

LAHS - AP Environmental Science Summer Assignment
Mrs. Tauxe email: k.tauxe@laschools.net

Welcome to AP Environmental Science. If you have questions, feel free to email me at k.tauxe@laschools.net. **Do Not Wait** until August to do this assignment!

This is due on the first day of class!

Points possible for each part of the summer assignment -

<u>Assignment</u>	<u>Check after completion</u>	<u>Points Possible</u>	<u>Your Score</u>
1: Read Ch. 1 Do the Study Guide (get this from me)		47	
1: Read Ch. 20 Do the Study Guide (get this from me)		21	
2: Article Summaries (type summaries)		50 (10 each) 3 pts for Title, Date, & Source 7 pts for summary	
3: Math Problems 12 problems (located in this packet)		12	
4: YouTube video assignment (located in this packet)		10	
5: Practice Free Response Question (FRQ) (get this from me)		10	
6A: Internet Assignment 5 People (located in this packet) (put on your own paper)		10	
6B Internet Assignment 5 Federal agencies (located in this packet) (put on your own paper)		10	
6C: Internet Assignment 5 Laws or Acts (located in this packet) (put on your own paper)		10	
TOTAL POINTS POSSIBLE		180	

Part 1: Get a start on the year by reading the **first** and **last** chapter of the text and doing the study guides:

- **Read Ch. 1 and do the study guide**
- **Read Ch. 20 and do the study guide**

Part 2: Article summaries

Select and read **4 articles** and **1 opinion** (these should be current events from a newspaper, magazine, or science magazine) making sure you choose at least one local (New Mexico), one from the U.S. and one Global (a country outside of the US). The fourth can be from any region.

Suggested topic list for articles:

Human population growth	Food production	Renewable resources
CO ₂ and Climate change	Endangered species	Water quality
Invasive species	Fossil Fuels	Nuclear energy
Recycling	Deforestation	Air quality

Articles must be at least 4 paragraphs long and should come from sources such as the following: Newspaper (Santa Fe New Mexican, New York Times, etc.), news magazines (Time, Newsweek), Science magazines (Discover, Scientific American, Nature, Science, Smithsonian, National Geographic). Each article must be recent (no more than a year old).

Use the following format:

- a. Article Title:
- b. Date:
- c. Source:
- d. Summary:

Each summary should be approximately ½ - 1 page, double spaced, 12 pt font

Answer the following questions in the summary:

1. What are the key points in the article?
2. Does it support or refute other information you have heard or read? Explain.
3. What are your comments on this article?

Part 3: Math Practice

Scientific Notation:

Thousand = $10^3 = 1,000$

Million = $10^6 = 1,000,000$

Billion = $10^9 = 1,000,000,000$

Trillion = $10^{12} = 1,000,000,000,000$

When using very large numbers, scientific method is often easiest to manipulate. For example, the US population is 300 million people or 300×10^6 or 3×10^8

When adding or subtracting, exponents must be the same. Add numbers in front of the ten and keep the exponent the same.

When multiplying or dividing, multiply or divide the number in front of the ten and add the exponents if multiplying or subtract the exponents if dividing.

$$\text{Example: } \frac{9 \times 10^6}{3 \times 10^2} = 9/3 \times 10^{(6-2)} = 3 \times 10^4$$

Prefixes:

m(milli) = $1/1000 = 10^{-3}$

c (cent) = $1/100 = 10^{-2}$

k(kilo) = $1000 = 10^3$

M (mega) = $1,000,000 = 10^6$

G (giga) = $1,000,000,000 = 10^9$

T (tera) = $1,000,000,000,000 = 10^{12}$

Exa - 10^{18}

APES Math Review:

The APES Examination will require you to do mathematical calculations. Occasionally these calculations may be somewhat esoteric, and you may find it possible to do them in your head; nonetheless, it is mandatory to show all work for all calculations on the free-response section of the APES exam. This worksheet is designed help to prepare you for the type of calculations you may encounter on this year's APES exam.

For each problem show every step of your work, and indicate the cancellation of all units

Scientific Notation—All APES students should be able to work comfortably with numbers in scientific notation.

Place the following numbers into scientific notation.

1) one billion

2) twenty three thousand

3) 70 trillion

4) three hundred

5) 0.00025

6) 7,310,000

Perform the following calculations in scientific notation.

7) five hundred billion times thirty five thousand

8) six thousand divided by 300 billion

9) $\frac{3.4 \times 10^{-2}}{1.7 \times 10^{-5}}$

10) $\frac{1.0 \times 10^5}{2.0 \times 10^3}$

11) $(3.5 \times 10^{-2})(2.0 \times 10^{-5})$

12) $(1.11 \times 10^{-5})(6.0 \times 10^9)$

Part 4: YouTube Video: To practice Dimensional Analysis:

APES Math Practice – Jones Science Mastering the Math – Part 1

Go to YouTube and search “Jones Science Mastering the Math – Part 1” to find this video. Follow along and copy everything from the video in the space below. This is the best way (dimensional analysis) to solve most APES problems.

<https://www.youtube.com/watch?v=HUAxG0r0Bwc&t=130s>

Sample Problem 1

A large, coal-fired electric power plant produces 12 million kilowatt-hours of electricity each day. Assume that an input of 10,000 BTUs of heat is required to produce an output of 1 kWh of electricity.

(a) Calculate the number of BTUs of heat needed to generate the electricity produced by the power plant each day.

(b) Calculate the number of pounds of coal consumed by the power plant each day, assuming that one pound of coal yields 5,000 BTUs of heat.

(c) Calculate the number of pounds of sulfur released by the power plant each day, assuming that the coal contains one percent sulfur by weight.

Part 5: Practice a Free Response Question (FRQ) – Get this from me. Follow directions and do the best you can. This is a practice so you can become comfortable with the format of the FRQ. Answer to the best of your knowledge.

Part 6: APES - Internet Assignment

A. Choose at least five of the following people and write a two or three sentence synopsis of who they are and what their contribution to the environment was.

Adams, Jane	Eliot, Charles W.	Jacobs, Jane	Nelson, Gaylord	Swift, Ernest
Brower, David	Emerson, Ralph Waldo	Leopold, Aldo	Olmsted, Frederick law	Thoreau, Henry David
Carson, Rachel	Greenley, Horace	Marsh, George Perkins	Osborn, Fairfield	Udall, Stewart
Caitlin, George	Hamilton, Alice	Marshall, Robert	Pinchot, Gifford	
Commoner, Barry	Hardin, Garret	Mather, Stephen	Powell, John Wesley	
Coolidge, Calvin	Harding, Warren	McDowell, Mary	Roosevelt, Franklin D.	
Ehrlich, Paul	Hoover, Herbert	Muir, John	Roosevelt, Theodore	

B. Choose at least five of the following Federal Agencies and write a two or three sentence synopsis of what they are and what their contribution to the environment was.

Agency for International Development (USAID)	National Center for Atmospheric Research
Bureau of Land Management (BLM)	National Lead Information Center
Bureau of Reclamation	National Marine Fisheries Service
Department of Agriculture (DA)	National Oceanic and Atmospheric Administration
Department of Energy (DOE) Department of Health and Human Services	National Park Service
Department of Housing and Urban Development (HUD)	National Renewable Energy Laboratory
Department of the Interior	National Science Foundation
Department of Transportation (DOT)	National Solar Heating and Cooling Information Center
Environmental Protection Agency (EPA)	Nuclear Regulatory Commission
Federal Energy Regulatory Commission	Occupational Safety and Health Administration
Food and Agriculture Organization of the United States (FAO)	Office of Ocean and Coastal Resource Management
Food and Drug Administration (FDA)	Office of Surface Mining Reclamation and Enforcement
Forest Service	Organization for Economic Cooperation and Development (US Office)
National Cancer Institute	Soil Conservation Service (National Resource Conservation Service)
International Whaling Commission	United Nations
Marine Mammals Commission	United Nations Environment Programme
Mine Safety and Health Administration	U.S. Fish and Wildlife Service
National Academy of Sciences	U.S. Geological Survey
National Aeronautics and Space Administration (NASA)	World Bank

C. Choose at least five of the following environmental laws/treaties and write a two or three sentence synopsis of what they do and when and why they were passed:

Atomic Energy Act	Clean Air Act
Clean Water Act	Coastal Zone Management Act
Comprehensive Environmental Response, Compensation and Liability Act	Emergency Planning and Community Right to Know Act
Endangered Species Act	Federal Food, Drug, and Cosmetic Act
Federal Land Policy and Management Act	Federal Insecticide, Fungicide, and Rodenticide Act
Food Quality Protection Act	Fisheries Conservation and Management Act
Marine Mammal Protection Act	National Environmental Policy Act
Oil Pollution Act	Proposition 65
Resource Conservation and Recovery Act	Safe Drinking Water Act
Surface Mining Control and Reclamation Act	Toxic Substances Control Act
Comprehensive Test Ban Treaty	Kyoto Protocol
Montreal Protocol	Non-Proliferation Treaty
United Nations Framework Convention on Climate Change	