Activity 3.1
Plant Cell Model

Name_____ Date_____ Hour_____

Student Materials

Supplies to make a model of a plant cell

NOTE: Use your imagination to make a model of a plant cell. Many craft items or food items can be used to help make the model.

Examples:

- Bubble wrap
- Gelatin
- Glue
- Green florist foam
- Green grapes
- Gum balls
- Markers or paint
- Modeling clay
- Packing peanuts
- Paper
- Plastic containers
- Plastic wrap
- Play dough
- Plastic beads
- Sandwich bags
- Scissors
- Small craft balls
- Wax paper
- Yarn

Directions

Make a model of a plant cell and identify the different cell parts. Include the cell wall, nucleus, vacuole, chloroplast and mitochondria.

1. Determine what items will be used to make the cell model.

   Examples: Bubble wrap can be used for the vacuole, green florist foam can be used for the plant cell and items pushed into it, beads can be used for the mitochondria.

2. Gather the items.

3. Paint, cut, or mark any items as necessary.

4. Construct the cell model.

5. Label the cell model or draw a diagram and identify what items were used and what they indicate.

Activity 3.2
Plant Anatomy

Name_____ Date_____ Hour_____

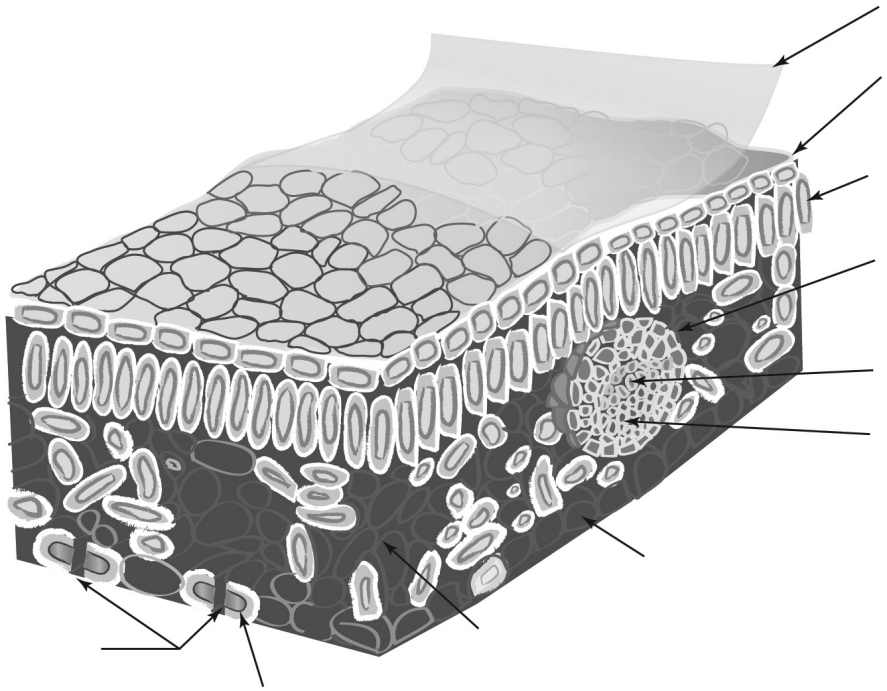
Student Materials

Pencil

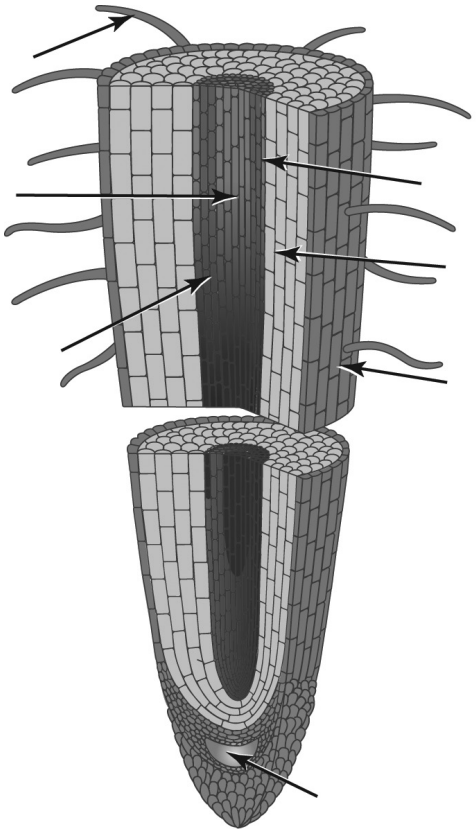
Directions

Label the components of the plant leaf anatomy, root structure and stem structure by writing the components next to the arrows.

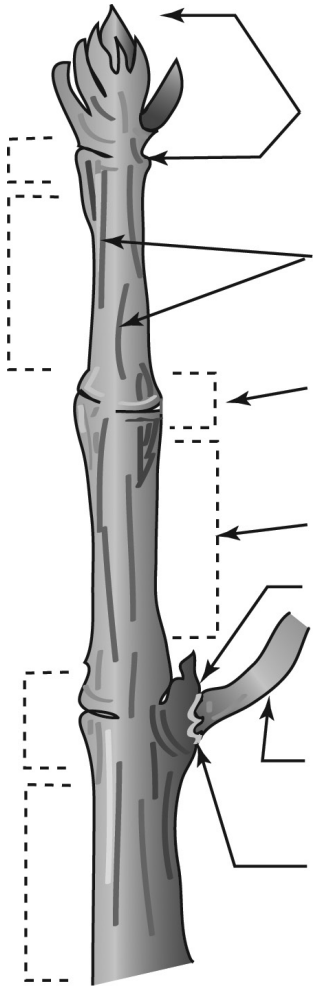
Plant Leaf Anatomy



Root Structure



Stem Structure



Activity 3.3
Flower Structure

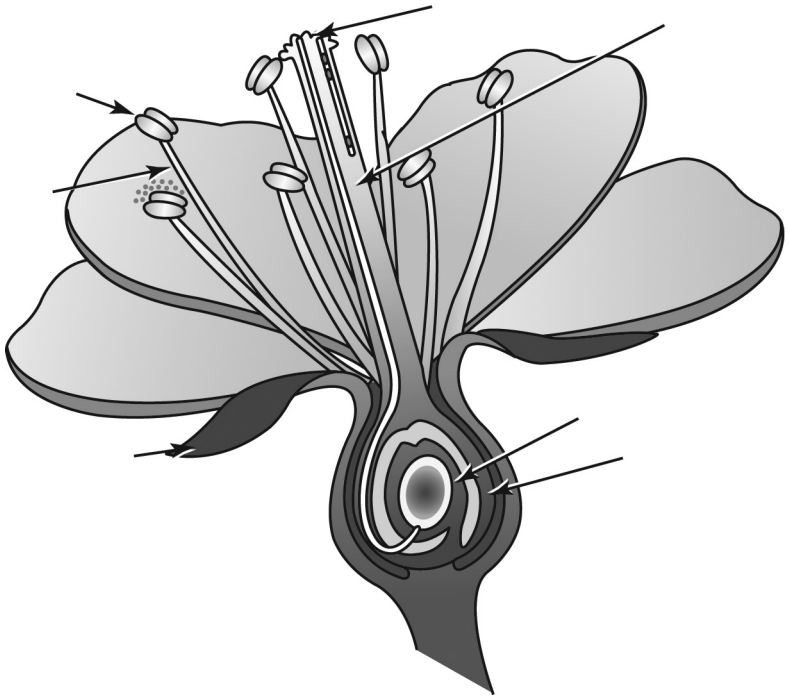
Name_____ Date_____ Hour_____

Student Materials

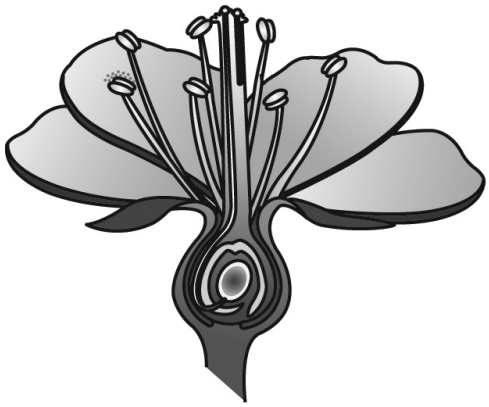
Pencil

Directions

Part 1: Label the flower structure of a plant by writing the components next to the arrows.



Part 2: Label the following illustrations as either complete or imcomplete, and either perfect or imperfect. Explain each flower on the lines provided.

1. 

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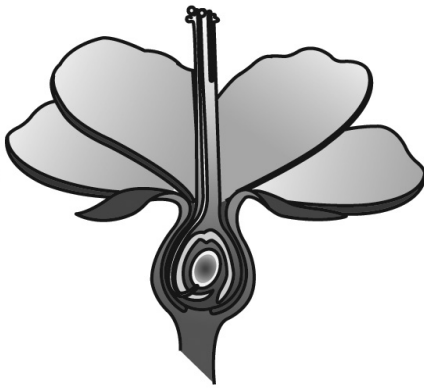
2. 

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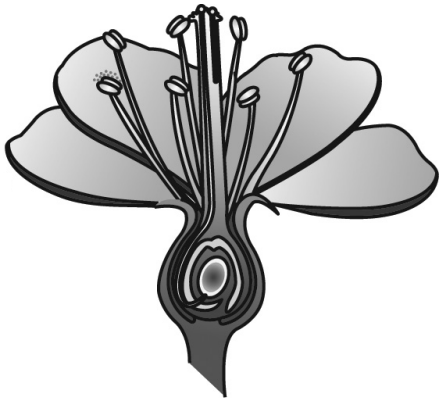
3. 

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Activity 3.4
Flower Dissection

Name_____ Date_____ Hour_____

Student Materials

Complete flower to dissect (Example: tulip, lily, gladiola)

Clear tape

Magnifying glass

Paper and pencil

Scissors and/or knife

Directions

Dissect a flower and answer the questions that follow. Using a separate sheet of paper, tape each dissected part on the paper and label the part.

1. Carefully remove the sepals and petals. Look at the sepals and petals under the magnifying glass.
2. Remove the stamen. Look at the stamen under a magnifying glass. Identify the anther and filament.
3. Use a piece of clear tape to get a sample of pollen grains. Look at the grains under a magnifying glass.
4. Observe the pistil, which should be left on the top of the stem. Locate the stigma at the top of the pistil.
5. Locate the ovary, which is a swollen area at the bottom of the pistil. Use the magnifying glass to find seeds in the ovary.
6. Carefully cut the pistil lengthwise.
7. Observe the stem and cut off a small piece of the stem. Look at the stem under a magnifying glass.

Questions

1. How many sepals did the flower have? _____

2. How many petals did the flower have? Did the petals have a fragrance? _____

3. How many stamens did the flower have? _____

4. What did the pollen grains look like under the magnifying glass? _____

   _____

5. Did you find any seeds in the ovary? If so, how many seeds? _____

   _____

Activity 3.5
Determine Germination Rate of a Seed

Name_____ Date_____ Hour_____

Student Materials

Seeds for germination (Examples: tomato, wheat, beans, peas, sweet corn, radish)

Paper towels

Plastic bags that are resealable (quart size)

Thermometers

Tray (to place plastic bags with seeds on)

Water and syringe for watering

Paper and pencil

Permanent marker

Procedure

1. Determine what two areas you will use to germinate the seeds. The areas should have different temperatures but other variables, such as light and amount of water received, should remain the same.

2. Fold a paper towel to create an area for seed germination. The paper towel should fit inside the plastic bag.

3. Place the seeds in two rows of ten seeds each inside the paper towel.

4. Carefully place the paper towel in the resealable bag and place on a tray.

5. Water the seeds so that the paper towel is saturated and reseal the bag.

6. Place the tray in one of the areas you have determined will be used for seed germination.

7. Complete steps 2-6 for the seeds that will be placed in the other germination location.

8. Observe the seeds daily and write your observations on a separate sheet of paper. Moisten the paper towels as necessary.

Questions

1. How many seeds from each location germinated?

   _____

2. Was there a difference in germination rates for the two locations?

   _____

   _____

3. How do you think temperature affects agricultural crops and their production?

   _____

   _____

   _____

Activity 3.6
Plant Responses to Stimuli

Name_____ Date_____ Hour_____

Student Materials

4 small potted plants (plants should be approximately the same size and in good health and recently watered)

Cardboard box with lid (large enough to fit one plant)

Scissors or a knife

Activity

In this activity you will observe plant responses to light and gravity.

Procedure

Light Stimuli

1. Cut a small opening in the lid of the cardboard box that will allow light to enter the box in one area only.
2. Place one plant in the cardboard box and place the lid back on the box. Place the box in an area where it will receive light.
3. Take another plant and place it in a test location so that it will grow normally.
4. Observe the plant daily by removing the lid and observing the direction the plant is moving.
5. Water the plant in the box and test location as needed. The soil should remain slightly damp during the experiment.
6. After at least four days, compare the plant in the box to the plant that was placed in a test location.

Gravity Stimuli

1. Place one plant on its side in a location where it will receive light.
2. Place another plant upright in the same location.
3. Water both plants as needed. The soil should remain slightly damp during the experiment.
4. After at least four days, compare the roots of the plant that was place on its side to the roots of the plant that was left upright.

Questions

1. What difference was there in the plant placed in the cardboard box and the test plant?

   _____

   _____

   _____

2. What difference was there in the plant placed on its side and the plant left upright?

   _____

   _____

   _____