Introduction to Bases in Chemistry and Everyday Life

Welcome to the World of Bases!

In this interactive worksheet, we will explore the fascinating world of bases in chemistry and their significance in everyday life. Get ready to learn about the properties, types, and applications of bases, and have fun while doing it!

What are Bases?

A base is a substance that releases hydroxide ions (OH-) in solution.

Examples:

- Baking soda
- Soap
- Toothpaste

Match the following substances with their corresponding properties:

Substance	Property
Baking soda	
Soap	
Toothpaste	

Types of Bases

Bases can be classified into two main categories: strong bases and weak bases.

Strong Bases:

- Completely dissociate in water, releasing a high concentration of hydroxide ions
- Examples: Sodium hydroxide (NaOH), Calcium hydroxide (Ca(OH)2)

Weak Bases:

- Partially dissociate in water, releasing a lower concentration of hydroxide ions
- Examples: Ammonia (NH3), Methylamine (CH3NH2)

Identify the following bases as strong or weak:

Base	Type
Sodium hydroxide (NaOH)	
Ammonia (NH3)	

pH and Bases

The pH scale measures the concentration of hydrogen ions (H+) in a solution.

Bases have a pH greater than 7.

Determine the pH of the following solutions:

Solution	pH
Baking soda (NaHCO3)	
Soap (sodium hydroxide, NaOH)	

Applications of Bases

Bases have many practical applications in various fields.

Medicine:

- Bases are used to treat conditions such as heartburn and indigestion
- Examples: Antacids, such as Tums and Rolaids

Environmental Science:

- Bases are used to neutralize acidic pollutants and treat wastewater
- Examples: Sodium hydroxide (NaOH) is used to neutralize acidic wastewater

Research and write about a real-life application of bases in one of the following fields:

- Medicine
- Environmental Science
- Materials Engineering

[Space for writing]

Base Scavenger Hunt

Find and identify examples of bases in your everyday life.

Base	Location	Use

Base Properties

Bases have distinct properties that can be observed and tested.

Properties of Bases:

- Bases have a slippery feel
- Bases taste bitter
- Bases turn red litmus paper blue

Test the properties of a base using the following materials:

- Baking soda
- Red litmus paper
- Water

[Space for experiment]

Base Reactions

Bases react with acids to form salts and water.

Predict the products of the following reactions:

Reaction	Products
Sodium hydroxide (NaOH) + Hydrochloric acid (HCl)	
Baking soda (NaHCO3) + Vinegar (CH3COOH)	

Base Safety

Bases can be hazardous if not handled properly.

> **Safety Precautions:**
>
> - Wear protective gear, such as gloves and goggles, when handling bases
> - Handle bases in a well-ventilated area
> - Avoid ingesting or inhaling bases
>
> *Read and follow the safety guidelines for handling bases:*
>
> 1.
> 2.
> 3.

Base Quiz

Test your knowledge of bases with the following questions:

1. What is the definition of a base?
2. What is the difference between a strong base and a weak base?
3. What is an example of a base used in medicine?

[Space for answers]

Conclusion

Review what you have learned about bases in chemistry and everyday life.

Reflection:

Reflect on how bases are used in your daily life and how they impact the environment.

[Space for reflection]