Photosynthesis Worksheet by C. Kohn, Waterford WI

Group Names (first/last):   
  
Hour Assignment is due: *end of the hour* Why late? Score: + ✓ -  
 Day of Week Date If your project was late, describe why

**Directions**: Complete this assignment in your assigned groups. A new person should answer each question – no one should answer multiple questions in a row**.** Only one sheet needs to be submitted per group. When one person is writing, the rest of the group should help create the answer they write down. This worksheet is graded on a + /✓/- basis. **A “+” means all lines were used, questions are answered fully and completely, and all work is neat and legible.**

1. In the space below, write the photosynthesis equation:
2. In the space below, draw a diagram of photosynthesis. Be sure to label the following: a) a plant b) CO2 c) H2O d) O2 e) glucose f) arrows showing what is absorbed, what is produced, and what is released.
3. In the space below, state the two key things that plant cells have that animal cells do not. Also state why they have these cellular structures.  
     
   Cellular organelle: Its purpose:   
     
      
      
   Cellular organelle: Its purpose:
4. In the space below, draw a chloroplast. Be sure to include and label the following: a) outer membrane   
   b) thylakoids c) grana d) stroma e) chlorophyll h) ATP Synthase
5. What is the one specific function of light in photosynthesis?   
     
   Why is this necessary?

What happens to the oxygen?

1. In the space below, draw both a mitochondria and a chloroplast. Be sure to include and label the following:  
   a) outer & inner membranes b) ATP synthase c) matrix d) intermembrane space e) thylakoids f) stroma
2. Complete the blanks below by filling in the parts of each organelle that serve that function:  
     
    **Mitochondria Chloroplast**  
   Storage of hydrogen:   
     
   Location of ATP Synthase:   
     
   Mover of hydrogen to its storage area:   
     
   What binds to hydrogen after   
   it powers ATP Synthase:   
     
   Purpose of ATP Produced:
3. Complete the blanks below for each part of photosynthesis:  
     
    **Light Reaction Calvin Cycle**  
   Main purpose:   
     
   Where it occurs:   
     
   What is taken in:   
     
   What is produced:   
     
   What powers it:
4. Briefly summarize what happens in the Light Reaction:
5. Briefly summarize what happens in the Calvin Cycle:
6. Draw the light reaction and Calvin Cycle below. Be sure to include the following: a) light b) thylakoids c) water  
   d) released oxygen e) ATP Synthase f) ATP and ADP & Pi g) CO2 h) RuBP i) RuBP w/ a 6th carbon j) G3P’s
7. What role does NADP+ play in the Calvin Cycle? Why is it necessary?
8. What role does RuBP play in the Calvin Cycle? Why is it necessary?
9. What role does G3P play in the Calvin Cycle? Why is it necessary?
10. What would happen in each of the following cases? Be as specific as possible in order to receive full points!  
      
    A plant cannot absorb water:   
      
    A plant goes without light:   
      
    A plant cannot make chlorophyll:   
      
    A plant cannot absorb CO­2:   
      
    A plant cannot reform RuBP: