Acids and Bases

Name_____

Test Date_____

Nomenclature Review

HCl_____ $NaOH$_____

H_2SO_4_____ $Ca(OH)_2$_____

H_2SO_3_____ $Cu(OH)_2$_____

H_2S_____ NH_4OH_____

Acids

Definition:

Properties:

1)
2)
3)
4)
5)
6)
7)

Bases:

Definition:

Properties:

1)
2)
3)
4)
5)
6)

Indicators

Define Indicator:

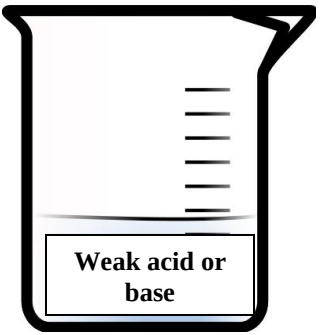
Type	Acid	Neutral	Base

Strength vs Concentration:

Concentration:

Strength:

Strong Acids/Bases vs Weak Acids/Bases as electrolytes
Using the pictures below show how a strong acid or base would differ from a weak acid or base when conducting electricity.



Why does this happen?_____
_____
_____
_____

YOU MUST MEMORIZE STRONG/WEAK ACIDS AND BASES!

Strong Acids	Weak Acids

Strong Bases	Weak Bases

Organic Acids:

Are organic acids weak or strong?

Ionization of Water
Ionization Equation:

Ionization Formula:

What do the [ ] mean?

<u>Relationships between acids and bases</u>
Neutral:

Acidic:

Basic:

pH Scale:

pOH Scale:

A change in $[H^+]$ by a factor of 10 causes the pH to change by _____.

A solution with a pH of 6 has _____ the $[H^+]$ as a solution with a pH of 7.

What is the difference in $[H^+]$ between a pH of 1 and pH of 4?

pH/pOH calculation Formulas:

1	$pH = -\log[H_3O^+]$	4	$pOH = -\log[OH^-]$
2	$[H_3O^+] = 10^{-pH}$	5	$[OH^-] = 10^{-pH}$
3	$pH + pOH = 14$	6	$K_w = [H_3O^+][OH^-]$

Try It: Calculate the pH

a) $[H_3O^+] = 1.00 \times 10^{-3}M$

b) $[H_3O^+] = 6.59 \times 10^{-10}M$

c) $[H_3O^+] = 7.01 \times 10^{-6}M$

Try it: Find the $[H_3O^+]$

a) pH = 3

b) pH = 6.61

c) pH = 2.52

Try it: Find the pH

a) pOH = 2

b) pOH = 1.26

c) pOH = 4.98

Try it: Find the pH

a) $[OH^-] = 1.00 \times 10^{-11}M$

b) $[OH^-] = 2.64 \times 10^{-13}M$

c) $[OH^-] = 3.45 \times 10^{-8}M$

Try it: Find the $[H_3O^+]$

a) $[OH^-] = 1.00 \times 10^{-6}M$

b) $[OH^-] = 4.97 \times 10^{-10}M$

c) $[OH^-] = 2.93 \times 10^{-2}M$

Try it: Find the pH

a) 0.054M HCl

b) 0.178M NaOH

Types of Acids and Bases

	Acid	Base
Arrhenius		
Bronsted-Lowery		

Neutralization Reactions (Using the Arrhenius Definition)
Generic Equation:

Define salt:

1) Sodium hydroxide and hydrochloric acid

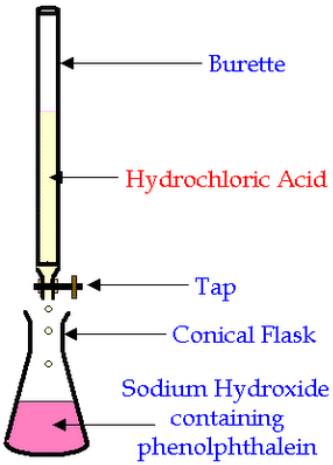
2) Calcium hydroxide and sulfuric acid

3) Potassium hydroxide and nitric acid

Vocabulary to know!

Term	***Definition***	***Example(s)***
Monoprotic		
Polyprotic		
Amphoteric		

Titrations:



Formula:

Terms to know:

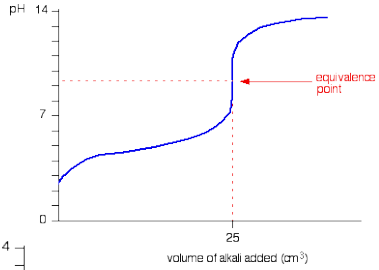
Term	***Definition***
Acid Base Titration	
End Point	
Equivalence Point	
Indicator	
Standard Solution	

Examples:

1) If it takes 54mL of 0.1M NaOH to neutralize 125mL of an HCl solution, what is the concentration of the HCl?

2) If it takes 25mL of 0.05M HCl to neutralize 345mL of NaOH solution, what is the concentration of NaOH solution?

Titration Curves: ID the type & the pH at the equivalence point.



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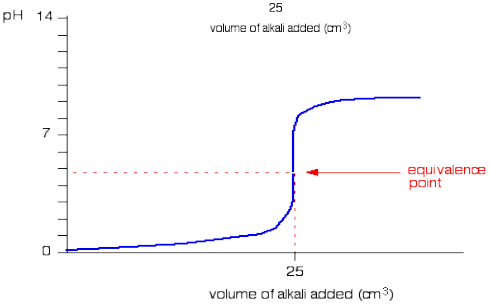

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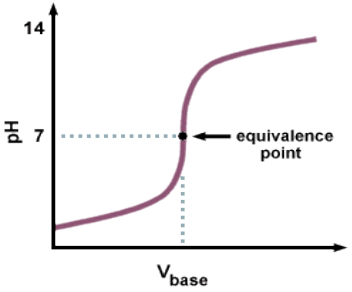

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