Plant Adaptations Worksheet by C. Kohn, Waterford WI

Group Names (first/last):   
  
Hour Date: Why late? Score: + ✓ -

**Directions:** work in pairs to complete this sheet. Pass the sheet onto a new person after each question. Those not writing should be using their notes and understanding to create the answer the other person writes. After each question, switch roles. + = exceed expectations. ✓= met but did not exceed expectations. - = redo the assignment

1. The poinsettias grown by the FFA are very susceptible to root rot. Unless the soil is allowed to dry between waterings, the roots will rot. If the roots rot, the plant will appear wilted, even though the soil is wet. Explain why they would look wilted if they have rotten roots using what you know about the function of the roots.   
     
   The function of the roots is to   
     
   if the roots are rotted, the plant will be unable to
2. A homeowner wants to move a small young tree. He claims he can just pull the tree out and move it to a new location (instead of digging around it and moving the dirt with the roots). Explain why this would be a bad idea knowing what you know about **root hairs**. (*Hint – what would happen to the roots hairs if you just pulled the plant?)*
3. For each portion of the plant, explain how water is moved into or through the plant.   
     
   Roots:   
     
   How this makes water move:   
     
      
     
   Stems/Leaves:   
     
   How this makes water move:   
     
      
     
   How is how water is moved into the roots different from how water is moved through the stem and leaves?
4. Veins in leaves are similar but different to the veins in your arms. In the space below, describe the two kinds of tissue that the veins in plants are made from. Then describe their function. Finally, state two ways in which the veins of plants are different from the blood vessels in your body.  
     
   Tissue: Function:   
     
      
     
   Tissue: Function:   
     
      
     
   How the veins of plants are different than the blood vessels of animals:   
     
   1   
     
   2
5. Imagine a plant have a mutation that prevents it from opening its stomata (the stomata are always closed). How would this affect….  
     
   CO2 absorption:   
     
   Transpiration:   
     
   How would a mutation that prevents a plant from closing its stomata affect…

CO2 absorption:   
  
Transpiration:

1. What is a lenticel?   
     
      
     
   Why do larger species of plants (like trees) more commonly have lenticels?

How is a lenticel like a stomata?   
  
How are they different?

You as a farmer have a choice between planting wheat (a C3 crop), corn (a C4 crop), or planting alfalfa (a legume). In the space below, summarize each kind of crop. Then state the pro’s and con’s of planting each kind of plant.

1. C3 plants are plants that   
     
      
     
   Advantages of planting C3 plants:   
     
      
     
   Disadvantages of planting C3 plants:
2. C4 plants are plants that   
     
      
     
   Advantages of planting C4 plants:   
     
      
     
   Disadvantages of planting C4 plants:
3. Legumes are plants that   
     
      
     
   Advantages of planting legumes:   
     
      
     
   Disadvantages of planting legumes (*alfalfa in this case*):   
     
      
   Note: alfalfa is a C3 plant as well as a legume. All legumes are C3 plants.
4. Which of these three would you choose to plant? Why?
5. A geneticist wants to use biotechnology to convert a legume into a C4 crop.   
     
   What could a C4 legume provide that a normal C4 plant could not?   
     
      
     
   What would be the advantage of turning a C3 legume into a C4 legume?   
     
      
     
   What would be the disadvantage of turning a C3 legume into a C4 legume?
6. How might the need for a C4 legume change if the researcher lived in a far-northern location (such as Canada or Norway)?
7. How might the need for a C4 legume change if the researcher lived in an equatorial region (such as Mexico or Columbia)?