



2026.2027 Summer Assignment

AP Environmental Science

Mrs. Rucker

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Student Welcome:.

Welcome to APES!

To help us start the year strong and make sure we have some of the foundations to set us up for success, you have some prep work to complete over the summer:

1. Watch the documentary "Home" (link provided) and complete discussion questions. This movie covers a lot of topics that we will be exploring further throughout the course, so it provides a great introduction.
2. Complete the skills practice to help prepare yourself for the quiz on these skills during the first week of class.

Please email me if you have any questions or would like any additional resources to assist in your assignment completion!

Directions:**Due: The first day of class (August 19, 2026)**

Reminder: By your enrollment in this course, it appears that you are willing to challenge yourself. This is a college-level course. You are expected to complete your own work in your own words. Plagiarism and cheating will not be tolerated and will receive a grade of ZERO. Administrative discipline may also occur. Simply because you worked with a partner does not mean you submit identical assignments.

Part 1**“Home” Movie Questions** (<https://www.youtube.com/watch?v=jqxENMKaeCU>)

Answer the following questions while watching the movie:

1. Describe the conditions on early Earth.
2. What happened to the carbon that poisoned the atmosphere?
3. How did the agricultural revolution change the Earth?
4. How has Earth changed in the last 60 years since the use of oil has become more widespread?
5. What is most of the grain in the US used for?
6. What led to the dramatic decline in the biodiversity of agricultural crop species?
7. How many kilos of water does it take to produce 1 kilo of beef?
8. How have cars shaped the way housing is laid out in the US and other developed countries?
9. How much has the volume of international trade increased since 1950?
10. What are your thoughts on how the video portrays Dubai? Is it self-sustainable?
11. Rainforests are cut down to make farmland for which products/crops?
12. What makes the growth of Lagos different from how most other cities grow?
13. Where does the water from Greenland's melting ice sheet go?
14. Why are the glaciers of mountains so important for the people in the lowlands?
15. What hope does the video offer at the end?

This video project covers many topics that we will discuss in APES this year.

Give three specific examples that are portrayed in the video about each of the APES concepts that are listed below:

All living things are linked

- 1.
- 2.
- 3.

Developed vs. Developing Countries

- 1.
- 2.
- 3.

Human Innovation and Technology

- 1.
- 2.
- 3.

The Carbon cycle

- 1.
- 2.
- 3.

Climatic Balance

- 1.
- 2.
- 3.

Shortage of Resources

- 1.
- 2.
- 3.

After watching the film, what topics are you most looking forward to learning about this year? What questions do you have?

Part 2

Math Basics:

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 to help to prepare you for the type of calculations you may encounter on this year's APES exam. Expect a math skills quiz the first week of school. Calculators will be allowed to be used during the test.

- For each problem show every step of your work, and indicate the cancellation of all units.
- Answers should be circled.

Scientific Notation:

Place the following numbers into scientific notation.

- | | |
|----------------|--------------------------|
| 1. one billion | 4. twenty three thousand |
| 2. 70 trillion | 5. three hundred |
| 3. 0.00025 | 6. 7,310,000 |

Perform the following calculations in scientific notation.

1. five hundred billion times thirty five thousand
2. six thousand divided by 300 billion
3. $(3.4 \times 10^{-2}) / (1.7 \times 10^{-5})$
4. $(1.11 \times 10^{-5}) (6.0 \times 10^9)$

Conversions:

$n = \text{nano} = 10^{-9}$ $\mu = \text{micro} = 10^{-6}$ $m = \text{milli} = 10^{-3}$ $k = \text{kilo} = 10^3$ $M = \text{mega} = 10^6$ $T = \text{Tera} = 10^9$ $G = \text{Giga} = 10^{12}$

1 $\text{mi}^2 = 640$ acres

1 barrel oil = 42 gallons

1 kilowatt-hour = 3.4×10^4

1 acre = 0.405 hectares

1 L = 0.264 gallons

BTU = 8.6×10^5 calories

1 metric ton = 1×10^3 kg

1. A 100 square mile area of national forest is how many acres? how many hectares?
2. A city that uses ten billion BTUs of energy each month is using how many kilowatt-hours of energy?
3. Fifty eight thousand kilograms of solid waste is equivalent to how many metric tons?
4. 2.8 mm = _____ m
5. 5×10^4 kg = _____ Mg

Percentages:

$$\% \text{ Change} = \frac{(\text{final} - \text{initial})}{\text{initial}} \times 100$$

1. Calculate the percentage growth rate for a country with a population of 6 million in a year in which it had 100,000 births, 70,000 deaths, 30,000 immigrants, and 50,000 emigrants.
2. If the concentration of mercury in a water supply changes from 65 parts per million (ppm) to 7 ppm in a ten-year period, what is the percentage change of the mercury concentration? How much per year?

Environmental Policies:

For each of the environmental policies listed below, make a flashcard to describe the basic principles. There will be a quiz on these in the first week of school.

- Clean Air Act (CAA)
- General Mining Act of 1872
- Wilderness Act
- Clean Water Act (CWA)
- Surface Mining Control & Reclamation Act
- Fish and Wildlife Act
- Safe Drinking Water Act
- General Mining Act of 1872
- Energy Policy Act
- Kyoto Protocol
- Soil & Water Conservation Act
- National Wildlife Refuge System Act
- Montreal Protocol
- Resource Conservation & Recovery Act (RCRA)
- Lacey Act (1900)
- National Environmental Policy Act (NEPA)
- Comprehensive Environmental Response, Compensation Liability Act (CERCLA)
- Endangered Species Act (ESA)
- Federal Food Drug and Cosmetic Act (FFDCA, FDCA OR FD&C)
- Oil Pollution act (OPA)
- Marine Mammal Protection Act (MMPA)
- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- Oil Spill Prevent & Liability Act Marine Protection, Research and Sanctuaries Act (MPRSA)
- Corporate Average Fuel Economy (CAFÉ Standards)
- Ocean Dumping Ban Act
- Convention on the International Trade in Endangered Species (CITES)
- Pollution Prevention Act (PPA)
- Toxic Substances Control Act (TSCA)
- National Energy Act Solid Waste Disposal Act
- Energy Policy Act

Chemistry Basics:

For each of the following, write out the chemical name that goes with the symbol. These will also be quizzed in the first week of school

CO ₂	PO ₄ ³⁻
CO	S
C ₆ H ₁₂ O ₆	SO ₂
CH ₄	SO ₃
H ₂	H ₂ SO ₄
N ₂	NaCl
NO ₂	Pb
NO ₃	U
NH ₃	Rn
NH ₄	Hg
O ₂	Cl
O ₃	H ₂ O
P	