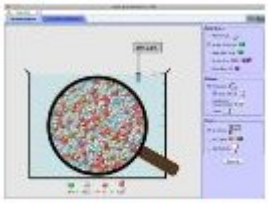
Acids/Bases PhET Virtual Lab Name:_____

What determines acid and base strength? Period: _____



Introduction:

When you test your pool's pH, what are you those little vials or paper strips telling you? When you hear an acid called "strong" or "weak", what do those terms refer to? In aqueous solutions, compounds can exist as molecules (*undissociated*) or ions (*dissociated*).

From your textbook in Ch22, answer the following

Acids

An acid produce ____ ions in water. When the H+ ions dissolve in water, the H+ ions interact with water H_2O molecules to make called _____ ions with the formula _____.

List three properties of acids from your textbook.

1. 2. 3.

List three common acids.

1. 2. 3.

Bases

There are two types of bases. A base might produce ions in water called _____ or it may accept _____ ions from water (p682-683).

List 3 properties of bases from your textbook.

1. 2. 3.

List three common bases.

1. 2. 3.

pH (p686)

The pH is a measure of the concentration of ___ ions. The _____ concentration, the _____ the pH and the more acidic a solution is. Acids have a pH between ____ and ____.

The _____ the pH the more basic the solution is. Bases have a pH between ___ and ___.

If the pH is ___ the solution is neutral and is neither basic or acidic.

Procedure: In internet explorer, type www/gleitz into the location bar and hit enter. Scroll down to today's date and click the link.

1. Begin with a **strong acid** and lower the pH probe into the beaker. What is the pH of this solution?
2. Test this strong acid with both pH paper and the conductivity probe. What color does the pH indicator become? Is this strong acid an electrolyte? Does current travel through this solution?
3. Repeat the above tests with the weak acid, the strong base, and the weak base, and water. Collect your observations in the table below:
4. Answer the observation questions.
5. Finish filing out the table.

	Strong Acid	Weak Acid	Strong Base	Weak Base	Water
pH meter read (value)					
pH paper (color)					
Conductivity (bright/dim/none)					
Type of ion or molecule					

Observation Questions:

1. (a) The red particles shown in the acid are (ions/molecules)
   (b) What are the particles in the acid called?

   (c) What happens to the concentration of ions when you change the acid strength from weak to strong?

2. (a) The blue particles shown in the base are (ions/molecules)
   (b) What are the particles in the base called?

   (c) What happens to the concentration of ions when you change the base strength from weak to strong?

Conclusion Questions:

3. Acids and bases contain (*ions/molecules*) as solutes in a solvent of water (*ions/molecules*) (circle)

4. As concentration of a weak acid increases, the pH *increases / decreases / remains constant*.

5. As concentration of a weak base increases, the pH *increases / decreases / remains constant*.

6. As the concentration of a weak acid increases, the **number of H_3O+ ions** *increases / decreases / remains constant*.

7. As the concentration of a weak acid increases, **conductivity** *increases / decreases / remains constant*.

8. As the strength of a weak base increases, the **number of OH- ions** *increases / decreases*.

9. As the strength of a weak base increases, the **conductivity** *increases / decreases / remains constant*.