

# AP Environmental Science 2018-2019 Summer Assignment

Edmodo Link: <https://edmo.do/j/y5qp7v>

Welcome to AP Environmental Science (APES). I am excited for next year, and I hope you are too! This September you will learn relevant information pertaining to the world around you.

The purpose of the summer assignment is to help you become aware of the environment and refresh some math skills. Please note that all summer assignments will be turned in through edmodo (<https://edmo.do/j/y5qp7v>). I hope that you have an enjoyable, exciting, and educational summer. I look forward to meeting you in September! - Mrs. Clement

Below are tasks you should complete this summer. All assignments should be typed, unless otherwise specified, and uploaded to the appropriate assignment link in edmodo. All assignments will be due the first day of school in September (**September 6, 2018**). The expectations for an AP course are significantly higher than those for a regular course.

**The summer assignment will count for a significant portion of your first nine weeks grade. All work turned in must be your OWN work. No late work will be accepted.**

You will need a composition notebook (college ruled) and a 2 inch binder for this class with 10 sections. You will use the notebook over the summer. Any assignments completed in google docs or OneDrive should be printed out and placed into your binder.

If you require clarification on any of the assignments, please contact me by email at [dcclement@yonkerspublicschools.org](mailto:dcclement@yonkerspublicschools.org) or [clementd249@gmail.com](mailto:clementd249@gmail.com)

## **Table of Contents:**

- Part I - Sign up for Edmodo - 60 points
- Part II - Basic Math Skills: Math Problems, 100 points
- Part III - Environmental Law: 100 points
- Part IV - Environmental disasters - 40 points
- Part V - Tragedy of the Commons and questions - 60 points
- Part VI – Chapter 1 and 2 Assignment – 100 Points

There will be quizzes on this material during the first and second week of school. These quizzes are noted in each section.

## **PART I: EDMODO (60 points)**

**Signing up for Edmodo is mandatory for this course.** If you don't have one already, create an account on Edmodo at <https://edmo.do/j/y5qp7v> and join the **APES.CLEMENT- 2018-2019** group. **Use the Group Code: etwfq9 to join.** Join by **July 6th** to receive the full points for this part of the assignment. Summer Assignment readings and links and will be posted here.

## **Part II Basic Math Skills**

**Directions:** The math assignment does not need to be typed. Please complete the following problems and make sure to show all your work. Calculators are not allowed on the AP Environmental Science test, so you will have to be able to do simple math in your head. After

you have completed the questions, you can take a picture of your work and upload it to the **“Brush Up Your Math Skills” assignment link on Edmodo**. The Office Lens app is a great app to use for taking pictures of documents. You can find it in the Apple or Android Stores for free.

### **Basic Math Skills (Borrowed from: [www.stjohnschs.org](http://www.stjohnschs.org))**

#### **Percentage**

$$17\% = 17/100 = .17$$

- Remember that “percent” literally means divided by 100.
- Percentage is a measure of the part of the whole: (part/whole) x 100
- 15 million is what percentage of the US population? 15 million/300 million = .05 or 5%
- What is 20% of this \$15 bill so that I can give a good tip?  $\$15 \times .20 = \$15 \times (20/100) = \$3$
- What is the percentage growth?  $\text{New} - \text{old}/\text{old} \times 100$

#### **Scientific Notation**

$$\text{Thousand} = 10^3 = 1,000$$

$$\text{Million} = 10^6 = 1,000,000$$

$$\text{Billion} = 10^9 = 1,000,000,000$$

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

--- When using very large numbers, scientific method is often easiest to manipulate. For example,

The US population is 300 million or  $3 \times 10^8$

--- When adding or subtracting, exponents must be the same.

Add the numbers in front of the ten and keep the exponent the same.

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

$$\text{Ex. } 9 \times 10^6 / 3 \times 10^2 = (9/3) \times 10^{(6-2)} = 3 \times 10^4$$

#### **Dimensional Analysis**

You should be able to convert any unit into any other unit accurately. You will be expected to write all problems in this format. You can go to the following site for guidance if you are not familiar with this method.

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

## Prefixes

You must also be able to make simple conversions and know the following prefixes:

**QUIZ:** You will have a quiz the first week of class on prefixes and simple conversions - 20 points

Tera (T) : $10^{12}$	Kilo (k) : $10^3$	Deci (d) : $10^{-1}$	Micro ( $\mu$ ) : $10^{-6}$
Giga (G) : $10^9$	Hector (h) : $10^2$	Centi (c) : $10^{-2}$	Nano (n) : $10^{-9}$
Mega (M) : $10^6$	Deka (da) : 10	Milli (m) : $10^{-3}$	

For example:

1 mg (milligram) = 1/1000 g (gram)

1 km (kilometer) = 1000 M (meters)

## **Assignment Part II: Math Problems- (100 points)**

Answer the following questions on a separate sheet of paper. **Show all of your work.**

***For this course you are required to show all your work done by hand, even if it's something really simple like 2x2. No work, no credit. This is to practice math without a calculator and making your writing legible to AP exam graders***

For any conversions questions, be sure to use dimensional analysis!

- 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 40 APES students and the next year I had 50. By what percentage did the population of APES students grow?
- 4) Electricity costs 6 cents per kilowatt hour (kWh). In one month one home uses one megawatt hour of electricity. How much will the bill be? (Use the prefixes chart on the previous 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 Virginia Tech which is 300 miles away. If gas costs \$4 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) Virginia Beach is 10 miles wide and 30 miles long. If one inch of rain falls on Virginia Beach, how many cubic feet of rain fell on the beach? (Hint: convert all units to feet first)
- 7) The combustion of one gallon of automobile fuel produces about 5 pounds of carbon (in  $\text{CO}_2$ ). Two autos are making a trip of 600 miles. The first auto gets 20 miles per gallon, and the second gets 30 miles per gallon. Approximately how much less carbon (in  $\text{CO}_2$ ) will be produced by the second auto on this trip?
- 8) How many oranges are in a crate if the price of a crate of oranges is \$1.60 and the price of

oranges is \$0.20 per pound and there are 3 oranges per pound?

9) What is the cost of coal in dollars per ton if it costs \$0.04 per kilogram? (1 ton = 1000 kg)

10) How many years old are you if you have lived 1 billion seconds?

*Part III - Environmental Law: 100 points*

Construct a table like my example that organizes important information regarding environmental legislation for the laws/treaties listed below. The following link will be helpful:

<https://www.epa.gov/laws-regulations> Include the following information:

- Name of law or treaty
- Draft Year and amendment years
- Is it international or National (just the U.S.)
- Describe the function
- What environment issues are affected by this legislation?
- Agency/group responsible for regulation and enforcement (United Nations, Department of Interior, EPA, etc.)

Name	Draft & Amendment year(s)	International or US	Description	Issue(s) Affected	Agency
Clean Air Act	1963, 1977, 1990	US	To monitor and control air pollutants such as sulfur dioxide, nitrogen oxides, carbon monoxide, particulate matter, ozone, lead, carbon dioxide, volatile organic compounds, mercury. Meant to protect public welfare and health and to regulate emissions of dangerous air pollutants.	Air pollution, human health	EPA

Table Hints:

- You may find it easier to do this in landscape orientation
- You can use your textbook or online SCHOLARLY resources (Wikipedia is not reliable) to find the information. Since these are governmental in nature, .gov sites are best!

**\*\* QUIZ on this material the second week of school, so be prepared!\*\*\***

Upload completed assignment **by September 6** to the **“Environmental Law” assignment link on Edmodo**. Print a copy and place in your binder as the first section - this will be a reference guide of all the environmental laws and treaties. You will be referring back to this during the year.

1. Clean Air Act (CAA) of 1970, 1990
2. Clean Water Act (CWA) of 1972
3. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 1980
4. Endangered Species Act (ESA) of 1973
5. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), 1947
6. Hazardous and Solid Waste Amendments (HSWA) of 1984

7. Occupational Safety and Health Act of 1970 (OSH Act)
8. Resource Conservation and Recovery Act (RCRA) of 1976
9. Safe Drinking Water Act (SDWA) of 1974
10. Solid Waste Disposal Act (SWDA) of 1965
11. Toxic Substances Control Act (TSCA) of 1976
12. Wilderness Act of 1964
13. Montreal Protocol
14. Oil pollution Act (OPA)
15. Ocean Dumping Ban Act
16. Paris Agreement

#### **Part IV - Environmental disasters – (40 points)**

Find an article that has been published for each environmental disaster. Include a hard copy of each article (either printed out, photocopied, or cut out) OR include the hyperlink to the URL if you found it online. Sources can include scientific publications, journals, newspapers like the NY Times, National Geographic, The Wall Street Journal (aim high - the more scholarly, the better). Online newspapers or journals or .gov, .edu, or .org sites are okay too.

For each disaster, please address the following criteria in at least 1/2 page double-spaced per disaster.

1. Summarize the content of the article your own words.
  - a. Focus on the following questions:
    - i. What is the problem? When and where did it begin?
    - ii. Do we know who the responsible parties are? If so, who is it?
    - iii. How severe is the environmental impact?

#### **List of Disasters:**

1. Chernobyl
2. Bhopal
2. Deepwater Horizon
3. Minimata
4. Love Canal
5. Seveso
6. Baia Mare
7. Fukushima

**Once you have answered all questions, upload your typed document to “Environmental Disaster” assignment link on Edmodo. Due by September 6**

**\*\*\* You will have a QUIZ on this information during the first week of school \*\*\***

#### **Part V - Tragedy of the Commons Essay – (60 points)**

Read the essay “Tragedy of the Commons” by Garrett Hardin. The essay can be found at this link: [http://www.garretthardinsociety.org/articles/art\\_tragedy\\_of\\_the\\_commons.html](http://www.garretthardinsociety.org/articles/art_tragedy_of_the_commons.html). After reading, create a Word document and respond to the following questions in complete sentences. Do not quote long excerpts from the essay. Your answers should be YOURS alone, written in YOUR voice. Once you have answered all the questions, upload your Word document to the “Tragedy of the Commons” assignment link on Edmodo. **Due by September 6**

1. What is Garrett Hardin’s central idea in this essay?
2. Do you personally agree with Hardin’s central idea?
3. Is the “Tragedy of the Commons” unavoidable?
4. 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.

## **Part VI – Chapters 1 and 2 Assignment (100 points)**

You are expected to read Chapters 1 and 2 and complete 4 total assignments, two Case Study Reflections and two Chapter Outlines.

**Chapter 1 and 2 has been scanned and can be found on Edmodo as an assignment.**

Each chapter begins with a Case Study (also called Chapter Opening). You will complete a **Case Study Reflection** in which you write a reflective paragraph of your own thoughts on the environmental issue discussed. This is meant to be a free thought reflection, but here are some questions to consider that may guide your thinking. *This assignment is to be completed in your composition notebook.*

1. **How does the topic affect you?**
2. **Suggest some solutions to the environmental challenges presented.**
3. **If there are any environmental trade-offs, discuss your opinion on if it is a worthwhile solution.**

[Link to Example](#)

[Link to Example](#)

**Chapter Outlines** are meant to be your notes and your study guide for my tests throughout the year and the AP exam on May 6th. While I will be giving lectures via powerpoint, the amount of content we must cover does not allow us to take notes live in class. These outlines are your notes, use in-class lectures to supplement your notes as needed.

[Link to Example](#)

[Link to Example](#)

Please feel free to use your own style of note taking, but this will be graded, so be neat and complete.

I also expect you to include MANY of the diagrams found in each chapter, though chapters 1 and 2 do not have many diagrams that are important. Later chapters will have a good amount. I

will provide a list at the start of next year of which diagrams I expect to see in your chapter outlines.

**Upon returning to school, we will spend no more than two days going over the Syllabus and the first two chapters. You will then have your first test (approximately 30-40 multiple choice questions) on these chapters.**