Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_

**Introduction -** Take a few minutes to **play** with the sim (<http://phet.colorado.edu/en/simulation/acid-base-solutions>). Look at the tools you have and what happens to each in different solutions of acids and bases. Look at molecule view vs graph view and try to find a connection between pH, pH paper colour and electrical conductivity. Can you find a connection between H3O+ concentration and pH?

**pHET Lab: Acid/Base Solutions**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Solutions** | **View**  **(draw ions)** | **Equation** | **Color of pH paper** | **pH** | **Strength of Conductivity** |
| Water |  |  |  |  |  |
| Strong acid |  |  |  |  |  |
| Weak acid |  |  |  |  |  |
| Strong base |  |  |  |  |  |
| Weak base |  |  |  |  |  |

**Discussion Questions:**

1. Which ions (OH- or H3O+) are most abundant in an acid? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which ions (OH- or H3O+) are most abundant in a base? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which ions are most abundant in water? (Trick?) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. pH 7 is acid/base/water? (circle one)
5. pH lower than 7 is acid/base/water? (circle one)
6. pH higher than 7 is acid/base/water? (circle one)
7. What happens to the strength of the acid/base as the pH moves further from 7?
8. How does the concentration of ions in a strong acid differ from a weak acid?
9. How does the concentration of ions in a strong base differ from a weak base?
10. Explain to someone in 3-4 steps how to use pH paper to determine the pH of a substance:

Step 1 –

Step 2-

Step 3-