

Chapter Nine: Chemical Reactions

Section One: Reactions and Equations

Chemical reaction: the process by which the atoms of one or more substances are rearranged to form different substances

- Products: right side of the reaction
- Reactants: left side of the reaction

Chemical equation: represents with symbols and formulas, the amounts of products and reactants in a reaction

Indications of a Chemical Reaction:

1. A temperature change (release heat or light or absorb heat)
2. Odor or production of a gas (gas bubbles)
3. Formation of a precipitate
 - a. **precipitate:** a solid that is produced as a result of a chemical reaction and that separates from the solution
4. A color change

Symbols used in chemical equations:

- +: separates 2 or more reactants or products
- \rightarrow : separates reactants from the products
- (s): solid state
- (l): liquid state
- (g): gaseous state
- (aq): aqueous state: water solution – solid dissolved in water

Word equation: an equation where the reactants and products are represented by words

Methane gas plus oxygen yields carbon dioxide gas and water

Skeleton (Formula) equation: the reactants and products are represented by their symbols and formulas



Balancing equations:

1. Identify the names of the reactants and products
2. Write the formula equation with correct formulas for reactants and products
3. Balance the formula equation according to the law of conservation of mass
 - a. **Coefficient:** in a chemical equation, the number written in front of a reactant or product
 - b. This will take trial and error...remember to SIMPLIFY if needed
4. Count atoms to make sure the equation is balanced
5. **Chemical equation:** a statement that uses chemical formulas to show the identities and relative amount of the substances involved in a chemical reaction

Balanced chemical equation with states:

