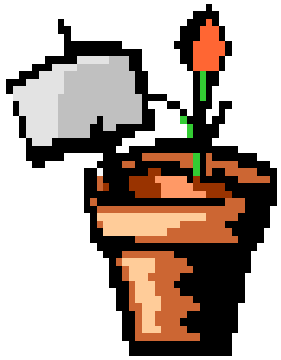
# Seed Plants



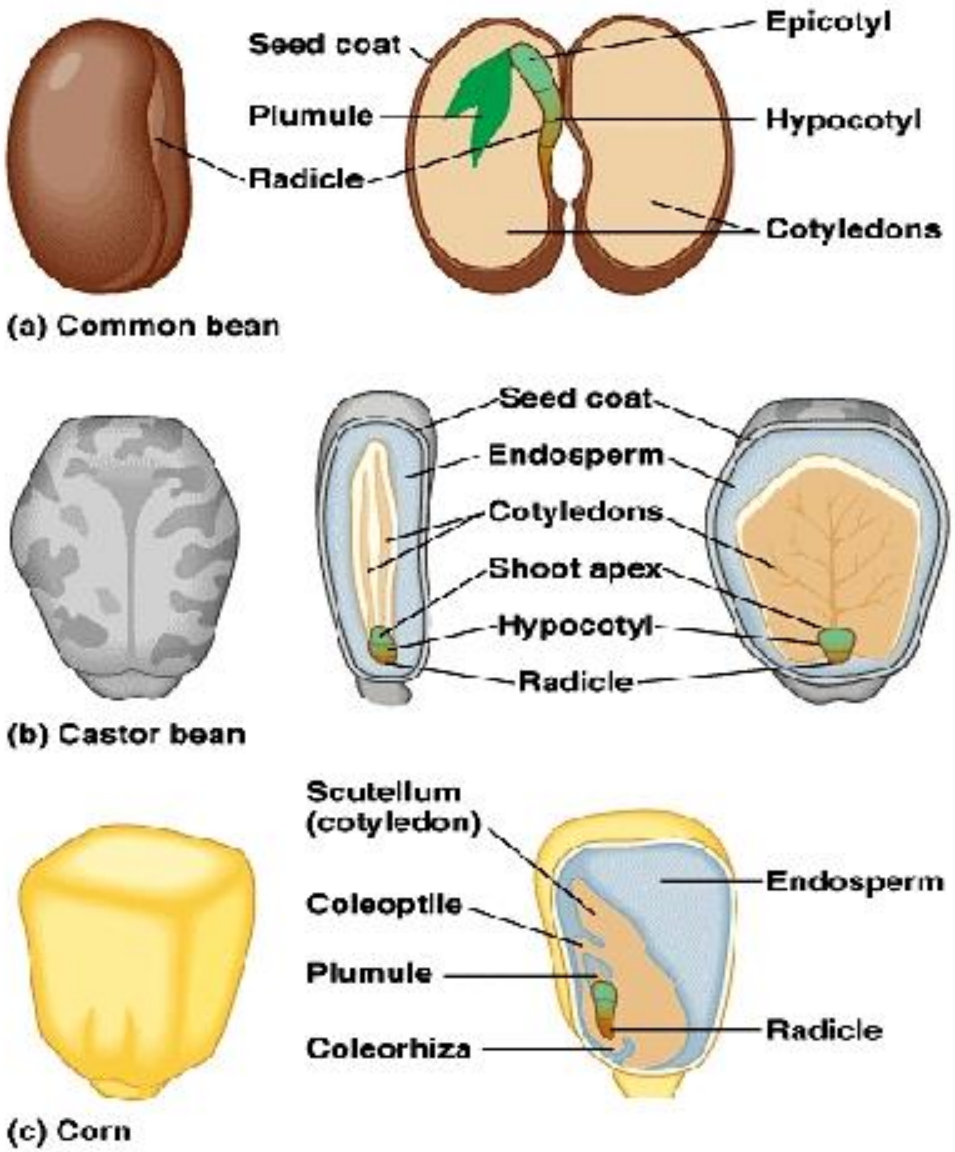
# What is a seed?

1. A seed is an embryo with a food supply enclosed in a tough coat.


2. Seed plants don't require water for fertilization due to pollen production

3. There are 2 types of seed bearing plants- gymnosperms and angiosperms

# Seed Structure

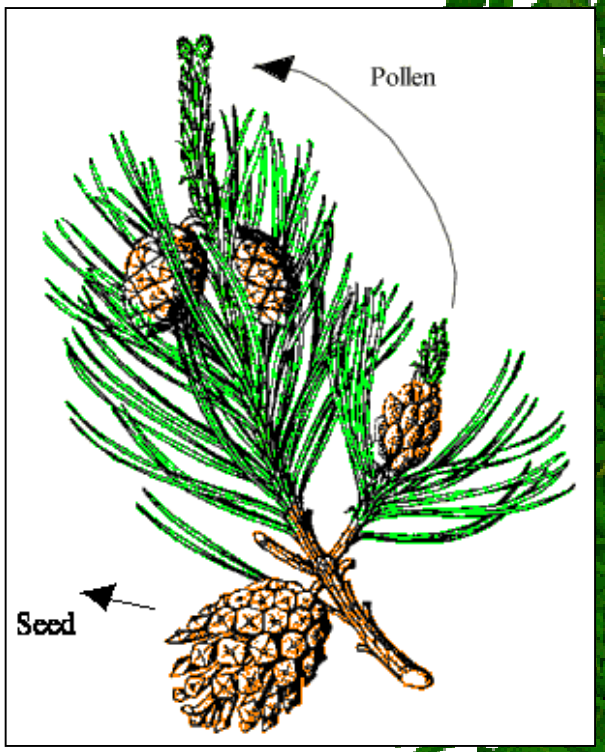


4. **Gymnosperms**;

a. Non flowering vascular plants

b. Example: conifer

1. <u>Cone bearers</u>: seeds found on scales of cone
2. Needle like leaves with tough cuticle
3. Shallow roots
4. Bark to reduce water loss
5. <u>Evergreens</u>: retain leaves all year
6. Male cone produces pollen
7. female cone produces seeds

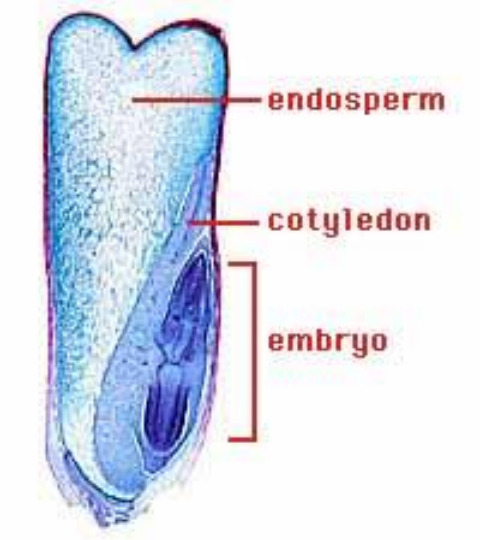


5. **Angiosperms**: flower producing plants; most successful plant group on earth

- Two groups: monocots & dicots

# a. Monocots

1. Have one <u>cotyledon</u>: food storage organ of plant embryo
2. Parallel veins in leaves
3. Vascular bundles are scattered
4. Netlike roots
5. Examples - grasses, lilies, corn




grasses

lilies

corn

# b. Dicots

1. Have 2 cotyledons
2. Netlike veins
3. Vascular bundles in a circle
4. <u>Taproots</u>: anchor firmly in the ground
5. Examples: oak , poplar, holly, daisies, and roses

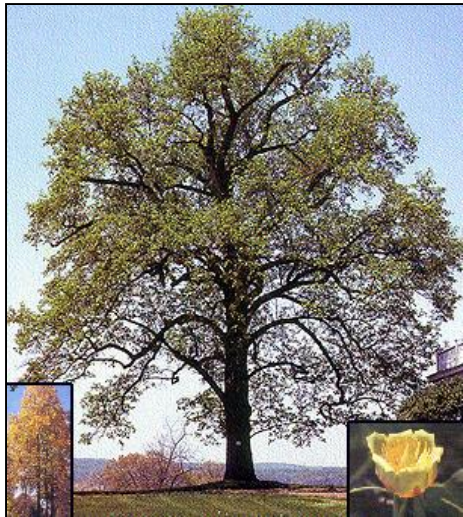
roses

Oak

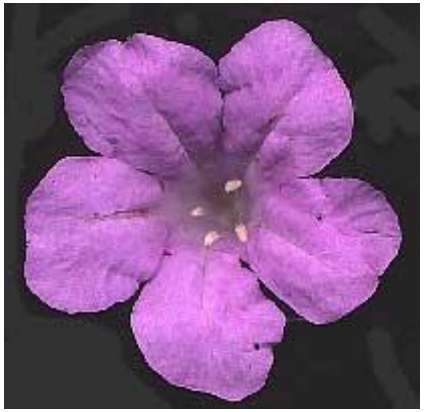
holly

poplars

daisies



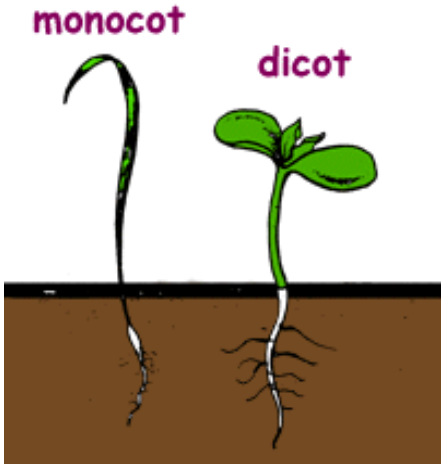
Monocots – flower parts in multiples of three



Dicots – 4 or 5 flower parts, or multiples of 4 or 5

Classification by # of seed leaves (cotyledons):

seeds sprout 1 leaf – monocot,
seeds sprout 2 leaves – dicot



6. Life spans

   a. annuals: live only 1 year, corn, wheat, peas

   b. biennials- life span of 2 years, carrots, beets

   c. perennials- life span of several years, leaves die back to soil, daylilies, hydrangea, shrubs, maple trees

| Embryos | Leaf venation | Stems | Roots | Flowers |
| --- | --- | --- | --- | --- |
| **Monocots** | | | | |
|  One cotyledon |  Veins usually parallel |  Vascular bundles usually complexly arranged |  Fibrous root system |  Floral parts usually in multiples of three |
| **Dicots** | | | | |
|  Two cotyledons |  Veins usually netlike |  Vascular bundles usually arranged in ring |  Taproot usually present |  Floral parts usually in multiples of four or five |

# Quiz 5

Put your notes away and get ready for your quiz,

# Quiz 5

1. ____ is an embryo with food supply and tough coat.

   a. spore  b. seed  c. sporangia

2. Cone bearers and evergreens are _____.

   a. gymnosperms  b. angiosperms  c. gametosperm

3. Dicots have ___ cotyledons.

   a. 2  b. 3  c. 5

4. Seeds that sprout one leaf (flower part mult of 3)?

   a. dicot  b. monocot  c. neither

5. ___ are flowering plants.

   a. angiosperms  b. gymnosperms  c. ferns

# Quiz 5

1. ____ is an embryo with food supply and tough coat.

   a. spore  b. seed  c. sporangia

2. Cone bearers and evergreens are _____.

   a. gymnosperms  b. angiosperms  c. gametosperm

3. Dicots have ___ cotyledons.

   a. 2  b. 3  c. 5

4. Seeds that sprout one leaf (flower part mult of 3)?

   a. dicot  b. monocot  c. neither

5. ___ are flowering plants.

   a. angiosperms  b. gymnosperms  c. ferns

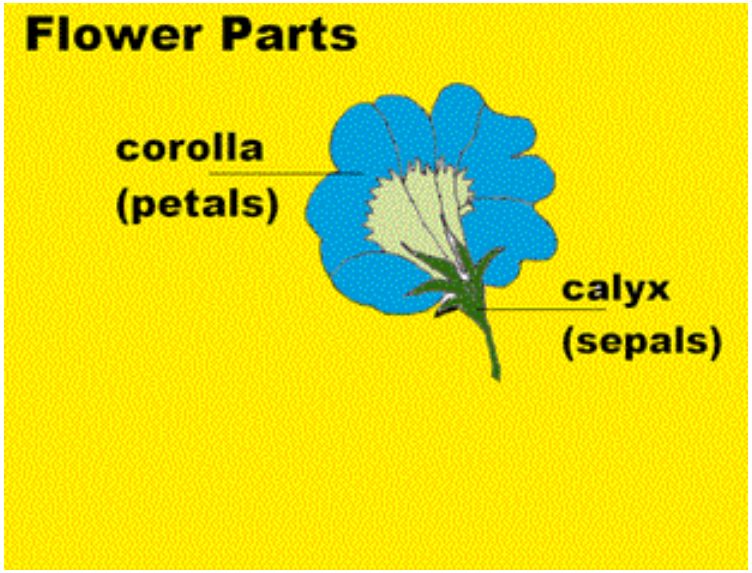
# JOURNAL #6

- Compare /Contrast Monocot and Dicot.

| Monocot | Dicot |
| --- | --- |
| 1 cotyldon | 2 cotyldon |
| Veins parallel | Veins netlike |
| Vascular bundle scattered | VB centered |
| Fibrous roots | taproot |
| Mult of threes | Mult 4 or 5 |


Flowers

1. Functions- reproductive organ of the plant
2. Structures-
   a. petals- colored portion of the flower
   b. Sepals- outermost portion of the flower




Flowers are colorful to attract pollinators such as insects and birds

C. Female parts-Pistil

1. Stigma- sticky top of pistil for pollen to be deposited
2. Style- stalk connecting stigma to ovary
3. Ovary- contains ovule, where eggs are found
4. Ovule- will become seeds if fertilized

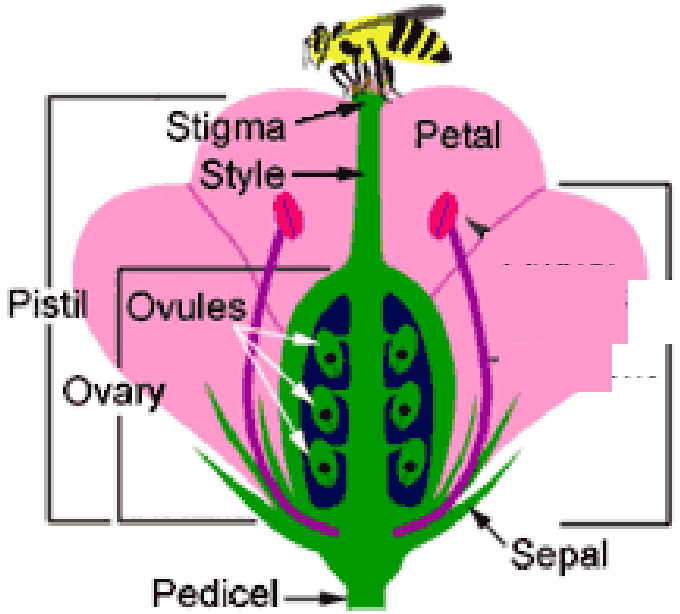



**Figure 19.** Complete flower structure

D. Male parts- Stamen

1. Anther- top of stamen, releases pollen
2. Filament- stalk attaching anther to stem

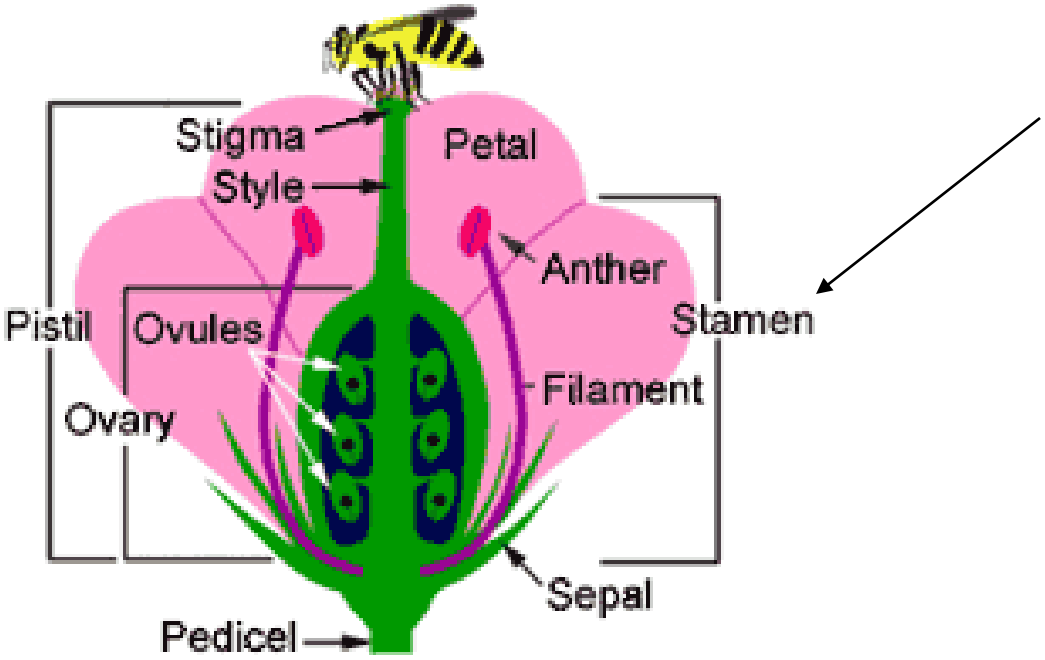
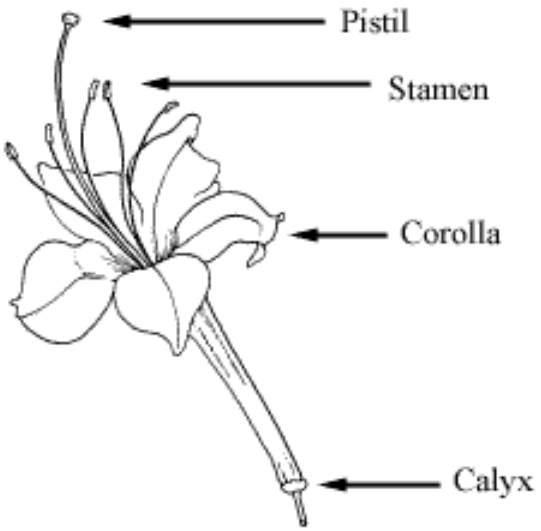
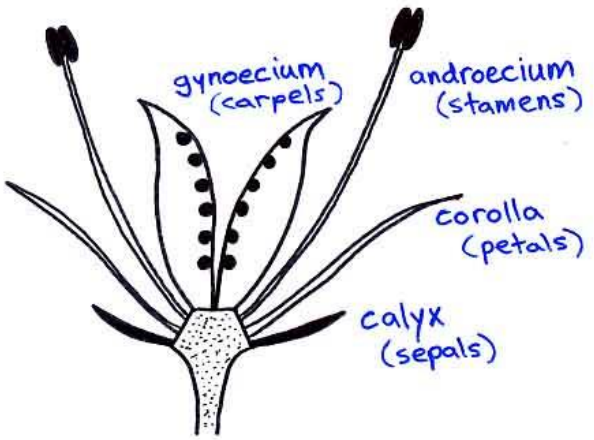



**Figure 19.** Complete flower structure

Complete flowers- contain sepals, petals, stamens, and pistils




Incomplete flowers- lacking 1 or more organs, may have separately sexed flowers

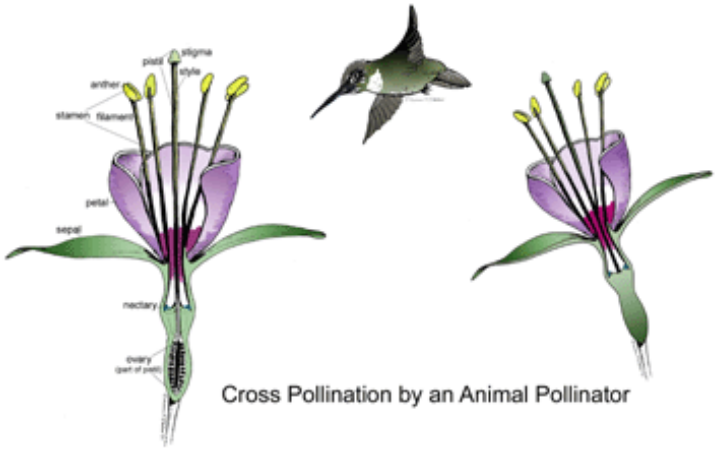


Pollination- transfer of pollen from one plant to another

a. Transferred by animals: usually brightly colored flowers, produce nectar, sweet smell

b. Wind

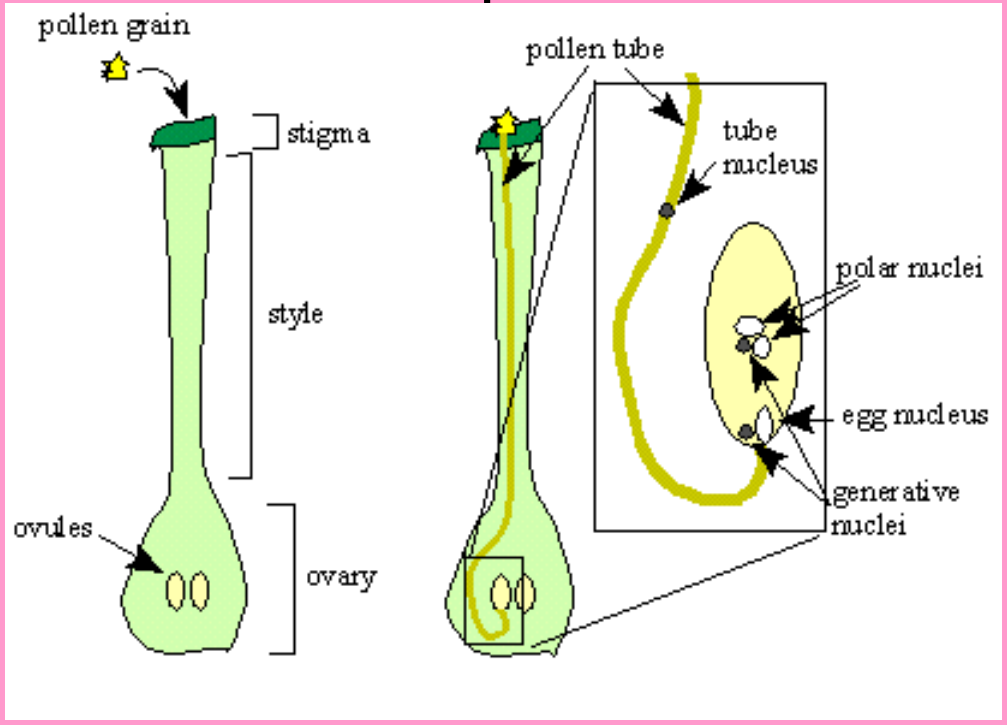
c. water



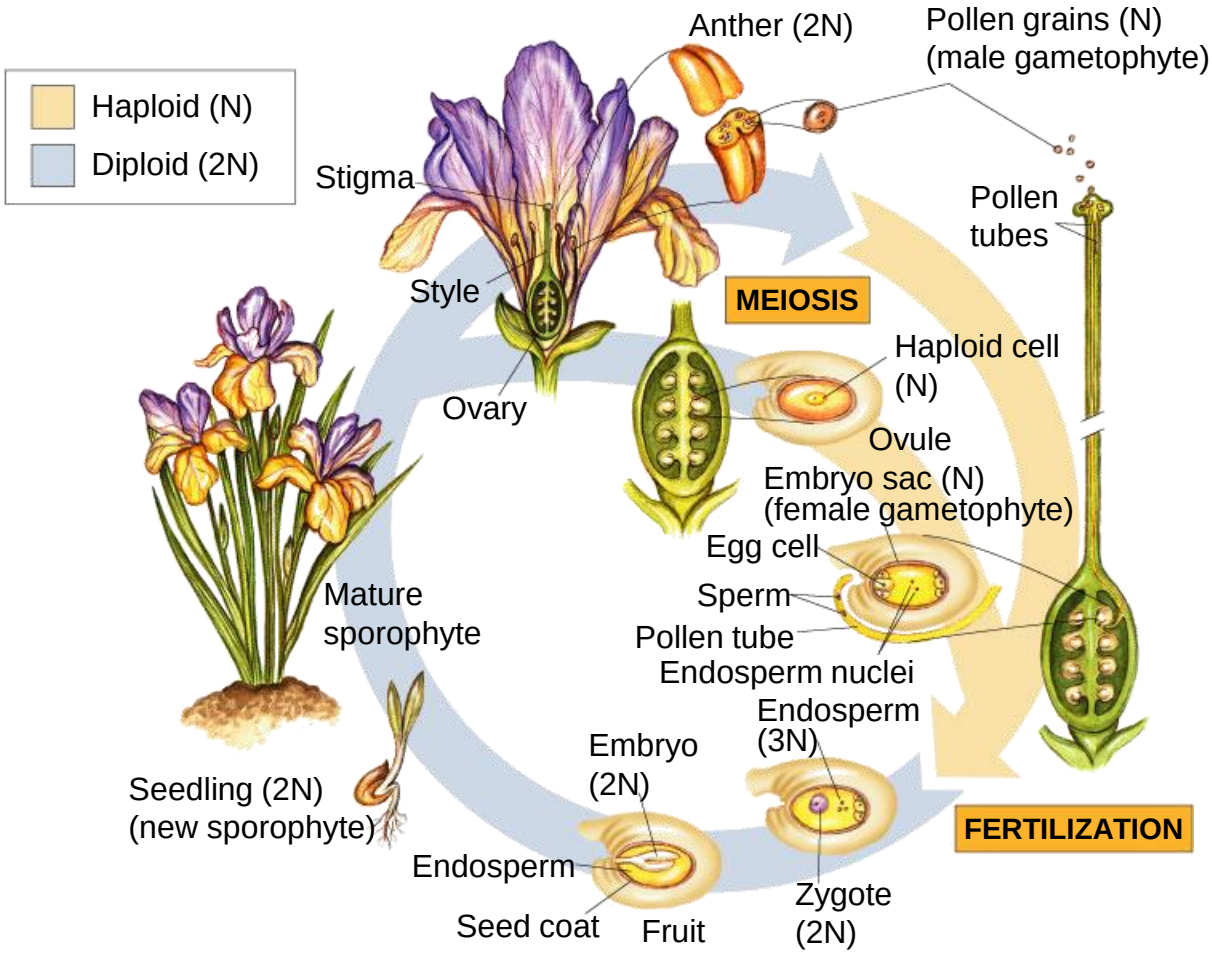
Cross Pollination by an Animal Pollinator

Reproduction:

a. Pollen grain reaches stigma, each has 2 haploid sperms cells & tube cell
b. Tube cell forms tube into ovary
c. Double fertilization occurs
d. After fertilization, flower parts die & seed develops



# Figure 24–7 The Life Cycle of an Angiosperm



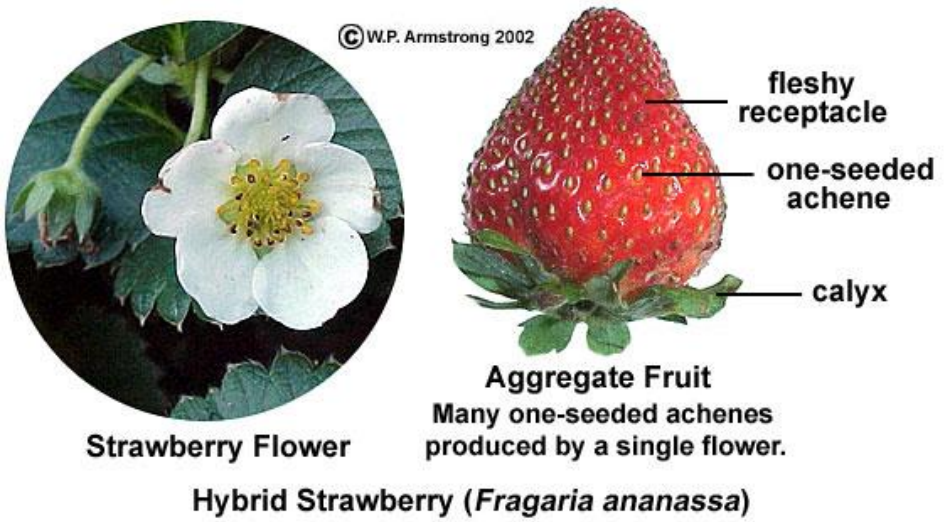
# Describe Fruits

1. A fruit is a ripened ovary containing seeds, protect seed while developing

2. Types:

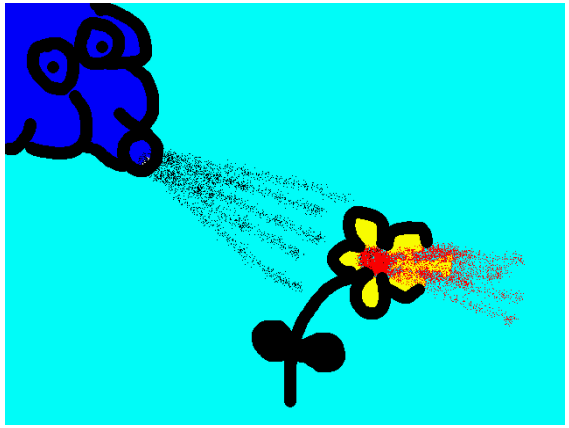
a. Simple- formed from single ovary: examples: apple, pear

b. aggregate:- formed from flowers with many ovaries; example: blackberry



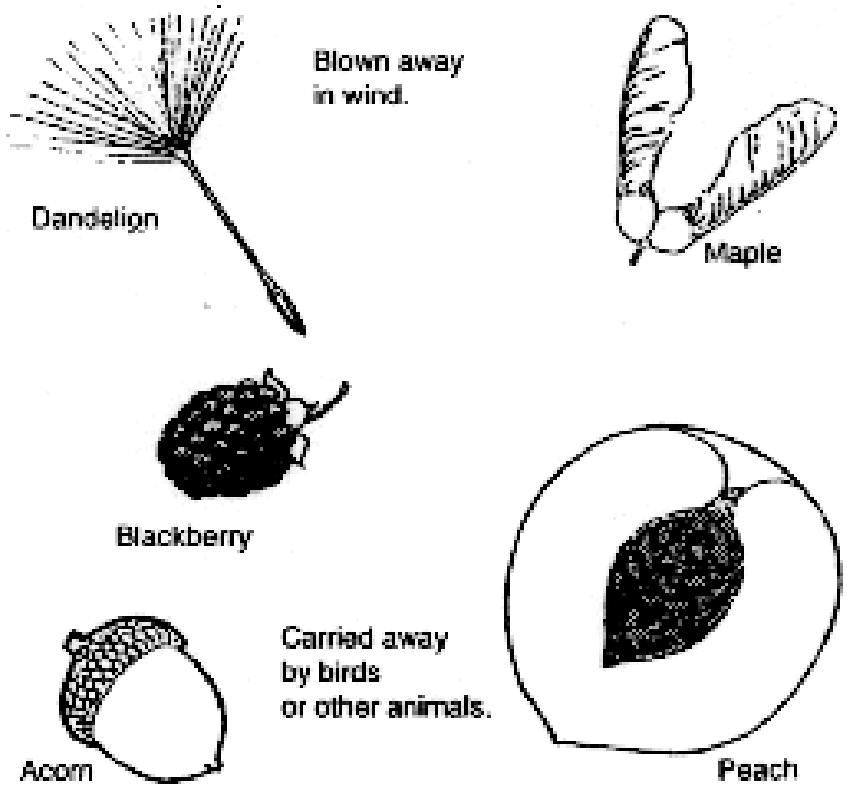

c. Multiple: formed from many fused flowers; examples: pineapple

# Describe Seeds



1. Function to start new generations
2. Dispersal by animals(eat fruits & seeds), wind, water


A seed is a baby with its' own food supply enclosed in a tough protective coating



*Germination*: resuming growth of seeds

a. Seed coat splits

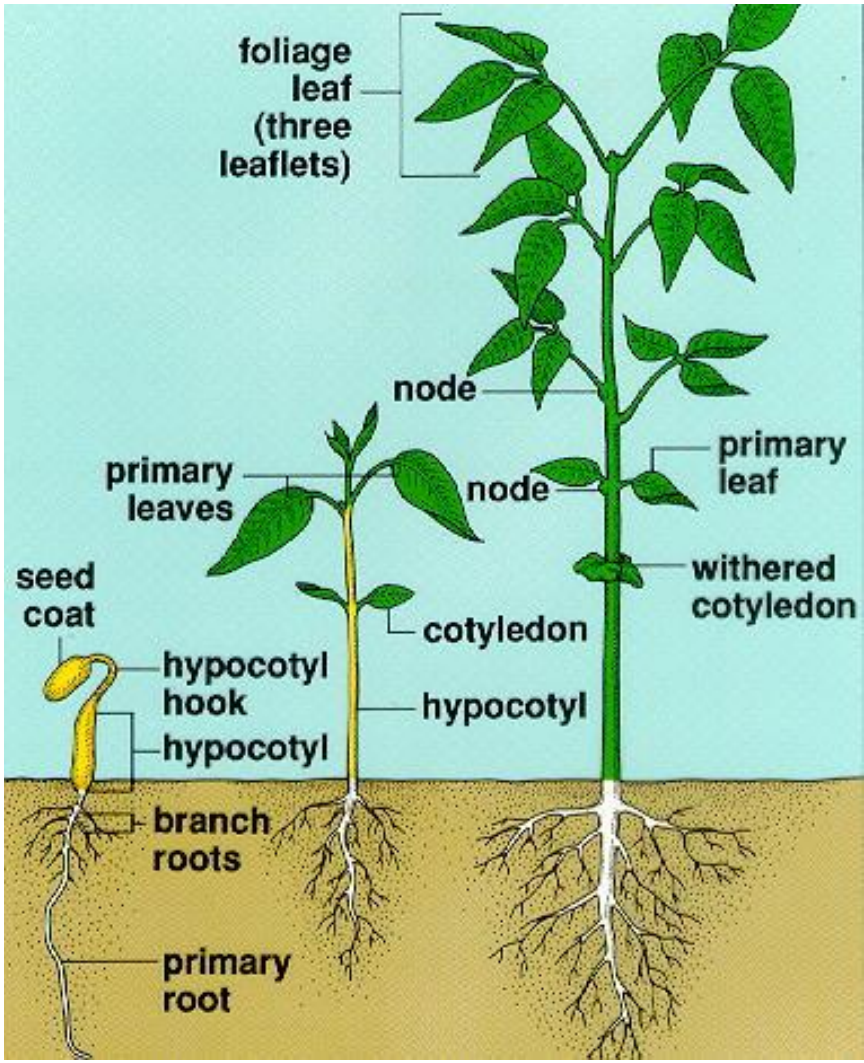
b. cotyledon provides energy source for growth

c. radicle is first plant part to emerge, grows down, & develops into primary root

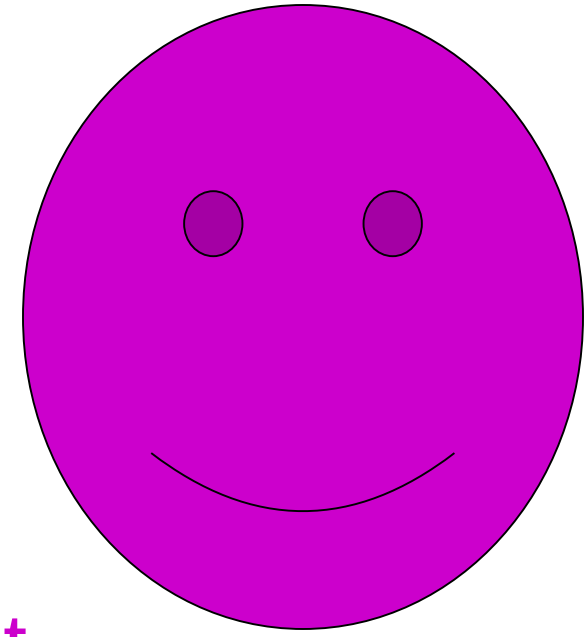
d. hypocotyl lengthens as root grows

e. as growth continues, cotyledon & hypocotyl emerge from soil

f. leaves & stems eventually turns green & begins to photosynthesize



# Quiz 6



Put your notes away and get ready for your quiz,

# Quiz #6 Flowers

1. The stigma, style and ovary make up the _____ of a flower.

   A. pistil  B. stamen  C. gametes  D. sepals

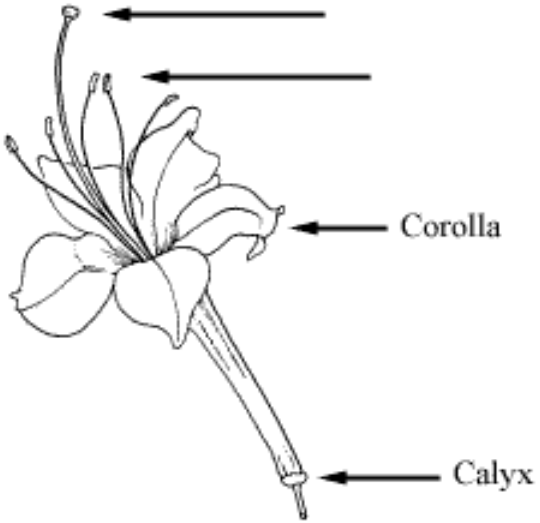
2. Pollination can occur by:

   A. animals  B. water  C. both of these  D. none

3. Identify this flower as either complete or incomplete

   A. complete

   B. incomplete

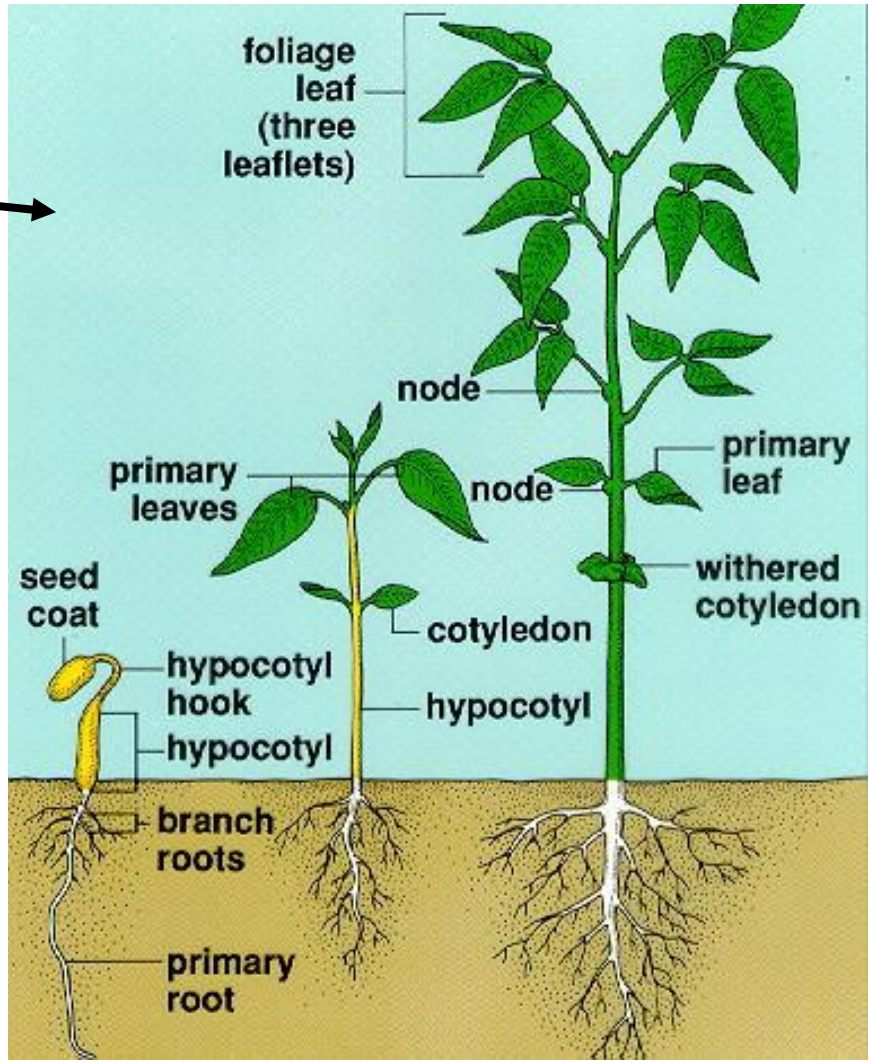


4. _____ occurs when a pollen grain reaches an ovary.

A. mitosis B. ovulation C. meiosis D. fertilization

5. This is called:

A. Fertilization
B. stigmation
C. germination & growth
D. angiofertilization



# Quiz #6 Flowers

1. The stigma, style and ovary make up the _____ of a flower.

   A. pistil  B. stamen  C. gametes  D. sepals

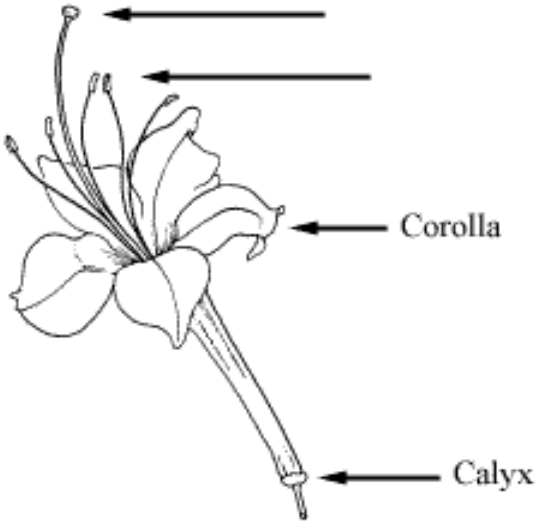
2. Pollination can occur by:

   A. animals  B. water  C. both of these  D. none

3. Identify this flower as either complete or incomplete

   A. complete

   B. incomplete

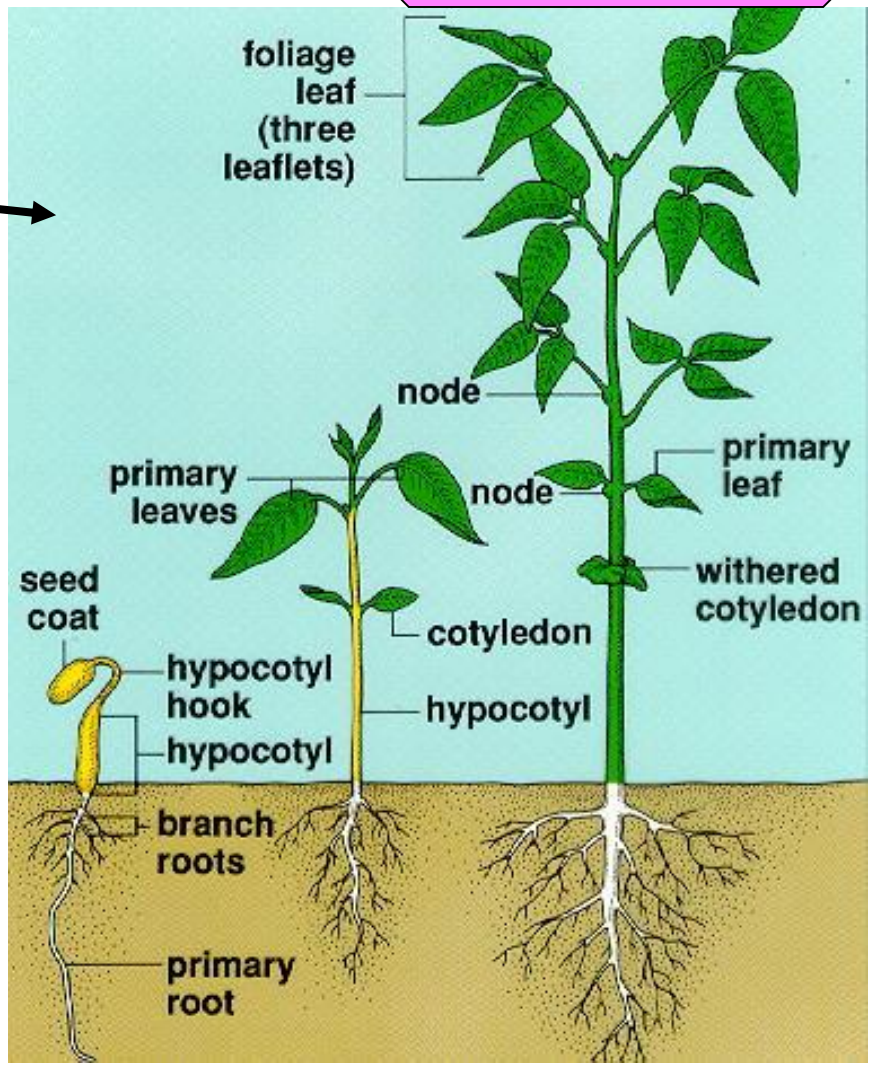


4. _____ occurs when a pollen grain reaches an ovary.

A. mitosis  B. ovulation  C. meiosis  D. fertilization

5. This is called:

A. Fertilization
B. stigmation
C. germination & growth
D. angiofertilization



# JOURNAL #7

- Explain three ways that plants are beneficial to life on Earth. Use your own paper for this answer.

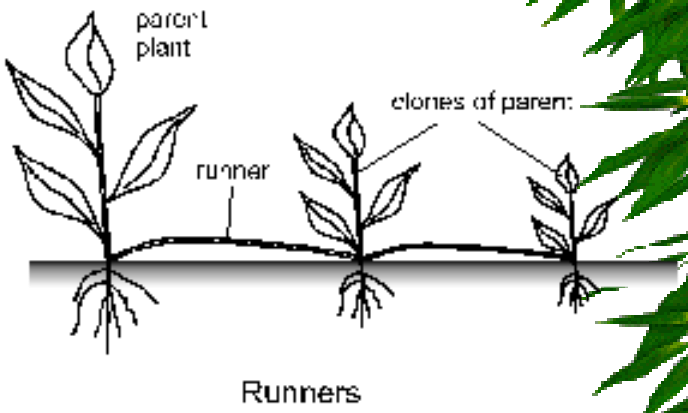
1. **Oxygen exchange**
2. **Food Source**
3. **Building Supplies**
4. **Pencils**
5. **Paper, etc.**

# Asexual Reproduction in Plants

1. offspring will have same genes as parents

2. Vegetative propagation:
   a. producing new individuals from roots, stems, or leaves of existing plants

b. Examples:
1. Runners- modified stems that grow along the top of the ground & send out their own roots.

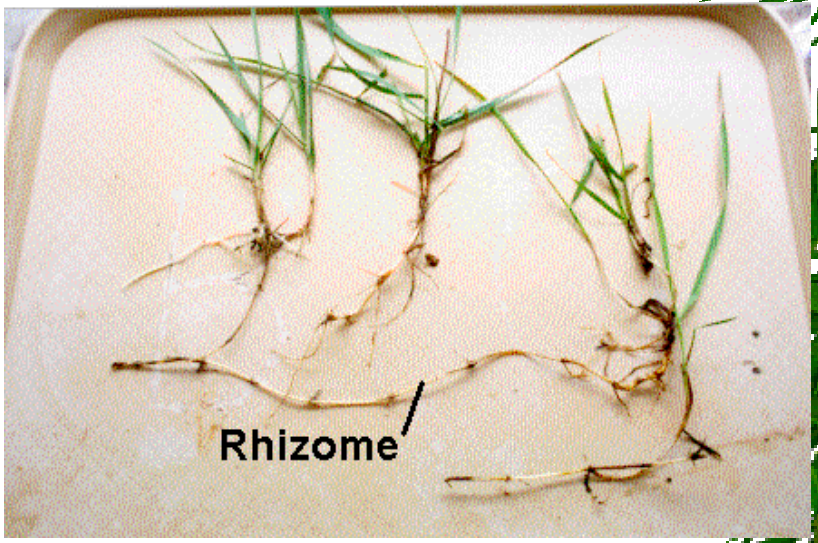


Runners

Strawberries

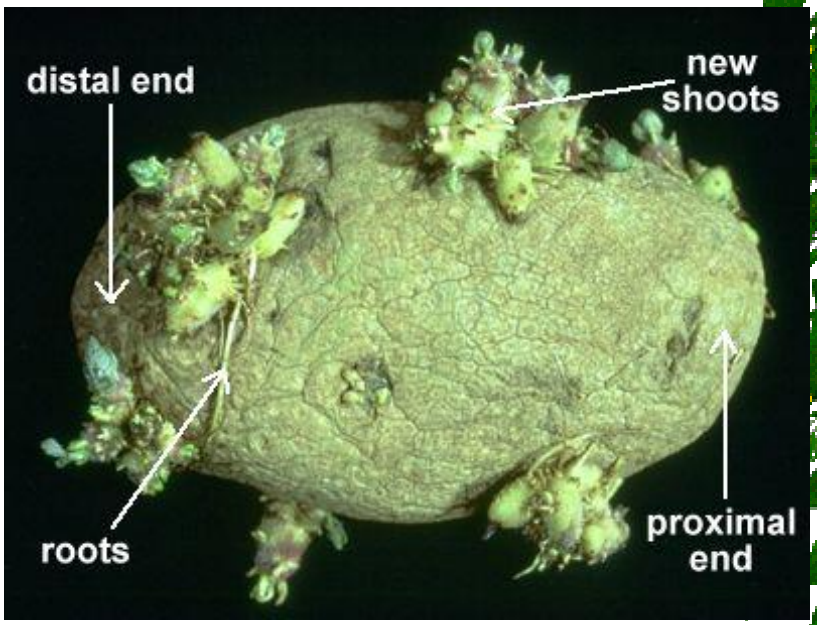
**2. Rhizomes- modified stems that grow under the soil, produce new roots from stem.**

**Ex- grasses**




**3. Tubers- shorter, thicker stems that produce an “eye” which is capable of producing a new plant.**

**Ex-Potato**



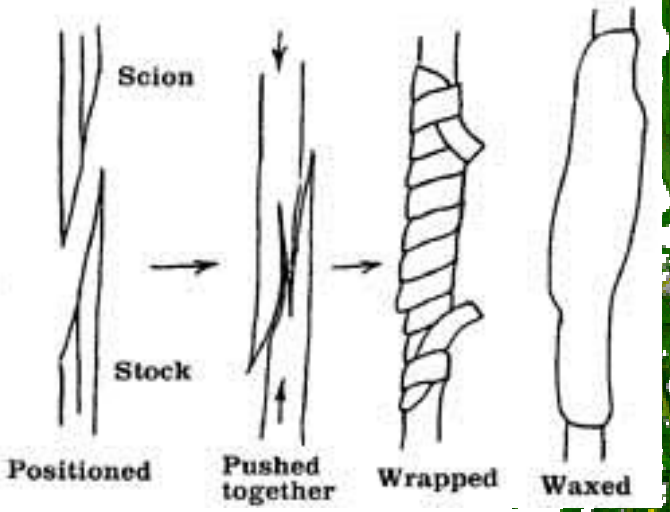
**4. Bulbs- stem covered with modified leaves which can produce a new plant. Onion**

**5. Food storing roots- carrots & beets are roots which are capable of producing a new plant.**

**3. Artificial Propagation-**
**a. Method of asexual reproduction most used in agriculture**

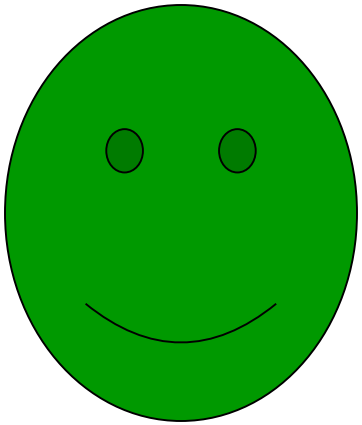
**b. cuttings- pieces of stem cut from parent kept in water, moist soil or sand will put out new roots. Example- many garden plants**

**c. Grafting- buds or sections are cut from one plant & attached to another that is already rooted in the soil.**
**Ex- roses, fruit trees, & grapes**




**d. Tissue culture- pieces of the center of stem are removed & placed in flasks with growth medium from which a whole new plant will develop**

# Quiz 7



Haaa, just kidding!

Hang in there! We are almost done