

Objective

By the end of this lesson, you will be able to understand the law of conservation of mass, differentiate between elements and compounds, and identify different types of chemical reactions.

Materials and Prep

- Pen and paper
- Basic understanding of atoms and molecules

Activities

- **Experiment Time:** Perform a simple chemical reaction using household items. Observe any changes and identify the elements and compounds involved.
- **Element vs. Compound:** Create a chart listing examples of elements and compounds. Discuss their differences and similarities.
- **Reaction Types:** Watch videos or conduct research to identify and explain different types of chemical reactions like synthesis, decomposition, single replacement, and double replacement.

Talking Points

- **Law of Conservation of Mass:** "In chemical reactions, the total mass of the reactants must be equal to the total mass of the products. This means that matter is neither created nor destroyed, it only changes form."
- **Elements and Compounds:** "Elements are substances made up of only one type of atom, while compounds are made up of two or more different types of atoms bonded together. For example, oxygen (O_2) is an element, while water (H_2O) is a compound."
- **Types of Chemical Reactions:** "Chemical reactions can be classified into different types based on the rearrangement of atoms. Synthesis reactions combine elements to form compounds, decomposition reactions break compounds into elements, single replacement reactions involve one element replacing another in a compound, and double replacement reactions involve an exchange of ions between two compounds."