AP Biology Summer Assignment 2023

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<u>Welcome to AP Biology!</u> This class that focuses on use of knowledge from eight units in higher level critical thinking applications. We will discuss the expectations of the course in more detail when classes begin in August but first, I have a few items for you to complete prior to the first day of school. The purpose of this is to get you familiar with some terminology, review and practice basic graphing and data skills, and make sure you have the materials you need for class. I am restructuring this activity which is inspired by several colleagues in the AP biology community to make it fun. :). It is summer, after all.

Task 1: Gathering required materials

- 1. 3-ring binder (at least 1") with loose-leaf college-ruled paper
- 2. 1 set of tab dividers. The sections will be Notes/Vocabulary, Classwork/Homework, Test/ Quizzes, Articles/Supplemental Materials. These can be headed and arranged in any order you like, but you need to keep your materials organized in these categories. This will be valuable as you prepare for the AP test.
- 3. Blue or black pens. AP Biology FRQs (free response questions) are only scored if they are written in blue or black ink.
- 4. Highlighters. Any color, these will be used as we practice scoring.
- 5. Colored pencils or pens that will not bleed through paper for sketch notes.
- 6. Non-programmable, 4-function calculator. This is required for the AP exam.
- 7. Graph paper. I suggest a few loose leaf pages punched and kept in your binder.

8. A test prep manual. There are many available. Choose a recent copy as the 2019-2020 academic year involved a restructuring of the class and the curriculum. If you go to amazon.com and type AP Biology 2020 several options will pop up.

Task 2: Terminology Hunt

This is due on Friday, August 11, 2023. It will be submitted to google classroom. You are going to become familiar with terms that will be used throughout the year. Instead of completing a vocabulary list, however, you are going to find a representative of 25 items of your choice from this list and take a selfie with the item. You will compile the pictures with an **explanation** of what the photo represents into a Google Slides document. **The list of terms will be at the end of this document.**

A. The pictures do not have to show a specific example, though for some items that may be easier. For example, if you chose the term glucose (not on the list), you may take a picture of a plant and your explanation would state that the plant is transferring energy to glucose by the process of photosynthesis. Or a picture of roots and indicate this is where glucose is stored. Your explanation must be in complete sentences.

B. ALL items must be found in nature. You many not draw a picture or use a picture from any other source. Go outside. **Do not spend any money!** You can find everything you need for free.

C. Each person is to turn in his or her own project. You may work together to find the items. You may use the same item for more than one person. But each person is expected to turn in a project with his/her selfies and explanations put into his or her own words, no exceptions!

D. This is a 50 point classwork assignment. One point for each photograph, one point for each explanation or description. <u>No work will be accepted late.</u>

Task 3: Graphing and Data Skills Practice

Answer the following on paper using blue or black ink. You will turn this in on Friday, August 11. This will be your first **quiz grade** for the quarter. All_answers are to be written in complete sentences. **No** credit will be provided otherwise. Point values are listed by the question. <u>This will not be accepted late.</u>

- 1. You are designing an experiment to test the effects of atropine on the heart rate of male vs female rats.
 - **1.** What are the disadvantages of having a sample that is too small (testing on too few individuals)? What are the disadvantages of having too large of a sample? (4 points)
 - 2. What would be your control group? (2 points)
 - 3. What is the dependent variable for your study? Independent variable? (2 points)
 - 4. Identify two constants in your study. (2 points)

Note: You are not writing out a materials list and steps of a lab experiment. I want you to take the question that is posed and determine a way to answer it using data. The answers to your questions will convey that.

- 2. For the experiment described above provide a **null hypothesis**. Make sure this is written correctly. (2 points).
- **3.** Use the graph below to answer the following:
 - A. The graph is missing an appropriate title. Provide one. (1 point)
 - **B.** This graph includes error bars. There is definite overlap between the error bars in Species B upon exposure to nitrogen and exposure to phosphorus. Explain what this means. (2 points)
 - **C.** Stating evidence from the graph (always!), provide a conclusion for this study in complete sentences (always). Be explicit, never use "it". (4 points)
 - **D.** N= 50 lakes refers to the population tested. The percent increase compared to the control is represented on the Y-axis.
 - 1. Is this the dependent or independent variable? (1 point)
 - 2. Describe the control in this experiment. Do not define control. (1 point)
 - E. A cause of the changing percentage of algae in the ponds is often attributed to a process called eutrophication. EXPLAIN what this is and if the data reflects this process. (4 points)

Task 4: Student and Parent Signature

AP Biology Parent/Student Contract

AP Biology is a fast-paced, hands-on, student inquiry course equivalent to a freshman biology course (two semesters) in college. The purpose of the AP Biology Parent/ Student Contract is to provide information to parents and students and to facilitate students' success in an academically challenging course. Please read carefully the list of expectations below and then sign the form at the bottom confirming your commitment to AP Biology.

- I recognize that AP Biology is a challenging course, and that a great deal of effort will be required of me in order to successfully complete the course.
- I recognize that there was a summer assignment, and may need to study over the breaks in the school year. My teacher will not give graded work over school holidays.
- I recognize that I need to be in class on time every day, except in an emergency or illness. If I am absent, I understand it is my responsibility to make arrangements with my AP Instructor to come in during study hall and get caught up as soon as I am back to school.
- I will put forth maximum effort throughout the entire year & commit to having excellent classroom participation.
- I understand the importance of the Honor Pledge at Clarksville Academy and will submit work that reflects my knowledge, understanding, and work ethic without stealing work from others.

• I recognize that assessments will be timed and representative of the AP test that will be taken in the spring, and that I am expected to prepare for this test in an effort to receive the college credit I have been working toward during the year.

I have read and understand the expectations for this course. If I have any concerns or questions, I will contact the teacher directly in person or by email at clindsey@clarksvilleacademy.com.

Parent Name, Signature, and Date

Student Name, Signature, and Date

Terminology List (Choose 25)

Gibberellins	adaptation of a plant	abscisic acid	Glycogen	Adaptation of an animal
Gymnosperm	actin and myosin	Hermaphrodite	Aggregate fruit	adhesion of water
amniotic egg	homologous structures	K-strategist	Anabolism	Keratin
analogous structures	Angiosperm	example of each member of the kingdoms (except archaebacteria)	larval stage of an insect	Annelid
apical growth	Lignin	Littoral zone organism	auxin producing part of a plant	C4 plant
Mimicry	Basidiomycete	biological magnification	modified leaf, root, or stem	Monocot plant with flower and leaf
mutualism	Cellulose	Chitin	Climax community	Parasite
Nymph stage of an insect	cohesion of water	Coelomate	niche	Pioneer species
radial symmetry	r-strategist	plasmolysis	Dicot plant with flower and leaf	Enzyme
Endosperm	Scale from an animal with a two chambered heart	Succession (primary or secondary)	fermentation	fruit- dry with seed and fleshy with seed
a genetically modified organism	transpiration	protein, lipid, and a carbohydrate	Mycorrhizae	Commensalism

heartwood	stomata	lepidoptera	Denaturation	Catabolism
Deuterostome	Polyploidy	Pollen	Artificial selection	rock strata
Migration	concentration gradient	Necrosis	mutation	Recessive phenotype
endergonic reaction	food chain	Saprophyte	Keystone species	nitrogen cycle

Reminders:

Tasks 2 and 3- Submit to google classroom on the first Friday of school (August 11)

Due to family events this summer, I will plan to check my work email on Mondays over the summer. This summer assignment can be completed in 2-3 hours, so don't overthink it. If you have questions, email me and I will get to you as soon as I can.



Figure 3. Responses of lake algae to addition of nutrients. Error bars are 95% confidence limits. N = 50 lakes.