

# Summer Assignment – Advanced Placement Environmental Science (APES)

## INTRODUCTION:

Welcome to Advanced Placement Environmental Science! This is a fast-paced, college-level course, where you will learn how all the science you've acquired in school thus far comes together in the natural environment, and the role that you play in this. You will also gain skills that will help you to be a better learner when you get to college (and beyond!).

One of these skills is being able to read a scientific text and to make meaning from it. You doubtless already have a skill set for this, and we will build on that now. Please complete the assignment below by the first day of school. You may email me if you are confused (bhach@nya.org), and I will get back to you within a few days.

TEXTBOOK: [Environment: The Science Behind the Stories 7<sup>th</sup> ed, by Withgott & Laposata, ISBN: 978-0-13-745189-0](#)

## INSTRUCTIONS (check off items as you complete them):

1. \_\_\_\_\_ Read page 2 in this document – “How to read the APES textbook”
2. \_\_\_\_\_ Take notes on pages 2-5 of your textbook (the first few pages of chapter 1)
3. \_\_\_\_\_ Compare your notes on pages 2-5 with my notes (page 2 in this document)
4. \_\_\_\_\_ Make any changes you need to make in your own notes, and think about how to improve your note-taking for the remainder of chapter 1
5. \_\_\_\_\_ Complete the reading and notes for ch 1
6. \_\_\_\_\_ Complete the following questions on p20-21
  - a. Seeking solutions #1-4
  - b. Calculating ecological footprints: complete the table and answer #1-3
7. \_\_\_\_\_ Take the chapter 1 reading quiz (open notes)
8. \_\_\_\_\_ check your reading quiz against the answer key. *If you got a 9 or a 10, this means your reading strategies are in good alignment with my expectations. If you got an 8 or below, look back at the questions you missed as well as your notes and my sample notes to figure out how to adjust your reading strategies for the next chapter.*

## Reading the APES textbook - AKA – 3 steps to success in this course!

1. Organize your notes first
  - Chapter # and title at the top of the page
  - If you are typing your notes, before you even begin reading, make an outline using just the headers.  
Like this:

I. Section headers (the blue headers in your book) - roman numerals  
a. sub-headers (the green headers in your book) - a,b,c,d  
- Notes on sub-section should be bulleted and indented under the sub-header

2. Use the book's layout to your advantage
  - a. Write down the sub-headers – in this book they summarize the content in that section!
  - b. write a few bullet points below each one
    - i. Define vocab (underline vocabulary terms)
    - ii. Explain “how” or “why” or “what does that mean” for the sub-header. It is most helpful to read the whole sub-section BEFORE you do this.
3. Answer any assigned questions
  - There will be reading quizzes (open notes), and doing the questions is the best way to make sure that you are prepared for the reading quiz.
  - Come to class with questions on what you don't understand or need clarification on.
  - We will NOT re-cover all the material from the textbook. If it is in the reading you are responsible for it.

## Mr. Hach's Notes on pages 2-5

### Chapter 1 – Science and Sustainability

- I. Our Island, Earth – we need to learn to live sustainably on our planet
  - a. Our environment surrounds us
    - i. Environment – all living and non-living things around us. ii. We are part of the environment and must be aware of our role and interactions
  - b. Environmental science explore our interactions with the world
    - i. We depend on nature for air, water, food, shelter etc. ii. Modifying the natural environment has allowed us to have a better quality of life, but has also degraded natural systems, threatening our own well-being
    - iii. Environmental science – the scientific study of how the natural world works, how our environment affects us, and how we affect our environment
  - c. We rely on natural resources
    - i. Natural resources – the substances and energy sources that we take from our environment and that we rely on to survive
    - ii. Renewable natural resources – resources that are replenished over short periods (sunlight, wind, wave energy are perpetually renewed, and timber, water, animals, and soil renew themselves on certain time scales and are only renewable if we use them more slowly than they replenish)
    - iii. Nonrenewable natural resources – in finite supply, not replenished
  - d. We rely on ecosystem services
    - i. Ecosystem services – functions of the natural environment from which we benefit (clean air, water, pollination, etc.)
  - e. Population growth amplifies our impact
    - i. more people = more impact
    - ii. Agricultural revolution – transition from hunter-gathering to agriculture about 10,000 y.a. allowed more food to be produced and more babies to be born
    - iii. Industrial revolution – shift from rural agrarian life to urban life with factory made goods. Brought advances in technology that allowed the population to grow iv. Fossil fuels – non-renewable energy sources (coal, oil, natural gas)
  - f. Resource consumption exerts social and environmental pressures
    - i. Ecological footprint – estimates the land and water needed to provide a person or population with the resources they consume and dispose of
    - ii.

### Chapter 1 Reading Quiz (open notes)

- 1) \_\_\_\_\_ The scientific method \_\_\_\_\_.  
A) results in conclusions based on speculation      B) cannot prove a hypothesis to be true  
C) results in the proving of a theory      E) involves testing observations to derive a working hypothesis  
D) now has been replaced by a widely accepted shortcut that is less time-consuming and less expensive
  
- 2) \_\_\_\_\_ Roberto lives near a wind farm and is wondering about the environmental effects of the wind turbines. He \_\_\_\_\_ that the turbines make a sound like faint airplane engines and also that there are far fewer meadowlarks living near the windfarm than lived there before the windfarm was built. A) hypothesizes  
B) predicts      C) observes      D) theorizes      E) guesses

- 3) \_\_\_\_\_ Roberto lives near a wind farm and is wondering about the environmental effects of the wind turbines. He \_\_\_\_\_ that the turbines, which sound like faint airplane engines, are scaring off meadowlarks that used to nest in the area.  
A) hypothesizes      B) predicts      C) observes      D) theorizes      E) hopes
- 4) \_\_\_\_\_ In a manipulative experiment \_\_\_\_\_.  
A) researchers manipulate the independent variable  
B) researchers manipulate as many variables as possible  
C) replication of the experiment is not necessary  
D) a scientist has been caught manipulating the data for economic gain E) the peer review process is bypassed
- 5) \_\_\_\_\_ All of the following are examples of quantitative data EXCEPT \_\_\_\_\_.  
A) the number of siblings that students have      B) the gender of the students in a class  
C) the cholesterol levels of the students in a class      E) the exam scores for the students in a class  
D) the amount of sleep normally gotten by the students in a class
- 6) \_\_\_\_\_ A study's results are deemed worthy of acceptance into the body of scientific knowledge if they are published in journals which \_\_\_\_\_.  
A) use the peer review process      B) charge a high fee for acceptance  
C) are funded by corporations financing the research      E) conform to current political and religious views  
D) meet guidelines advocated by environmentalists or consumer groups
- 7) \_\_\_\_\_ An environmental scientist is least likely to be involved with which of the following?  
A) determining the best fuel to generate electricity for a growing city in Arizona  
B) helping a rancher determine the best ways to rotate herds of cattle to reduce erosion  
C) studying X-ray emissions for evidence of black holes  
D) launching NASA satellites that monitor changes in carbon dioxide production on Earth  
E) studying the relationship between soil fungi and aspen trees in areas that are being restored after oil sand mining
- 8) \_\_\_\_\_ Solutions to environmental problems \_\_\_\_\_.  
A) can be implemented only by scientists  
B) should be designed with the goal of sustaining Earth's natural capital  
C) must work on a global scale  
D) must focus on short-term fixes because long-term solutions are generally unattainable E) must always be designed and discussed in the political arena before implementation
- 9) \_\_\_\_\_ What is a key "take-home message" about Easter Island? A)  
Making and placing large stone statues is a waste of time.  
B) Tropical soils are insufficient for growing enough crops for a population to be self-sustaining.  
C) An island population must live as responsible stewards of its resources.  
D) Humans that live in tropical areas will not die of exposure to extremely low temperatures.  
E) The invasive brown tree snake can wipe out an entire population of humans in a short amount of time.

10) \_\_\_\_\_ You have read about the mistakes made on Easter Island. On Tikopia, a small island in the Solomon Islands, the people acted in other ways. When they realized that the pigs they had imported were damaging the environment, they killed them all. They had to have permission from a chief to fish, which prevented overfishing. They also practiced contraception. These actions all indicate that \_\_\_\_\_.

- A) they believed in full resource utilization
- B) they felt that everything was a nonrenewable resource
- C) they felt that everything was a renewable resource
- D) they were concerned with only one year at a time
- E) they were attempting to enact sustainability

**Chapter 1 Reading Quiz Answers**

1. B    2. C    3. A    4. A    5. B    6. A    7. C    8. B    9. C    10. E