

# Acids and Bases

## Unit III

# Brainstorm: Acids and Bases

- 1.Think
- 2.Pair
- 3.Share











With your group decide whether you agree or disagree with each of the following statements:

BEFORE

AFTER

1. All acids with the same concentration are the same strength
2. All bases have "OH" in their chemical formula
3. The pH scale is a logarithmic scale

1. All acids with the same concentration are the same strength

**Answer: DISAGREE!**

2. All bases have "OH" in their chemical formula

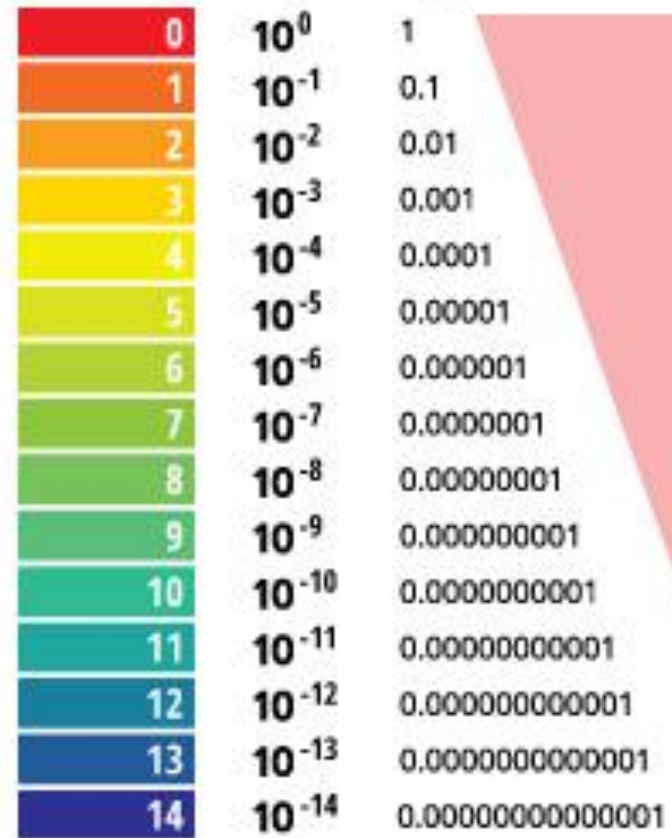
**Answer: DISAGREE!**

	ACID	BASE			
100% ionized in H <sub>2</sub> O	<b>Strong</b>	HCl	Cl <sup>-</sup>	<b>Negligible</b>	
		H <sub>2</sub> SO <sub>4</sub>	HSO <sub>4</sub> <sup>-</sup>		
		HNO <sub>3</sub>	NO <sub>3</sub> <sup>-</sup>		
Acid strength increases ↑		H <sub>3</sub> O <sup>+</sup> (aq)	H <sub>2</sub> O		
	<b>Weak</b>		HSO <sub>4</sub> <sup>-</sup>	SO <sub>4</sub> <sup>2-</sup>	<b>Weak</b>
			H <sub>3</sub> PO <sub>4</sub>	H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>	
			HF	F <sup>-</sup>	
			HC <sub>2</sub> H <sub>3</sub> O <sub>2</sub>	C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup>	
			H <sub>2</sub> CO <sub>3</sub>	HCO <sub>3</sub> <sup>-</sup>	
			H <sub>2</sub> S	HS <sup>-</sup>	
			H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>	HPO <sub>4</sub> <sup>2-</sup>	
			NH <sub>4</sub> <sup>+</sup>	NH <sub>3</sub>	
			HCO <sub>3</sub> <sup>-</sup>	CO <sub>3</sub> <sup>2-</sup>	
		HPO <sub>4</sub> <sup>2-</sup>	PO <sub>4</sub> <sup>3-</sup>		
<b>Negligible</b>		H <sub>2</sub> O	OH <sup>-</sup>	<b>Strong</b>	
		OH <sup>-</sup>	O <sup>2-</sup>		
		H <sub>2</sub>	H <sup>-</sup>		
	CH <sub>4</sub>	CH <sub>3</sub> <sup>-</sup>		100% protonated in H <sub>2</sub> O	
				Base strength increases ↓	



3. The pH scale is a logarithmic scale  
**ANSWER: AGREE!!!**

$$\text{pH} = -\log[\text{H}^+]$$



# Sort the following vocabulary words into groups:

Arrhenius theory

Titration

Logarithms

Strong base

Electrolyte

Conjugate acid-base pair

Levelling effect

$K_a$

pH

Ionization

Hydrolysis

Indicators

Weak base

pOH

Buffers

Caustic

Sour taste

$K_w$

Corrosive

Dissociation

Bitter taste

Proton

Weak acid

Hydrogen ion

Strong acid

Bronsted-Lowry theory

Amphiprotic

$K_b$

Slippery