

APES Summer Work 2025



Welcome to AP Environmental Science AKA APES I am excited for this upcoming year with you, exploring environmental topics through a scientific lens. I am looking forward to the new year with all of you and wish you a relaxing and restful summer (even while you complete this assignment!).

Due to the amount of time we have in class and the amount of information we need to cover, there is summer work. This allows for us to go at a more manageable pace throughout the year.

What you need for the summer work:

For the class you will need to purchase:

- Achieve (with access to ebook) *OR*
- Achieve + hard copy of textbook



We will be using the Achieve platform for assignments throughout the year so you will need to have it in order to access and complete the assignments.

The textbook is the 4th edition (a coyote on the front) which is aligned with the new AP exam format for Environmental Science (it is significantly different from the last versions so make sure you have this specific book).



You will also need to join Edpuzzle - go to www.edpuzzle.com and sign into your account.

The class code is **epbamez**

Directions for completing summer work:

**** Hand-write** the answers (no typed responses will be accepted).

There is evidence hand-writing helps with processing information and you want to take the time to process this information now; there will be plenty more information coming at you throughout the year.

You can print out this packet or write on another piece of paper (or in a notebook) the answers with part of the question included for reference.

** Edpuzzle keeps track of your history so watch them through this site and answer any questions embedded. You need to watch the videos through Edpuzzle for them to count.*

When answering open ended questions on edpuzzle - this is an AP class ,a college-level course. Write more, not less. Answers with the minimum amount of information rarely receive full credit; that said, do not go crazy with your answers - state the answer and back it up with 2-3 pieces of information/ evidence.

**** It is your responsibility to have a handwritten copy of the summer work submitted as a PDF to schoology by Sunday, August 10th.**

EDPUZZLE AND TEXTBOOK

(FYI: For each chapter: Be ready to answer the module review questions as well as the review questions at the end of the chapter – “Environmental Practice Exams” – multiple choice questions in the first 2 weeks of school)

All page numbers refer to the hard copy of the textbook. PDFs of the parts of the book for the summer work are on the summer APES schoology course

(access code: GM8K-CWBQ-BQNQ3)

TEXTBOOK: Module 0 - What is Environmental Science?

I. Videos **edpuzzle**

A. Watch edpuzzle: What Are Wild Coyotes Doing in the Big City? Answer the question at the end of the video (~8:50)

B. Think Like a Scientist—Gorongosa... also answer the question at the end of the video. (~7 min)
List 2 questions/issues that came up for the scientists as they looked towards conservation.

a.

b.

II. Textbook

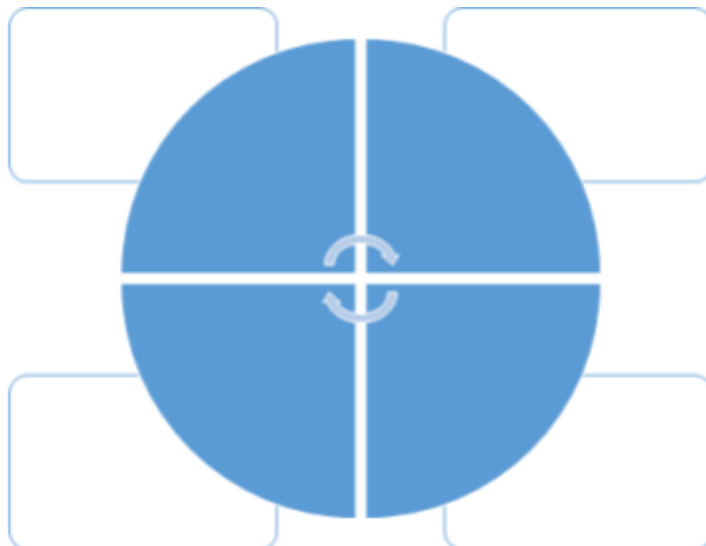


1. State the difference between environmentalism and environmental science.

environmentalism	environmental science

Read through the section “The AP environmental science course contains for “Big Ideas” and look at the visual representation of the 4 big ideas (p.10-11)

2. Fill out the following diagram below with the 4 big ideas in the circle and in the square associated with each, write out 2 important points (according to you)



Review the Scientific Method - you will be expected to know this and be ready to apply during the labs: control, independent and dependent variables, hypothesis, accuracy, precision, uncertainty, theory

3. A hypothesis is also called an alternative hypothesis to contrast with the null hypothesis. What is a null hypothesis? Give an example.

4. Write out the first and second laws of thermodynamics according to the textbook - phrases are fine for the answer.

First law of thermodynamics:

Second law of thermodynamics:

TEXTBOOK: Unit 1 - The Living World: Ecosystems

Module 1 - Introduction to Ecosystems

Textbook



5. How does competitive exclusion principle and resource partitioning relate to competition?

(Have all three underlined terms in your answer)

Module 2 -Terrestrial Biomes

6. Table 1. Characteristics of some representative biomes.



Go to [this NASA website](#)

In the table below, there are 2 cities - the first is from the NASA site. The second in parentheses is from the textbook and this will help you match up since some biomes are known as different names. The ones in the textbook will be the ones on the APES exam (you can put either in the biome section)

Biome	Biome	1 Dominant plant species (can be general)	Temperature range (°C)	Precipitation Range (mm)
Winnipeg, Canada (British Columbia, Canada)				
Knoxville, Tennessee (Stuttgart, Germany)				
Cairo, Egypt (Arica, Chile)				
Austin Texas (Stillwater, OK)				
Hanoi, Vietnam (Basco, Philippines)				
Johannesburg, South Africa (Kabwe, Zambia)				
Nome, Alaska (Egedesminde, Greenland)				

*** Could you do the AP practice questions at the end of the module and get them correct?*

TEXTBOOK: Unit 2 - The Living World: Biodiversity

Module 9 - Ecosystem Services

We will just be covering this through edpuzzle. I am going to expect you have skimmed the actual module.

I. Videos **edpuzzle**

C. "Ecosystem Services" from CA Academy of Sciences (watch to the very end; ~9 min)

a. Give 3 examples of an ecosystem service and label them direct service or indirect service.

a.

b.

c.

b. What is happening to the mangroves? (This can be a phrase/ 1-2 sentences)

c. The video talks about the cost of treatment plants versus wetland habitat maintenance... Briefly state what they found.

Module 13 - Adaptations

I. Videos **edpuzzle**

D. Selection for Tuskless Elephants

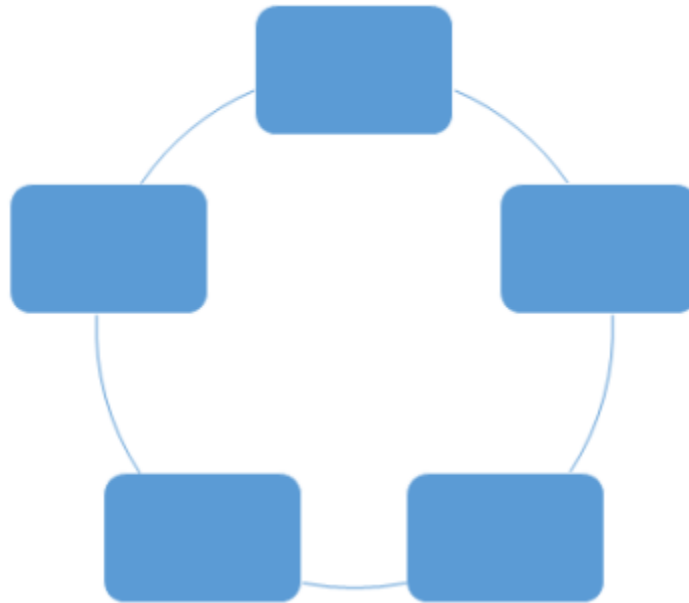
Explain the connection between genetics, poaching and tusklessness in the elephant population looked at. Be clear in your answer and use supporting evidence from the video to back up your answer.

II. Textbook



Evolution by Random Processes.

7. Place each process (mutation, gene flow, genetic drift, bottleneck effect, founders effect) in its own rectangle. Next to it, summarize in 1-2 phrases how it affects the evolution of a population. Remember, the graphics can be very helpful.



8. Look at Fig. 13.3 “Evolution by natural selection”. Natural selection happens at the population level. Briefly explain how adaptations and fitness influence a population (~2-3 sentences).

Unit 9 - Global Change

I. Videos edpuzzle

E. Global Climate Change – Bozeman Science (~7.5 minutes)

(The video will also address many of the questions below on the reading)

** The first graph you come across – know!!

Answer the questions embedded in the video

F. Sea turtles are being impacted by climate change - watch and enjoy the little babies (~2 min) 😊

II. Textbook



Module 56: The Greenhouse effect

9. Fill in the following chart on greenhouse gasses:

Greenhouse gas	Chemical formula	Name 1 natural source	Name 1 anthropogenic sources
Water vapor			
Carbon dioxide			
Methane			
Nitrous oxide			
Chlorofluorocarbons			

10. How does the energy of the sun and the greenhouse gasses in the atmosphere cause the Earth to warm to sustain life?

Module 57: Increases in greenhouse gasses and global climate change

Be able to explain Figure 57.1 “Changes in atmospheric CO₂ over time” at the start of module 57 (p. 677)

11. We have evidence of humans contributing to climate change. Lay out the evidence in your own words below as well as the tool/ model/ study that supports the claim.

- a.
- b.
- c.
- d.
- e.

12. Complete the “Practice Math and Graphing” at the end of the module (p. 687)... see chapter for data

** This equation you will need to know so we will practice it now!

Show your work for each country

For percent change... *Show your work and remember NOOOO*

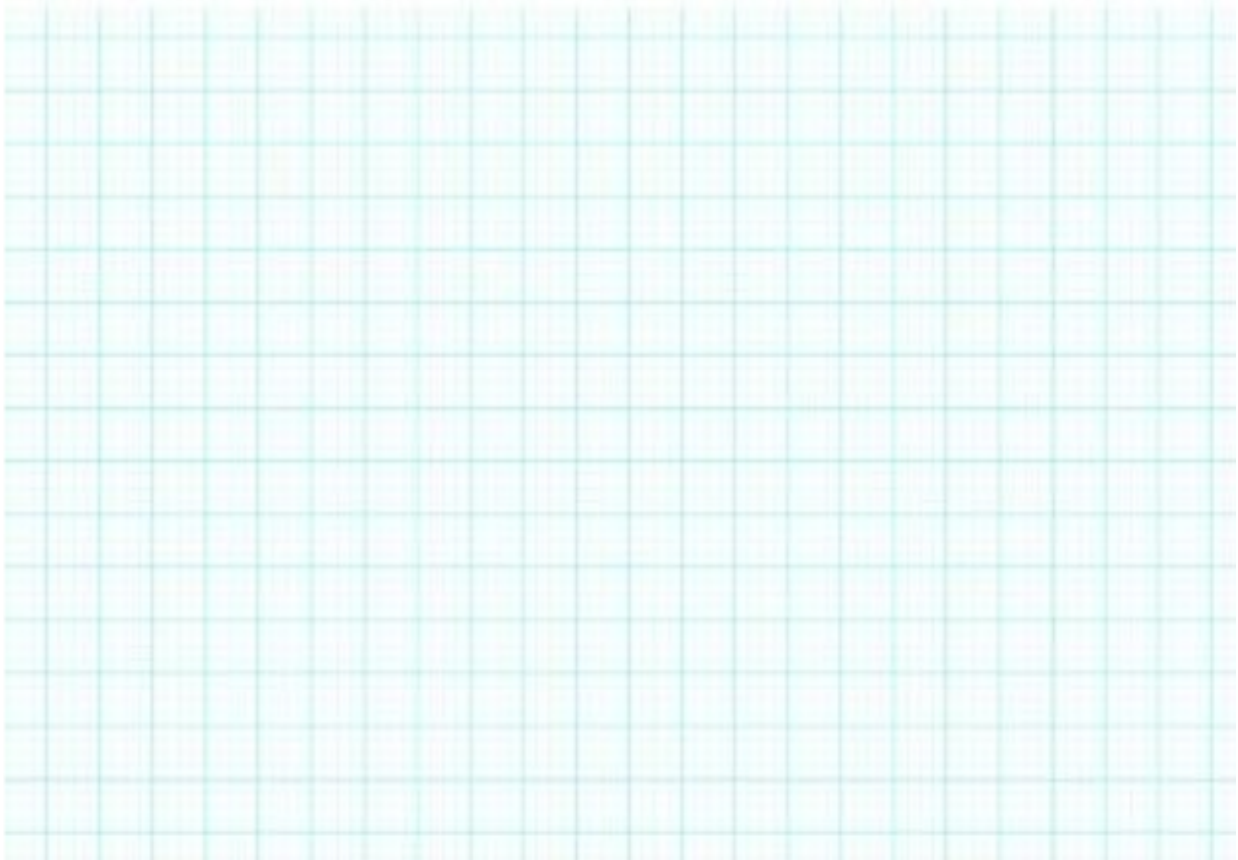
$$\frac{(\text{new value} - \text{old value})}{\text{Old value}} \times 100 = \% \text{ change}$$

Country	Percent Change
China	
United States	
India	
Russian Federation	
Japan	
Germany	
South Korea	
Iran	
Canada	
Saudi Arabia	

13. Graph: Graph 5 of the 10 countries above

Remember the elements of a proper scientific graph:

- *Type of graph: appropriate for the data presented and is easy to interpret*
- *Title: at the top of the graph; descriptive that states both independent and dependent variables*
- *X - and Y- axes: clearly labeled with correct measurement units present*
- *Scales: on both x- and y-axis are consistent and accurate*
- ** If a portion of the scale is skipped on an axis, that you use a double slash to indicate this on the graph; do so carefully as to accurately show the data trend.*
- *Legend (key) is present if applicable (colors, patterns)*
- *Professional polished product: neat and legible, lines/ Bars on graph are straight or points on graph are easy to see*



Environmental Issues:

I. Videos edpuzzle

G. Bandi Mbubi: Demand a fair trade cell phone (Ted Talk) (~9:21)

Answer the questions embedded in the video

You will be asked a question at the end of the video - there is a note explaining what an externality is... you want to pay attention to it. Here is the definition here as well:

Externalities are defined as “a cost or benefit of a good or service that is not included in the purchase price of that good or service, or otherwise accounted for.” (Friedland and Reyla, 2023, p.297)

H. Feedback loops: How nature gets its rhythms (~5.5 min)

Watch the video... you will need to know and apply both negative and positive feedback loops.

Explain negative feedback.

II. Websites

The two articles/websites below discuss agriculture and aquaculture.

Read both and answer the questions below.

Please note - this is an AP class, meaning it is at a college level. Your answers want to be at that level so when explaining, you need to clearly answer the questions and back up each answer with specifics from the websites.

1. [Agriculture and Aquaculture: Food for Thought - EPA](#) (2020)
2. [Cows and climate change](#) - UC Davis (2019)

14. Explain why a person cannot just say “Cows are a big cause of climate change because they produce so much methane”. Your answer should include: why this statement is inaccurate, what the reality is and at least 3 pieces of information/evidence from the UC Davis article. This may be a 2 paragraph answer.

15. There is an issue with the sheer amount of cattle for meat production - explain what the EPA means.

16. Explain the value of oyster farms (EPA article).