

SECTION 9-2

SECTION SUMMARY

Gymnosperms

Guide for Reading

- ◆ What are the characteristics of gymnosperms?
- ◆ How do gymnosperms reproduce?

A gymnosperm is a seed plant that produces naked seeds—seeds that have no protective covering. **All gymnosperms produce naked seeds. In addition, many gymnosperms also have needlelike or scalelike leaves and deep-growing root systems.** Most gymnosperms are trees, although a few are shrubs and vines. Gymnosperms are classified into four groups—the cycads, the ginkgo, the gnetophytes, and the conifers. The conifers are the largest group of gymnosperms on Earth today.

Most gymnosperms have reproductive structures called **cones**. Most gymnosperms produce two types of cones: male cones and female cones. Male cones produce tiny grains of **pollen**, which contain the microscopic cells that will later become sperm cells. Female cones contain at least one ovule at the base of each scale. An **ovule** is a structure that contains an egg cell. After being fertilized, the ovule develops into a seed.

To reproduce, **first, pollen falls from a male cone onto a female cone. In time, a sperm cell and an egg cell join together in an ovule on the female cone.** The transfer of pollen from a male reproductive structure to a female reproductive structure is called **pollination**.

Many useful products come from conifers. Some of these products include paper and the lumber to build homes. Conifers are also used to make the rayon fibers in clothes.

Conifers are grown in large forests. Clear cutting is one method to obtain lumber. In clear cutting, all the trees in a large area of forest are cut down. This practice can destroy animals' homes and cause the soil to be washed away by rains.