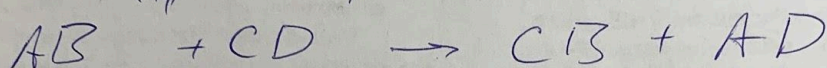
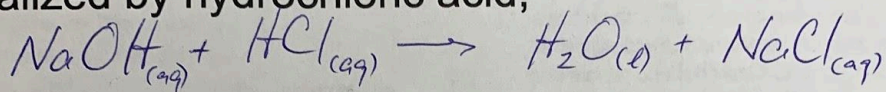


## Neutralization Reactions:

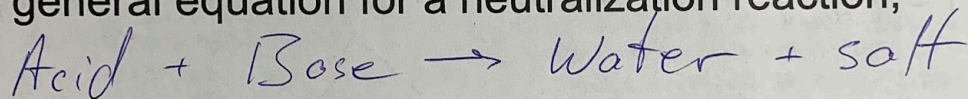
Reactions where an acid and a base react to change the pH of the solution closer to 7 (neutral).

acid  $\rightarrow$  pH < 7  
base  $\rightarrow$  pH > 7

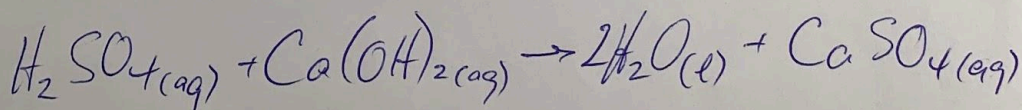
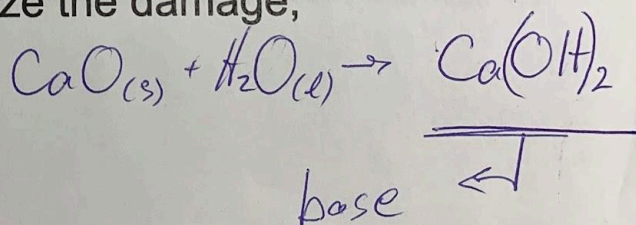
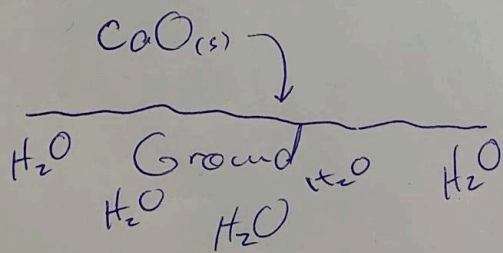
The chemical formula for sodium hydroxide when it is neutralized by hydrochloric acid;



The general equation for a neutralization reaction;

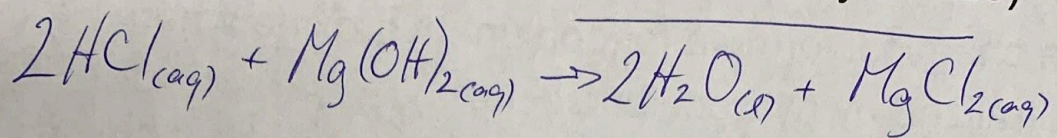


When sulphuric acid is spilled in a train wreck, Calcium oxide is applied in the area to neutralize the damage;

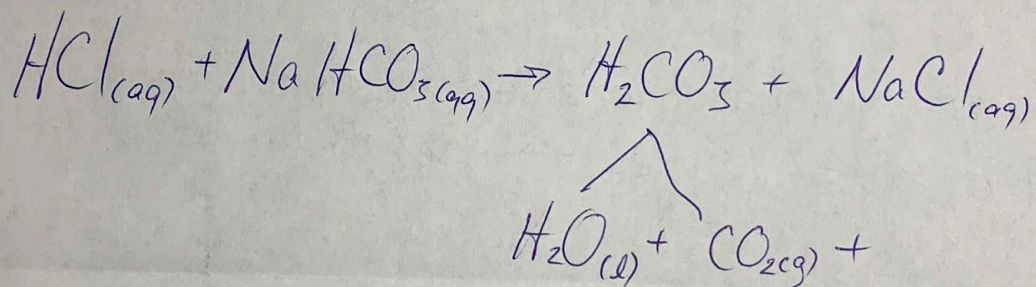


- brings the pH of the soil back closer to 7.

Stomach acid;  $\rightarrow \text{HCl}_{(aq)}$  when the stomach produces too much acid due to spicy foods, or acidic foods, it can become uncomfortable. A person will feel uncomfortable until they can resolve the problem with an antacid like for example milk of magnesia (active ingredient of magnesium hydroxide)



... or sodium bicarbonate;



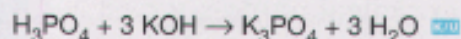
HW: Section 6.6, page 229, #1-9



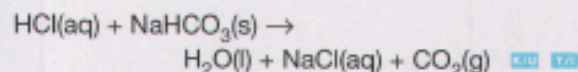


## CHECK YOUR LEARNING

1. In this section, you read about firefighters cleaning up a hazardous spill of a base. This is the chemical reaction they used:



- What type of reaction is this?
  - Write the general equation for this kind of reaction. Compare the equation above with the general equation.
  - Name the reactants.
  - Name the products.
  - How do you think the pH of the products compared to the pH of the initial spill?
2. Baking soda fizzes, releasing carbon dioxide gas, when it is added to an acid spill. KJ0 LA
- What evidence tells you this is a chemical change?
  - How could you use this property to tell when the acid is completely neutralized?
  - Why is baking soda a good choice for neutralizing acid spills at home?
3. The chemical equation for the reaction of baking soda and hydrochloric acid is as follows:



- What type of reaction is this?
- Describe what you would observe if you watched this reaction occur.

4. Why is it important to neutralize an acid spill before attempting to clean it up? KJ0
5. Why is it necessary to regularly test the pH of pool water? KJ0
6. You visit your grandmother's house and use her new hot tub. When you get a little water in your eyes, they sting. You decide to check the pH of the water. Your suspicions were correct: the water is too acidic. You offer to help your grandmother fix the problem. She shows you two bottles of chemicals: one labelled HCl and one labelled  $\text{Ca(OH)}_2$ . She is not sure which one to use. Which one will you use to make the water in the hot tub safe? Explain your reasoning. KJ0 LA
7. Consider these compounds: HCl, KOH, NaCl,  $\text{H}_3\text{PO}_4$ . Which could be used to raise the pH of pool water? Which could lower the pH of pool water? Explain. KJ0
8. Carbonic acid,  $\text{H}_2\text{CO}_3$ , is added to pop to make it taste tart or sour. Write a word equation for the neutralization of carbonic acid with potassium hydroxide, KOH. KJ0
9. (a) One way to treat a lake polluted with acid rain is to add calcium hydroxide,  $\text{Ca(OH)}_2$ , to it. How does this help?
- (b) Why is this only a short-term "fix" to the acid rain problem for the lake?
- (c) What would be a long-term "fix"? KJ0 LA