

Environmental Science AP (APES) 2008-2009 Summer Assignment

Dear Future Environmental Science AP Student,

Congratulations on your decision to take environmental science this upcoming school year. We have a busy year ahead of us. There is no official summer assignment. However, I would like you to spend some time thinking about the environment, when you are outside, watching T.V., reading a magazine or newspaper etc. We will be covering the first three chapters of the textbook very quickly and having a test over these chapters the second week of school. The homework for the first three chapters is included in this document. It will be assigned the first day of school. If you have some extra time and want to get started, you can. Otherwise, you can do the chapters as they are assigned when school starts. If you have questions regarding the course, I can be reached at moeller@pvpusd.k12.ca.us. Chapters 1 –3 are not optional, the only option is if you want to start them ahead of time or wait until the school year begins. You may also want to access the textbook website (on the back cover of the text) for additional information – click on the “student companion website” you do not need any additional access code.

School supplies: For those of you who like to do your shopping before the school year starts, you will need a 3-ring binder specifically for this class. A 3” binder will probably be sufficient. While it is not required, many students find an AP Environmental Science study guide helpful, any of the ones available at your local bookstore or online are fine. Some students really liked using a study guide that is not available in the stores, the McGraw-Hill AP Achiever. If you want this one you will need to order it online (ex. Amazon.com) the isbn number is 978-0-07-325689-4.

Have a great summer,

Mrs Moeller

The due dates are as follows:

Chapter 1 vocabulary and questions	9/3, 9/4
Chapter 2 vocabulary and questions	9/5, 9/8
Chapter 3 vocabulary and questions	9/9, 9/10
Test #1 Chapters 1,2,3	9/9, 9/10

SCROLL DOWN FOR THE ASSIGNMENTS

APES Vocabulary Assignment
Chapter 1 – Key Themes in Environmental Sciences

Define the words in the space below, using dark ink. You may use your book, your notes, or your previous experiences with the word.

Word	Definition
Aesthetic justification	
Carrying capacity	
Ecological justification	
Gaia hypothesis	
Megacities	
Moral justification	
Precautionary principle	
Sustainability	
Sustainable ecosystems	
Sustainable resource harvest	
Utilitarian justification	

Chapter 1 – Key Themes in Environmental Sciences

Answer the following questions thoroughly, in complete sentences AND incorporate the question into the answer. Failure to do this will result in a loss of points. These assignments are to be completed independently. Working together and turning in the same answers as someone else is dishonest, and will result in a zero for the assignment as well as a lower citizenship grade.

1. Approximately how many people live on Earth?
2. Refer to Figure 1.6. How would you respond to the statement “the catch of salmon in the Columbia River is sustainable at 1960’s levels?”
3. In what ways do the effects on the environment of a resident of a large city differ from the effects of someone living on a farm? In what ways are the effects similar?
4. Programs have been established to supply food from Western nation to starving people in Africa. Some people argue that such food programs, which may have short-term benefits, actually increase the threat of starvation in the future. Give two pros and two cons of international food relief programs.
5. Sustainability is very important when dealing with environmental challenges. What is sustainability?
6. Explain how you could determine the sustainable yield of salmon in the Columbia River (Refer to Figure 1.6).
7. Is it possible that all the land on Earth will sometime in the future become one big city? If not, why not? To what extent does the answer depend on the following:
 - a. Global environmental considerations
 - b. Scientific information
 - c. Values
8. Who is the author of *Silent Spring*, and what is the significance of this book?
9. If you had to choose the “root of all environmental problems on Earth,” what would it be?
10. Summarize the case study about the Black Death. Include information about what it is, how it is spread, what conditions lead to it etc.
11. Read the Critical Thinking Issue on page 14, and answer the four associated questions.
 - a. How does the current state of the world’s coral reefs illustrate each of the six key themes of this book?
 - b. What are the utilitarian, ecological, aesthetic, and moral justifications for preserving coral reefs?
 - c. If Maitri Visetak were making his living from fishing rather than farming shrimp, how might he view the preservation of coral reefs? What arrangements could be made to meet his needs but at the same time preserve coral reefs in his area?
 - d. What things can you do in your everyday life to contribute to the preservation of coral reefs?

APES Vocabulary Assignment

Chapter 2 – Science as a Way of Knowing: Critical Thinking about the Environment

Define the words in the space below, using dark ink. You may use your book, your notes, or your previous experiences with the word.

Word	Definition
Controlled experiment	
Deductive reasoning	
Dependent variable	
Disprovability	
Experimental controls	
Fact	
Hypothesis	
Independent variable	
Inductive reasoning	
Inference	
Manipulated variable	
Model	
Observations	
Operational definitions	
Probability	
Pseudoscientific	
Quantitative data	
Qualitative data	
Responding variable	
Scientific method	
Scientific theory	

Variable	
Theories	

Chapter 2 Science as a Way of Knowing: Critical Thinking about the Environment Study Questions

Answer the following questions thoroughly, in complete sentences AND incorporate the question into the answer. Failure to do this will result in a loss of points. These assignments are to be completed independently. Working together and turning in the same answers as someone else is dishonest, and will result in a zero for the assignment as well as a lower citizenship grade.

1. Which of the following are scientific statements and which are not? Explain your reasoning for each case.
 - a. The amount of carbon dioxide in the atmosphere is increasing.
 - b. Condors are ugly.
 - c. Condors are endangered.
 - d. Today there are 280 condors.
 - e. Crop circles are a sign from Earth to us that we should act better.
 - f. Crop circles can be made by people.
 - g. The fate of Mono Lake is the same as the fate of the Aral Sea.
2. Explain the difference between the "control" in an experiment and a "controlled experiment."
3. If you were using a ruler (in inches) and you report a distance measured to be 0.3900 inches, what is wrong with this?
4. Identify the independent and dependent variables in each of the following:
 - a. Change in the rate of breathing in response to exercise.
 - b. The effect of study time on grades.
 - c. The likelihood that people exposed to smoke from other people's cigarettes will contract lung cancer.
5. Explain why it is important that scientific statements must be falsifiable.
6. Calculate the probability of a fish surviving when the water temperature is 27°C, if you were given the following data: 50 fish were held at 27°C and 28 of them survived.
7. State whether each of the following are quantitative or qualitative.
 - a. The growth of clams (g/day) that are kept in different temperature over the span of a month.
 - b. The number of dead fish in a fish kill.
 - c. Separating peaches based on whether they are ripe or not.
 - d. The amount of nitrates in a water supply, measure in parts per million (ppm)
8. What is another word for the manipulated variable in an experiment?

Read the "Critical Thinking Issue" on page 35, and answer the following questions.

9. What is the major claim made in the article?
10. What evidence does the author present to support the claim?
11. Is the evidence based on observations, and is the source of the evidence reputable and unbiased? Explain.
12. Is the argument for the claim, whether or not based on evidence, logical? Explain.
13. Would you accept or reject the claim? Explain.
14. Assuming the claim were well supported by evidence based on good authority, why would your acceptance be only tentative?

APES Vocabulary Assignment
Chapter 3 – The Big Picture: Systems of Change

Define the words in the space below, using dark ink. You may use your book, your notes, or your previous experiences with the word.

Word	Definition
Average Residence Time	
Biosphere	
Biota	
Closed System	
Doubling Time	
Ecosystem	
Environmental Unity	
Exponential Growth	
Feedback	
Lag time	
Negative feedback	
Open system	
Overshoot and collapse	
Positive feedback	
Steady state	
System	
Uniformitarianism	

Chapter 3 – The Big Picture: Systems of Change Study Questions

Answer the following questions thoroughly, in complete sentences AND incorporate the question into the answer. Failure to do this will result in a loss of points. These assignments are to be completed independently. Working together and turning in the same answers as someone else is dishonest, and will result in a zero for the assignment as well as a lower citizenship grade.

1. How does the Amboseli National Reserve case history exemplify the principle of environmental unity?
2. Explain the difference between positive and negative feedback in systems and give an example of each.
3. Which is generally the more “beneficial,” positive or negative feedback?
4. Is exponential growth good or bad, why?
5. Why is the idea of equilibrium in systems somewhat misleading in regard to environmental questions? Is the establishment of a balance of nature ever possible?
6. Why is the concept of the ecosystem so important in the study of environmental science?
7. What is the Gaia hypothesis?
8. Why does overshoot occur, and what could be done to anticipate and avoid it?
9. Which type of feedback loop would involve an increase in output leading to a decrease in input?
10. What is the layer of Earth in which all the biota live?
11. Calculate the residence time for a molecule of water in a lake ($1,000,000 \text{ m}^3$ volume) that has a stream flowing in at a rate of $1000 \text{ m}^3/\text{day}$. Show all work – for this and every calculation you do in this class.
12. Given that a population that is growing exponentially at a rate of 2% per year, and with a population of 250,000 people, how big would it be in 10 years? Show your work.
13. How long would it take the population described above to double? Show your work.

