Learning Guide 3C – Acids and Bases I Chem 1010

Introduction

In this unit, we are studying ionic compounds, and acids and bases. Now that we've looked at ionic compounds, it's time to talk about acids and bases.

Discussion questions:

What do you think of when you hear the word acid?

What do you think of when base you hear the word base?

In chemistry, acids and bases are two special categories of compounds. They are considered ______ because if you mix them together, they

_____each other.

Common Acids and Bases

Before we talk about what makes a compound an acid or a base, let's look at some examples.

Common acids:

HCl hydrochloric acid H₂SO₄ sulfuric acid HNO₃ nitric acid H₃PO₄ phosphoric acid C₂H₄O₂ acetic acid C₃H₆O₃ lactic acid C₆H₈O₇ citric acid

What do all of these acids all have in common?

How could they be divided into two groups?

Common bases:

NaOH sodium hydroxide KOH potassium hydroxide NaHCO₃ sodium bicarbonate CaCO₃ calcium carbonate NH₃ ammonia

What do most of the bases have in common?

Which of them ones seem most alike?

common acids:

hydrochloric acid (HCl)

- •
- •
- •

sulfuric acid (H₂SO₄)

- •
- •

nitric acid (HNO₃)

- •
- •

phosphoric acid (H₃PO₄)

- •
- •

acetic acid (C₂H₄O₂)

structure:

- •
- •

lactic acid (C₃H₆O₃)

structure:

- •
- •

citric acid (C₆H₈O₇)

- •
- •

common bases:

sodium hydroxide (NaOH)

•

potassium hydroxide (KOH)

•

sodium bicarbonate (NaHCO₃)

- •

- •

- •

calcium carbonate (Ca₂CO₃)

- •
- _
- •
- .

ammonia (NH₃)

- •
- •

What Acids and Bases are Like

Now that we've seen all of these examples, let's look at some of the characteristics of acids and bases.

physical characteristics:

acids –

examples:

bases -

examples:

chemical characteristics:

acids

reaction:

bases:

reaction:

Some acids and bases have a greater tendency to do this than others.

strong acids and bases:

strong acids:

strong bases:

weak acids and bases:

weak acids:

weak bases: