Name _____ Date _____ Period _____

AP Biology
Observing Roots, Stems, and Leaves

Pre-Lab Questions:

1. Which plant tissues are responsible for the absorption of water and mineral nutrients?

2. How is sugar, which is produced in the leaf, moved to other parts of the plant?

3. How are woody and herbaceous stems different, and how are they alike?

4. What tissues are continuous in the root, stem, and leaf?

5. How does the leaf conserve water?

Slides to Observe: Use a petri dish to make your circles. Draw each structure in the circle. Label what you are looking at and give its magnification. Use the colored pencils to create your drawings. You will have 8 drawings total.

1. Lily Leaf epidermis – Label and give the function of the stomata..
2. Typical Monocot and Dicot Leaves (draw and label both) – Label and give the functions of the following: guard cells, upper and lower epidermis, stoma, spongy layer, palisade layer, bundle sheath, xylem, and phloem
3. Typical Monocot and Dicot Roots (draw and label both) – Label and give the functions of the following: xylem, phloem, endodermis, pericycle, parenchyma, epidermis
4. Typical Monocot and Dicot Stems (draw and label both) – Label and give the functions of the following: epidermis, parenchyma, pith, xylem, phloem, vascular bundle
5. Pine Stem – Label the layers you can distinguish.

Analysis: *Answer in complete sentence.*

1. How are the vascular bundles arranged in the monocot stem?

2. How are the vascular bundles arranged in the dicot stem?

3. What are other differences between the stems that you observed?

4. What are the functions of the stem?

5. How are the xylem and phloem different?

6. How are the vascular bundles arranged in the monocot root?

7. How are the vascular bundles arranged in the dicot root?

8. What are other differences between the roots that you observed?

9. What process is occurring in the roots more than in other cells throughout the plant?

10. What are other characteristics that differentiate monocots from dicots?

11. Where in the leaf was the palisade layer located? Why do you think it is most beneficial there?

12. Did you see any vascular tissue (xylem and phloem) in the leaf? Describe what you saw.

13. What would happen to the leaf if there were no stomata? Why?

14. Describe the evolutionary advantage of the pine needle.

15. Cacti have sharp pointy structures that look similar to pine needles. Compare and contrast the function of each of these structures and how they are adapted to their respective environments.