

Flower Power

Teacher Information

Some plants produce two kinds of flowers on the same plant. One will have only stamens, the other only pistils. These are *incomplete flowers*. There are also composite flowers (such as dandelions and marigolds) which consist of many complete flowers clustered into one. The flowers used for this activity should have both stamens and a pistil, known as a *complete flower*. These include flowers like the lily, gladiola, tulip, and fruit blossoms. Select the largest flowers for this lesson and provide a variety of them.

Overview: *Students will dissect flowers to discover where seeds originate.*

Materials

- complete flower (e.g., lily, gladiola, or tulip)
- data sheets Flower Dissection and Parts of a Flower (pages 172 and 173)
- clear tape
- magnifier
- transparency of How Flowers Reproduce (page 174)
- several apples

Activity

1. Ask the students if they know how seeds are produced. Tell them they are about to take a flower apart so they can see where seeds are formed. If the students are too young to dissect flowers alone, do this activity as a demonstration.
2. Distribute data sheets, flowers, magnifiers, and clear tape to students and let them follow the data sheets as they dissect the flower.

Closure

- Use the transparency How Flowers Reproduce to explain the reproduction process to students. Tell them bees are the best pollinators of flowers. When a bee goes to a flower to get nectar and pollen, some pollen drops off the bee's body onto the sticky stigma on the pistil. Beekeepers often rent hives to farms with apple orchards or other trees needing to be pollinated. Other insects which visit flowers also pollinate them. Pollen can also be transferred to the stigma by wind and by some birds and bats.
- Explain that fruits and vegetables are really swollen ovaries of a blossom that grew on the plant. Show students an apple and point out the leftover blossom and stem on opposite ends. Cut the apple open to expose the seeds formed inside the ovary. Let the students examine the seeds.
- Save the students' flower parts to be used in the next lesson and in the plant journal.

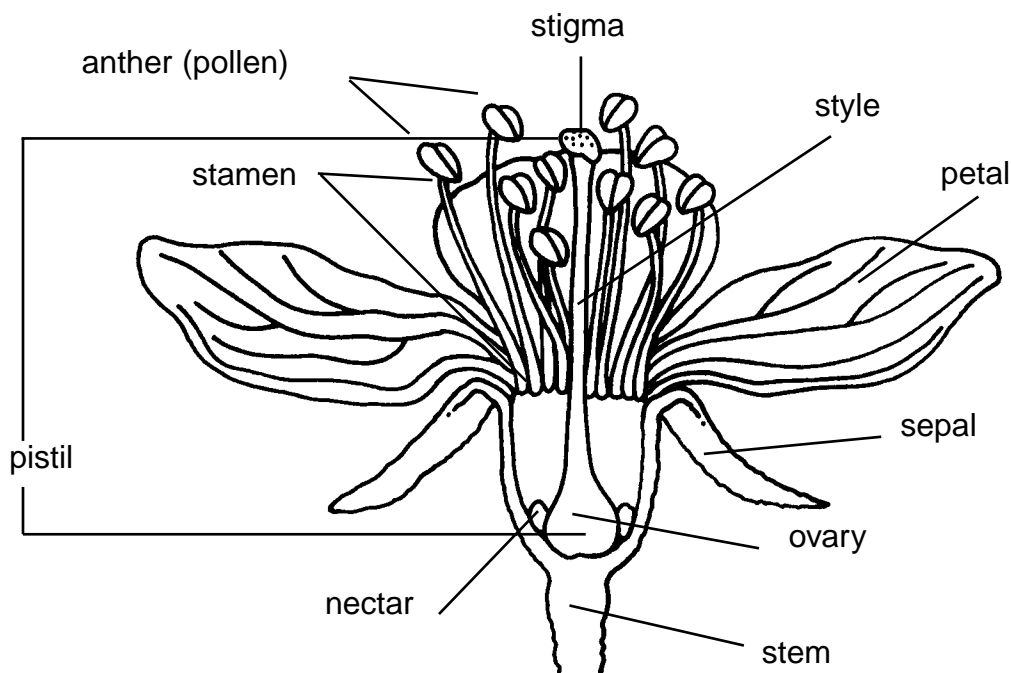
Extender

- Take students on a walk to search for fruit-bearing plants that show blossoms and fruit. Try to find examples of the transition from blossom to fruit on a plant. Cut open a blossom to expose the swollen ovary inside, the beginning of the fruit.
- Have students examine a dandelion flower and one which has gone to seed. This is a great example of a composite flower. Each seed is formed in its own flower but combined with others.

Flower Dissection Instructions

To the Student: Follow directions as you carefully dissect the flower.

- Snip off a piece of the stem. Examine it with the magnifier and then tape it in the box marked “stem” on the Parts of a Flower data sheet. Complete the rest of the information in the box.
- Locate the *sepals*, *petals*, *stamens*, and *pistil*. Count their number and write this in the boxes.
- Gently pull off the sepals and tape a specimen in the sepal box. Describe how it feels.
- Smell the flower; if it has a fragrance, describe it in the petal box. Carefully remove the petals and tape one to the data sheet. Answer the question about the flower’s color and fragrance.
- Examine a stamen, the male part of the flower. Look at the top of the stamen (*anther*) with a magnifier to see the pollen grains. Put your fingertip against the anther. Did the pollen stick to your finger? This is what happens when a bee touches it. Rub the pollen between your fingers and then describe what it feels like in the pollen box.
- Take a sample of pollen grains using the sticky side of a piece of clear tape. If you have a microscope, place the tape on a glass slide and examine it. Put a sample of pollen grains in the pollen box. Draw what the pollen grains look like when magnified.
- Remove the stamens and tape one of them in the box. Describe what you see on the anther and draw a magnified view of it.
- Study the pistil, the female part of the flower. Feel the stigma, the top of the pistil. Describe how it feels. At the bottom of the pistil is a swollen area (*ovary*). Try to cut it open with your fingernail. Use your magnifier to see if you can find any tiny seeds inside the ovary. You may be able to split the stem of the stigma (*style*) lengthwise to see if you can locate the pollen tube which has grown from the stigma to the ovary.



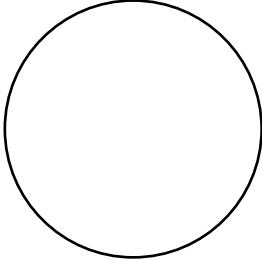
Parts of a Flower

To the Student: Tape the parts of the flower in the correct boxes below and then complete the information.

Stem

Description:

Magnified view of the tip of the stem:



Sepal

Number of sepals:
Description of how it feels:

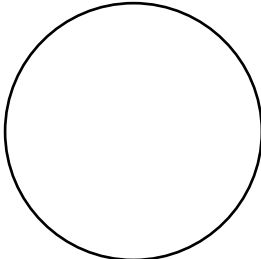
Petal

Number of petals:
Why do flowers have colored petals and sometimes have a fragrance?

Pollen

Describe how it feels:

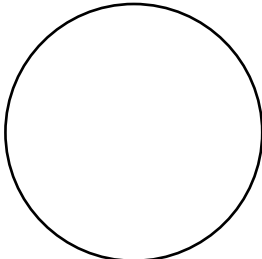
Magnified view of pollen grains:



Stamen

Number of stamens:
Describe what you saw on the anther:

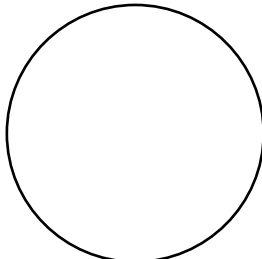
Magnified view of anther:



Pistil

Number of pistils:
Describe how the stigma feels:

Magnified view inside the ovary:



How Flowers Reproduce

1. Each pollen grain is a single cell. Pollen forms on the top (anther) of the stamen.
2. Pollen is carried by insects, wind, or birds to the stigma, the sticky top of the pistil.
3. Once on the stigma, the pollen grain absorbs moisture from the pistil and breaks open.
4. Its contents form a pollen tube, growing down into the pistil.
5. The pollen tube grows until it reaches the ovule containing an egg cell.
6. Sperm from the pollen travels down the tube to the ovule and unites with the egg cell.
7. A seed now begins to develop inside the ovary.
8. An ovary may have a single seed (avocado) or more than one seed (apple).
9. The ovary develops into a fruit enclosing the seed(s).

