

ACIDS

- compounds that release hydrogen ion (H^+), when dissolved in water.

Properties of acids:

- Corrosive: React with most metals to give off hydrogen gas
- Cause chemical burns on contact
- Taste sour (like citrus - citric acid!)
- Changes litmus indicator to RED

BASES

- Substances that release hydroxide ion (OH^-) when dissolved in water

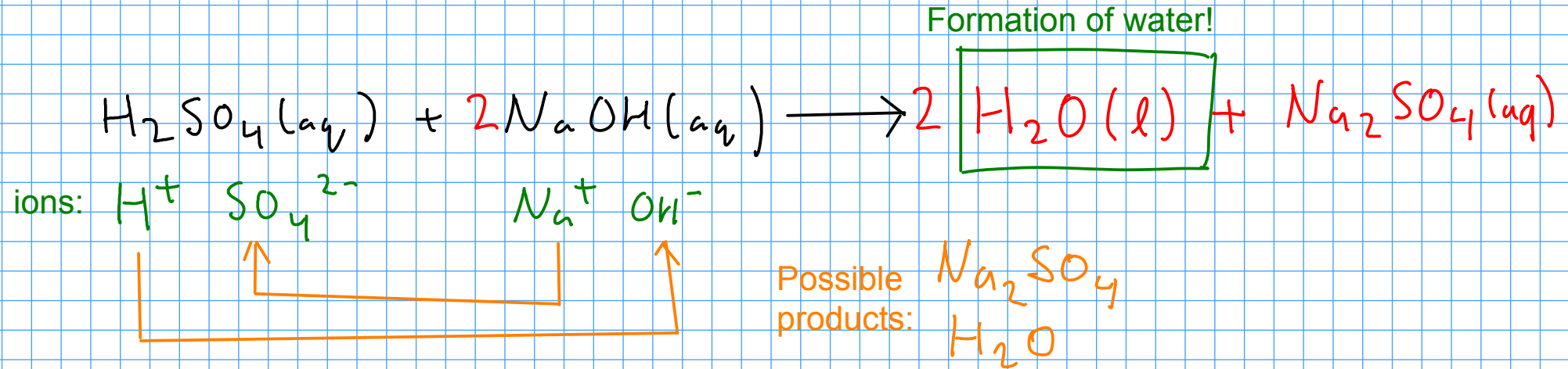
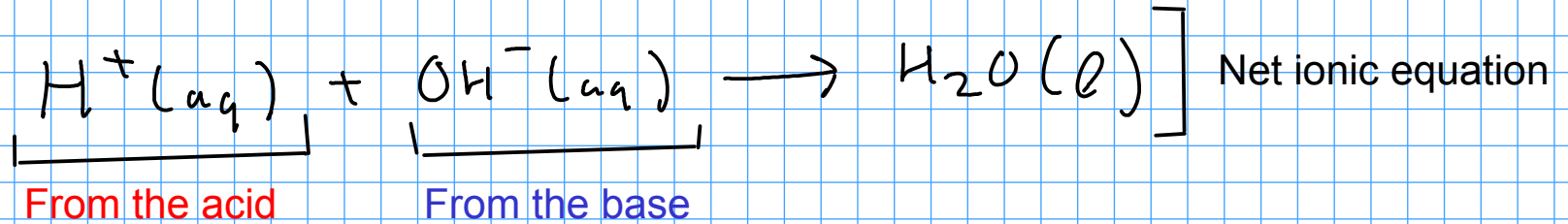
Properties of bases:

- Caustic: Attack and dissolve organic matter (think lye, which is NaOH)
- Cause skin/eye damage on contact
- Taste bitter
- changes litmus indicator to BLUE

Due to the dissolving action of base on your skin, bases will feel "slippery". The base ITSELF is not particularly slippery, but what's left of your skin IS!

ACID/BASE or NEUTRALIZATION reactions

- the driving force of these reactions is the formation of water molecules.



- How can this reaction be detected?

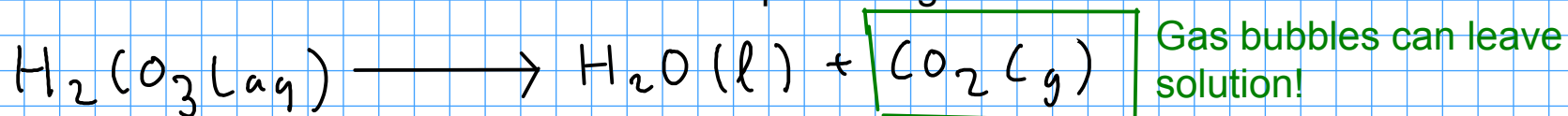
- pH detector (indicator paper, etc.)
- do the products have similar chemical properties to the reactants?
- release of heat!

GAS FORMATION / OTHER MOLECULES

- There are a few other molecules that can be made with exchange-type chemistry.
- Most of these molecules are unstable and can break apart to form gases.

- Formation of a weak acid:

- The formation of ANY weak acid in an exchange-type reaction can be a driving force.
- Some weak acids are unstable and can break apart into gas molecules.

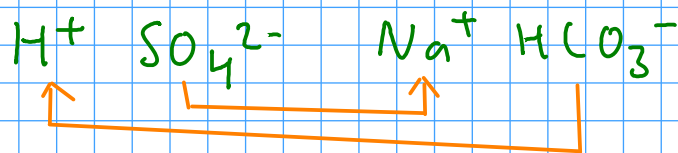


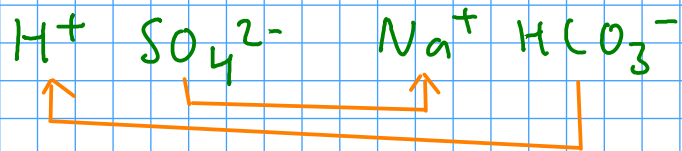
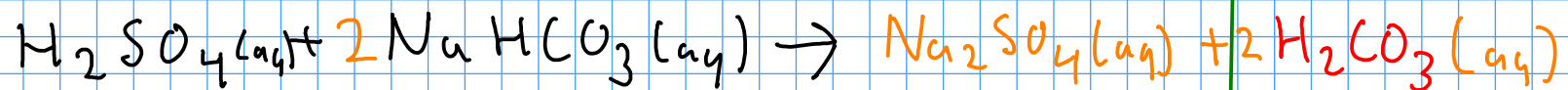
... but how would you form carbonic acid in an exchange-type reaction?

acid + carbonate CO_3^{2-}

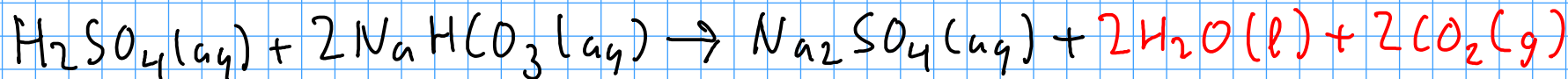
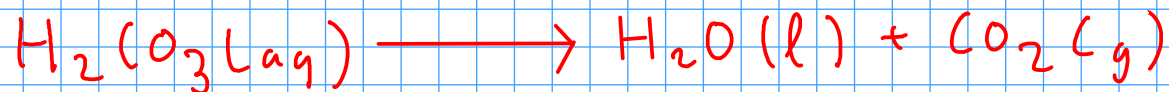
OR

acid + bicarbonate HCO_3^-

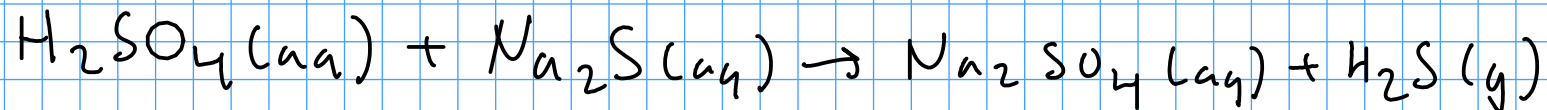
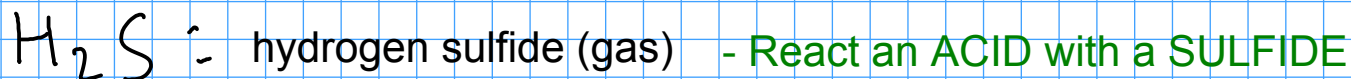
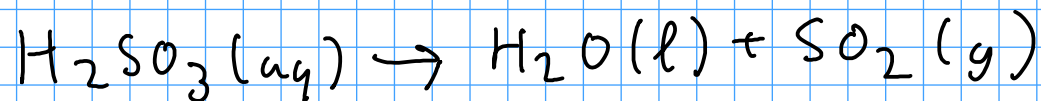
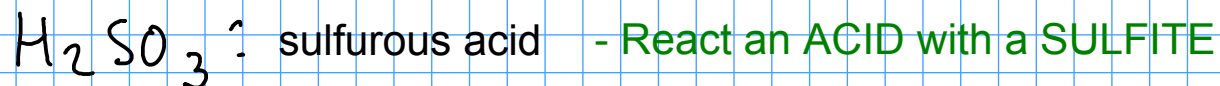




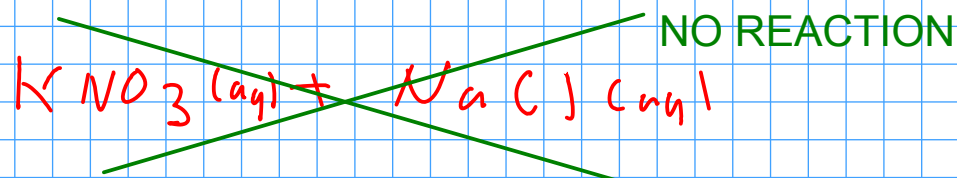
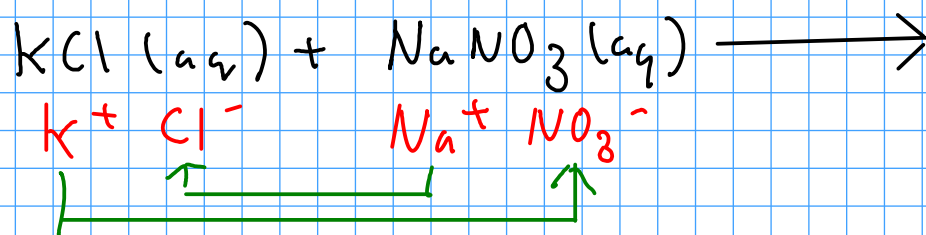
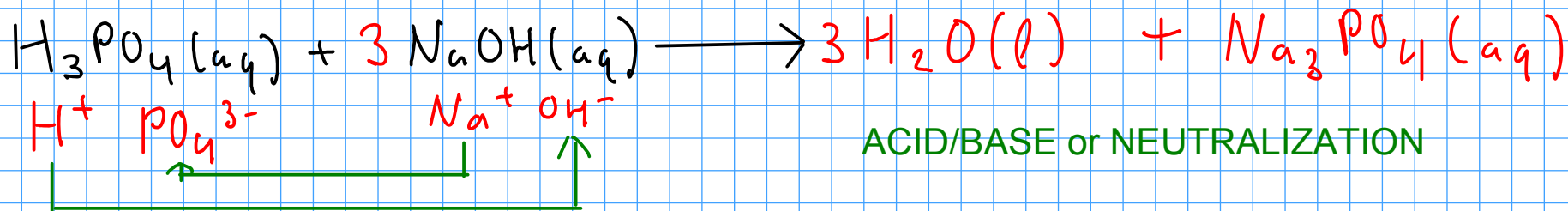
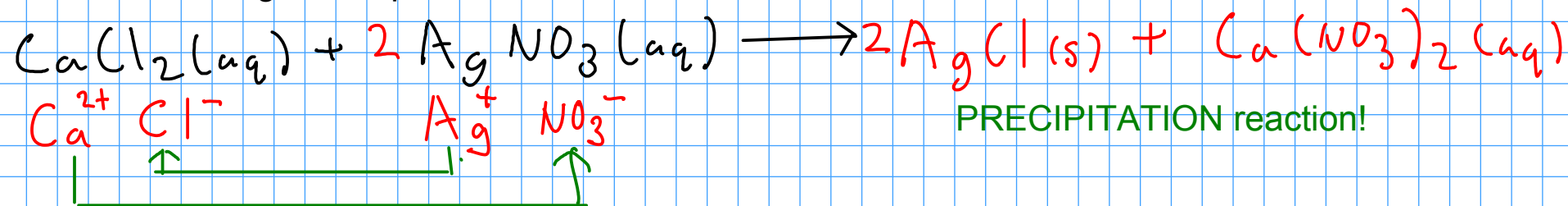
... but when we mix sulfuric acid and sodium bicarbonate, we observe BUBBLES. We need to write an equation that agrees with our observations. We know that carbonic acid decomposes, so we go ahead and put that into our equation.



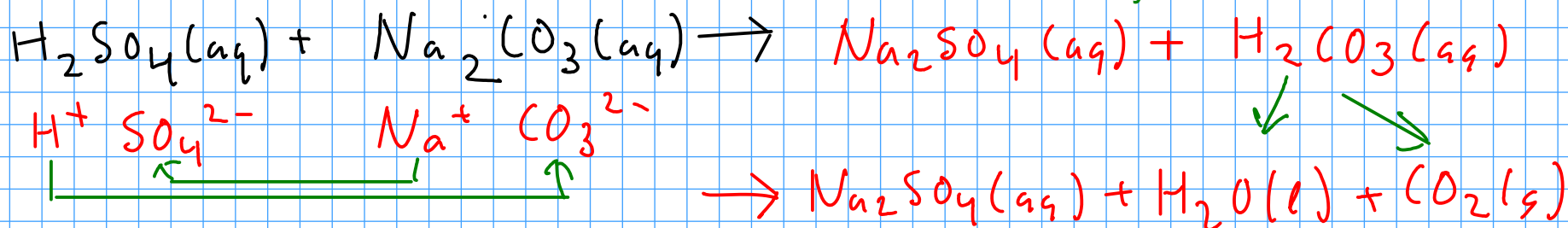
Other molecules of interest:



A few more exchange examples: In EXCHANGE reactions, transition metals do not change their charge!



- Both "products" are soluble ionic compounds that exist in water as free ions - just like they were before they were mixed.



Driven by the formation of unstable CARBONIC ACID, which breaks down and releases a GAS