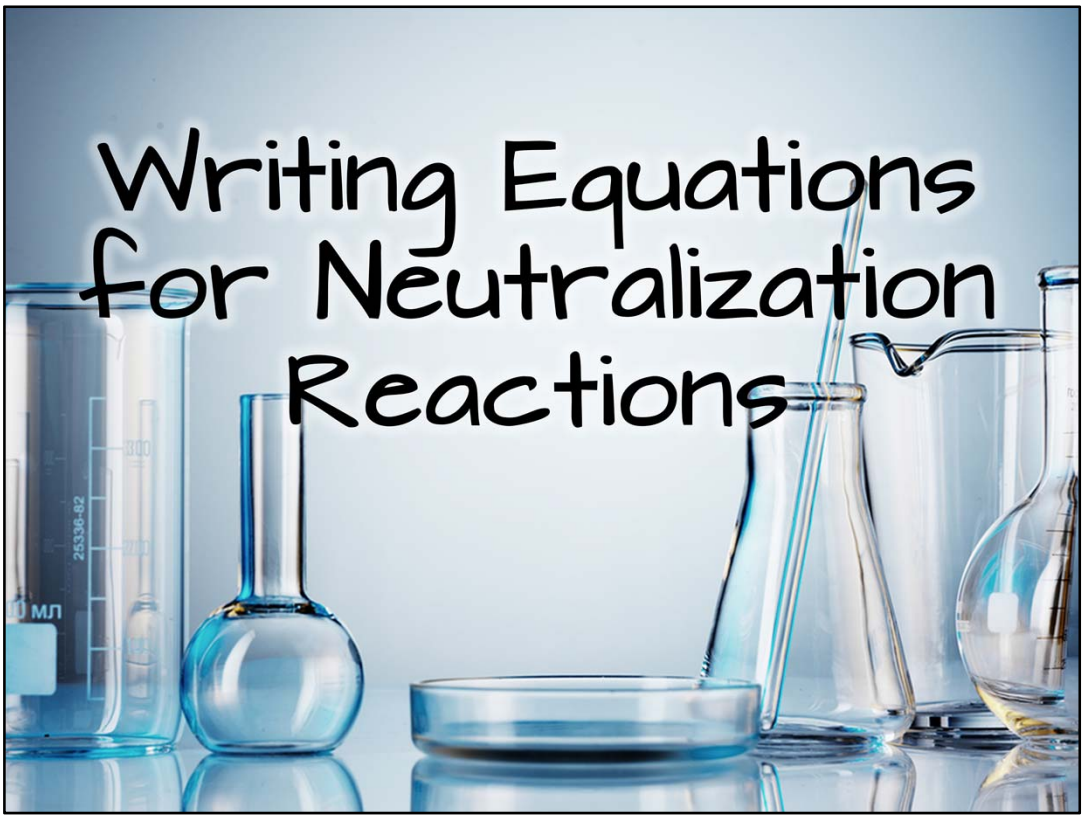
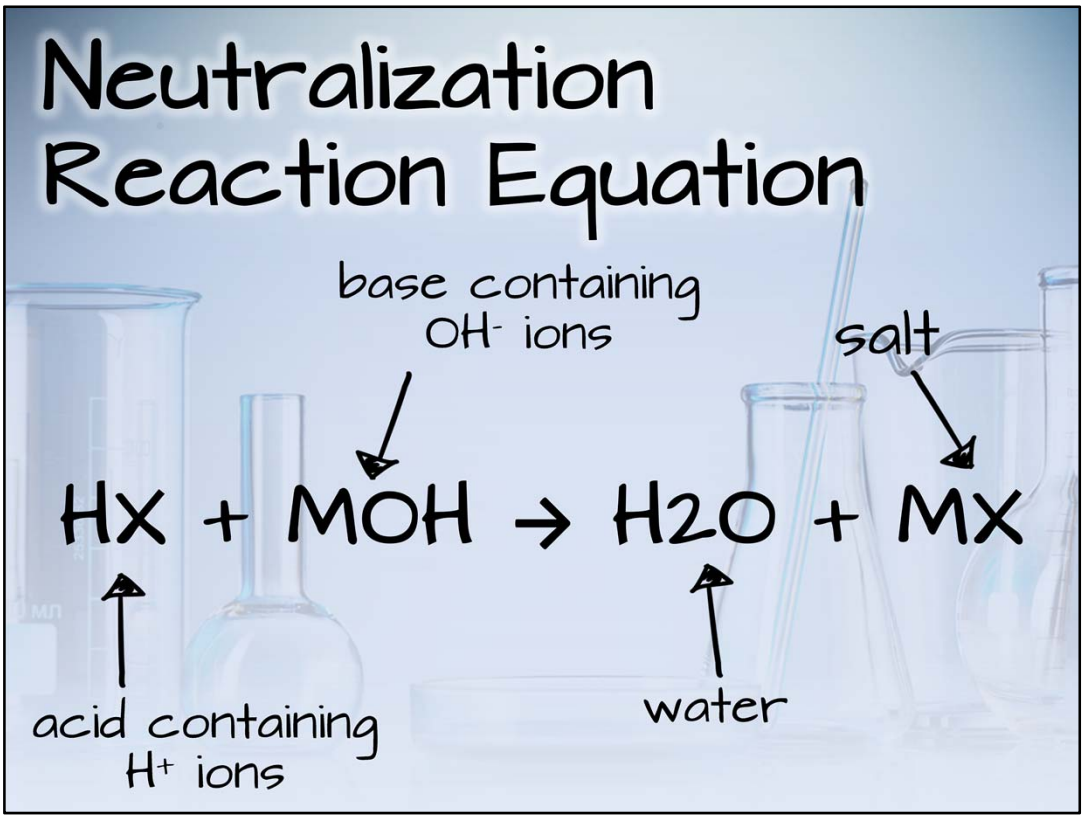
Module 11: Acid/Bases, Neutralization, and Redox Reactions

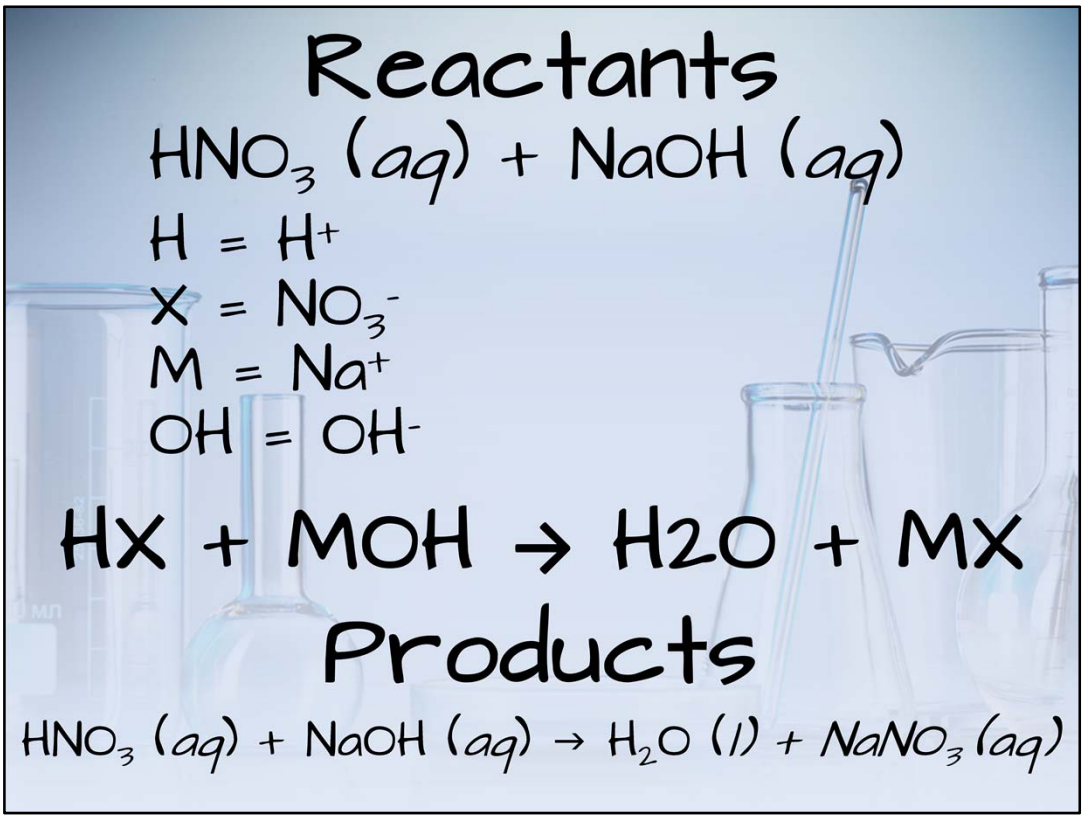
Topic 3 Content: Writing Equations for Neutralization Reactions



Writing Equations for Neutralization Reactions

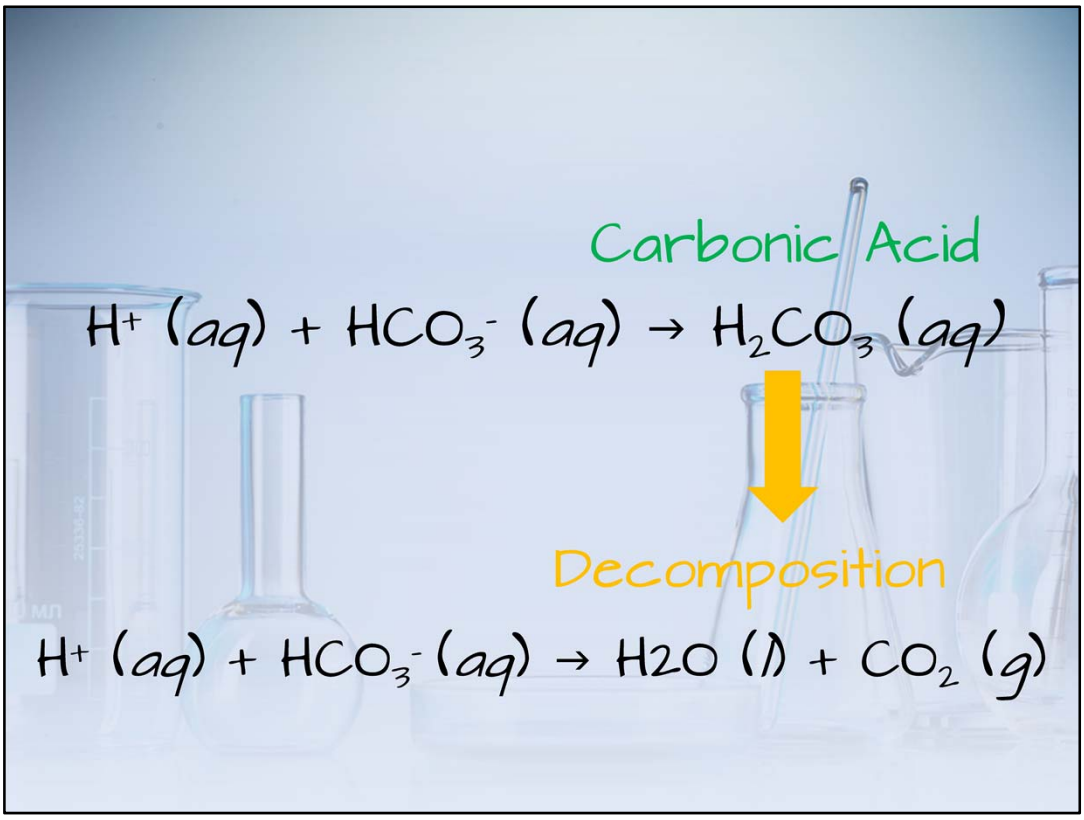


The first step in writing a neutralization reaction equation is to predict the formulas for the products. This is done using the equation for neutralization reactions shown here. In this equation, HX is the acid containing hydrogen ions, MOH is the base containing hydroxide ions, and these two reactants yield water and a salt, indicated by MX.



Try to predict the products of the reactions between nitric acid and sodium hydroxide. Take a moment to review both of the reactants shown here.

What are the products of this reaction? Since this a neutralization reaction, you will find that H^+ is equal to H, NO_3^- is equal to X, Na^+ is equal to M, and the OH^- is equal to OH. Predicting the products for the reaction is now a simple task. The reaction between nitric acid and sodium hydroxide yields water and sodium nitrate.



The reaction between an acid and an ionic compound containing either carbonate or hydrogen carbonate leads to carbon dioxide and water as products. You might remember from decomposition reactions that if you add a H^+ to a CO_3^{2-}, you will form H_2CO_3. Carbonic acid is not stable in water, so it decomposes to carbon dioxide and water. This means that if you ever get carbonic acid as a product, you will need list the products as water and carbon dioxide.