

Round 1

Round 2 (HA)

Semis (A-)

FINALS

Cyanic Acid

Hydrocyanic Acid

1a)

Acetic Acid *(ethanoic acid)*

Formic Acid *(methanoic acid)*

1b)

Benzoic Acid

Nitrous Acid

2a)

Hydrofluoric Acid

Oxalic Acid - 2nd proton HC_2O_4^-

2b)

Carbonic Acid

Sulfuric Acid - 2nd proton HSO_4^-

3a)

Hydrosulfuric Acid
(aka: Hydrogen Sulfide)

Hypochlorous Acid

3b)

Carbonic Acid - 2nd proton HCO_3^-

Hydrogen Sulfide - 2nd proton HS^-

4a)

Boric Acid

Oxalic Acid

4b)

Name: _____

- **WARM UP (your brain)**
 - First start by writing the formulas for all the compounds
- **Round 1: THE STRONGER ACID moves on!**
 - Use the table to find which acid has the highest K_a
- **Round 2: Highest pH moves on!**
 - If the acid is combined with its conjugate base, which buffer solution would have a higher pH
 - Assume the concentration of the acid (HA) is 0.10 M and its conjugate base (A⁻) is 0.10M
 - **The conjugate base from the most basic buffer solution moves on**
- **Round 3: The Most MASSIVE moves on!**
 - Calculate formula mass.
 - The winner has the greatest formula mass.
- **Round 4: It's a SOLID winner**
 - When in a solution with Ca^{2+} , which compound will precipitate out?
 - **The precipitate is the winner!**
- **PROVE YOUR HONOR:** Draw the Lewis Dot Diagram of SO_4^{2-} (must use Formal Charge & Resonance for the correct structure)

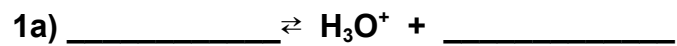


TABLE 16.1

Acid-Ionization Constants at 25°C*

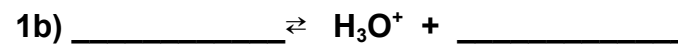
Substance	Formula	K_a
Acetic acid	$\text{HC}_2\text{H}_3\text{O}_2$	1.7×10^{-5}
Benzoic acid	$\text{HC}_7\text{H}_5\text{O}_2$	6.3×10^{-5}
Boric acid	H_3BO_3	5.9×10^{-10}
Carbonic acid	H_2CO_3	4.3×10^{-7}
	HCO_3^-	4.8×10^{-11}
Cyanic acid	HOCN	3.5×10^{-4}
Formic acid	HCHO_2	1.7×10^{-4}
Hydrocyanic acid	HCN	4.9×10^{-10}
Hydrofluoric acid	HF	6.8×10^{-4}
Hydrogen sulfate ion	HSO_4^-	1.1×10^{-2}
Hydrogen sulfide	H_2S	8.9×10^{-8}
	HS^-	$1.2 \times 10^{-13}\ddagger$
Hypochlorous acid	HClO	3.5×10^{-8}
Nitrous acid	HNO_2	4.5×10^{-4}
Oxalic acid	$\text{H}_2\text{C}_2\text{O}_4$	5.6×10^{-2}
	HC_2O_4^-	5.1×10^{-5}

Work For Round 2 - include both hydrolysis of weak acid and pH calc.

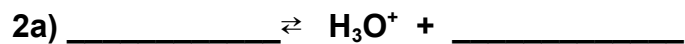


pH =

VS

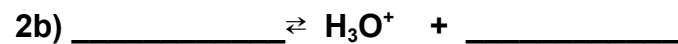


pH =

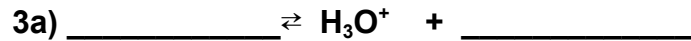


pH =

VS

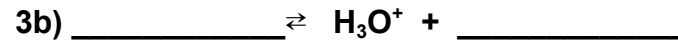


pH =

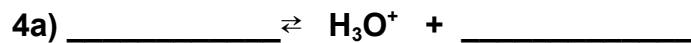


pH =

VS

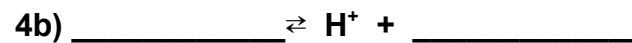


pH =



pH =

VS



pH =