

Classification Of Chemical Reactions Worksheet

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Part 1: Building a Foundation

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

Hint: Think about the changes that occur during a chemical reaction.

- A) Change in shape
- B) Color change
- C) Melting
- D) Dissolving

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

Hint: Consider the different ways substances can react with each other.

- A) Synthesis
- B) Dissolution
- C) Decomposition
- D) Evaporation

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

Hint: Think about how two or more reactants combine to form a product.

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

Hint: Consider the common products of burning hydrocarbons.

1. What are the products?

What is the main principle behind balancing chemical equations?

Hint: Consider the laws of chemistry that govern reactions.

- A) Law of definite proportions
- B) Law of conservation of mass
- C) Law of multiple proportions
- D) Law of constant composition

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?

Hint: Think about the types of reactions involving metals and acids.

- A) Synthesis
- B) Decomposition
- C) Single replacement
- D) Double replacement

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

Hint: Analyze the reaction to determine its characteristics.

- A) It is a synthesis reaction.
- B) It is a combustion reaction.
- C) It involves the formation of water.
- D) It is a decomposition reaction.

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

Hint: Consider the ions involved in the reaction.

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

Hint: Think about how compounds interact in a reaction.

- A) Synthesis
- B) Decomposition
- C) Single replacement
- D) Double replacement

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

Hint: Consider the changes in oxidation states during the reaction.

- A) Zinc is oxidized.
- B) Copper is reduced.
- C) It is a single replacement reaction.
- D) It is a synthesis reaction.

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

Hint: Consider the energy released during the reaction.

Part 3: Evaluation and Creation

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

Hint: Think about the types of reactions that create new substances.

- A) Synthesis
- B) Decomposition
- C) Single replacement
- D) Double replacement

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

Hint: Consider the combustion of hydrocarbons.

- A) CO_2 and H_2O ; Combust ion
- B) C and H_2 ; Decomposition
- C) CO and H_2O ; Synthesis
- D) C_3H_6 and O_2 ; Single replacement

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

Hint: Think about common double replacement reactions you can perform safely.