represents the **Subscript**? _____
 - 3) What element is represented by the letter "**H**"? _____
 - 4) How many "**H**'s" do you have total? _____

Procedure :

- 1) Using your set of cards, replicate the chemical equation onto your desk.
- 2) Label the reactant side and the product side.

Record the following information into Data Table:

- 3) Identify the elements on the reactant side.
- 4) Count the number of atoms for each element.
- 5) Identify the elements on the product side.
- 6) Count the number of atoms on the product side.
- 7) Are the 2 sides equal? If not, the equation is not balanced.
- 8) The cards numbered 2 - 7 are your **coefficients**. They can **ONLY** be placed in front of the elements. You can **not** change the subscripts.
- 9) Choose an element that is not balanced and begin to balance the equations.
- 10) Continue until you have worked through all the elements.
- 11) Once they are balance, count the final number of Reactants and Products.
- 12) Write the balanced equation.
- 13) Can your equation be simplified?

Make the following Equations on your desk	Reactants	Products	Reactants - Final	Products - Final	Balanced Equation
$H_2 + O_2 \rightarrow H_2O$					
$H_2O_2 \rightarrow H_2O + O_2$					
$Na + O_2 \rightarrow Na_2O$					
$N_2 + H_2 \rightarrow NH_3$					
$P_4 + O_2 \rightarrow P_4O_{10}$					
$Fe + H_2O \rightarrow Fe_3O_4 + H_2$					
$C + H_2 \rightarrow CH_4$					
$Na_2SO_4 + CaCl_2 \rightarrow CaSO_4 + NaCl$					
$C_2H_6 + O_2 \rightarrow CO_2 + H_2O$					
$Al_2O_3 \rightarrow Al + O_2$					

Analysis/Results:

1. What does " \rightarrow " mean?
2. What side of the equation are the reactants found? products?
3. Why must all chemical equations be balanced?
4. Why can't the subscripts be changed?
5. What does it mean to "simplify" the equation?

Conclusion: 2-3 sentences on what you learned.