

AP Environmental Science Summer Assignment

Text book:

McGraw Hill, Environmental science a study in interrelationships 13th edition (come and get it from me before school ends)

Welcome to AP Environmental Science! The major topics of the class are as follows:

Energy Systems and Resources – atmosphere, soil, groundwater, and geology

The Living World – ecosystems and cycles

Populations – demographics, dynamics and growth

Land and Water Use – agriculture, forestry, mining, fishing and global economics

Energy Resources and Consumption – fossil fuels, nuclear energy, conservation and consumption

Pollution – types of pollution and its impact, waste disposal

Global Change – ozone, global warming, loss of biodiversity

This summer assignment will give you a brief overview of all of the topics we will go over this year by looking at some of the associated prerequisites and example math calculations. Over the course of the year we will learn more about the science and social issues associated with each of the topics. There are three parts to the summer assignment, two of which will be collected on the first day of class. Directions for these two assignments are given later in this paper. **If you have any questions about the assignment, feel free to email me rwright@morriscatholic.org** If you work with someone else, be sure that your answers are in your own words and not copied from a partner. All work turned in must be your own work. The assignment will be graded as follows:

1. Reading – Read Chapters 1-4 in your textbook. Quiz the first week of class. (33points)

2. Math Problems– Due on the first day of class. (33points)

- Points will be given for *setup and answers*. Use the APES Math Review as a reference for this and throughout the year.

3. Current Events– Due on the first day of class (33points)

- Summaries and responses to 2 articles dealing with environmental issues.

Prerequisite Knowledge and Skills

AP Environmental Science is a college level course that combines content area from earth science, biology, chemistry, physics, math, and social studies. You are expected to enter the course with a good understanding of basic scientific and mathematical concepts and skills, as well as strong reading, writing, and speaking abilities. Although we will continue to develop these skills throughout the school year, your success in the class is also dependent upon what you bring to it at the onset. One goal of this summer assignment is to help you brush up on these skills and concepts. Over the summer, review the scientific concepts below as well as the mathematical calculations on the next page; we will be building upon and referencing them throughout the school year. You should be prepared to take a quiz on these skills and concepts during the first week of school.

If you do not receive at least an 85% on the quiz, you will need to stay after for tutoring until you are able to achieve an 85% on it.

Prerequisite Basic Scientific Concepts:

You should be familiar with the following terms/concepts from Biology,

Chemistry, and Earth Science:

This will be on the quiz..

Organic vs. Inorganic
Natural vs. Synthetic
Kinetic vs. Potential Energy
Radioactive decay
Half life
Law of Conservation of Matter
1st Law of Thermodynamics
2nd Law of Thermodynamics
Entropy
Organism
Species
Population
Community
Ecosystem
Producers/Autotrophs
Consumers/Heterotrophs
Decomposers
Photosynthesis (reactants and products)
Cellular Respiration (reactants and products)
Aerobic vs. Anaerobic
Adaptation
Mutation
Gene
Trait
Chromosome
Gene pool
Natural Selection
Biodiversity
Extinction
Plate Tectonics
Weathering
Climate Change
Rocks vs. Minerals
Climate vs. Weather

The full name of each of these chemical abbreviations:

CO₂, CO, C₆H₁₂O₆, CH₄, H₂,
H₂O, N₂, NO_x, NO³⁻, NH₃, O₂,
O₃, P, PO₄³⁻, S, SO₂, Cl, K,

NaCl, Pb, Hg, Rn, U

Math Problems

Answer the questions. Use a separate sheet of paper if necessary. Show all work, including units on both sides of your equations. An AP Environmental Science Math Review is provided to help you.

- 1) What is one million times one thousand? Show your work in scientific notation. Give the answer in scientific notation and in words.
- 2) A population of deer had 200 individuals. If the population grows by 15% in one year, how many deer will there be the next year?
- 3) 3) One year I had 40 AP Environmental Science students and the next year I had 50 Environmental Science students, what percentage did the population of APES students grow by?
- 4) 4) Your car gets 15 miles to the gallon and your friend's car gets 25 miles to the gallon. You decide to go on a road trip to Virginia Tech, which is 300 miles away. If gas costs \$4 per gallon and you decide to split the gas money, how much money will you save in gas by driving your friend's car?
- 5) 5) Virginia Beach is 10 miles wide and 30 miles long. If one inch of rain falls on Virginia Beach, how many cubic feet of rain fell on Virginia Beach. (Hint: convert all units to feet first).
- 6) Electricity costs 6 cents per kilowatt hour. In one month one home uses one megawatt hour of electricity. How much will the electric bill be? (be sure to look at the prefixes chart on the previous page for the conversion of kilo to mega) Your car gets 20 miles to the gallon and your friend's car gets 35 miles to the gallon. You decide to go on a road trip to SUNY-Oneonta, which is 165 miles away. If gas costs \$4 per gallon and you decide to split the gas money, how much money will you save in gas by driving your friend's car?

Current Events

In environmental science, it's important to know about current issues in the news. One of our goals for this course is to educate you about environmental issues that are important to our community, our country, and our world. We will be reading and discussing a variety of current events throughout the school year as well. This is a great opportunity to start thinking about the environment and how it affects us.

Over the course of the summer, find two articles that relate to environmental science. Topics include, but are not limited to:

pollution, climate change, environmental legislation, alternative energy sources, fossil fuels, human population growth, renewable resources, recycling/waste management, air quality, water quality, conservation/wildlife, food production/food safety, deforestation, GMOs (genetically modified organisms), etc.

On the **first day of class**, you should submit for each article:

Article

All articles should be current and taken from a reliable source. The sources may be scientific publications, popular magazines, newspapers or the like. Try the NY Times (especially Tuesdays), Washington Post, National Geographic, Discover Magazine, Natural History Magazine, Scientific American, Science, Nature, Sierra, Audubon, etc. The articles should be long enough for you to write a substantial summary and well-thought out response. All bibliographic information should be visible on the article itself or included with the summary. Try to find a variety of articles at the state, national, and global level that address multiple environmental issues.

Summary:

Write a brief summary of each article and point out the major environmental themes discussed. Your summary should be no less than 250 words.

Personal Reaction:

Your personal reaction should clearly state your opinions and/or reflection on the article. You can offer potential solutions, compare it to another environmental problem, ask questions about the article, or simply reflect on the article's content. Do not simply write, "This article was very interesting/good." It should be no less than 250 words. Some questions to drive your discussion:

- What are the key points made in the article?
- What are the points of view presented about this issue?
- Does the article teach you something new?
- Does it support or refute other information you've heard or read? How so/in what way?