

Unit 8 - What's the Final Product - Balancing, Types of Rxn, Stoichiometry

Content Area: **Science**
Course(s): **Chemistry CP**
Time Period: **March**
Length: **6 weeks**
Status: **Published**

Transfer Skills

Types of Reactions and Stoichiometry - students will be able to identify the types of reactions and properly balance a chemical reaction. Students will be able to predict the outcomes of mixing reactants and the amounts of products produced that will affect the percentage yield.

Enduring Understandings

Chemical formulas can provide much information about the amount of chemicals that can be used or produced during a reaction.

Matter is conserved in a chemical reaction.

Balanced equations allow you to determine the amount of product produced from a given amount of reactant.

Chemical formulas can provide much information about the amount of chemicals that can be used or produced during a reaction.

Quantities of all reactants are not always completely consumed.

Essential Questions

How do chemical reactions obey the law of conservation of matter?

How can you predict the products of a chemical reaction?

How can we determine if a chemical change has taken place?

How is stoichiometry used to obtain quantitative information from balanced equations?

How can you determine which reactant will be used up first?

How are balanced chemical equations used in stoichiometric calculations?

How can you calculate amounts of reactants and products in a chemical reaction?

Content

synthesis, decomposition, single replacement, double replacement, combustion, Stoichiometry, Limiting reactant, excess reactant, theoretical yield, actual yield, percent yield

Skills

Write word equations and formula equations for a given chemical reaction.

Balance chemical reactions.

Identify the type of chemical reaction.

Predict the products of simple reactions given the reactants.

Solve various types of stoichiometric problems by balancing equations using moles, mass, representative particles, and volumes of gases (at standard temperature and pressure).

Identify the limiting reactant for a reaction and use it to calculate theoretical yield

Calculate the amount reactant remaining after a reaction is complete.

Calculate percent yield.

Resources

Standards

SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.B.3	Revise predictions and explanations using evidence, and connect explanations/arguments to established scientific knowledge, models, and theories.
SCI.9-12.5.1.12.B.4	Develop quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.
SCI.9-12.5.2.12.B.2	Describe oxidation and reduction reactions, and give examples of oxidation and reduction reactions that have an impact on the environment, such as corrosion and the burning of fuel.
SCI.9-12.5.2.12.B.3	Balance chemical equations by applying the law of conservation of mass.
SCI.9-12.5.2.12.B.b	A large number of important reactions involve the transfer of either electrons or hydrogen

ions between reacting ions, molecules, or atoms. In other chemical reactions, atoms interact with one another by sharing electrons to create a bond.

SCI.9-12.5.2.12.B.c

The conservation of atoms in chemical reactions leads to the ability to calculate the mass of products and reactants using the mole concept.