**Plant Study Guide for Week 4**

| Plant Part | Vascular | Non-Vascular |
|---|---|---|
| Root | Roots anchor plant and absorb nutrients | No true roots or stems |
| Stem | Supports plant and transports water and nutrients | Water seeps in from cell to cell |
| Leaf | Place where photosynthesis, transpiration, respiration take place | No true leaves |
| Reproduction | Confiers-cones which are naked seeds<br>Flowers/fruit-which contain hidden seeds | Spore formation |

**Vascular-largest group**

**Well-developed system for transporting water and food; they have true roots, stems, and leaves.**

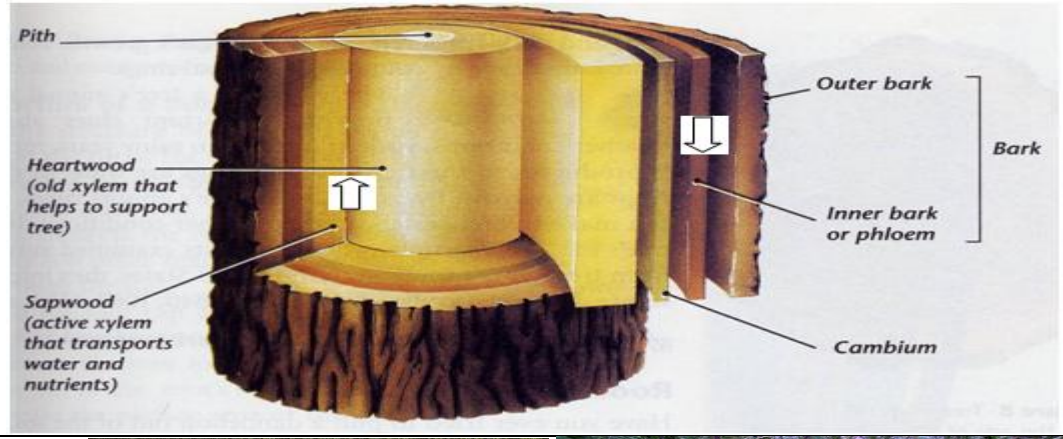
**help circulate water and food throughout the plant.**

***Xylem*** **transport water and minerals from the roots up to the rest of the plant. (up elevator, xylem up)** ⇧

***Phloem*** **transport food from the leaves down to the rest of the plant. (down elevator, phloem down)** ⇩

**Examples:**

***woody*** **stems- trees & bushes** ***herbaceous*** **stems- grasses**



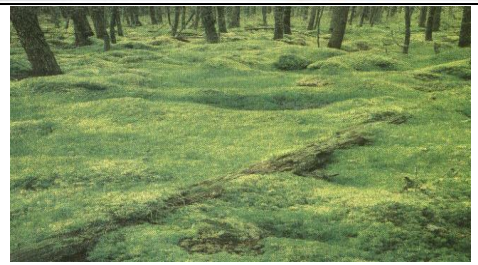

**Non-Vascular-smallest group**

**Plants do not have a well-developed system for transporting water and food; do not have true roots, stems, or leaves.**

**They must obtain nutrients directly from the environment and distribute it from cell to cell throughout the plant. This usually results in these plants being very small in size.**

**Examples: mosses, liverworts, and hornworts.**

**Mosses**



**Liverworts**

**Hornworts**

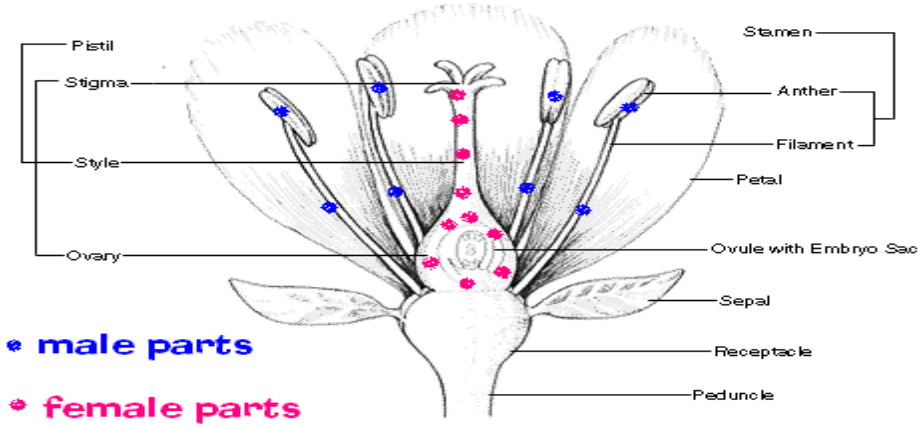
## Structures for Reproduction

### Seed Producing

**There are two major groups of seed-producing plants:**

**Flowering Plants**

- **Flowering plants differ from conifers because they grow their seeds inside an ovary, which is embedded in a flower.**
- **The flower then becomes a fruit containing the seeds.**
- **Examples include most trees, shrubs, vines, flowers, fruits, vegetables, and legumes.**




**Functions of the Flower Parts**

**ovary- contains eggs**
**ovule- fancy name for egg**
**stigma- catches pollen**
**anther- produces pollen**
**style-supports the stigma**
**petals (corolla)-attracts insects and animals**
**sepal-protects the flower**
**stamen- the male part of the flower**
**pistil-the female part of the flower**
**filament-supports the anther**

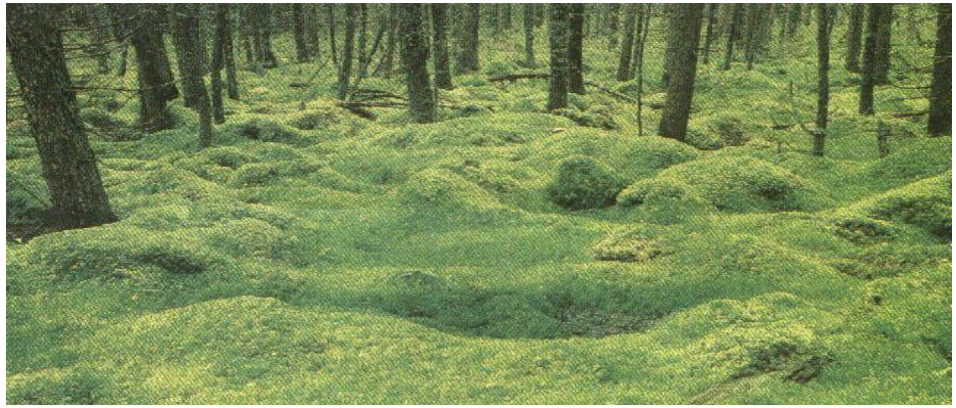
***Look closely below at each picture as you watch the apple blossom flower become a fruit after the sperm/egg unite in fertilization.**

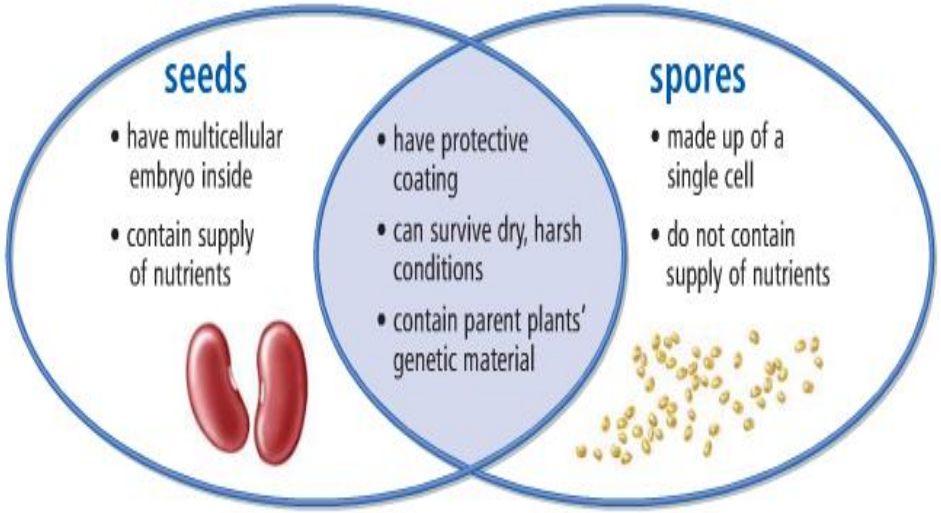

### Spore Producing

- **Spores are much smaller than seeds.**
- **Almost all flowerless plants produce spores.**
- **Examples- mosses and ferns**

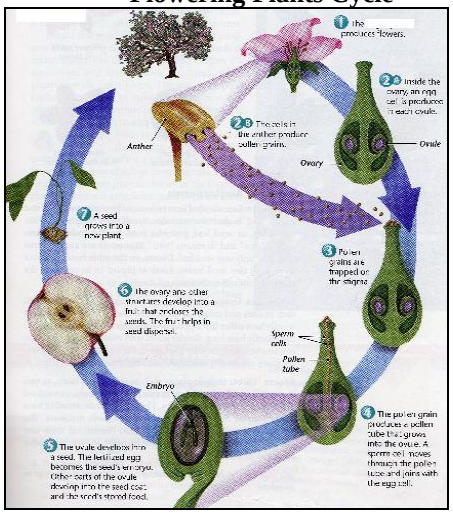
**Ferns**

**Mosses**

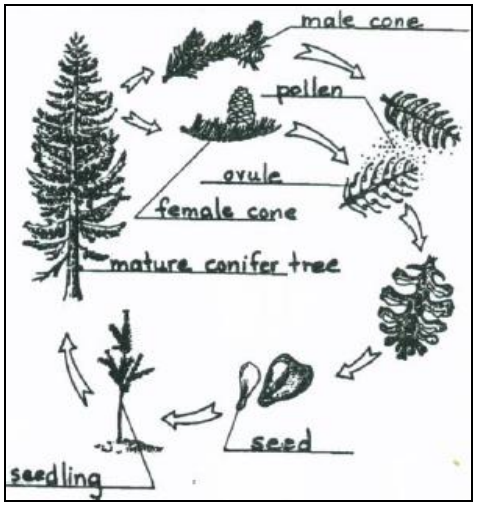




**Flowering Plants Cycle**



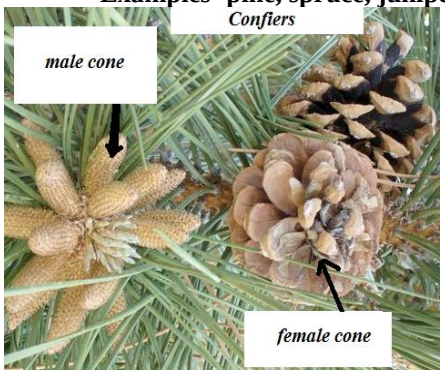

**Confier/Cone Plant Cycle**




Spores on the underside of a fern.

**Conifers**

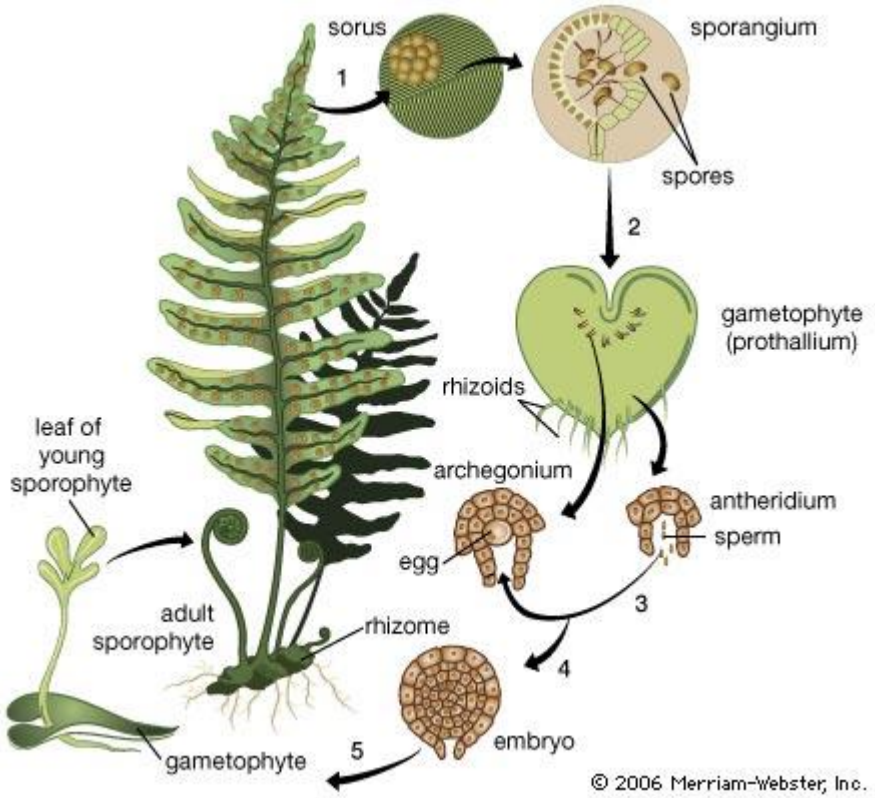
- **Most cone-bearing plants are evergreen with needle-like leaves.**
- **Conifers never have flowers but produce seeds in cones.**
- **Examples- pine, spruce, juniper, redwood, and cedar trees.**




**Redwood**

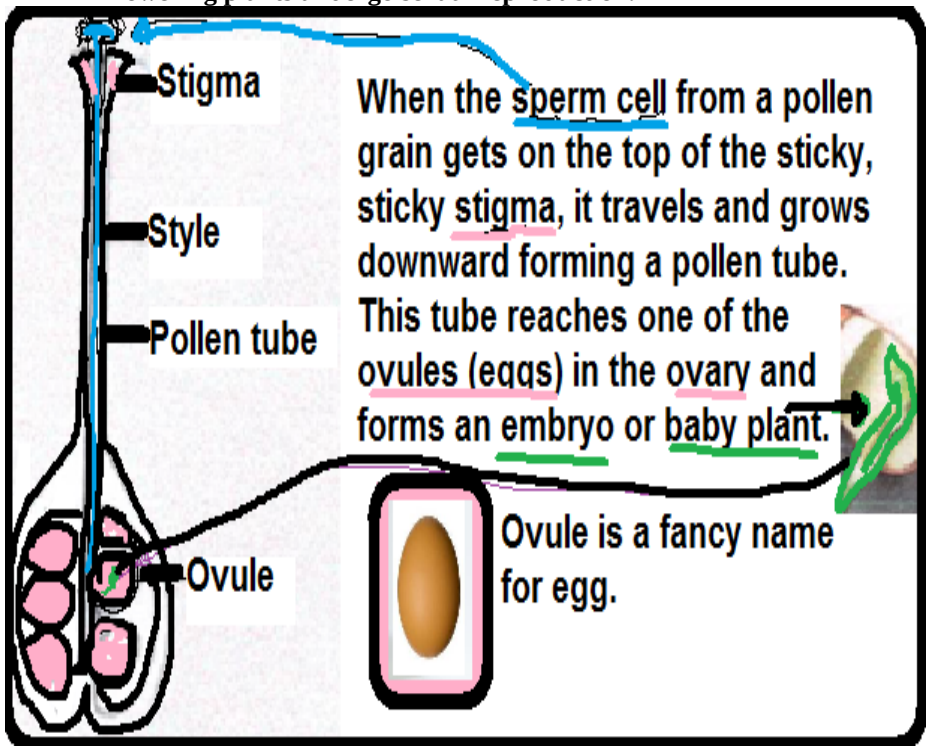
**Juniper**

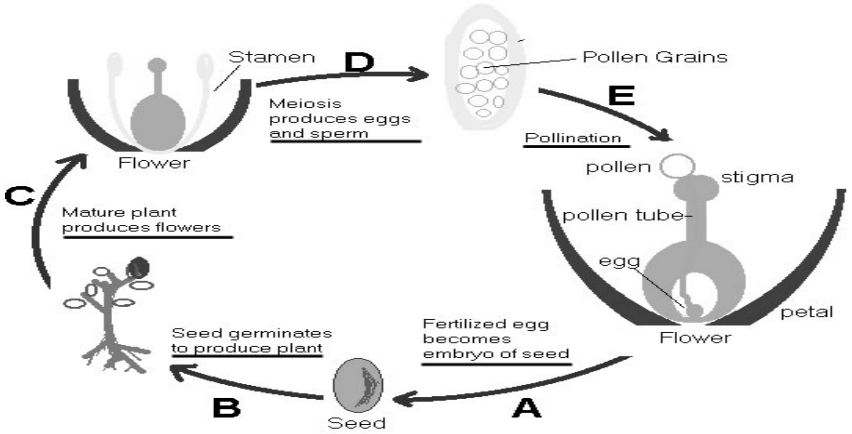
**Spruce**



## Sexual Reproduction

- **A process of reproduction that requires a sperm cell (in <u>pollen</u>) and an egg cell (in the <u>ovule</u>) to combine to produce a new organism.**
- **All flowering plants undergo sexual reproduction.**

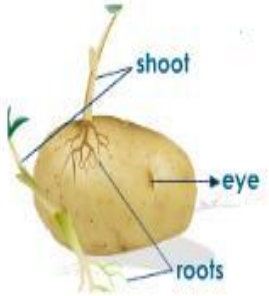



**Plant Reproduction Flow Chart**

## Asexual Reproduction

- **A process of reproduction that involves only one parent plant or plant part and produces offspring identical to the parent plant.**
- **Many plants can grow new plants asexually from their plant parts.**
- **If a plant is cut or damaged, it can sprout new growth from the stems, roots, or leaves.**

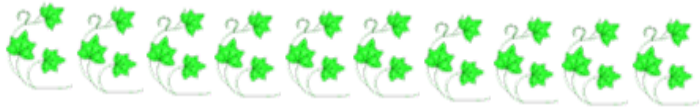



**<u>TUBERS, BULBS</u>**

- **underground stems**
- **The "eyes" or buds of tubers, for example potatoes, grow into roots and shoots to produce a new plant.**
- **Bulbs, for example onions, are big buds made of a stem and special types of leaves.**

**<u>RUNNERS</u>**

- **Stems that run along the ground.**
- **New strawberries or some ivy grow from the tips of runners.**
- **Many lawn grasses grow from runners.**



**<u>STEM CUTTINGS</u>**

- **When a piece of cut stem is planted, roots may form from the cutting, and then a full plant develops.**
- **Examples: Sugar cane and pineapple <u>ROOTS</u>**
- **Some fruit trees and bushes send up "suckers" or new shoots from the roots.**
- **Some roots that can produce new plants from root pieces, such as a sweet potato.**