

Name: _____ Date: _____ Period: _____

Biology Chapter 2 – Chemistry of Life
Acid/Base Lab

Objective:

Students will identify the difference between acids and bases regarding hydrogen ion concentration and pH scale number.

Students will use biological indicators to determine whether unknown solutions are acids or bases.

Equipment:

Safety Goggles

6 Dropper Bottles of Unknowns

1 Dropper Bottle of Phenolphthalein

1 Test Well Container

pH Indicator paper

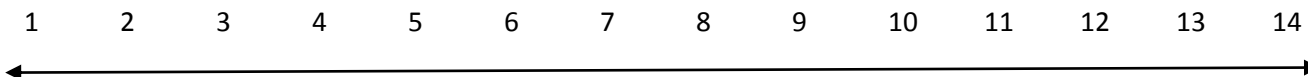
Directions:

1. Mark your test well container with numbers 1-6 for each unknown sample.
2. Use the 6 dropper bottles of unknowns to fill each of the wells. Check to make sure you are matching the unknown bottle numbers with the well numbers.
3. Dip the numbered pH paper in each of the unknown wells. You must use a fresh strip of pH paper for each unknown. Record the number of the pH reading in the table below.
4. Place 2 drops of phenolphthalein in each of the unknown test wells. Record the color that results in the table below.
5. In the last column of your table, identify whether each unknown was an acid, base or neutral.
6. Answer the questions of the back of this page.

| Sample | Numbered pH Paper | Phenolphthalein (Color) | Neutral, Acid, or Base? | Unknown Identification |
|------------|-------------------|-------------------------|-------------------------|------------------------|
| Known Acid | | | | |
| Unknown 1 | | | | |
| Unknown 2 | | | | |
| Unknown 3 | | | | |
| Unknown 4 | | | | |
| Unknown 5 | | | | |
| Unknown 6 | | | | |

Questions:

1. On the pH scale below, write the names of each of the unknowns next to the number of the pH you recorded in your results.



Questions Continued:

2. Which of the unknowns was the strongest acid? Explain why.

3. Which of the unknowns was the strongest base? Explain why.

4. Which of the unknowns was the weakest acid? Explain why.

5. Which of the unknowns was the weakest base? Explain why.

6. Compare acids and bases regarding their H⁺ concentration compared to water.

7. Many shampoo advertisements discuss the importance of pH balance. In your opinion, what does this mean to have a pH balanced shampoo? Refer to the pH table in your answer. What can happen to your hair if you use a shampoo that is not pH balanced?