

Lesson Nine – Flower Facts

Objective: Students learn the parts of a flower and how and why pollination happens.

Time: 45 minutes

Key words: petals, sepals, pollen, ovule, pollination, pollinators, anthers, stigma, pistil, ovary, herbivores, evolved, evolution

Advanced Preparation:

- Make copies of the Student Pages titled “Why Do Plants Have Flowers?”
- Make copies of the Worksheets titled “Flower Parts and Pollination Worksheet” and “Flower Pie Worksheet.”

Procedure:

1. Pass out Student Pages “Why Do Plants Have Flowers?” Read and discuss with class. Review the names and functions of the flower parts. Using the pollination diagram on the overhead, demonstrate how pollen is transferred from one flower to the next.
2. Pass out “Flower Parts and Pollination Worksheet” and complete together as a class. Use this opportunity to show the parts of a flower and how pollination works.
4. Pass out “Flower Pie Worksheet” and review assignment.

Evaluations/Extensions:

- Have students complete two Worksheets and add to portfolio.
- For pollination demonstration using the overhead, you can stick a bee cutout on the eraser end of a pencil and let it “fly” from anther to pistil.
- Have real flowers available for students to examine closely with a magnifying glass or hand lens. We recommend Easter Lilies, Day Lilies, Asian Lilies, or Tulips. (Caution, lily pollen can stain clothes.)
- Ask student with Solitary Bee to explain how these bees pollinate flowers and depend on them.

Flower Facts

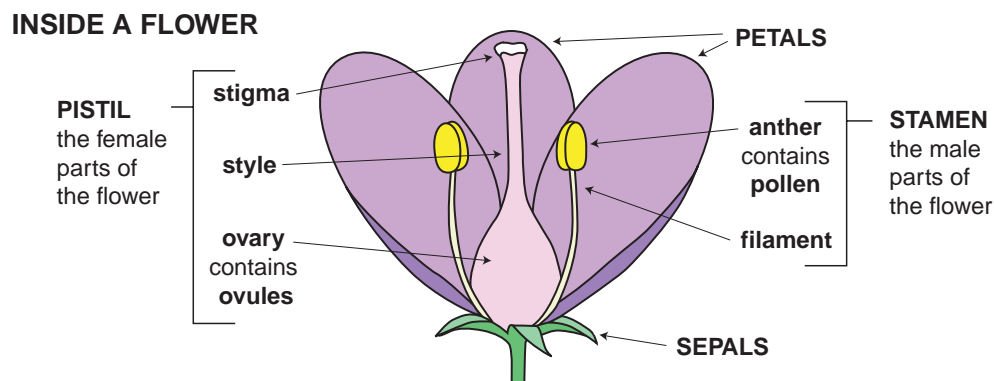
Why Do Plants Have Flowers?

The goal of every plant and animal is the same: To create the next generation. The way a plant makes another generation of its species is by making seeds. Flowers are the tools that plants use to make their seeds.

A seed contains all the information needed to make a new plant. This information is stored as a code in tiny genes within the seed. This genetic code forces the seed to grow into a plant like its parents. Although the new plant will be the same species as its parents, it will not be exactly the same as either of them. Its genetic code is a new mix of genes, half from each parent.

Only flowers from the same species of plant can produce seeds. A flower provides a place to combine the genetic code from a male and a female into a single seed. The combination happens when the **pollen**, from the male parts of one flower, connects with an **ovule** (egg) from the female parts of another flower. This is called **pollination**.

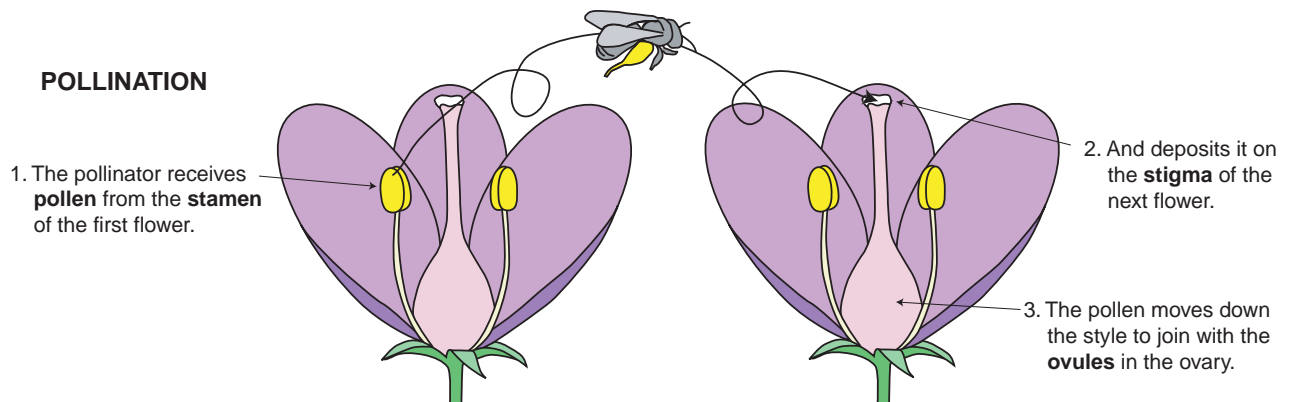
Here are the basic parts of a flower:



But how does the pollen from one flower get to the ovules of another flower? Unlike animals, plants can't exactly go out hunting for a mate! Instead of working very hard at attracting each other, plants make flowers to attract **pollinators** to do the work of mating for them.

Pollinators can be bees, flies, beetles, moths, hummingbirds, bats and other animals that visit flowers. They gladly travel from flower to flower to gather the nectar and pollen to feed themselves or their young. The plants make the nectar and pollen just to attract the pollinators. Flowers are like big signs that advertise to pollinators: Eat Here!

When a pollinator goes into a flower to collect nectar or pollen, tiny grains of pollen from the **anthers** of the flower (the male parts) stick to their bodies. When the pollinator visits another flower of the same species, some of this pollen brushes onto the sticky **stigma**. The stigma is the receiving end of the **pistil** (the female part of a flower), where the ovules (eggs) in the **ovary** wait to be fertilized by the pollen. The pollen travels from the stigma, down the style, to the ovary. When an ovule is fertilized, the genes from the pollen combine with the genes of the ovule and a seed is made!



This is how it happens:

The job of a flower is to help its pollinator put pollen exactly in the right place at the right time to make a seed. When a plant's flower succeeds at this, the plant gets to pass the secret for this success to the next generation, through the genetic code in its seeds! When a plant fails to grow up and make seeds, its genetic code does not get passed on. It becomes a loser in the game of life.

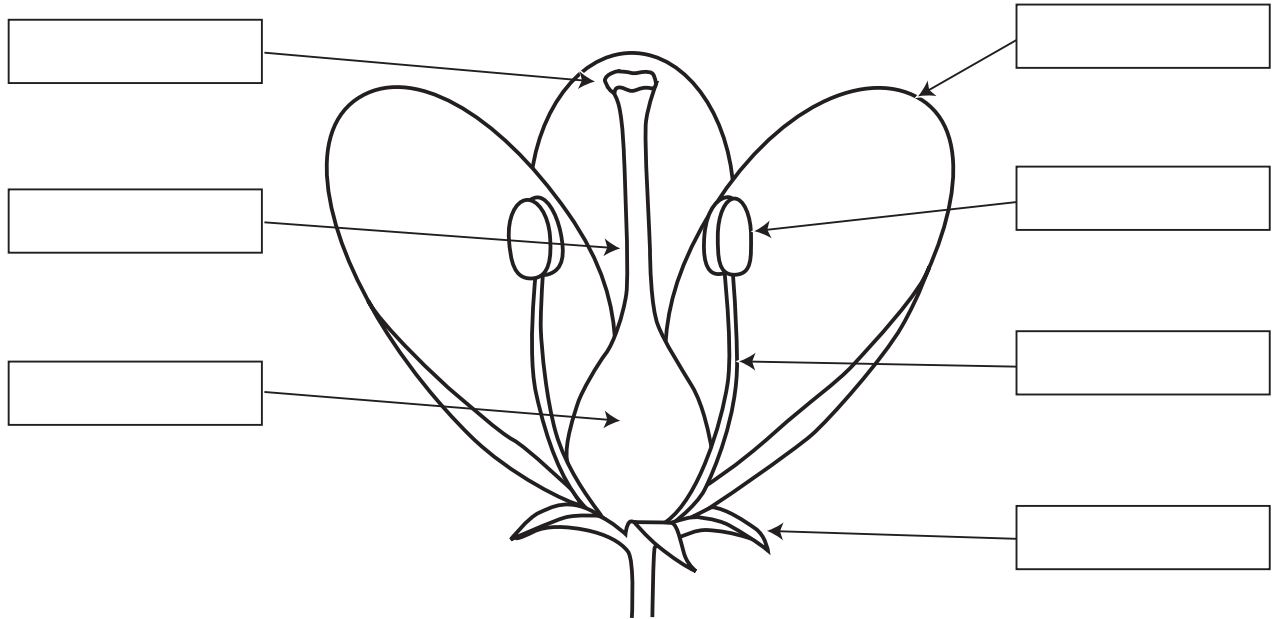
The environment is constantly testing each plant. Competition for sunlight, water, nutrients and space is fierce. **Herbivores** are hungry and plants are their breakfast, lunch and dinner! Only the strongest individuals survive long enough to reproduce. These survivors keep making seeds, letting the environment select the winners and losers. Through this selection process plants have **evolved** (developed) to survive life in every habitat on our planet. This **evolution** has filled even the harshest habitats with life, including vernal pools.

Although the pollination of a flower may appear to happen by accident, plants and pollinators have been practicing for millions of years to make sure that this “accident” happens. Often a plant and pollinator co-evolve (evolve together), adapting to changes in each other to improve their own survival. A plant species may depend on a single species of pollinator to make its seeds. Likewise, many pollinators rely on one plant species to provide all the food for their young. The complex relationship between solitary bees and certain vernal pools plants is a good example of this co-evolution.

Name: _____

Flower Parts & Pollination Worksheet

Fill in the boxes with the name of the flower part from the words in the box below. Color the petals red, the sepals green, and the pollen yellow.



anther filament stem ovary petal sepal leaf style stigma twig

How Pollination Works

Fill in the blanks.

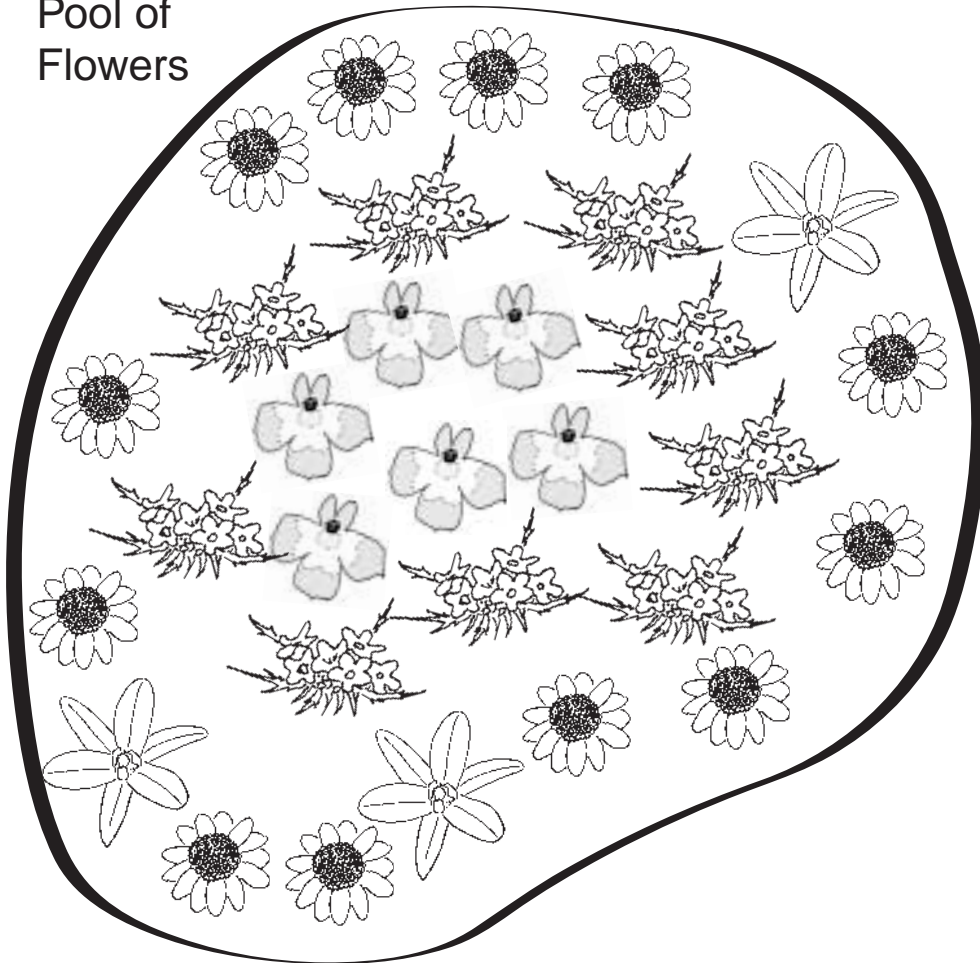
1. For plants to make seeds, the pollen from the _____ of one flower needs to fertilize the ovule of another flower.
2. The seeds are produced in the flower's _____, at the base of the pistil.
3. A variety of critters collect pollen and nectar to feed themselves and their young. These critters also carry pollen from one flower to another and are called _____.
4. Name at least four critters that might be pollinators:

Flower Pie Worksheet

Name: _____

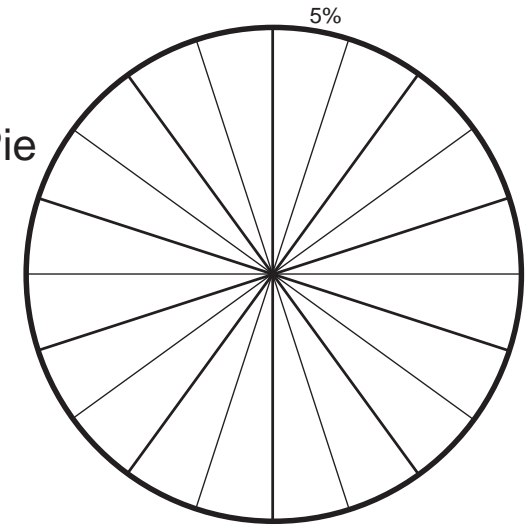
How could you use this kind of data to see if vernal pools are different from each other when they flower? Write your answer on the back. Directions: Count the number of each flower and complete the table and graph. Create a color key in the table and complete the pie graph.

Pool of Flowers

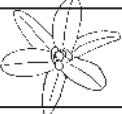





Splash

Flower Pie Graph



Data Table

	Color Code	Count	Fraction	Percent
 Brodiaea				
 Goldfields				
 Navarretia				
 Downingia				
Totals				