MHS 2017-18 AP Biology: Summer Assignment
Mr. Alcala

Welcome to AP Biology! You have made the decision to take on a very challenging course; yet, if you put the necessary effort and time into it; and prepare accordingly, you should be able to pass the exam and gain college credits. Please be advised that some colleges/universities do not accept certain AP credits. This is especially true if you are in a "biology majors" program. They will want you to take their courses.

Please email me if you have any questions about the summer assignment: stace.alcala@polk-fl.net

Summer Assignments

Mandatory Assignment #1

First, I would like to know a little about who you are so your **first assignment is to send me an email.** Yup….that's it! Your first AP Biology grade will be sending me an email…if only all of the grades were this easy! I will reply so you have electronic record that your assignment was received. Here is where I would like you to email me at: **stace.alcala@polk-fl.net (before the end of this summer)**

Subject Line: AP Biology 2017-18
Body: Your full name (& nickname that you go by if you have one) & stuff about you!

1. Who was your last science teacher? What class?
2. What other science classes have you taken? Are planning to take next year?
3. What do you like to do (hobbies, sports, music, interests, etc.)?
4. Do you have a job or plan on getting a job next year? What kind?
5. What are your personal strengths when it comes to learning new material?
6. What causes you to struggle in a course?
7. What is the most effective way for you to prepare for a test?
8. How many AP classes have you taken so far? How many have you passed with a 3 or higher?
9. How many AP classes are you taking this year (please list)?
10. Have you or will you be taking anatomy and physiology?
11. Have you or will you be taking APEs (AP Environmental)?
12. Was there anything that you liked or disliked about your earlier biology class?
13. What are you looking forward to the most in AP Biology?
14. What are you most anxious about in AP Biology?
15. **Why are you taking AP Biology? What do you hope to accomplish/gain?**

Mandatory Assignment #2 – Signing up for class communication. Please indicate in your email to me if you are interested in a "remind101" phone account. I will be able to contact you through both your email and phone if you chose to have the phone account. **In addition, a google doc page is being built for the class, you will be able to log in and see upcoming assignments, submit work, and even take quizzes etc…**

Mandatory Assignment #3 Get your supplies for AP Biology Class

Get yourself ready for class! Below is the list of supplies that you will need for class. **WOW**, it is quite a list, but one thing you can be assured of is that our class is interactive – that being said you will need the proper tools to engage in project based, interactive learning, labs and classroom activities.

1. Mead/Five star **HEAVY DUTY** (plastic cover) 5 subject Notebook **College ruled**. (You will need this for 1st semester). Will be used daily in class for notes and daily activities. This will be called your **BILL – Biology Interactive Learning Log**
2. ONE 1 ½ -2 inch binder White with **clear cover for title page**. Will be kept in class and used to store Review Materials for AP Bio Exam, graded work and labs. This will be your review binder and very important for the last quarter of school in prep for the exam.
3. Blue/Black pens and Red Pen (for corrections) – & pencils (for testing days)
4. Pack of highlighters (several different colors) Will be used for interactive **BILL** reading and activities
5. Colored pencils or markers that WILL NOT bleed through pages of notebook
6. Pack of **Post it divider tabs** for **BILL**
7. Pack of 8 dividers for your review binder
8. Note Cards (200+ - 3x5) and note card rings Will be used for **Bill** activities and vocabulary cards about 500-600 vocabulary words will be learned throughout the course. Students are encouraged to buy note cards in various colors.
9. ONE pack of Colored File Folders, Letter, 1/3 Cut, assorted colors (pack of 10-25, students DO NOT need the 100 count box. Each student will use about 12 folders during the course of the year). Will be used for mini tri folds to present lab work.

Mandatory Assignment # 4 Get your BILL ready for Semester ONE of AP Bio!

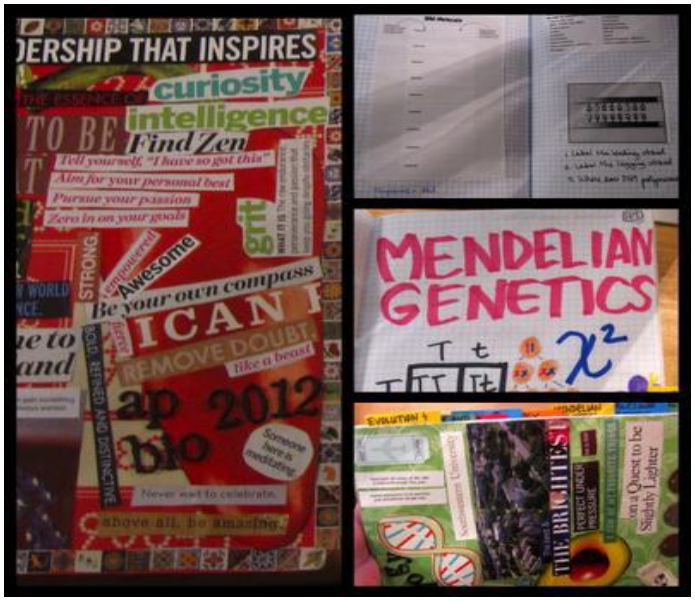
BILL--The Biology Interactive Learning Log You will also be spending a lot of time with something called BILL. In our AP Biology course, students keep an interactive student notebook (ISN), where you will document your learning and interact with course content. Our ISN is called a **B**iology **I**nteractive **L**earning **L**og, and we will use it daily. On any given day, we could be doing one of the following things in our notebook:

- Solving practice problems
- Interpreting graphs or diagrams
- Creating graphic organizers or concept maps about biology content
- Writing practice free response questions

The activities we will do in our BILL are meant to allow you to interact with the biology content of our class in various ways. The more ways you interact with biological concepts, the more likely you will be able to apply them to new situations, whether it is a test or a lab investigation. To create your BILL, you will need a MEAD/FIVE star HEAVY DUTY (Plastic Cover) spiral 5 subject notebook. **These notebooks are the most durable spiral notebooks – so please make sure you get a high quality one to ensure that your notebook does not fall apart (as will be the case with generic spiral notebooks).** This is important because by the end of the year, you will have a homemade study guide.

This summer: You will need to decorate the cover of your BILL with a collage of some sort that represents you. I recommend that you cover the front of your notebook with clear packing tape once you have completed the cover to add durability, but also to protect the collage you make. **We will go over how to set up the inside of the BILL in class on the second day of class so be sure you have your notebook with you in class so that you can get it set up**

It is important that you keep up with your BILL on a daily basis, since this learning log is the physical representation of your processing of course concepts. We will use this notebook in class on a daily basis to catalog all the learning that you do both inside and outside the classroom, so it is important that you have it with them each day. Here is a collage that illustrates a little bit about what a BILL cover might look like.



***BILLs are the Brainchild of Lee Ferguson – Master AP biology teacher This photo is from her personal BILL

Optional Assignment – Summer Scavenger Hunt

Extracurricular activity scavenger hunt. Complete the task listed, and provide the appropriate documentation (indicated in parentheses). **For every five** that you complete and document successfully, I will give you **five bonus points** on your first course exam.

1. Watch the news/Check the Google News Aggregator/Read a newspaper at least once a week. (copy of article, or log of date/URL and a 1-sentence summary of a news item from each week – **minimum of 8**)

2. See a superhero movie in a theater. Make sure it's a good one. (stub)

3. Feed ducks on three separate occasions. (photos)

4. Grow a plant. (living plant brought to class on day 1)

5. Go **to two state parks** and take a walk. (photos AND maps)

6. GO to the Zoo. (photo AND stub)

7. Go see a movie at the MOSH planetarium. (photo of you in the hallway- you can't take a picture in the gallery AND stub)

8. Go to a water-based amusement park. (photo AND stub)

9. Go to the beach, Collect sand in a glass jar. (jar of sand AND photos)

10. Catch a cicada. (molt)

11. Sleep outside, under the stars. (photo)

12. Find an animal in the wild (no dangerous ones!). (photo of animal AND photo of you

13. Read **more than one book**. (list, photos, AND **3 sentence summaries**)

14. Play the board game "Settlers of Catan" or "Risk" or the card game "Apples to Apples" (photo)

15. Put a Linux distribution on your computer. (photo)

16. Build your own personal website. (url)

17. Set up a geocaching tournament for you and your friends. (photo and map)

18. Make your own clothing. (wear it to school)

19. Identify three species of trees in your neighborhood. (leaves & genus/species of each).

20. Hold five earthworms AND two slugs (with worms and slugs in opposite hands). (photo)

Task	Due Date	Task Description	Objective	Check off
1	Before the 1st day of class	***Mandatory Assignment 1 : Letter of introduction email sent to thomasb3@duvalschools.org***	So I can begin to get to know you as a student.	
2	Before the 1st day of class	**Mandatory Assignment #2 – Signing up for class communication**	Students will be signed up and ready to receive class communications by the first day of school	
3	First Day of School	**Mandatory Assignment #3 Get your supplies for AP Biology Class** Get your AP biology Supplies	Assemble your supplies for class so we can get started right away	
4	2nd Day of School	**Mandatory Assignment #4 Get your BILL ready for Semester ONE of AP Bio!** Have your BILL ready	Students BILL is ready and student is prepared to engage in interactive learning processes	
5	1st Day of School	**Mandatory Assignment #5**	Graphing Introduction Graphing Problems	
optional	1st Day of School	**Optional Assignment – Scavenger Hunt**	Have some fun this summer, Rest! (trust me - you'll need it)	

Mandatory Assignment 5 Graphing and Data skills practice

Math and Statistics for AP Biology - Research the answer to the following questions

1. In designing an experiment or other scientific study, why do scientists need to sample from a population rather than using an entire population?
2. Suppose you are designing an experiment to test the effects of nicotine on the heart rate of rats. What are the disadvantages of having too small a sample size (i.e., testing on too few rats)? What are the disadvantages of having too large a sample size (i.e., testing on too many rats)?
3. Explain the difference between discrete variables and continuous variables. Give an example of each.
4. Explain the difference between quantitative and categorical variables. Give an example of each.
5. What is a null hypothesis?
6. Explain the difference between a Type I error and a Type II error.
7. What are some steps that scientists can take in designing an experiment to avoid false negatives? 10

Graphing Practice INTRODUCTION

Graphing is an important procedure used by scientists to display the data that is collected during a controlled experiment. **Line graphs** must be constructed correctly to accurately portray the data collected. Many times the wrong construction of a graph detracts from the acceptance of an individual's hypothesis

A graph contains **five major parts**:

1 **Title** 2 **The independent variable** 3 **The dependent variable** 4 **The scales for each variable** 5 **A legend**

- The **TITLE**: depicts what the graph is about. By reading the title, the reader should get an idea about the graph. It should be a concise statement placed above the graph.
- The **INDEPENDENT VARIABLE**: is the variable that can be controlled by the experimenter. It usually includes time (dates, minutes, hours, etc.), depth (feet, meters), and temperature (Celsius). This variable is placed on the X axis (horizontal axis).
- The **DEPENDENT VARIABLE**: is the variable that is directly affected by the independent variable. It is the result of what happens because of the independent variable. Example: How many oxygen bubbles are produced by a plant located five meters below the surface of the water? The oxygen bubbles are dependent on the depth of the water. This variable is placed on the Y-axis or vertical axis.
- The **SCALES** for each Variable: In constructing a graph one needs to know where to plot the points representing the data. In order to do this a scale must be employed to include all the data points. This must also take up a conservative amount of space. It is not suggested to have a run on scale making the graph too hard to manage. The scales should start with 0 and climb based on intervals such as: multiples of 2, 5, 10, 20, 25, 50, or 100. The scale of numbers will be dictated by your data values.
- The **LEGEND**: is a short descriptive narrative concerning the graph's data. It should be short and concise and placed under the graph.
- The **MEAN** for a group of variables: To determine the mean for a group of variables, divide the sum of the variables by the total number of variables to get an average.
- The **MEDIAN** for a group of variables: To determine median or "middle" for an even number of values, put the values in ascending order and take the average of the two middle values. e.g. 2, 3, 4, 5, 9, 10 Add 4+5 (2 middle values) and divide by 2 to get 4.5
- The **MODE** for a group of variables: The mode for a group of values is the number that occurs most frequently. e.g. 2, 5, 8, 2, 6, 11 The number 2 is the mode because it occurred most often (twice)

Problem A – Graphing/Data Analysis

Using the following data, answer the questions below and then construct a line graph.

Depth in Meters	Number of Bubbles/min Plant A	Number of Bubbles/min Plant B
2	29	21
5	36	27
10	45	40
16	32	50
25	20	34
30	10	20

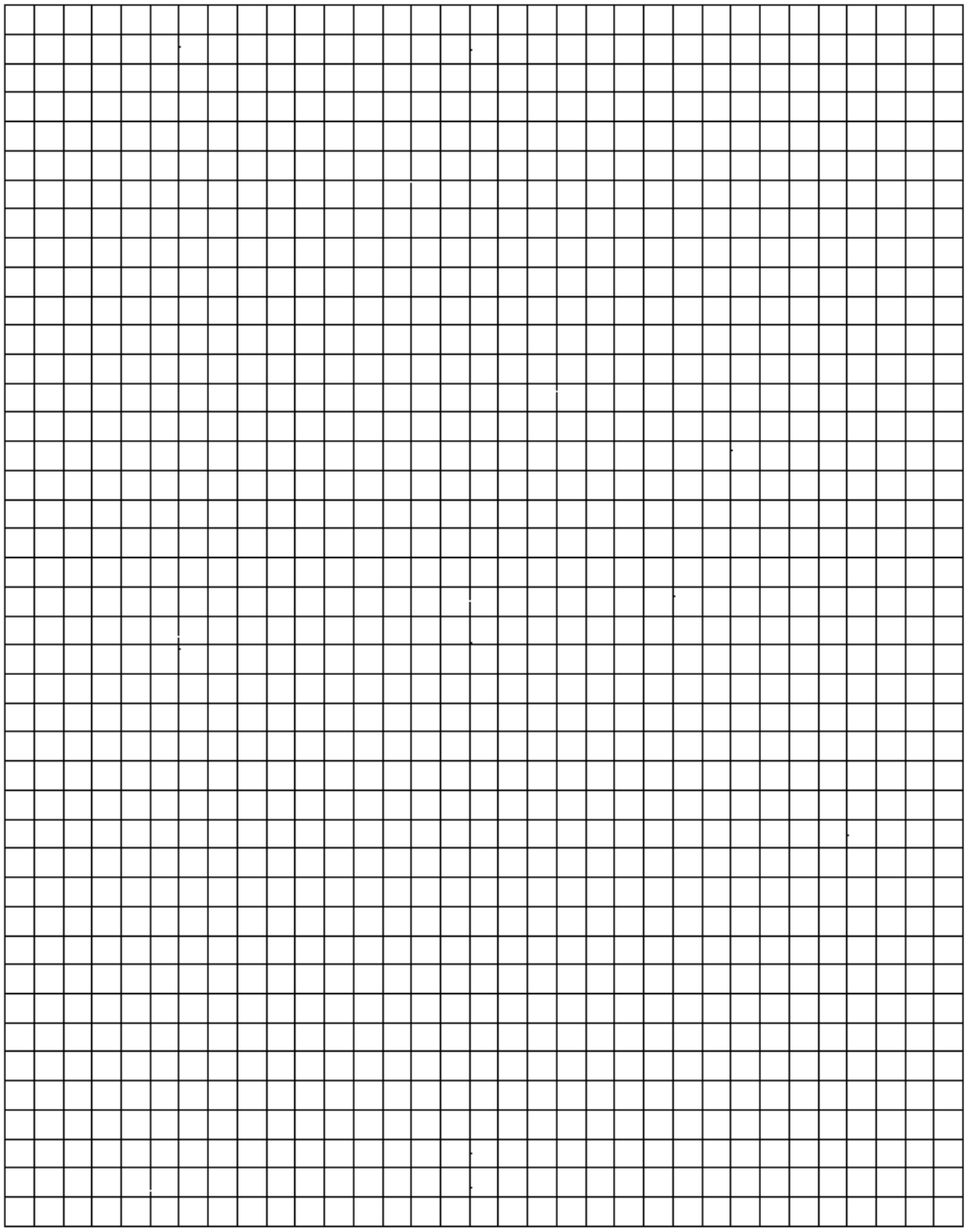
1. What is the dependent variable and why?
2. What is the independent variable and why?
3. What title would you give the graph?
4. What are the mean, median, and mode of all 3 columns of data?

a). Depth : Mean_____Median_____Mode_____

b). Bubble Plant A.: Mean _____Median_____Mode_____

c). Bubbles Plant B: Mean _____Median_____Mode_____

Title: _____



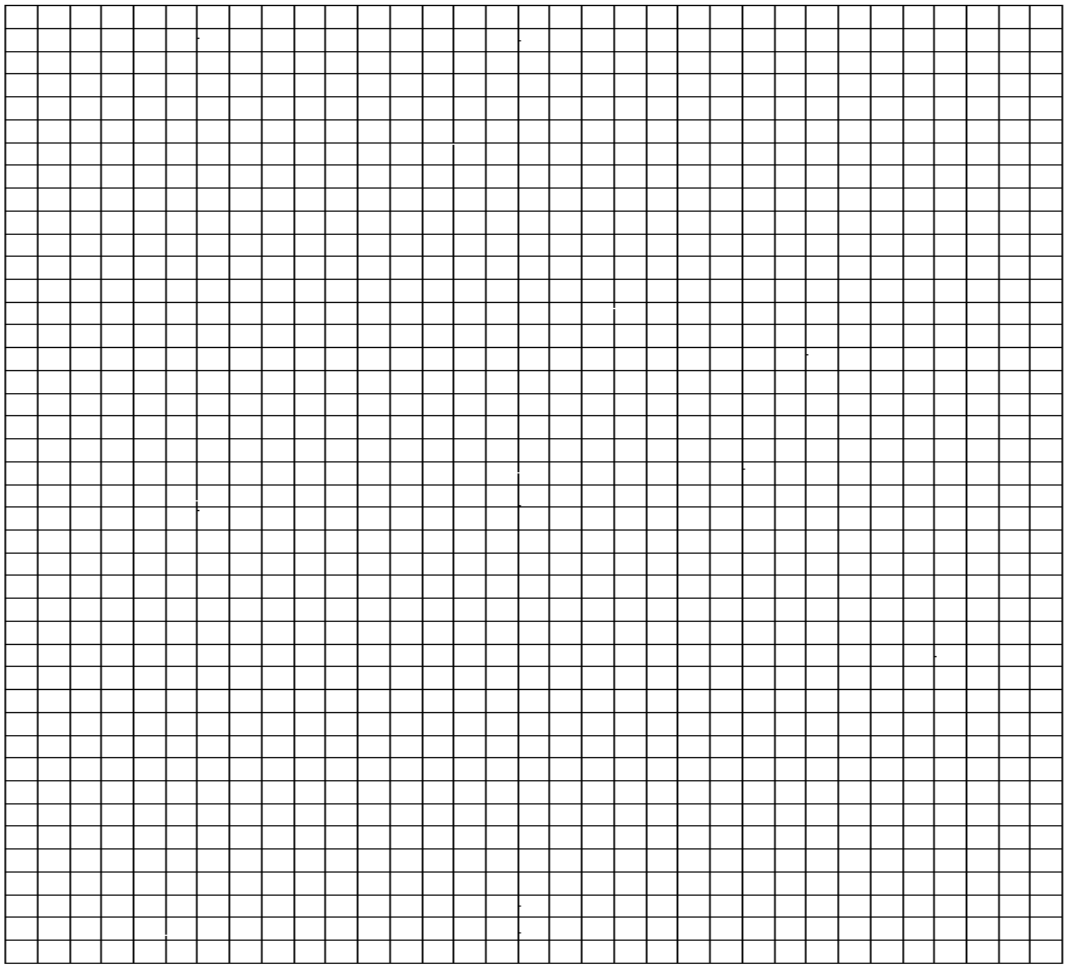
Legend:

Problem B – Graphing and Data Analysis:
Diabetes is a disease affecting the insulin producing glands of the pancreas. If there is not enough insulin being produced by these cells, the amount of glucose in the blood will remain high. A blood glucose level above 140 for an extended period of time is not considered normal. This disease, if not brought under control, can lead to severe complications and even death. Answer the following questions concerning the data below and then graph it.

Time After Eating (hours)	Glucose (ml)/liter of blood Person A	Glucose (ml)/liter of blood Person B
0.5	170	180
1.0	155	195
1.5	140	230
2.0	135	245
2.5	140	235
3	135	225
4	130	200

1. What is the dependent variable and why?
2. What is the independent variable and why?
3. What title would you give the graph?
4. Which, if any, of the above individuals (A or B) has diabetes?
5. What data do you have to support your hypothesis?
6. If the time period were extended to 6 hours, what would the expected blood glucose level for Person B?

Title: _____



Legend