2023 AP Environmental Science Summer Work

Scholars,
Welcome to AP Environmental Science. I am so excited that you decided to take the course. Whereas this course covers a lot of ground, I find it helpful to have some basic background knowledge to set a foundation for the year. As a result, I have crafted to assignments for you to complete this summer. The first is a set of math problems that involved dimensional analysis, i.e. unit conversion. You will be asked to convert throughout the year in various assignments that involve calculation. You may feel free to use a calculator, but please show any setup work. The second assignment is a short list of major environmental legislation that has been passed that affects the United States. Your task is to fill in the spreadsheet on paper or digitally with the basic information for which is called (summary, date, effect, etc.). Neither of these should take very long, but please have both of these ready by the time you return in August, as they will be due the first day. Have a good summer.

APES Math

Dimensional Analysis (you will be asked to do a lot of these. Make sure you are comfortable with them)

You should be able to convert any unit into any other unit accurately if given the conversion factor. Online tutorials are available:

http://www.chem.tamu.edu/class/fyp/mathrev/mr-da.html

Common 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}

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. One year I had 13 AP Environmental Science students and the next year I had 16 AP Environmental Science students, what percentage did the population of APES students grow by?
4. 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 earlier on this page for the conversion of kilo to mega)
5. 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 Nashville, TN, which is 200 miles away. If gas costs $3 per gallon and you decide to split the gas money, how much money will you save in gas by driving your friend's car?
6. Area of Memphis is approximately 839 km^2. What would be the volume of water that fell on Memphis during a 2 cm rain event? Give answer in m^3 (remember that we dealing with squared units you must cancel the unit twice, i.e. km^2 is km x km)
7. An mp3 takes up about 16 kilobytes of memory per second of music. If you owned a one terabyte hard drive and filled it with only mp3s, how many days' worth of music would you have? (keep track of units: kilobytes to terabytes and seconds to days)
8. A Toyota Camry sold in Japan is advertised as having a gas mileage of 23.4 km/l. What is its equivalence in miles/gal? (miles/gal)? (1 mile=1.61km and 1 gal = 3.79L)

These may be a challenge, but give it your best effort. Answer these questions on a separate paper and be ready to turn them in on the first day of class.

Major Environmental Legislation of the United States Government

Act Goal		Year Enacted (amended)	Presidential Signer (if applicable)	True Outcome
Endangered Species Act				
RCRA (Resource Conservation and Recovery Act)				
Clean Water Act (CWA)				
CERCLA (Comprehensive Environmental Recovery, Compensation, & Liability Act)				
Clean Air Act (CAA)				
CITES (Conv on Int'l Trade in Endangered Species)				
Montreal Protocol				
Kyoto Protocol				
Safe Water Drinking Act (SWDA)				
Delaney Clause of Food, Drug, & Cosmetic Act				