

2018-2019 AP Environmental Science Summer Assignment
Mr. Campbell
Cranford High School

Welcome future APES students!

This is an advanced science course that combines the disciplines of biology, chemistry, geology, physics, government and economics to investigate global environmental issues. We will discover how the Earth's systems function together and how humans have affected our planet. We will also examine our personal consumption habits and learn ways to be responsible global citizens in the face of serious environmental issues. **Because this is a college level course, you will be responsible for learning a large amount of material on your own. I will help you as we go, but it will be your responsibility to READ, take notes, study and learn your vocabulary!**

We also work under the assumption that you have a general science background that includes biology, chemistry and algebra. The purpose of this summer assignment is to help you prepare for the APES content by getting organized, reviewing some background information, and getting familiar with some of the basic concepts of environmental science.

General Guidelines: You will be expected to bring this completed assignment to class on the first day of school. There are 3 parts to the summer assignment.

Read the directions for each section carefully and DO NOT PROCRASTINATE.

Have a great summer and I look forward to getting to know you in the fall!

Please do not hesitate to contact me with any questions.

Sincerely,

Mr. Campbell

gcampbell@cranfordschools.org

******This assignment is to be completed individually; Plagiarism, copying or "collaborative" assignments will not be tolerated. Any copied assignments will be scored as a zero and dealt with according to CHS's Zero Tolerance Policy******

Section 1: Math Review

The following problems represent some of the basic math skills that are required to be successful in AP Environmental Science. Use this sheet over the summer to review.

NO CALCULATORS ARE ALLOWED TO BE USED IN CLASS, ON TESTS OR ON THE AP EXAM!!!

SHOW ALL OF YOUR WORK to get full credit. Write out your answers on this printed sheet or on separate paper.

Here are some tutorials to help review your math skills:

Scientific notation:

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

Dimensional analysis:

http://www.chemprofessor.com/dimension_text.htm

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

Long division and multiplication:

<http://www.mathsisfun.com/dividing-decimals.html>

<http://www.tutors4you.com/tutorialondecimals.htm>

Put the following numbers into scientific notation.

1) $0.00003 =$ _____

2) $170,000 =$ _____

3) $0.005 =$ _____

4) $376 =$ _____

5) $4160 =$ _____

Write the following numbers in standard notation (convert from scientific)

6) $3 \times 10^7 =$ _____

7) $5.6 \times 10^3 =$ _____

8) $8.2 \times 10^8 =$ _____

9) $7 \times 10^1 =$ _____

10) $2.1 \times 10^0 =$ _____

11) $3.4 \times 10^{-2} =$ _____

12) $5.1 \times 10^{-1} =$ _____

13) $4.7 \times 10^{-4} =$ _____

14) $6 \times 10^{-9} =$ _____

Solve the following

15) $10^2 \times 10^5 =$ _____

16) $10^1 \times 10^2 =$ _____

17) $10^2 \times 10^{-5} =$ _____

18) $10^{-1} \times 10^7 =$ _____

19) $10^{-3} \times 10^{-3} =$ _____

20) $10^{-4} \times 10^{-2} =$ _____

21) $10^4 / 10^5 =$ _____

22) $10^1 / 10^3 =$ _____

23) $10^2 / 10^{-3} =$ _____

24) $10^{-6} / 10^{-4} =$ _____

25) $10^{-2} / 10^{-6} =$ _____

Solve the following using scientific notation

26) $0.004 \times 0.006 =$

27) $0.025 \times 0.004 =$

28) $0.00005 \times 0.000007 =$

29) $26,000 \times 1,000 =$

30) $237 \times 1,000,000 =$

31) $320,000,000 \times 0.0005 =$

32) $0.003 \times 4,000 =$

33) $2,000 / 13,000 =$

34) $25 / 0.0015 =$

35) $200 / 1,000,000 =$

36) $0.001 / .00001 =$

Percentages

37) 10 is what percent of 1,000?

38) What is 25% of 2,500?

39) What is 30% of 3,000,000?

40) 25 is what percent of 4,000?

41) You start with 100 units and end with 150 units, what is the percentage increase?

42) You start with 100 units and end with 50 units, what is the percentage decrease?

43) You start with 25 units. How many units would you have after a 400% increase?

44) You start with 200 units. How many units would you have after a 75% decrease?

45) You use 1,000 kilowatts of power. You increase your usage by 40%. How many total kilowatts are you using?

46) Your old microwave used 2 kilowatts an hour. Your new microwave uses 1.5 kilowatts an hour. What is your percent energy savings?

47) A light bulb uses 100 watts of power. 95 watts are wasted as heat. What percentage of energy is used to light the bulb?

48) A fluorescent bulb uses 24 watts and gives off the same amount of light as a 100 watt regular bulb. What is the percentage in energy savings by switching to a fluorescent bulb?

49) A population starts the year with 1,000 residents. By the end of the year, 100 new babies were born. What is the percent increase for this population?

50) You dissolve 5 grams of salt into 95 grams of water. What is your percent salt solution?

Dimensional Analysis

Set up and solve the following equations using all units and showing all work. Use scientific notation when appropriate.

51) There are 2.2 pounds in 1 kilogram. How many pounds in 140 kilograms?

52) There are 2.54 centimeters in one inch. How many centimeters are in 32 inches?

53) There are 36 inches in one yard, how many centimeters are in two yards?

54) There are 100 centimeters in 1 meter. How many yards are in one meter?

55) Given 1000 watts in 1 kilowatt, how many watts are in 2.4 kilowatts? 2015-2016 RHS Summer AP Environmental Science Preparation Assignment

56) 1 megawatt is 10⁶ watts. How many kilowatts are there in one megawatt?

57) There are 1,000 grams in one kilogram, and 1,000 micrograms in one gram. How many micrograms are in 2,500 kilograms?

58) You have 24 light bulbs, each using 100 watts an hour. How many watts will be used in 120 hours?

59) 1,000 homes are in a city. Each home uses 200 kilowatt hours a month. How many kilowatt hours does the entire city use in a month?

Section 2: HOME video and Questions

Watch the video titled HOME (link below) and answer the questions in complete sentences (typed, font size 12, single spaced).

<https://www.youtube.com/watch?v=jqxENMKaeCU>

1. Describe the conditions on early Earth.
2. What happened to the carbon that poisoned the atmosphere?
3. How did the agricultural revolution change the Earth?
4. How has Earth changed in the last 60 years since the use of oil has become more widespread?
5. What is most of the grain in the US used for?
6. What led to the dramatic decline in the biodiversity of agricultural crop species?
7. How many kilos of water does it take to produce 1 kilo of beef?
8. How have cars shaped the way housing is laid out in the US and other developed countries?
9. How much has the volume of international trade increased since 1950?
10. What are your thoughts on how the video portrays Dubai? Is it self-sustainable?
11. Rainforests are cut down to make farmland for which products/crops?
12. What makes the growth of Lagos different from how most other cities grow?
13. Where does the water from Greenland's melting ice sheet go?
14. Why are the glaciers of mountains so important for the people in the lowlands?
15. What hope does this video offer at the end?

This video project covers many topics that we will discuss in APES this year. Give two specific examples that are portrayed in the video about each of the APES concepts that are listed below:

16. All living things are linked
17. Developed vs. Developing Countries
18. Human Innovation and Technology
19. The Carbon cycle
20. Shortage of Resources

Section 3: Documentaries

CHOOSE TWO DOCUMENTARIES TO WATCH: Documentaries must be a minimum of 45 minutes in length. Documentaries should look at Environmental ISSUES, not just nature.

Use any source! Netflix, HBO, Amazon Prime, Redbox, Youtube, other streaming sources...

Please complete the following for **EACH documentary** and type the information (12 font, single spaced).

- Provide the name of the documentary, the year in which it was released, and a sentence relating its general topic or subject.
- Describe any questions you may have as a result of your viewing (3 Questions Minimum)
- Describe your opinion of the documentary – positive/negative/neutral. Reference items in the documentary to support your thoughts. (Minimum 1 paragraph- 8 sentences/paragraph)
- Relate what you have learned to your personal life – how does it affect/impact you? What information affected you the most? Will it impact how you live your life? (Minimum 1 paragraph- 8 sentences/paragraph)

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Checklist:

Please place this completed checklist at the front of your assignment before you turn it in.

Name _____

Section 1: Score _____/30

- I have shown ALL of my work.
- I have NOT used a calculator.
- I have read through the math review material and understand how to solve these types of problems.
- I have completed all of the review problems and am able to use these math skills in class at any time.

Section 2: Score _____/40

- I have watched the entire video
- I have typed all my answers: they are thorough, answered in complete sentences and entirely my own work

Section 3: Score _____/30

- I have completed all of the written components for EACH documentary.

ALL OF MY SUBMITTED WORK IS 100% MY OWN, IN ACCORDANCE WITH CHS'S ZERO TOLERANCE POLICY ON PLAGIARISM.