Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_

**Plant Propagation Notes**

1. ***List & describe common methods of sexual plant propagation***

**Plant Propagation**

* **Sexual Plant Propagation**
  + Reproduction of plants by \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_ by the uniting of 2 gametes.
  + Offspring plants are genetically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than parent plants
* **Sexual Reproduction in Plants**



* + Flower produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Seeds are pollinated (fertilized) by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Seed is harvested and planted to produce a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plant.



* + Offspring plant has ½ of it’s genes from 1 plant and ½ from another
  + Offspring plant is genetically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than both parent plants.
* **Methods of sexual plant propagation**

**1- Seed**

* + - Seeds are harvested from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and planted
    - Most common method of plant reproduction

*Where do seeds come from?*

* Seeds develop in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of a flower & are harvested
* Seeds are kept to grow another season

*How are seeds harvested?*

*[](http://www.theseedbasket.com/wp-content/uploads/2010/01/Delphinium-11.jpg)[](http://www.theseedbasket.com/wp-content/uploads/2010/01/Delphinium-Seeds-Copy.jpg)*

1. 2. 3.

3

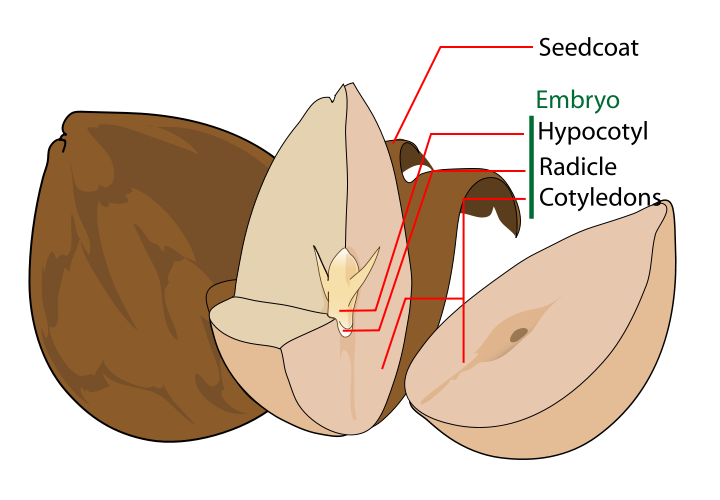
4

2

1

***Parts of a Seed***

* **Seed Coat:** Hard surface that protects interior of plant
* **Embryo:** The new plant that develops as result of fertilization

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***Types of Commercial Seed***

* Raw
* Pelleted: Coated to make seed bigger and easier to handle

***Name the Seed:***



***Hybrid Seed***

* “Hybrid” can apply to any cross-pollinated plant
* Plants grown from seed that is a result of special breeding
* Considered genetically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Seedlings have “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
* Result of controlled crossing of a dedicated “female line” and a dedicated “male line”
  + Both lines are genetically pure and will have the best traits from both parents.
* Seed saved from hybrid plants does not produce quality plants.

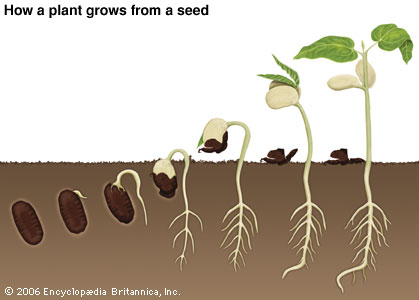
**2- Spores**

* + Primarily with ferns
    - Ferns do not have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Usually found on back of fern
    - They drop to ground and grow into a new plant

1. ***Describe the process and environmental conditions of seed germination***

**Germination:**

* Development of a seed from a resting stage to a stage of growth.



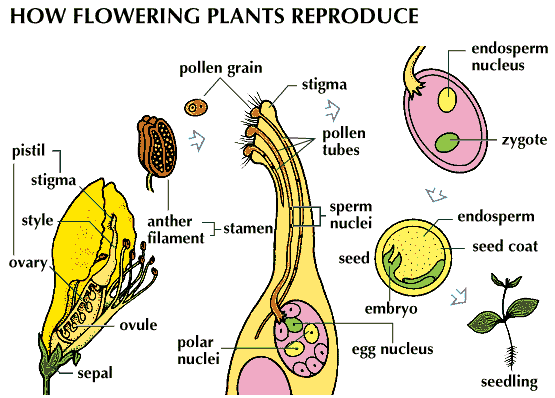
**Environmental Requirements:**



1. ***Diagram the process of plant fertilization***

**Plant Fertilization:**

* + The meeting of the \_\_\_\_\_\_\_\_\_ gamete with the \_\_\_\_\_\_\_\_ gamete



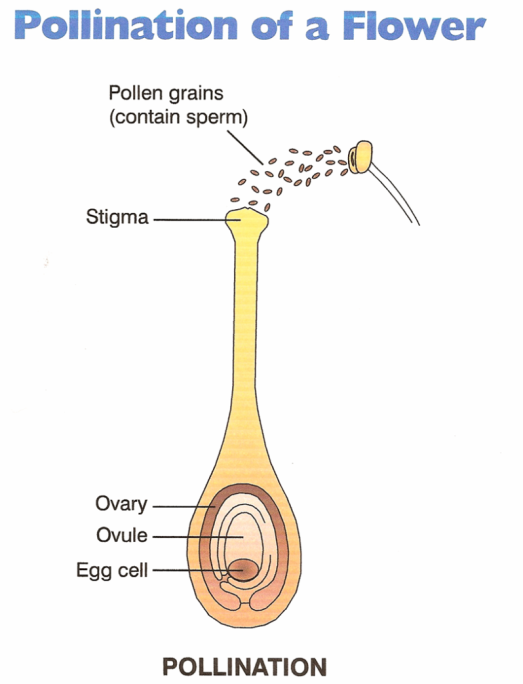
* + Takes places in \_\_\_\_\_\_\_\_\_\_\_ of flower

1. 2. 3.
2. ***Explain the importance of seed viability and vigor.***

**The most viable seed is:**

* + Collected from strong, healthy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ properly prior to seed harvest
  + Kept at moisture/temperature level to keep seed in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. ***Explain pollination, cross-pollination, and self-pollination of flowering plants.***



**Pollination:**

Transfer of pollen from an anther to a stigma of a flower of the same species

**Self Pollination:**

* + Pollen from a plant pollinates a flower on the **SAME** plant

**Cross Pollination:**

* + Pollen from a plant pollinates a flower on a **DIFFERENT** plant

**Methods of Pollination:**

* + **Insects**
    - Bees
    - Butterflies
    - Moths
  + **Wind**

1. ***List & describe methods of asexual plant reproduction***

**Asexual Reproduction:**

* + Reproduction of plant \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the use of reproductive organs (flower pistil & stamen)
  + Also called “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” propagation
  + Use of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to grow a new plant
  + Produces genetically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants (clones)

**Benefits:**

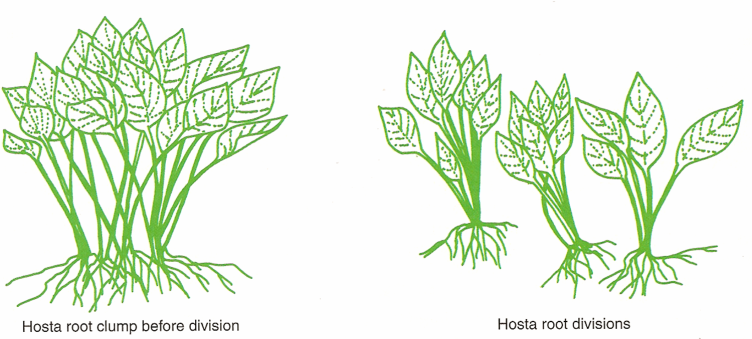
* + Can be quicker
  + Assures characteristics to be passed to offspring
  + Less expensive

**Drawbacks:**

* + Can’t be used with all plants
  + No genetic diversity

**1-Separation/Division:**

* + Separating or dividing one plant into several smaller plants



**2-Layering:**

* + Reproduce a new plant while offspring plant is still connected to parent.
    - Advantage: No water stress

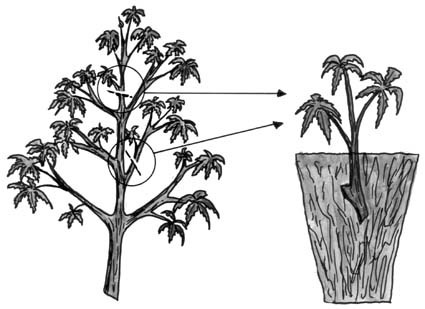
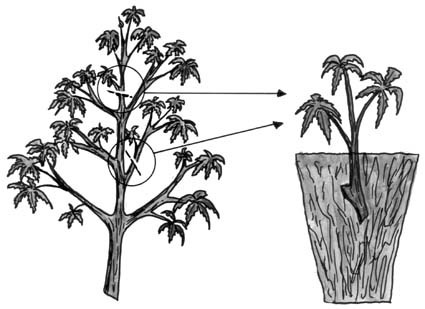


**3-Tissue Culture:**

* + Also called “Micropropagation”
  + Propagation of plants from nearly microscopic parent plants
  + **Benefit=** Mass production of a cultivar from an extremely limited amount of parent stock

**4-Cuttings:**

* + Using a section of stem and/or leaf to produce a new plant



1. ***Describe optimal conditions for asexual propagation.***

**Environment:**

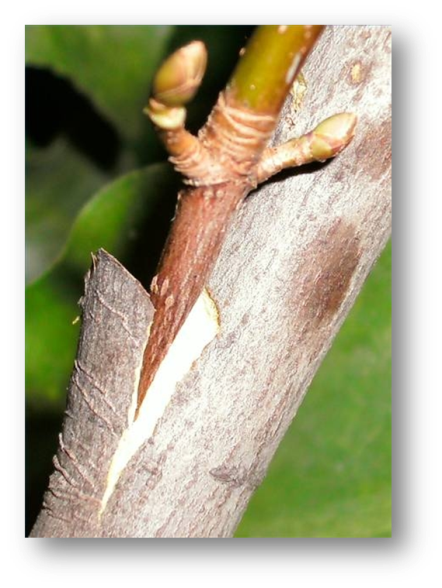
* + Moisture/humidity
  + Good draining soil

**Plants:**

* + Healthy & strong
  + Correct plant varieties
    - Some plants don’t propagate well asexually

1. ***Demonstrate techniques used to propagate plants by cuttings, division, separation, and layering.***

-See Lab Sheets for step by step instructions



1. ***Describe grafting techniques.***

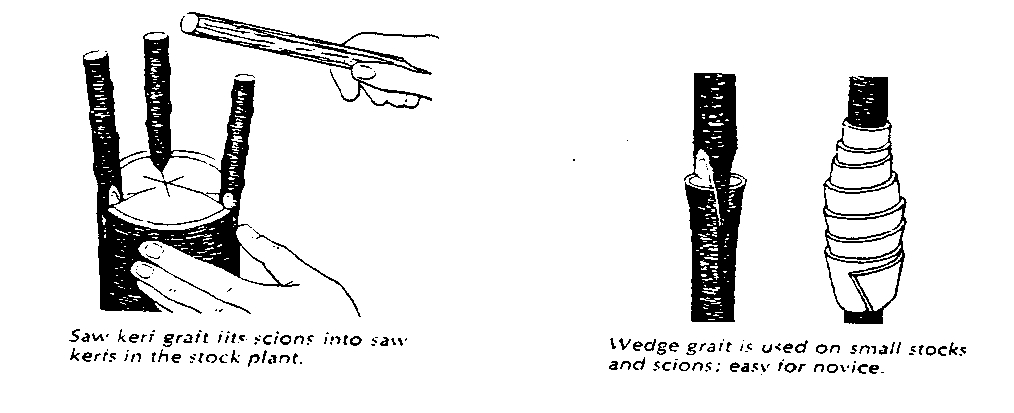
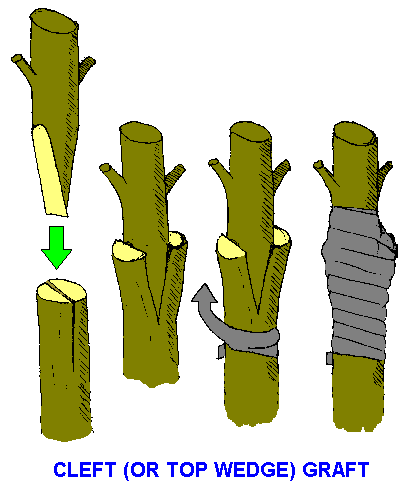
**Grafting:**

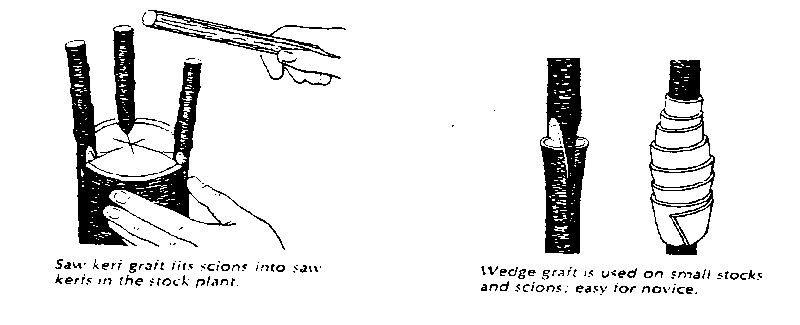
* + Connecting 2 pieces of living plant material together to form a single plant
  + Scion= New plant material
  + Rootstock= old plant material

**Benefits of Grafting:**

* + Increase the strength and disease resistance of roots
    - Peach trees have stronger roots that are more resistant to root rot than almond tree roots
  + Several Varieties grown on one tree/bush
    - Apple trees with 2-3 varieties of apple
    - Rose bushes with multiple colors of roses

**Types of Grafts:**

* + Wedge Graft
  + ****Saw Kerf Graft

****



* + Whip & Tongue Graft

