



AP Environmental Science is a rigorous course that will be taught at a level comparable to a college course. You will find that this course is interdisciplinary, combining areas of chemistry, biology, geology, math, economics and politics. In this course, science is applied to understanding the interrelationships found in nature and analyzing environmental problems, both natural and human-made. In addition to lectures, we will be taking a very hands-on approach to the subject by doing many labs and activities and making connections to current events with articles, videos and TED talks. It is my desire that the knowledge gained in this course will remain with each student and guide your decision-making processes as citizens of this place we call Earth.

The summer assignment is to help prepare you both academically and mentally for the material, expectations, and pace of the course. Just as throughout the year you will need to be responsible for pacing yourself through ongoing assignments (readings, homework, etc), the same is expected of you in this summer assignment. The assignment is split into two separate components, each of which is outlined on the following pages. Your work should be submitted by **Wednesday, 9/6/23**. The discussion questions will be submitted electronically to Canvas and the calculations should be handwritten on a separate sheet of paper.

****Reminder:** JBHA Academic Honesty policy is still in effect for summer assignments and prohibits the use of resources including, but not limited to, AI generation tools (e.g. ChatGPT). Any digital work that is to be assessed is subject to AI detection tests.

Summer Assignment is worth 50 points:

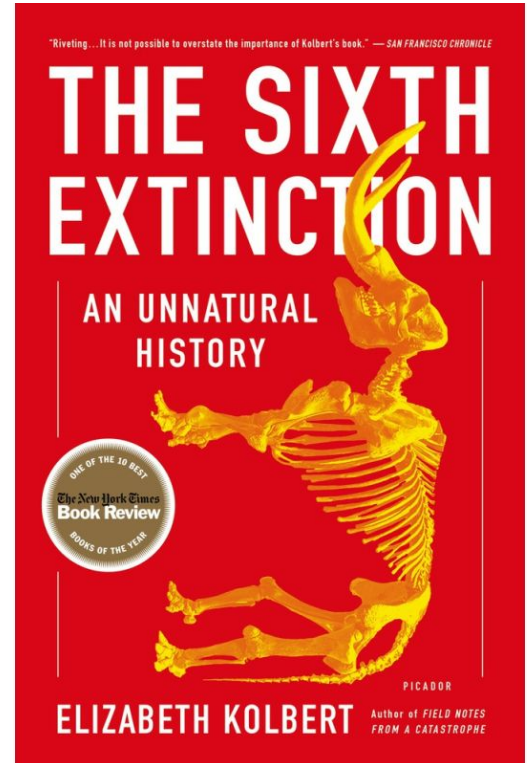
Part I = 40 points

Part II = 10 points

PART I. GLOBAL ENVIRONMENTAL AWARENESS: Looking beyond our own backyard, it is important to understand environmental concerns around the world. To begin this process, you will be reading *The Sixth Extinction: An Unnatural History* — by Elizabeth Kolbert (ISBN: 1250062187). Then respond to the following discussion questions (40 points):

Discussion Questions

1. What do you think the author's hope is for what readers will take away from the experience of reading this book?
2. Why are amphibians known as the "planet's greatest survivors"? How have they evolved over time?
3. The example of the extinction of Auk sheds light on the issue of human-induced extinction, in your opinion do you think humans deserve a "special status" as a creature outside of nature? Justify your argument with a quote.
4. Explain the significance of the Alverezes' challenging the "uniformitarian viewpoint".
5. Explain how coral reefs support aquatic ecosystems and what is predicted to happen to coral reefs if current emissions trends continue?
6. Why is the current rate of warming causing more impacts than previous warming periods? What is its effect on organisms?
7. Explain the significance in the relationship between army ants and ant-following birds and how it demonstrates ecosystem interconnectedness.
8. How have humans affected geographic distribution and geographic separation of species? What is the global consequence of the sudden increase in movement of species?
9. What happened in 1984 that saved the Sumatran rhino from extinction? Was the effort successful?
10. What is the sole cause of the sixth extinction? What specific steps might you take to counteract the trends that Kolbert describes in her book?



PART II.

APES Math Review

Complete the following sections of math review on a separate sheet of paper. All work needs to be included, as maximum credit on the AP exam will require you to show your calculations.

1. Percentages

- A. What is 15% of 1,500?
- B. You start with 100 units and end with 150 units, what is the percentage increase?
- C. You start with 100 units and end with 50 units, what is the percentage decrease?
- D. You start with 200 units. How many units would you have after a 75% decrease?
- E. You use 1,000 kilowatts of power. You increase your usage by 30%. How many total kilowatts are you using?
- F. Your old microwave used 2 kilowatts an hour. Your new microwave uses 1.5 kilowatts an hour. What is your percent energy savings?
- G. A light bulb uses 100 watts of power. 95 watts are wasted as heat. What percentage of energy is used to light the bulb?
- H. A fluorescent bulb uses 22 watts and gives off the same amount of light as a 100 watt regular bulb. What is the percentage in energy savings by switching to a fluorescent bulb?
- I. A population starts the year with 1,000 residents. By the end of the year, 100 new babies were born. What is the percent increase for this population?
- J. You dissolve 5 grams of salt into 95 grams of water. What is your percent salt solution by mass?

2. Dimensional Analysis : Set up and solve the following equations using all units and showing all work. Conversion factors are included. Use scientific notation when appropriate.

- A. There are 2.2 pounds in 1 kilogram. How many pounds in 120 kilograms?
- B. There are 2.53 centimeters in one inch. How many centimeters are in 24 inches?
- C. There are 36 inches in one yard, how many centimeters are in one yard?
- D. There are 100 centimeters in 1 meter. How many yards are in one meter?
- E. Given 1000 watts in 1 kilowatt, how many watts are in 2.3 kilowatts?
- F. 1 megawatt is 10^6 watts. How many kilowatts are there in one megawatt?
- G. There are 1,000 grams in one kilogram, and 1,000 micrograms in one gram. How many micrograms are in 2,500 kilograms?
- H. You have 24 lightbulbs. Each uses 100 watts an hour. How many watts are used in 120 hours?
- I. 1,000 homes are in a city. Each home uses 200 kilowatt hours per month. How many kilowatt hours does the entire city use in a month?
- J. An electricity provider charges \$0.09 per kilowatt hour (kWh). How much money does it cost for a lightbulb that uses 156 kWh?