Unit 2: Chemistry Review

Previously Tested (yes, you still need to know this)

Topic 2.2 What happens to atoms in a chemical reaction?

- ➢ Ionic Compounds
  - Metals/cations and non-metals/anions
  - Transfer of electrons
- ➢ Covalent Compounds
  - Non-metal elements
  - Share electrons
  - Famous Seven (H_2, N_2, O_2, Cl_2, Br_2, I_2, F_2) and P_4 and S_8

The making and breaking of bonds involves changes in energy

Writing chemical equations depends on the law of conservation of mass

- ➢ A **chemical equation** is a statement that uses words or symbols to describe a chemical reaction
- ➢ A **reactant** is any substance that undergoes a chemical change in reaction
- ➢ A **product** is any new substance that is formed from the reaction. An arrow is used to point towards the end result, which is product formation

Reactant A + Reactant B → Product C + Product D

- ➢ Word Equation: **magnesium** + **oxygen** → **magnesium oxide**
- ➢ Skeleton Equation: $\mathbf{Mg} + \mathbf{O_2} \rightarrow \mathbf{MgO}$
- ➢ Balanced Equation: $\mathbf{2Mg}_{(s)} + \mathbf{O_2}_{(g)} \rightarrow \mathbf{2MgO}_{(s)}$
- ➢ Coefficients versus Subscripts

New Knowledge

Topic 2.3 How is energy involved in chemical processes?

Chemical reactions involve a transfer of energy between systems and their surroundings

Some chemical reactions absorb energy, and others release energy

- ➔ Activation Energy
- ➔ System vs. Surroundings
- ➔ Law of Conservation of Energy
- ➔ Exothermic Reaction
- ➔ Endothermic Reaction
- ➔ Cellular Respiration vs. Photosynthesis

- ➔ Temperature of Reactions in Solution
- ➔ Energy vs. Progress of Reaction Graphs

Topic 2.4 How do atoms rearrange in different types of chemical reactions?

The many kinds of chemical reactions can be grouped into a few main types based on how their atoms are rearranged

Reaction Types:

Synthesis	Decomposition	Combustion
Single Replacement	Double Replacement	Neutralization

- ➔ Identify reaction types
  - ◆ Word equation, skeleton equation and balanced equation
- ➔ Predict the products
  - ◆ Word equation, skeleton equation and balanced equation

Incomplete Combustion

Neutralization reaction, an acid reacts with a base

- ➔ What is an acid?
  - ◆ Binary acids vs. oxyacids
  - ◆ Common acids and their name(s), formulas and uses
- ➔ What is a base?
  - ◆ Common bases and their name(s), formulas and uses
- ➔ Acid-Base Indicators
- ➔ The pH Scale
  - ◆ Acidic Values and relationship between H^+ and OH^-
  - ◆ Basic Values and relationship between H^+ and OH^-
  - ◆ Neutral Values and relationship between H^+ and OH^-

Resources

- ★ Topic 2.2 Notes, Topic 2.3 Notes, Topic 2.4 Notes (given in class and gone over)
  - These notes come straight from the textbook
- ★ Mrs. Patton's Notes (given in class and gone over)
- ★ Booklet 4.3 and Booklet 6.1 and Section 5.1 (given in class and gone over)
- ★ Workbook Review Sections for Topic 2.2, Topic 2.3 and Topic 2.4 (gone over in class)
- ★ Workbook pages for Topic 2.2, Topic 2.3 and Topic 2.4 (done in class and gone over)
- ★ Quizzes (handed back and gone over)
- ★ Labs (handed back)
- ★ Lunch Time Tutorials (have you attended?)