**Plant Classification**

Nonvascular: have no vessels, no roots, no stems or leaves.   
Examples: Mosses & Liverworts

Vascular: have vessels to transport food and water. They have roots, stems and

leaves. Example: Grass, corn, trees, flowers, bushes

Xylem: transports water  
Phloem: transports food & nutrients

Gymnosperms

* "naked seeds"
* cone bearing plants (seeds grow on cones)
* needle like leaves
* usually stay green year round
* wind pollinated
* Examples: pine trees & evergreens

Angiosperms

* flowering plants
* seeds are enclosed in a fruit
* most are pollinated by birds & bees
* have finite growing seasons
* Examples: grasses, tulips, oaks, dandelions
* Divided into two main groups: Monocots & Dicots

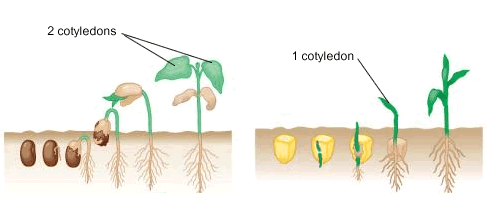
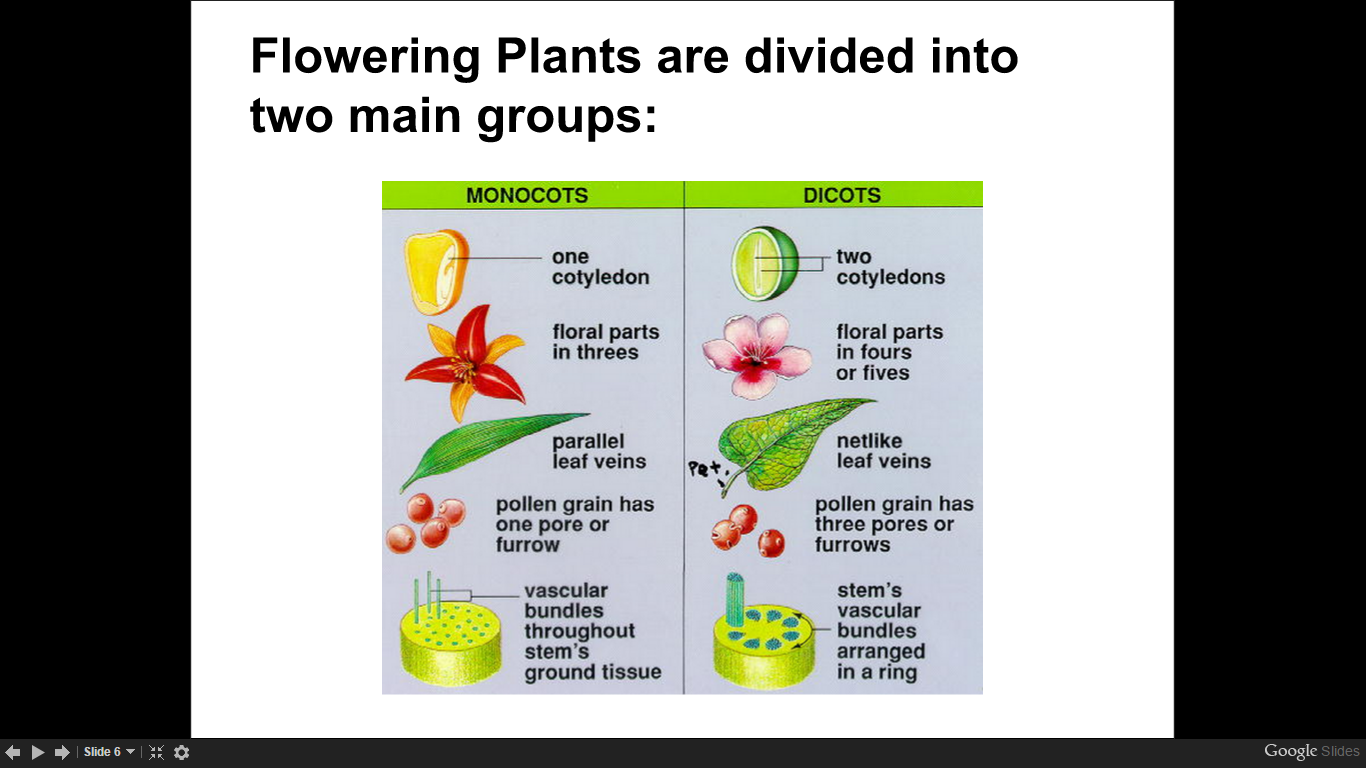
**Angiosperms**

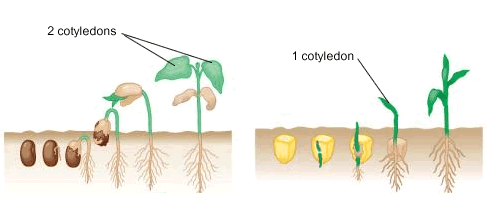
Dicots

* Angiosperms that have 2 seed leaves (cotyledons)
* net veins on leaves
* flowers have 4-5 parts
* taproots
* Examples: trees and ornamental flowers

Monocots

* Angiosperms have 1 seed leaf (cotyledon)
* parallel veins on leaves
* 3 part symmetry for flowers
* fibrous roots
* Example: lilies, onions, corn, grasses, wheat





**Parts of the Plant**

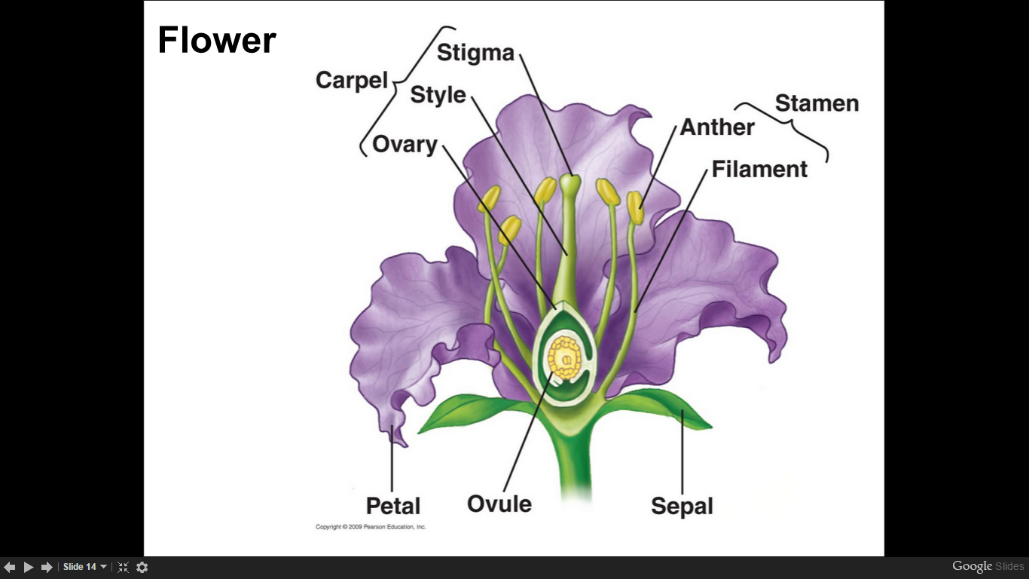
Roots

* water and minerals are absorbed (taproots vs fibrous roots)
* also used to anchor the plant
* movement of water up to leaves is influenced by TRANSPIRATION

Stems

* Support plant
* transport water through xylem
* transport nutrients through phloem
* a celery stalk soaked in food coloring will absorb the food coloring, you can see the xylem
* Two types of stems: herbaceous and woody

Leaves

* Photosynthetic organ of the plant, used to convert sunlight into food
* Stomata: pores within the leaf that open to let CO2 in and O2 out. Guard cells open and close.
* Cuticle: waxy covering on leaf that prevents water loss

Flower

* Reproductive organ of the plant
* Flowers are usually both male and female
* The male part of the flower is the STAMEN
* The female part of the flower is the PISTIL
* See your coloring sheet for more detail on flower anatomy

Plant Reproduction

* Pollen is produced by the stamen.
* Pollen moves away from the plant via the wind or other pollinators (birds & bees)
* The pollen lands on the pistil of another plant and fertilizes the eggs within the ovary
* The flower petals fall off, the ovary develops into a FRUIT that encloses the seeds
* Fruits are dispersed in a variety of ways (wind, animals)
* Fruits are not always edible, anything with a seed inside can be considered a fruit (helicopters, acorns, dandelions)

Asexual Reproduction in Plants

* Many plants can clone themselves, a process called VEGETATIVE PROPAGATION
* strawberry plants and other vine like plants send out runners, which grow into new plants
* some plant clippings will grow into new plants
* a Potato will grow into a new plant

How Plants Grow

* Germination occurs when a seed sprouts (usually caused by changes of temperature and moisture)
* Monocots have 1 seed leaf (cotyledon), Dicots have 2 seed leaves
* Perennials - live several years, and reproduce many times, woody plants are perennials
* PRIMARY GROWTH makes a plant taller at roots and stems
* SECONDARY GROWTH makes a plant wider, or adds woody tissue
* Tree Rings tell the age of a tree, each ring represents a growing season. The photo shows a tree who has been through four growing seasons. The lighter thinner rings are winter periods.