Soils pH Lab

Name: Hour Date:

**Directions**: In this lab, you will be investigating the impact soil pH has on nutrient availability. This is a very unstructured lab; in other words, you will be creating much of this lab on your own. Use this sheet to guide your work. If you find that you are lost or confused, raise your hand for assistance. You may work with one other person, but each of you will be expected to complete your own worksheet. You may also work by yourself if you choose.

**Materials Needed:** 1) Soil Sample; 2) Plastic paint tray liner; 3) LaMotte soil test kit; 4) household items with a high or low pH, including ammonia, baking soda, lemon juice, borax, etc.; 5) Dixie cups; 6) Disposable gloves; 6) Goggles

1. How does soil pH affect nutrient availability?
2. What is the ideal pH range for soil?
3. Using the LaMotte soil test kits, determine the pH of your soil sample and record it here   
   1. Is your soil acidic or basic? Circle one ACIDIC NEUTRAL BASIC
4. Is this pH good or bad for growing horticultural crops? In other words, would vegetable crops grow well or would they grow poorly in this soil? Be sure to explain your answer
5. Using the LaMotte soil test kits, determine the nitrogen and phosphorus content of your soil. Record it below by circling the correct description as determined by your soil test.  
   1. Nitrogen TRACE LOW MEDIUM HIGH
   2. Phosphorus TRACE LOW MEDIUM HIGH
6. Your next task is to find a way to “trick” the soil test. You have various household products at your disposal. How could you change your soil pH? Can you make the nitrogen and phosphorus levels decrease by changing the pH? Below, write a short paragraph on how you might accomplish this:
7. Below, write a hypothesis. A good hypothesis is a prediction based on evidence and rational logic. Write your hypothesis below  
     
   *I hypothesis that …*
8. A rationale is why you think your hypothesis will be proven correct. Why do you think your hypothesis above will be supported by your methods?
9. Conduct your experiment and re-run your soil test with your modified soil. Record the results below:  
   1. pH 4.0 5.0 6.0 7.0 8.0
   2. Nitrogen TRACE LOW MEDIUM HIGH
   3. Phosphorus TRACE LOW MEDIUM HIGH
10. Did your experiment work? Were you able to change the soil sample’s pH? Did this have any impact on the nitrogen and phosphorus test results? Explain all below:
11. Explain your results. If your experiment worked, explain why it worked and what this means in terms of what you know about soil pH and nutrient availability. If your results did not support your hypothesis, explain why you think this happened; were your methods flawed, or did you perform an experimental error? Could you re-do your experiment in another way to make it work? Explain below:
12. Rate your understanding of pH from 1 (totally lost) to 5 (totally got it): 1 2 3 4 5