

## SECTION 9 - 1

## SECTION SUMMARY

## The Characteristics of Seed Plants

## Guide for Reading

- ◆ What characteristics do seed plants share?
- ◆ What are the main parts of a seed?
- ◆ What are the functions of leaves, stems, and roots?

**All seed plants share two characteristics. They have vascular tissue and use seeds to reproduce.** They all have body plans that include leaves, stems, and roots.

Water, food, and nutrients are transported throughout plants in vascular tissue. There are two types of vascular tissue. **Phloem** is the vascular tissue through which food moves. When food is made in the plant's leaves, it enters the phloem and travels to the plant's stems and roots.

Water and nutrients travel in the vascular tissue called **xylem**. The plant's roots absorb water and nutrients from the soil. These materials enter the root's xylem and move upward into the stems and leaves.

**Seeds** are structures that contain a young plant inside a protective covering. **A seed has three important parts—an embryo, stored food, and a seed coat.**

The young plant that develops from the zygote, or fertilized egg, is called the **embryo** and has the beginnings of roots, stems, and leaves. In some plants, food is stored inside one or two seed leaves, or **cotyledons**. The outer covering of a seed is called the seed coat.

**Germination** is the early growth stage of the embryo. Germination begins when the seed absorbs water from the environment and uses its stored food to begin to grow.

**Leaves capture the sun's energy and carry out the food-making process of photosynthesis.** The underside of the leaf has small openings, or pores, called **stomata**. These open and close to control when gases enter and leave the leaf. The process by which water evaporates from the stomata in a plant's leaves is called **transpiration**.

**The stem carries substances between the plant's roots and leaves. The stem also provides support for the plant and holds up the leaves so they are exposed to the sun.** Inside the stem is a layer of cells called the **cambium**. The cells of the cambium divide to produce new phloem and xylem and to increase the stem's width.

**Roots anchor a plant in the ground and absorb water and nutrients from the soil.** The tip of the root is rounded and is covered by a **root cap**. The root cap protects the root from injury from rocks and other material as the root grows through the soil.