Sec 4.1 – Arrhenius Theory of Acids and Bases
Sec 4-2 Common Acids and Bases

The purpose of this first class is to review some of the theories that you already know about acids, bases and salts. We will discuss some common products that are acids, bases or salts and be able to recognize and label compounds that are acids, bases or salts.

Svante Arrhenius received a Nobel Prize for his research with acids and bases in 1903

Arrhenius Definitions:

ACID – any substance that releases $H^+$ in water
Examples – HCl, $H_2SO_4$, HNO$_3$

BASE – any substance that releases $OH^-$ in water
Example – NaOH, KOH, Ca(OH)$_2$

SALT – the neutralization product which results when an acid and a base react
- Basically: any ionic compound which is not an acid or a base

Neutralization Reaction

$H^+ + OH^- \rightarrow H_2O$

Acid + Base $\rightarrow$ Salt + Water

The $H^+$ and the $OH^-$ react to form water, and the other two ions forms the salt

**be sure to balance the reaction

$2HCl + Ca(OH)_2 \rightarrow CaCl_2 + 2H_2O$
## Properties of Acids and Bases

<table>
<thead>
<tr>
<th>Acids</th>
<th>Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td>React with bases</td>
<td>React with acids</td>
</tr>
<tr>
<td>Electrolytes</td>
<td>Electrolytes</td>
</tr>
<tr>
<td>Act on some metals to produce $H_2(g)$</td>
<td>Feels slippery</td>
</tr>
<tr>
<td>Turns litmus paper red</td>
<td>Turn litmus paper blue</td>
</tr>
<tr>
<td>Tastes sour</td>
<td>Tastes bitter</td>
</tr>
</tbody>
</table>

Litmus paper: red (acid) blue (base)
Sec 4-2 - Common Acids and Bases

Common Acids and Bases

You must learn the commercial names and the common uses, all of these are found in the text and the common questions are on WS 4-1.

ACIDS

1. Sulphuric Acid - Commercial Name – oil of vitriol, battery acid
   Formula - $\text{H}_2\text{SO}_4$
   Common uses -

2. Hydrochloric Acid – Commercial Name – Muriatic Acids
   Formula - $\text{HCl}$
   Common uses -

3. Nitric Acid – Commercial Name – Nitric Acid
   Formula - $\text{HNO}_3$
   Common uses -

4. Acetic Acid – Commercial name - Vinegar
   Formula - $\text{CH}_3\text{COOH}$
   Common uses -

BASES

1. Sodium Hydroxide – Commercial name – Caustic Soda, lye
   Formula - $\text{NaOH}$
   Common uses –

2. Potassium Hydroxide – Commercial Name – Caustic potash
   Formula - $\text{KOH}$
   Common uses –
3. Ammonia – Commercial Name – NH₃(aq) ammonium hydroxide –

\[ \text{NH}_4^+ \quad \text{OH}^- \]

Formula -
Common uses –

Class work – pg 110 to 114 # 1-8