

Important Concepts . . .

Preview Review



Science

Grade 7

***W2 - Lesson 1: Life Processes and
Structure of Plants***

Important Concepts of Grade 7 Science

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W1 - Lesson 2	Nutrient Cycles, Energy Flows, and Changes in Ecosystems
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Materials Required.

Textbook:
Science in Action 7

Science Grade 7
Version 5
Preview/Review W2 - Lesson 1

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Preview/Review Concepts for Grade Seven Science



*W2 - Lesson 1: Life Processes
and Structure of Plants*

OBJECTIVES

By the end of this lesson, you should be able to

- identify and describe basic plant parts
- explain and identify what an adaptation is and predict adaptations of plants living in specific conditions
- define basic life processes in plants

GLOSSARY

adaptation - a change in an organism that makes it better suited to an environment

cellular respiration - the breakdown of glucose by cells to release energy for the cell's use

diffusion - the movement of particles from an area of high concentration to an area of low concentration

osmosis - the diffusion of water across a semi-permeable membrane

photosynthesis - the process plants use to make their own food using light, carbon dioxide, and water

transpiration - the evaporation of water from pores of a plant

Introductory Information for Teachers

Preview/Review courses are aimed mainly at students who have complete the regular course but who need to review before beginning the next grade. Other students may find Preview/Review courses useful in preparing for the new materials they will study in their next grade. No Preview/Review course is intended to replace the regular course because all cover only some important concepts from the Program of Studies for each grade.

Preview/Review materials are intended for use by teachers in one-subject and one-grade classrooms.

This Preview/Review course contains fifteen lessons in three sections. Each section has five lessons with homework. A short quiz is provided at the end of each section to test students' knowledge of the material studied. In a classroom, the course will likely be completed in three weeks.

Students may attend one, two, or all three sections. Because Science has five units per grade and does not divide into three sections, Sections 1 and 2 cover two units each and Section 3 covers the final unit.

In Science, textbooks are central to Preview/Review. That is, the textbook must be read and used to complete the activities proficiently.

Textbooks required:

- Grade 7: *Science in Action 7*
- Grade 8: *Science in Action 8*
- Grade 9: *Science in Action 9*

W2 - Lesson 1: Life Processes and Structure of Plants

Plants have some common parts regardless of type. They also carry out a number of processes in order to maintain life.

Plant Structure

If you carefully pull any small plant out of the soil and look at it closely, you will find certain standard parts on it. They include roots, stems, leaves, and reproductive parts. This lesson takes a closer look at them and how they can be identified as well as what they do for the plant.

1. Read page 101 of *Science in Action 7* and describe the appearance and functions of each of the following plant parts.

a. stems _____

b. leaves _____

c. roots _____

d. cones _____

e. flowers _____

f. seeds _____

Adaptation

Read pages 118-120 in the textbook. Because of conditions that a plant species has been exposed to over time, changes in its structure may have occurred. These changes are called **adaptations**. They help improve the plant's chances of survival in a particular environment.

- 2. How do you expect the leaves of a plant that lives in the desert to be modified to help the plant survive in dry conditions?

- 3. If you have a plant that relies on insects to help it reproduce, (pollinate it) what sorts of characteristics would you expect to find in its flowers?

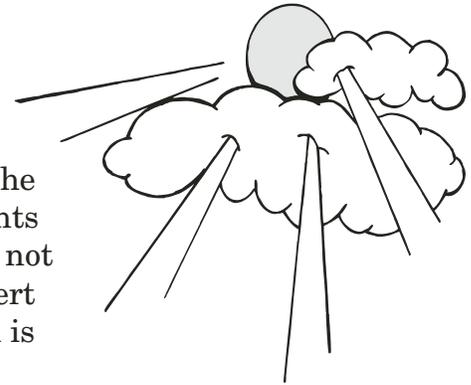
- 4. What kinds of adaptations does a flowering plant that lives on the Tundra in Canada's far north need?

- 5. Why do the leaves of spruce and pine have a coating of resin?



Life Processes

The process that probably comes to mind first when discussing plants, is **photosynthesis**. Read page 104 of the textbook. During photosynthesis, plants trap solar energy (sunlight), which is not usable by living organisms, and convert it to chemical energy (glucose), which is usable.



- 6. In addition to light energy, what substances must plants have for photosynthesis?

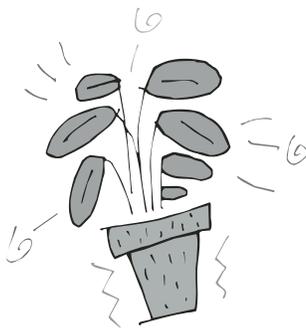
- 7. Write the word equation for what happens during photosynthesis.

- 8. In which part of the plant does photosynthesis occur?

- 9. **Cellular respiration** is often thought of as the opposite of photosynthesis. Read page 104 of the textbook. In this process, sugar the plant made during photosynthesis is broken down in the presence of oxygen. When this happens, energy is released for use by the plant. Write the word equation for what happens in cellular respiration.



How Plants Move Matter



Other processes within plants involve moving material into and out of cells and the plant. These processes include diffusion, osmosis, capillary action, active transport, and transpiration. **Diffusion** is the movement of particles from an area of high concentration to an area of lower concentration. It is important for moving many substances into or out of cells. **Osmosis** is a special kind of diffusion—the diffusion of water across a semi-permeable membrane. This is how water moves into a root and into or out of cells. Some particles do not diffuse into or out of cells. They require a carrier molecule and the addition of energy. This is called **active transport**. Read pages 103, 106, and 107 of the textbook for details.

10. Compare and contrast diffusion and osmosis.

11. How does active transport differ from osmosis and diffusion?



12. How does a plant “breathe”?

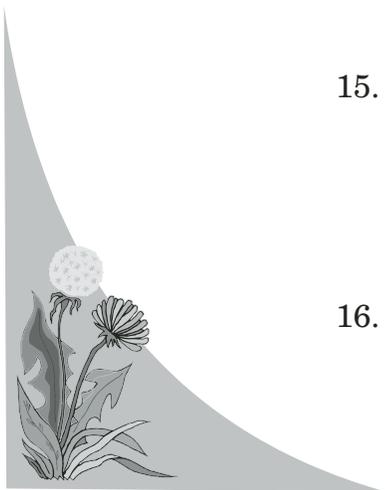
Water moves through transport tubes in a plant partly by **capillary action**. Attraction between the water particles and the tubes pulls the water along. When water reaches a pore to the outside of a plant, it evaporates into the air. This process is called **transpiration**. Because water particles are attracted to each other, as one particle evaporates it pulls up another to take its place. Read page 103 of your textbook.

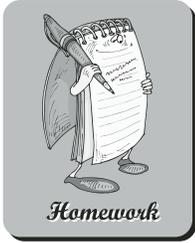
13. Describe how water moves up a plant stem by capillary action.

14. Why does a plant wilt?

15. If water concentration is higher inside a cell than outside, where will water move?

16. Define gas exchange.





You have learned about plant structure and life processes. Your homework will demonstrate your understanding.

Homework

Examine two different types of plants. On each plant identify the parts that you learned about. How are the parts of the two plants different? How are they the same?
