**Unit 1 Chemistry Experiment**: Writing balanced equations

**Aim**: To develop chemical equation writing skills.

**Background**

Writing balanced equations to represent or predict chemical reactions is a fundamental skill for chemists. A systematic approach helps with this process. In particular,

* always refer to **electrovalency** charts before writing formulas.



* reaction products can often be predicted by swapping the ions.

**Examples**

sodium chloride + silver nitrate 🡪 sodium nitrate + silver chloride

barium hydroxide + magnesium sulfate 🡪 barium sulfate + magnesium hydroxide

1. Write the products in words to the following reactions (swap the ions as shown above)

 copper sulfate + magnesium hydroxide 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 sodium sulfate + barium nitrate 🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Experiment**

We will work through a series of reactions, where you will observe the reaction and then write a balanced equation for the reaction. For each reaction, you must follow the process below – do NOT take shortcuts.

**Balancing Equations**

1. Write the equation in words.
2. Replace the names with the correct formulas.
3. Balance using the coefficients in front of the chemicals.
4. Sulfur and oxygen gas

|  |  |
| --- | --- |
| Words |  |
| Formulas  |  |
| Balance  |  |

1. Magnesium and oxygen gas. Burn a small sample in tongs. Use the Bunsen to start the reaction.

|  |  |
| --- | --- |
| Words |  |
| Formulas  |  |
| Balance  |  |

1. Silver nitrate and potassium bromide solutions. Add a few mL of each to two test tubes. Pour one test tube into the other

|  |  |
| --- | --- |
| Words |  |
| Formulas  |  |
| Balance  |  |

1. Aluminium nitrate and sodium carbonate. Add a few mL of each to two test tubes. Pour one test tube into the other

|  |  |
| --- | --- |
| Words |  |
| Formulas  |  |
| Balance  |  |

1. Light your Bunsen. This is a chemical reaction between methane (CH4) and oxygen.

|  |  |
| --- | --- |
| Words |  |
| Formulas  |  |
| Balance  |  |