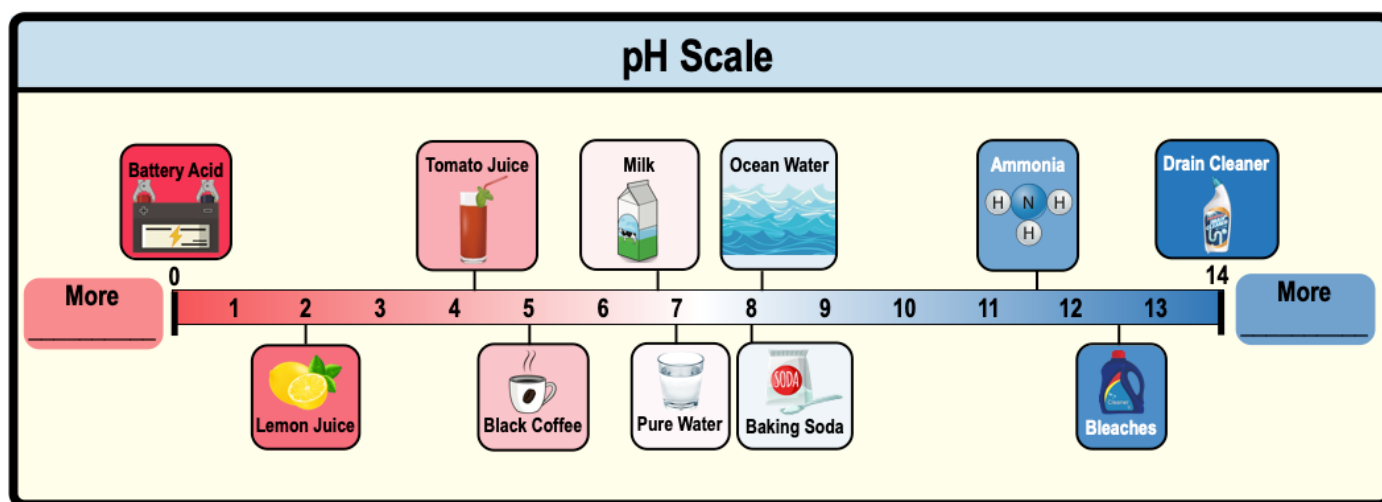


## CONCEPT: PH SCALE

- Recall: Many biological processes are strongly affected by the \_\_\_\_\_ of dissolved  $H^+$ .
- \_\_\_\_\_ : a measurement of \_\_\_\_\_ concentration in a solution.
  - pH also *indirectly* measures [\_\_\_\_\_] in aqueous solutions.
  - pH Scale** goes from \_\_\_\_\_ to \_\_\_\_\_ (determines if a solution is *acidic* or *basic*):

|       |                    |                              |
|-------|--------------------|------------------------------|
| _____ | solution pH ____ 7 | $[H^+] \text{ ____ } [OH^-]$ |
| _____ | solution pH ____ 7 | $[H^+] \text{ ____ } [OH^-]$ |
| _____ | solution pH ____ 7 | $[H^+] \text{ ____ } [OH^-]$ |



**PRACTICE:** In a neutral solution, the concentration of \_\_\_\_\_.

- Hydrogen ions is less than the concentration of hydroxide ions.
- Water molecules is less than the concentration of hydroxide ions.
- Hydrogen ions is greater than the concentration of hydroxide ions.
- Hydrogen ions is equal to the concentration of hydroxide ions.

**PRACTICE:** A base \_\_\_\_\_:

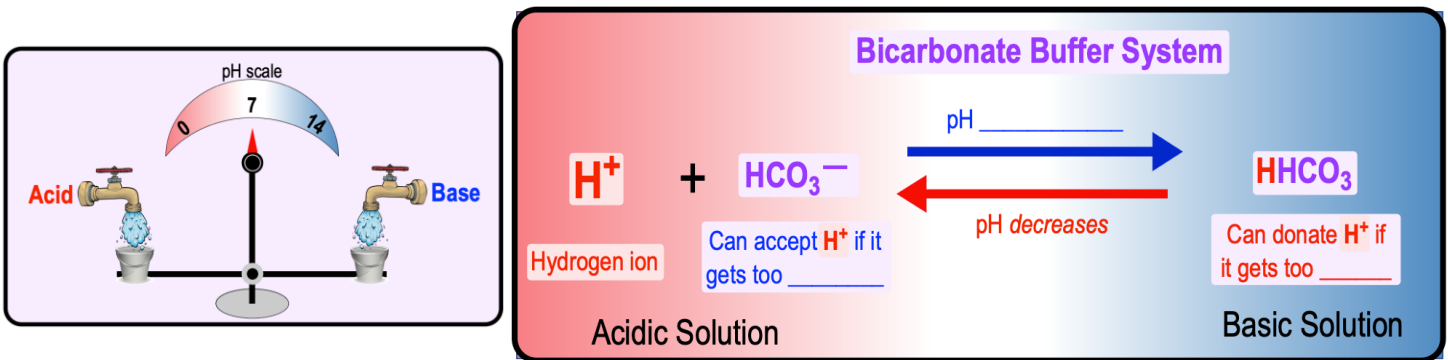
- Has a value of 7 on the pH scale.
- Is a chemical that donates hydrogen ions to a solution.
- Is a chemical that accepts hydrogen ions from a solution.
- Has a value below 7 on the pH scale.
- None of the above are correct.

## CONCEPT: PH SCALE

### Buffers

- NOTE: pH of most living organisms is ~7 (neutral) & changing the pH even slightly can be *harmful*.
- **Buffers:** substances that \_\_\_\_\_ changes in *pH* when acids/bases are added to solution.
  - Depending on the situation, buffers can either \_\_\_\_\_ or \_\_\_\_\_  $H^+$  in solution.
  - Organisms use *buffers* to maintain \_\_\_\_\_ in regards to the *pH*.

**EXAMPLE:** Bicarbonate Buffer System in Blood.



**PRACTICE:** Which of the following statements about buffers is true?

- They maintain a consistent pH only when acids are added to them, but not bases.
- They maintain a consistent pH of 7.
- They fluctuate in pH when acids are added to them.
- They maintain a consistent pH when acids or bases are added to them.
- They fluctuate in pH when acids or bases are added to them.

**PRACTICE:** Buffers are substances that help resist shifts in pH by:

- Donating  $H^+$  in acidic solutions.
- Donating  $H^+$  to a solution when they have been depleted.
- Releasing  $OH^-$  in basic solutions.
- Accepting  $H^+$  when they are in excess.
- Both b and d are correct.