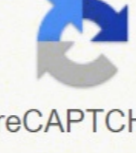


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LEAF POGIL

- Thylakoids/Grana
 - Light
 - Water
 - Sugar
- Stroma
 - Water
 - Sugar
 - Oxygen

- Palisade mesophyll cells are packed with chloroplasts and are the site of photosynthesis.
- Spongy mesophyll cells are arranged in a way that allows for the exchange of gases.
- Stomata are the openings in the leaf that allow for the exchange of gases.
- Guard cells are the cells that surround the stomata and control its opening and closing.
- Upper epidermis: Protects the leaf from the sun and prevents water loss.
- Lower epidermis: Protects the leaf from the ground and allows for gas exchange.
- Stomata: The opening in the leaf that allows for the exchange of gases.
- Guard cells: The cells that surround the stomata and control its opening and closing.
- Palisade mesophyll: The cells that are packed with chloroplasts and are the site of photosynthesis.
- Spongy mesophyll: The cells that are arranged in a way that allows for the exchange of gases.
- Upper epidermis: The top layer of cells that protects the leaf.
- Lower epidermis: The bottom layer of cells that protects the leaf.
- Stomata: The opening in the leaf that allows for the exchange of gases.
- Guard cells: The cells that surround the stomata and control its opening and closing.

PHOTOSYNTHESIS

Across

- The product of photosynthesis. (3)
- Process by which carbon dioxide and water combine to form glucose and oxygen. (9)
- Specialized structures that allow gas to enter and leave the leaf. (7)
- Part of the plant where photosynthesis generally occurs. (6)
- The process by which plants and some bacteria use the energy from sunlight to produce sugar. (14)
- A compound needed for photosynthesis. (6, 7)
- Molecule used to store energy. (5)
- Specialized cells or vesicles containing photosynthetic chemicals. (9)
- Chlorophyll absorbs every color of sunlight except this. (3)

Down

- Place where dark reactions occur. (6)
- An animal that eats plants. (7)
- The process of converting energy from a light-related substance into the pyrophosphate bond of an ATP molecule. (20)
- A group of accessory pigments that includes beta-carotene. (11)
- Place where light reactions occur. (7)
- A compound needed for photosynthesis. (7)
- A by-product of photosynthesis. (3)
- A plant pigment that absorbs sunlight. (11)
- This reaction requires direct energy of sunlight to make energy carrier molecules. (5)
- The link between the energy that comes from sunlight to the energy captured by photosynthesis. (4, 7)
- Number of molecules of oxygen produced along with one molecule of sugar. (3)
- Reaction that occurs when the products of the Light Reaction are used to form C₃ or other kinds of carbohydrates. (9)

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Photosynthesis

Making Energy

Chloroplasts

Photosynthesis is a process in which sunlight energy is used to make glucose. The site of photosynthesis is in the **chloroplast** - an organelle found in the leaves of green plants. The main functions of chloroplasts are to produce food (**glucose**) during **photosynthesis**, and to store food energy. Chloroplasts contain the pigment, **chlorophyll**. Chlorophyll absorbs most of the colors in the color spectrum, and reflects only green and yellow wavelengths of light. This is why we see leaves as green or yellow - because these colors are reflected into our eyes.

- What is photosynthesis?
- Where does photosynthesis occur?
- What are chloroplasts and where are they found?
- What are the two main functions of chloroplasts?
- Why do most leaves appear green?
- What is the primary pigment found in the chloroplast?

Photosynthesis

Glucose is another name for sugar. The molecular formula for glucose is C₆H₁₂O₆. Plants make sugar by using the energy from sunlight to transform CO₂ from the air with water from the ground into glucose. This process, called photosynthesis, occurs in the chloroplast of the plant cell. During this process, oxygen (O₂) is created as a waste product and is released into the air for us to breathe. The formula for photosynthesis is:

$$6\text{CO}_2 + 6\text{H}_2\text{O} + \text{sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$$

This formula says that **carbon dioxide** + **water** molecules are combined with the energy from **sunlight** to produce **sugar** and **oxygen**. The reactants in photosynthesis (what is used) are CO₂, water and sun. The plant gets water from the ground through its roots. The plant collects carbon dioxide from the air. Much of the carbon dioxide comes from living organisms that exhale (breathe it out), but some also comes from factory smokestacks and car fumes.

- What is the formula for photosynthesis?
- What three things are used to make glucose in photosynthesis?
- Where does the water come from?
- Where does the water enter the plant?
- Name 3 sources of CO₂.
- What type of energy does the plant use to convert CO₂ and H₂O into sugar?

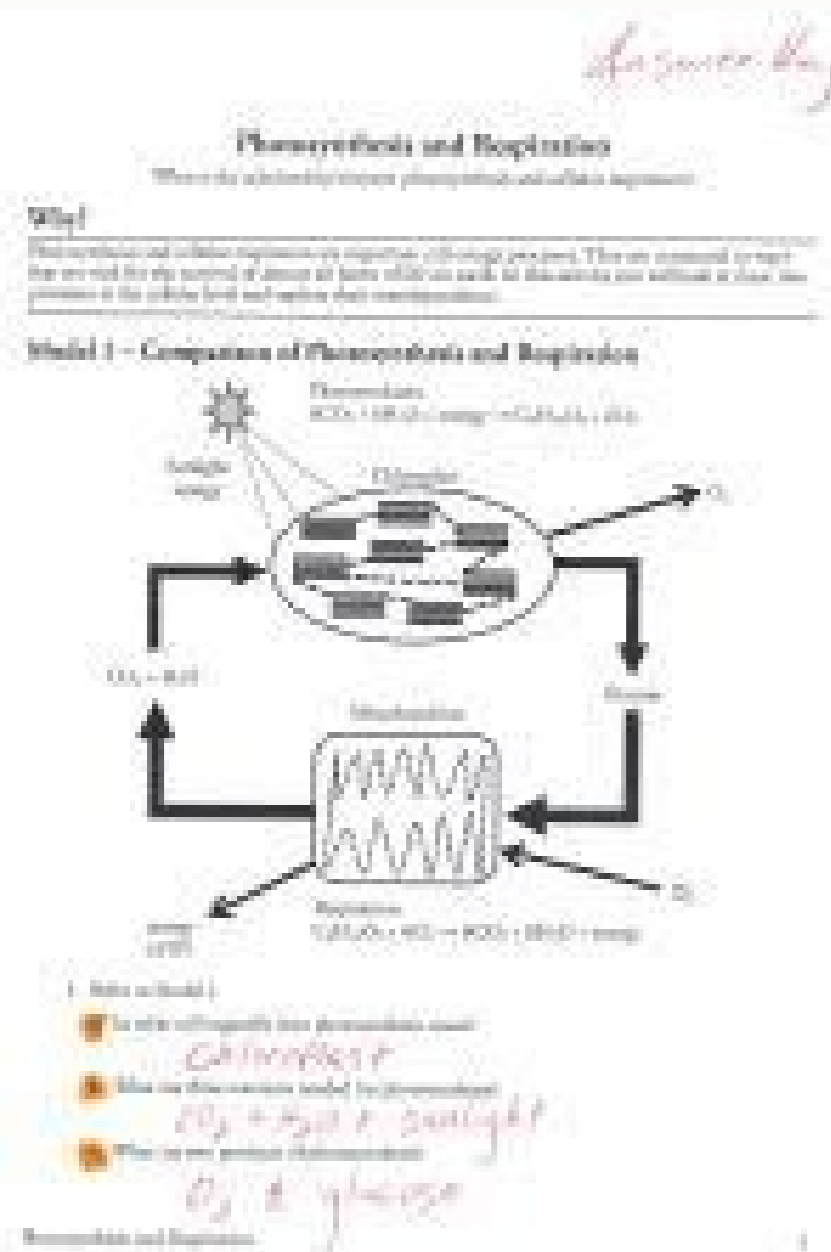
The products are **glucose** and **oxygen**. The glucose produced is used by the plant for energy and growth. We also use this glucose by eating plants. The oxygen produced is released into the air for us to breathe. Photosynthesis is essential.

2-2A Understanding Nutrient Cycles – Use pages 69 from textbook

Figure 2.16 on page 69 represents a model of a nutrient cycle that takes place without human interference. In this activity, you will study this model to become familiar with the different parts of a nutrient cycle.

1. Work with a partner and study Figure 2.16 closely. (Keep one of your textbooks open to page 69).
2. Identify where nutrients are stored.
Nutrients are stored in Earth's atmosphere, oceans, and land masses.
3. Identify the nutrient flows. Describe any patterns that you see.
Descriptions may vary
Biotic processes, such as decomposition, and abiotic processes, such as river run-off, can cause nutrients to flow in and out of stores.
4. Infer the way in which nutrients travel from land to oceans.
Runoff on the ground, through rivers, or in the water table
5. Identify the state in which nutrients enter the atmosphere (ex. As liquids, solids, or gases).
Cellular respiration involves carbohydrates reacting with oxygen to form carbon dioxide, water, and energy.
6. State where the fastest exchange of nutrients takes place.
Biotic – producers, consumers, and decomposers in the ocean and on land
7. State how producers might contribute to nutrient cycles.
Photosynthesis converts solar energy into chemical energy. Carbon, in the form of carbon dioxide, enters through the leaves of plants and, in the presence of sunlight, reacts with water to produce carbohydrates and oxygen.
8. Hypothesize how human activities might alter a nutrient cycle.
Descriptions may vary – pollution, transportation and CO₂
9. Explain why the arrows are drawn in different sizes.
The arrows indicate the amount of nutrients being exchanged and stored.
10. What conclusion can you make about nutrient stores in marine sediments and sedimentary rocks?
Since the arrows are large, this indicates a large amount of nutrients is stored in marine sediments and sedimentary rock.
11. (a) What biotic processes may take place in a nutrient cycle?
The biotic processes include decomposers releasing nutrients into the soil for plants, plants taking up the nutrients, consumers eating the plants, and then the plants and animals dying and the decomposers repeating the process. Also, plants exchange gases with the atmosphere.

(b) what abiotic processes may take place?
Abiotic processes could include precipitation and the return of nutrients to land or the ocean as rain, erosion, and run-off.
12. Do nutrients leave the biosphere? Explain.



Top half 14. Carbon dioxide, water, sunlight. 7. Matter: carbon dioxide, water, sugar, oxygen Energy: Sunlight (kinetic), glucose (potential) 8. Related searches for biology pogil photosynthesis answer key; Pogil Biology Answer Key Pogil Answer Keys for Teachers Photosynthesis Pogil Answers AP Biology Photosynthesis Pogil Answers Pogil Worksheet Answers AP Biology Cellular Respiration Pogil Answer Key Tag: photosynthesis pogil packet answers in a Leaf What's the relationship between structure and function in a leaf? List three substances leaving the leaf. Chloroplasts here would be wasted since little light gets down to them. Leaves are like living machines that recycle the carbon and oxygen in our environment. The palisade mesophyll makes the whole leaf green because the cells there are the only ones that contain chloroplasts, which contain the green pigment chlorophyll 15. Why? you have convenient answers with photosynthesis what in a leaf pogil answer key PDF. Reactants are the ingredients in a chemical reactions. We also have many ebooks and user guide is also related with photosynthesis what in a ... Label the central vein in the leaf diagram. sunlight, carbon dioxide, water, sugar, water (gas), oxygen 1. It would also mean no oxygen for ... Tag: photosynthesis what is a leaf pogil what in a leaf pogil answer key.pdf FREE PDF DOWNLOAD NOW!!! Source #2: photosynthesis what in a leaf pogil answer key.pdf FREE PDF DOWNLOAD POGIL | Home pogil.org What is POGIL? Carbon Dioxide and Water b) Reactants enter? This process, driven by the sun's energy, allows for a constant supply of oxygen and food for the inhabitants of Earth. Model 1 - Leaf Sun-Catcher Sunlight (energy) Carbon dioxide Oxygen Water (gas) Water (liquid) Sugars Water (gas) General Equation for Photosynthesis Reactants light carbon dioxide + water → sugars + oxygen energy 1. It would also mean no oxygen for animals and no food for heterotrophs. What would the world be like without leaves—no grass for ball fields, no beautiful landscaping? middle of leaf 10. More chloroplasts can then exist and they have more room to move around so they can take turns getting sun. 18. Water 4.5. Liquid entering, gas leaving 6. Some cells, like the guard cells and spongy mesophyll cells regulate the products and reactants in the leaf to make photosynthesis run at optimal levels. 19. Veins are important structures that carry materials through the leaf. the location of the veins in the leaf are centrally located so they have access to more of the leaf tissue. 11. 12. Look back at your answers to Questions 1-3 and the photosynthesis equation. ... Tag: photosynthesis what s in a leaf pogil key what in a leaf pogil answer key is packed with valuable instructions, information and warnings. Carbon dioxide, water, sunlight energy 2. Cuticle upper epidermis 16. In this activity you will look at these two processes at the cellular level and explore their interdependence. Tag: biology pogil photosynthesis what s in a leaf whats in a leaf pogil answer key such as: killer a journal of murder pdf, it never too late to sing piano accompanies the beginner sing). km june 2014 answer sheet, crma study guide, volvo penta high pressure electric fuel pump kit 4 3 5, stanford 10 sample test first Tag: photosynthesis pogil answer key answer key photosynthesis Keywords: Read Online biology pogil answer key... Equation for Photosynthesis 6) Using above equation: a) Reactants? 4) Central Vein. They are connected in ways that are vital for the survival of almost all forms of life on earth. 10. Tag: photosynthesis what s in a leaf pogil key What's in a Leaf? The chloroplasts of these cells would block out some of the sun that would otherwise make it to the p.m. nutrients) away from the leaf to areas where the plant is growing or to storage areas in the plant. POGIL originated in college chemistry departments in 1994; there are now well over ... Tag: photosynthesis what s in a leaf sheet pogil and cellular respiration are important cell energy processes. 1 Photosynthesis: What's in a Leaf? What is the relationship between structure and function in a leaf? Why? What would the world be like without leaves—no grass for ball fields, no beautiful landscaping? In the appropriate locations on Model 2, mark with labels and arrows what is entering the leaf and what is exiting the leaf. 2. What is the relationship between structure and function in a leaf? Cuticle, upper epidermis, palisade mesophyll, spongy mesophyll, lower epidermis, lower cuticle. 9. A. 9. 1 Photosynthesis: What's in a Leaf? To get started finding photosynthesis what in a leaf pogil ... Tag: photosynthesis what is a leaf pogil 4. Model 1 - Leaf Sun-Catcher ... List three things entering the leaf in Model 1. 3. Water sugar oxygen 3. Not all cells in plants are dedicated to photosynthesis because the plant has to be able to perform other functions of life. 5) Water has changed from a liquid to a gas. middle of leaf B. Photosynthesis: What's in a Leaf? They are the largest = most volume. POGIL is an acronym for Process Oriented Guided Inquiry Learning. What is the relationship between structure and function in a leaf Why? Carbon Dioxide through stomata (underside of leaf ... Tag: photosynthesis pogil What's in a Leaf? Which substance is both entering and leaving? P.m. = longer, bigger, contain chloroplasts, exposed to more sunlight, more complex (any others?) 17. 3 Read This! Inside plant veins are two different types of tissues. Palisade mesophyll 13. Xylem carries water and minerals up from the roots of the plant and phloem carries the sugars (nutrients) away from the leaf to areas where the plant is growing or to storage areas in the plant. Tag: photosynthesis what s in a leaf worksheet answers What's in a Leaf?

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