Leaf and Stem Anatomy Study Guide

Leaf Anatomy

1. What is the main purpose of a leaf?

2. What are the external structures of a leaf and their corresponding functions? **Draw and label a leaf** to support your answer.

    a.

    b.

    c.

    d.

    e.

3. List the vein patterns of leaves and **draw a picture of each.**

    a.

    b.

    c.

    d.

4. Compare the vein patterns of monocots and dicots.

5. How do leaves adapt to their environment?

6. What are the major types of leaves? **Draw a picture of each.**

    a.

    b.

i. There are two types of compound leaves:

1.
2.

7. The arrangement of leaves along a stem varies from one genus to another. List the major leaf arrangements. **Draw a picture of each.**

a.

b.

c.

d.

8. The leaf is organized to collect sunlight and turn it, through photosynthesis, into food. It has many layers of tissues to make this happen. What are the internal structures of a leaf and their corresponding functions? **Draw and label a leaf to support your answer.**

a.

b.

c.

d.

e.

f.

Stem Anatomy

9. Stems have many important jobs in a plant.
   a. They are responsible for the _____ and _____ of a plant.

   b. Some are made of _____, and some are _____ or soft.

10. List the four functions of the stem.

a.

i. Why?

b.
    i. What is this movement known as?
c.
    i. Why is this important?
d.

11. What are the external structures of a plant's stem and where are they located (9 total)? **Draw a stem and label the parts to support your answer.** Lastly, make sure to state the function of each part.

    a.

    b.

    c.

    d.

    e.

    f.

    g.

    h.

    i.

12. Inside the stem, there are tissues used to transport materials throughout the plant.
    a. Stems are organized in one of the following ways:

        i. _____ bundles, which are found in _____

        ii. _____ are found in _____

    b. There are three important types of tissue found in the stem. State each and their corresponding function.
        i.

        ii.

        iii.

c. All three are located in the _____ or outer portion of the stem.

d. There are two types of wood in stems. State the function and location of each.
   i.

   ii.

e. The very center of the tree is known as the _____.

f. In the space below, **draw the internal structures** of a monocot (bundles) and a dicot stem (rings) making sure to label each part (monocots: xylem and phloem, dicots: xylem, phloem, vascular cambium, pith, heartwood, and sapwood).

13. How can one determine the age of a tree?

a. What does each ring represent?

14. Specialized Stems

a. We generally expect stems to be upright above the ground.
   i. Some stems are modified to _____ or to help the plant _____.
   ii. Some stems grow beneath the _____ instead of above it.
   iii. Describe each of the different types of specialized stems. Give a specific example of each. **Draw a picture of each**
      1.
         a. Example –
      2.
         a. Example -
      3.
         a. Example -
      4.
         a. Example –
      5.
         a. Example -