

LIFE SCIENCES 11

ANGIOSPERMS

General Information

- characterized by having a seed that is covered by a fruit
- 235 000 species (6 times the number of species of all other plants combined)
- includes deciduous trees, broad-leafed evergreens, herbaceous (non-woody) garden plants and grasses
- life spans
 - annuals – live for one growing season or less
 - biennials – live for two years
 - perennials – live for several years

Dicots (Dicotyledons)

- woody and non-woody species
- flower parts are in 4's or 5's
- net-veined leaves
- vascular bundles arranged in a circle within the stem
- seeds germinate with two cotyledons (seed leaves)
- Examples: buttercup, maple, cactus, pea, rose

Draw examples of leaves, flowers, stem and germinated seeds.

Monocots (Monocotyledons)

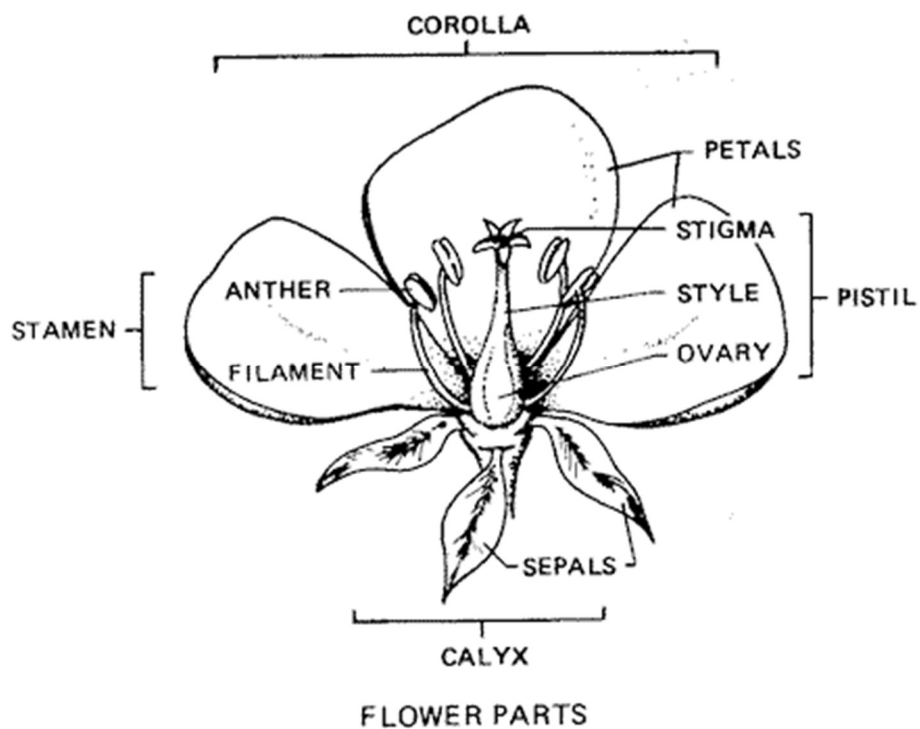
- herbaceous species only
- flower parts in 3's
- parallel-veined leaves
- vascular bundles scattered throughout stem
- seeds germinate with only one cotyledon
- Examples: lily, palm, orchids, grasses (wheat, rice, corn)

Angiosperm Life Cycle

- one flower is able to produce heterospores → different male and female spores from same flower
- microspores develop into pollen grains within the pollen sacs
- megasporocyte is found within the ovule (includes the integument), which is enclosed within the ovary
 - megasporocyte divides into 4 haploid megaspores by meiosis
 - 3 of the new megaspores disintegrate
 - remaining megaspore divides through mitosis to form 8 nuclei within a mass of cytoplasm
 - cytoplasm differentiates into 7 cells
 - egg (n)
 - 2 synergids (n) – help attract pollen tube

- 3 antipodals (n) – disintegrate upon fertilization
- polar cell (2n) – contains 2 of the eight nuclei
- pollinator carries pollen grains to female part of flower
 - each pollen grain contains 2 cells
 - tube cell grows down into ovary until it reaches an ovule
 - generative cell divides to form two non-flagellated sperm cells for double fertilization
- double fertilization occurs
 - 1 sperm joins with egg to form the zygote, which divides to form the embryo
 - 1 sperm joins with the polar nuclei to produce a 3n endosperm nucleus
 - endosperm nucleus divides to form the endosperm (food for the developing plant)
- integument develops into a protective seed coat (embryo, endosperm and seed coat form the seed)
- walls of the ovary may develop into the fruit that surrounds the seeds

Parts of a Flower



Parts of a Flower

