

Photosynthesis and Respiration Webquest

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

1. How do plants rely on photosynthesis?
2. How do animals rely on photosynthesis?
3. What are the two important "jobs" of photosynthesis?

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:

- A) The shade over the window _____
- B) The container of water _____
- C) The child _____
- D) What gas does the child provide for the plant to use? _____
- E) What gas does the plant provide for the child to use? _____
- F) Will the plant continue to produce gas if the shade over the window is closed? _____
- G) According to the animation, what are the three reactants needed for a plant to undergo photosynthesis? _____

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.

- A) What type of molecule is shown on the leaf? _____
- B) Draw one of the molecules below, as it is shown in the leaf:
- C) According to the reading, these molecules "do not come from the tap." What two places do they come from? _____
- D) What is "stripped" from each water molecule? (you may have to click replay to catch this) _____
- E) From where does the cell get the energy to do this? _____
- F) The stripped molecules form pairs. Where does it go after this? _____
- G) What gas enters the leaf? _____
- H) This gas enters through "holes" in the leaf. What are they called? _____
- I) What molecule is formed once again? _____ ---

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

K) What is the name of this molecule? _____

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.

a) Can a tree produce enough oxygen to keep a person alive? Explain

b) Can a plant stay alive without light? Explain

c) Can a plant survive without oxygen? Explain

#2) http://www.phschool.com/science/biology_place/biocoach/photosynth/overview.html

1) What is the definition of photosynthesis?

2) What is the driving force of photosynthesis?

3) What is the equation for photosynthesis?

4) Photosynthesis transfers electrons from water to carbon dioxide molecules. Why is this electron transfer called an oxidation reduction process?

#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:

1) What is the importance of chlorophyll?

2) What organelle is chlorophyll found in?

3) What is the name of the energy currency found in a cell?

4) Where does the bulk of atmospheric oxygen come from?

#4)

<http://www.wiley.com/legacy/college/boyer/0470003790/animations/photosynthesis/photosynthesis.htm>

- Click on the following labels and answer the corresponding questions to follow:

LABEL (Strategy/Players)

1. What two phases can photosynthesis be broken down into?

LABEL (Light Reaction)

1. What starts the chain reaction in the LIGHT reaction phase of photosynthesis?
2. What are the group of pigments in the thylakoid called?
3. What do these photosystems do?

LABEL (Dark Reaction)

1. What is the name of the cycle that converts inorganic carbon dioxide into a carbohydrate molecule a plant can use?
2. Is sun needed for this part of photosynthesis?

#5) http://highered.mcgraw-hill.com/sites/0073031216/student_view0/exercise3/chloroplast_structure.html

Drag the chloroplast parts over the question mark you think it might belong to. If you are correct when you let go of the mouse it will show up on the diagram with a check mark. Keep doing this until the chloroplast is completely labeled. SKETCH and label the parts of the chloroplast below (ROUGH SKETCH, you do not have to draw all of the grana stacks you see, just label and draw one of them, I want to see you know what the parts look like, artistic ability does not matter):

#6) <http://www.biologyinmotion.com/atp/index.html>

- 1) How do living things mainly store energy?
- 2) What does ATP stand for?
- 3) What is ATP often thought of as a rechargeable battery?
- 4) What happens when a ADP molecule gains a phosphate?
- 5) What happens when a ATP loses a phosphate?
- 6) How do humans "recharge" their batteries?
- 7) Click the Right arrow on the bottom left of the corner. When we eat large food molecules what happens to them first in our body?
- 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?

#7 <http://bioactive.mrkirkscience.com/07/ch7intro.html>

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

- 1) Define respiration-
- 2) Define aerobic respiration-
- 3) What are the 4 steps of aerobic respiration?
- 4) Describe in your own words what happens during glycolysis.
- 5) How many ATP molecules are produced during glycolysis?
- 6) How many ATP molecules are produced during the citric acid cycle?
- 7) How many ATP molecules are produced after electron transport and chemiosmosis?

8) Click to the last slide and tell me the final equation for respiration?

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

#8 http://highered.mcgraw-hill.com/sites/0073031216/student_view0/exercise3/mitochondrion_structure.html

Drag the mitochondria parts over the question mark you think it might belong to. If you are correct when you let go of the mouse it will show up on the diagram with a check mark. Keep doing this until the mitochondria is completely labeled. SKETCH and label the parts of the mitochondria below (ROUGH SKETCH, you do not have to draw all of the grana stacks you see, just label and draw one of them, I want to see you know what the parts look like, artistic ability does not matter):

For the following statements write P if it describes photosynthesis, or write R if it describes respiration.

- 1) Occurs in the chloroplast _____
- 2) Occurs in the mitochondria _____
- 3) Uses Oxygen _____
- 4) Produces Oxygen _____
- 5) Uses Water _____
- 6) Produces water _____
- 7) Relies directly on the sun _____
- 8) Producers are dependent on this process to produce food _____
- 9) Only plants do this process _____
- 10) Plant and Animals do this process _____
- 11) The goal of this process is to get ATP _____
- 12) The goal of this process is to make glucose _____