http://www.youtube.com/watch?v=PCM5IwJ8wcs&lr=1&safety_mode=true&persist_safety_mc

http://www.youtube.com/user/mtchemers#p/u/43/kcPjY9cQpWs

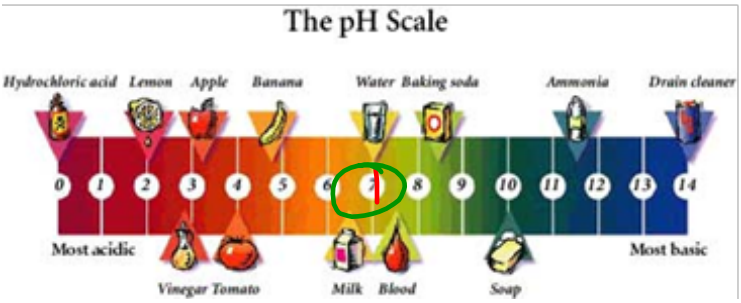
http://www.youtube.com/user/mtchemers#p/u/42/Av1LUAPN5q8

ACIDS

- Molecules that ionize in water to produce hydrogen ions, $H^{+}_{(aq)}$, ions which give acids their properties
- Most hydrogen compounds are named as acids since they form conducting solutions.
- Three exceptions are HCl(g) - hydrogen chloride, $H_2S(g)$ - hydrogen sulfide and HCN(g) - hydrogen cyanide.

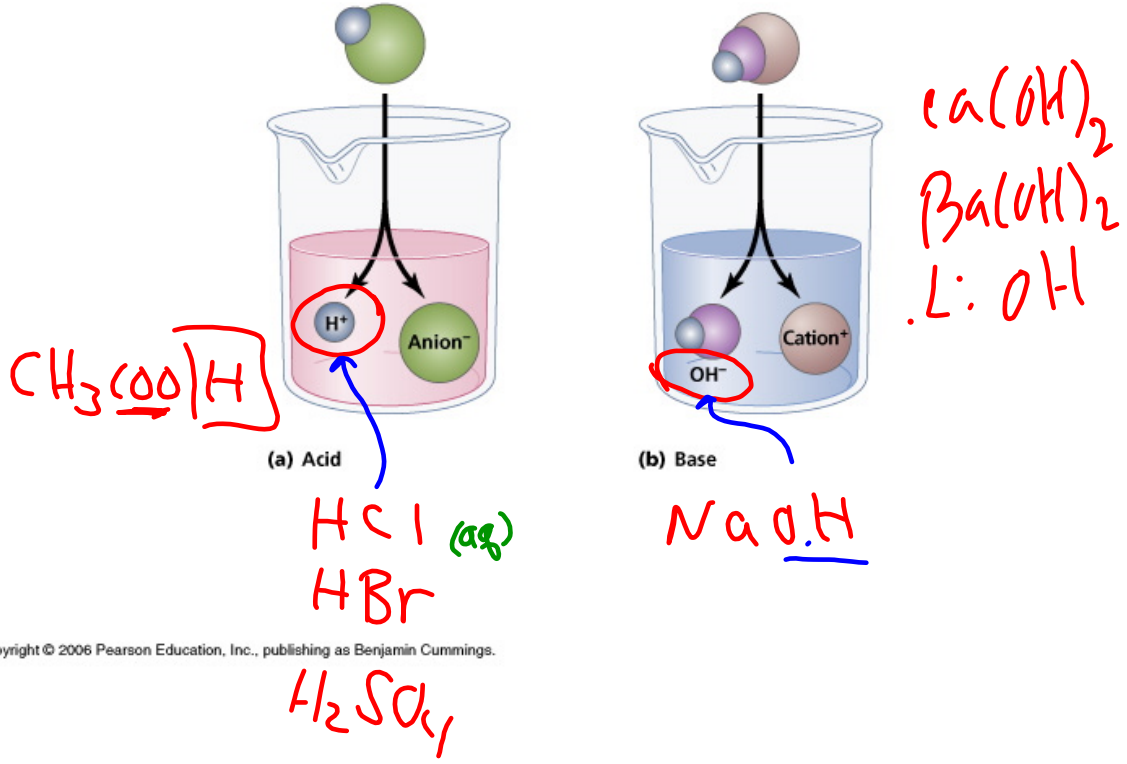
- ***Properties of acids:***
- Conduct electricity
- Turn blue litmus paper red
- Taste sour
- React with many metals to produce hydrogen gas, $H_{2(g)}$
- Have a pH value of less than 7. pH is a measure of the acidity of a substance.

A pH of 7 is neutral while greater than 7 is basic and less than 7 is acidic.



- Neutralize or partially neutralize bases
- General Formula: H____ (aq) or ____COOH (aq)
- *Note:* not all hydrogen containing compounds are acids

Eg: NH_3 CH_4 CH_3OH C_2H_5OH



Naming Acids

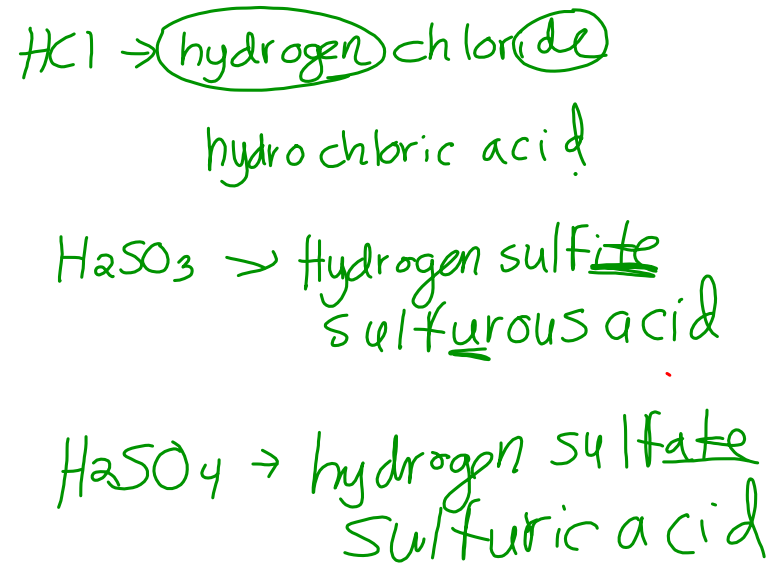
General Rules

- Name the hydrogen compound like an ionic compound, then convert the ionic nam to the acid name

hydrogen _____ide becomes **hydro_____ic acid**

hydrogen_____ite becomes _____**ous acid**

hydrogen_____ate becomes _____**ic acid**



Writing Acid Formulas

General Rules:

1. Translate acid name into ionic name:

hydro___ic acid → hydrogen ___ide
hydro___ous acid → hydrogen ___ite
hydro___ic acid → hydrogen ___ate

2. Write chemical formulas for each ion, using rules for writing formulas for ionic compounds.

3. Hydrogen symbol is written first (cation), except for carboxylic acids (those with COO group), in which case hydrogen is placed at the end eg: CH_3COOH

4. Give the state as aqueous = (aq). We use aqueous since acids are usually in solution when used in reactions. The definition of an aqueous solution is one in which water is the solvent.

Examples:

Acid Formula	Ionic Name	Acid Name
HCl(aq)	Hydrogen chloride	Hydrochloric acid
HCN(aq)	Hydrogen cyanide	Hydro cyanic acid
$HNO_2(aq)$	Hydrogen nitrite	nitrous acid
$H_2SO_3(aq)$	Hydrogen sulfite	Sulfurous acid
$HNO_3(aq)$	Hydrogen nitrate	nitric acid
$H_2SO_4(aq)$	Hydrogen sulfate	sulfuric acid
$H_3PO_4(aq)$	Hydrogen phosphate	phosphuric acid
$CH_3COOH(aq)$	hydrogen acetate	acetic acid

Name	Cation & Anion	Formula
Hydroiodic acid	H^+ I^-	$HI(aq)$
Chlorous acid	H^+ ClO_2^-	$HClO_2(aq)$
Chloric acid ate	H^+ ClO_3^-	$HClO_3(aq)$
Boric acid ate	H^+ BO_3^{3-}	$H_3BO_3(aq)$
Benzoic acid ate	H^+ $C_6H_5COO^-$	$C_6H_5COOH(aq)$

Worksheets 1 – 5

Worksheet 7 & 8

BASES

- most are ionic compounds that contain the hydroxide ion, OH, an ion that gives bases their properties

- *Properties of bases:*
- Conduct electricity
- Turn red litmus paper blue
- Taste bitter
- Feel slippery
- Have a pH value greater than 7
- Neutralize or partially neutralize acids

- *Note:* Not all compounds that contain OH are bases

Eg: $CH_3OHC_2H_5OH$

Naming Bases

- follow the general rules given for ionic compounds

Examples: NaOH Sodium hydroxide

NH_4OH Ammonium hydroxide

Writing Base Formulas

- follow the general rules given for ionic compounds

Examples: Lithium hydroxide $LiOH$

Calcium hydroxide $Ca(OH)_2$