

CHAPTER 6	Investigation 6.C: Differentiating between Weak and Strong Acids and Bases	BLM 6.2.5
HANDOUT		

Given six unknown solutions of equal concentration, you will carry out a procedure that will identify the solutions as being a strong acid, strong base, weak acid, weak base, neutral ionic solution, or molecular solution.

Question

What laboratory tests will allow you to identify weak and strong acids and bases?

Safety Precautions

- Acids and bases are often both toxic and corrosive. Wash any spills on skin or clothing with plenty of cool water and inform your teacher immediately.
- When you have completed this investigation, wash your hands.

Materials

- Unknown solutions of:
 - 0.10 mol/L molecular solution
 - 0.10 mol/L neutral ionic solution
 - 0.10 mol/L strong base  
 - 0.10 mol/L strong acid  
- 0.10 mol/L weak base  
- 0.10 mol/L weak acid  
- conductivity testers
- pH paper or pH meter
- short strips of magnesium ribbon

Procedure

1. Read the procedure steps below and construct an appropriate table to record your results.
2. Determine the pH of the solutions, using either pH paper or a pH meter. Record your observations.
3. Determine the conductivity of each solution by placing 25 mL of a solution into a 50 mL beaker and using the conductivity tester. Record your observations.

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4. Determine the reactivity of each solution with Mg(s) metal by placing 5 mL of the solution into a test tube and adding a small piece of Mg(s). Record your observations, making note of whether some solutions reacted more vigorously with the metal than others.
5. Dispose of all materials as directed by your teacher.

Analysis

1. Using your data, classify each of the six unknown solutions. Explain your classifications.

Conclusion

2. Provide empirical definitions for each of strong acid, weak acid, strong base, weak base, neutral ionic solution, and molecular solution.