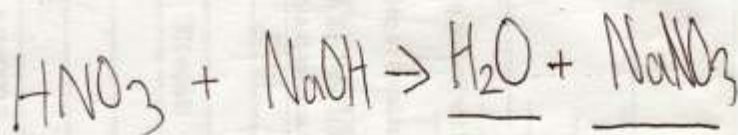
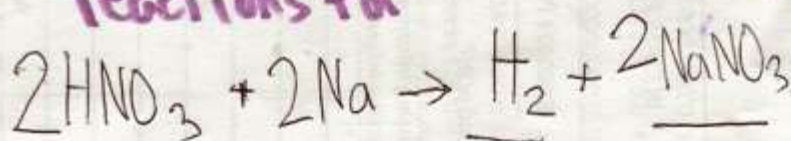


OUR TEST IS FRIDAY

PURPOSE: ACID IS INVISIBLE;
HOW CAN WE SEE HOW
MUCH H^+ IS IN A BEAKER?

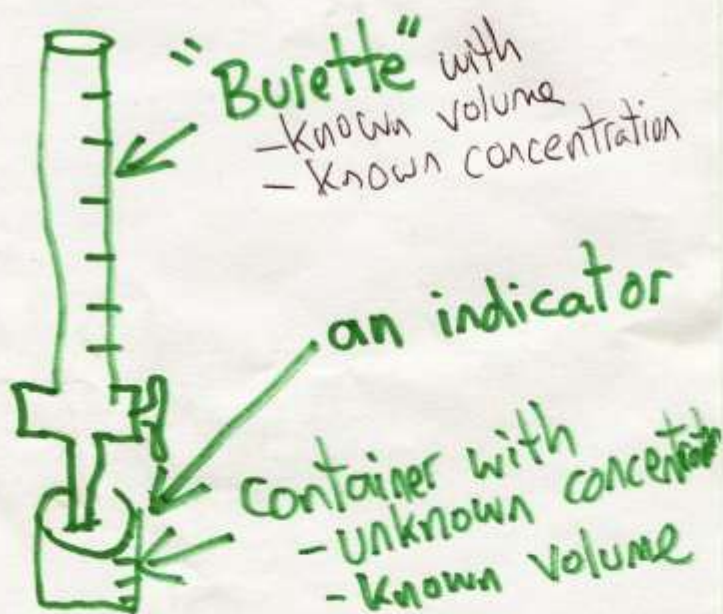
WARMUP: Write balanced
reactions for



#2

"TITRATION" IS
WHEN WE MIX A SUBSTANCE
OF KNOWN WITH ONE OF
UNKNOWN CONCENTRATION.

#3 EQUIPMENT NEEDED



#4 MOST TITRATION'S CALCULATIONS
START WITH THIS

$$\frac{\text{Volume of KNOWN}}{\text{Volume of UNKNOWN}} \times (\quad) \times (\quad) =$$

Acids with metals. Concentrations review.

CAeMis+ry: <http://genest.weebly.com>

Stop in for help every day at lunch and Tues, Weds, & Thurs after school!

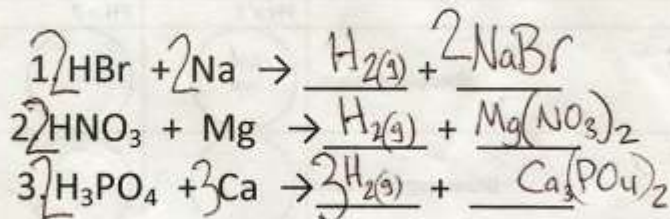
After-hours question? Email me at home: genest@madison.k12.wi.us



ANSWERS
Name _____
Period _____

Metal with Acid

Remembering that Acid + Metal → neutral hydrogen gas + salt, fill in the missing compounds for each reaction below



4. We have three equations which we have been using in this chapter. ∴

<p>Write the equation you have memorized that describes what number you get when you multiply the molarity of H+ by the molarity of OH-</p> <p>$\text{pH} = -\log[\text{H}^+]$ $[\text{H}^+][\text{OH}^-] = 1.0 \times 10^{-14}$</p>	<p>Write the equation you have memorized that describes how H+ molarity is related to pH</p> <p>$\text{pH} = -\log[\text{H}^+]$</p>	<p>Write the equation that you have been using since March to relate moles of solute, volume of solution, and molarity of a solution.</p> <p>Concentration = $\frac{\text{moles}}{\text{Volume}}$ ← must be LITERS</p>
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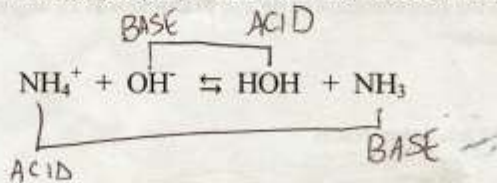
5. If a solution contains 0.445 moles of HNO₃ dissolved to make 2.3 liters of solution, what is the molarity?

Concentration = $\frac{\text{moles}}{\text{Volume}}$ $\text{conc.} = \frac{0.445 \text{ mol}}{2.3 \text{ L}}$ $\text{conc} = 0.19 \text{ M}$

6. If a solution of HF has a concentration of $2.3 \times 10^{-6} \text{ M}$, and a volume of 444 mL, how many moles of HF does it have?

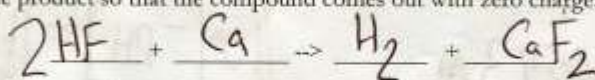
$\text{conc} = \frac{\text{mol}}{\text{Vol}}$ $\text{mol} = (\text{conc})(\text{Volume})$ $\text{moles} = (2.3 \times 10^{-6})(0.444 \text{ L})$
 $\text{moles} = 1.0 \times 10^{-6}$

7. In the reaction below, connect the conjugate pairs with a line. Write "acid" or "base" below each of the four substances.



ANSWERS

8. Show what reaction occurs when calcium reacts with HF. Use your periodic table to help you with the charges of the product so that the compound comes out with zero charge.



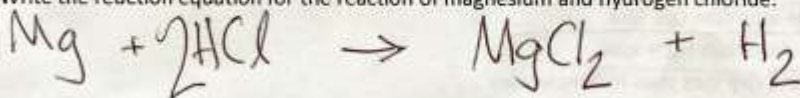
9. Write a word in the center of each circle to tell what color each would be. One has been done as an example. Use the dashed line table below as a reference.

	PH = 3	PH = 7	PH = 11
phenolphthalein	Colorless	Colorless	pink!
bromocresol green	yellow	Blue	Blue
Thymol blue	yellow	yellow	Blue

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
bromocresol green	3.8-5.4	yellow to blue
thymol blue	8.0-9.6	yellow to blue

10. Write the reaction equation for the reaction of magnesium and hydrogen chloride.



11. Calculate both the concentration of H⁺ and of OH⁻ ions at 25 degrees in

a. pure water

$$[\text{H}^+] = 1.0 \times 10^{-7} \quad [\text{OH}^-] = 1.0 \times 10^{-7}$$

b. a 10. M solution of NaOH



$$1.0 \times 10^{-14} = [\text{H}^+][\text{OH}^-] \quad \text{answer: } [\text{OH}^-] = 10\text{M} \quad [\text{H}^+] = 1.0 \times 10^{-15}$$

12. Find the $[H^+]$ of a solution at 25 degrees with a pH of

a. 3.494 $3.21 \times 10^{-4} M$

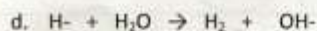
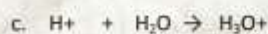
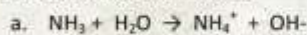
b. 1.265

$0.0543 M$

13. If a solution contains 1.745 moles of HNO_3 dissolved to make 2.1 liters of solution, what is the molarity?

$0.76 \frac{mol}{L}$

14. IN the reactions below if water is behaving as a base, write "BASE", if water is behaving as an acid write "ACID". Or write "NEITHER".



$pH = -\log(H^+)$
 $-pH = \log(H^+)$
 $10^{x[-pH]} = [H^+]$
 $10^{x[-3.494]} = H^+$
ANSWER: 3.21×10^{-4}

ANSWER:

ACID (water gave a H^+)
ACID (gave up an H^+ , so it's ACID)
BASE (because water accepted a H^+)
ACID

The following four questions are all multiple choice:

15. Circle the only two compounds that are electrolytes:

- a. $C_6H_{12}O_6$
- b. $C_{12}H_{22}O_{11}$
- c. CH_3CH_2OH
- d. HNO_3
- e. $NaOH$

16. A solution of HCl is a stronger acid than a solution of HCN because the HCl

- a. creates a larger $[OH^-]$ in solution
- b. creates a larger $[H^+]$ in solutions
- c. has more mass than HCN
- d. has less mass than HCN

17. When tested, a solution turns red litmus to blue. This indicates that the solution contains more

- a. H^+ ions than OH^- ions
- b. H_3O^+ ions than OH^- ions
- c. OH^- ions than H_3O^+ ions
- d. H^+ and OH^- ions than H_2O molecules

18. If an aqueous solution turns blue litmus red, which relationship exists between the hydronium ion and hydroxide ion?

- a. $[H_3O^+] < [OH^-]$
- b. $[H_3O^+] = [OH^-]$
- c. $[H_3O^+] > [OH^-]$
- d. Neither ion is present