

## Introduction

Over 90% of all plants are angiosperms or flowering plants. When you think of flowers, you probably think of a rose, carnation or maybe, a tulip . It is not just flowers that are flowering plants.



In the spring and summer, you can find flowers in many places but, many plants have flowers that you never see. The grass in the yard is a flowering plant but, you have probably never seen their flower. They are hidden inside the plant. A plant lives to produce more plants and it needs a flower to do that. Flowers are responsible for producing seeds This lesson will teach you the parts of a flower and how those parts work.

## Objectives

- Students will understand the role of flowers in the life of a plant.
- Students will understand the basic parts of a flower.
- Students will understand the function of the parts of the flower.
- Students will understand seed development.

## Background

First, let us look at the diagram of a flower.

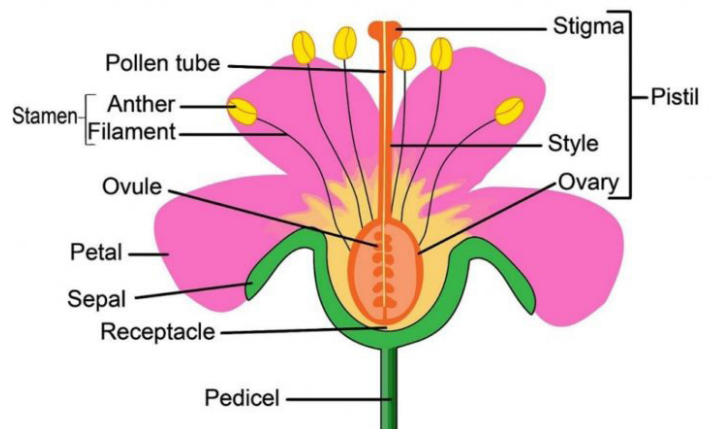
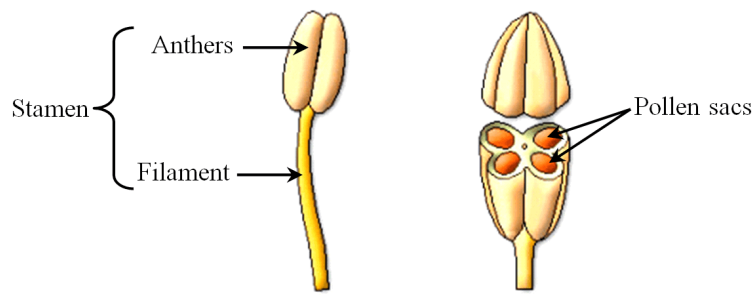


Photo provided by: <https://www.colourbox.com/vector/a-common-flower-parts-vector-34289070>

A “perfect flower” has both male and female parts. There are also parts that are not male or female. The sepal are leaves that protect the flower as it grows. They peel back as the flower grows. The petals give many flowers their beauty, but the most important job they have are to attract insects that will help them in the process of producing seeds. You will read more about that later.

All of the male and female parts have a job. The male part is called the stamen and is made up of two parts: filament and anther. The filament is simply a stem or stalk that holds up the anther. Inside the anther are pollen sacs. The pollen sacs contain pollen. Pollen contains the male cell that will fertilize the female cell.



Structure of stamen

Photo provided by: <https://www.toppr.com/guides/biology/anatomy-of-flowering-plants/flower/>

When the plant has reached the correct stage of its life, the pollen sacs will break open, releasing the pollen into the air.

The female part is called the pistil or carpel. It has four parts: stigma, style, ovary and ovules (inside the ovary).

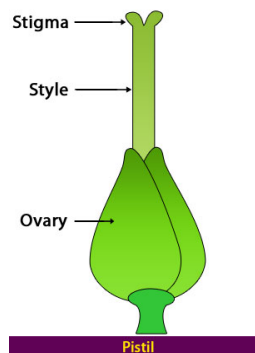
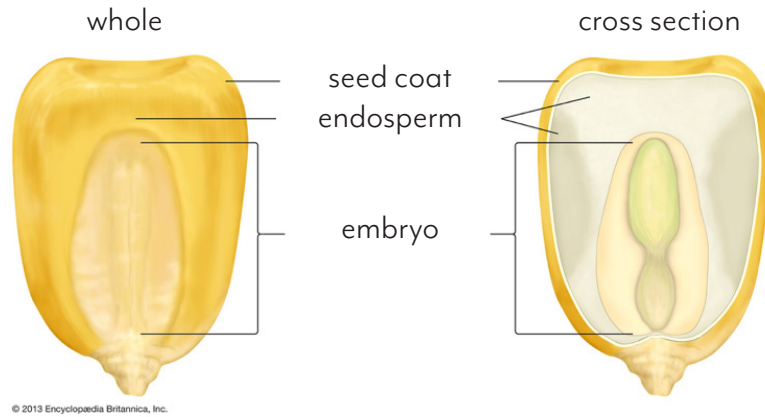


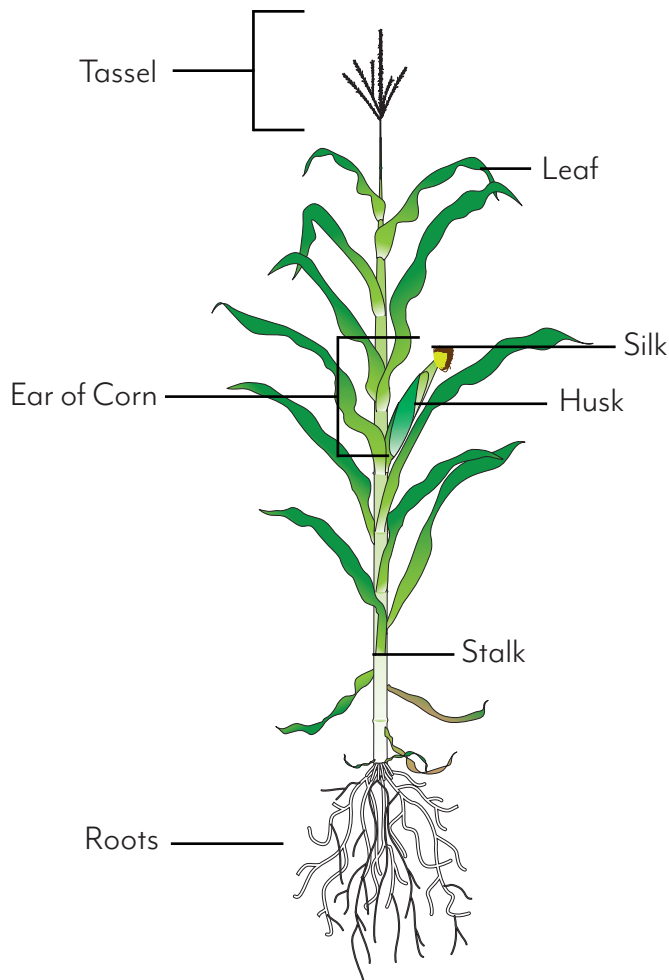
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The stigma is a sticky surface that the pollen will land on. The act of transferring pollen grains from the male anther of a flower to the female stigma is called pollination. Some flowers are designed so that the pollen from their own anther fall on their own stigma. This is called self-pollination. Some flowers rely on animals (mostly insects), wind or water to carry pollen from another plant to their stigma. This is called cross-pollination. Once the pollen is on the stigma, the pollen grows a tube through the style and into the ovary. The ovule is inside the ovary and holds the female cell or gamete. Male cells or gametes from the pollen follow the tube to the female gamete. The male and female gamete grow together, this is called fertilization. This begins to grow into an

embryo and the ovule turns into the rest of the seed. The embryo is the baby of the plant. The rest of the seed is there to protect and feed the embryo.



Some flowers do not have the male and female parts together in one place. These are called incomplete flowers. Corn is an example of an incomplete flower. The stamen or male parts are on top of the corn plant, it is called the tassel. The female part or pistil is the ear of corn. The hair-like structures on the ear of corn are called the silk. The silk outside of the husk is the stigma. The silk inside of the husk is the style. The cob is the ovary and contains the ovules. Every ovule has a silk. If a pollen grain successfully lands on that silk it will become a corn kernel. Did you know that an average ear of corn can have over 700 kernels on it? Corn relies on the wind for cross-pollination.



## Plant Maturation

When the seeds are fully developed the plant will drop them to the ground. With crops like corn, soybeans, wheat and many others, farmers harvest the grain before that happens. Some plants have special adaptations to help spread their seeds. For example, a cocklebur will get caught in the hair of a passing animal and that animal will carry that seed to another location. The fuzzy top on a dandelion allows the wind to carry it to other locations. These are called seed dispersal methods.



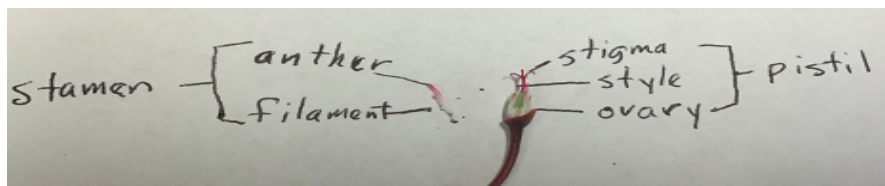
Photos provided by: [www.gardeningknowhow.com/plant-problems/weeds/getting-rid-of-cocklebur-weeds.htm](http://www.gardeningknowhow.com/plant-problems/weeds/getting-rid-of-cocklebur-weeds.htm)  
<https://www.pbs.org/wgbh/nova/article/dandelion-seed-flight/>

## Videos

- Brush up on anthers, stigmas, florets, and insects with a self- and cross-pollination guide provided by Encyclopedia Britannica <https://www.britannica.com/video/73119/Some-ways-plants>
- Sexual Reproduction in Flowering Plants provided by It's AumSum Time [https://www.youtube.com/watch?v=2ycl2E9r-\\_o](https://www.youtube.com/watch?v=2ycl2E9r-_o)

## Activity

1. Walk around your property or (with your parent's) walk around the neighborhood.
2. See how many flowers you can find.
3. Try to find at least one that you can see all of the parts.
4. With your parents' permission, pick that flower and take it inside.  
Hint: the bigger the flower, the easier this assignment is.
5. Gently pull the petals and sepals off so you can see the stamen and pistil. You may need to use tweezers.
6. Lay that on a piece of paper and label the parts.



## Conclusion

We rely on the seeds of many plants for our survival. We eat the seeds of corn, peas, beans and many other plants. There are other seeds that farmers plant in the ground so, a new plant will grow, and we can eat its leaves, stems or roots. We use some crop seeds, like corn, to feed our livestock. Also, we use seeds to make other products like oil, flour and thousands of other things around our house. We could not have seeds without flowers. Test what you have learned using the Flower and Pollination Worksheet.

## Flower and Pollination Worksheet

1. What are the two male or stamen parts of the flower?
2. What are the four female or pistil parts of the flower?
3. There are several steps to pollination, fertilization and maturation. Below is a list of those steps in random order. Place a 1 by the first step, 2 by the second step and so on.

\_\_\_ seed develops

\_\_\_ anther breaks open and releases pollen

\_\_\_ plant matured and drops the seeds

\_\_\_ a pollen tube grows through the style to the ovary

\_\_\_ pollen lands on the stigma. Called pollination.

\_\_\_ male cell and female cell meet and fertilization occurs.

\_\_\_ male cell moves through the pollen tube to the ovary.

4. Name three types of seeds that we eat.
5. Many plants let their seeds drop to the ground, but some plants have other ways to spread their seeds. Can you name two example of plants that use other ways to spread their seeds (seed dispersal)?
6. The parts of the flower of the corn plant is called something different but they do the same jobs. Using the parts listed below, write the parts of the flower by the parts of the corn plant that does the same thing:

Word bank: stamen, stigma, style, ovary

Cob =

Tassel =

Silk inside the husk =

Silk outside the husk =

1. What are the two male or stamen parts of the flower?

**Filament and anther**

2. What are the four female or pistil parts of the flower?

**Stigma, style, ovary and ovule**

3. There are several steps to pollination, fertilization and maturation. Below is a list of those steps in random order. Place a 1 by the first step, 2 by the second step and so on.

6 seed develops

1 anther breaks open and releases pollen

7 plant matured and drops the seeds

3 a pollen tube grows through the style to the ovary

2 pollen lands on the stigma. Called pollination.

5 male cell and female cell meet and fertilization occurs.

4 male cell moves through the pollen tube to the ovary.

4. Name three types of seeds that we eat.

**Corn, peas, beans and many others**

5. Many plants let their seeds drop to the ground, but some plants have other ways to spread their seeds. Can you name two example of plants that use other ways to spread their seeds (seed dispersal)?

**Cockleburs stick to animals**

**Dandelion seeds float in the wind**

6. The parts of the flower of the corn plant is called something different but they do the same jobs. Using the parts listed below, write the parts of the flower by the parts of the corn plant that does the same thing:

Word bank: stamen, stigma, style, ovary

Cob = **ovary**

Tassel = **stamen**

Silk inside the husk = **style**

Silk outside the husk = **stigma**