

APES SUMMER SUGGESTION

Welcome future APES students! AP Environmental Science is a multidisciplinary subject dealing with a wide range of politics, economics, ethics, worldviews, and, yes, sciences. Combining the disciplines of biology, chemistry, geology and physics, environmental science explores the relationship between organisms and their ever-changing environment.

Advanced Placement classes are fast-paced and college level courses. The purpose of this Summer Suggestion is to help you prepare for the upcoming APES content by getting organized, reviewing some prerequisite math, science, and analytical skills, and getting familiar with some basic concepts of environmental science.

THIS SUMMER SUGGESTION IS JUST THAT, A *SUGGESTION*. THERE IS NO PENALTY FOR NOT COMPLETING ANY OR ALL PARTS. LIKEWISE, THERE IS NO EXTRA CREDIT FOR COMPLETING THIS SUMMER SUGGESTION.

In my experience, students who are organized and hit the ground running are more successful throughout the year. If you'd like to better prepare yourself for AP Environmental Science, I *highly recommend* completing the 4 Parts I have outlined below.

Part 1 – ELECTRONIC SETUP

1. Visit my website at www.jonesscience.com. Familiarize yourself with the site and **bookmark** it on your phone or computer – you will be accessing this website often throughout the year.
2. Visit the link <https://www.remind.com/join/jonesapes> and sign up for my **text reminders**. You can choose to get a text message, an e-mail, or download and use the Apple or Android app.

Part 2 – ENVIRONMENTAL SCIENCE ARTICLE PRACTICE

Every day, in every part of the planet, environmental science is in the headlines, on the nightly news, and dominating conversations. To help highlight this, and to practice for an assignment we will do often, please complete the following:

1. **Find 1 environmental science article.** Find 1 article that you believe relates to the course. The article must be at least 500 words and be no older than June 2019. Aim high when selecting an article – *The New York Times*, *Los Angeles Times*, *Wall Street Journal*, *National Geographic*, *Science*, *Scientific American*, *Discover*, or *Nature* are excellent bets for a great article.
2. **Read the article and write a summary.** Summary must be at least 50 words and explain the important details of the article and the connection to environmental science. Respond to the article – what questions do you have, what is your opinion, how does the issue impact you? It is recommended that you type this summary; you may want to reference it later in the year and having a digital copy may prove helpful.

Part 3 – MATH SKILLS PRACTICE

Math is an extremely important part of science; math is used to support and provide evidence for every conclusion in science. I've created some questions below that reflect the type of math we will be working on throughout the year. **Please attempt all problems**; if you are struggling and having trouble, check out the resources on the next few pages. If you still need help, come see me the first couple weeks of school.

Answer the following questions on a separate sheet of paper. **SHOW ALL WORK**. *Beware: there will be some questions similar to these on our first Unit Test so make sure you know how to do them!*

1. What is ten thousand times one hundred million? Show your work in scientific notation. Give the answer in scientific notation and in words.
2. A population of deer had 300 individuals. If the population grows by 20% in one year, how many deer will there be next year?
3. In the year 1990, the population of the United States was 250 million. In 1998 the population was 275 million. What percent did the population increase by?
4. If a city of 10,000 experiences 100 births, 30 deaths, 10 immigrants, and 20 emigrants in the course of a year, how many people are added to the population? What is its net annual percentage growth rate?
5. Your car gets 20 miles to the gallon and your friend's car gets 30 miles to the gallon. You decide to go on a road trip to visit UC Berkeley, which is 400 miles away. If gas costs \$4 per gallon and you decide to split the gas money, how much money will each of you save in gas by driving your friend's car?
6. Long Beach is roughly 10 kilometers wide and 12 kilometers long. If two centimeters of rain falls on Long Beach, how many cubic meters of rain fell on Long Beach? (Hint: convert all units to meters first)
7. Electricity costs 7 cents per kilowatt hour. In one month, one home uses 1.5 megawatt hours of electricity. How much will the electric bill be for the month?
8. LEDs are quickly replacing incandescent and CFL light bulbs. If an LED light bulb lasts for 50,000 hours, a CFL lasts for 10,000 hours, and an incandescent light bulb lasts for 1,250 hours, how many of each would you need to light a room for 50,000 hours?
9. **SHOW YOUR WORK** for the following multiplication and division problems.
 - a. $70.0 / 3.5$
 - b. 1900×0.7
 - c. $5.80 \times 10^{-3} \times 2.7$
 - d. $2362 / 71.9$
 - e. $0.08 / 0.009$
 - f. $4.60 \times 10^4 / 0.0530$
10. Complete the following metric conversions:
 - a. 51.37 m to cm
 - b. 216 cm to m
 - c. 9.64 m to mm
 - d. 859,900 mm to m
 - e. 59.78 Mm to km
 - f. 8,005 L to kL
 - g. 34.54 cm to mm
 - h. 82,570 mm to cm
 - i. .004538 kg to cg
 - j. 913,700 kJ to MJ

11. By hand, construct **ONE LINE GRAPH** representing the following data sets from January 26-31, 2015:

| Temperature in Long Beach, CA | |
|-------------------------------|-------------|
| Day | Temperature |
| 1 | 76° F |
| 2 | 73° F |
| 3 | 75° F |
| 4 | 73° F |
| 5 | 70° F |
| 6 | 70° F |

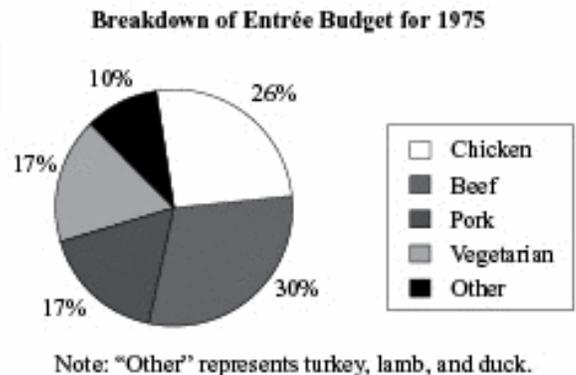
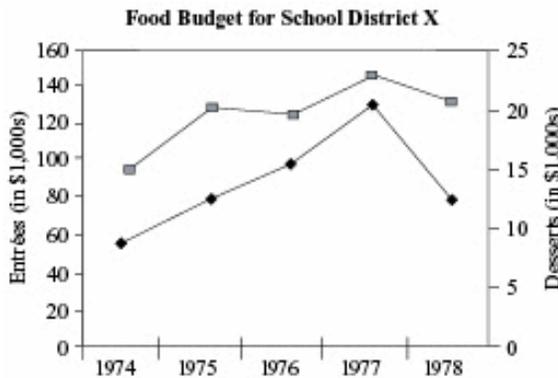
| Temperature in Long Beach, NY | |
|-------------------------------|-------------|
| Day | Temperature |
| 1 | 32° F |
| 2 | 27° F |
| 3 | 33° F |
| 4 | 37° F |
| 5 | 38° F |
| 6 | 27° F |

Make sure your graph has a title, axes labeled, correct scale, and a legend or key.

12. Answer the following questions based on your graph.

- What was the highest temperature recorded for each location?
- What was the lowest temperature recorded for each location?
- What was the average temperature for each location?
- What trend do you notice at each location?

Questions 13-15 refer to the following graphs.



13. In which of the following years was the difference between School District X's budget for entrées and its budget for desserts the lowest?

- 1974
- 1975
- 1976
- 1977
- 1978

14. Which of the following is the closest approximation for the amount School District X's budget for chicken in 1975 exceeded its budget for desserts in 1974?

- \$4,000
- \$24,000
- \$32,000
- \$120,000
- \$125,000

15. What was School District X's approximate budget for vegetarian entrées in 1975?

- \$7,500
- \$13,000
- \$21,500
- \$37,500
- \$58,250

Part 4 – EXPERIMENTAL DESIGN PRACTICE

Your friends can't decide which sunscreen brand is the most effective at blocking dangerous ultraviolet energy. Several claim Coppertone, others say Neutrogena, a few say Hawaiian Tropic, and your cousin is partial to Banana Boat. You happen to have all of these brands at home in the same SPF rating.

On a separate sheet of paper, **design an experiment** that could be used to help determine which brand is the most effective at blocking UV.

*** Remember that UV can be harmful so you don't want to use humans or any other mammal as test subjects. Think about alternatives...

Be sure to include and label in your answer:

- A testable hypothesis
- The variable that you will be testing
- The data to be collected
- A description of the experimental procedure
- A description of the results that would validate your hypothesis

Answer the following questions about your experiment:

1. What is the independent variable?
2. What is the dependent variable?
3. What is the control?
4. Why is a control necessary in your experiment?
5. What are some important constants in your experiment?
6. What are some variables that you can't control in your experiment?