1

Name _____

Photosynthesis
PRE-TEST

DIRECTIONS: Answer the following questions in the space provided.

1.Green plants make their own food in a process called photosynthesis.

2.What are the ingredients plants need to produce their food?

sun, water and carbon dioxide

3.The plant's characteristic green color comes from the chemical chlorophyll.

4.This chemical is found in special cells in the leaves called chloroplasts.

5.The plant's food is a form of sugar called glucose.

6.The tiny openings on the underside of leaves are called stomata.

7.All life on earth depends on plants. How is this possible?

Student answers will vary - should include food and producing oxygen.

8.Plants and animals have a wonderful partnership. What is it that plants need from animals and what do plants produce that is essential to animals?

Plants need carbon dioxide and animals need the oxygen produced by plants.

9.Glucose that isn't used by the plant can be stored as starch.

10.All forms of energy on earth such as the fuels used in our cars are traceable to plants and sunlight. Explain that statement.

Student answers will vary, must include an explanation.

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2

Name _____

Photosynthesis
VIDEO QUIZ

At the end of the video production is a short quiz. You may right the answers to the quiz on this sheet.

DIRECTIONS: Mark the following statements either "True" or "False" or fill in the blanks with the correct words after you hear the tone.

1. True or False? One of the raw materials used by green plants during photosynthesis is the gas carbon monoxide. False
2. True or False? Plants can store some of the food they manufacture as starch. True
3. True or False? The tiny holes through which gases enter and exit leaves are called chloroplasts. False
4. True or False? During photosynthesis, green plants manufacture a sugar called glucose. True

Directions: Answer the following questions by filling in the missing word or with short answers after you hear the tone.

5. During photosynthesis water molecules are split into atoms of oxygen and _hydrogen_.
6. Roots absorb the water they need for photosynthesis through tiny out growths called _root hairs_.
7. Because they are produced from long-dead plant material, gasoline and oil are often called _fossil_ fuels.
8. Green plants get their color from a chemical called _chlorophyll_.
9. The energy plants use during photosynthesis comes from the _sun_.
10. During photosynthesis, sunlight provides the energy to split molecules of carbon dioxide and _water_.

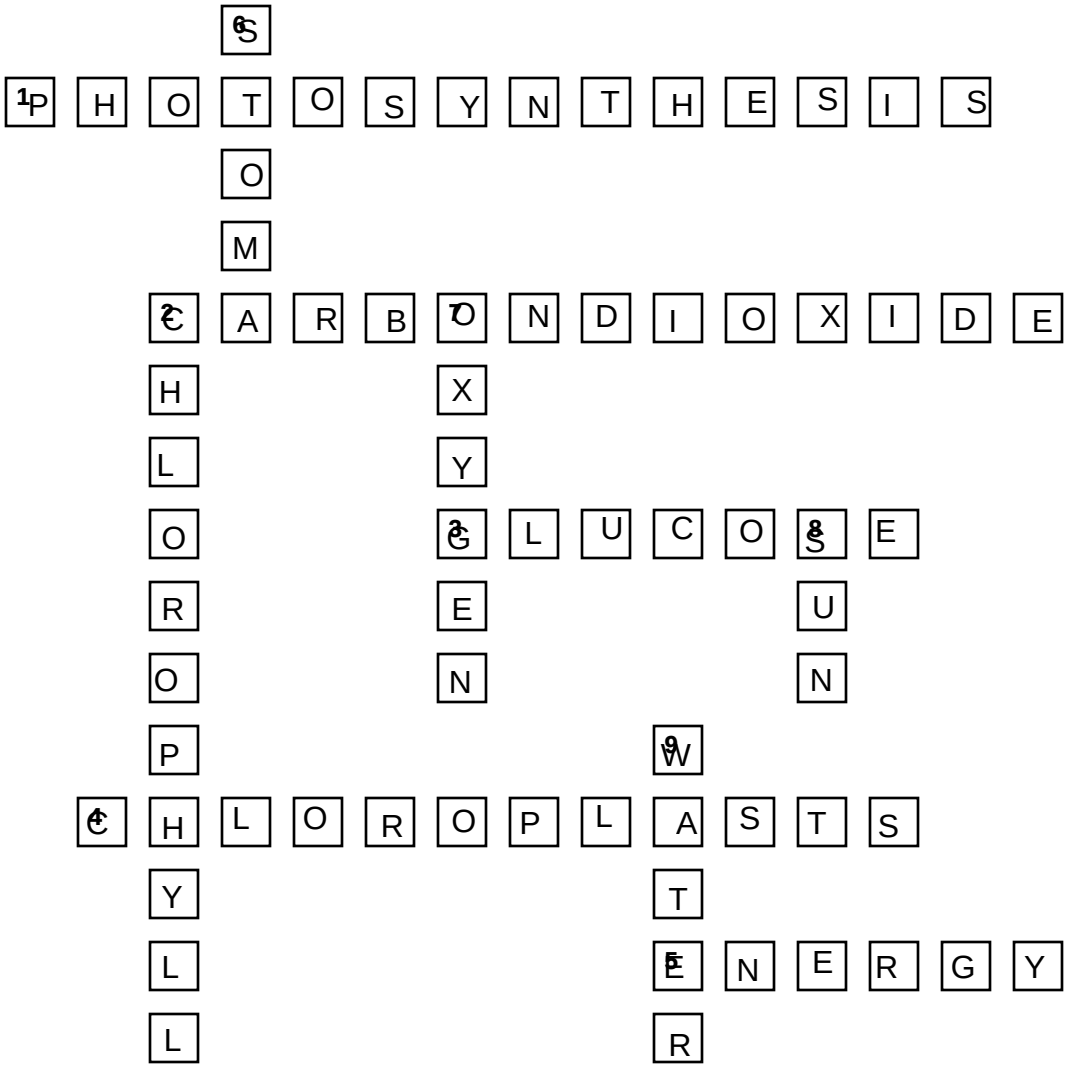
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3

Name _____

Photosynthesis
CROSSWORD

DIRECTIONS: Fill in the boxes below with the words that complete the paragraph at the bottom of the page.



Green plants make their own food in a process called (1) photosynthesis. They need (2 across) _____ _____ from the air and (9) _____ from the soil as well as (5) _____ from the (8) _____. The (2 across) _____ _____ is collected through small openings on the underside of the plant's leaves. Each of these openings is called a (6) _____. The plant gains its characteristic green color from the chemical (2 down) _____, which is found in special cells called (4) _____. The leaf's main job then is to make (3) _____, a form of sugar. During this food-making process (7) _____ is released by the plant into the air. That gas is essential for animal and human survival.

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Name _____

Photosynthesis
TRACING BACK

Many things can be traced back to plants. For example, petroleum, which is used to run cars and trucks, was formed millions of years ago when prehistoric plants and animals died and were buried under layers and layers of rock and soil.

DIRECTIONS: Try to trace things listed below back to plants. The first one has been done for you.

1. woolen sweater — Wool comes from sheep. Sheep feed on grass.
2. book — Paper comes from tress
3. leather purse — Leather comes from animal hides, that come from animals. Animals feed on grass
4. cotton dress — Dress made from a fabric made from cotton (a plant)
5. cake — The main ingredient in cake is flour. Flour is made by milling wheat.
6. triple-decker hamburger — The bread is made of flour and the hamburger is made of beef from cows. Cows feed on grass.
7. milk — Milk comes from cows. Cows feed on grass.
8. bread — The main ingredient in bread is flour. Flour is made by milling wheat.
9. coal — Coal is a fossil fuel, made from long dead plants.
10. honey — Honey comes from bees. Bees collect pollen from flowers to make it.

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Name _____

Photosynthesis
CARBON DIOXIDE AND PLANT GROWTH

Purpose: Green plants produce food during the process of photosynthesis. One of the ingredients needed by plants is carbon dioxide. Carbon dioxide is released by animals when they exhale. It is a gas that mixes with the other gases in the air. The leaves of plants collect the carbon dioxide through small openings on the underside of each leaf. The openings are called stomata. This experiment will illustrate the importance of carbon dioxide to plants.

Materials:
1. a plant with good sized leaves such as a geranium
2. petroleum jelly
3. towels

Procedures:
1. Cover the top of one leaf with petroleum jelly.
2. Cover the bottom of another leaf with petroleum jelly.
3. Place the plant in sunlight and water it regularly.

Observations: After three or four days, examine the leaves. Take the petroleum jelly off each leaf with paper towels. Record what you see.

1. How did the leaf that had petroleum jelly on top compare with other leaves on the plant?

Student answers will vary based on results.

2. How did the leaf that had petroleum jelly on the bottom compare with other leaves?

Student answers will vary based on results.

Conclusions: How can you explain your findings?

Students answers will vary, must include explanation.



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Name _____

Photosynthesis
OXYGEN AS A BY-PRODUCT

Purpose: Green plants produce food during the process of photosynthesis. Oxygen is given off by plants during this food production. This gas is very important to life froms on our planet. This experiment will show that oxygen is released by plants only when photosynthesis is taking place.

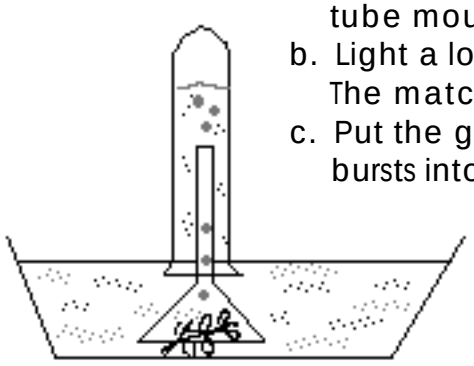
Materials:
1. two elodea plants (you can get them from most pet shops)
2. Two test tubes with stoppers
3. Two pans with deep sides
4. Two glass funnels

Procedures:
1. Fill each pan with water almost to the top.
2. Put an elodea plant in the bottom of each pan.
3. Fill the test tubes with water and keep one submerged in each pan.
4. Place a glass funnel over each plant, making sure the neck of the funnel is above the water.
5. Put one pan with plant in direct sunlight.
6. Hold the water filled test tube over the funnel and watch the gas bubbles rise into the tube. As the bubbles rise into the test tube the water will be displaced and empty out. Wait until most of the test tube is filled with the gas given off by the elodea.
7. Remove the test tube but stopper it so the gas can't escape.
8. Repeat everything for the other pan and plant but this time put the set-up in a dark closet.

Observations: Did gas bubbles rise from the elodea plant in the closet?

To test the gas collected follow these procedures:

a. Remove the stopper from the test tube while holding the test tube mouth side down.
b. Light a long fireplace match and then blow out the flame. The match should be glowing.
c. Put the glowing end of the match into the test tube. If it bursts into flames then pure oxygen is present.



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Name _____

Photosynthesis
POST-TEST

DIRECTIONS: Answer the following questions in the space provided.

1. The process of food making performed by green plants is called _photosynthesis_.
2. The tiny openings on the underside of leaves are called _stomata_.
3. What are the ingredients plants need for their food making process?

   sun, water and carbon dioxide
4. The green color that leaves have is caused by the chemical _chlorophyll_.
5. This green colored chemical is found in cells of the plant's leaf called _chloroplasts_.
6. The plant's food is a kind of sugar called _glucose_.
7. Plant sugar that isn't used by the plant can be stored as _starch_.
8. Here is the chemical formula for the food making process that plants undertake:



   Identify the various chemicals shown in the formula.

   carbon dioxide + water --> glucose and oxygen
9. How can you support the statement that all life on earth is dependent on plants?

   Student answers will vary
10. List as many examples as you can that the energy we use on earth is actually traceable to plants and sunlight.

    Student answers will vary.

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