

Build a Flower

Scientists often make models in the laboratory. Models help scientists understand processes and structures. Models are especially useful when scientists are trying to understand processes that are too small to be seen easily, such as pollination, or processes that are too large to be examined in a laboratory, such as the growth of a tree. Models also make it possible to examine the structures of objects, such as flowers.

In this activity, you will use your creativity and your understanding of the structure of a flower to make a model of a flower from recycled materials and art supplies.

OBJECTIVES

Build a model of a flower.

Explain how the model represents an actual flower.

Describe the basic parts of a flower.

MATERIALS

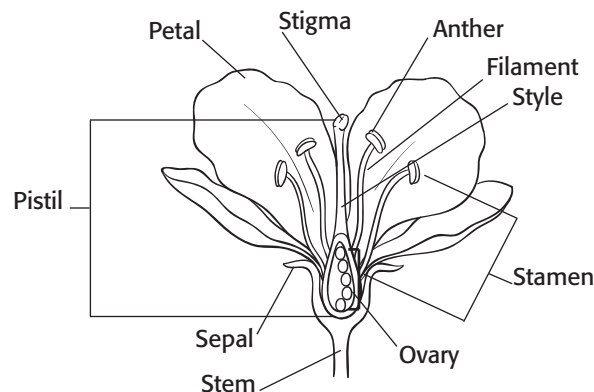
- art materials such as colored paper, pipe cleaners, beads, and yarn
- recycled items such as paper plates and cups, yogurt containers, wire, string, buttons, cardboard, and bottles
- card, index, 3 × 5 in.
- glue
- tape
- scissors

SAFETY INFORMATION



PROCEDURE

1. Draw a flower similar to the one shown in the figure below. This flower has both male and female parts. Not all flowers have this structure. The flowers of many species of plants have only male parts or only female parts, not both.



Build a Flower *continued*

- 2. Decide which materials you will use to represent each flower part. Then, build a three-dimensional model of a flower. The model you build should contain each of the following parts: stem, sepals, petals, stamens (anther and filament), and pistil (stigma, style, and ovary).
- 3. After you build your model, draw a key for your flower model on an index card. Label each of the structures represented on your flower.

ANALYZE THE RESULTS

- 1. **Organizing Data** List the structures of a flower, and explain the function of each part.

- 2. **Identifying Patterns** What is the outermost part of your flower? the innermost part of your flower?

- 3. **Analyzing Data** How are your flower model and an actual flower alike? How are they different?

Build a Flower *continued*

DRAW CONCLUSIONS

4. Drawing Conclusions How might your flower attract pollinators? What modifications could you make to your flower to attract a greater number of pollinators?

5. Evaluating Models Is your model an accurate representation of a flower? Why or why not?

6. Making Predictions If you based your flower model on a plant species that had flowers that did not have both male and female parts, how would that model be different from your current model?

APPLYING YOUR DATA

Research flowering plants whose flowers do not have both male and female reproductive parts. Build models of the male flower and the female flower for one of these flowering plants. Then, compare the new models to your original model, which includes both male and female reproductive parts.

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Teacher Notes and Answer Key

TIME REQUIRED

One 45-minute class period

LAB RATINGS

Teacher Prep–1
Student Set-Up–2
Concept Level–2
Clean Up–1

Easy ← 1 2 3 4 → Hard



Jane Lemons
Western Rockingham
Middle School
Madison, North Carolina

MATERIALS

The materials list on the student page includes enough materials for one student or group of students.

SAFETY CAUTION

Remind students to review all safety cautions and icons before beginning this lab activity.

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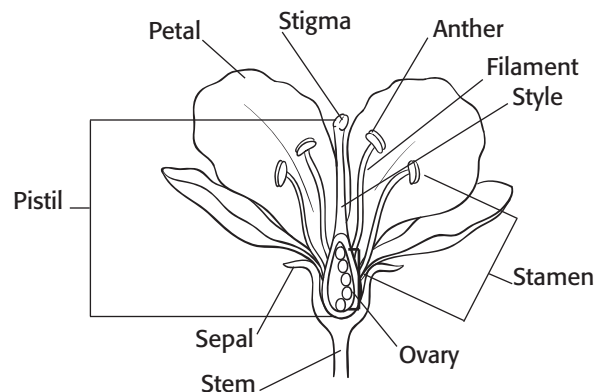
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PROCEDURE

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Name _____ Class _____ Date _____

Build a Flower *continued*

- Decide which materials you will use to represent each flower part. Then, build a three-dimensional model of a flower. The model you build should contain each of the following parts: stem, sepals, petals, stamens (anther and filament), and pistil (stigma, style, and ovary).
- After you build your model, draw a key for your flower model on an index card. Label each of the structures represented on your flower.

ANALYZE THE RESULTS

- Organizing Data** List the structures of a flower, and explain the function of each part.

petal: the often colorful leaf-shaped part of a flower that attracts pollinators

sepal: the modified the leaves that form the base of the flower and that

enclose and protect the bud before the flower opens

stem: the main stalk of the plant from which leaves, flowers, and fruits develop;

water and nutrients move through the stem between the leaves and roots.

pistil: the female reproductive structure of a flower

stigma: the upper tip of the pistil, which receives pollen

style: the stalklike part of the pistil between the stigma and ovary

ovary: the enlarged part of the pistil in which ovules are formed

stamen: the male reproductive structure of flowers

anther: the top of the stamen that produces pollen

filament: the threadlike part of the stamen that holds the anther

- Identifying Patterns** What is the outermost part of your flower? the innermost part of your flower?

sepal; pistil

- Analyzing Data** How are your flower model and an actual flower alike? How are they different?

Sample answer: My flower model and an actual flower have the same parts:

sepals, petals, stamens, and pistils. Unlike real flowers, my flower cannot be

pollinated, nor can it produce seeds.

Name _____ Class _____ Date _____

Build a Flower *continued***DRAW CONCLUSIONS**

- 4. Drawing Conclusions** How might your flower attract pollinators? What modifications could you make to your flower to attract a greater number of pollinators?

Sample answer: My flower will attract pollinators because it has bright petals. I could give my flower a fragrance to attract more pollinators.

- 5. Evaluating Models** Is your model an accurate representation of a flower? Why or why not?

Sample answer: My flower is accurate in appearance, but it is not accurate in function. My model looks like a flower, but it cannot be pollinated or fertilized.

- 6. Making Predictions** If you based your flower model on a plant species that had flowers that did not have both male and female parts, how would that model be different from your current model?

Sample answers: My flower would have only stamen or only pistils if it were modeled after a plant that had flowers that did not have both male and female parts.

APPLYING YOUR DATA

Research flowering plants whose flowers do not have both male and female reproductive parts. Build models of the male flower and the female flower for one of these flowering plants. Then, compare the new models to your original model, which includes both male and female reproductive parts.

Students should demonstrate an understanding of how flowers with both male and female parts differ from flowers with only male or only female parts. Students' models should reflect this understanding. Some students may also note that in some species, both male and female flowers can be found on one plant, while in other species, they are found on different plants.