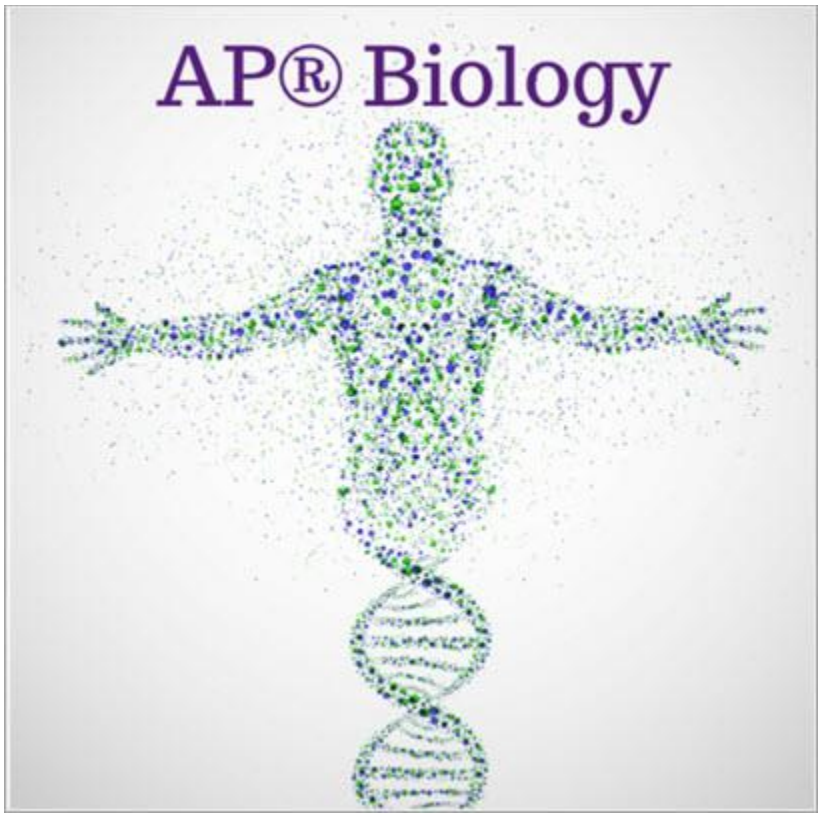
WHITE STATION HIGH SCHOOL

Dedicated To Excellence



Summer Assignment

Instructor: Chikezie O. Madu, Ph.D.

Text @wshapbio14 to (615)212-2686
To opt-out of messages at any time by replying,
"unsubscribe@wshapbo14"

33% of overall Lab grade

Heading

Full Name:

Grade:

Contact Phone Number:

Responses must be typed, scanned, and emailed to cemadu1@gmail.com

Deadline: 11:59 PM on 08/01/2018

******Hard copy will be turned in on the first day of the school year******

To contact instructor, email cemadu1@gmail.com. **Please do not call or text.**

Dear AP Biology Students,
Welcome to AP Biology!

I am excited about working with you as you continue to expand your scientific understanding. Advanced Placement courses are reasonably arduous and AP Biology is no exception. We cover a two-semester college course in addition to a lab course. Occasionally, you will be asked to stretch yourself and some task will seem overwhelming. However, I will work with you to make it less stressful. While the course may be challenging, it will be worthwhile! Your summer assignment begins by:

Task One:

Due Date-05/30

1. Sign up for REMIND 101 **Text @wshapbio14 to (615)212-2686**

Task Two:

Due Date-06/04

https://sites.google.com/a/providenceday.org/apbiology/class-resources/graphing

https://www.youtube.com/watch?v=9dbl6YZaT5A

https://www.youtube.com/watch?v=Xi79jGeQ9H0

https://www.youtube.com/watch?v=Rvzqkw1DNq0

https://www.youtube.com/watch?v=RfIug_pB4JY

https://www.youtube.com/watch?v=biK0YDaaS8o

"Biological concepts and models are becoming more quantitative, and biological research has become critically dependent on concepts and methods drawn from other scientific disciplines. The connections between the biological sciences and the physical sciences, mathematics, and computer science are rapidly becoming deeper and more extensive." BIO2010 report of the National Research Council (2003)

Therefore, it is imperative that today's students develop and apply quantitative skills as part of their exploration into biology. A good grasp of quantitative methodology and reasoning is particularly important in the laboratory experience. Visit these websites and others you may find, and become familiar with the following statistic concepts:

1. Mean
2. Standard deviation
3. Standard error of mean
4. Chi square

https://www.youtube.com/watch?v=jgqYlSKoXak

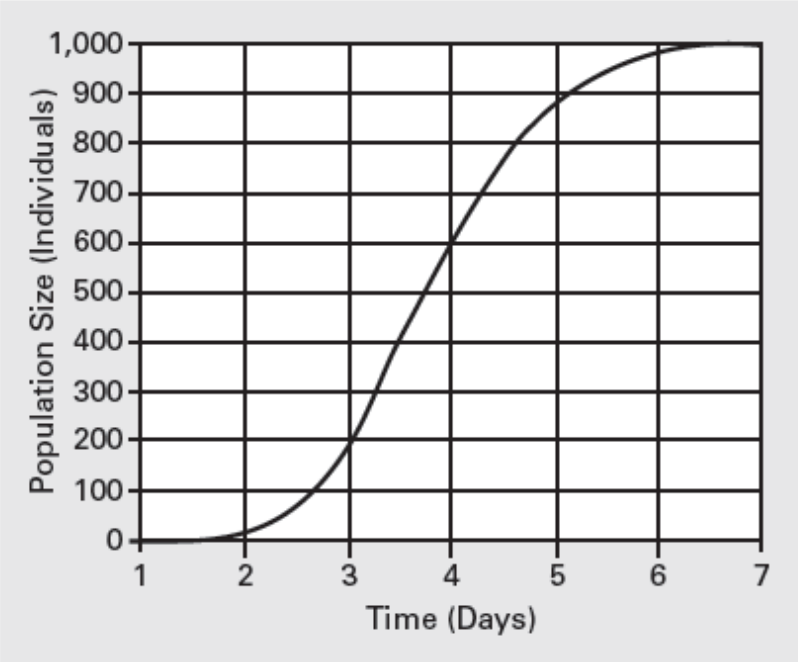
http://www.bozemanscience.com/chi-squared-test/

http://www.bozemanscience.com/standard-deviation/

http://www.bozemanscience.com/standard-error/

You will take a quiz on this during the first week of school.

Sample Grid-In Question Using Graphing



Use the graph above to calculate the mean rate of population growth (individuals per day) between day 3 and day 5. Give your answer to the nearest whole number.

Sample Free-Response Question Using Graphing

Plants lose water from their aboveground surfaces in the process of transpiration. Most of this water is lost from stomata, microscopic openings in the leaves. Excess water loss can have a negative effect on the growth, development, and reproduction of a plant. Severe water loss can be fatal. Environmental factors have a major impact on the rate of plant transpiration.

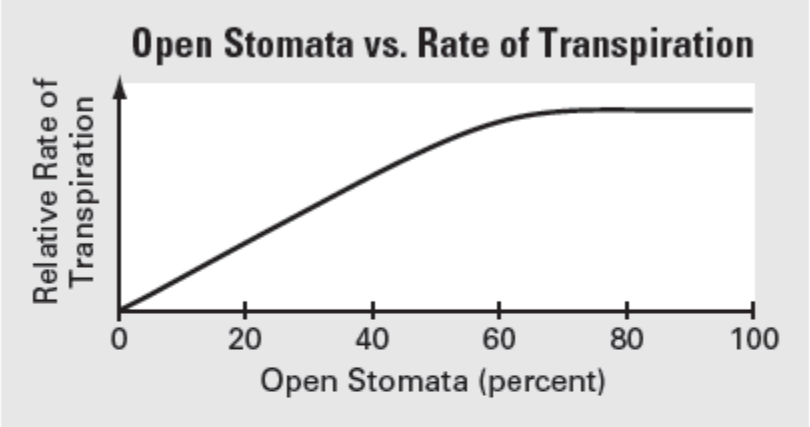
Transpiration Rate Versus Temperature

Temperature (°C)	20	23	27	28
Transpiration Rate ($mmol/m^2.sec$)	1.5	3	5	4.5

(a) Using the data above and the axes provided, **draw** a graph showing the effect of temperature change on the rate of transpiration. **Explain** the shape of the curve from 23 degrees to 28 degrees.

(b) Humidity is another environmental factor that affects transpiration rate. Using the axes provided, **draw** a curve that illustrates what you predict would be the rate of transpiration with increasing humidity and constant temperature. **Justify** the shape of the curve based on your prediction.

(c) The curve below illustrates the rate of transpiration related to the percent of open stomata on the leaf of a particular plant. **Explain** why the curve levels off with increasing percentage of open stomata per area of the leaf.



(d) The data below show the density of stomata on the leaf surfaces of three different species of plants. **Describe** the environments in which each plant most likely evolved. **Justify** your descriptions.

	Stomata Density (# of stomata/mm^2)	
Plant	In Upper Epidermis	In Lower Epidermis
Anacharis	0	0
Water Lily	420	0
Black Walnut	2	465

Task Three:

Due Date-06/15

Task Four:

Due Date-06/20

TASK Five:

Due Date-06/25

Task Six:

Due Date-06/30

Task Seven:

Due Date-07/01

For each of the following experiments, state the following

1. A Hypothesis**(if any)**
2. A Null Hypothesis
3. Dependent variable**(if any)**
4. Independent variable**(if any)**
5. Relationship between the DV and IV**(if any)**
6. Control(s) **(if any)**
7. Constants**(if any)**
8. Conclusions

Passage VI

Three studies compared the effects of 5 sweeteners (Sweeteners Q–U) on food consumption by rats and on the concentrations of *leptin* and *ghrelin* (hormones that regulate appetite) in the blood of rats. Sweeteners Q–U differ only in the percent by mass of fructose and of glucose (see Table 1).

Table 1

Sweetener	Percent by mass of: fructose	glucose
Q	0	100
R	42	58
S	50	50
T	55	45
U	100	0

Study 1

Each of 5 groups (Groups 1–5) of rats was assigned a solution having a 100 g/L concentration of 1 of the 5 sweeteners. Each rat was placed in a separate cage and provided unlimited access to the assigned sweetener solution and to solid food for 56 days. Table 2 shows, for each group, the amounts of sweetener solution and solid food consumed per rat per day. On Day 56, blood was collected from each rat for analysis in Studies 2 and 3.

Table 2

Group	Sweetener	Amount consumed per rat per day: sweetener solution (mL)	solid food (g)
1	Q	73	9
2	R	55	14
3	S	52	16
4	T	48	18
5	U	29	23

Table 2 adapted from Heather R. Light et al., "The Type of Caloric Sweetener Added to Water Influences Weight Gain, Fat Mass, and Reproduction in Growing Sprague-Dawley Female Rats." ©2009 by the Society for Experimental Biology and Medicine.

Study 2

A 1 mL blood sample from each rat was placed in a separate test tube containing 0.2 mL of *Indicator N* (which reacts with leptin to form a blue dye). The concentration of blue dye in each tube was directly proportional to the leptin concentration in the blood sample. Table 3 shows the leptin concentration per sample for each group.

Table 3

Group	Sweetener	Leptin concentration per sample (pM*)
1	Q	804
2	R	622
3	S	553
4	T	475
5	U	251

*picomolar

Study 3

Study 2 was repeated, except that *Indicator P* (which reacts with ghrelin to form a yellow dye) was used instead of Indicator N. The concentration of yellow dye in each tube was directly proportional to the ghrelin concentration in the blood sample (see Table 4).

Table 4

Group	Sweetener	Ghrelin concentration per sample (pM)
1	Q	852
2	R	1,125
3	S	1,279
4	T	1,450
5	U	1,758

Tables 3 and 4 adapted from Andreas Lindqvist, Annemie Baelemans, and Charlotte Erlanson-Albertsson, "Effects of Sucrose, Glucose and Fructose on Peripheral and Central Appetite Signals." ©2008 by Elsevier B.V.

PASSAGE VII

Bacteria can be categorized by how they respond, as indicated by reproduction and growth, to certain temperatures. They are grouped into four categories—psychrophiles, psychrotrophs, mesophiles, and thermophiles—based on their growth response to certain temperatures. Minimal growth temperature is the lowest point at which the bacteria will reproduce. Optimum growth point is the temperature at which the bacteria reproduce most efficiently. Maximum growth point is the very highest temperature to which the bacteria will respond, beyond which the bacteria will not reproduce at all. Table 1 lists the types of bacteria as well as the growth points for each.

Table 2 represents a list of common bacteria and their growth points.

Table 1			
Growth points or ranges (°C)			
Classifications	Minimum	Optimum	Maximum
Psychrophile	below 0	10–15	below 20
Psychrotroph	0–5	15	30
Mesophile	5–25	18–45	30–50
Thermophile	25–45	50–60	60–90

Table 2			
Cardinal growth points (°C)			
Bacteria name	Minimum	Optimum	Maximum
Anoxybacillus flavithermus	30	60	72
Bacillus flavothermus	30	60	72
Clostridium perfringens	15	45	50
Escherichia coli	10	37	45
Listeria monocytogenes	1	34	45
Micrococcus cryophilus	0	15	30
Staphylococcus aureus	10	37	45
Streptococcus pyogenes	20	37	40
Streptococcus pneumoniae	25	37	42

PASSAGE II

Researchers conducted trials on a certain prescription drug delivered in immediate-release capsules and extended-release capsules.

Figure 1 shows the mean concentration (nanograms per milliliter [ng/mL]) of the two active ingredients of the prescription drug in patients' blood plasma over time (hr).

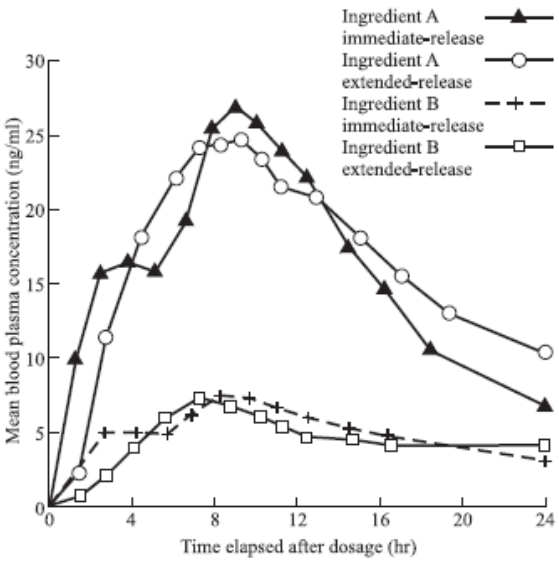


Figure 1

In clinical trials of the prescription drug, subjects given the prescription drug were interviewed at regular intervals about the symptoms the prescription drug is meant to relieve. After each interview, the subjects were assigned a symptom score. A high symptom score corresponds to high intensity of symptoms, and a low symptom score indicates low intensity of symptoms. Figure 2 shows the mean symptom score over time (hr) for subjects who took the prescription drug.

In the clinical trials, some subjects were given the prescription drug and some subjects were given a placebo (an inactive pill). Table 1 shows the percentage of subjects from both groups who reported various adverse side effects.

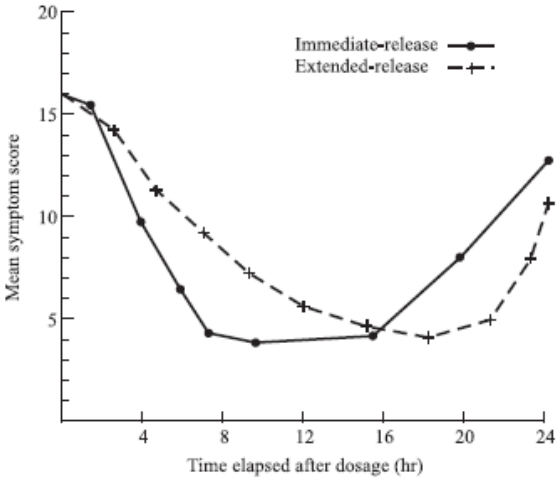


Figure 2

Table 1

Body system	Side effect	Prescription drug group (%)	Placebo group (%)
General	Feeling of weakness	6	5
	Headache	26	14
Digestive system	Loss of appetite	32	5
	Diarrhea	8	0
	Dry mouth	31	5
	Nausea	14	0
Nervous system	Anxiety	7	4
	Dizziness	9	0
	Insomnia	25	11
	Irritability	11	4
Cardiovascular system	Rapid heart rate	10	2
Nutritional	Weight gain	15	0

PASSAGE V

Tenebrio molitor is an arthropod insect which, like 90% of all insects, undergoes the process of complete metamorphosis, meaning that it passes through four life stages: egg, larva, pupa, and adult. In the larval stage the insect is commonly known as a mealworm; as a full adult it is a darkling beetle. Figure 1 shows the four stages of the *T. molitor* life cycle (*x*-axis), as well as data for minimum and maximum days spent in each stage of metamorphosis (*y*-axis) for *T. molitor* that were raised by students in a lab.

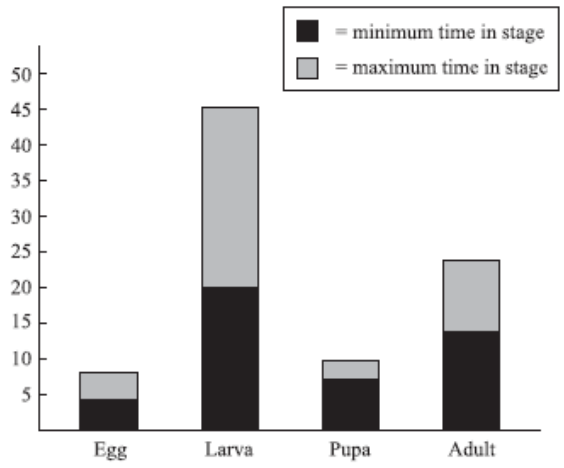


Figure 1

Table 1 includes data recorded for four different colonies of *T. molitor* raised by students in a lab, including the type of food each colony was given, beginning larval length, duration of time in larval and pupal stages, and final adult length. It was decided that the colonies would be given only one type of food source: either a fruit, a vegetable, or one of two whole grains. Apple was chosen as the fruit, carrot for the vegetable, and oats and wheat for the two whole grains.

Table 1

Colony	Diet	Avg. larval size (mm)	Avg. duration in larval stage (days)	Avg. duration in pupal stage (days)	Avg. adult size (mm)
1	Apple	25.8	36.9	7.5	19.3
2	Carrot	24.5	39.4	8.4	19.5
3	Oat	24.9	49.1	9.2	20.6
4	Wheat	25.3	57.2	10.8	21.3

PASSAGE II

Certain species of flowers attract more bees than others with the scent of their pollen. The pollen is found on a structure within the flower called the *anther*, which is located on top of another structure called the *stamen*. Flowers typically have multiple anthers and stamens.

Bees carry the pollen from the flowers on their legs. The bees move from flower to flower while collecting pollen. Some of the pollen falls from their legs as they land on another flower. This depositing of pollen causes cross-pollination to occur (fertilization of the other flowers). Three studies were conducted to study this process.

Study 1

For two flower species (A and B), pollen quantity per anther in milligrams (mg), anther quantity per flower in number, and percentage of stamens covered with pollen were recorded (see Table 1).

Table 1

Flower species	Pollen quantity (mg) per anther	Anther quantity per flower	Stamens covered with pollen (%)
A	4.9	12	27
B	7.6	19	27

Study 3

The researchers hand-pollinated flowers from a third species, Species C. They also observed the Species C plants being cross-pollinated by the bees in the area. All flowers were observed for 2 years. The scientists recorded the results in Table 3.

Table 3

Cross-pollination of Species C flowers	Results from:	
	Hand-pollinated flowers	Bee-pollinated flowers
Flowers that reproduced	31	12
Flowers reproducing after 1 year	10	34
Flowers reproducing after 2 years	8	15
Total flowers produced after 2 years	50	43

Study 2

Three study sites were established to determine the pollen collection rate of one species of bee for the flowers used in Study 1. In Site 1, Species A flowers were absent. In Site 2, Species B flowers were absent. In Site 3, both Species A and B flowers were absent.

Two pollen containers were placed at each site: one containing 50 mg Species A pollen and one containing 50 mg Species B pollen. The containers were left in place for 36 hours and the amount of pollen that was taken from the containers was measured. The results are recorded in Table 2.

Table 2

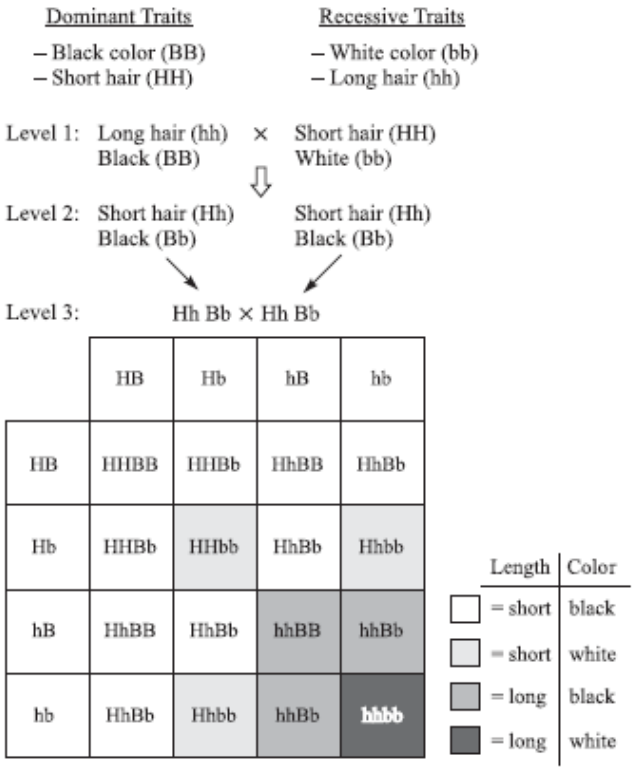
Site	Flower species absent	Amount of Pollen (mg) removed from dishes containing pollen from:	
		Species A	Species B
1	A	26	13
2	B	12	35
3	A and B	2	4

PASSAGE V

Gregor Mendel is known for his work in genetics. He is credited with discovering how traits (characteristics) are passed from one generation to the next. After his observations of inherited traits, Mendel concluded that each organism carries two sets of information about a certain trait. If the two sets differ about the same trait, one set dominates the other. That way, information can be passed on through the generations, even if the trait is not expressed.

It has since been determined that the presence of certain traits is attributed to *genes*, and the different forms that genes can take, known as *alleles*. Dominant alleles (*D*) produce dominant characteristics; recessive alleles (*d*) produce recessive charactersitics. Dominant alleles are expressed whenever present (*DD, Dd*) but recessive alleles are expressed only when the dominant allele is absent (*dd*).

A study was done in which the independence of two traits was tested. In this study, a rabbit with long black hair was mated with a rabbit with short white hair. The dominant trait for hair length is short (*H*). The dominant trait for hair color is black (*B*). If the two initial rabbits (level 1 in the figure below) are *homozygous* for their traits, meaning that the two alleles for each trait are the same, breeding them will result in offspring that have both a dominant and recessive allele for each trait. Such a pairing of alleles is known as *heterozygous*. If, as in level 2 of the figure, two heterozygous rabbits are bred, the chart (level 3) contains all the possibilities for their offspring.



PASSAGE V

Aphids are small plant-eating insects known to feed on rosebushes. In the cultivation of roses, certain pesticides are often applied when the presence of aphids is detected. However, sometimes the flowers that are treated with the pesticides are not as vibrant or fragrant as those that did not receive the pesticide treatment. Two experiments were conducted to study the effects of certain pesticides on rosebushes.

Experiment 1

A gardener filled 125 pots with Soil Type 1. No pesticide was added to the soil in 25 pots. The other pots were divided into four groups of 25 and the soils in each group were treated with 5, 15, 25, or 35 parts per million (ppm) of either Pesticide A or Pesticide B. All other factors were held constant. Fully grown rosebushes with buds but no flowers were planted after the pesticide was placed in the soil. After 30 days the rosebushes were uprooted, sun-dried, and the total number of petals produced by the bushes was counted. The results are shown in Table 1.

Table 1

Pesticide dose (ppm)	Number of petals	
	Pesticide A	Pesticide B
5	12	15
15	2	7
25	9	14
35	5	7
None	14	14

Experiment 2

Experiment 1 was repeated with 100 pots of Soil Type 1 and 100 pots of Soil Type 2. The same pesticide doses and type and number of rosebushes were used. All other factors were held constant. After 30 days the rosebushes were uprooted and weighed. The results are shown in Table 2.

Information on the composition of the two soil types used is given in Table 3.

Table 3

Solid type	pH level	Organic matter (%)	Clay (%)
1	4.1	3.0	12.5
2	3.9	6.5	6.3

Table 2

Pesticide dose (ppm)	Average weight of rosebush (oz)			
	Soil type 1		Soil type 2	
	Pesticide A	Pesticide B	Pesticide A	Pesticide B
5	47.5	51.4	52.7	61.2
15	37.1	42.3	40.3	51.7
25	27.5	32.9	31.1	40.3
35	19.7	22.1	23.6	29.7
Note: Average plant weight with untreated Soil Type 1 was 42.1 oz; average plant weight with untreated Soil Type 2 was 24.7 oz.				

PASSAGE VII

In nature, different types of organisms often form *symbiotic* (mutually beneficial) relationships with each other. One such example of this is between certain types of fungi and plants; this relationship is known as a *mycorrhiza*. The association provides the fungus with food through access to sugars from photosynthesis in the plant. In return, the plant gains the use of the fungi's surface area to absorb mineral nutrients from the soil. It is believed that without the assistance of fungi, these plants would not be able to absorb crucial nutrients, including phosphates, from the soil. Two experiments were performed to study the effect that the plant-fungi relationship has on plant growth.

Experiment 1

For 6 weeks, several specimens of three different types of plants, selected from among four different types of plants, were grown in a greenhouse. The average growth of each type of plant was recorded every two weeks. The soil used for the plants was treated to remove any trace of fungi to establish expected growth without the plant-fungi association. The results are shown in Table 1.

Table 1

Plant type	Average plant growth (in)		
	Week 2	Week 4	Week 6
1	1.2	2.8	3.7
3	0.6	1.7	2.0
4	0.9	2.6	3.5

Experiment 2

In this experiment, several specimens of four different types of plants were grown in a greenhouse for six weeks, and the average growth of each type of plant was recorded every two weeks. This time, however, untreated soil that contained fungi was used. The results are shown in Table 2.

Table 2

Plant type	Average plant growth (in)		
	Week 2	Week 4	Week 6
1	2.6	3.8	5.1
2	2.9	4.1	5.9
3	1.9	3.3	5.4
4	1.7	3.4	4.9

Information on the plant types used is given in Table 3.

Table 3

Plant type	Root structure	Native climate type	Leaf type
1	Diffuse	Prairie	Grass-like
2	Taproot	Northern forest	Evergreen needle
3	Taproot	Prairie	Broad
4	Diffuse	Tropical forest	Broad

36. The results of Experiment 1 indicate that during what time frame did all of the plant types studied experience the greatest increase in growth rate?

F. 0–2 weeks
G. 2–4 weeks
H. 4–6 weeks
J. Cannot be determined from the given information.

37. A plant from which climate type was NOT studied in Experiment 1?

A. Prairie
B. Tropical forest
C. Northern forest
D. All climate types were studied in Experiment 1.

38. Based on the results of Experiment 1, which plant type experienced the most total growth between Week 2 and Week 6?

F. Plant Type 1
G. Plant Type 3
H. Plant Type 4
J. Each plant type experienced the same total growth.

PASSAGE IV

Students wanted to test the effects of nutrition on the growth of guinea pigs. Two experiments were conducted using different feeds and vitamin supplements. For both experiments, four groups of 10 guinea pigs each were given a different type of feed over an 8-week period. Each group received the same quantity of food and was provided with fresh water daily. The guinea pigs were measured and weighed weekly. The guinea pigs in each group had an average starting weight of 50 grams (g) and an average starting length of 20 centimeters (cm).

Experiment 1

Group 1 was fed a high-protein feed (Feed P).
Group 2 was fed a grain-based feed with vitamin supplements (Feed Q).
Group 3 (control group) was fed a grain-based feed without supplements (Feed R).
Group 4 was fed a grain-based feed without supplements plus fruits and vegetables (Feed S).

The results and average measurements are recorded in Table 1 below.

Table 1

Group	Average weight after 8 weeks (g)	Average length after 8 weeks (cm)
1	93	32.50
2	82	29.00
3	74	25.25
4	76	23.00

Experiment 2

Group 5 was fed a high-protein feed plus fruits and vegetables (Feed V).
Group 6 was fed a grain-based feed with vitamin supplements plus fruits and vegetables (Feed W).
Group 7 (control group) was fed a grain-based feed without supplements (Feed X).
Group 8 was fed a grain-based feed without supplements plus fruits only (Feed Y).

The results and average measurements are recorded in Table 2 below.

Table 2

Group	Average weight after 8 weeks (g)	Average length after 8 weeks (cm)
5	98	38.25
6	85	30.50
7	75	25.00
8	74	23.25

29. Based on the results of the study, what is the order of the suspected mutagens, from the substance with the *least* potential to be mutagenic to the substance with the *most* potential to be mutagenic?

A. P, M, N, L
B. P, L, M, N
C. N, L, P, M
D. N, M, L, P

30. In the study, the scientists tested the effect of Substance P at a concentration of 5×10^{-9} g/mL. After the study, the scientists repeated their test of the effect of Substance P, but at 3 other concentrations. The 3 concentrations and their corresponding results are shown in the table below.

Concentration of Substance P	Number of colonies
10×10^{-9} g/mL	14
50×10^{-9} g/mL	54
100×10^{-9} g/mL	114

What is the relationship, if any, between the concentration of Substance P and its potential to cause mutations?

F. As the concentration of Substance P increases, its potential to cause mutations increases only.
G. As the concentration of Substance P increases, its potential to cause mutations decreases only.
H. As the concentration of Substance P increases, its potential to cause mutations first decreases and then increases.
J. There is no relationship between the concentration of Substance P and its potential to cause mutations.

31. Before bacteria were added to it, the dish that was intended to serve as the control dish in the study lacked which of the substances listed below?

I. Histidine
II. Nutrient agar
III. Suspected mutagen

A. II only
B. III only
C. I and II only
D. I and III only

32. Which of the following statements about the numbers of bacteria that regained the ability to synthesize histidine is consistent with the results of the study for Dishes 2 and 3 ? The number of bacteria that became His^+ revertants after exposure to:

F. Substance M was about 2 times the number of bacteria that became His^+ revertants after exposure to Substance L.
G. Substance L was about 2 times the number of bacteria that became His^+ revertants after exposure to Substance M.
H. Substance M was about 4 times the number of bacteria that became His^+ revertants after exposure to Substance L.
J. Substance L was about 4 times the number of bacteria that became His^+ revertants after exposure to Substance M.

33. The particular strain of *S. typhimurium* chosen for the study lacks normal DNA repair mechanisms. Which of the following statements gives the most likely reason this particular strain was chosen? The scientists:

A. did not want the bacteria in the study to synthesize any DNA.
B. did not want the bacteria in the study to synthesize any proteins.
C. wanted the bacteria in the study to be able to repair the mutations caused by the substances.
D. wanted the bacteria in the study to be unable to repair the mutations caused by the substances.

Task Eight:

Due Date-07/05

Article Reading

TASK Nine:

Due Date-07/15

Second Task- due date 06/04/18

Read chapter 1 and 2 of Campbell and Reece's *Biology 9th edition, AP edition textbook*. And pay attention to the objectives included in the packet. A copy of the textbook can be found on my webpage and the link can be accessed through the school web page Along with the assigned reading, you will be required to complete the guided reading and activities before August 1, 2016. You will take an assessment on this chapter and the entire packet the first Friday of the school year.

CHAPTER 1-INTRODUCTION: THEMES IN THE STUDY OF LIFE

After reading this chapter,

1. Briefly describe, in your own words, unifying themes that pervade the science of biology, and suggest why they are considered unifying themes.
2. Explain how the properties of life emerge from complex organization.
3. Describe five emergent properties associated with life, and suggest why they are essential.
4. Distinguish between holism and reductionism, using analogies.
5. Explain how technological breakthroughs contributed to the formulation of the cell theory and our current knowledge of the cell.
6. Using a Venn diagram, distinguish between prokaryotic and eukaryotic cells.
7. Explain, in your own words, what is meant by "form fits function." Describe five organs or cell that can be used to explain this.
8. List the five kingdoms of life and use a Venn diagram to compare and contrast them.
9. Distinguish between inductive and deductive reasoning using nonscientific and scientific examples.
10. Explain how science and technology are interdependent using several appropriate examples.

CHAPTER 2 THE CHEMICAL CONTEXT OF LIFE

After reading this chapter,

1. State four elements essential to life that make up 96% of living matter, and propose why they are essential.
2. Describe the structure of an atom and the importance the structure plays in its properties and function.
3. Explain how electron configuration influences the chemical behavior of an atom.
4. Define electronegativity and explain how it influences the formation of chemical bonds.
5. Distinguish among nonpolar covalent, polar covalent and ionic bonds using an analogy.
6. Describe the formation of a hydrogen bond and explain how it differs from a covalent or ionic bond.
7. Explain why weak bonds are important to living organisms and give an example of how it plays a role in life.
8. Describe how the relative concentrations of reactants and products affect a chemical reaction.

TASK Ten:

Due Date-07/20

Integrity Policy

"Plagiarism. Failure to acknowledge ideas, phrases, data, images, or other intellectual property gained from a preexisting body of work. This includes self-plagiarism, or the submission of one piece of work in more than one course without the explicit permission of the instructors involved."[1]

"Cooperative or collaborative effort in coursework without acknowledgment and explicit permission of the instructor. Assume that acknowledgement is necessary any time you collaborate and/or cooperate, unless you are expressly informed that it is not".[2]
"Cheating. The submission of work as one's own that has been prepared by another person."[3]

1-3-https://www.hamilton.edu/student-handbook/studentconduct/honor-code

"I affirm that I have not given or received any unauthorized help on this assignment, and that this work is my own."

Signature _____