Name: _____   Period: _____

Advanced Placement and Environmental Science Summer Assignment

"Our environment, the world in which we live and work, is a mirror of our attitudes and expectations." – Earl Nightengale

Goal

To be successful in AP Environmental Science and Environmental Science, you need to have knowledge of both past and present environmental events and issues. The goal of your assignment is to begin to build your knowledge of environmental issues both past and present.

Expectations

- The assignment is meant to spread across the summer. For optimal results, work on the assignment in 30 minute blocks of time two to three times per week for the summer.
- **All work for assignment #2 must be shown in the packet.** If you need additional room, you may use extra paper but it MUST be attached to this assignment and STAPLED to the back. Each problem must be LABELED appropriately.
- If you need assistance, please feel free to contact me via cell phone at (281) 686-7566 or via e-mail at kristal.watson@yesprep.org. **Note: I will be without my phone and consistent internet access for all of July and will respond as soon as I can to your requests.**

Summer Assignment #1: Read a Non-Fiction Text Related to an Environmental Issue or Event

You will read the following book to help build your knowledge of such issues. As you read the book, please be sure to annotate the book and research topics or information that you do not fully understand. You must come prepared for a quiz on the **FIRST** day of school.

1. *The Jungle by Upton Sinclaire*
   - **Lexile**: 1170
   - **Summary**: Upton Sinclair's The Jungle is a vivid portrait of life and death in a turn-of-the-century American meat-packing factory. A grim indictment that led to government regulations of the food industry, The Jungle is Sinclair's extraordinary contribution to literature and social reform.

Since we are fully aware of Ms. Watson's expectations from 9th grade, completing the summer reading should not be an issue. You should have a copy of the book before you leave for summer break. The expectation is that we are **holding ourselves accountable** during summer vacation and completing all work assigned to best prepare us for the year. **The 1st 6 weeks DEPENDS on your knowledge of this novel and how to incorporate it into daily objectives.**

Summer Assignment #2: Math Skills

On the AP Environmental Science exam, Ms. Watson's Unit Tests/Quizzes and Common Assessments you will be asked to solve math problems **without** a calculator. Below are sample problems that you will be expected to solve. Approximate completion time: 35-65 minutes. **ALL WORK MUST BE SHOWN OR NO CREDIT WILL BE GIVEN!**

- *Scientific Notation*

    1. $2.2 \times 10^5 + 4.56 \times 10^6$

    2. $60 \times 10^3 - 2 \times 10^2$

    3. $(3.5 \times 10^4) \times (3 \times 10^6)$

    4. $(7.5 \times 10^5) \div (15 \times 10^8)$

    5. $(4.0 \times 10^3)^3$

Turn To The Back →

Name: _____   Period: _____

- **Metric Conversions**
  Perform the following conversions using **dimensional analysis/conversions**. **ALL WORK MUST BE SHOWN!**

    6. 0.575 m to mm

    7. 1.48×10^2 kg to g

    8. 45 mm to cm

    9. 45 mm^3 to cm^3

- **Percent Increase**

    The table below shows the world consumption of oil from 1986 to 1997.

Year	Consumption (millions barrels per day)
1986	62
1987	63
1988	65
1989	66
1990	66
1991	67
1992	67
1993	67
1994	68
1995	70
1996	72
1997	74

    10. **Determine the approximate percent increase in consumption from 1986 to 1997.**

    11. The atmospheric concentration of carbon dioxide increased from 278 ppm in 1790 to 383 ppm in 2007. What is the approximate percent increase in carbon dioxide concentration from 1790 to 2007?

- **Energy Pyramid**

    12. If a producer contains 56,000 J of energy in its tissues, what is the maximum amount that would be incorporated into the tissues of a tertiary consumer?

    13. Assuming that a population of white-tail deer had an energy content of 20,500 kcal, what is the minimum energy content of the producers?

- *Money Matters*
    14. Battery electric vehicles (BEVs) have been introduced to consumers as an alternative way to reduce the environmental effects caused by use of internal-combustion engine (ICE) vehicles. A comparison of both vehicle types can help determine whether the use of BEVs would be beneficial in the future. Assume that the fuel efficiency of the ICE vehicle is 25 miles per gallon (mpg) and that gasoline costs $3.75 per gallon (gal). Calculate the cost of gasoline per mile for the ICE vehicle.

    15. The Cobb family of Fremont is looking at ways to decrease their home water and energy usage. Their current electric hot-water heater raises the water temperature to 140°F, which requires 0.20kWh/gallon at a cost of $0.10/kWh. Each person in the family of four showers once a day for an average of 10 minutes per shower. The shower has a flow rate of 5.0 gallons per minute.
        a. Calculate the following. **Be sure to show all work and include units with your answers**.
            i. The total amount of water that the family uses per year for taking showers

            ii. The annual cost of the electricity for the family showers, assuming 2.5 gallons per minute of the water used is from the hot-water heater

        b. The family is considering replacing their current hot-water heater with a new energy-efficient hot-water heater that costs $1,000 and uses half the energy that their current hot-water heater uses. How many days would it take for the new hot-water heater to recover the $1,000 initial cost?

- *Sample Free Response from 2014 Common Assessment*
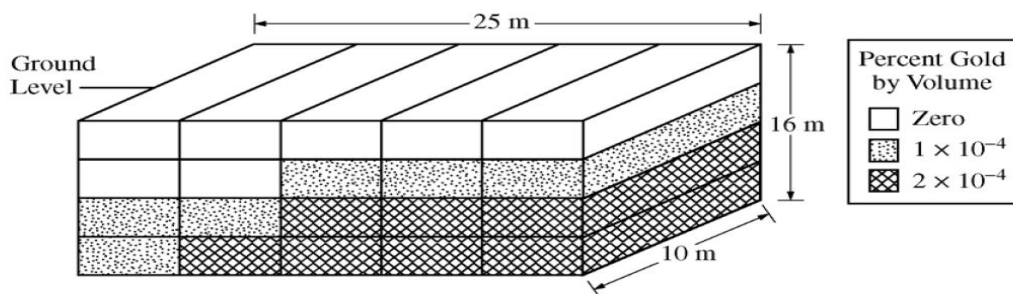
Auric Miners, Inc., won a contract to mine gold from the terrain represented in the diagram above. The terrain can be divided into 20 rectangular blocks, each with a volume of 200 cubic meters. Site analysis has revealed the average gold content of each block, as designated by the different patterns shown in the legend.

(A) Calculate the volume of gold, in cubic meters, that can be mined from the excavation of all 20 blocks. **Show all work.**

(B) Calculate the percent of gold in the total excavation. **Show all work.**

<div align="center">

Turn To The Back →

</div>

(C) If the total cost of excavating and extracting the gold is $1,520,000, calculate the price that the gold must be sold for, in dollars per gram, in order for the mine to break even. (**The density of gold is 19 g/cm³.**)

To assess your ability to solve problems like the ones above, you will take a quiz over similar problems during the second week of school.

Summary Assignment #3: Vocabulary

Summer Assignment #3: Vocabulary

During the first semester, you will be required to recall information that you learned in both middle school and high school. In order to be successful in this course, you need to be able define and/or explain the following concepts. Your task is to create flashcards for these terms and that you begin to review these terms over the summer and throughout the school year using the flashcards that you created. Approximate completion time: 1.5 – 2 hours. **You will take a quiz over vocabulary terms during the first and second week of school.**

1. glacier
2. surface runoff
3. evaporation
4. transpiration
5. inner core
6. outer core
7. metamorphic
8. igneous
9. sedimentary
10. deposition
11. magma
12. mantle
13. lithosphere
14. asthenosphere
15. minerals
16. erosion
17. precipitation
18. fault zones
19. earthquakes
20. seismic activity
21. epicenter
22. Richter scale
23. continental crust
24. oceanic crust

25. divergent plate boundaries
26. subduction
27. hot spots
28. tectonic cycle
29. seafloor spreading
30. convergent plate boundaries
31. transform plate boundaries
32. fault
33. pH
34. biomass
35. consumer
36. producer
37. primary consumer
38. secondary consumer
39. evolution
40. founder effect
41. genetic drift
42. trophic level
43. bottleneck effect
44. mutualism
45. commensalism

46. parasitism
47. predation
48. tropical rainforest
49. tropical dry forest
50. savanna
51. chaparral
52. temperate grassland
53. desert
54. temperate deciduous forest
55. temperate rainforest
56. boreal forest
57. tundra
58. first law of thermodynamics
59. second law of thermodynamics
60. photosynthesis
61. respiration
62. carbon cycle
63. nitrogen cycle
64. water cycle