Biology Chapter 2 Section 2 – Properties of Water
Objectives: Students will
A) List 3 properties of water
B) Summarize the meaning of the pH scale
C) Compare 3 differences between acids and bases
D) Analyze a data table to determine whether 10 unknowns are acids or bases.

The pH Scale

A) List 3 properties of water

WATER:

What is its chemical formula? _____

How many atoms?_____

Types of bonds?_____

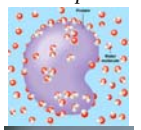
What happens to the electrons in covalent bonds? _____

Does the hydrogen and oxygen share evenly?_____

What is the result?_____

A) List 3 properties of water

Water-soluble protein

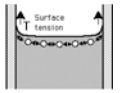


Greatest _____ in the world

_____ compounds

Most _____
molecule found in living things

_____ tension



B) Summarize the meaning of the pH scale
Water Dissociation
H_2O-->H+ & OH-
Analyze the above equation. What do you think dissociation means?

What does it have to do with acids and bases?

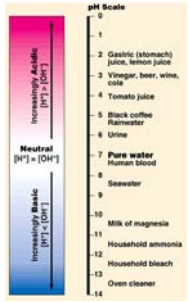
- Acid= _____ H^+ (Hydrogen ions) than _____
- Base=_____ H^+ (Hydrogen ions) than _____

How frequently do they break apart in water?

B) Summarize the meaning of the pH scale

pH=measurement of _____

- -log of the _____
- for water = _____
- pH = _____ = _____
- _____ = Range
- 0-6 = _____
- 7 = _____
- 8-14 = _____
- Further from 7 = _____



B) Summarize the meaning of the pH scale.
Understanding Check

- Given the following H+ concentrations, calculate the pH and identify whether its an acid, base or neutral:
- 1) $[H+]= 10^{-4}$
- 2) $[H+]= 10^{-7}$
- 3) $[H+]= 10^{-9}$
- 4) $[H+]= 10^{-14}$
- 5) $[H+]= 10^{-12}$
- 6) $[H+]= 10^{-6}$
- 7) $[H+]= 10^{-2}$

C) Compare 3 differences between acids and bases

Acid	Base
• _____ H+ ions than water • _____ • Taste_____ • React _____ with _____ • Turns litmus _____ • If strong, will _____ • Examples:	• _____ H+ ions than water • _____ • Feels _____ • Turns litmus _____ • _____ turns _____ • If strong, will _____ • Examples:

C) Compare 3 differences between acids and bases

Strong acids and bases?

- The _____the pH number, the more acidic the solution.
- The _____ the pH number, the more basic the solution.

C) Compare 3 differences between acids and bases

Strong acids and bases?

- The _____the pH number, the more acidic the solution.
- (lower, closer to 0) (0-6)
- The _____ the pH number, the more basic the solution.
- (higher, closer to 14) (8-14)

D) Analyze a data table to determine whether 10 unknowns are acids or bases.
Understanding Check

Sample #	pH Test Number	Phenolpthalein Result	Is it an acid or base?
1	4	Clear	
2	1	Clear	
3	10	Pink	
4	7	Clear	
5	3	Clear	
6	13	Pink	

10

Understanding Check

Get your stamp.

Complete the Food Lab or Meal Plan after you receive your stamp.

1. Create a chart comparing 2 differences between acids and bases.
2. Predict what would happen if a city received acid rain for an extended time.
3. What do you think pH balanced means?
4. Why do you think your shampoo and conditioner must be pH balanced?

11