What is a Plant?

Chapter 4 Lesson 1

Vocabulary

**Chlorophyll-** green pigment found in the chloroplasts of plants.

**Photosynthesis-** food-making process in plants

**Tissue-** group of cells that perform a specific function

**Chloroplast-** where food is made during photosynthesis

**Vacuole-** large storage sac for food, water, and waste.

**Cuticle-** waxy, waterproof layer of the leaf

**Vascular tissue-** system of tube-like structures inside a plant through which food and water are transported.

Ancestors of Plants

Biologists have studied fossils in order answer the question, Which organisms were the ancestors of today’s plants?

A fossil is the trace of ancient life forms preserved in rock and other substances.

Land plants and green algae are very closely related.

Biologists studied a pigment called chlorophyll, a green pigment found in the chloroplasts of plants, algae, and some bacteria.

Characteristics of Plants

Plants are autotrophs

This means that they make their own food.

The food-making process in plants in known as photosynthesis.

Plants use carbon dioxide and water to make food and oxygen.

Plants are multicellular

Except for some green algae, plants are made of many cells.

Cells are organized into tissues.

Tissues are groups of similar cells that perform the same job.

Plants have cell walls

The cell wall separates the cell of the plant from the environment.

Cell walls contain cellulose. Cellulose makes the walls rigid.

Plant Cells

Unlike the cells of animals, a plant’s cells are enclosed by a cell wall.

Chloroplasts, which look like green jelly beans, are the structures in which food is made.

A vacuole is a large storage sac that can expand and shrink.

The vacuole stores many substances, including water, wastes, and food.

A plant wilts when too much water has left its vacuole.

Adaptations for land plants

Adaptations make an organism better fitted to survive and multiply in its environment.

For plants to survive on land, they must have ways to obtain water and other nutrients from their surroundings, retain water, support their bodies, transport materials, and reproduce.

Obtaining and retaining water

All organisms need water in order to survive.

To live on land, plants need adaptations for obtaining water and other nutrients from the soil.

One adaptation is the way the plant produces its roots.

To help plants prevent water loss, plant leaves have a waxy, waterproof layer called a cuticle.

Support and Transporting materials

Land plants must be able to support their own bodies.

This is easier for low plants, but tall plants need strong cells walls and tissue to support their bodies and hold them to the sun.

Plants need a way to transport materials throughout the plant.

Plants absorb water and materials through the roots and then it is transported to the vascular tissue.

Vascular tissue is a system of tube-like structures inside a plant through which water, minerals, and food move.

Reproduction

For many plants, reproduction can only occur if there is water in the environment.

This is because the sperm cells of these plants swim through the water to the egg cells.

Land plants need to have adaptations that make reproduction possible in dry environments.

Class/homework: Assess your understanding pg. 112, Apply-it pg. 114, Assess your understanding pg. 115