

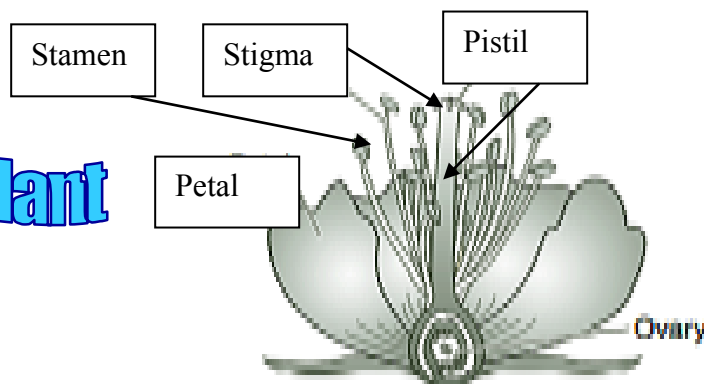
Key Concepts

Life Processes and Living Systems

(SOL 4.4)

Plants

- For many typical green plants, there are structures that perform certain basic functions. For example, roots anchor the plants and take water and nutrients from the soil. Plant stems provide support and allow movement of water and nutrients.
- Plants can be divided into two general groups: those that produce seeds and those that produce spores.
- Many seed-producing plants have **roots, stems, leaves, and flowers**. The **stamen** and **pistil** are reproductive parts of the flower. The **sepals** are the small leaves that form the “housing” or “protection” of the developing flower.
- **Pollination** is part of the reproductive process of flowering plants. Pollination is the process by which pollen is transferred from the stamens to the stigma.
- Some plants reproduce with **spores**. These include ferns and mosses.
- Green plants produce their own food through the process of **photosynthesis**. Green plants use **chlorophyll** to produce food (sugar), using carbon dioxide, water, nutrients, and sunlight. Leaves are the primary food producing part of these plants.
- Oxygen is produced during photosynthesis.
- Plants adapt to changes in their environment in order to survive. Dormancy is a plant adaptation. **Dormancy** is a period of suspended life processes brought on by changes in the environment.



Parts of the Plant

Plant Reproduction

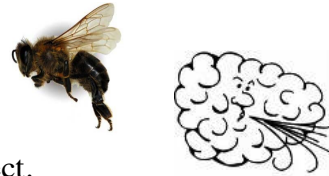
Plants reproduce, or create, other plants like themselves. To do this, plants have reproductive parts. **Sepals** are green and look like leaves. They protect the flower when it is a bud. Flower **petals** have many shapes, sizes, and colors. Their bright colors and smells attract different animals. Many flowers attract insects. Others attract birds.

A plant's **roots** anchor the plant and take water and nutrients from the soil. Plant **stems** provide support and allow movement of water and nutrients.

Many flowers have both male and female parts. The male parts are called the **stamens**. A yellow powder called **pollen** is made in the **anther**, the top part of each stamen.

The female part of the flower is the **pistil**. The top of the pistil, called the **stigma**, is sticky. When pollen grains land on the pistil, they stay there. For seeds to form, pollen from the male part of a flower has to reach the female part. Moving pollen from the stamen to the stigma is called **pollination**. Pollination can take place in many ways.

The wind can carry pollen. Trees and grasses are often pollinated by the wind. Insects often pollinate flowers that are brightly colored or that have strong smells. More flowers are pollinated by bees than by any other kind of insect.



After pollination, a pollen tube grows down into the ovary. The ovary is at the bottom of the pistil. In the **ovary**, male cells coming through the pollen tube join egg cells, or **ovules**. The pollen cells fertilize the ovules. The fertilized cells start to form seeds. The ovary develops into a **fruit**. A fruit holds the seeds that form in the flower. A fruit can be soft and fleshy, like a peach, or it can be hard like a walnut.

Different plants have different ways to reproduce. Evergreen plants, such as pine trees, make seeds in **cones**. Flowering plants, such as apple trees, make seeds in flowers that are later found inside the fruit.

Mosses and ferns reproduce from spores. Spores are special cells that can live a long time without water. When spores do get enough water, they grow into new plants.



Dormancy

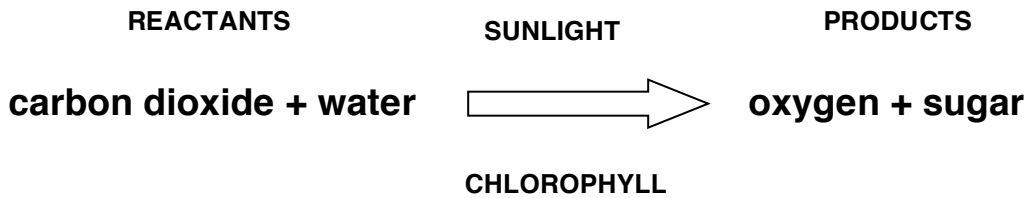
Dormancy - a period of suspended life processes brought on by changes in the environment (like droughts or cold seasons); a period in which a plant has no active growth

Example - *When your lawn turns brown during the winter, the grass becomes dormant. As soon as spring comes, the grass will begin to grow again.*

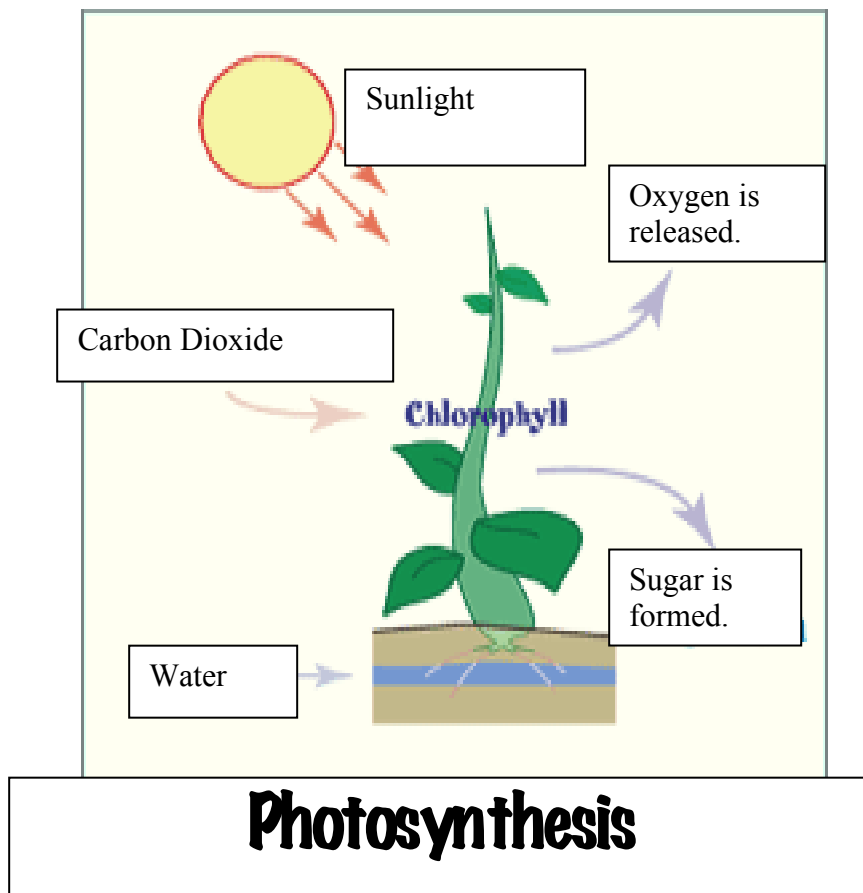


Photosynthesis

The plant's roots take in water from the soil. Water travels through the stems to the leaves. Carbon dioxide, a gas in the air, is absorbed into tiny openings in the leaves. The green material in the leaves, chlorophyll, traps energy from sunlight. Plants use the energy to change water and carbon dioxide into sugars and oxygen. The oxygen goes into the air. Plants use the sugars to live and grow.



Carbon dioxide and water in the presence of sunlight and chlorophyll produce sugar and oxygen.





Directions: True/False: Write **T** for true and **F** for false in the blanks. If false, change the underlined word to the correct response in the parentheses.

- _____ 1. **Roots** help collect sunlight and carry out photosynthesis. (_____)
- _____ 2. **Sunlight** is required for all plants to grow. (_____)
- _____ 3. The **pistil** produces pollen in the anther. (_____)
- _____ 4. A plant will lie **dormant** from one season to the next until conditions are right for growth. (_____)
- _____ 5. Moving pollen from the stamen to the stigma is called **fertilization**. (_____)
- _____ 6. The **sepal** protects the flower when it is budding. (_____)
- _____ 7. Plants produce food from the energy of the sun through the process of **pollination**. (_____)
- _____ 8. **Stems** anchor plants into the earth and draw water and nutrients from the soil. (_____)
- _____ 9. Ferns and mosses reproduce by **spores**. (_____)
- _____ 10. The female part of the flower is called the **stamen**. (_____)
- _____ 11. **Carbon dioxide** is produced during the process of photosynthesis. (_____)
- _____ 12. The purpose of the **stem** is to carry water and nutrients to all parts of the plant. (_____)