

AP Environmental Science Summer Fun

The APES summer assignment has 4 parts. You do not have to turn in anything for parts I and II. In the second week of school, you will be given a quiz covering this material. **Feel free to email me questions** _____

Part I: This year in APES is allowing calculators, but we still need to practice important formulas, metric conversions, and data analysis.

Contents

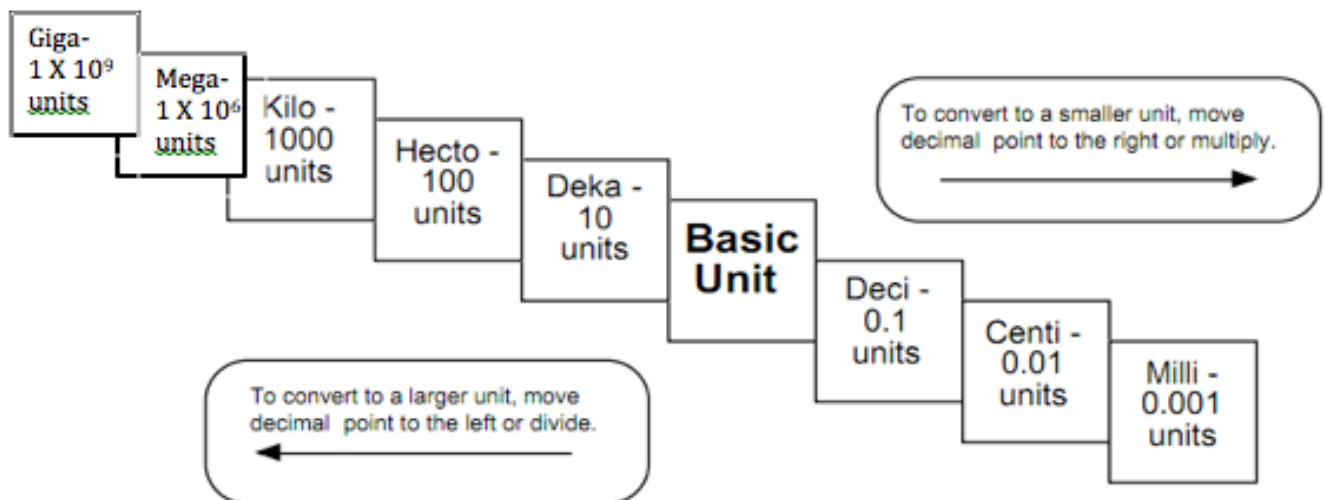
Averages, Percentages and Percent change, Metric Units, Scientific Notation, Dimensional Analysis

Reminders

1. Write out all 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.
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.

Metric Units: YOU MUST MEMORIZE THE METRIC CONVERSION CHART

Kilo-, centi-, and milli- are the most frequently used prefixes of the metric system. You need to be able to go from one to another without a calculator. You can remember the order of the prefixes by using the following sentence: *Good Morning King Henry Died By Drinking Chocolate Milk*. Since the multiples and divisions of the base units are all factors of ten, you just need to move the decimal to convert from one to another.



$$\text{Percent Change} = \frac{|\text{New} - \text{Original}|}{\text{Original}} \times 100$$

1) If you scored a 1090 on your first PSAT and 1210 on your second PSAT. What was your percent improvement?

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

3) What is 70% of 640?

4) 400 kilograms= _____ milligrams

5) 7 grams = _____ Gigagrams

6) 600 mm = _____ cm

7) 25 centigrams = _____ kilograms

8) 10 Megameters = _____ millimeters

Write the following in scientific notation

9) 394 billion

10) 0.000070202

Complete the following calculations

11) $4.2 \times 10^5 + 5.05 \times 10^9$

12) $2 \times 10^5 \times 5.05 \times 10^9$

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

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

15) How many acres of the forest were destroyed?

16) If termites destroyed 42 acres of forest in 2015 and 65 acres of forest in 2016, what was the percent increase in forest destruction?

17) 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?

18-22) Answer the following questions using the following statement, your knowledge of the scientific method, and the graph below.

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.

18) What is the dependent variable?

19) What is the independent variable?

20) What is the optimum (best) temperature for clam development?

21) What is the average temperature in this experiment?

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

22) Make a line graph of the data.



Part II: Chemistry : Memorize these formulas

CO ₂ - carbon dioxide	NO ₃ ⁻ - nitrate	K- potassium
CO- carbon monoxide	NH ₃ - ammonia	Mg- magnesium
H ₂ CO ₃ - carbonic acid	NH ₄ ⁺ - ammonium	Ca- calcium
C ₆ H ₁₂ O ₆ - glucose	O ₂ - oxygen gas	NaCl- sodium chloride
CH ₄ -methane	O ₃ - ozone;	Fe- iron
CaCO ₃ - calcium carbonate	P- phosphorus	Zn- zinc
H ₂ - hydrogen gas	PO ₄ ⁻³ - phosphate	Pb- lead-
H ₂ O-water	S- sulfur	Hg- mercury
N ₂ - nitrogen gas	SO ₂ - sulfur dioxide	Al-aluminum
NO- nitric oxide	SO ₃ - sulfite	As-arsenic
NO ₂ - nitrogen dioxide	SO ₄ ⁻² - sulfate	Rn- radon
N ₂ O- nitrous oxide	H ₂ S- hydrogen sulfide	U- uranium
NO ₂ ⁻ - nitrite	Cl- chlorine	

Part III. Experimental Design

Design and perform your own experiment that involves taking quantitative measurements of a physical quantity. Be creative, and do something that reflects your personal interests. The purpose of this assignment is for you to practice writing a clear, concise experimental procedure, such that someone who wasn't present would be able to replicate your experiment. If you want to do an experiment that involves consumers, you must email me [_____](#) your proposed procedure and get approval.

- I. Write a clear, concise procedure for the experiment. Make sure you include every step of the procedure, and describe all equipment you will use. Include either a sketch or a photo of the experimental setup.
- II. Discuss the assumptions and sources of experimental uncertainty, as well as how you will attempt to minimize the uncertainty.
- III. Perform the experiment and record the data in a clear data table. Label all data with both quantity and units.
- IV. Create a hand drawn graph of your data.
- V. Analyze the results of your experiment and write a brief conclusion.

Part – IV Watch all the **4 episodes** of this Documentary, link and title is below.
Check out **“Our Living World” 2024** Do not get confused with other titles, episodes names are blow so
Match the name of episode as well and you have the link as well so no confusion.
Netflix <https://www.netflix.com/in/title/81137426?s=i&trkid=260453186&vlang=en&clip=81774665>

Write a 200-word Summary of Episode -1 Nature’s Amazing network.

Write a 200-word Summary of Episode -2 The Rhythm of life.

Write a 200-word Summary of Episode -3 Breaking Point.

Write a 200-word Summary of Episode -Road to Recovery.
