

Name: _____ Period: _____ Date: _____

Reactions of Acids and Bases Guided Notes – Student Edition

Acids are a group of chemicals which release _____ when they dissolve in water.

Bases have the opposite property and can _____ acid particles from a solution. Acids and bases show very predictable reactions:

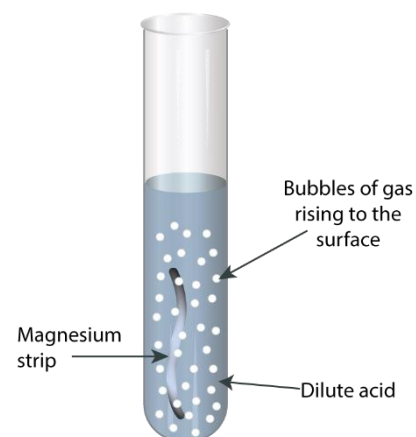
1. Acid reacting with metals.

Some metals such as _____ and _____ react rapidly when placed in acid. This can be observed by _____ and _____ which occurs in the test tube. When the reaction occurs the hydrogen ions from the acid pull _____ off the metal to form the bubbles of hydrogen gas (_____). This leaves the remainder of the acid molecule to join with the metal producing a new product called a _____.

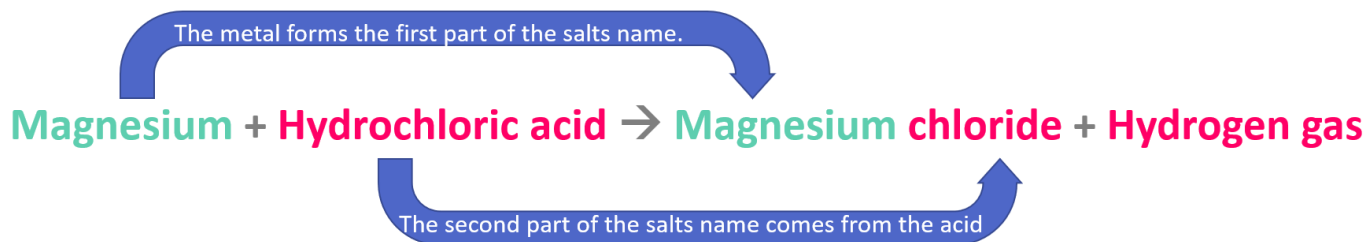
Different acid and metal combinations produce different types of salts. The table below shows the salts that you should know for this unit.

Type of Acid	Salt formed
Hydrochloric acid	_____ salt
_____ acid	Sulfate salt
Nitric acid	_____ salt

The general reaction between an acid and a metal can be summarized by the following word equation:



For example, magnesium ribbon reacts vigorously in hydrochloric acid and will fizz and bubble until it disappears. The reaction of magnesium and hydrochloric acid can be summarized as follows:



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Activity 1: Metal and Acid Reactions

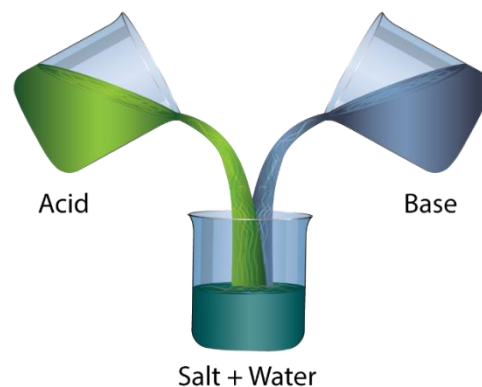
Complete the following word for the reactions between metals and acids.

1. Zinc + Sulfuric acid → _____ + _____
2. Sodium + Hydrochloric acid → _____ + _____
3. Lithium + Nitric acid → _____ + _____
4. Calcium + hydrochloric acid → _____ + _____
5. Magnesium + Sulfuric acid → _____ + _____

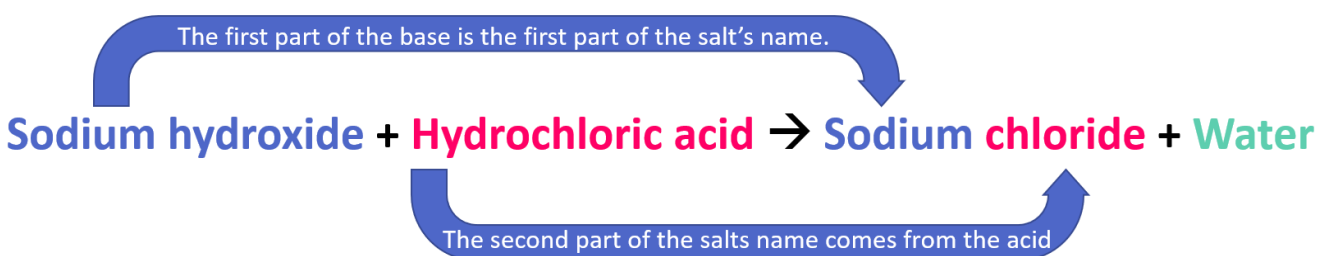
2. Acids reacting with Bases.

Acids and bases (metal _____ and _____) react with each other to form _____ water molecules and a metal salt. This type of reaction is called _____ because the products have a pH of ____ and remove hydrogen ions from solution.

The solid salt compound from this reaction can be recovered by _____ the water. The general word equation for the reaction of an acid and a base is:



For example, sodium hydroxide reacts with hydrochloric acid:



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Activity 2: Acid and Base Reactions

Complete the following acid and base reactions

1. Zinc oxide + sulfuric acid \rightarrow _____ + _____
2. Nitric acid + magnesium hydroxide \rightarrow _____ + _____
3. Hydrochloric acid + barium oxide \rightarrow _____ + _____
4. Calcium hydroxide + Sulfuric acid \rightarrow _____ + _____
5. Copper oxide + sulfuric acid \rightarrow _____ + _____

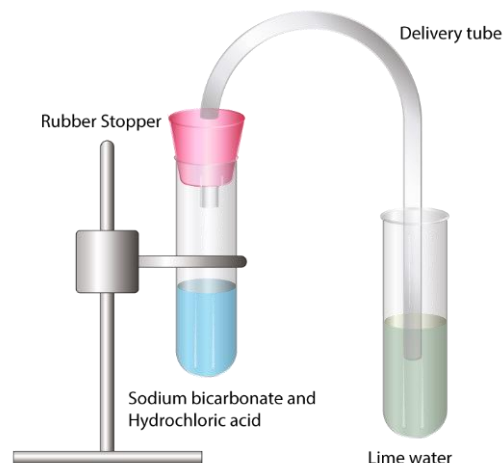
3. Acids reacting with metal carbonates and metal hydrogen carbonates.

Metal carbonates and hydrogen carbonates (also called _____) are also basic compounds which react with acids. Acids can be neutralized by metal carbonates and bicarbonates and so these reactions are also classed as _____ reactions because they remove _____ from the solution. However, unlike metal oxides and hydroxides, the carbonate or hydrogen carbonate means that _____ is also produced along with water. The general word equation for the reaction of an acid and a base is:

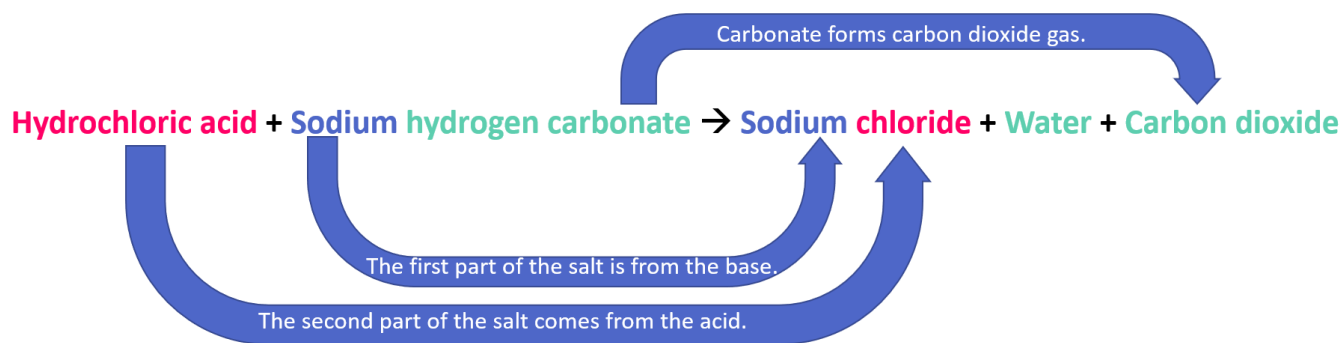


An example of this type of reaction is sodium hydrogen carbonate (bicarbonate) and hydrochloric acid. The sodium hydrogen carbonate will fizz and bubble.

Collecting the gas using a delivery tube placed in _____ will confirm the presence of carbon dioxide gas, which turns _____.



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Activity 3: Acid and Metal (Hydrogen) Carbonates Reactions

Complete the following acid and metal carbonate/ metal hydrogen carbonate reactions:

