Monday, March 16th

Learning Target : I can determine the relative acidity of solutions using indicators to measure pH.

Homework: Worksheet due Thursday

As you enter... (Copy or rephrase the question)

**What does acid-base theory tell us is the difference between acids and bases? Name at least 2 parts.**

1. Acids start w/ H (proton donor), bases have OH (proton acceptor) } Bronsted Lowry theory
2. Produces $OH^-$ = base
   Produces $H^+$ or $H_3O^+$ = acid } Arrhenious theory

**Reminder: Acids/Bases Quiz Friday**

***Big Idea: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.***


3rd period
- Lab 18: Acid/Base Indicators (60 min)

4th period
- Lab Debrief (30 min)
- Exit Tix (5 min)

**Lab 18 info...**

-Keep all solutions and indicators at the materials table.

-Liquid indicators only need one drop per solution.

-6 litmus papers per group (rip in half to get 12)

-Lab must be handed in by the end of 4th period.

Tix out the door (Don't forget your name.)

What is the color of the indicator thymol blue in a solution that has a pH of 11?

(1) red
(2) blue
(3) pink
(4) yellow

Explain how you got your answer.

Tuesday, March 17th

Learning Target : I can predict the products of a neutralization reaction.

Homework: Worksheet due Thursday

As you enter... (Copy or rephrase the question)

***Take out your reference tables.** Table M

Which indicator is yellow in a solution with a pH of 9.8?

A. methyl orange
B. bromthymol blue
C. bromcresol green
D. thymol blue

**Reminder: Acids/Bases Quiz Friday**

**Table M**
**Common Acid–Base Indicators**

| Indicator | Approximate pH Range for Color Change | Color Change |
|---|---|---|
| methyl orange | 3.1–4.4 | red to yellow |
| bromthymol blue | 6.0–7.6 | yellow to blue |
| phenolphthalein | 8–9 | colorless to pink |
| litmus | 4.5–8.3 | red to blue |
| bromcresol green | 3.8–5.4 | yellow to blue |
| thymol blue | 8.0–9.6 | yellow to blue |

Source: *The Merck Index*, 14th ed., 2006, Merck Publishing Group

***Big Idea: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.***


3rd period

- Neutralization: Acid/Base Matching Game (35 min)
- Exit Tix (5 min)

## Tix out the door (Don't forget your name.)

Which statement describes one acid-base theory?

(1) An acid is an $H^+$ acceptor, and a base is an $H^+$ donor.
(2) An acid is an $H^+$ donor, and a base is an $H^+$ acceptor.
(3) An acid is an $H^-$ acceptor, and a base is an $H^-$ donor.
(4) An acid is an $H^-$ donor, and a base is an $H^-$ acceptor.

# Neutralization: Acid/Base Matching Game

*Write the general chemical equation for a neutralization reaction:*

Acid + Base → $H_2O$ + Salt

**Example:**

*Write balanced chemical equations for these neutralization reactions.*

*Be sure to: 1) balance the reaction 2) include phases*

___ $Ba(OH)_2(aq)$ + ___ HCl (aq) → $2H_2O$ + $BaCl_2$

base acid

+2 -1

2 3

___ $Al(OH)_3$ (aq) + ___ $H_2SO_4$ (aq) → $6H_2O$ + $Al_2(SO_4)_3$

base acid

(+) (-)

1. Go back and circle all of the strong acids.
2. Go back and put a box around all of the strong bases.

Tuesday, March 17th

Learning Target : I can use titration to determine an unknown concentration of an acid with a known concentration of a base.

Homework: Worksheet due Thursday

As you enter... (Copy or rephrase the question)

**Finish the neutralization reaction and balance the equation.**

1 $H_2SO_4$ + 2 NaOH --> $2H_2O$ + 1 $Na_2SO_4$

**Reminder: Acids/Bases Quiz Friday**

***Big Idea: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.***


3rd period

- Finish Neutralization worksheet (20 min)

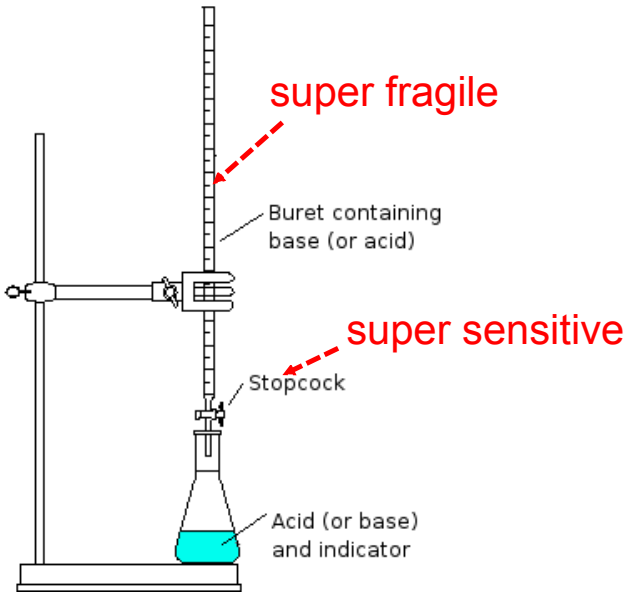
3rd/4th period

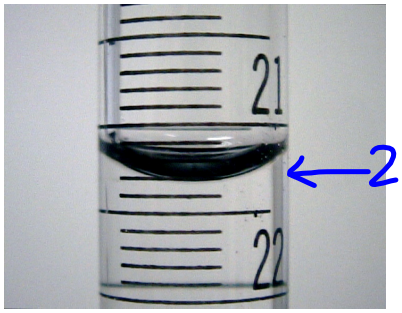
- Titration Lab (70 min)
- Exit Tix (5 min)

## Tix out the door (Don't forget your name.)

Which statement describes one acid-base theory?

(1) An acid is an $H^+$ acceptor, and a base is an $H^+$ donor.
(2) An acid is an $H^+$ donor, and a base is an $H^+$ acceptor.
(3) An acid is an $H^-$ acceptor, and a base is an $H^-$ donor.
(4) An acid is an $H^-$ donor, and a base is an $H^-$ acceptor.




What is the volume?

What is the concentration of the acid if you use 0.1 M NaOH?

--Going to slowly add acid to the base until the pink color is gone. That's how you know you've added enough.

--Then use titration equation to solve for the unknown concentration.

Thursday, March 19th

Learning Target : I can apply my understanding of acid-base vocabulary to questions.

Homework: Worksheet due today... put in bin

As you enter... (Copy or rephrase the question)

**1. From lab yesterday, which acid (HCl or $H_2SO_4$) did you need more of to titrate the NaOH? Why do you think that is?**

HCl, because there are less hydrogens than $H_2SO_4$.

**2.** Solve: **What is the concentration (Molarity) of 20 mL of HCl that is titrated with 10 mL of 1M NaOH?**

$M_A V_A = M_B V_B \rightarrow (X)(20) = (1)(10)$

$\frac{20}{20} \quad \frac{20}{20}$

$X = .5\ M$

**Reminder: Acids/Bases Quiz tmw**

3. 50 mL of $H_2SO_4$ titrated with 5 mL of 10 M KOH. What is $M_A$?

$M_A V_A = M_B V_B$

$X(50) = (10)(5)$

$X = 1\ M$

***Big Idea: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.***


3rd period

- Make up work...
- Then... Make yourself a vocabulary cheat sheet to use for the Kahoot game tmw.

***Winner of Kahoot will earn a free class work grade.***

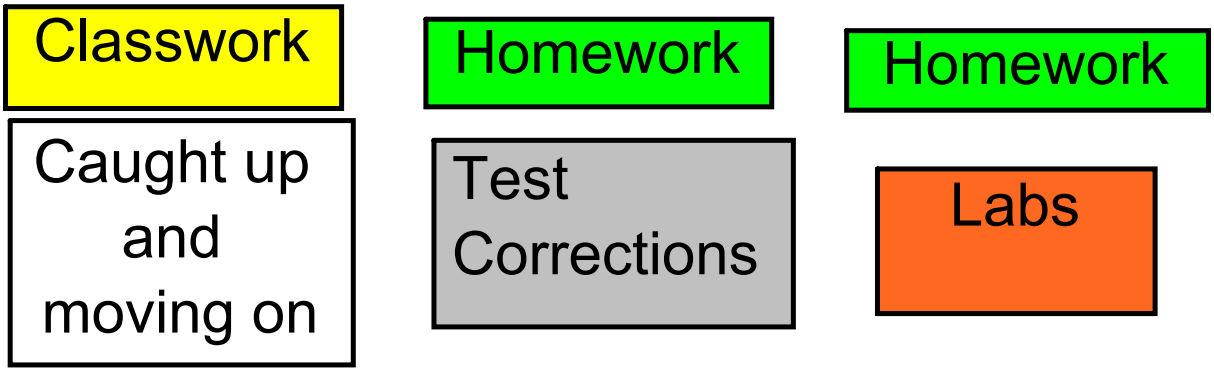
Lab

Tix out the door (Don't forget your name.)

**What is the concentration (molarity) of 25 mL of $H_2SO_4$ that is titrated with 50 mL of 1M KOH?**

**Assignments to hand in from this unit:**

- Acid/Base Intro Packet
- Acid/Base Scavenger Hunt (unless signed)
- Lab 18: Indicators and pH
- Neutralization Matching Game Worksheet (unless signed)
- Lab 19: Titration
- Acids and Bases HW
- Test Corrections with explanations on separate sheet



Friday, March 20th

Learning Target : I can apply my knowledge of acids and bases to quiz questions.

Homework: n/a

As you enter... (Copy or rephrase the question)

**1. What is the purpose of titration?**

Find the unknown concentration of an acid.

**2. What color would bromthymol blue turn in a basic solution?**

Table M 8-14 = basic

yellow → blue 6.0-7.6

**Reminder: n/a**

$M_A V_A = M_B V_B$

$X(10) = (2)(20)$

$\frac{10x}{10} = \frac{40}{10}$

$X = 4\ M$

NaOH has 20mL and is 2 M. What is the concentration of 10mL HCl?

***Big Idea: Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.***

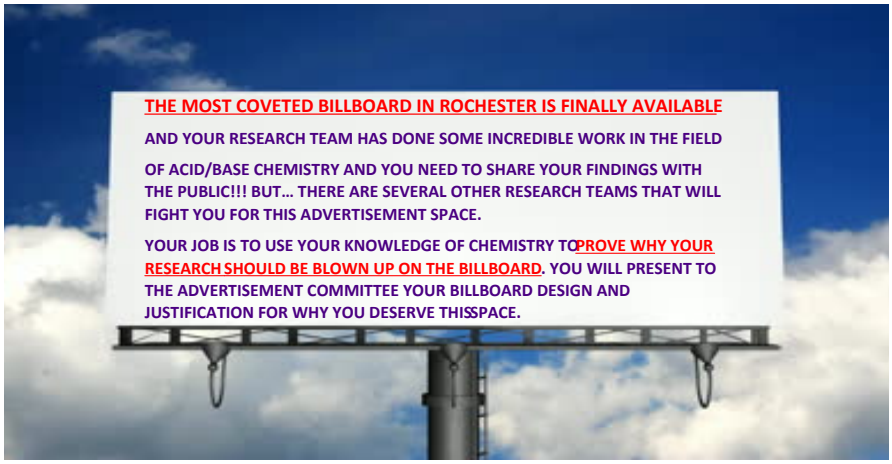
AGENDA

3rd period

- Make cheat sheet for Kahoot game (20 min)
- Play Kahoot! (20 min)

4th period

- Acids and Bases Quiz (25 min)
- Choose a final acids and bases project for next week (30 min)




Tix out the door (Don't forget your name.)

**n/a**