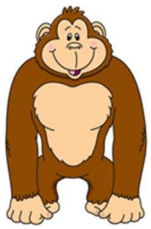
AP Environmental Summer Assignment 2022 Northview High School



Welcome to APES! I am very happy that you have decided to take this course and embark on what I hope will be a beneficial and relevant educational journey. Your summer assignment is to perform several tasks to help you prepare for a successful year and to get you thinking about the environment and how humans affect it. Parts 1-3 of this assignment are mandatory, and for Part 4 you have a choice of 2 assignments. You are expected to enter the course with a good understanding of basic math concepts and geography so the goal of parts 2-3 of this assignment is to help you brush up on these, as we will be referencing these throughout the year.
For Part 4 of the summer work, you may choose between 2 different assignments. Visit a park or natural area at least 20 miles from Northview High School and write a paper about your experience OR read a book relating to a topic in environmental science and write a report. Be prepared to share your park visit or reading experiences with the class.
If you have questions, please feel free to email me at delgadom1@fultonschools.org. I will be checking my email (somewhat) regularly. I hope you have a fun summer and spend time in the great outdoors. I look forward to getting to know you and to an exciting year of APES **in person!!**
Cheers! Mr. Malcom Delgado

This summer assignment consists of the following parts which are presented on these 4 pages. Except for the email, ALL work is due the FIRST day of class. Be prepared for an assessment on parts 2 and 3 on Thursday of the first week back.

1. **Introductory email**: Please email me by Friday 8/5/22
2. **Math Review Problems**: Sharpen up your math skills and complete the math questions. You must show all work.
3. **Geography Review**: The physical and political boundaries of our world are reviewed.
4. **Your Choice of 2 activities: A) Get Outside your Self-ie** park visit: Refer to the instructions under Part 4.
   OR B) Read a book relating to the Environment. Refer to the instructions under Part 4.

Part 1: Introductory email: Please email me, Mr. Malcom Delgado, at delgadom1@fultonschools.org by Friday 8/5/22 and tell me your name, something you love about nature, why you are taking APES, and a specific goal you have for the class.

Part 2. Math Review:

This part of the assignment will help you to brush up on some basic math skills that are required for APES. Work the following practice problems on a separate sheet, and remember to show all your work, including units. Topics: Percentages, metric conversions, Temperature conversions, scientific notation, Dimensional Analysis.

Percentages

1. A farmer grows 156 acres of wheat. If 6 percent of the crop is lost to pests, how many acres of wheat will he yield?
2. If a country has a population of 66 million, and the total annual water use by this country is 3.77×10^{12} L what is the per capita daily water usage in liters? (per capita means per person)
3. The Greenland Ice Sheet contains 2,850,000 cubic kilometers of ice. It is melting at a rate of .008% per year. How many cubic kilometers are lost each year?
4. If 57.5 square miles, or 15%, of a forest is being logged, how large is the forest?
5. Calculate the percentage growth for a county with a population of 6 million in a year in which it had 100,000 births, 70,000 deaths, 30,000 immigrants and 40,000 emigrants.
6. A coal fired power plant is 35% efficient. If one ton of coal contains 20 million BTU of energy, then how many BTU of waste heat are produced per ton of coal?
7. If the concentration of iron in a water supply changes from 45ppm to 8 ppm in a ten-year period, what is the annual percent change of the iron concentration?
8. If 25% of a natural area is to be developed, leaving 750 acres untouched, how many acres are to be developed?

a) Metric Conversions *Common Metric prefixes:*

μ (Micro) = 1/1,000,000 = 10^{-6} m (milli) = 1/1000 = 10^{-3} c (centi) = 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}

9. 1200 kilograms =? milligrams
10. 2.3 Gbyte =? Mbyte
11. 6544 liters =? milliliters

12. .78000 cm =? Km

b) Temperature Conversions: Formulas: °C = 5/9 (°F – 32) and °F = (°C x 9/5) + 32

13. a) 85°F = __ °C b) 15 °C =___ °F c) -35 °C = ___ °F

c) Scientific Notation

Write the following numbers in scientific notation:

14. 145,000,000,000
15. 135 trillion
16. 1 millionth

d) Dimensional Analysis (remember this??☺)

Handy Conversion factors:

1 square mile = 640 acres *1 hectare (Ha) = 2.47 acres* *1 kW-hour = 3,413 BTUs*
1 barrel of oil = 159 liters *1 metric ton = 1000 kg* *1 inch = 2.54 cm* *1 mile= 1.6 km or 5280 feet*
1 pound = 16 ounces or 454 grams *1 ton = 2000 lbs.* *1 liter = 1.057 quart* *1 mL = 1 cm^3*

17. 1.35 kilometers per second =? miles per hour
18. A 540 million square mile forest is how many hectares?
19. The total amount of freshwater on earth is estimated to be 3.7 x 10^8 km^3. What is the volume in L?
20. Your car gets 15 miles per gallon, and your friend's car gets 25 mpg. If you go on a 200-mile road trip in your friend's car, and gas costs $2.50 per gallon, how much gas money will you save by using your friend's car instead of your car?
21. If one barrel of crude oil provides six million BTUs of energy, how many kW-hr will one liter of crude oil provide?
22. Fifty-eight thousand kilograms of solid waste is equivalent to how many metric tons?
23. Sapelo Island, off the coast of Georgia, is 16500 acres in size. If one inch of rain falls on the island, how many cubic feet of rain fell on the island?
24. Your house is 1000.0 sq. ft., and you have a natural gas furnace. 60,000. BTUs of heat per square foot are required to heat your house for one winter season. A) How many BTUs of energy will be needed? B) If one cubic foot of natural gas supplies 1,000. BTUs of heat, how many cubic feet of natural gas will be needed for this one winter season?
25. Suppose my car gets 32 miles to the gallon of gas and I drive approximately 15,000 miles per year. How many gallons of gas do I use in a year? If one gallon of gasoline emits 20 pounds of CO_2, when burned in the internal combustion engine of my car, how much CO_2 does my car emit each year?

Part 3: World Geography Refresher:

Please print out 2 copies of the attached world map (or another world map of your choice) and label the following on the maps. Please print neatly & legibly; it is recommended that you label the maps with numbers and create a corresponding key.

1. World Political Map: Label the following:
   - all oceans
   - Equator, Topic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle
   - Countries: China, Japan, Korea, India, Pakistan, Indonesia, Philippines, Brazil, Chile, Cuba, Mexico, Haiti, Dominican Republic, Hawaiian Islands, Galapagos Islands, Nigeria, South Africa, Burkina Faso, Saudi Arabia, Iran, Iceland, Sweden, Germany, Russia, Greenland

2. World Physical Map: Label the following:
   - Rivers: Amazon, Congo, Nile, Danube, Volga, Ganges, Yangtze, Mississippi
   - Lakes/Seas/ Regions: Great Lakes, Lake Chad, Lake Victoria, South China Sea, Gulf of Mexico, Red Sea, Aral Sea, Black Sea, Mediterranean Sea, Bering Sea, Hudson Bay, Chesapeake Bay
   - Mountain ranges: Andes, Alps, Himalayas, Rockies, Sierra Nevada region, Cascades, Appalachians
   - Other: San Andreas fault, Everglades, Grand Banks

Part 4: Do EITHER part A or Part B, your choice. (be prepared to share your experiences with the class)

Part 4A. Get outside yourself-ie!

Get outside! We have been cooped up too long! Enjoy the glorious summer weather and explore our beautiful natural world! Please visit **at least one public park or natural area** (regional, state, or national) **that is at least 15 miles from Northview High**, take a picture of yourself (must include Mr. APES) at the park, and TYPE a paper reflecting on your visit, and describing and providing information about the park. Please include all the following:

- park name and location and weather conditions on the day of your visit
- the organization responsible for upkeep of this park
- history of the park
- why you chose this park and how you spent your time at the park
- plants & animals (describe & identify at least 8 species that you observed, give both common & scientific names, & identify habitat conditions needed by each of these species to thrive)
- visible signs of human impact in the park
- challenges faced by this park (usage, traffic, water use, topography, etc.)
- your overall impressions of the park and your visit
- Attach your photo to your paper (with Mr. APES, cut out the picture to the right and include in your photo)
- Include a list of references in either MLA or APA format

Note: You will need to do some research. This is an AP course. Please do not bore us all with pre-school quality work such as "I saw trees and birds". 😊

MR. APES!

OR

Part 4B: Read an Environmental Book

A goal of this course is to educate you about environmental issues and to get you thinking about the environment and how we affect it. For this assignment, you will read a book relating to the environment (suggestions below or your own choice). As you read and after you finish, you will prepare a typed report to include the following:

- Give the name of the book, author(s), publisher, and year it was published.
- List and define vocabulary and concepts related to environmental science (10 terms) that you encountered in your book
- Write a brief summary of the book (2 paragraphs)
- Describe your opinion of the book (positive, negative, neutral) and reference items from the book to support your position (3 paragraphs)
- Relate what you have learned from your reading to your personal life and how it impacts/affects you. (1 paragraph)
- Condense the overall take-home message of your book into a bumper sticker slogan or a PSA. Design and draw your bumper sticker or PSA poster. Justify and defend your slogan. (1 paragraph)

There are so many great books available, lots of good new ones too! Here are just a few suggestions of books I have read recently or still intend to read:
Never Cry Wolf (Farley Mowat), No Impact Man (Colin Beavan), Silent Snow- the slow poisoning of the Arctic (Maria Cone), Silent Spring (Rachel Carson), The Omnivore's Dilemma (Michael Pollan), The World Without Us (Alan Weisman), The Story of Stuff (Annie Leonard), Blue Future (Maude Barrow), The Soul of an Octopus (Sy Montgomery), What a Fish Knows (J. Balcombe), the Golden Spruce (John Valiant)….
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