

Name Key

Photosynthesis and Respiration Webquest

#1) <http://www.pbs.org/wgbh/nova/methuselah/photosynthesis.html#> (adapted from Ranic 2005)

- How do plants rely on photosynthesis?  
it allows the energy of the sun to be converted
- How do animals rely on photosynthesis?  
Provides O<sub>2</sub> (oxygen) and energy
- What are the two important "jobs" of photosynthesis?  
make Glucose, make oxygen

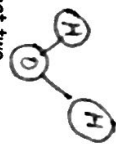
In the upper right hand corner click on the link that says "Go to Illumination Photosynthesis". Allow time for this applet to load.

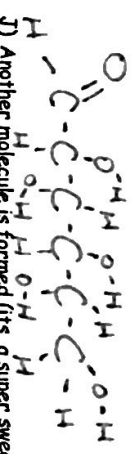
Click on "The Cycle" at the top left of the box

Click on each of the following items and explain what happens:

- The shade over the window opens and lets light in
- The container of water waters the plant
- The child breathes out CO<sub>2</sub> in O<sub>2</sub>
- What gas does the child provide for the plant to use? CO<sub>2</sub>
- What gas does the plant provide for the child to use? O<sub>2</sub>
- Will the plant continue to produce gas if the shade over the window is closed? NO
- According to the animation, what are the three reactants needed for a plant to undergo photosynthesis? light + CO<sub>2</sub> + H<sub>2</sub>O

Click on the "Atomic Shuffle" at the top center of the screen. Read and answer the following questions by clicking the NEXT button when you are ready to move on.

- What type of molecule is shown on the leaf? H<sub>2</sub>O (water)
- Draw one of the molecules below, as it is shown in the leaf:  

- According to the reading, these molecules "do not come from the top." What two places do they come from? made in the cell sucked up
- What is "stripped" from each water molecule? (you may have to click replay to catch this) The H's are stripped from the O's
- From where does the cell get the energy to do this? sunlight
- The striped molecules form pairs. Where does it go after this? out of the leaf
- What gas enters the leaf? CO<sub>2</sub>
- This gas enters through "holes" in the leaf. What are they called? stomata
- What molecule is formed once again? H<sub>2</sub>O

- Another molecule is formed (its a super sweet one...) Draw this molecule below as shown:  

- What is the name of this molecule? Glucose

Click on "Three Puzzlers" at the top right of the screen. Go through each scenario, try to guess the answer and explain the right answers below in your own words.

- Can a tree produce enough oxygen to keep a person alive? Explain  
Yes, it makes enough O<sub>2</sub> to keep a person alive
- Can a plant stay alive without light? Explain  
People survive without light but eventually it needs light
- Can a plant survive without oxygen? Explain  
NO, plants have to do cellular respiration too

#2) [http://www.phschool.com/science/biology\\_place/biocoach/photosynth/overview.html](http://www.phschool.com/science/biology_place/biocoach/photosynth/overview.html)

- What is the definition of photosynthesis?  
The process by which light energy is turned into chemical energy
- What is the driving force of photosynthesis?  
Light energy
- What is the equation for photosynthesis?  
CO<sub>2</sub> + H<sub>2</sub>O + light → C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> + O<sub>2</sub>

#3) <http://www.johnkyrk.com/photosynthesis.html>

In the lower left corner of the screen, click the forward arrow button with your mouse to answer the following questions:

- What is the importance of chlorophyll?  
Chlorophyll absorbs light energy
- What organelle is chlorophyll found in?  
Chloroplast
- What is the name of the energy currency found in a cell?  
ATP
- Where does the bulk of atmospheric oxygen come from?  
the photosynthesis reaction in plants

#4) <http://www.biocycimotion.com/atp/index.html>

- 1) How do living things mainly store energy?  
Chemical bonds
- 2) What does ATP stand for?  
Adenosine Triphosphate
- 3) What is ATP often thought of as a rechargeable battery?  
energy can be released and re stored
- 4) What happens when a ADP molecule gains a phosphate?  
it is "charged"
- 5) What happens when a ATP loses a phosphate?  
it loses energy
- 6) How do humans "recharge" their batteries?  
by eating
- 7) Click the Right arrow on the bottom left of the corner. When we each large food molecules what happens to them first in our body? They are pulled apart to release energy stored in their bonds
- 8) In the diagram on the right, read the instructions on the left and describe to me what you had to manipulate in order to get a full "synthesis" to occur?  
Food → ATP → ADP + P

#5) <http://bioactive.mrkirkscience.com/07/chZintro.html>

Read through the information and answer the following questions. To navigate through simply click the NEXT button.

- 1) Define respiration-  
breaking down glucose into usable energy
- 2) Define aerobic respiration-  
respiration with oxygen
- 3) Click to the last slide and tell me the final equation for respiration?



4) How many TOTAL ATP molecules are produced during aerobic respiration per glucose molecule?

30

5) FROM YOUR NOTES: list 3 differences between aerobic and anaerobic respiration.  
Aerobic makes more energy, aerobic uses  $O_2$ , Anaerobic creates lactic acid and/or Ethyl alcohol

Go to [http://www.windows.ucar.edu/your/links/earth/Water/co2\\_cycle.html](http://www.windows.ucar.edu/your/links/earth/Water/co2_cycle.html) and answer these questions:

1. Draw the carbon cycle:

See picture on website

2. How does carbon exist in the atmosphere?

Carbon dioxide gas ( $CO_2$ )

3. How are fossil fuels created?

When plants and animals die, they become buried and become fossil fuels

4. Describe two ways that carbon enters the atmosphere.

respiration, burning fossil fuels

5. How are the oceans involved in the carbon cycle?

Oceans soak up carbon from the atmosphere

6. How is the temperature of the Earth partly controlled by carbon?

$CO_2$  traps heat in the atmosphere