Flowering Plants
Section 23-4

Angiosperms

Key Idea: Botanists traditionally divide the angiosperms into two subgroups - monocots and dicots.

A monocot is a flowering plants whose seeds have one seed leaf.

A cotyledon is a seed leaf.

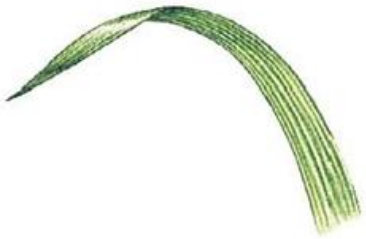
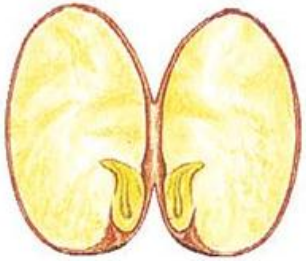
A dicot is a flowering plants whose seeds have two seed leaves.

Angiosperms

- Angiosperms are the most successful group of plants and range in size from tiny herbs to giant trees.
- Most monocots have long, narrow leaves with parallel veins and produce flowers whose parts are in multiples of three.

- Most dicots have leaves with branching veins and produce flowers whose parts are in multiples of four or five.

Comparing Monocots and Dicots

Plant type	Leaves	Flower parts	Examples
Monocots 	parallel venation 	usually occur in threes 	lilies, irises, palms, orchids, coconut, onions, bananas, pineapples, tulips, bamboo, and grasses (including wheat, corn, rice, and oats)
Dicots 	net venation 	usually occur in fours or fives 	beans, lettuce, oaks, maples, roses, carnations, elms, cactuses, and most broad-leaved forest trees

Reproduction in Angiosperms

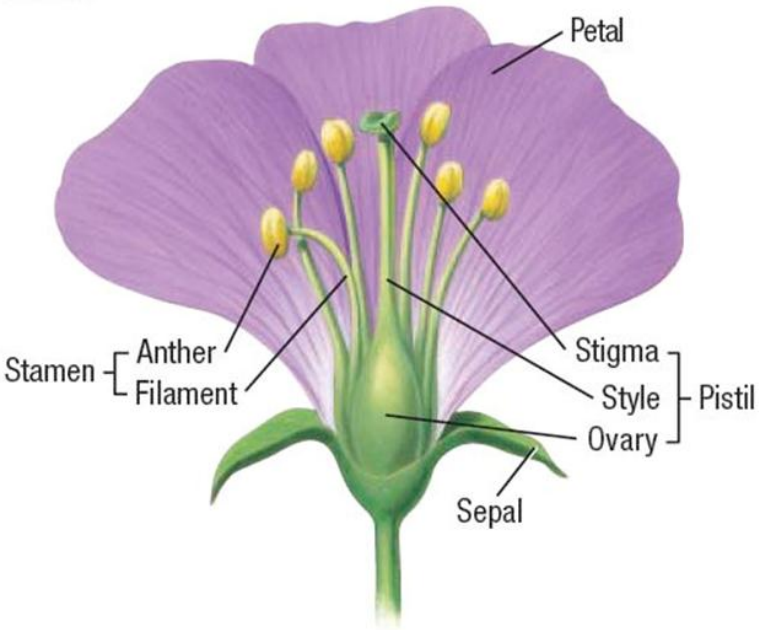
Key Idea: A *flower* is a specialized reproductive structure of angiosperms. The male and female gametophytes of angiosperms develop within flowers, which promote pollination and fertilization more efficiently than do cones.

A stamen is a thread-like filament that produces pollen.

An anther is a pollen-producing sac.

A pistil is a structure that produces ovules

Figure 17 The four basic parts of a flower—sepals, petals, stamens, and pistils—are arranged in concentric whorls.



Structure of Flowers

- The female part of a flower provides a pathway for sperm to reach the eggs without having to swim through water.

Pollination

Key Idea: The flowers of many angiosperms are adapted for pollination by wind or by animals.

Pollination

- Some plants have pollen that can fertilize the plant's own ovules. These plants can breed by *self-fertilization*.
- Plants that cannot fertilize their own ovules breed by *cross-fertilization*.
- Flowers may have brightly colored petals, sugary nectar, strong odors, and shapes that attract pollinators.

Fruits

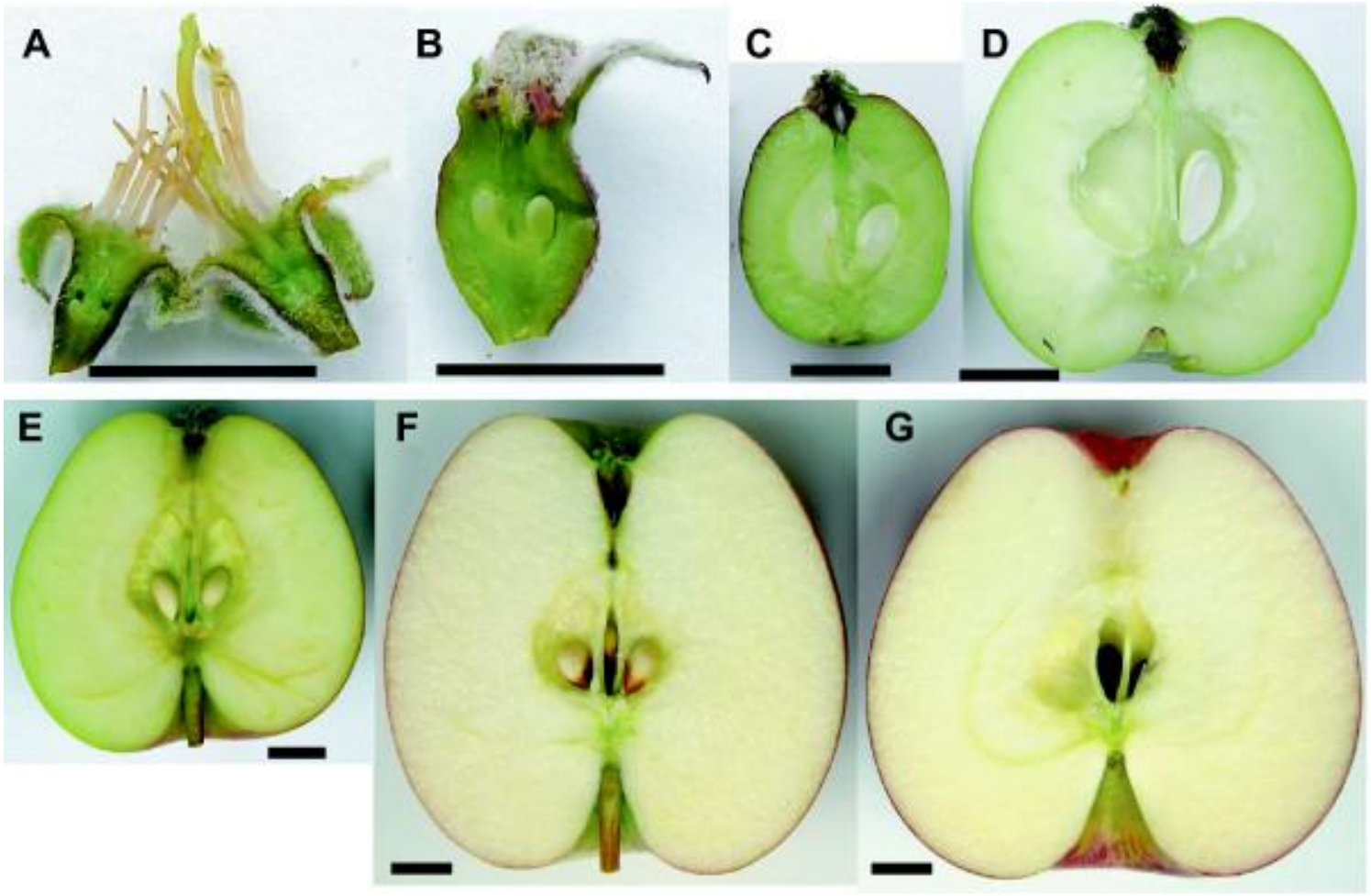
Key Idea: Although fruits provide some protection for developing seeds, they primarily function in seed dispersal.

Fruit is a structure that develops from an ovary of a flower and contains seeds.

Fruits

- The ovary of a pistil is called a fruit after its ovules are fertilized.
- When many fruits are eaten by animals, the seeds pass undigested through the animals and are dispersed.

Fruit Formation



Vegatative Reproduction

Key Idea: Many plants reproduce asexually in a variety of ways that involve nonreproductive parts, such as stems, roots, and leaves. The reproduction of plants from these parts is called *vegetative reproduction*.

Vegatative Reproduction

- In most plants, vegetative reproduction is faster than sexual reproduction.

Name	Description	Examples
Runner	Horizontal, above-ground stem	Airplane plant, Bermuda grass
Bulb	Very short, stem with thick, fleshy leaves; only in monocots	Onion, daffodil, tulip
Corm	Very short, thickened, underground stem with thin, scaly leaves	Gladiolus, crocus
Rhizome	Horizontal underground stem	Iris, fern, sugar cane
Tuber	Swollen, fleshy, underground stem	Potato, caladium