

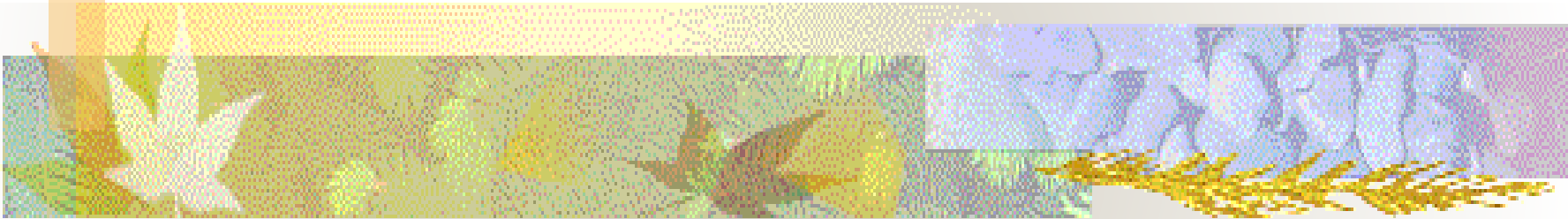


# Warm-up 14

Day 15      May 5/6

- List as many uses for plants as you can think of.

# Unit: Introduction to Plant Science





# Why are plants important?

- Provide oxygen
- Prevent famine
- Crops
  - Cereal Grains - wheat, rice
- Ornamental
  - Landscape design - indoors and outdoors



# How are plants classified?

- Nonvascular: have no vessels, no roots, no stems or leaves. (spores)
  - Examples: Mosses & Liverworts
- Vascular: have vessels to transport food and water. They have roots, stems and leaves.
  - Example: Grass, corn, trees, flowers, bushes
  - These are then broken down into Gymnosperms and Angiosperms



# Gymnosperms

- "naked seeds"
- cone bearing plants (seeds grow on cones)
- needle like leaves
- usually stay green year round
- wind pollinated
- Examples: pine trees & evergreens



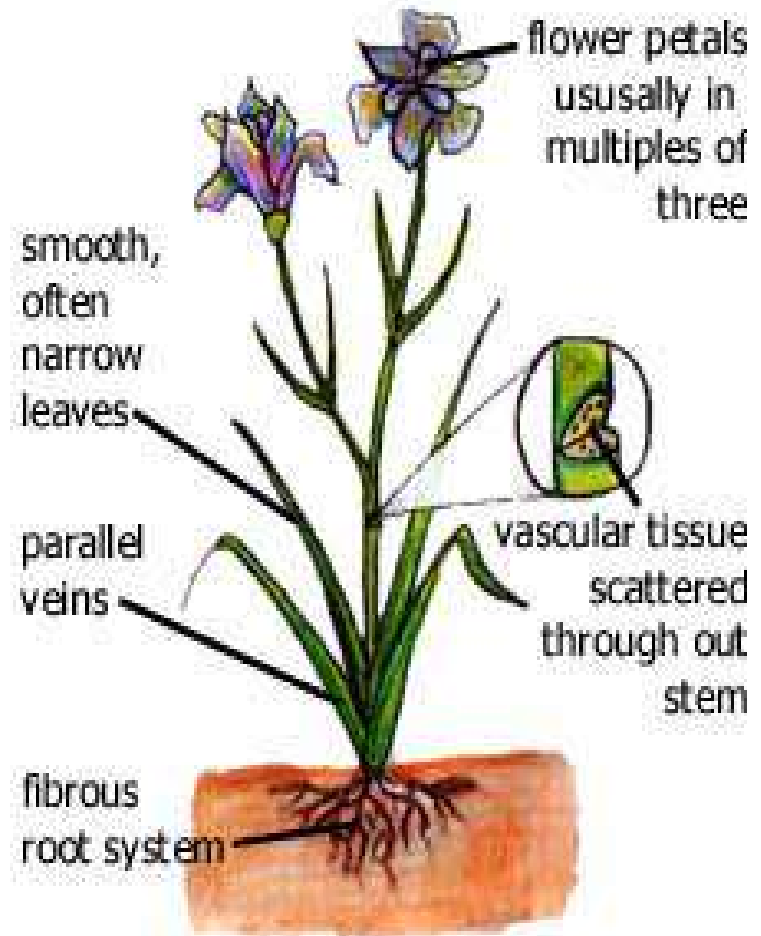
# Angiosperms

- flowering plants
- seeds are enclosed in a fruit
- most are pollinated by birds & bees
- have finite growing seasons
- Examples: grasses, tulips, oaks, dandelions
- Divided into two main groups:  
Monocots & Dicots

# What is a Monocot?

- Has one seed leaf (cotyledon)
- Parallel leaf veins
- Fibrous roots
- Flower parts in 3's
- Vascular tissue scattered
- Examples: most fruits, flowers, palms

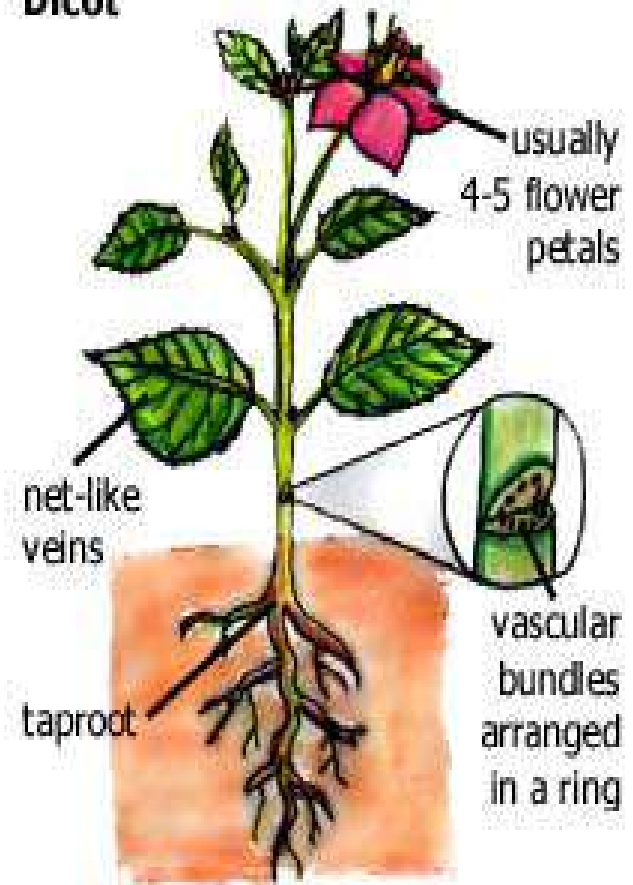
## Monocot



# What is a Dicot?

- Has two seed leaves (cotyledons)
- Network of veins in leaves
- Primarily tap roots
- Flower parts in 4's or 5's
- Vascular tissue in rings
- Examples: onion, corn, wheat

Dicot







# Concept Map

- Create a Plant Classification Concept Map using the notes thus far.
- Include details about each type of classification (descriptions)
- Colorful
- Neat



# How else are plants classified?

## ■ By their life cycle

### ■ **Annual**

- A plant that germinates, grows and dies in one growing season
- Examples: radishes, corn, many wildflowers

### ■ **Biennials**

- A plant that germinates, grows and dies in two growing seasons
- Examples: cabbage, beets, carrots

### ■ **Perennials**

- A plant that germinates, grows and dies over more than a two season period (3 or more)
- Examples: Boxwood Shrub, Palo Verde, Mesquite



## Warm-up 15

Day 16 May 7/8

- Describe the classification of plants from the largest group to most specific. (think about the map we made)
- If you were looking at a flowering plant, how would you know if it was a monocot or a dicot? Explain.



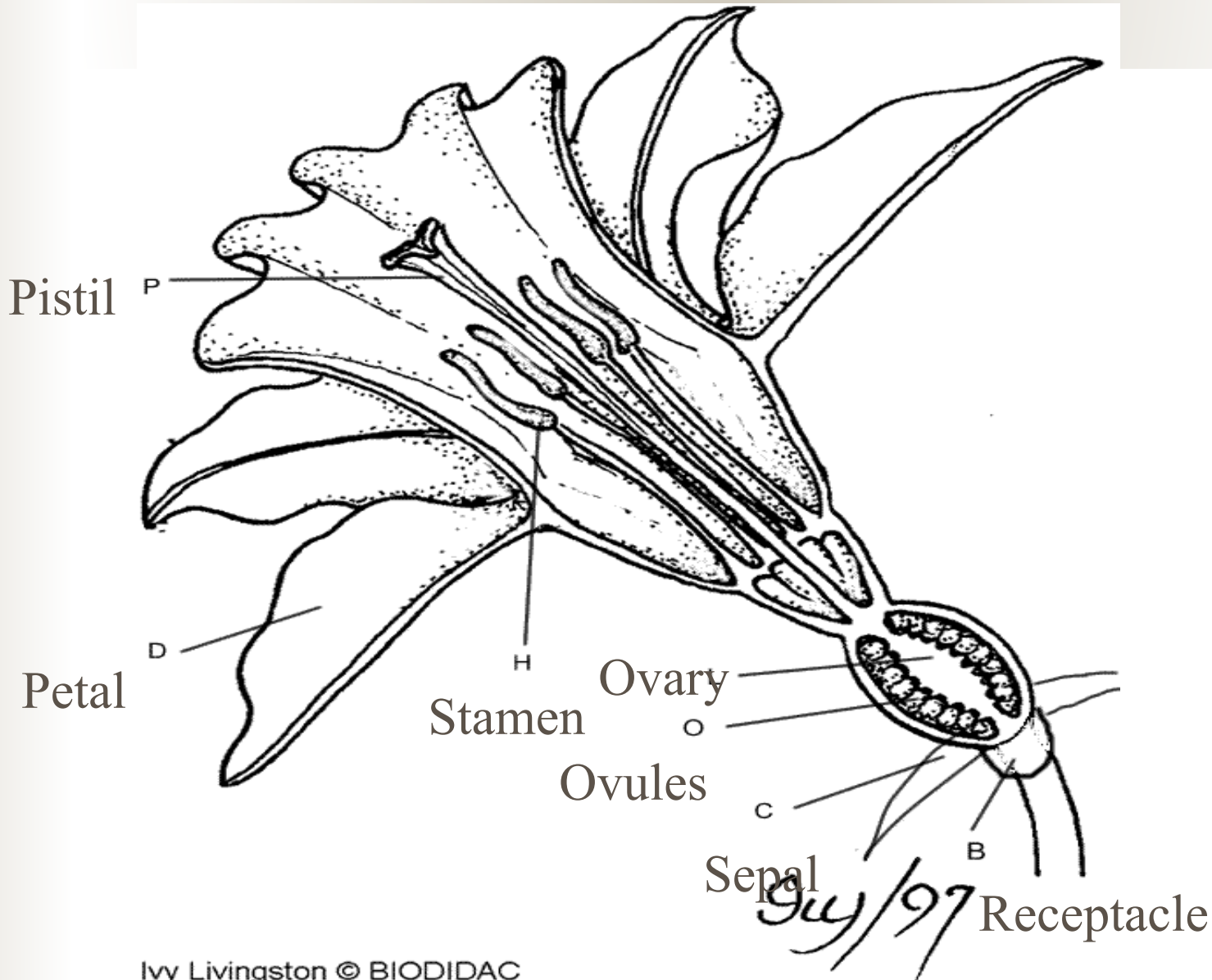
# What are the major parts of a plant?

- Flower
- Leaves
- Stems
- Roots



# Why are flowers important?

- Reproductive organ of the plant
- Flowers are usually both male and female
- The male part of the flower is the STAMEN
- The female part of the flower is the PISTIL
- See your coloring sheet for more detail on flower anatomy



Pistil P

Petal D

Stamen H

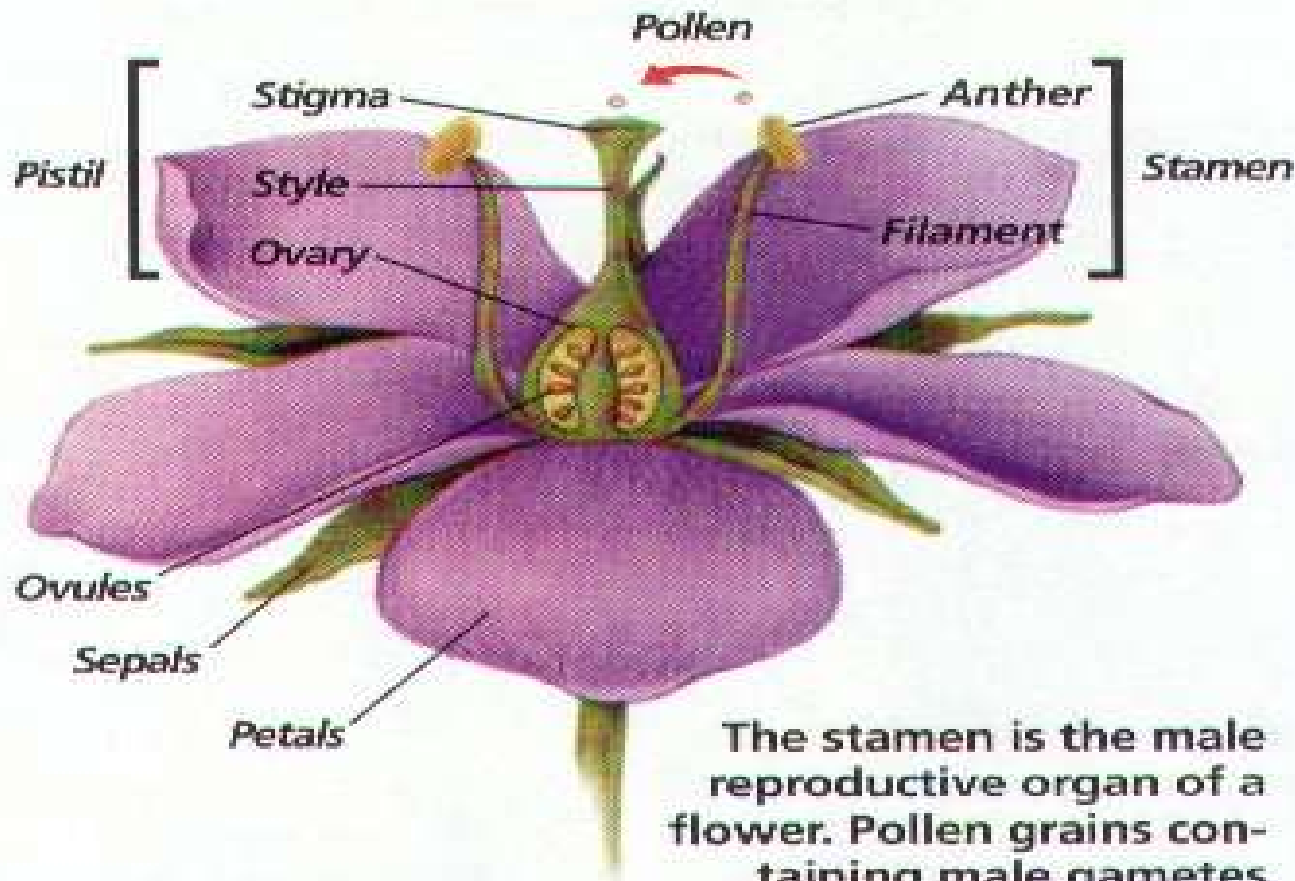
Ovary O

Ovules C

Sepal B

Receptacle

The pistil is the female reproductive organ. Inside the ovary at the base of the pistil are the ovules. Ovules contain the female gametophyte generation of the plant. Female gametes—egg cells—form in each ovule.



The stamen is the male reproductive organ of a flower. Pollen grains containing male gametes form inside the anther.



# How do plants reproduce?

- Pollen is produced by the stamen.
- Pollen moves away from the plant by the wind or other pollinators (birds & bees)
- The pollen lands on the pistil of another plant and fertilizes the eggs within the ovary

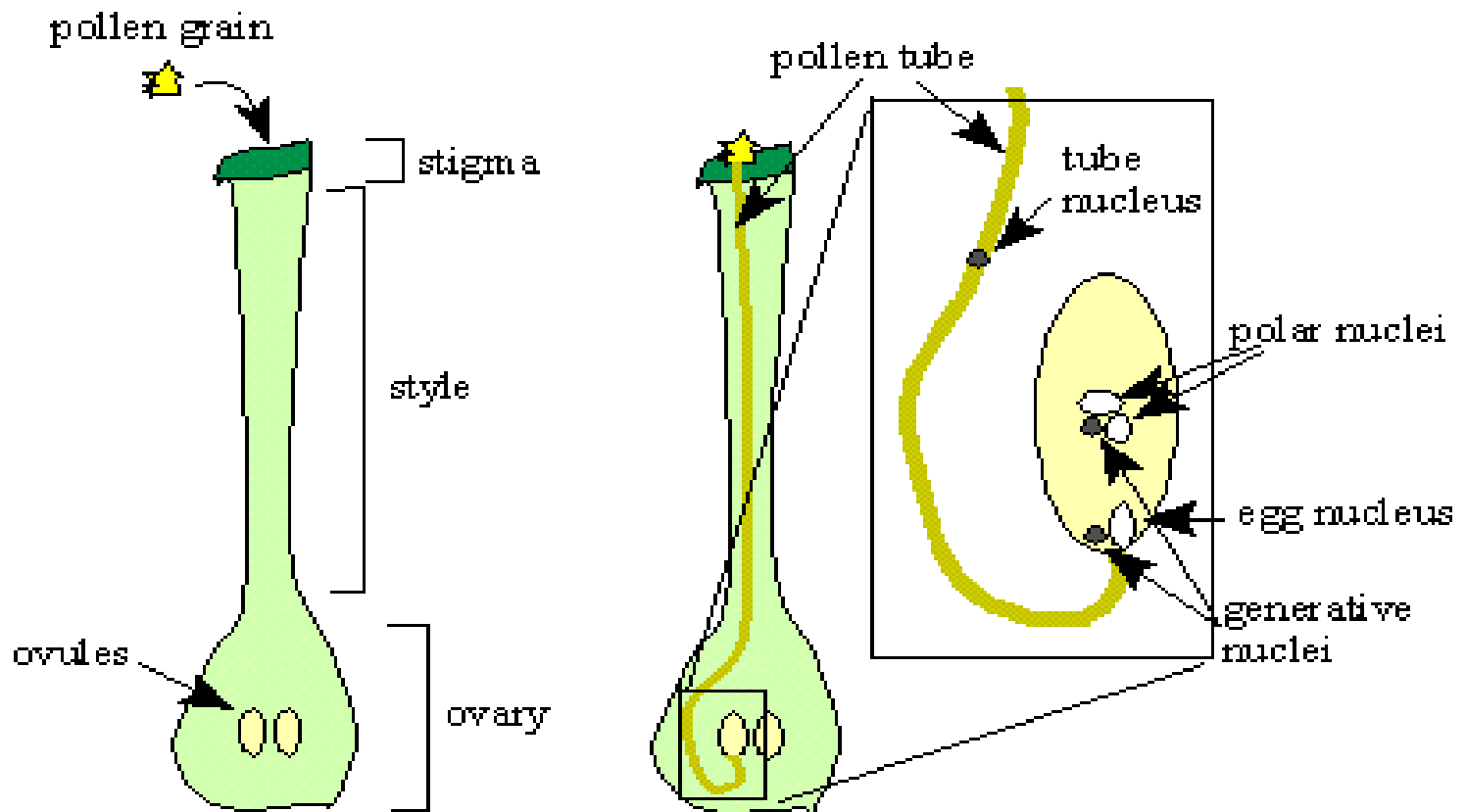




# How do plants reproduce?

- The flower petals fall off, the ovary develops into a FRUIT that encloses the seeds
- Fruits are dispersed in a variety of ways (wind, animals)
- Fruits are not always edible, anything with a seed inside can be considered a fruit (helicopters, acorns, dandelions)

# Pollination in Angiosperms





# Reproduction in Gymnosperms

- Not all plants have flowers
- Cones
  - Female cone has female sex cells and tend to be large
  - Male cone has male sex cells and tend to be small
- Pollination
  - Wind carries pollen to the female cone
  - Ovules and pollen come together to form a seed.
- Cone falls and opens



# Non-vascular Plants

## ■ Mosses

### ■ Reproduction

- Gametophytes (sex cells)
- The male cells are splashed with water and they swim to female cells.
- They mature to form spores



# Asexual Reproduction in Plants

- Many plants can clone themselves, a process called VEGETATIVE PROPAGATION
- strawberry plants and other vine like plants send out runners, which grow into new plants
- some plant clippings will grow into new plants
- a Potato will grow into a new plant



# Why are leaves important?

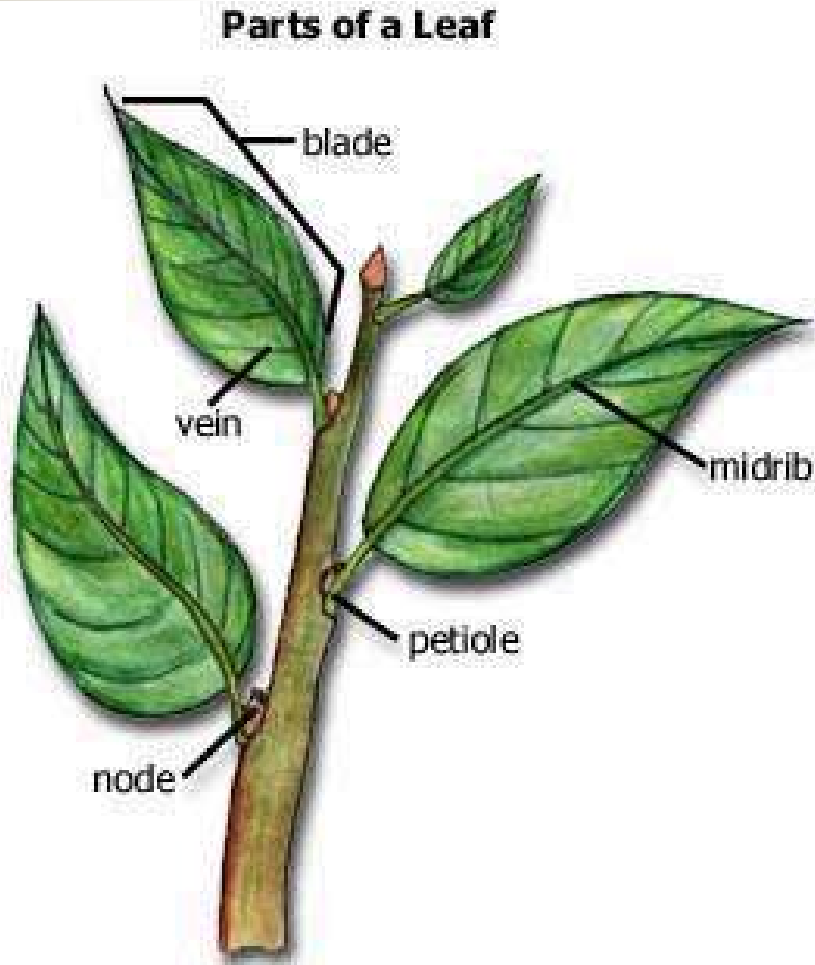
- Leaves provide the food needed for a plant to survive
- Leaves perform Photosynthesis



# What is photosynthesis?

- Leaves take in water, carbon dioxide and in the presence of light produce oxygen and carbohydrates (sugar)
- $\text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{light}} \text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6$

# What are the parts of a leaf?



- Blade: helps with collecting the sun's rays
- Veins: transport water and nutrients
- midrib: central vein
- Petiole: point of attachment to the stem
- Nodes: will grow if the petiole is removed



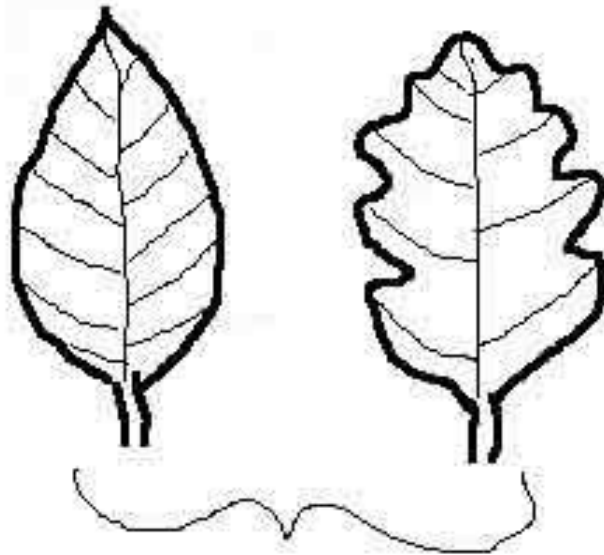


# What are the parts of a leaf?

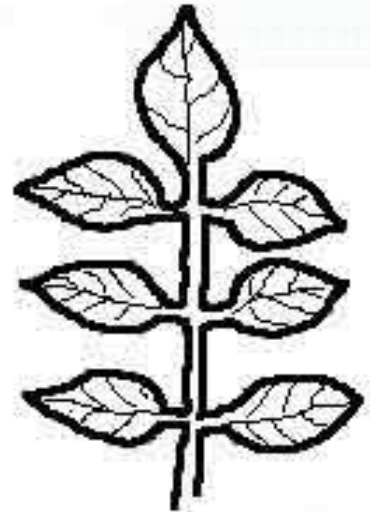
- Stomata: pores within the leaf that open to let CO<sub>2</sub> in and O<sub>2</sub> out. Guard cells open and close.
- Cuticle: waxy covering on leaf that prevents water loss

# What are the two types of leaves?

- Simple
- Compound



**Simple**



**Compound**

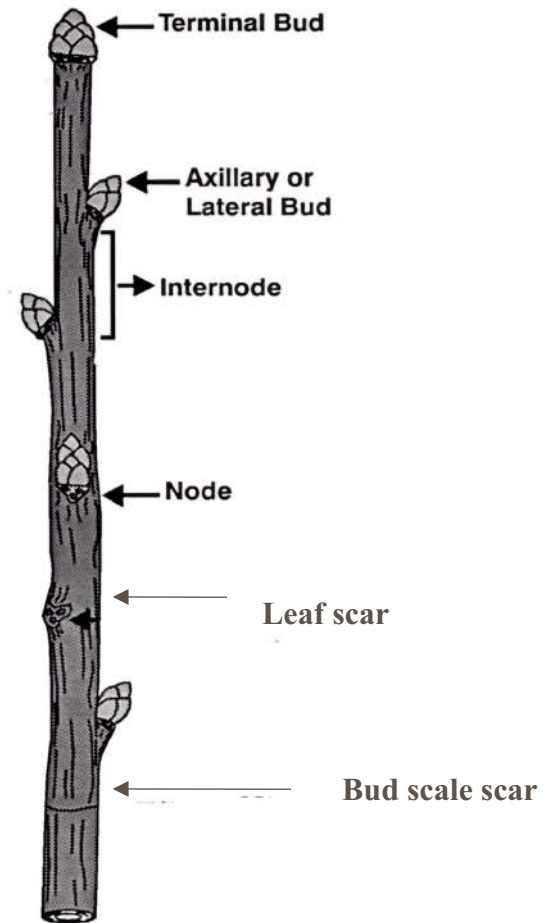


# Why is the stem important?

- Provide support
- Transport water through xylem
- Transport nutrients through phloem
- Two types of stems: herbaceous and woody

# What are the parts of a stem?

- Terminal bud: point of new growth
- Lateral bud: point of new growth
- Internode: in-between points of growth



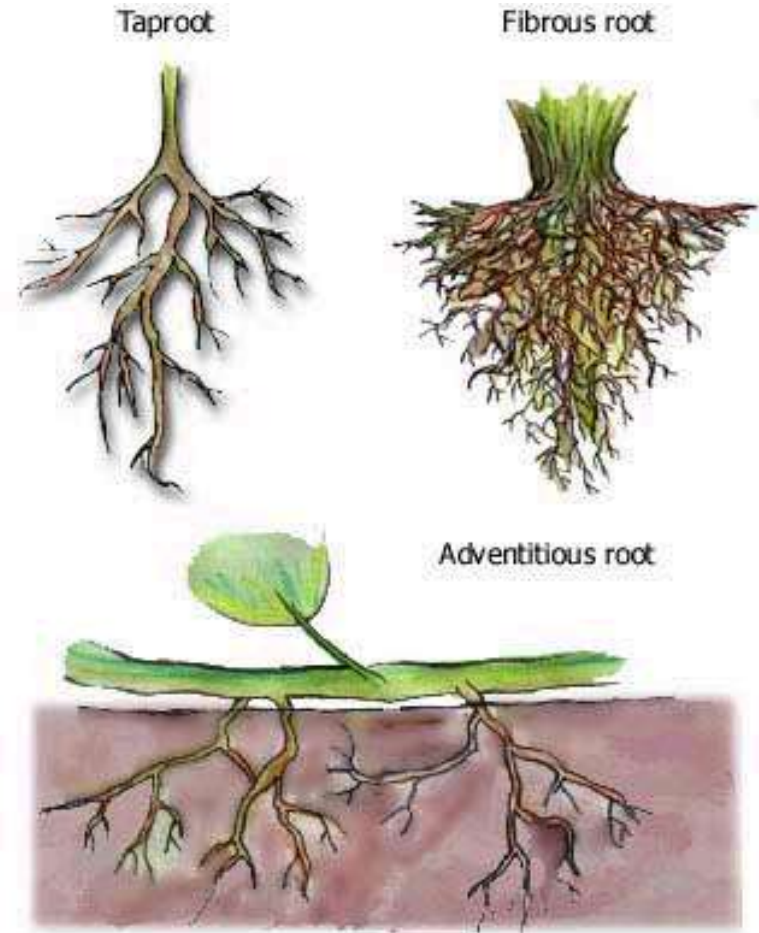


# Why are the roots important?

- Provide anchor for the plant
- Water and minerals are absorbed
- Movement of water up to leaves is influenced by **TRANSPIRATION**

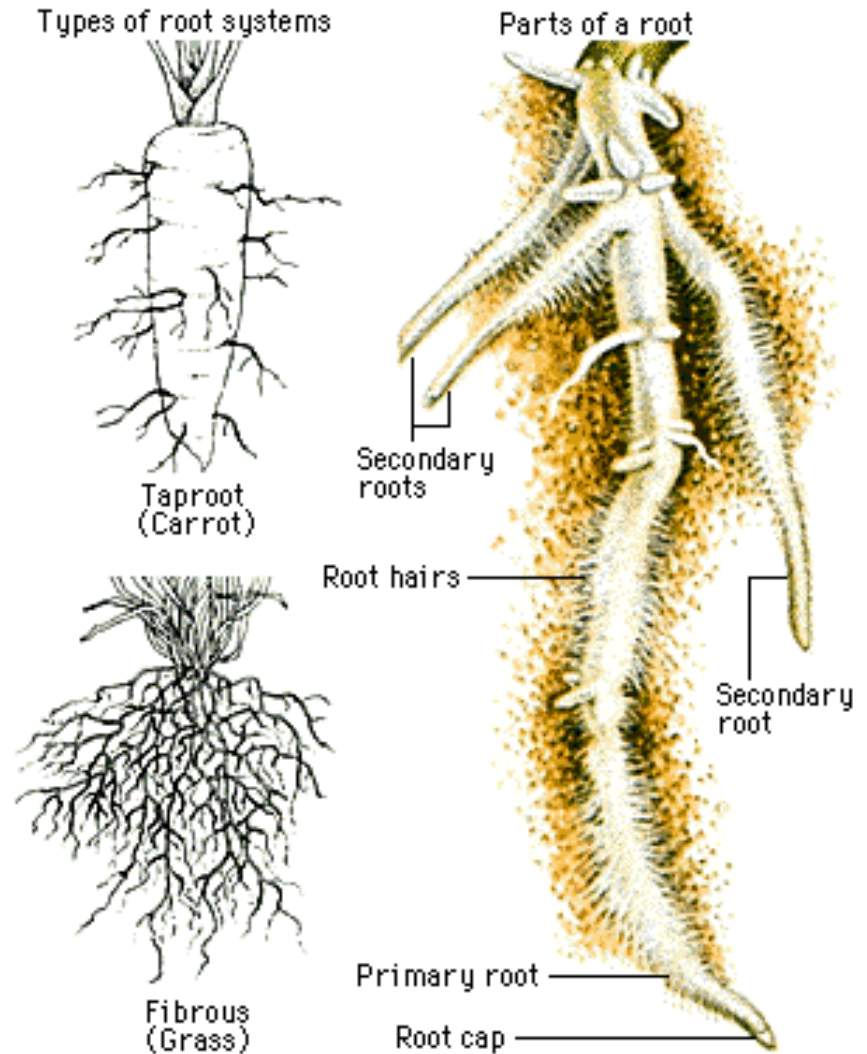
# What are the three types of roots?

- Taproot: absorbs water deep in the ground - carrots, pecan trees
- Fibrous roots: roots stay close to top soil - tomato, bedding plants
- Adventitious: helps plant climb or anchor - ivy, strawberries, some grasses



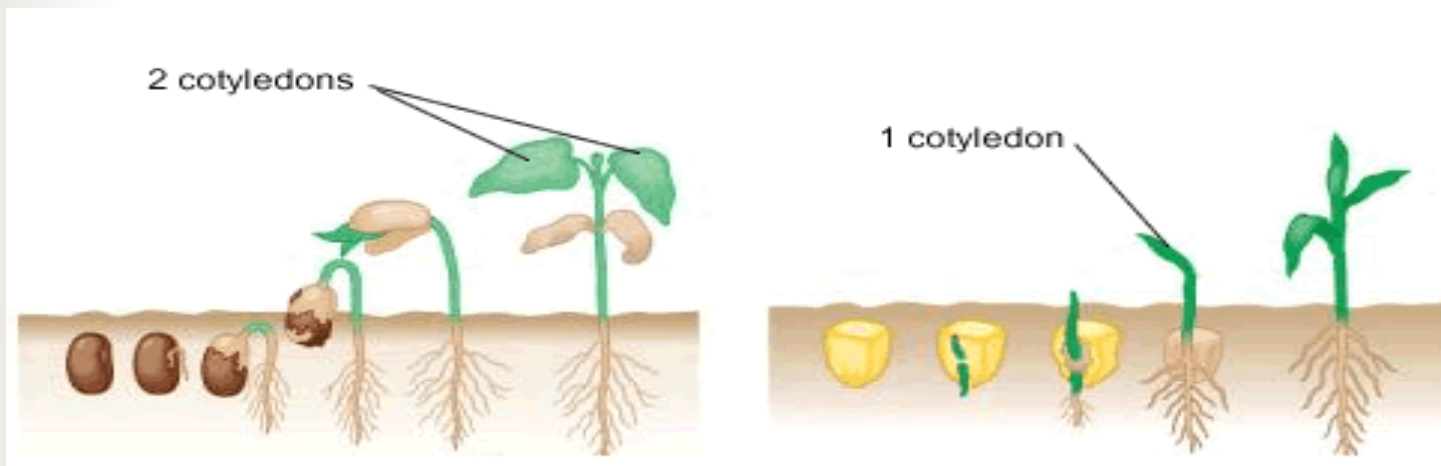
# What are the parts of a root?

- Primary root: the first root to grow
- Secondary roots: branch off of the primary root
- Root hairs: these account for 95% of water absorption



# How does a plant grow?

- Germination occurs when a seed sprouts (usually caused by changes of temperature and moisture)
- Monocots have 1 seed leaf (cotyledon),  
Dicots have 2 seed leaves







# How do plants respond to the environment?

- Response to a stimulus in the plant's environment
  - Gravitropism – gravity tells the plant where the ground is
  - Phototropism – responding to sunlight
  - Hydrotropism – responding to water
  - Thigmotropism – responding to touch
  - Chemotropism – responding to chemicals