



What is photosynthesis?

Plant Concepts: _____

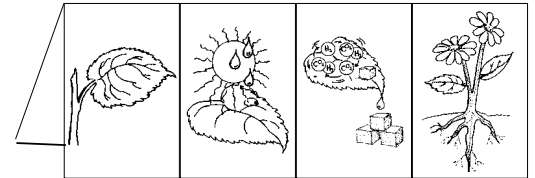
- All plants contain chlorophyll. Look at a green plant as you review these concepts.
- Chlorophyll gives the plant its green color.
- Most photosynthesis takes place in the leaves of the plant.
- Chlorophyll absorbs sunlight energy.
- The sunlight energy breaks down water into its two elements, hydrogen and oxygen.
- The plant releases oxygen into the air.
- The plant absorbs carbon dioxide from the air and mixes it with hydrogen to make glucose, or sugar.
- In addition to sugar, the plant makes other food substances that it either uses or stores for future use.
- The stored food is called sap.

Teacher’s Note: An alternative assessment suggestion for this lesson is found on pages 78-79. If Graphic Pages are being consumed, photocopy assessment graphics needed first.

Vocabulary Words: green plant sugar sap absorbs hydrogen oxygen *carbon dioxide *chlorophyll *photosynthesis (foh toh SIN theh sis)

Read: *Lots of Science Library Book #2.*

Activities:



Photosynthesis – Graphic Organizer

Focus Skill: sequencing a process

Paper Handouts: 8.5"x11" sheet of paper a copy of Graphics 2A – D

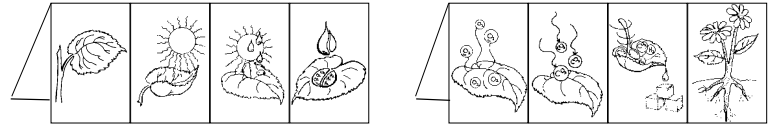
Graphic Organizer: Make a Small Question and Answer Book. Draw/glue the pictures in the correct order on the front tabs. Under the tabs, write/dictate clue words about the process of photosynthesis.

1. Plant leaves are green because of chlorophyll. (*plant, green*)
2. Plants need sunlight and water. (*sunlight, water*)
3. Plants use sunlight and water to make their food. (*make food*)
4. Plants move the food they make throughout their parts. (*move and use food*)

Paper Handouts: two 8.5"x11" sheets of paper a copy of Graphics 2A – H
a 12"x18" sheet of construction paper

Graphic Organizer: Make two Small Question and Answer Books. Draw/glue the pictures in the correct order to illustrate the process of photosynthesis. Make a Half Book from the 12"x18" paper. Glue the small Question and Answer Books inside the Half Book.

- ☞ Explain the process of photosynthesis by writing clue words or phrases under each tab. Orally explain the process using complete sentences.
- ☞ Research photosynthesis. Under each tab explain that step in the process. Explain how photosynthesis changes from day to night.



Investigative Loop – Chlorophyll in Plants – Lab 2-1

Focus Skill: drawing conclusions from observations

Lab Materials: a clear glass half full of rubbing alcohol a fresh leaf

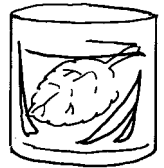
Paper Handouts: 8.5" x 11" sheet of paper a copy of Lab Graphic 2-1
Lab Record Cards (index cards or 1/4 sheets of paper)

Graphic Organizer: Make the Pocket Book. See page 2 for instructions. This is the student's Lab Book. In future Lessons, Pocket Books will be made and glued side-by-side to this one. Glue Lab Graphic 2-1 on the left pocket.

Concept: The chlorophyll that makes plants green can be extracted for observation.

Prediction: If chlorophyll is extracted from a leaf into alcohol, what color will it be?

Procedure: Place a freshly picked leaf in the glass of alcohol. (Note: Dip the leaf in boiling water before placing it in the alcohol to speed up the process.) Set a timer and check the leaf every hour for several hours. Check it the next day.



Observations: Observe the leaf before, during, and after placing it in the alcohol. How does the leaf change? How does the alcohol change?

Record the Data: On your Lab Record Cards, write Lab 2-1, the date, and leaf observations. Diagram the leaf and alcohol as they were before and after the experiment.

Conclusions: Draw conclusions from your observations.

Communicate the Conclusions: On a Lab Record Card, explain how your observations led to the conclusions. Place the Lab Record Cards in the Lab Book for Lab 2-1.

Spark Questions: Discuss questions sparked by this lab.

New Loop: Choose one question to investigate further,

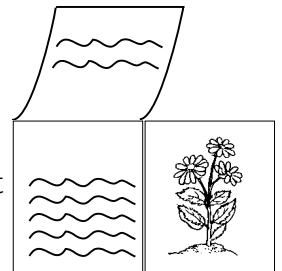
Or repeat the above procedure using leaves of different plants in new glasses of alcohol. Compare the color of the alcohol for each plant. Make a Lab Record Card for each plant.

Add to your Plant ID Book

Materials: Nature Guide Book

Paper Handouts: 8.5"x11" sheet of white paper student's Plant ID Book

Graphic Organizer: Make a Large Question and Answer Book. Glue it side-by-side to the Plant ID Book made in the previous lesson. Students select two plants to feature in their Plant ID Books. Draw one plant on each tab. Record the plant observations under the tabs. See Lesson 1 Activities section.



Experiences, Investigations, and Research

Select one or more of the following activities for individual or group enrichment projects. Allow your students to determine the format in which they would like to report, share, or graphically present what they have discovered. This should be a creative investigation that utilizes your students' strengths.



1. Write a word with plants. Find a good location for plants to grow, write a word in the dirt, and sprinkle carrot seeds in the small furrows. Cover the seeds with dirt and water. Check your word growth daily.



2. Chloroplasts are the tiny parts of the plant cell that contain chlorophyll. Research the structure of a plant cell. Focus on chloroplasts. Make a Half Book for this project. Draw a plant cell on the cover. Inside, illustrate the cell and label the parts. Describe each part and its function in the cell.



3. Read *The Tale of Peter Rabbit* by Beatrix Potter. \ \ \



4. Begin reading *My Side of the Mountain* by Jean Craighead George or *Swiss Family Robinson* by Johann David Wyss. \ \ \

