photosynthesis

A process by which a plant produces its food using energy from sunlight, carbon dioxide from the air, and water from the soil.

[Diagram of photosynthesis process]

http://www.urbanext.uiuc.edu/gpe/glossary/photosynthesis.html
Plant Parts
Can you fill in the blanks with the correct words?

stem  flower  leaf  roots

Name: ____________________________

Name ____________________________


11/17/2005
How Do They Help Out?

Each part of a plant has a different function. Each is very important in order for the plant to grow healthy and strong.

Try to match the plant parts with their functions.

- **Stem:** This part keeps the plant in the soil. It also collects moisture from the soil.

- **Leaves:** This part helps the plant stand up. It carries moisture and food to all parts of the plant.

- **Roots:** This part makes seeds so we can grow new plants.

- **Flowers:** This part makes food for the plant from the sun's rays and carbon dioxide.
Flower Facts

Why Do Plants Have Flowers?

The goal of every plant and animal is the same: To create the next generation. The way a plant makes another generation of its species is by making seeds. Flowers are the tools that plants use to make their seeds.

A seed contains all the information needed to make a new plant. This information is stored as a code in tiny genes within the seed. This genetic code forces the seed to grow into a plant like its parents. Although the new plant will be the same species as its parents, it will not be exactly the same as either of them. Its genetic code is a new mix of genes, half from each parent.

Only flowers from the same species of plant can produce seeds. A flower provides a place to combine the genetic code from a male and a female into a single seed. The combination happens when the pollen, from the male parts of one flower, connects with an ovule (egg) from the female parts of another flower. This is called pollination.

Here are the basic parts of a flower:

But how does the pollen from one flower get to the ovules of another flower? Unlike animals, plants can’t exactly go out hunting for a mate! Instead of working very hard at attracting each other, plants make flowers to attract pollinators to do the work of mating for them.

Pollinators can be bees, flies, beetles, moths, hummingbirds, bats and other animals that visit flowers. They gladly travel from flower to flower to gather the nectar and pollen to feed themselves or their young. The plants make the nectar and pollen just to attract the pollinators. Flowers are like big signs that advertise to pollinators: Eat Here!
When a pollinator goes into a flower to collect nectar or pollen, tiny grains of pollen from the **anthers** of the flower (the male parts) stick to their bodies. When the pollinator visits another flower of the same species, some of this pollen brushes onto the sticky **stigma**. The stigma is the receiving end of the **pistil** (the female part of a flower), where the ovules (eggs) in the **ovary** wait to be fertilized by the pollen. The pollen travels from the stigma, down the style, to the ovary. When an ovule is fertilized, the genes from the pollen combine with the genes of the ovule and a seed is made!

**POLLINATION**

1. The pollinator receives **pollen** from the **stamen** of the first flower.
2. And deposits it on the **stigma** of the next flower.
3. The pollen moves down the **style** to join with the **ovules** in the ovary.

This is how it happens:

The job of a flower is to help its pollinator put pollen exactly in the right place at the right time to make a seed. When a plant’s flower succeeds at this, the plant gets to pass the secret for this success to the next generation, through the genetic code in its seeds! When a plant fails to grow up and make seeds, its genetic code does not get passed on. It becomes a loser in the game of life.

The environment is constantly testing each plant. Competition for sunlight, water, nutrients and space is fierce. **Herbivores** are hungry and plants are their breakfast, lunch and dinner! Only the strongest individuals survive long enough to reproduce. These survivors keep making seeds, letting the environment select the winners and losers. Through this selection process plants have **evolved** (developed) to survive life in every habitat on our planet. This **evolution** has filled even the harshest habitats with life, including vernal pools.

Although the pollination of a flower may appear to happen by accident, plants and pollinators have been practicing for millions of years to make sure that this “accident” happens. Often a plant and pollinator co-evolve (evolve together), adapting to changes in each other to improve their own survival. A plant species may depend on a single species of pollinator to make its seeds. Likewise, many pollinators rely on one plant species to provide all the food for their young. The complex relationship between solitary bees and certain vernal pools plants is a good example of this co-evolution.
Name:

Flower Parts & Pollination Worksheet

Fill in the boxes with the name of the flower part from the words in the box below. Color the petals red, the sepals green, and the pollen yellow.

- stigma
- petals
- style
- anther
- ovary
- filament
- sepal

How Pollination Works

Fill in the blanks.

1. For plants to make seeds, the pollen from the __________ of one flower needs to fertilize the ovule of another flower.

2. The seeds are produced in the flower’s __________ at the base of the pistil.

3. A variety of critters collect pollen and nectar to feed themselves and their young. These critters also carry pollen from one flower to another and are called __________.

4. Name at least four critters that might be pollinators:

   - butterfly
   - moth
   - hummingbird
   - bee
The Bee and the *Brassica*: Interdependence

Bees and *Brassica* plants need each other in order to live. Each one takes something from the other and gives something in return. You might say that they have a real partnership.

Why does a flower need a bee? The main reason is so that the flower can make seeds. The *Brassica* flower holds both the male and the female parts of the plant. The male parts, the filament and anther, produce the pollen, which looks like fine yellow powder. Pollen must travel to the female parts, the pistil and stigma, of another flower on a different *Brassica* plant. Unless the pollen from one plant can reach another plant, no new seeds will form. Then, no new *Brassica* seedlings will grow.
Photosynthesis

Green plants can make their own food by using the process of photosynthesis. Photosynthesis happens in a part of the leaf called the chloroplast. There are millions of chloroplasts in each leaf. The chloroplasts contain a special chemical called chlorophyll. Chlorophyll is green and gives green plants their color.

Chlorophyll is very special because it can trap the light energy that plant leaves get from the sun.

Here is how photosynthesis works. The chloroplasts within the leaves take in carbon dioxide (CO₂) from the air, water (H₂O) from the soil (that travels from the roots to the stems to the leaves), and light* energy from the sun. The CO₂, H₂O and light energy are put together** to make glucose. Glucose is a type of sugar. It is made of carbon (C), hydrogen (H), and oxygen (O) and has lots of chemical energy stored within it. When the CO₂ and H₂O combine to make glucose there is extra oxygen left over. This extra oxygen is released as O₂ into the air. This is the oxygen that we breathe!

Photosynthesis is very important for many reasons. The energy the plants capture from the sun is used by the plants to help them grow. Also, animals depend on this energy as their source of energy too. This is because animals eat plants or eat other animals that ate plants. In addition, plants and animals share another important relationship. Plants take in CO₂ from the air and release O₂ back into the air. Animals (including humans) take in O₂ and release CO₂. Therefore, plants and animals depend on each other.

Photosynthesis Homework:

1. Photosynthesis is the process of converting **light** energy into **chemical** energy.

2. Photosynthesis is made possible by the green pigment called **glucose**.

3. To perform photosynthesis plants need **carbon dioxide** from the **air**, **water** from the **ground**, and **light** from the **sun**.

4. The products of photosynthesis are **sugar** and **carbon dioxide**.

5. Light energy for photosynthesis usually comes from the **sun**.

6. The part of the plant cell where photosynthesis takes place is called the **chloroplasts**.

7. Glucose is a type of **sugar**. It is made of **carbon dioxide**, **H₂O**, and **light energy**. It has lots of **chemical energy** stored within it.

* photo means “light”
** synthesis means “put together”
Module 1, Lesson 3: Plants making food from the sun

Photosynthesis

- **CARBON DIOXIDE** \((\text{CO}_2)\)
- **WATER** \((\text{H}_2\text{O})\)
- **FOOD** (glucose)
- **CHLOROPLAST**
- **ENERGY**
- **OXYGEN** \((\text{O}_2)\)

\[ \text{CO}_2 + \text{ENERGY} + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 \]
**How I Respond to Conflicts**

Fill in the appropriate circle for things you always, sometimes, or never do.

<table>
<thead>
<tr>
<th>When there's a conflict, I try to:</th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. hit the other person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. run away</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. get help from another kid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. talk it out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ignore it</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. understand the other point of view</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. make a joke of it</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. get help from a grown-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. make the other kid apologize</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. apologize myself</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. find out what the problem is</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. listen to the other kid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. tell the kid to leave me alone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. say swear words</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. get friends to gang up on the other kid</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My Favorites!

Sport to Play: football
Sport to Watch: football
Hobby: play video games
Holiday: Christmas
Place to Be: Africa
Time of the Day: 12:00
Season: summer
Flower: 
Tree: Apple Tree
Song: I'm Sprung
Group: 
Book: Deltora Guest
Movie: 4 Brothers
TV Program: Drawn Together

School Subject: science
Color to Wear: Blue
Type of Clothing: G-unit
Color: Red
Person to Visit: Halle Berry
Dream Car: Fuzz
Dream Career: Food Critic
Dream Vacation: Africa
Dream Future: Be Free
Food: Kalimari
Drink: Coca-Cola
Candy Bar: 3 Musketeers
Author: 
Animal: Cheetah

Spencer Kagan: Cooperative Learning ©
Publisher: Resources for Teachers, Inc. • 1(800) Wee Co-op
**Chapter 8. Teambuilding**

**I Am**

*Instructions:* Mark line closest to the word that best describes you.

- Fast ↔ Slow
- Thinker ↔ Doer
- Morning Person ↔ Night Person
- Listener ↔ Talker
- Leader ↔ Follower
- Indoor Person ↔ Outdoor Person

**I Prefer:**

*Instructions:* Mark line closest to the word that best describes you.

- Adventure Movie ↔ Comedy
- Ice Cream ↔ Cake
- Airplanes ↔ Boats
- Sports Car ↔ Luxury Car
- Beach ↔ Mountains
- Dogs ↔ Cats

*Spencer Kagan: Cooperative Learning®*

Publisher: Resources for Teachers, Inc. • 1(800) Wee Co-op
The United Nations

Name: Daniel Williams

In what year was the UN established? It was established on October 24th, 1945.

How many countries are members? 51 countries are members.

If the United Nations is not a world government, what is it? Or what do they do? One big nation that's my opinion, to have peace between nations.

Where is the United Nations building? It is in New York.

What are the six main organs of the UN? The Security Council, Economic and Social Council, Trusteeship Council, Secretary, and International Court of Justice.

What is the General Assembly? A parliament of nations.

(Arnake & Narishkin 2006)
The Security Council

There are 15 council members in the Security Council. When the council finds a problem, they try to settle it peacefully.

The Economic and Social Council

This council upholds the peace in economic and social development. This council has 54 members elected by the General Assembly.

The Trusteeship Council

This council protects the 11 trust territories. They established the 185th member state, Pacific Islands – Palau.

The International Court of Justice

This council's nickname is the World Court. The council makes decisions for problems between countries.

The Secretariat

This council takes care of administrative work for countries. There staff number is about 7,500 working.

Daniel Williams.
Good evening Mr. President,

I am a representative of Uganda, I would like to say that Ghana is in great need of your help. We ask that you would help us with our problem: country's problem.

We would like that you help us with our treatment for HIV/AIDS. To help us reduce child mortality rate, also to improve maternal health. I've only named three of Ghana's problems. We have made progress in C 707, whose main purpose is to disarm nuclear weapons. So I hope you are able to reach this message to help us in time.
embryo
seed coat
Daniel Williams