

# Review:

- Answer the following questions about acids.
  - List the properties of acids.
    - sour taste
    - pH < 7
    - react w/metals
    - blue-red
    - good conductors
    - not slippery
  - What makes an acid strong or weak?
    - strong acids completely ionizes
  - How many strong acids are there? List them.
    - HCl, HBr, HI, H<sub>2</sub>SO<sub>4</sub>, HClO<sub>3</sub>, HNO<sub>3</sub>
  - What are the differences between Arrhenius acids and Bronsted-Lowry Acids?
    - ↳ H<sup>+</sup> donors
    - ↳ H<sup>+</sup> cation

May 17-11:02 AM

# Review:

- Answer the following questions about acids.
  - Determine if the following acids are polyprotic or monoprotic and ternary or binary:
 

> H <sub>3</sub> PO <sub>4</sub>	<u>poly prot.</u>	<u>ternary</u>
> HF	<u>monopro.</u>	<u>binary</u>
> C <sub>3</sub> H <sub>7</sub> COOH	<u>monoprot.</u>	<u>ternary</u>

} ↑  
ion

May 17-11:03 AM

# Review:

- Answer the following questions about bases.
  - List the properties of bases.
    - bitter taste
    - slippery
    - pH > 7
    - do not react w/metals
    - red → blue
    - good conductors
  - What makes a base strong or weak?
    - strong bases completely ionize
  - How many strong bases are there? List them.
    - LiOH, NaOH, KOH, RbOH, CsOH, Sr(OH)<sub>2</sub>, Ba(OH)<sub>2</sub>
  - What are the differences between Arrhenius bases and Bronsted-Lowry bases?
    - ↳ H<sup>+</sup> acceptor
    - ↳ OH<sup>-</sup> anion

May 17-11:04 AM

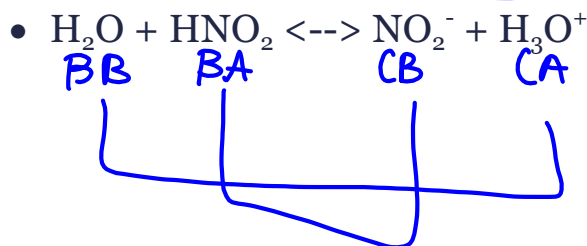
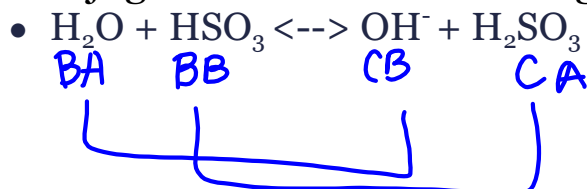
# Review:

- Answer the following questions about water.
  - What is K<sub>w</sub>? Include the name, equation, and value in your answer.
    - $K_w = [H^+][OH^-] = 1 \times 10^{-14} M$
  - What is H<sub>3</sub>O<sup>+</sup> and why do we use it?
    - hydronium ion
    - H<sup>+</sup> are in nature
  - Define amphoteric.
    - can act as both an acid or base
    - H<sub>2</sub>O → H<sub>3</sub>O<sup>+</sup>

May 17-11:04 AM

# Review:

- Identify the acid, base, conjugate acid, and conjugate base in the following equations.



May 17-11:05 AM

# Review:

- A solution has an  $[\text{H}^+]$  of  $1.2 \times 10^{-5} \text{ M}$ .

- What is its pH?

$$\text{pH} = -\log[\text{H}^+] = -\log 1.2 \times 10^{-5} = 4.92$$

- Is this solution acidic or basic? Explain your answer.

$$\text{pH} < 7$$

May 17-11:05 AM

# Review:

- An HI solution has a pH of 3.10.
- Calculate the concentration of the hydrogen ion.

$$[H^+] = 10^{-pH} = 10^{-3.10} = 7.94 \times 10^{-4} M$$

- Is this solution acidic or basic? Explain your answer.

$$pH < 7$$

May 17-11:05 AM

# Review:

- A solution has a pOH of 5.30.
- What is the pH of the solution?

$$14 = pH + pOH$$

$$14 = pH + 5.30$$

$$14 - 5.30 = 8.70$$

- Is this solution acidic or basic? How do you know?

$$pH > 7$$

May 17-11:06 AM

# Review:

- A student performs a titration using a standardized solution of  $\text{Sr}(\text{OH})_2$  to determine the concentration of  $\text{HBr}$ .

- What type of compound is  $\text{HBr}$ ? How do you know?

acid -  $\text{H}^+$

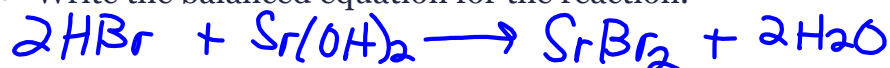
- What type of compound is  $\text{Sr}(\text{OH})_2$ ? How do you know?

base -  $\text{OH}^-$

- What type of reaction is this? What will the products be?

neutralization rxn

- Write the balanced equation for the reaction.



May 17-11:06 AM

# Review:



- A student performs a titration from the previous problem using 25.0 mL of  $\text{HBr}$  and 37.9 mL of 0.950 M  $\text{Sr}(\text{OH})_2$ .

- Calculate the molarity of the  $\text{HBr}$ .

$$37.9 \text{ mL Sr}(\text{OH})_2 \times \frac{1 \text{ L}}{1000 \text{ mL}} \times \frac{0.950 \text{ mol Sr}(\text{OH})_2}{1 \text{ L}} \times \frac{2 \text{ mol HBr}}{1 \text{ mol Sr}(\text{OH})_2} = \frac{0.72 \text{ mol}}{0.025 \text{ L}}$$

- What should be the pH of the equivalence point for this titration? How do you know?

pH  $\approx$  7

$$= 2.9 \text{ M}$$

- What is an appropriate indicator to use for this titration? Why?

changes color around pH  $\approx$  7

May 17-11:06 AM