

Making a Small Leaf Model

Student Name _____ Date _____

Introduction:

The leaves of a plant are the major location of photosynthesis. The structure of a leaf is designed so that it is an efficient location for photosynthesis to occur. Think about the reactants necessary for photosynthesis to occur and how the leaf is able to furnish those substances. When you complete this model, you will be able to complete that task easily!

Objectives:

- Create a leaf model
- Know the basic structure of a leaf
- Relate the structure to the function of a leaf as it relates to photosynthesis
- Write a summary of the relationship of the structure of plant tissue to its function as it relates to photosynthesis

Materials per student:

- 2 green sheets (card stock, construction paper, foam sheets) (8 1/2 X 11 in.) or one sheet of green and one sheet of bubble wrap
- 2 sheets of clear scrap laminate, acetate sheets for overheads, or sheet protectors (cut apart)
- 1 clear straw
Available for students to share in small group:
- permanent green or black marker
- stapler and regular staples
- scissors
- clear tape

Procedure:

1. Layer the four sheets on top of one another as follows:

Layer	Sheets	Represents
Top	Clear	Upper epidermis
Second	Green	Palisade mesophyll
Third	Green or bubble wrap	Spongy mesophyll
Bottom	Clear	Lower epidermis

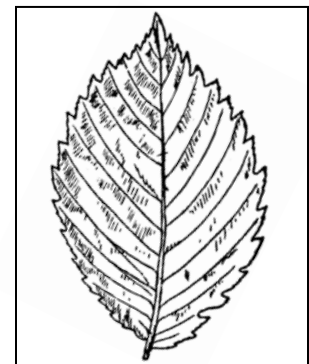
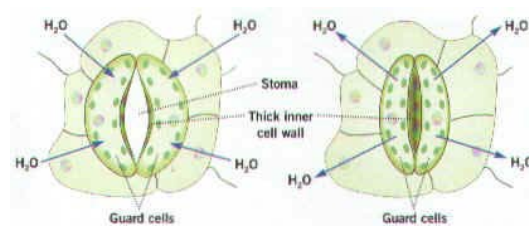


Figure 1

2. Use the marker to trace a leaf, including a petiole, on the top clear layer. The leaf shape should just fit inside the sheet. See Figure 1 above. You may use any leaf shape.

3. Insert the straw (vein) between the second and third layer of the leaf. Tape the other end of the straw to the second layer. Let the end of the straw extend out of the petiole. Staple the sheets together at the petiole to secure the straw and layers. Use scissors to cut out the leaf shape. Label each layer in the booklet with the appropriate name from Step 1.

4. On the bottom layer, draw as many stomata as will fit on the leaf. Make some guard cells open and some closed. The open stomata should resemble a pair of open lips and the closed stomata should resemble a pair of closed lips. See drawing below from http://www.biologyjunction.com/leaf_stomata_lab.htm.



5. Draw chloroplasts on the third layer (a clear sheet). Fill in with as many chloroplasts as possible on the sheet. See diagram.



6. In the leaf booklet, write a short summary of what happens in each leaf layer and how it relates to photosynthesis.

