

Classification Of Chemical Reactions Worksheet Answer Key PDF

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Part 1: Building a Foundation

Which of the following is an indicator of a chemical reaction?

- undefined. A) Change in shape
- undefined. B) Color change ✓**
- undefined. C) Melting
- undefined. D) Dissolving

A color change is a common indicator of a chemical reaction.

Select all the types of chemical reactions from the list below:

- undefined. A) Synthesis ✓**
- undefined. B) Dissolution
- undefined. C) Decomposition ✓**
- undefined. D) Evaporation

Synthesis and decomposition are types of chemical reactions.

Explain what is meant by a synthesis reaction and provide a general equation for it.

A synthesis reaction involves combining reactants to form a single product, typically represented as $A + B \rightarrow AB$.

List the products typically formed in a combustion reaction involving a hydrocarbon.

1. What are the products?

Carbon dioxide and water.

Typically, carbon dioxide and water are produced in combustion reactions.

What is the main principle behind balancing chemical equations?

undefined. A) Law of definite proportions

undefined. B) Law of conservation of mass ✓

undefined. C) Law of multiple proportions

undefined. D) Law of constant composition

The law of conservation of mass states that matter cannot be created or destroyed, which is why equations must be balanced.

Part 2: Application and Analysis

If a metal reacts with an acid to produce hydrogen gas and a salt, what type of reaction is this?

undefined. A) Synthesis

undefined. B) Decomposition

undefined. C) Single replacement ✓

undefined. D) Double replacement

This is a single replacement reaction where a metal displaces hydrogen from the acid.

Consider the reaction: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$. Which of the following statements are true?

undefined. A) It is a synthesis reaction. ✓

undefined. B) It is a combustion reaction.

undefined. C) It involves the formation of water. ✓

undefined. D) It is a decomposition reaction.

This reaction is a synthesis reaction that produces water.

Predict the products of the reaction between sodium chloride and silver nitrate and classify the type of reaction.

The products are silver chloride and sodium nitrate, and it is a double replacement reaction.

Which type of reaction is characterized by the exchange of ions between two compounds?

undefined. A) Synthesis

undefined. B) Decomposition

undefined. C) Single replacement

undefined. D) Double replacement ✓

This describes a double replacement reaction.

Analyze the following reaction: $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$. Which of the following are true?

undefined. A) Zinc is oxidized. ✓

undefined. B) Copper is reduced. ✓

undefined. C) It is a single replacement reaction. ✓

undefined. D) It is a synthesis reaction.

Zinc is oxidized and copper is reduced in this single replacement reaction.

Analyze why a combustion reaction is exothermic and discuss the energy changes involved.

Combustions are exothermic because they release energy in the form of heat and light as reactants are converted to products.

Part 3: Evaluation and Creation

Which reaction type is most likely to be used in the formation of new compounds in industrial processes?

undefined. A) Synthesis ✓

undefined. B) Decomposition

undefined. C) Single replacement

undefined. D) Double replacement

Synthesis reactions are commonly used in industrial processes to create new compounds.

Given the reactants, C_3H_8 and O_2 , predict the products and classify the reaction.

undefined. A) CO_2 and H_2O ; Combust ion ✓

undefined. B) C and H_2 ; Decomposition

undefined. C) CO and H_2O ; Synthesis

undefined. D) C_3H_6 and O_2 ; Single replacement

The products are carbon dioxide and water, and it is a combustion reaction.

Design an experiment to demonstrate a double replacement reaction, including the materials needed, procedure, and expected results.

An experiment could involve mixing solutions of sodium chloride and silver nitrate to form a precipitate of silver chloride.