# Acids & Bases

**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**

# Acids

- Ions
  - Hydrogen
- pH
  - 6 or less
- Taste
  - Sour
- Feel
  - Sticky

- Other
  - Corrode metals
- Indicators
  - Turns litmus paper red
  - Phenolphthalein does not change
- Examples
  - Lemon juice, vinegar, tomato juice, black coffee, soda, urine, saliva

**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**

# Bases

- Ions
  - Hydroxide
- pH
  - 8 or more
- Taste
  - Bitter
- Feel
  - Slippery
- Other
  - AKA Alkaline
- Indicators
  - Turns litmus paper blue
  - Phenolphthalein turns pink
- Examples
  - Sea water, baking soda, soap, bleach, ammonia, drain cleaner

**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**

# Neutral Substances

- Compounds that have a pH of 7 are said to be neutral
  - Why is pure water neutral?
    - It produces both hydrogen & hydroxide ions

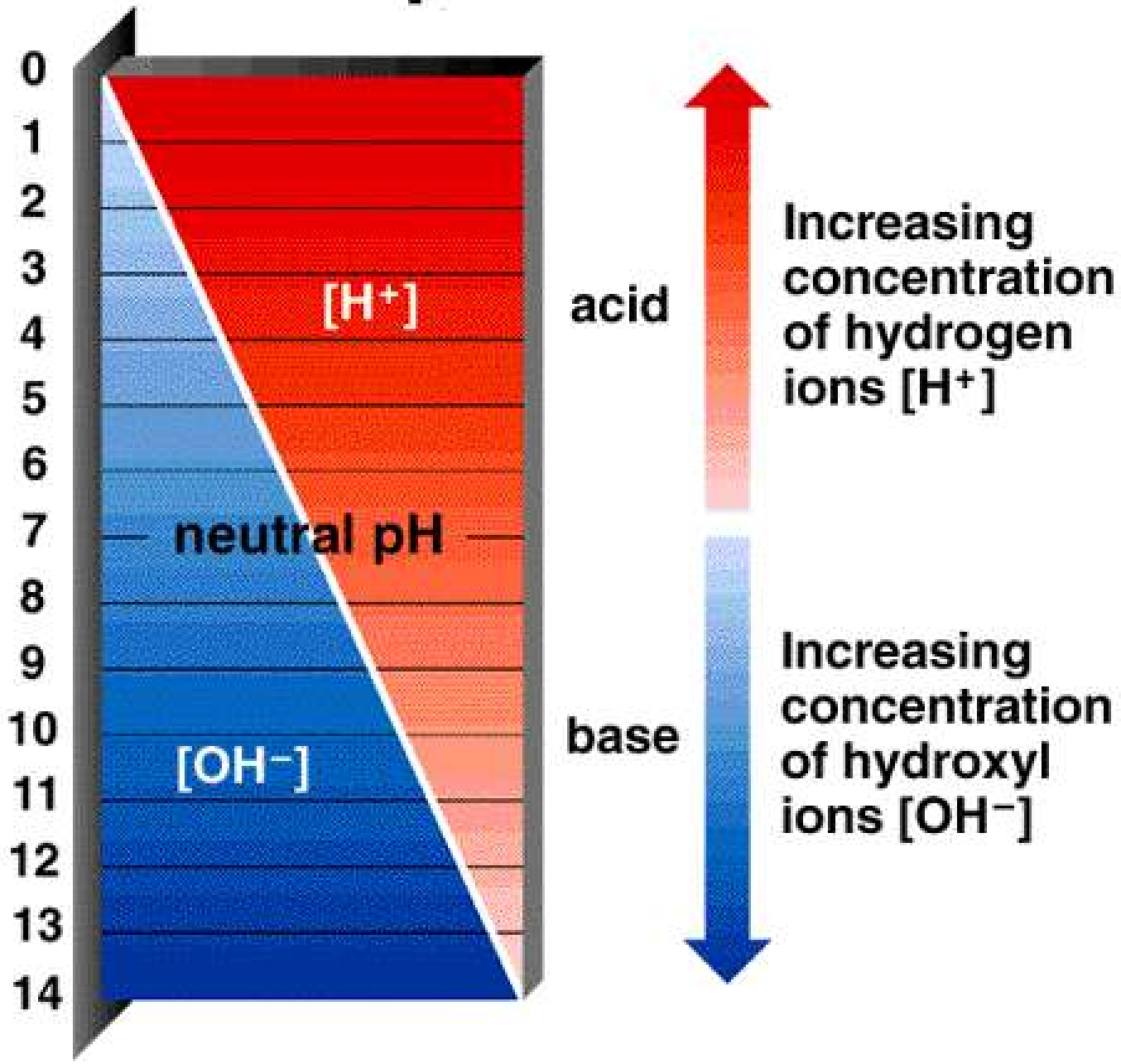
**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**

# pH Scale

- The pH scale measures the concentration of hydrogen ions
  - The more hydrogen ions produced, the lower the number is
  - The pH scale is a log-based scale, which means that each value is 10x different than the next one
- There is also a pOH scale that measures hydroxide ion concentration
  - It is the exact opposite of the pH scale

**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**

# pH Scale



# Acid-Base Neutralization Reactions

- When an acid and a base are reacted together, the products are pure water and a neutral compound called a salt
  - Salt does NOT mean the stuff on your kitchen table; NaCl is only one type of salt
  - A salt is any ionic solid created by an acid-base neutralization reaction

**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**

# Acid-Base Neutralization Reaction Examples

- 1 $HCl$ + 1 $NaOH$ → 1 $H_2O$ + 1 $NaCl$

A B W S

- 1 $Ca(OH)_2$ + 1 $H_2CO_3$ → 1 $CaCO_3$ + 2 $HOH$

B A S W

- 1 $H_2SO_4$ + 2 $NH_4OH$ → 2 $HOH$ + 1 $(NH_4)_2SO_4$

A B W S

- 1 $HNO_3$ + 1 $KOH$ → 1 $KNO_3$ + 1 $H_2O$

A B S W

**EQ: Why is it important to know the properties of acids, bases, and neutral compounds?**