AP Environmental Summer Assignment

Welcome to AP Environmental Science! Students who enroll in APES should be ready and willing to devote sufficient time, focus & energy to class assignments, including daily readings, taking extensive notes in and outside of class, prepare for frequent exams and quizzes, participating in laboratory and field experiments, writing reports, giving oral presentations, participating in class discussions and doing other various class assignments. **Students who are not able or willing to devote sufficient time, focus and energy to this course should consider taking this course another time.**

In order to be better prepared, we need to do some work over the summer. Hopefully you will find most of your assignment both informative and enjoyable. The purpose of this assignment is to get you thinking about the environment in which you live and help prepare you for your studies in environmental science for the upcoming school year. You should plan on immersing yourself in the subject of environmental science for the next twelve months. Please complete the following assignment this summer (**DUE the 2nd day of school**).

Assignment:

1. Read and take notes on Chapters 1 & 2 in the APES textbook (Miller *Living in the Environment*, 17th edition)
2. Answer the Review Questions at the end of each chapter.
    a. Chapter 1 – Page 28-29
    b. Chapter 2 – Page 52
3. Complete Quizzes that will be on Canvas
    a. You must accept the canvas course invitation. This should be sent to you in the next few weeks.
4. Complete supplemental assignments on canvas.
5. Complete attached math worksheet.

Math Review

This year in APES you will hear the two words most dreaded by high school students…NO CALCULATORS! That's right you **cannot** use a calculator on the AP Environmental Science exam. Since the regular tests you will take are meant to help prepare you for the APES exam, you will not be able to use calculators on regular tests all year either. The good news is that most calculations on the tests and exams are written to be fairly easy calculations and to come out in whole numbers or to only one or two decimal places. The challenge is in setting up the problems correctly and knowing enough basic math to solve the problems. With practice, you will be a math expert by the time the exam rolls around. So, bid your calculator a fond farewell, tuck it away so you won't be tempted, and start sharpening your math skills!

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.

Directions

The Summer Math Worksheet is designed to review math skills that you should already know. If you're having trouble please feel free to use the suggested websites for review or conduct your own research.

Part A. Decimals

https://www.khanacademy.org/math/arithmetic/decimals

Part B. Averages

Hopefully you have this one covered.

Part C. Percentages

https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-ratios-prop-topic/cc-6th-percentages/v/describing-the-meaning-of-percent

Part D. Metric Units

https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-measurement-topic/cc-4th-unit-conversion/v/time-unit-conversion

Part E. Scientific Notation

https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-numbers-operations/cc-8th-scientific-notation/v/scientific-notation--old

F. Dimensional Analysis

https://www.khanacademy.org/math/algebra/introduction-to-algebra/units-algebra/v/dimensional-analysis-units-algebraically

Summer Math Worksheet

Put your work on your own paper. Circle your final answer when performing calculations. Try to do all work **WITHOUT A CALCULATOR!** You will **NOT** be allowed to use a calculator on classroom tests OR on the AP Exam.
REMEMBER TO SHOW **ALL WORK** AND CALCULATIONS!!

A. Practice Decimals

1. 1.678 + 2.456 =
2. 344.598 + 276.9 =
3. 1229.078 + .0567 =
4. 45.937 – 13.43 =
5. 199.007 – 124.553 =
6. 90.3 – 32.679 =
7. 28.4 x 9.78 =
8. 324.45 x 98.4 =
9. 1256.93 x 12.38 =
10. 64.5 / 5 =
11. 114.54 / 34.5 =
12. 3300.584 / 34.67 =

B. Practice Averages:

13. Find the average of the following numbers: 11, 12, 13, 14, 15, 23, and 29

14. Find the average of the following numbers: 124, 456, 788, and 343

15. Find the average of the following numbers: 4.56, .0078, 23.45, and .9872

C. Practice Percentages:

16. What is 45% of 900?

17. Thirteen percent of a 12,000 acre forest is being logged. How many acres will be logged?

18. A water heater tank holds 280 gallons. Two percent of the water is lost as steam. How many gallons remain to be used?

19. What percentage is 25 of 162.5?

20.35 is what percentage of 2800?

21.14,000 acres of a 40,000 acre forest burned in a forest fire. What percentage of the forest was damaged?

22. You have driven the first 150 miles of a 2000 mile trip. What percentage of the trip have you traveled?

23. Home prices have dropped 5% in the past three years. An average home in Indianapolis three years ago was $130,000. What's the average home price now?

24. The Greenland Ice Sheet contains 2,850,000 cubic kilometers of ice. It is melting at a rate of .006% per year. How many cubic kilometers are lost each year?

25.235 acres, or 15%, of a forest is being logged. How large is the forest?

26. A teenager consumes 20% of her calories each day in the form of protein. If she is getting 700 calories a day from protein, how many calories is she consuming per day?

27. In a small oak tree, the biomass of insects makes up 3000 kilograms. This is 4% of the total biomass of the tree. What is the total biomass of the tree?

D. Practice Metric System:

28.1200 kilograms = ? milligrams

29.14000 millimeters = ? meters

30.670 hectometers = ? centimeters

31.6544 liters = ? milliliters

32..078 kilometers = ? meters

33.17 grams = ? kilograms

E. Practice Scientific Notation:

Write the following numbers in scientific notation:

34.145,000,000,000

35. 13 million

36. 435 billion

37. 0.000348

38.135 trillion

39. 24 thousand

Complete the following calculations:

40. $3 \times 10^3 + 4 \times 10^3$

41. $4.67 \times 10^4 + 323 \times 10^3$

42. $7.89 \times 10^{-6} + 2.35 \times 10^{-8}$

43. $9.85 \times 10^4 - 6.35 \times 10^4$

44. $2.9 \times 10^{11} - 3.7 \times 10^{13}$

45. $1.278 \times 10^{-13} - 1.021 \times 10^{-10}$

46. three hundred thousand plus forty-seven thousand

47. 13 million minus 11 thousand

48. $1.32 \times 10^8 \times 2.34 \times 10^4$

49. $3.78 \times 10^3 \times 2.9 \times 10^2$

50. three million times eighteen thousand

51. one thousandth of seven thousand

52. eight ten-thousandths of thirty-five million

53. $3.45 \times 10^9 / 2.6 \times 10^3$

54. $1.98 \times 10^{-4} / 1.72 \times 10^{-6}$

55. twelve thousand divided by four thousand

F. Practice Dimensional Analysis:

Conversions:

1 square mile = 640 acres
1 hectare (Ha) = 2.47 acres
1 kw-hr = 3,413 BTUs
1 barrel of oil = 159 liters
1 metric ton = 1000 kg

56. 134 miles = ? inches

57. 8.9×10^5 tons = ? ounces

58. 1.35 kilometers per second = ? miles per hour

59. A city that uses ten billion BTUs of energy each month is using how many kilowatt-hours of energy?

60. A 340 million square mile forest is how many hectares?

61. If one barrel of crude oil provides six million BTUs of energy, how many BTUs of energy will one liter of crude oil provide?

62. Fifty eight thousand kilograms of solid waste is equivalent to how many metric tons