Welcome to PHS Honors Biology
2010 Summer Assignment:

The Honors Biology Summer Assignments are designed to help the students review their knowledge on the *Scientific Processes* and *Cell Structure & Function*, and begin their investigation in *Ecology*.

- **The estimated time to complete the summer assignment is 10 hours.**
- **All of the assignments are due on the 1st day of the student's Biology class.**
- **The summer assignment will account for 20% of the 1st marking period grade.**
- **Students will receive ZERO for any part of the assignment not submitted on time!**
- **Students will be assessed on these assignments within the first 2 weeks of school.**
- **To complete the assignments, students will need to pick up their Biology textbook from the PHS Library and have Internet access.**
  - Summer Library hours: Monday→ Friday 10 am-noon & 1-3 pm
- **Students may address any questions or concerns regarding these assignments to the Science Department Chair, Mrs. Baranek at: baraneks@parklandsd.org**

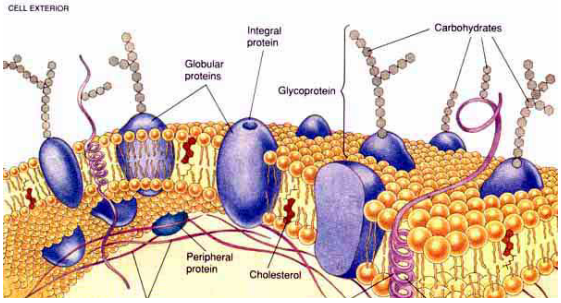
1. Understanding & Practicing Scientific Processes:

a. Read Chapter 1 from text: "The Science of Biology" (1.0 hours)
b. Scientific Processes Vocabulary Assignment (0.5 hours) (25pts)
c. Measurement Activity (0.5 hours) (45pts.)

2. Reviewing Cell Structure & Function:

a. Read Chapter 7 from text: "Cell Structure & Function" (1.0 hours)
b. Cell Structure & Function Vocabulary Assignment: Notecards (1.0 hours)
   - using the attached vocabulary list, students will create notecards for each of the cell terms as follows
   - the front of the card should include the term as well as a sketch or picture of the cell part (see example below)
   - the back of the card should describe the structure and function of the cell part (see example below) (60pts.)

Cell Membrane
(aka. Plasma membrane)



(front of card)

Structure: a selectively permeable bi-lipid layer that surrounds the cell

Function: controls what can enter or leave the cell

Nickname: "gatekeeper"

(back of card)

3. Introduction to Ecology:

a. Read Chapter 3 from text: "The Biosphere" (1.5 hours)
   - complete Ecology Vocabulary Assignment (25 pts.)
b. Read Chapter 4 from text: "Ecosystems and Communities" (1.5 hours)
   - Chapter 4 Outline (25 pts.)

4. Real Life Applications of Ecology: Walter Quality Investigations

a. Water Pollution: an Introduction (online article) (1.0 hour) (25pts.)
   - access the online article above at: http://www.explainthatstuff.com/waterpollution.html
   - Write a one-page summary of the article.
   - Be sure to describe:
     - the types of water pollution
     - the causes of water pollution
     - the effects of water pollution
     - how water pollution is being addressed

b. Water Quality in the Lehigh Valley (research) (2.0 hours) (25pts.)
   - Find one on-line article that addresses a specific type of pollution affecting the water quality for the Lehigh Valley Region.
   - Write a one-page summary of the article
   - Be sure to describe:
     - the type of water pollution
     - the causes of this pollution,
     - the effects of this water pollution.
     - How this water pollution is being addressed
   - Additionally, propose a solution to correct this pollution
   - Attach your summary to a printed copy of your article to be submitted to the teacher.

Honors Biology Summer Assignment: (25pts) Name: _____

Vocabulary #1- Scientific Processes (chapter 1)

1. Science- _____

   _____

2. Technology- _____

   _____

3. Research- _____

   _____

4. Observation- _____

   _____

5. Data- _____

   _____

6. Quantitative data- _____

   _____

7. Qualitative data- _____

   _____

8. Measuring- _____

   _____

9. Mass- _____

   _____

10. Weight- _____

    _____

11. Volume- _____

    _____

12. Classifying- _____

    _____

13. Hypothesis- _____

_____

14. Predicting- _____

_____

15. Inferring- _____

_____

16. Theory- _____

_____

17. Law- _____

_____

18. Controlled experiment- _____

_____

_____

19. Dependent Variable (responding)- _____

_____

20. Independent Variable (manipulated)- _____

_____

21. Controlled Variables- _____

_____

22. Analyze- (analysis) _____

_____

_____

23. Model- _____

_____

24. Communicate- _____

_____

25. Scientific method- _____

_____

Honors Biology Summer Assignment: Name: _____
Measurement Activity (45pts)

1. What are the 3 metric standard units used for measuring each of the following: (3)
   a. Used to measure length- _____
   b. Used to measure mass- _____
   c. Used to measure volume- _____

2. Write the correct metric prefix next to its equivalent below: (5)
   a. 0.001 m = millimeter
   b. 0.01 m = _____meter
   c. 0.1 m = _____meter
   d. 10 m = _____meter
   e. 100 m = _____meter
   f. 1000 m = _____meter

3. Convert the follow metric units as shown in the example: (6)
   Ex. 90 dm = _____ m $\frac{90\ dm}{1} \times \frac{1m}{10dm} = 9\ m$
   a. 5.25 m = _____ cm

   b. 10 km = _____ m

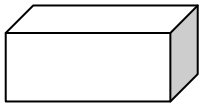
   c. 375 mm = _____ m

4. Calculate the <u>area</u> in metric units: (show your work & include units!) (6)
   a. A rectangular skin graph that is 5 cm wide and 10 cm long
      Answer: _____

   b. An opening of a blood vessel that is 3 mm in diameter
      Answer: _____

   c. Find the difference in the area of a straw with a diameter of 5 mm and a straw with a diameter of 7 mm.
      Answer: _____

5. Calculate the volume in metric units: (5)

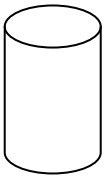


   a. A block of ice that is 3 m long, 2 m wide, and 1.5 m high.

      Answer: _____

   b. Using a cylindrical can from your house (for example a can of vegetables or soda), measure the height & diameter in metric units and calculate the volume of your can.

      1. height _____
      2. diameter _____
      3. volume _____



6. Convert the following measurements from English to metric: (10)
   a. 1 inch = _____ cm
   b. 100 yards = _____ m
   c. 26.1 miles = _____ km
   d. 3 cups = _____ ml
   e. 1 gallon = _____ l
   f. 10 pounds = _____ kg
   g. 1 ounce = _____ g
   h. 0^0 F = _____ ^{0}C
   i. 72 ^{0} F = _____ ^{0}C
   j. 98.6^0 F = _____ ^{0}C

7. Observations: In the spaces below, list your 5 senses and make an observation using each sense: (10)

Sense:	Observation:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Honors Biology Summer Assignment: (60pts) Name: _____

Vocabulary #2- Cell Structure & Function (chapter 7)

For each of the cell term, create a notecard as directed in the summer assignment instructions. (front: term & picture; back: structure & function)

1. cell membrane (aka plasma membrane)
2. cell wall
3. cytoplasm
4. nucleus
5. nucleolus
6. nuclear membrane (aka nuclear envelope)
7. smooth endoplasmic reticulum
8. rough endoplasmic reticulum
9. golgi apparatus (golgi bodies/complex)
10. vesicle
11. vacuole
12. ribosome
13. mitochondria
14. chloroplast
15. lysosome
16. peroxisomes
17. cytoskeleton
18. centrioles
19. cilium (cilia)
20. flagellum (flagella)

Honors Biology Summer Assignments: (25pts) Name: _____

Vocabulary #3: Ecology (chapters 3 & 4)

1. Ecology- _____
   _____
2. Biosphere- _____
   _____
3. Species- _____
   _____
4. Population- _____
   _____
5. Community- _____
   _____
6. Ecosystem- _____
   _____
7. Biome- _____
   _____
8. Autotroph (producer)- _____
   _____
9. Photosynthesis- _____
   _____
10. Chemosynthesis- _____
    _____
11. Heterotroph (consumer)- _____
    _____
12. Herbivore- _____
    _____
13. Carnivore- _____
    _____

14. Omnivore- _____

_____

15. Detritovore- _____

_____

16. Decomposer- _____

_____

17. Food chain- _____

_____

18. Food web- _____

_____

19. Trophic level- _____

_____

20. Ecological pyramid- _____

_____

21. Biomass- _____

_____

22. Biogeochemical cycle- _____

_____

23. Evaporation- _____

_____

24. Transpiration- _____

_____

25. Nutrient- _____

_____