



Pollinators

This month we are learning about our good garden friends the pollinators. Who are the pollinators? Bees, hummingbirds, moths, bats, butterflies, flies, and beetles are a few notable representatives. Pollinators are animals that help many flowering plants produce their seeds and thus ensure the continued existence of millions of plant species, and in turn, of most animal species, including humans. Each week we will dig into a different pollination-focused topic and provide instructions for engaging, hands-on lessons and activities. By the end of the month we hope your young gardeners will understand the intricate relationship between pollinators and flowering plants and also learn to love, respect, and appreciate these hard-working animals.

Week 1: What is Pollination?

Learning Objectives:

This week kids will learn:

- The common parts of a flower
- How flowers make seeds
- Why many flowers need help from pollinators to make their seeds

Materials Needed for the Week:

Activity 1: Introduction to the Parts of a Flower

- [Fantastic Flowers Reading Page](#)
- [Anatomy of a Flower Coloring Page](#)
- Crayons, colored pencils, or markers

Activity 2: Make Your Own Flower

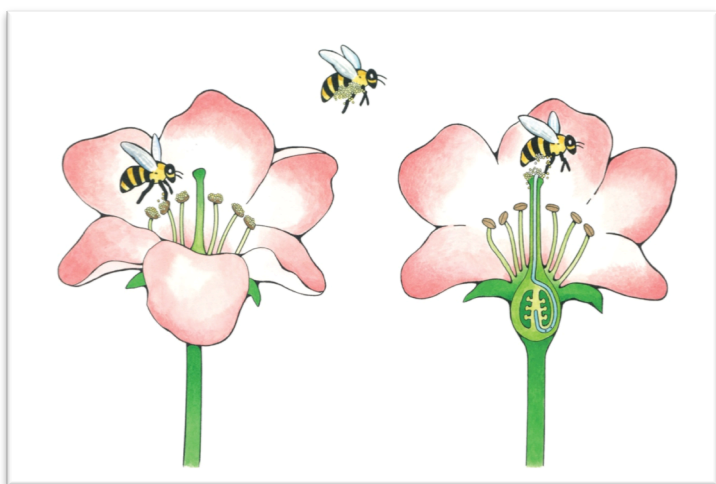
- Plastic cup(s)
- Modeling clay or playdough
(Try your hand at making [no-bake homemade playdough](#) or [traditional homemade playdough](#))
- Construction paper
- Crayons, colored pencils, or markers
- Chenille sticks, pipe cleaners, or straws
- Pompoms, cotton balls, or tissue paper
- Tape
- (Note: Feel free to substitute any of the above supplies if needed. You'll find more suggestions after Activity 2, below.)

Activity 3: Dissect a Flower

- [Flower Dissection Handout](#) (optional)
- A sample flower
- Hand lens or magnifying glass (optional)
- Tweezers (optional)

Introduction

Flowering plants have a distinctive way of making seeds. Their flowers make pollen in parts called stamens. To create a seed, the pollen must be transported and joined with egg cells that are located in parts called pistils. This process is called pollination. Sometimes the pistils and stamen are in the same flower and sometimes the pollen from one flower must be moved to the pistil of another flower. Since pollen does not have wings or feet, it needs help moving from one place to the other. Some flowers rely on the wind or water to help make pollination happen. Other flowers rely on small animals called pollinators to transport their pollen from flower to flower as demonstrated in the illustration below.



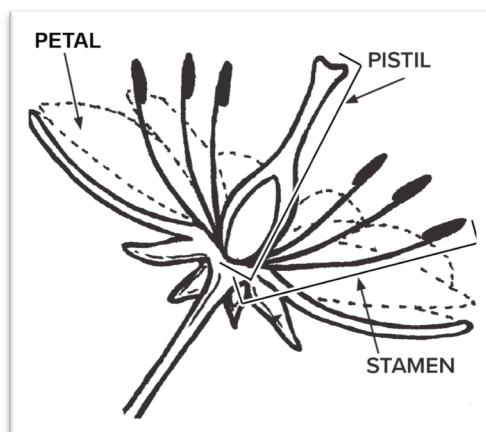
Let's look more in depth at the parts of the flower and the pollination process.

The pistil is made up of multiple parts: a platform called the stigma and the thin stalk that holds it up, called the style. The stigma is often sticky so it can trap pollen. At the base of the style is the ovary, which may or may not be visible. Inside the ovary are the ovules, which contain the eggs.

Pollination occurs when the pollen transfers from the stamen to the pistil. Once there, it

will grow a tiny pollen tube down the style into the ovary, where the eggs are located. This part of the process is called fertilization. Fertilized eggs grow into tiny embryos, which then develop into seeds. *You can vary the amount of detail you share about this process with your child or students depending on their age.*

Other important flower parts are the petals and sepals. In addition to surrounding and protecting the seed-making parts, the petals of flowers that need pollinators to help them transport the pollen are often brightly colored or patterned to attract the pollinators (birds, bees, and other insects). Some are broad and flat to provide good “landing pads.” Wind-pollinated flowers, such as those of corn and oak trees, on the other hand, usually have inconspicuous petals, if any. Sepals are green leafy structures surrounding the petals, which initially protected the developing bud.



Activities and Lessons

Activity 1: Introduction to the Parts of a Flower

1. Together or independently, read the [Fantastic Flowers Handout](#). Have your kids complete the reading comprehension questions and then discuss your answers together.
2. Next, color the [Anatomy of the Flower](#) coloring page. Encourage kids to create different color combinations and patterns that they think would help their flower attract pollinators. Give them an opportunity to explain their choices.
3. Finally, if possible, take your coloring page outside and go for a flower hunt in your yard or local green space. Without picking the flowers (remember they are hard at work making seeds!) see if you can identify the sepals, petals, pistil, and stamen. Extra bonus if you can find some pollen or visiting pollinators too!

Activity 2: Make Your Own Flower

1. Ask kids to cut out flower petals from construction paper and decorate them with different patterns. Attach your petals to the edge of a small plastic cup with tape so that they hang down the outside of the cup.
2. Next, create your pistil and stamens using chenille sticks. It is common for flowers to have just one pistil and multiple stamens; however, you can leave that up to your child if you wish. To make the pistil, shape the chenille stick so that the top looks like a landing pad or a loop. To make the stamen, wrap small pompoms around the top.
3. Place a piece of modeling clay or PlayDoh in the bottom of your cup and then poke the bare ends of the pistil and stamens into it.
4. If you want to take this activity further, name your flower and then encourage kids to also create their own pollinator to help with pollination.



Note: These are just suggested materials, but feel free to use anything you have on hand. For example, you can use straws instead of chenille sticks or ball up pieces of paper or tissue instead of using pompoms.

Activity 3: Dissect a Flower

1. This week kids have learned about the important work flowers are doing by making the seeds. However, in this activity we are going to sacrifice one or two flowers for the sake of science. Begin by obtaining one or two flowers to dissect. If cut flowers are available to you from a grocery store or florist, look for alstroemeria flowers — they make great dissection subjects because they have very large, recognizable plant parts. (Lily flowers also work, but they are generally more expensive, and please note that they are poisonous for humans and animals.) You may also be able to find flowers from your garden or other shrubs or trees in your yard. If you must look beyond your own space, please make sure to obtain permission before picking them.
2. Give kids a copy of the [Flower Dissection Handout](#). Go over the different parts of the plant that you will be looking for with your child.
3. Very carefully, remove the flower petals. If available, you could use tweezers for this job and add in some fine motor skills practice (and kids find it fun), but you could also just use your fingers. Have kids take a close look at the petals. If you have a hand lens or magnifying glass available, take a look at the petals for additional details, such as texture, shine, tiny hairs, color patterns, etc. Count the number of petals and record that information on the chart on the Handout. If you want extend your math learning, you could also have your kids measure the petals.
4. Next, count the number of stamens and carefully remove one of them. (See Note, below.) Look carefully for pollen at the top. Try gently tapping the anther against a piece of white paper to see if any pollen comes loose. Use your hand lens or magnifying glass, if available, to examine the stamen.
5. Finally, count the pistils. (See Note, below.) Describe the top “landing pad.” Does it look shiny or wet? Gently touch it — is it sticky? Look at it through a magnifying glass or hand lens if available. As the very last step, see if you can very gently pull apart the ovary at the bottom and see seeds beginning to develop.

Note: What if you do not find any stamen or pistils in your sample flower? There are some plants that produce pistils and stamens on separate flowers; that is, some flowers have only stamens, some have only pistils. A common example of this phenomenon is the squash family (squash, cucumbers, watermelons). There are even some plants, such as holly shrubs — some plants only produce flowers with stamens, and other plants only produce flowers with pistils. This is why not all holly plants will get holly berries on them. Only the holly shrubs that have flowers with pistils (which contain the ovaries) will develop holly berries (seeds).

6. As a last and optional step, to document your work, you can tape your parts onto your handout for later review. If supply allows, you could also repeat this process with another type of flower and compare your findings.

Digging Deeper

You can use the following resources to dig deeper into this week's lessons:

Books

The Reason for a Flower by Ruth Heller

Beautiful illustrations and simple text providing an overview of the purpose of flowers in the plant world.

The Flower Garden by Eve Bunting

A delightful book about a young girl who plants a flower garden for her mother's birthday.

Videos

Time Lapse Videos posted by Seed Your Future:

<https://www.seedyourfuture.org/plantflix>

Seed Your Future has gathered a great collection of plant-focused time-lapse videos. This week makes sure to check out The Beauty of Pollination by Moving Art™, Watch Flowers Bloom Before Your Eyes, Beautiful Cacti Bloom Before Your Eyes, and Cherry Blossom 4K Timelapse.

Identifying Parts of a Flower from the Art Lady Channel:

<https://www.youtube.com/watch?v=ZQAnJ8ICFc8>

Daffodil Flower Dissection:

<https://www.youtube.com/watch?v=MSAVKlyZh6o>

Additional Related KidsGardening Lessons and Activities to Try

Pressed Flowers and Leaves

<https://kidsgardening.org/garden-activities-pressed-flowers-and-leaves/>

Flower and Leaf Prints

<https://kidsgardening.org/garden-activities-leaf-and-flower-prints/>

Edible Flowers

<https://kidsgardening.org/growing-guide-edible-flowers/>

Petal Attraction

<https://kidsgardening.org/lesson-plans-petal-attraction/>

State Flowers

<https://kidsgardening.org/lesson-plan-state-flowers/>



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Lessons to Grow By, Week 1 Reading Page

Fantastic Flowers

Roses are red, violets are blue, we love flowers, how about you?

Do you have a favorite flower? What color is it? Where do you find it? Why is it special to you?

Flowers can be found in many different sizes, shapes, and colors. They can be as small as a penny or as big as a dinner plate. Their petals come in every color of the rainbow – red, orange, yellow, green, blue, purple, and also brown, black, and white. Some of them give off a wonderful scent too (although not all of them – some of them actually are kind of stinky). Most times we see notice them in spring, summer, and fall, but in places where it is warmer, you might find some during the winter months too.

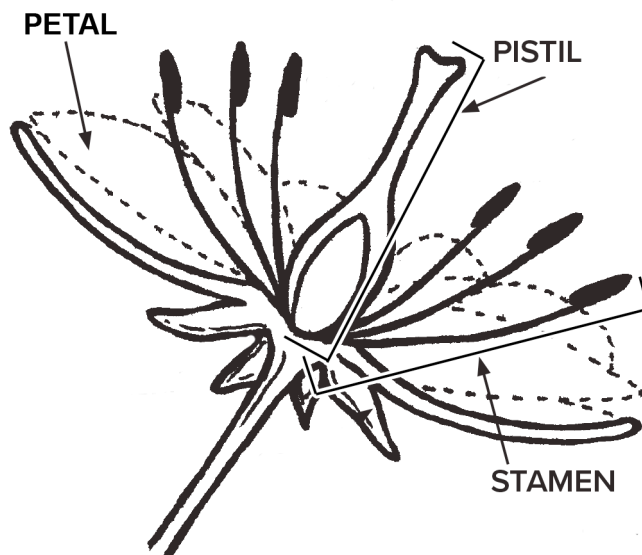
Think back to the plants you have seen around your school or home. Do they all have flowers on them? The answer is no. Most plants have flowers, but there are some that do not. There are also some plants, especially some of our bigger trees that have small flowers that you may not recognize as flowers at all.

So why do plants have flowers? How do they help the plant? Flowers have one very important job to do. Their job is to make seeds. Seeds grow into new plants and ensure that we have plenty of plants living in our environment. Plants are an important source of

oxygen, food, and shelter, and without them animals would not be able to survive on this planet.

Even though flowers on different plants do not look like each other, they are actually made up of the same parts including:

- Petals: The often-colorful structures that surround the seed making parts.
- Stamens: The parts that make pollen, small grain-like cells that are often yellow in color.
- Pistil: The parts where the seeds actually grow.



To make the seeds, the pollen from the stamens must be moved to the pistil. Sometimes the pollen moves from the stamens to the pistil on the same flower and sometimes it moves from the stamens on one flower to the pistils on another flower. In some cases, the pollen moves with the help of wind or water. Other times, animals like bees or butterflies help move the pollen from plant to plant. This process is called pollination.

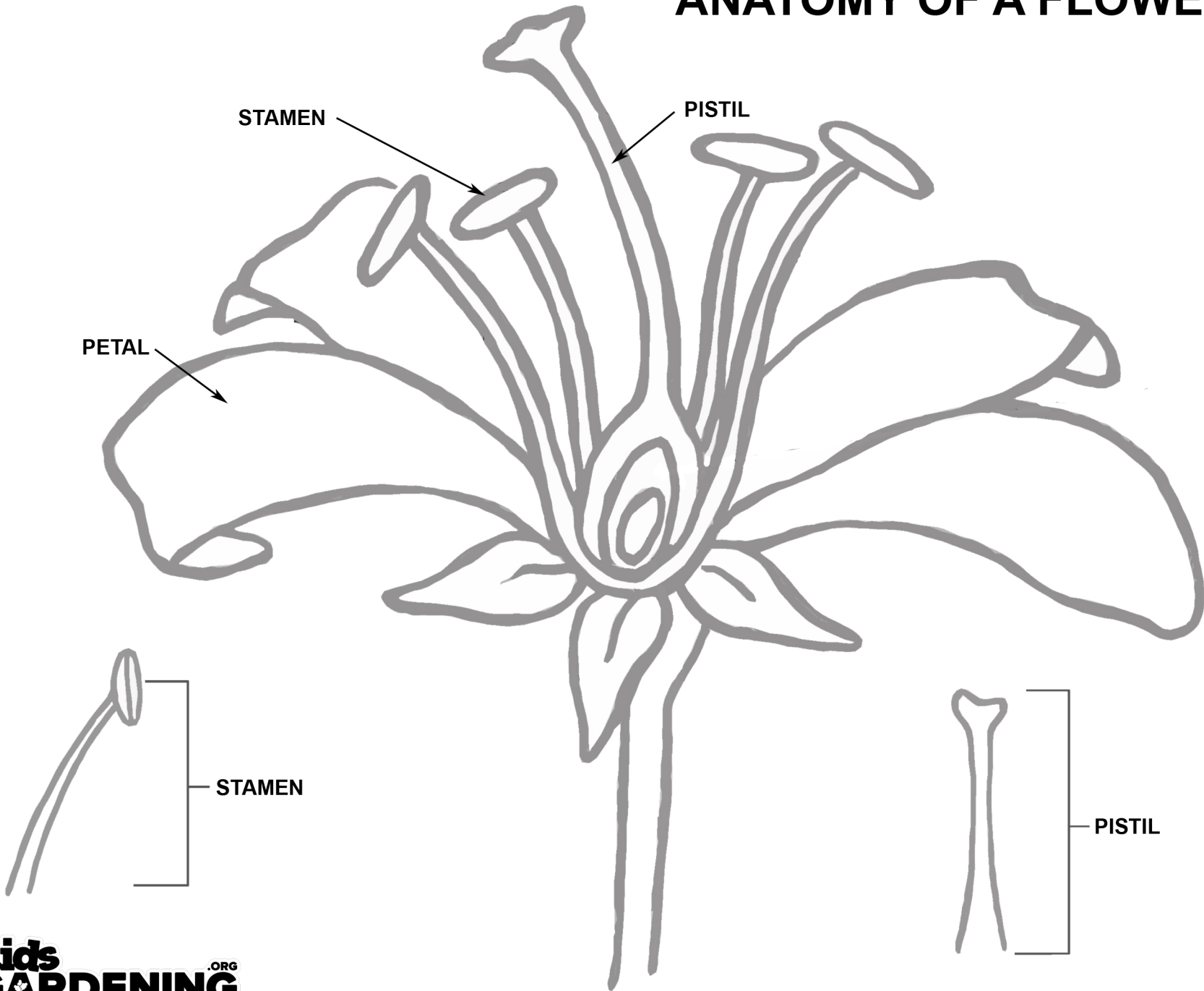
Flowers have many features to encourage pollinators to help them move pollen. At the base of the pistil of some types of flowers, pollinators can find sweet nectar to eat. Some pollinators also eat some of the pollen too. The bright colors and eye-catching patterns on petals also help flowers attract pollinators.

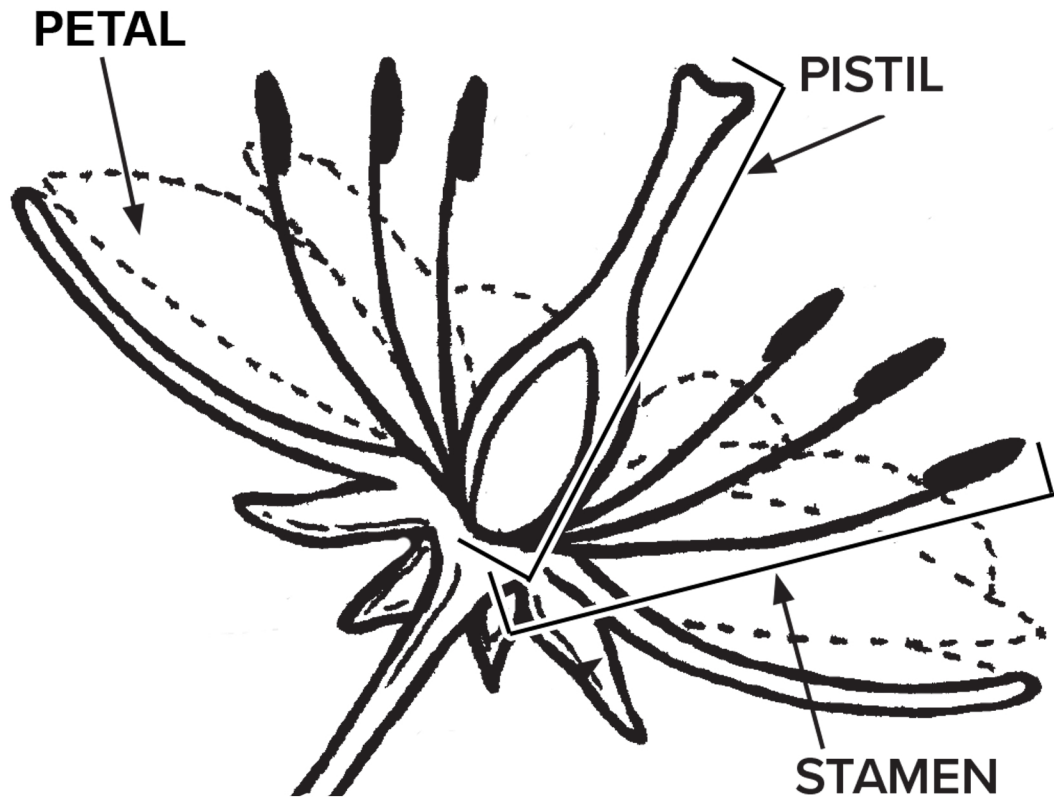
From sunflowers to petunias, next time you stop to admire a beautiful flower, remember that it is hard at work!

Reading Comprehension Questions

1. True or false: Flowers come in different sizes, shapes and colors.
2. True or false: All plants have flowers.
3. What is the main job of a flower?
4. Which of the following is not a name of a common part of a flower:
 - Pistil
 - Antennae
 - Petals
 - Stamen
5. What word do we use to describe how pollen moves from one flower part to another flower part?

ANATOMY OF A FLOWER





Flower Part	Number	Additional Observations
Petals		
Pistil(s)		
Stamen(s)		

Additional Notes: