

AP ENVIRONMENTAL SCIENCE (APES) SUMMER ASSIGNMENT

Here are four assignments to get you in the right frame of mind for the new school year. Please submit your completed work to Google Classroom **before** the first day of class.

1. **DO YOUR OWN WORK**—no copying, cheating, or taking information directly from sources. **USE YOUR OWN WORDS!**
2. **NO LATE ASSIGNMENTS WILL BE ACCEPTED.** No credit will be given for any work that is late.

ASSIGNMENT: This assignment will be counted as a **major assignment** in the first quarter.

- 1) **Read the essay** “Tragedy of the Commons” by Garrett Hardin. Here is a link: http://pages.mtu.edu/~asmayer/rural_sustain/governance/Hardin%201968.pdf
When you have completed the reading, please respond to the following in complete sentences. I expect at least a few sentences in response to each subsection:
 - a. What is Garrett Hardin’s central idea in this essay?
 - b. Do you personally agree with Hardin’s central idea?
 - c. Is the “Tragedy of the Commons” unavoidable?
 - d. Identify one “commons” in your own life (at school, home, work) and explain how it is (or is not) being managed wisely to avoid the situation described in the essay.
- 2) **Investigate.** Choose an article (at least one page in length) that describes a scientific experiment. This article needs to be from a SCIENTIFIC journal and no more than three years old. This should be a primary source (written by the experimenters) describing one experiment and not a summary or review article (written by others).
Journal Examples: Science, Environmental Health Perspectives.
You can also use this website to find scientific journals: www.iopscience.iop.org
 - a) State the title of the experiment and the authors.
 - b) Summarize the article.
 - c) Identify the independent and dependent variables in the experiment.
 - d) Identify the claims made in the article and describe the evidence that supports the claim.
 - e) Provide me with a link to the article. **DO NOT PRINT THE ARTICLE.**These articles will be shared out verbally during the first day of class. Be prepared to share the summary of your article.
- 3) **Environmental Laws, Terms and Agencies.**
Understanding some of the basic environmental legislation and the duties of different agencies is an important part of the course. We will refer to this information throughout the year as we write our essays. This information can easily be found on the internet. Please be sure to phrase information in terms that you understand.
- 4) **Basic Math Review**
For the Math portion of the assignment, please be sure to **SHOW ALL WORK**, and **DO NOT** use a calculator! You may use one to check your work, but try to figure out the problems without it. They were designed to be solvable by arithmetic alone.

Email me with any questions. I will be checking email daily starting in mid –August.

Mrs. Pasnik

Environmental Science Teacher

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Environmental Legislation

Environmental Legislation/Agreements: Provide the year the legislation was first ratified, and give a brief description of the important components

Name	Abbr.	Year	Description
Clean Air Act	CAA		
Clean Water Act	CWA		
Comprehensive Environmental Response, Compensation Liability Act	CERCLA Superfund		
Convention on International Trade in Endangered Species	CITES		
Resource Conservation and Recovery Act	RCRA		
Endangered Species Act	ESA		
Kyoto Protocol	KP		
Montreal Protocol	MP		
Safe Drinking Water Act	SDWA		
Soil and Water Conservation Act	SWCA		
Solid Waste Disposal Act	SWDA		
Surface Mining Control and Reclamation Act	SMCRA		
Delaney Clause of Food, Drug, and Cosmetic act			

Legislative Terms: Define these terms in your OWN WORDS as they relate to environmental legislation

Conservation	
Preservation	
Restoration	
Remediation	
Mitigation	
Reclamation	

Regulatory Agencies: Provide the year the agency was instituted, and a brief description of responsibilities related to environmental quality

Agency	Abbr.	Year	Description
Dept. of Health and Human Services	DHHS		
Environmental Protection Agency	EPA		
Bureau of Land Management	BLM		
National Park Service	NPS		
Dept. of Agriculture	USDA		
National Oceanic and Atmospheric Organization	NOAA		
US Fish and Wildlife Service	USFWS		
US Geological Survey	USGS		
Dept. of Energy	DOE		
Council on Environmental Quality	CEQ		

APES BASIC MATH SKILLS

Perform the following calculations WITHOUT a calculator! These problems have been set up with numbers that multiply and divide evenly to produce whole number answers, just like you would find on a typical APES exam.

1. 14000 millimeters = ? meters _____
2. 6544 liters = ? milliliters _____
3. 0.078 kilometers = ? meters _____
4. 17 grams = ? kilograms _____

5. Expand the following:

a. 2.96×10^7

b. 6.02×10^{-3}

c. 6.67×10^{-11}

d. 9.8×10^5

6. Put the following in scientific notation:

a. 0.025

b. 1150000

c. 0.0000550

d. 6070

7. Perform the following calculations without a calculator and write the answers in scientific notation:

a. $(2.96 \times 10^7) + (1.0 \times 10^7)$ _____

b. $(6.0 \times 10^6) \div (3.0 \times 10^4)$ _____

c. $(2 \times 10^5) \times (3 \times 10^{10})$ _____

d. $(8 \times 10^{12}) - (1.2 \times 10^{12})$ _____

8. Perform the following calculations without a calculator and write the answers in scientific notation:

a. $(2.96 \times 10^7) + (1.0 \times 10^8)$ _____

b. $(6.0 \times 10^6) \div (3.0 \times 10^{-4})$ _____

c. $(2 \times 10^5) \times (3 \times 10^{-10})$ _____

d. $(8 \times 10^{12}) - (1.2 \times 10^{11})$ _____

9. Perform the following calculations without a calculator (but show some work) and write the answers in scientific notation:

a. $(2.96 \times 10^7) \div (3.7 \times 10^8)$ _____

b. $(6.8 \times 10^6) \div (1.7 \times 10^{-4})$ _____

c. $(2.1 \times 10^5) \times (3.1 \times 10^{10})$ _____

d. $(9.6 \times 10^{12}) \div 160,000$ _____

Show ALL work for these problems below:

10. What is 45% of 1800?

11. A gas engine is 6% efficient. What portion of a full 21 gallon tank of gas is wasted?

12. The Greenland Ice Sheet contains 2,850,000 cubic kilometers of ice. It is melting at a rate of .006% per year. How many cubic kilometers are lost each year?

13. In a small oak tree, the biomass of insects makes up 3000 kilograms. This is 4% of the total biomass of the tree. What is the total biomass of the tree?

Prerequisite knowledge and skills
(Does not need be handed in)

You are expected to enter the course with a good understanding of basic scientific and mathematical concepts and skills as well as strong, reading, and writing skills.

You are not required to complete this or hand this in to your teacher. You should be prepared to take a quiz on these skills and concepts during the first week of school. If that means completing this assignment and then checking with your teacher about any of the information before a quiz takes place that is your responsibility. This is an AP level course and you are required to put in the effort it requires.

Prerequisite Basic Scientific Concepts:

You should be familiar with the following terms/concepts from Biology, Chemistry, and Earth Science:

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

You should know the full name of each of these chemical abbreviations: CO_2 , CO , $C_6H_{12}O_6$, CH_4 , H_2 , H_2O , N_2 , NO_x , NO_3^- , NH_3 , O_2 , O_3 , P , PO_4^{3-} , S , SO_2 , Cl_2 , K , $NaCl$, Pb , Hg , Rn , U