**Activity 33: Identifying Acids and Bases**

***Learning Objectives***

*Part 1 Identify the six strong acids*

*Identify a strong base*

*Part 2 Characterize a neutralization reaction*

*Predict the products and balance the chemical equation for a neutralization reaction*

**Estimated Completion Time** 45 Minutes

**Instructor Information**

Part 1 is fairly straightforward; appropriate time should be allocated for balancing neutralization reactions in Part 2.

**ANSWERS TO QUESTIONS**

Part 1. Strong Acids and Bases

1. Strong acids are a., d., and f.

2. Because the most common isotope of the hydrogen ion (H+) contains a single proton, no neutrons, and no electrons, H+ contains only one subatomic particle and one proton.

3. Because a positive proton cannot exist in isolation in solution, it is most commonly associated with the solvent, H2O, which when an H+ is present would be H3O+.

H3O+ = H2O + H+.

**Part 2. Neutralization Reactions**

1. The anion OH- is found in a base, not a salt.

2. a. HNO3(*aq*) + KOH(*s*) **→ KNO3 (*aq*) + H2O(*l*)**

b. **2**HBr(*aq*) + Ca(OH)2(*s*)→ **CaBr2(*aq*) + 2H2O(*l*)**

c. H2SO4(*aq*) + Mg(OH)2(*s*)→ **MgSO4(*aq*) + 2H2O(*l*)**

**Activity 33: Skill Development**

1. a. HNO3(*aq*) + NaOH(*s*) → **NaNO3(*aq*) + H2O(*l*)**

b. H2SO4(*aq*) + **2**KOH(*s*) **→**  **K2SO4(*aq*) + 2H2O(*l*)**

c. **2**HBr(*aq*) + Ba(OH)2(*s*) **→** **BaBr2(*aq*) + H2O(*l*)**

d. **2**HCl(*aq*) + Mg(OH)2(*s*) **→** **MgCl2(*aq*) + H2O(*l*)**