

## What Do the Inside Parts of Leaves Look Like?

### Review of Key Terms

Define the following terms using the introductory box of information **and your textbook** (Ch.22, Sect.1&2).

Leaf \_\_\_\_\_

Organ \_\_\_\_\_

Tissue \_\_\_\_\_

Cell \_\_\_\_\_

Transpiration \_\_\_\_\_

### Part A. Making a Model of a Leaf

1. After you have assembled your leaf, list the layers (pieces) in order from top to bottom.

Top → \_\_\_\_\_ → bottom

2. As you look at your leaf model, which structures (which type of tissue or type of cell) makes up most of this leaf? \_\_\_\_\_

3. If you were to hold a leaf in your hand and look down on the top of the leaf, which tissue/layer would you see? \_\_\_\_\_

4. If you were to hold a leaf in your hand and look down on the bottom of the leaf, which tissue/layer would you see? \_\_\_\_\_

### Part B. Examining a Cross-section of a Leaf Using a Microscope

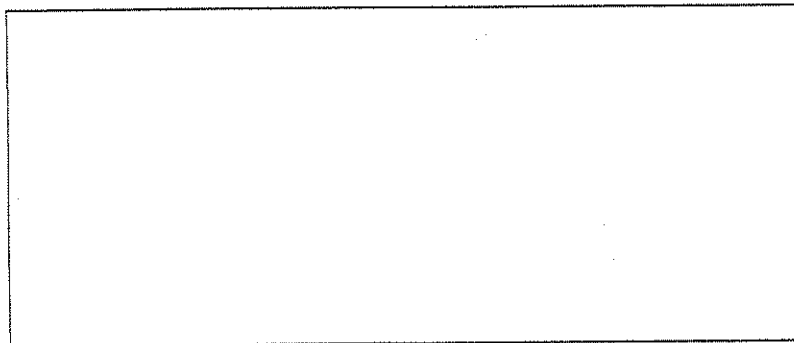
1. After you have made your drawing and labeled it, which layer of the leaf did you find the easiest to see? \_\_\_\_\_

2. Record the type of plant from which the leaf was taken to make this slide. \_\_\_\_\_

3. What is the magnification (magnifying power) of the eyepiece lens? \_\_\_\_\_

4. What is the magnification (magnifying power) of the objective lens? \_\_\_\_\_

In the box below, draw one-fourth to one-half of the leaf that you see through the microscope. Label!



5. Now, using page 1114 in your text, calculate the total magnification through which you observed the leaf. (*Show the math.*)

6. Now, using page 1113 in your text, list in order the pieces of a microscope through which a light particle travels before it reaches your eye, starting with:

Light source → \_\_\_\_\_ → Eye

**Analysis**

1. List the function of these parts of a plant.

- A. xylem \_\_\_\_\_
- B. palisade mesophyll layer \_\_\_\_\_
- C. cork cambium \_\_\_\_\_
- D. spongy mesophyll layer \_\_\_\_\_
- E. apical meristem \_\_\_\_\_
- F. phloem \_\_\_\_\_
- G. guard cell(s) \_\_\_\_\_
- H. root hairs \_\_\_\_\_

2. Describe what happens to the guard cells and stomata when water diffuses out of the guard cells.

3. How is the waxy cuticle layer similar to a plastic bag?

4. Where does the phloem get the “food” that it carries to the stem and roots?

5. Name the two major gases that are exchanged through the stomata. \_\_\_\_\_ & \_\_\_\_\_

6. Many houseplants have very thick, waxy leaves. They do not wilt (droop) as quickly as houseplants with thinner leaves. Explain.

7. The celery stalks that you eat are leaf stalks. What kind of tissues and cells are the “strings” of the celery stalk that make celery kind of stringy and strandy when you chomp?

8. Describe how cactus leaves are well-adapted to their most common biome.

**Summarize**

How does the structure of a leaf help determine its function? (*a few sentences and thought*)