Honors Biology I Summer Work

Honors biology is an intensive, in-depth study of the natural world around us. This course is intended for freshman and sophomore students who have an interest in science and/or a desire to pursue a scientific field of study in college. Honors Biology is a hands-on course, involving laboratory investigations including dissections of a frog and sheep heart.. The pace of the course will be **fast**. Students are expected to be self-motivated and must be able to work independently.

Part 1: The scientific method

Use the following links to obtain the information needed to complete the assignment listed below. Complete all work for Parts 1 and 2 on a separate sheet of paper. Work must be legible and in complete sentences.

http://www.hartnell.edu/tutorials/biology/scimethod.html

http://www.dummies.com/how-to/content/designing-experiments-using-the-scientific-method.html

1. List the steps to the scientific method.
2. Define the following terms:
    a. Controlled experiment
    b. hypothesis
    c. Independent or manipulated variables
    d. Dependent or responding variable
    e. Control variables
    f. Control groups

3. Beatrice usually blows her nose using ***Kleenex*** tissues, but her mucus keeps leaking through the tissue. Create a controlled experiment for Beatrice which would allow her to determine if there is a better, stronger brand of tissue.
    a. Write out the steps or procedures Beatrice should follow.
    b. What would Beatrice's hypothesis be?
    c. Identify the parts of a controlled experiment listed in question 2 above (c-f)

Part 2- Ecology

Use the following links to obtain the information needed to complete the assignment listed below.

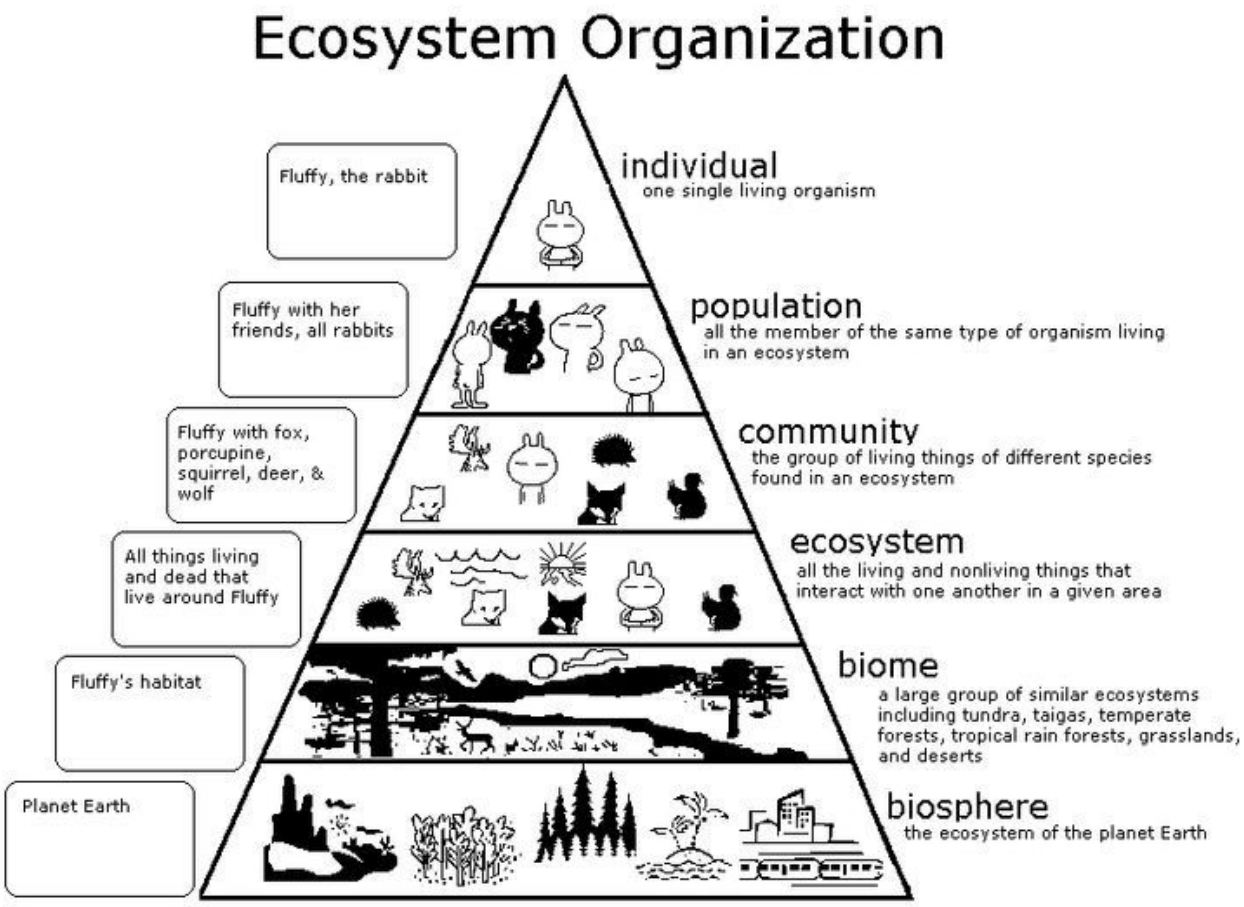
http://www.blueplanetbiomes.org/world_biomes.htm
http://ths.sps.lane.edu/biomes/index1.html
http://eschooltoday.com/ecosystems/what-is-an-ecosystem.html
https://www.khanacademy.org/science/biology/crash-course-bio-ecology/crash-course-ecology-2/v/crash-course-ecology-04

1. Define the following terms:
    a. Ecology
    b. Biotic
    c. Abiotic
    d. Permafrost
    e. Climate
    f. Microclimate
    g. Population
    h. Community
    i. Ecosystem
    j. Biome
    k. Biosphere
    l. Habitat

2. Complete the table below;

Land Biomes	Location	Climate	Soil	Plants	Animal
Tropical Rain Forest					
Savanna					
Desert					
Chaparral					
Temperate Grassland					
Temperate Deciduous Forest					
Taiga/Coniferous Forest					
Tundra					

3. Ecosystem Organization pyramid: Draw **on a separate sheet of paper**.
    a. Choose an individual from a species.
    b. Show that individual in a population, in a community, an ecosystem, a biome and the biosphere. Use the top of the pyramid for the individual. As you move down the pyramid the space will widen, just as the level of organization in an ecosystem widens.
    c. Use the sample on the next page as a model.



Part 3: The Cell

For this section you will need to watch the two video links listed below:

- https://www.youtube.com/watch?v=cj8dDTHGJBY (animal cells)
- https://www.youtube.com/watch?v=9UvlqAVCoqY (plant cells)
- https://www.youtube.com/watch?v=1Z9pqST72is (Optional video. may be useful if you need extra help)

1. Explain the difference between a eukaryotic cell and a prokaryotic cell. Which type of cell are you made up of?
2. Complete the table on the next page

Cell Organelle	Cell type: Animal, Plant or Both	Function	Picture and/or Description
Cell (Plasma) Membrane			
Cell Wall			
Cytoplasm			
Rough Endoplasmic Reticulum			

Smooth Endoplasmic reticulum			
Ribosome			
Golgi Apparatus (bodies)			
Lysosomes			
Nucleus			
Vacuole			
Mitochondria			
Chloroplast			
Centriole			
Cytoskeleton			

Additional Information:

The sources/links that are listed with the summer assignments are only recommendations, you may use any reliable source to help you with your assignment.

Do not wait for the last few days of summer to complete this assignment. Spread the work out over the summer and review just before school starts. If you feel that this assignment is too much work, you may want to consider waiting until next year to take biology. This decision is up to you and your parents/Guardian.

If you need help during the summer, you can email me at acater@spsd.us. I will check my e-mail on a weekly basis.

Have a safe and enjoyable summer. I look forward to meeting you in September.