

# KINGDOM PLANTAE: Gymnosperms, Angiosperms & Seeds NOTES

## GYMNOSPERMS

### CHARACTERISTICS:

- Chloroplasts for photosynthesis
- Alternation of generations
- “Naked seeds” in cone like structures
- Vascular tissue
- Meristem tissue
- Roots cover a wide surface area – good for where soil is thin
- Gymnosperms have woody tissue which is very strong.
- This allows gymnosperms to compete for sunlight and it allows the roots to penetrate the soil more deeply.

### VASCULAR TISSUE

- **Xylem** – carries water and minerals to leaves from the roots for photosynthesis. Made of dead cells.
- **Phloem** – distributes sugar / food throughout the plant (products of photosynthesis). Made of living cells.

## ANGIOSPERMS

### CHARACTERISTICS:

- Enclosed seeds and protected inside a fruit of the flower
- Have flowers
- Vascular tissue
- Alternation of generations
- Meristem tissue, parenchyma, stoma, guard cells, and epidermis (cuticle)

### **Angiosperms are divided into 2 groups:**

#### 1. ***monocots***

- Angiosperms whose seeds have only **one** cotyledon or seed leaf.
- Have vascular bundles (xylem and phloem) scattered throughout the stem
- Leaf veins are parallel
- Floral parts are in 3's or multiples of 3.

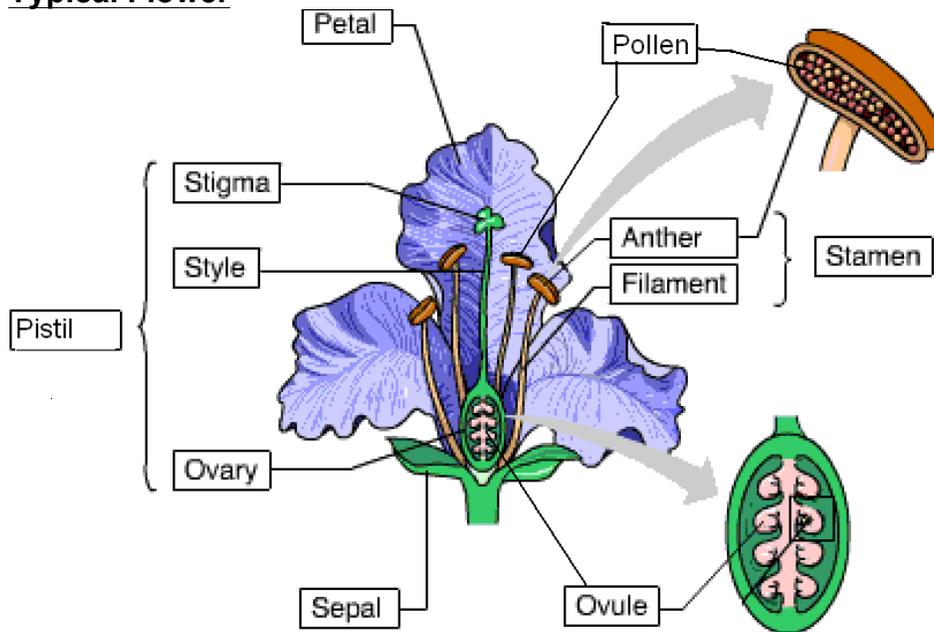
Ex) grasses, wheat, corn, water lilies, barley

#### 2. ***dicots***

- Angiosperms whose seeds have two cotyledons or seed leaves.
- Have vascular bundles arranged in a circle or ring in the stem
- Leaf veins are branched or netlike
- Floral parts are in 4's or 5's or multiples of 4 or 5.

Ex) oaks, cacti, maples

## Typical Flower



Name of the Part	Function of the Part
<b>Stamen – male parts</b>	
Anther	Produces pollen (with sperm inside)
Filament	Raises anther so pollen can be dispersed or picked up by an insect
Pollen	Vessel for dispersal of sperm
<b>Pistil – female parts</b>	
Stigma	Sticky to capture pollen
Ovary	Becomes fruit to protect seed
Ovule	Seeds
Style	Protects pollen tube, raises stigma to catch pollen
Sepal	Encloses flower bud, protection
Petal	Attract pollinators

## SEEDS

- Plant seeds consist of an embryo that is surrounded by a special seed coat called a **testa**.
- The seed develops from the zygote formed when one of the 2 sperm nuclei in the pollen tube fertilizes the egg in the ovule.
- When conditions are right, the seed grows or germinates.
- The first part to emerge is the root that breaks through the testa.
- The next part to emerge is the shoot / stem

The Parts of the Seed:

SEED PART:	MATURES INTO ADULT PART CALLED THE:
Radicle	Root
Epicotyl	Leaf Bud
Hypocotyl	Stem
Plumules	Leaf / Leaves