



Plant Lab



- Problems:**
1. To learn the difference between monocots and dicots seeds and learn the parts of a seed.
 2. To learn the difference between monocot and dicot roots.
 3. To learn the difference between monocot and dicot flowers and learn the parts of a flower.
 4. To learn the difference between monocot and dicot leaves and look at the stomata.

Materials: bean, corn, carrot, grass, monocot and dicot flowers, leaves, tape, fingernail polish, microscope, iodine, scalpel, glass slide Several different plants, Microscope slides, Microscopes, VDO on Monocots and Dicots

Procedure:

Monocot v. Dicot Seeds

1. Obtain a bean and corn kernel. **Draw and label the seed coat and helium for the bean and corn.**
2. Carefully loosen the seed coat of the bean and remove it. Split the bean in half.
3. **Draw the inside of the open bean and label the cotyledon and embryo.**
4. Carefully score the inside of the bean with your scalpel. Place a drop of iodine on the bean. If the bean turns brown/black/blue starch is present. **Record whether or not starch is present and why you think it does or does not.**
5. Examine the corn seed and determine which side of the seed the embryo is located. Cut the kernel carefully to remove the seed coat and expose the embryo. **Draw and label the embryo and the single cotyledon.**
6. Add a drop of iodine. **Is starch present? Make note of this.**

Monocot v. Dicot Flowers

1. **Draw and label your Monocot flower and leaf.**
2. Count and **record the number of petals.** Carefully remove the petals and tape a petal to your lab paper. Label it.
3. Remove a leaf and note the veining system. **Tape and Label the leaf on your paper.**
4. Remove an anther from the flower and tape and **label all the male parts on your paper: including the anther, stamen, filament, and pollen.**
5. Take some pollen from your plant and tap some gently onto a glass slide. Look at the pollen under a microscope and **draw what you see. Label your drawing.**
6. Look at the female parts of your flower. Remove and label the **pistil, stigma, style and ovary.** In order to find the ovary, you must cut the pistil in half lengthwise very carefully with your scalpel. **Tape the cut pistil to your paper, and label the parts.**
7. **Draw and label you Dicot flower and leaf.**
8. Follow the same directions 2-6.

Monocot v. Dicot Roots

1. **Draw the carrot, write down what type of root it is (tap root or fibrous) and whether it is a dicot or a monocot.**
2. Obtain a cross section of a carrot. **Draw it and label the xylem, phloem and the cortex.**
3. **Draw and label grass roots and write down what type of root it is (tap root or fibrous) and whether it is a dicot or a monocot.**

Leaf Structure

1. Pick a leaf from outside. **Note whether it is a dicot or monocot and draw it.**
2. Paint the top and bottom of your leaf with fingernail polish. Wait for it to dry.
3. Start with the underside of the leaf. Put tape over the dry polish, smooth the tape, and remove it.

- Place the sticky side of the tape on a glass slide and look at it under the microscope. Increase to the highest magnification.
- Draw and label what you see. Remember to **note the magnification** and that it is the **underside**.
- Do the same thing for the topside of the leaf. **Are the top and bottom of the leaf the same? Which side of the leaf are stomata present? Why do you think this is so?**

Data:

Labeled Drawings

- Bean
- Corn
- Flowers
- Pollen (including magnification)
- Carrot
- Grass
- Underside of Leaf (including magnification)
- Top of Leaf (including magnification)

Taped Flower Parts Labeled

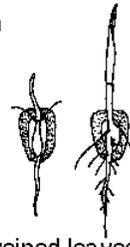
Questions Answered

Conclusion:

RERUNS be sure to answer problems in second R.

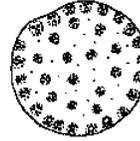
MONOCOTS

1 Cotyledon (seed leaf)
cotyledon

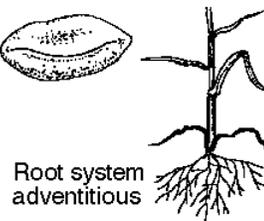


Parallel-veined leaves

Primary vascular bundles scattered



Pollen monosulcate



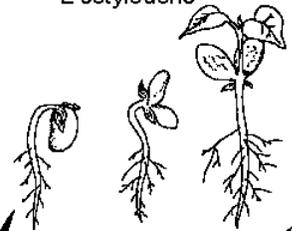
Root system adventitious

Floral parts in 3's

Fewer than 10% of species are woody

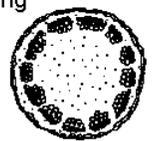
DICOTS

2 cotyledons



Net-veined leaves

Primary vascular bundles in a ring



Pollen mostly tricolpate

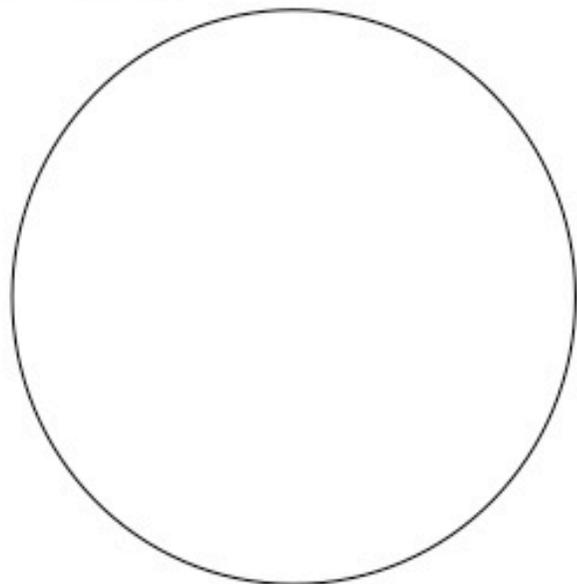


Root system primary and adventitious

Floral parts in 4's or 5's

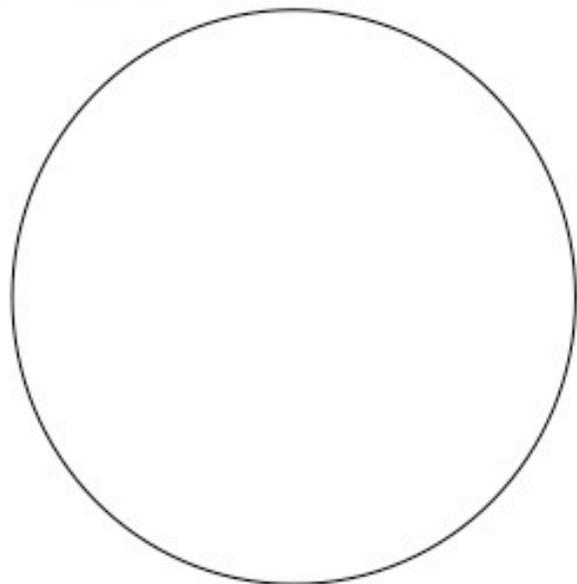
About 50% of species are woody

 **Microscope
Mania**



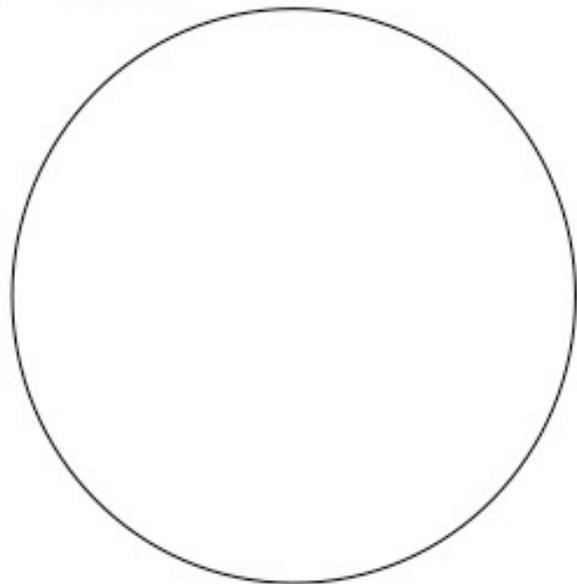
Name _____
Specimen _____
Power _____

 **Microscope
Mania**



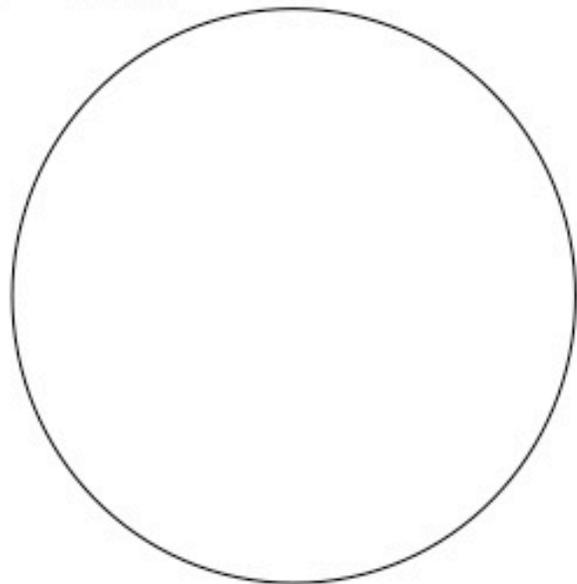
Name _____
Specimen _____
Power _____

 **Microscope
Mania**



Name _____
Specimen _____
Power _____

 **Microscope
Mania**



Name _____
Specimen _____
Power _____