

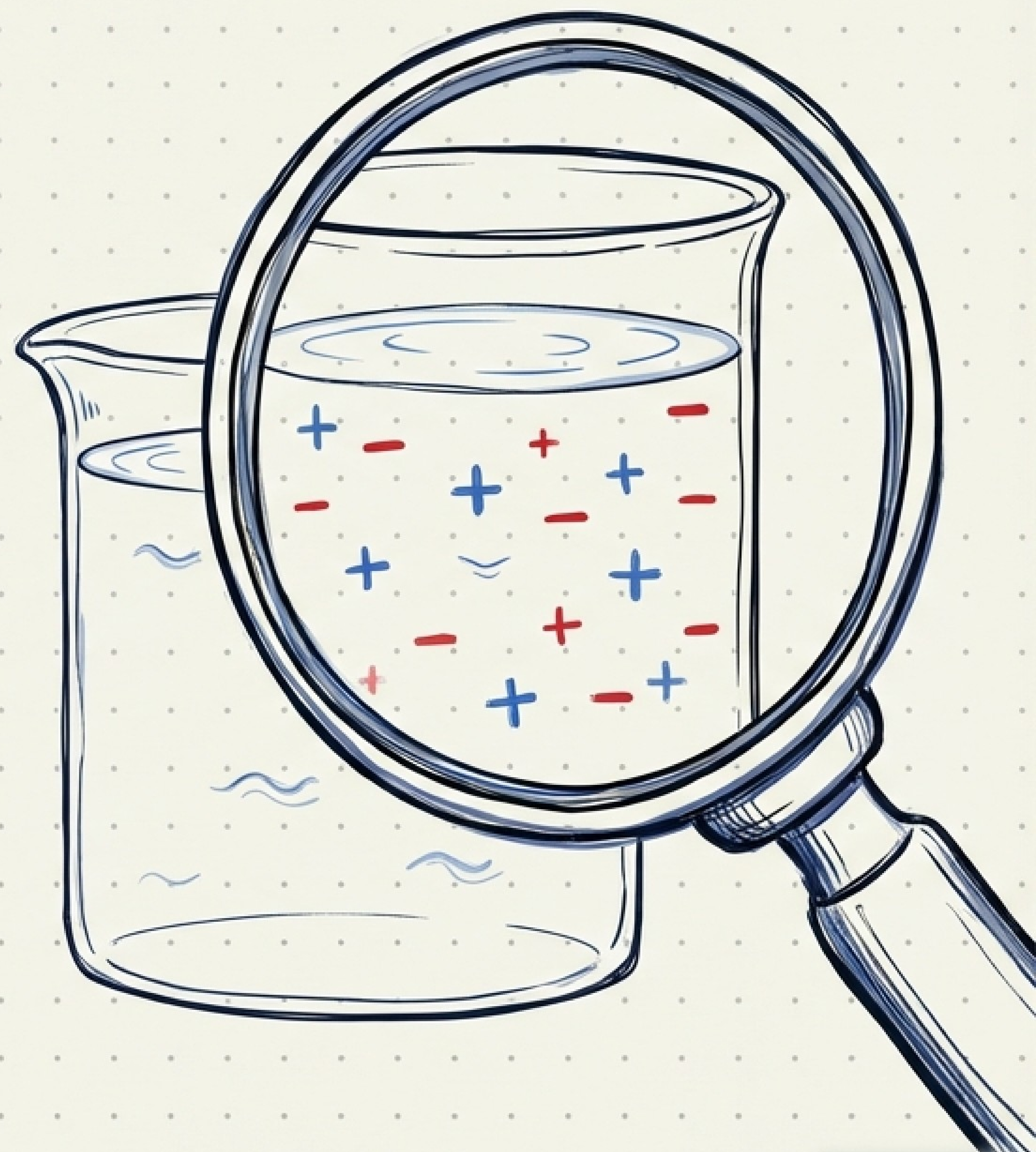
# Acids, Bases & Salts: Complete Study Notes



# Chemistry in everyday life relies on aqueous solutions

Acids, bases, and salts are essential chemical substances found all around us. The key to understanding them is looking at exactly what happens when they dissolve in an aqueous (water) solution.

They are defined by the specific ions they produce.



# Ions are the invisible building blocks of these solutions

Ions are charged particles formed when atoms gain or lose electrons.

Positive ions = Cations  
Examples:  $\text{Na}^+$ ,  $\text{H}^+$



Negative ions = Anions  
Examples:  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$



Crucial Concept!

Hydrogen ions are responsible for the acidic nature of substances.

When acids dissolve in water, they release  $\text{H}^+$  ions, which determine the strength of the acid.



# Acids release hydrogen ions ( $H^+$ ) when dissolved in water

## Common Acids:

Hydrochloric acid ( $HCl$ )

Sulfuric acid ( $H_2SO_4$ )

Nitric acid ( $HNO_3$ )

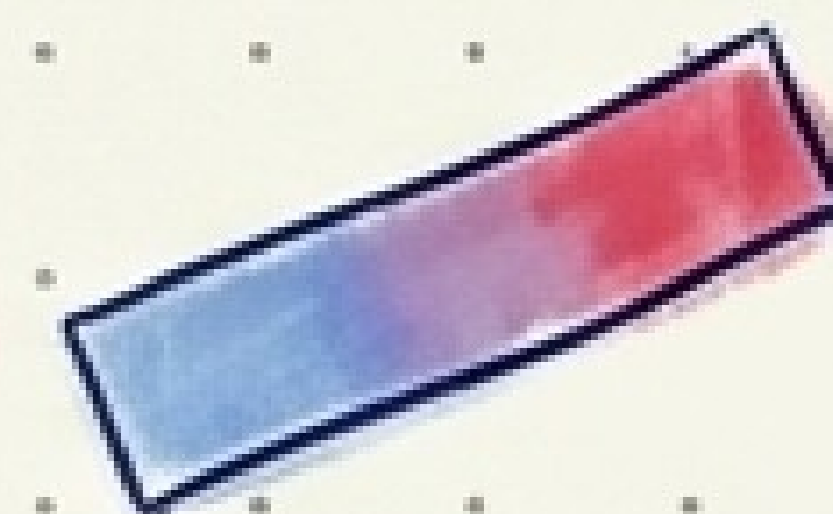
## Properties:



Sour taste



Turns blue litmus red



Conducts electricity  
in aqueous solution



Reacts with metals to  
release hydrogen gas

# Bases and alkalis release hydroxide ions ( $\text{OH}^-$ ) in water

Remember:  
Alkalis are just  
bases that  
dissolve in  
water!

## Common Bases:

Sodium hydroxide ( $\text{NaOH}$ )

Potassium hydroxide ( $\text{KOH}$ )

Calcium hydroxide ( $\text{Ca}(\text{OH})_2$ )

## Properties:

Bitter taste

Slippery touch

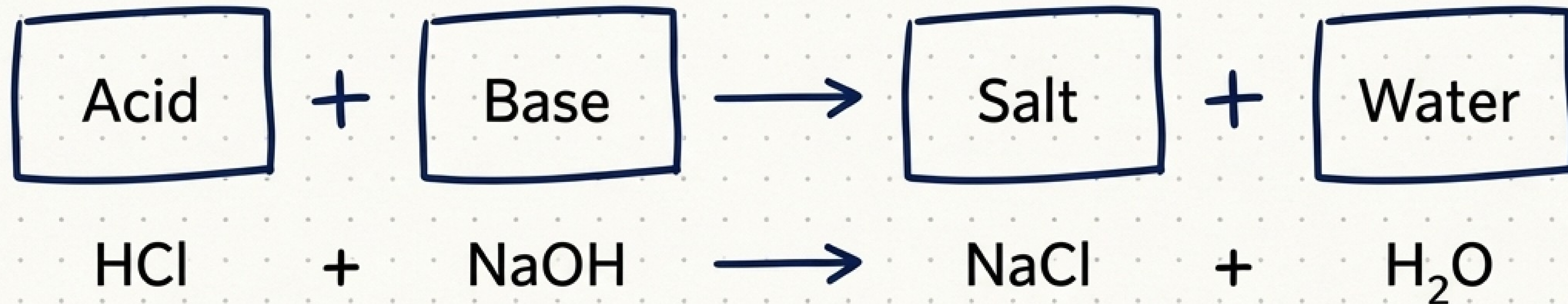
Turns red litmus blue

Neutralise acids to form salt and water



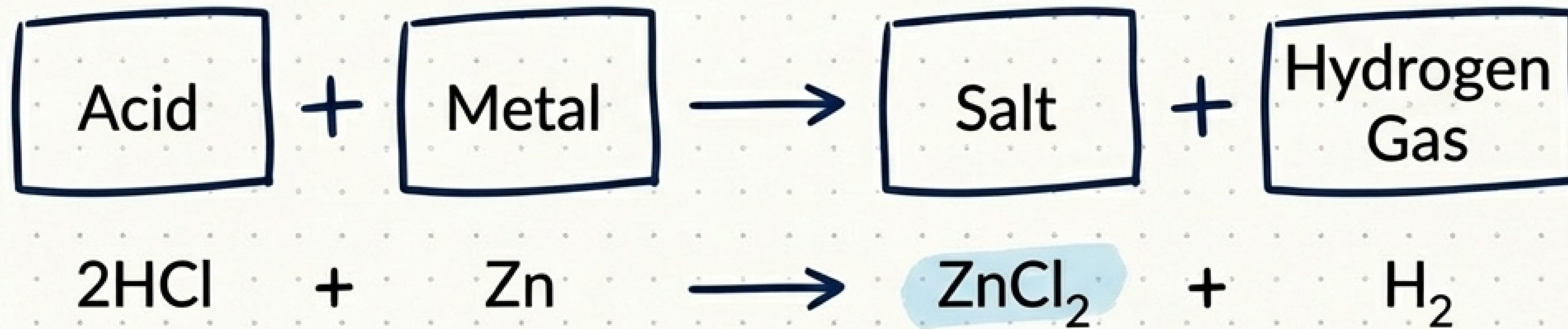
# Neutralisation reactions form salts and water

**Salts** are compounds formed by the neutralisation reaction between acids and bases.



Common salt: Sodium chloride!

# Acids react with metals to release hydrogen gas



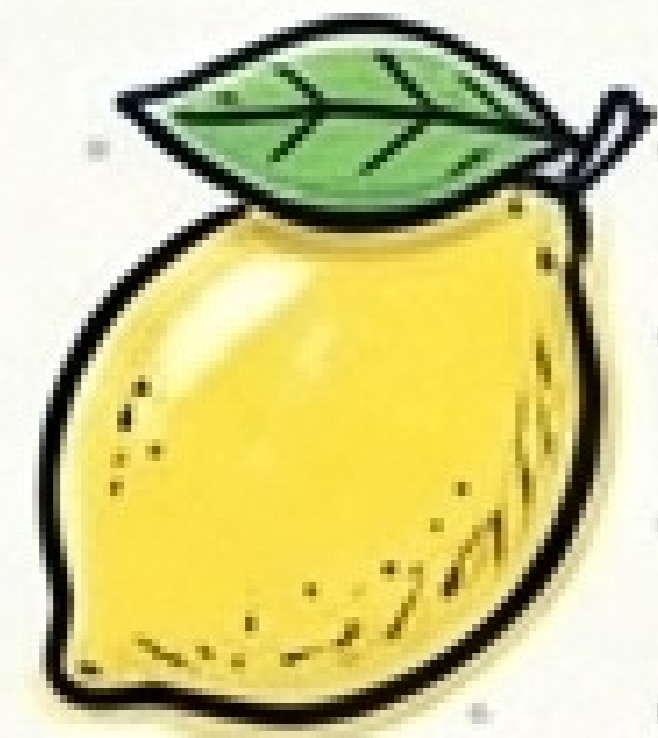
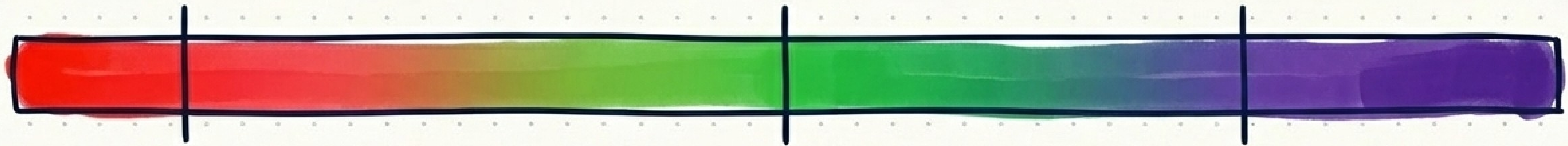
# The pH scale measures acidic or basic strength

The scale ranges entirely from 0 to 14.

pH < 7: Acidic

pH = 7: Neutral

pH > 7: Basic



Lemon juice ~2



Water 7



Soap solution ~10

# Active recall check

Which ion is produced by acids in water?

- A)  $\text{OH}^-$
- B)  $\text{H}^+$**
- C)  $\text{Na}^+$
- D)  $\text{Cl}^-$

Which substance is a base?

- A)  $\text{HCl}$
- B)  $\text{NaOH}$**
- C)  $\text{H}_2\text{SO}_4$
- D)  $\text{HNO}_3$

What is the pH of a neutral solution?

- A) 0
- B) 5
- C) 7**
- D) 14

Acids react with metals to produce:

- A) Salt & Oxygen
- B) Salt & Hydrogen**
- C) Salt only
- D) Water

Which of the following is a salt?

- A)  $\text{NaCl}$**
- B)  $\text{HCl}$
- C)  $\text{NaOH}$
- D)  $\text{H}_2\text{SO}_4$

**100% / A+**