

Parts of a Plant

Goal: Students will learn about the parts of plants and their functions which help the plant survive.

Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.



University of California

Agriculture and Natural Resources

UCCE Master Gardener Program



Name the Parts of a Plant

What do you see?

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Name the Parts of a Plant

What do you
see?

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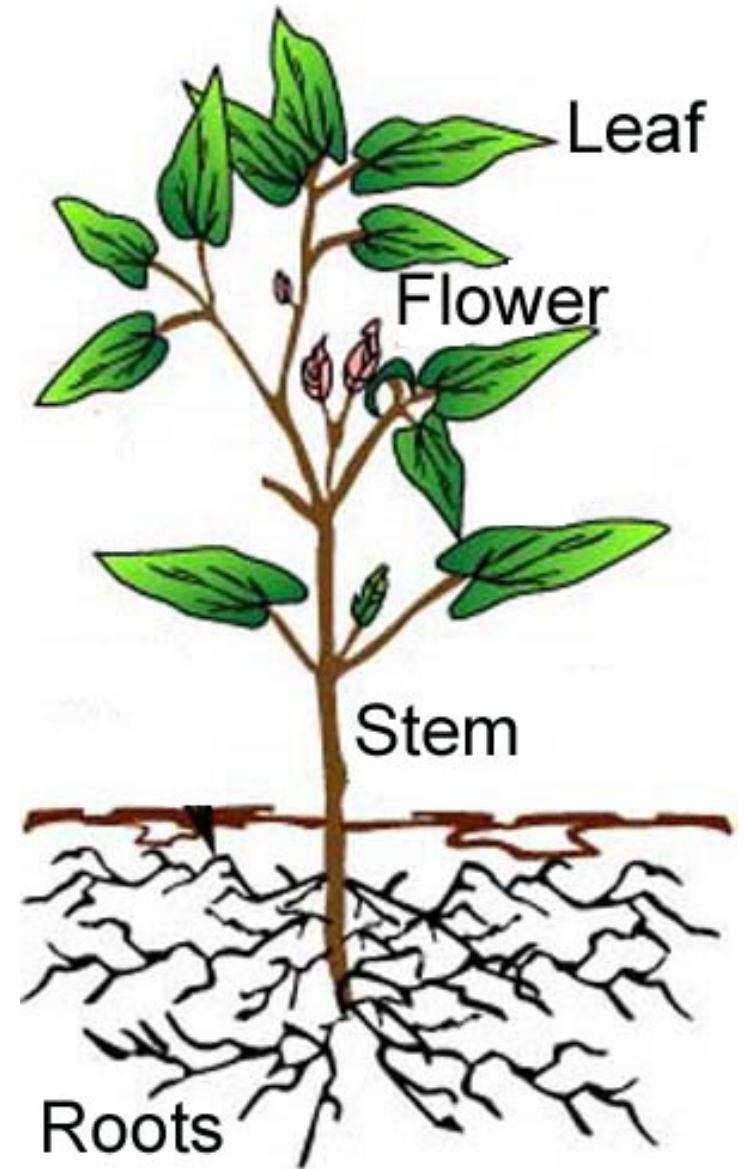
Name the Parts of a Plant

What do you
see?

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Put the Parts Together

- Bottom to Top
 - Roots
 - Stem
 - Leaves
 - Flower
 - Seeds (from flowers)
 - Fruits and Vegetables
 - Some grow from flowers
 - Some vegetables are roots



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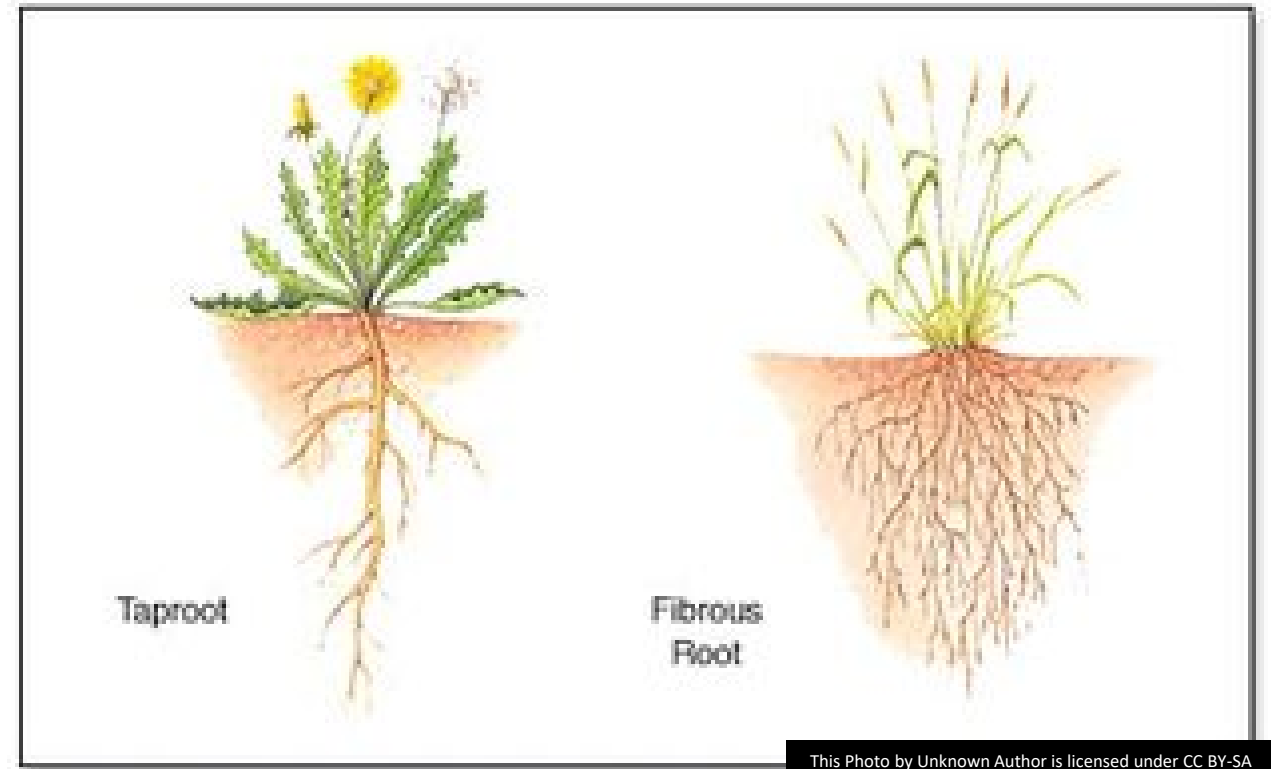
Where are the Roots?

- Roots grow in:
 - The ground
 - Water (hydroponics)
- Roots are the first part of the plant that grows from a seed.
- Roots require water, minerals and oxygen from the soil.



Roots Help Plants Survive

- Roots take up minerals and water to help the plant grow.
- Roots store food created by the plant (starch or sugar).
- Roots anchor the plant and keep it in place.

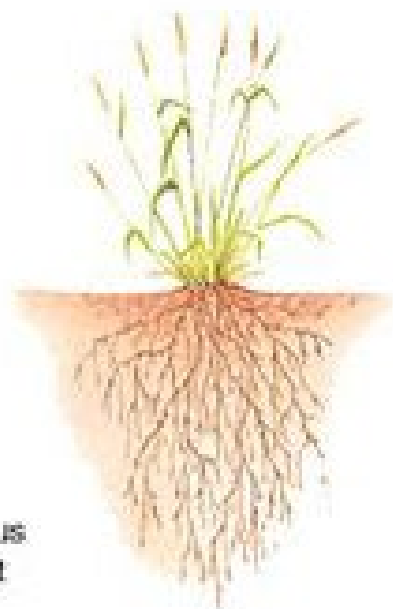


Roots Have Parts

- Taproot: main root; grows straight down.
- Fibrous root: thin root, with very fine roots branching from the stem.
- Some roots are edible (carrots, beets).



Taproot



Fibrous
Root

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Roots Grow in Soil

Soil is the top layer of the earth's crust where plants grow.



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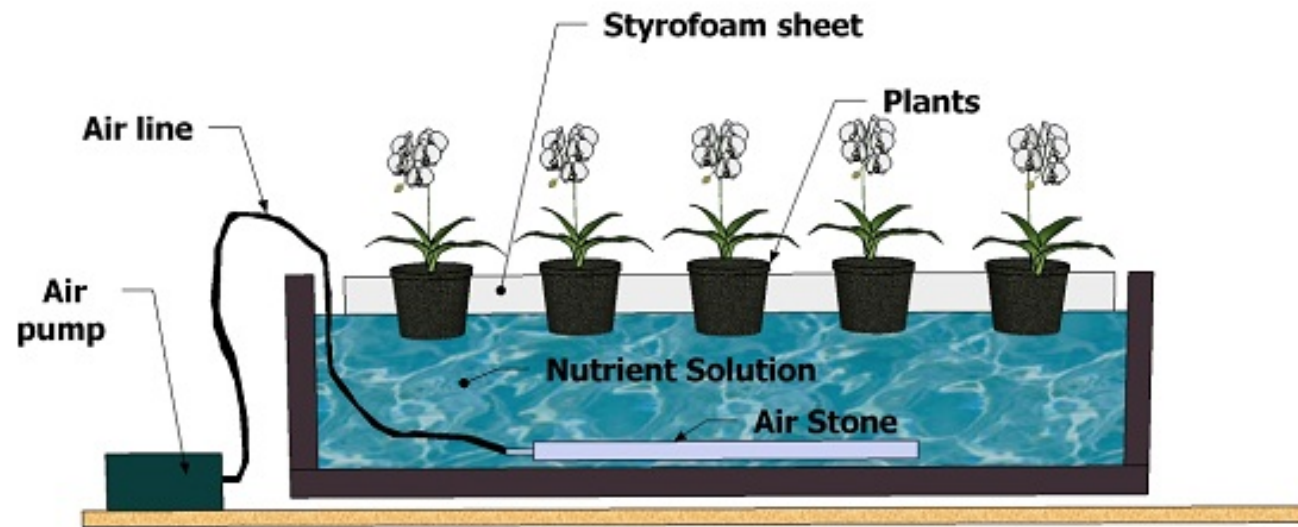
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- Soil contains:
 - Minerals from rocks (45%)
 - Organic matter – plants and animals (5%)
 - Air (25%)
 - Water (25%)
- Soil provides minerals, water and other elements that plants need to grow.

Roots Also Grow in Water Hydroponics

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Typical Water Culture System



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- The plants get the water they need in a hydroponic system.
- Air and nutrients need to be added.

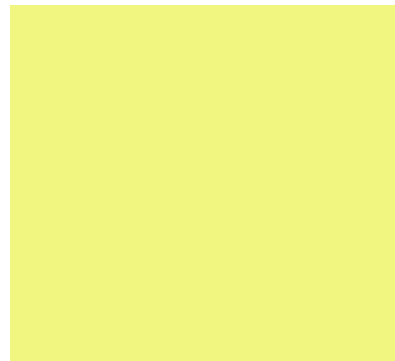
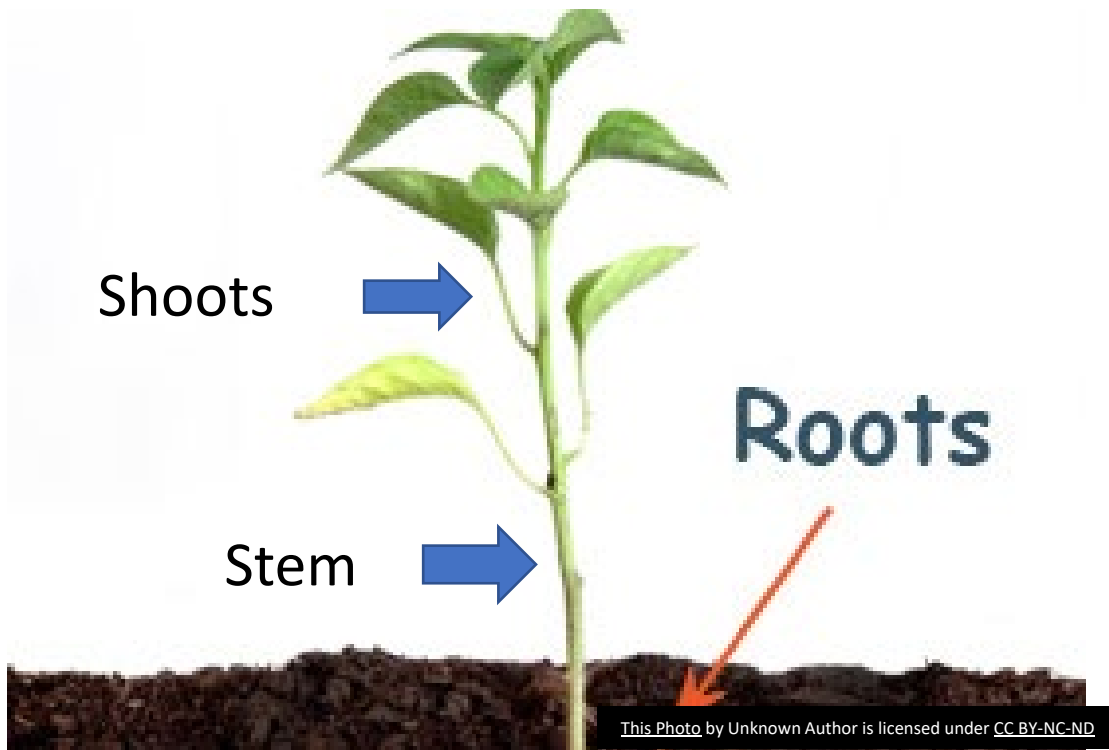
Plants Have Stems



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- Point out the stem in this picture.
 - The stem is often the most prominent part of the plant.
- The stem gives the plant structure and support.
- The stem has shoots which produce foliage or leaves.

Plants Have Stems and Shoots



- Shoots and stems contain tissue that moves water and nutrients up through the plant.
- Shoots support food producing foliage (leaves), and store food (starch) created by the plant.

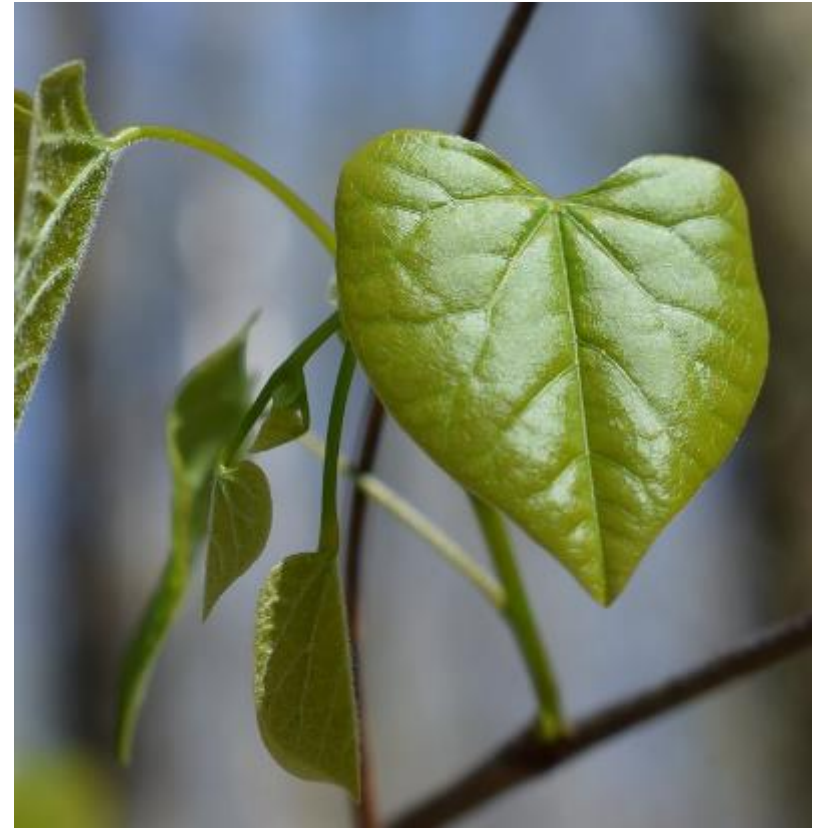
Stems Have Nodes



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- Nodes are portions of a stem that are often enlarged in diameter.
- Note the brown node on the stem in the picture.
- Buds or leaves grow from nodes.



Leaves and Buds Grow From Nodes



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Leaves

- Leaves provide surface area so plants can collect sunlight.
- Leaves have an epidermis, a thin protective layer of cells, on their upper and lower surfaces.
- Leaves have many shapes and colors depending on the variety of plant.

Flowers

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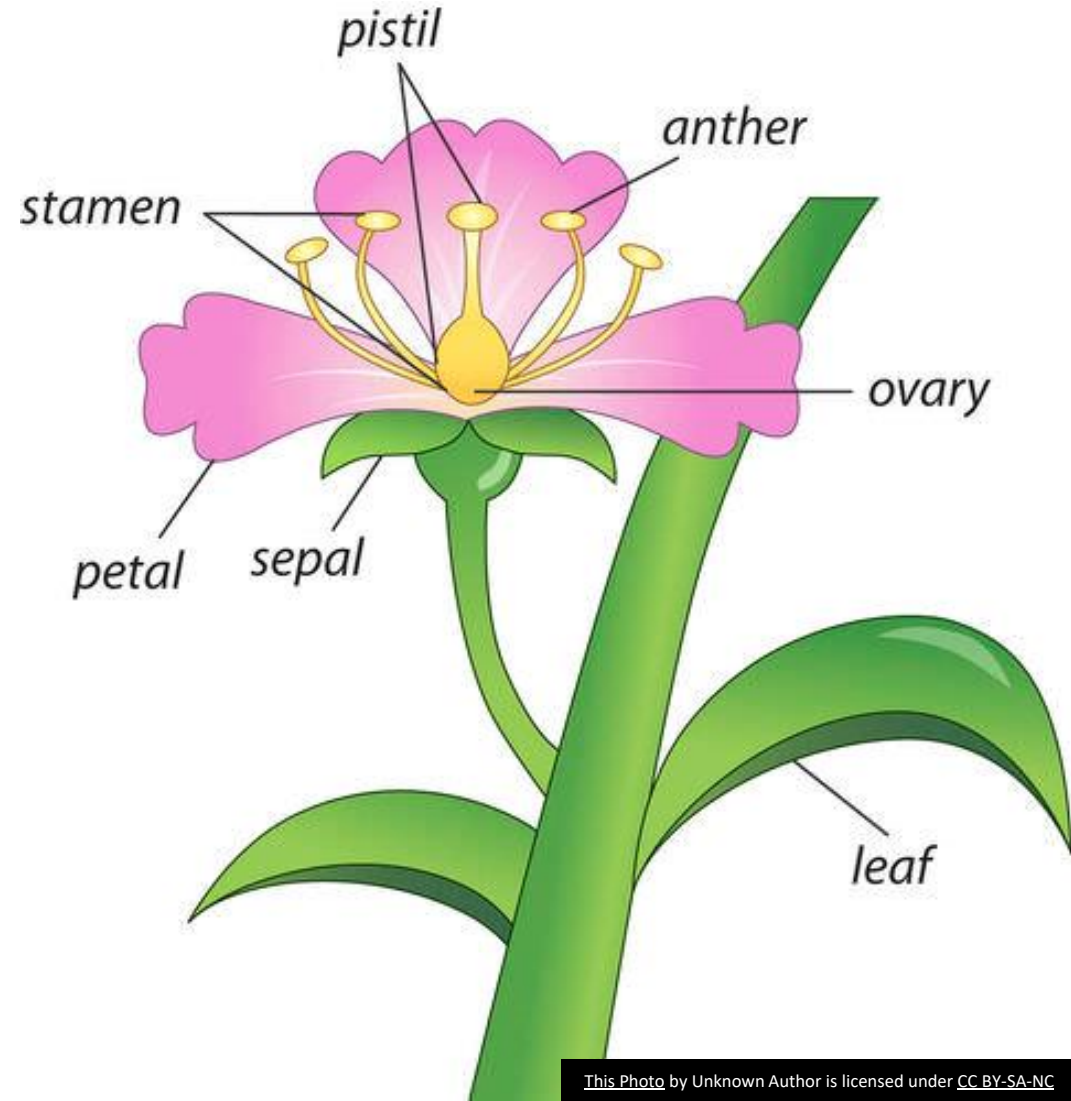
- Flowers are the colorful, showy part of a plant.
- They allow plants to:
 - Reproduce with seeds formed after the flower blooms.
 - Form fruit when the flower is pollinated with yellow, grainy pollen from the stamen in a flower.



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Parts of a Flower

- The stamen has the pollen needed to pollinate the pistil so a fruit or seeds can develop.
- The ovary is where the seeds or fruit develop.



Seeds

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- Seeds contain an embryonic plant in a dormant state with food for germination.
- Definitions
 - Embryo – Young plant inside a seed.
 - Dormant – Seed does not develop until conditions are right.
 - Germination – Process of a seed growing into a plant.



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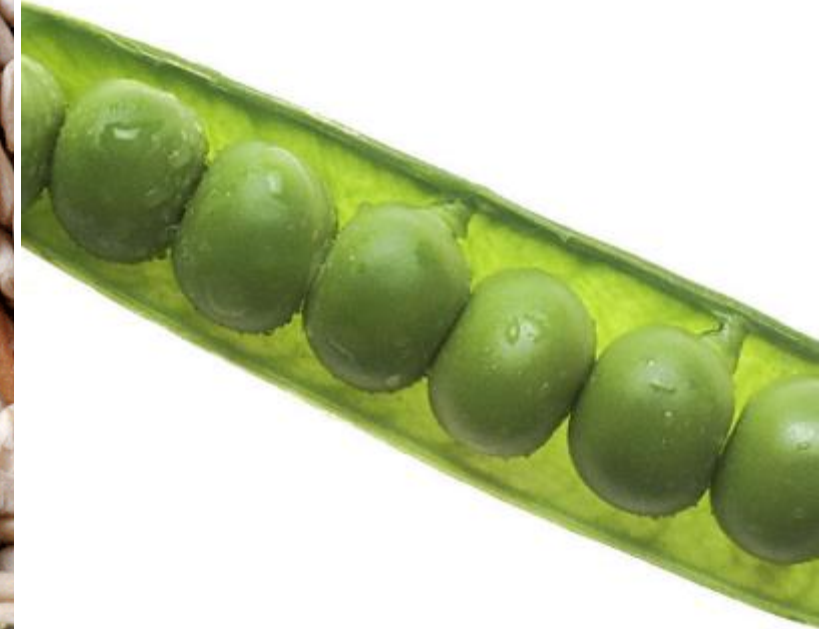
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Magnolia



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Sunflower



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Peas

Examples of Seeds and Seed Pods

Germination Process

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- Seed grows into a plant starting with the roots then two leaves.

Fruits and Vegetables

- Many fruits develop from flowers.
- The picture to the right shows the flower at the tip of the zucchini squash.
- Pollen from the stamen in a flower is needed for this fruit to develop.

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Root Vegetables

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- Some vegetables are edible roots.
- Name some root vegetables.



Video: Seed Germination Process

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- Video: [Seed Germination Process](#)



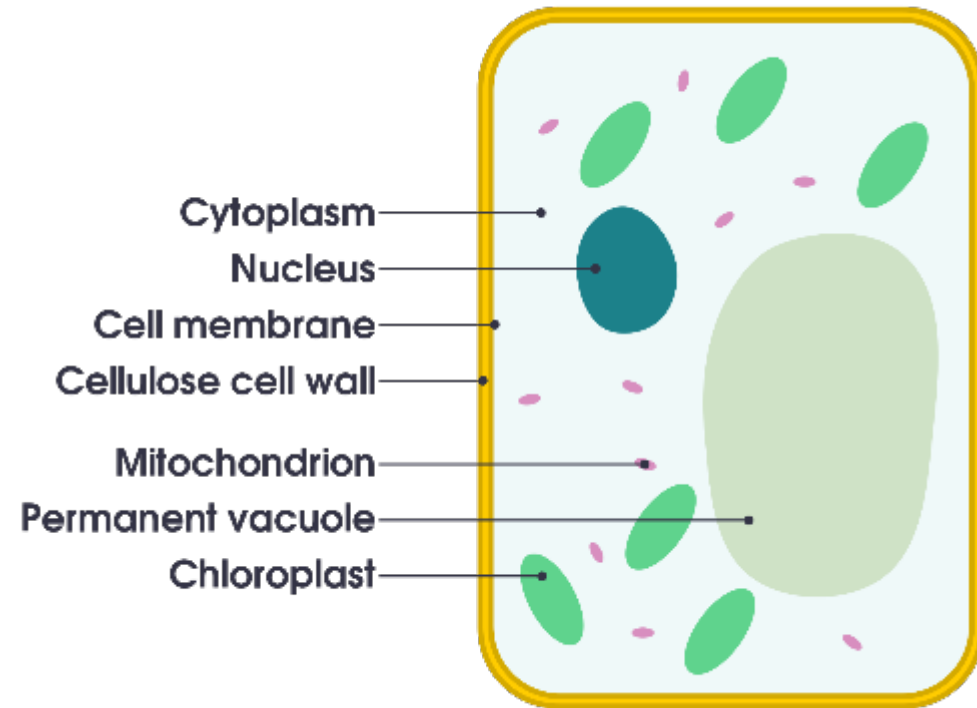
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Science Vocabulary

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Cells

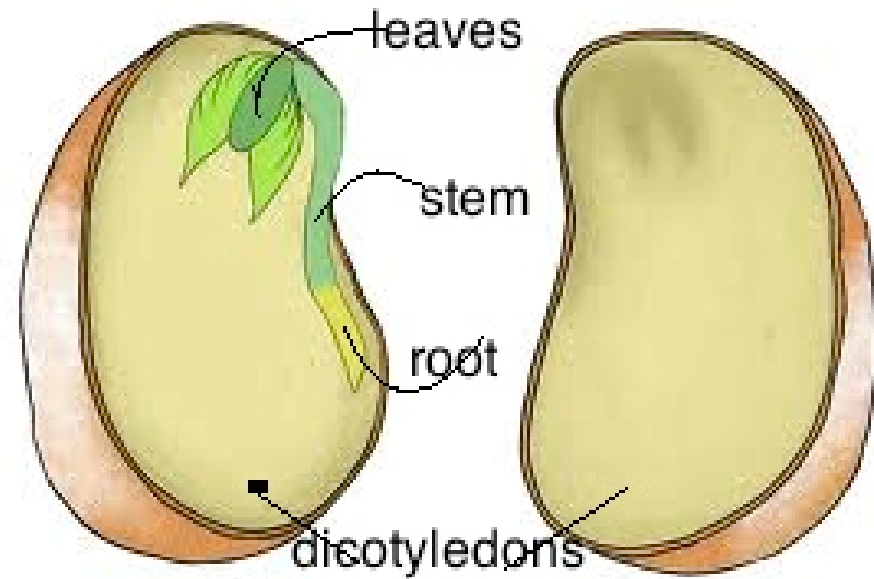
- Cells are the basic unit of life.
- A cell can only be seen in a microscope.



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Embryo

The young plant inside a seed.



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Hydroponics

- Growing plants in water and nutrients instead of soil.
- The picture shows towers with plants growing in water.



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Minerals

- **Minerals:** A solid material formed by natural events from rocks
 - Not from plants or animals
- **Minerals support plant growth:** They provide nutrition



Nutrition

- Nutrition is something used by a living thing to grow and survive.
- Plants get minerals from the soil to help them grow.



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Oxygen

Oxygen is a substance in the air that supports plant life.



Reproduce

- Reproduce: Have a baby or offspring.
- Plant seeds germinate and grow into new plants.



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Soil

Soil is the loose upper layer of the Earth's surface where plants grow.

Soil consists of organic matter (decayed plants and animals) and bits of rocks and minerals (nutrients for plants).



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Review - Discussion

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What did you learn about these plant parts today?

Review Questions

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- How do the plant roots help plants survive?
- Name the part of a plant that creates a new plant (plant reproduction).
- What yellow grainy substance is needed by the flower to grow a fruit?
- What plant parts give the plant support and structure?
- What plant parts help move water and nutrients through the plant?
- What grows from a node on a stem?
- What plant part helps the plant take in sunlight?
- What does soil provide that plants need?

Application

- Take a walk around a garden with an adult and identify 5 different leaf shapes. You can use the pictures to the right to help with identification.





Extension

Some plant cuttings can grow roots in water!

- Have an adult take you to a garden where you can cut a flower and stem from a plant. Have the adult cut the stem 4 to 5 inches long. Put the stem in water for a week to 10 days and see if roots grow. Geraniums and roses can grow roots in water and then be planted in the ground. Maybe you can find another type of flower that will root in water!

Next Generation State Standards

- **Third Grade**

- LS1.B: Growth and Development of Organisms**

- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)

- LS3.A: Inheritance of Traits**

- Many characteristics of organisms are inherited from their parents. (3-LS3-1)

- LS3.B: Variation of Traits**

- Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)

Next Generation State Standards - Continued

- **Fourth Grade**

LS1.A: Structure and Function

Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)

- **Fifth Grade**

LS1.C: Organization for Matter and Energy Flow in Organisms

Plants acquire their material for growth chiefly from air and water. (5-LS1-1)

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)

Resources

- Pittenger, Dennis R., California Master Gardener Handbook, Second Edition, 2015
- California Foundation for Agriculture in the Classroom Lesson
- <http://marinmg.ucanr.edu/files/187894.pdf>
- Images: Creative Commons
- Image: Education.com <https://www.education.com/lesson-plan/parts-of-a-plant/>
- Image: <https://www.dkfindout.com/us/animals-and-nature/plants/parts-plant/>
- Video: Seed Germination Process
<https://www.youtube.com/watch?v=eFGc2hEgjaM>
- Video: Watch and Learn <https://watchandlearn.scholastic.com/videos/animals-and-plants/plants/what-are-plants.html>

Gardening Questions?

- Email or Call the UCCE Master Gardeners of Riverside County
- Email Helpline
 - anrmgriverside@ucanr.edu
- [Riverside Master Gardeners Website](#)



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