AP Environmental Science (APES) Summer Fun

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MANDATORY – JOIN REMIND 101 at the beginning of summer. Text to "81010" Text "@rrhs-apes"

All work below (the math and the laws) is due upon return to school. We will have a quiz on the material during the 1st week.

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 CONVERION 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.
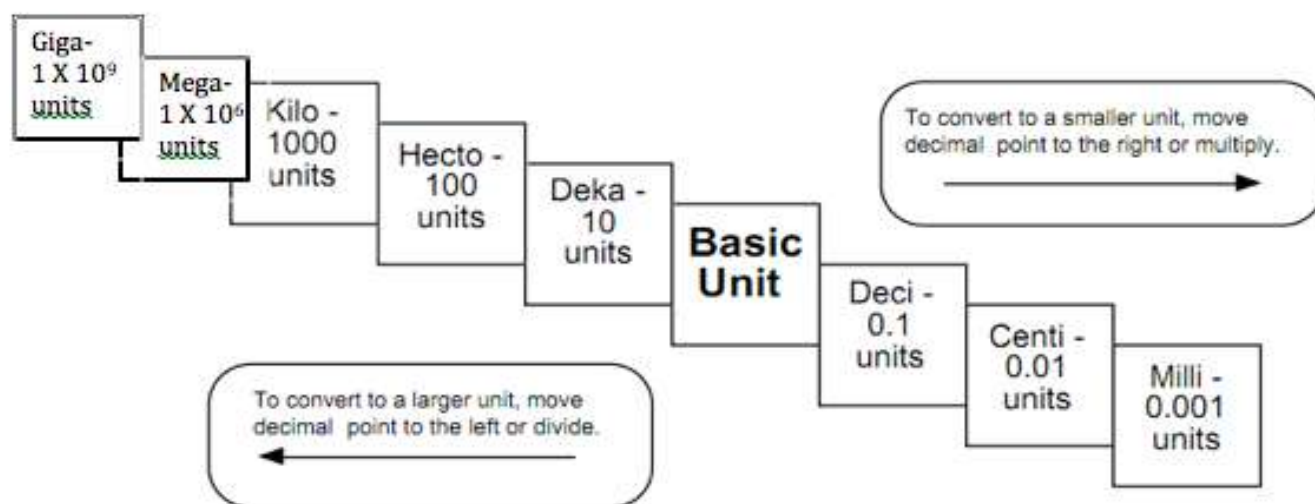
Percent Change = | New – Original | X 100

Original

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

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.

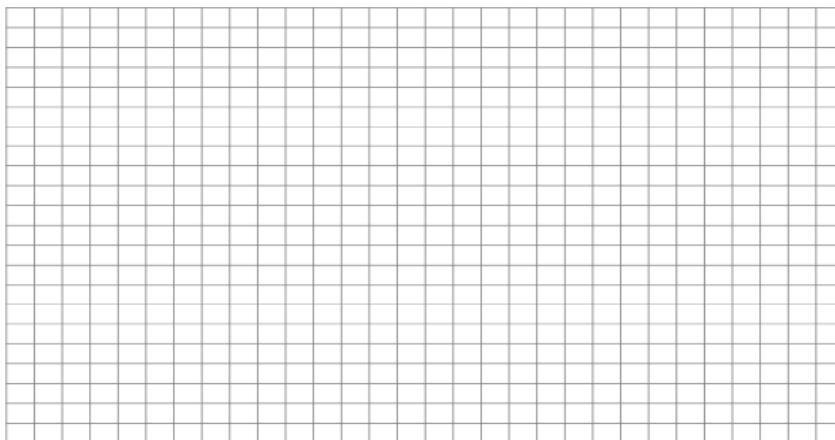| Water Temperature in °C	Number of developing clams
15	75
20	90
25	120
30	140
35	75
40	40
45	15
50	0

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?

22) Make a line graph of the data.

Part II: Chemistry : <u>Memorize</u> these formulas

CO_2- carbon dioxide

CO- carbon monoxide

H_2CO_3- carbonic acid

$C_6H_{12}O_6$- glucose

CH_4-methane

$CaCO_3$- calcium carbonate

H_2- hydrogen gas

H_2O-water

N_2- nitrogen gas

NO- nitric oxide

NO_2- nitrogen dioxide

N_2O- nitrous oxide

NO_2^- - nitrite

NO_3^- - nitrate

NH_3- ammonia

NH_4^+- ammonium

O_2- oxygen gas

O_3- ozone;

P- phosphorus

PO4^{-3}- phosphate

S- sulfur

SO$_2$- sulfur dioxide

SO$_3$- sulfite

SO$_4$$^{-2}$- sulfate

H$_2$S- hydrogen sulfide

Cl- chlorine

K- potassium

Mg- magnesium

Ca- calcium

NaCl- sodium chloride

Fe- iron

Zn- zinc

Pb- lead-

Hg- mercury

Al-aluminum

As-arsenic

Rn- radon

U- uranium

Laws: <u>List</u> the main objective of each law.

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. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)