

## Welcome to AP Environmental Science!

The purpose of this summer assignment is to review skills that we will be using throughout the course and to introduce what Environmental Science is.

**The assignments are due the first day of class (with the exception of the letter to me which is due by July 13th) and will count as a grade. Please be aware that WE WILL hit the ground running so plan on having homework and assignments that first day!**

**Word of caution—don't wait to try to do this assignment a couple of days before it is due. Set yourself up for success from day one.**

Please feel free to email me with any questions you may have at [tshepler@ccajax.org](mailto:tshepler@ccajax.org)

Looking forward to class next year!

### Integrity and honesty

I am sorry to have to write these words, and I apologize if I offend any of you, but it is easier and more appropriate to address these matters from the get-go. You are in an upper-level science class, and the expectation is that you do your own work whether on tests, quizzes, homework, labs, notes, etc. I expect that there is absolutely no copying other's work or using AI to do your work. It does not matter if both parties are okay with it; it is not acceptable. I am all for group work and collaboration, but I have zero tolerance for an individual getting a free ride. You only hurt yourself by copying other's work and using AI. You will not develop the skills needed to pass the exam if you do not put the work and effort in all year. If you desire to excel in this class, you will need to be prepared and learn the material which will not happen by using other individual's work or AI as a crutch. If you are unsure whether you are doing something you shouldn't, ask yourself if you would be upset if someone snitched on you or if everyone knew what you were doing. I trust that you each desire to truly learn the material and have the grit and work ethic to persevere when things get challenging. I am always here for you and as classmates, you are also here to support one another, but not to carry or drag one another along.

### Part 1: Welcome Letter Assignment-due July 13<sup>th</sup>, via email to [tshepler@ccajax.org](mailto:tshepler@ccajax.org)

APES as a course involves a great deal of collaborative learning. It is important to me, as an instructor, that I get to know you as a person. It is also important that you, as a young adult who is preparing to enter college, work on email communication. I expect that you may struggle throughout the year, and I hope that you will keep an open line of communication with me as well as your other instructors. You will write a letter of introduction to the APES instructor, Mrs. Shepler. The letter is due July 13<sup>th</sup>. This gives you some time to think and ponder but gives me enough time to reflect as well.

- Please remember you are writing a letter that gives me the first glimpse at your written communication skills and your ability to read instruction and follow it. Please read the letter out loud to yourself before submitting it to me.
- In the subject line of your email, write: APES 2026/27 and your name (example: APES 2026/27, Joe Smith)
- See below for the content of the letter. Follow items 1-6 to ensure you include all necessary items.

Do not stress about this! This is an opportunity for me to get to know you. If you have questions that you would like to know about me or APES, please include them in the email you send me. Give that section a heading called, "Questions for Mrs. Shepler" and do not include it as part of your letter. I will answer to the best of my ability 😊

When you are emailing an instructor, you need to ensure your email contains a couple of key things.

1. Subject Line: see above
2. Addressing the instructor properly
  - a. You need to include a proper introduction.
    - i.Example: Dear Mr. Smith, Good Afternoon Mr. Smith, etc.

ii. Note: You are emailing an instructor, not texting your best friend

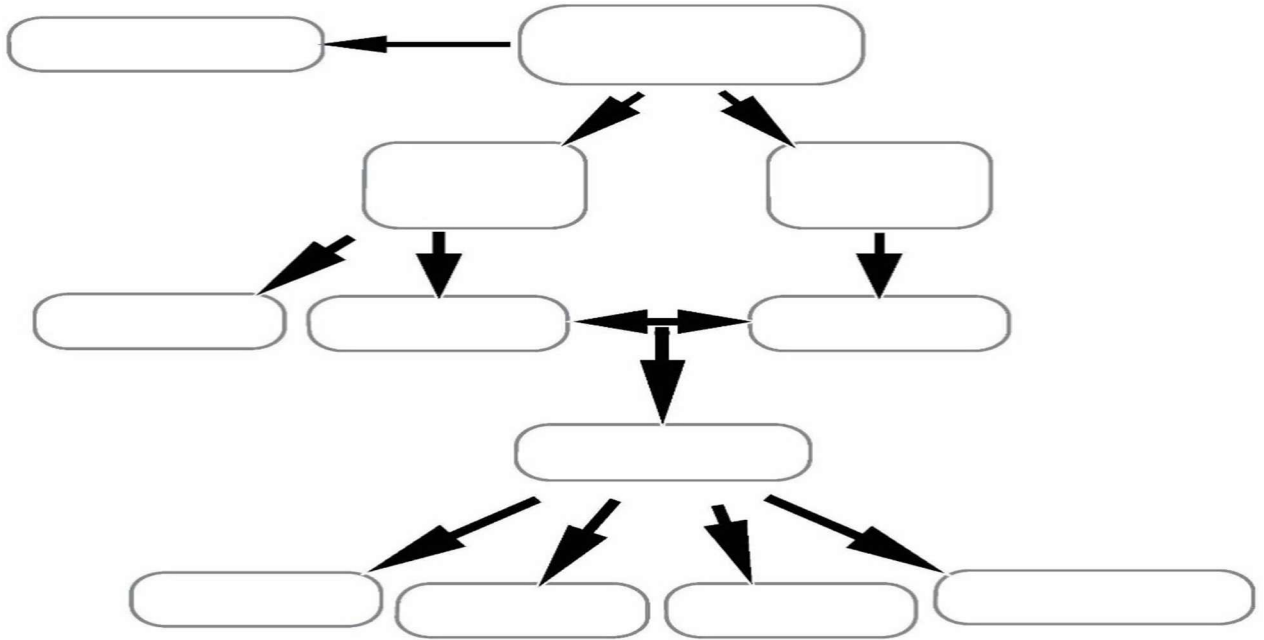
In this letter, include the following:

1. Introduce yourself:
  - a. What is your name?
  - b. Do you have a nickname you go by?
  - c. What grade are you in?
2. Courses:
  - a. What science classes have you taken so far? What was your final grade?
  - b. How many AP classes have you taken before this year? Which AP courses? Did you receive a 3 or higher grade on the exam?
  - c. What subject area(s) are you most interested in continuing in college?
  - d. Is there anything that you've especially liked or disliked about your earlier science classes?
3. Info about yourself:
  - a. What do you like to do (hobbies, sports, music, interests, etc.)?
  - b. Tell me about your family (siblings, pets, who do you live with? How would you describe them?)
  - c. Do you have a job or plan on getting a job next year/ what kind? How many hours?
4. Learning:
  - a. What are your personal strengths when it comes to learning new material?
  - b. What causes you to struggle in a course? How do you address that challenge?
  - c. How would you describe yourself as a learner?
  - d. What is the most effective way you have found to study for a science test?
  - e. How would you describe yourself as a team or group member?
  - f. What type of learner are you? Visual, auditory, etc.?
5. APES:
  - a. Why are you taking this course? What do you hope to accomplish/gain from this course?
  - b. What are you looking forward to most in AP Environmental Science?
  - c. Do you have any concerns about coming into APES this year?

**Part 2: Introduction to Environmental Science**

Watch the Bozeman Science YouTube video linked below ONLY to 7:30 to get a better sense of what to expect through this course. Complete the questions as you watch. <https://youtu.be/LE9KTG9PFho>

1. AP Environmental science is the study of the \_\_\_\_\_ between the \_\_\_\_\_ and the \_\_\_\_\_.
2. Listen to Mr. Anderson describe the various parts of the concept map, and pause after he reveals a new word, and fill in that word.



3. **Describe** what happened on Easter Island.
4. **Explain** the difference between Environmental Science vs Environmentalism.
5. **List** the 7 science practices:
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.
  - g.
6. **Describe** what happened to the Deepwater Horizon.

### **Part 3: Experimental Design**

Answer the following questions using the following statement, your knowledge of experimental design and the graph below. Need a refresh on experimental design? Watch [this video](#) or this [one](#). OR both.

A clam farmer has been keeping records concerning the water temperature and the number of clams developing from fertilized eggs. The data is recorded below.

Water Temperature in °C	Number of developing clams
15	75
20	90
25	120
30	140
35	75
40	40
45	15
50	0

- a.) What is the dependent variable?
- b.) What is the independent variable?
- c.) What is the optimum (best) temperature for clam development?
- d.) What is the average temperature in this experiment?
- e.) What are some **constants** the scientists should consider?

### **Part 4: Math Skills (What ?!?!? This is a science class, why so much math?)**

There are seven Science Practices that we will incorporate throughout the year, these are skills and a way to apply your content knowledge. You can check them all out [here](#).

**Practice 6** is Mathematical Routines: Apply quantitative methods to address environmental concepts.

**6.A** Determine an approach or method aligned with the problem to be solved.

**6.B** Apply appropriate mathematical relationships to solve a problem, with work shown (e.g., dimensional analysis).

**6.C** Calculate an accurate numeric answer with appropriate units.

#### Reminders

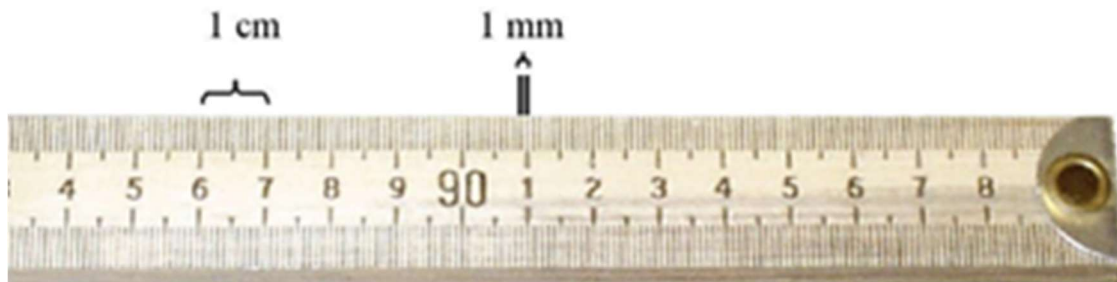
1. **Write out all of your work**, even if it's something really simple. This is required on the APES exam so it will be required on all your assignments, labs, quizzes, and tests as well.
2. **Include units in each step**. Your answers always need units and it's easier to keep track of them if you write them in every step. No naked numbers!
3. **Check your work**. Go back through each step to make sure you didn't make any mistakes in your calculations. Also check to see if your answer makes sense. For example, a person probably will not eat 13 million pounds of meat in a year. If you get an answer that seems unlikely, it probably is. Go back and check your work.
4. **You may use a calculator but will not be provided with a formula sheet.**

## Metric Units: YOU MUST MEMORIZE THE METRIC CONVERSION CHART

Prefix	Symbol	Multiply Base Unit by	Example
tera	T	1,000,000,000,000	teragram = Tg = $10^{12}$ g
giga	G	1,000,000,000	gigaliter = GL = $10^9$ L
mega	M	1,000,000	megagram = Mg = $10^6$ g
kilo	k	1,000	kilogram = kg = $10^3$ g
hecto	h	100	hectogram = hm = $10^2$ m
deka	da	10	decagram = dag = 10 g
deci	d	1/10	deciliter = dL = $10^{-1}$ L
centi	c	1/100	centimeter = cm = $10^{-2}$ m
milli	m	1/1000	millimeter = mm = $10^{-3}$ m
micro	$\mu$	1/1,000,000	microgram = $\mu$ g = $10^{-6}$ g

We usually see these units in class

Base Unit (g, m, W, L, etc.)



- 1.) How many mm are in a centimeter?
- 2.) How many centimeters are in a meter? (The prefix *centi-* means 100. How many cents (pennies) are in a dollar?)
- 3.) The prefix *milli-* means a thousand. How many millimeters are in a meter?

## PERCENT CHANGE: YOU MUST KNOW THIS FORMULA

$$\text{Percent Change} = \left( \frac{\text{New} - \text{Original}}{\text{Original}} \right) \times 100$$

- 4.) If you scored 1090 on your first PSAT and 1210 on your second PSAT. What was your percent improvement (percent change)?

## DIMENSIONAL ANALYSIS: YOU MUST BE ABLE TO DO THIS WITH A VARIETY OF UNITS

- 5.) If one termite can destroy 1.2mg of wood per day, how many kilograms of wood can 10 termites destroy in 1 week?

## ROUTINE MATH FUNCTIONS: SHOW YOUR WORK

- 6.) What is 70% of 640?
- 7.) 400 kilograms = \_\_\_\_\_ milligrams

8.) 600 mm = \_\_\_\_\_ cm

9.) 25 MW = \_\_\_\_\_ W

**Write the following in scientific notation.**

10.) 394 billion

11.) 0.000070202

12.) If I can run 6 km in 24 minutes, how many cm can I run in 5 hours?

13.) Fourteen percent of a 55,000 acre forest is destroyed by the invasive pine weevil. How many acres of the forest were not destroyed?

14.) A pesticide was sprayed on a portion of a forest. The pesticide killed 25,000 termites. This is 71% of the local termite population. What is the total termite population?

You should be familiar with these math skills from previous math classes. If you struggled with the problems and are still confused after looking at the key that's okay! Everyone enters the course with different strengths and skill levels, if you're willing to put in the effort, I am happy to work with you to help you succeed in the class.

### **Part 5: Watch the "Write Like A Scholar Series"**

An important part of AP Environmental Science is being able to communicate your understanding of the content through writing. The AP exam has three free-response questions (FRQs) that count for 40% of your overall score. The following videos provide an introduction to get you on the path to writing successful FRQs.

**For each video below list five things, you learned from each video.**

1.) **Video 1:** [Write Like A Scholar Series: Annotating AP Environmental Science FRQs](#)

**Annotate** the following FRQ Questions as taught in the video link above.

(b) **Identify** TWO environmental benefits of a living green roof, such as that suggested by Councilperson Fassler.

(c) **Describe** TWO practices the cafeteria's food service could use to decrease the environmental impacts of Fremont High School.

(d)

**Describe** a biological process by which carbon is removed from the atmosphere and converted to organic molecules.

(e)

The burning of fossil fuels has been shown to increase the concentration of carbon in the atmosphere.

**Discuss** TWO other human activities that increase the concentration of carbon in the atmosphere.

**FIVE THINGS YOU LEARNED:**

2.) Video 2: [Write Like A Scholar Series: Writing AP Environmental Science FRQs](#)

**FIVE THINGS YOU LEARNED:**

3.) Video 3: [Write Like A Scholar Series: Scoring AP Environmental Science FRQs](#) (Skip 6:11-9:10)

**FIVE THINGS YOU LEARNED:**