

**Examples of neutralization reactions** Write balanced *net ionic equations* for the following acid-base reactions:

**I. Acids reacting with metal hydroxide bases**

1. Sulfuric acid solution + sodium hydroxide solution
2. Sodium hydroxide solution + nitric acid solution
3. Hydrochloric acid solution + magnesium hydroxide solution

**II. Acids reacting with metal oxide bases**

4. Hydrochloric acid solution + calcium oxide solid
5. Potassium oxide solid + phosphoric acid solution
6. Aluminum oxide solid + hydrochloric acid solution

**III. Metal hydroxide bases reacting with nonmetal oxide acids**

7. Sodium hydroxide solution + dinitrogen pentoxide gas
8. Lithium hydroxide solution + tetraphosphorous decoxide gas
9. Aluminum hydroxide solution + silicon dioxide gas

**IV. Metal oxide bases reacting with nonmetal oxide acids**

10. Sodium oxide solid + tetraphosphorous decoxide gas
11. Calcium oxide solid + dinitrogen pentoxide gas
12. Sulfur trioxide gas + lithium oxide solid