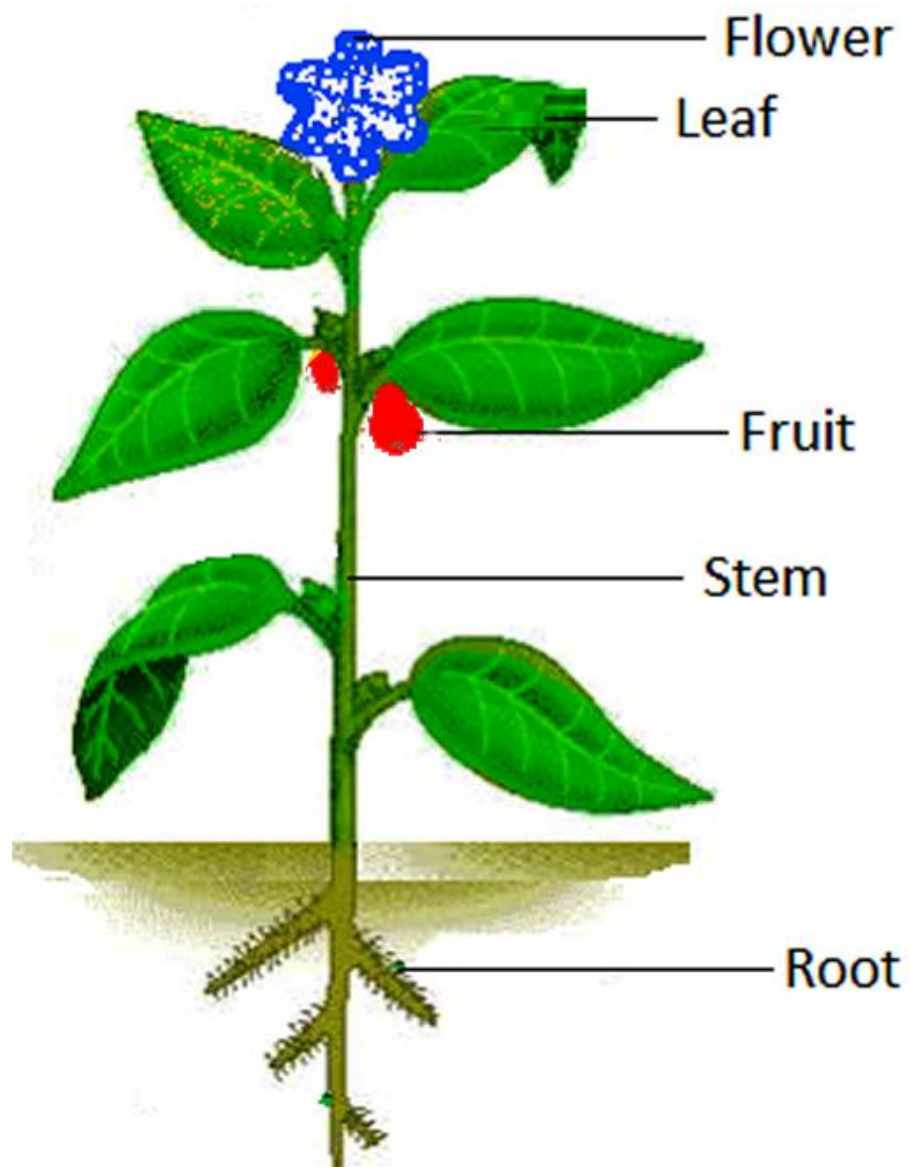


Can you imagine a world without a plant?

There would be a lot less oxygen and the earth would be spread with floods and droughts. There will be no medicine to heal people, no wood to make new things and no food to feed humans or animals.

Parts of a plant and their functions-



Roots-

Roots grow down from a seed. Roots keep plants in the ground. Roots help plants get water and mineral from the soil. They send water to the plant through the stem.

Desert plants store water in their roots. People can eat roots. Ginger, carrots and radishes are roots.

Fun fact:

Some swamp plants have roots that grow into the air instead of down into the soil.

Stem-

Stem holds the plants up like backbone. They connect to roots below the soil.

Stems act like straws. They carry water from roots to leaves and flowers.

People eat some kinds of stems. Celery, asparagus, rhubarb, sugarcane are tasty stems.

Some stems have thorns to keep animals away. Lemon trees have thorns.

Leaves-

Leaves are kitchen of the plants. Stem bring water from the soil to the leaves.

Leaves use sunlight, water and air to make food.

We eat some kinds of leaves, like spinach, lettuce, and cabbage.

Maple leaf is on the flag of Canada!

Flower-

Flowers grow seeds that can make new plants. Flowers are beautiful to attract the pollinators like bees.

Seeds-

The plant parts that can make new plants.

Source: <http://www.easypacelearning.com/science/plants/parts-of-a-plant/1320-parts-of-a-plant-vocabulary-with-pictures>

<http://kidsgrowingstrong.org/PlantParts>

The earth is a wonderful garden that can grow everything we need. To grow up to be healthy and strong, you need the right amounts of nutrients, sunshine, warmth and water.

Plants are exactly the same!



If you take a little seed and add water and warmth... it will start to grow a root and a stem.



Add sunshine and some nutrients from the soil...



and the stem will start to produce leaves and then flowers.

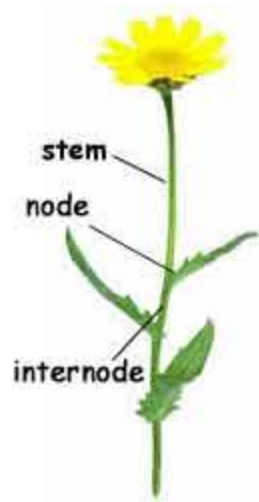


After the flower comes the fruit.
The fruit contains seeds and...



it starts all over again
with new seeds

Stems



Stems carry water and nutrients taken up by the roots to the leaves. Then the food produced by the leaves moves to other parts of the plant. Stems also provide support for the plant allowing the leaves to reach the sunlight that they need to produce food.

A **bud** is an embryonic stem which has the potential for further plant growth. It may develop into a leaf, flower, or both. Such buds are called *leaf buds*, *flower buds* and *mixed buds*, respectively.

Leaves

Leaves are made to catch light and have openings to allow water and air to come and go. The outer surface of the leaf has a waxy coating which protects the leaf. Veins carry water and nutrients within the leaf.



Simple Leaf

Plant Roots

Root perform three functions for most of the plants :

- Roots anchor the plant in the ground.
- Roots absorb water and dissolved minerals from the soil.
- Roots store food.

Root Systems:

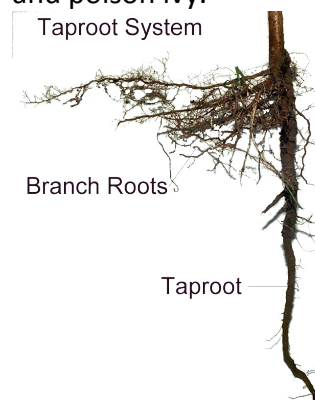
The root is the part of a plant that is usually found underground but can also be above ground.

There are two kinds of root systems. One is the tap root system. In this system there is a main root larger than the other branching roots. The other is the fibrous root system.

Tap roots are found in most trees and the carrot, parsnip, radish, beet, and dandelion. The grasses such as corn and rye have fibrous roots.

Taproot System:

Characterized by having one main root (the taproot) from which smaller branch roots emerge. When a seed germinates, the first root to emerge is the radicle, or primary root. In conifers and most dicots, this radicle develops into the taproot. Taproots can be modified for use in storage (usually carbohydrates) such as those found in sugar beet or carrot. Taproots are also important adaptations for searching for water, as those long taproots found in mesquite and poison ivy.



Fibrous Root System:

Characterized by having a mass of similarly sized roots. In this case the radicle from a germinating seed is short lived and is replaced by adventitious roots. Adventitious roots are roots that form on plant organs other than roots. Most monocots have fibrous root

systems. Some fibrous roots are used as storage; for example sweet potatoes form on fibrous roots. Plants with fibrous roots systems are excellent for erosion control, because the mass of roots cling to soil particles.

Circle the right answer

1. Which of these is not a job of the root of the plant?

To make food To hold the plant in place To take in water and minerals from the soil.

2. In this system there is a main primary root larger than the other branching roots.

tap root diffuse root edible root

3. In this system there are many thin roots with smaller root branching out..

tap root diffuse root edible root

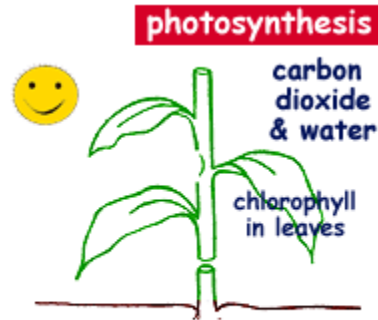
4. Roots tend to grow in length rather than width.

True False

5. The root system of a plant or tree can be large underground than the plant itself above ground.

True False

Photosynthesis



water &
nutrients

Leaves are the site of the food making process called photosynthesis. In this process, carbon dioxide and water in the presence of chlorophyll (the green pigment) and light energy are changed into glucose (a sugar). This energy rich sugar is the source of food used by most plants.

Photosynthesis is unique to green plants!

Photosynthesis supplies food for the plant and oxygen for other forms of life.

A green plant helped make the oxygen you are breathing today.

Flowers



Flowers not only look pretty but, in fact, are important in making seeds.

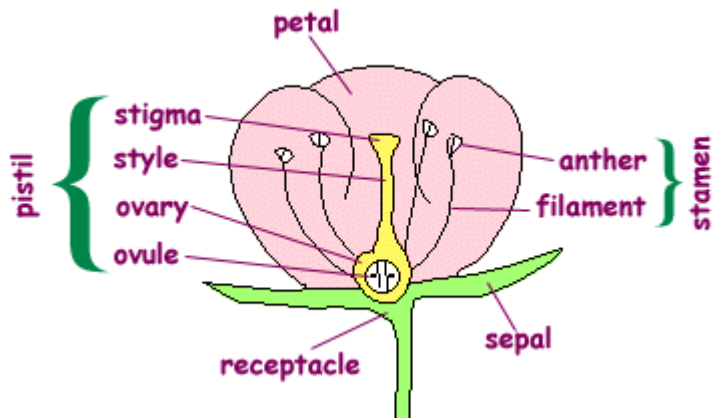
A **flower** is the plant reproductive organ which develops within a bud.

Flower Parts

Typical complete flowers consist of four sets of plant organs:

sepals, petals, stamens and **pistils**.

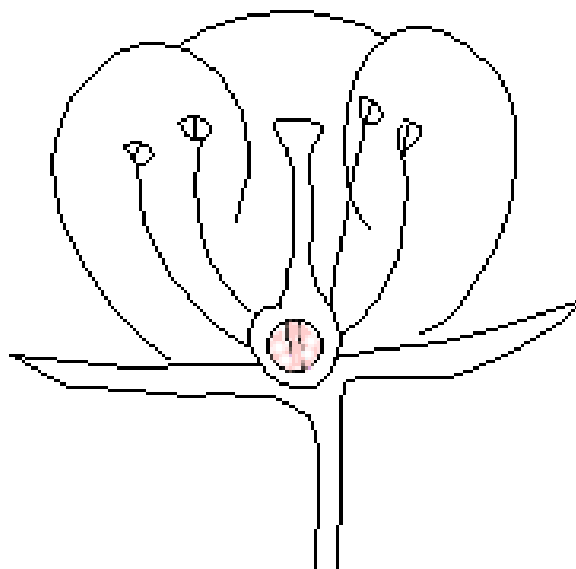
Flowers have some basic parts. The female part is the pistil. The pistil usually is located in the center of the flower and is made up of three parts: the stigma, style, and ovary. The stigma is the sticky knob at the top of the pistil. It is attached to the long, tube like structure called the style. The style leads to the ovary that contains the female egg cells called ovules.



The male parts are called stamens and usually surround the pistil. The stamen is made up of two parts: the anther and filament. The anther produces pollen (male reproductive cells). The filament holds the anther up.

During the process of fertilization, pollen lands on the stigma, a tube grows down the style and enters the ovary. Male reproductive cells travel down the tube and join with the ovule, fertilizing it. The fertilized ovule becomes the seed, and the ovary becomes the fruit.

Fertilization



Pollen lands
on stigma

Tube grows down
the style and
enters the ovary

Petals are also important parts of the flower, because they help attract pollinators such as bees, butterflies and bats. You can also see tiny green leaf-like parts called sepals at the base of the flower. They help to protect the developing bud.

All plants need these seven things to grow: room to grow, the right temperature, light, water, air, nutrients, and time.



- ① Room to Grow
- ② Temperature
- ③ Light
- ④ Water
- ⑤ Air
- ⑥ Nutrients
- ⑦ Time

① Room to grow.

All plants like to have room to grow. The above ground portions of the plant need space so leaves can expand and carry out the job of making food. Roots also need room to grow. Plants growing in small spaces will have their roots crowded, and that results in smaller amounts of growth.

② Temperature

Most plants like temperatures that most humans like. Some may like warmer temperatures while others may prefer cooler temperatures for best growth. It is always good to know where plants come from so you can make them feel at home. Most plants like to have cooler temperatures at night and don't like to be in a drafty spot.

③ Light

Plants grown indoors like bright light. Windows facing the south or west have the best light. Try to place the plants close to the window to take advantage of all the light. The further away from the window, the

darker it becomes. A plant will tell you when it isn't getting enough light, because its stems will be thin and it will lean toward the light. If you don't have a bright window, try using grow lights. Remember to have the light about six inches above the plants and leave it on for 14-16 hours each day.

4 Water

Water is important in the plant's ability to make and move nutrients. Without water or with too much water, a plant dies. For this reason, watering is an important part of plant care. Most plants like to be watered when the soil is slightly dry to the touch. When watering, moisten the soil by using enough water so that it starts to come out of the hole in the bottom of the container. (This is why it is important to use containers with drainage holes.) How often you water depends on a lot of things. Plant size, time of the year, and type of plant are a few. Your best guide, though, is to feel the soil. If you stick your finger one inch into the soil and it is dry, then water your plant.

5 Air

Plants use carbon dioxide in the air and return oxygen. Smoke, gases, and other air pollutants can damage plants.

6 Nutrients

Most of the nutrients that a plant needs are dissolved in water and then taken up by the plant through its roots. Fertilizers will help to keep the soil supplied with nutrients a plant needs. Don't apply too much too often. Fertilizer won't solve all of your plant problems, so make sure your plants have good light, good soil, and good drainage. The three most important nutrients are nitrogen, phosphorous, and potassium.



Nitrogen is used for above ground growth. This is what gives plants a dark green color. Phosphorous helps plant cell division. It aids in flower and seed production and in the development of a strong root system. Potassium helps fight off disease and provides for strong stems.

7 Time

It takes time to grow and care for plants. Some plants require more time to grow than others. Getting plants to flower or fruit at a certain time can be challenging. Plants that normally grow outdoors need a certain number of days to flower or fruit. You can time plants to flower or fruit on a certain date. This is a good lesson in both plant science and math.

What parts of the plant do we eat?

A large part of what people eat is made up of plants or parts of plants. In fact, plants contain many of the nutrients that help us live healthy lives. The examples below are what Sprout ate yesterday. What else do people eat?

ROOTS

radish



SEEDS

peas



LEAVES

lettuce



FRUITS



apple

FLOWERS



broccoli

STEMS



asparagus

What parts of the plant do we eat?

ROOTS

carrots
beets
turnips
rutabagas

SEEDS

lima beans
peas
green beans
sunflower seeds
black-eyed peas
pinto beans

FRUITS

tomato
apple
cucumber
strawberries
blueberries

FLOWERS

broccoli
cauliflower
squash blossoms
nasturtiums

LEAVES

kale
lettuce
spinach
cabbage
collards
mustard

STEMS

celery
rhubarb
onions