

There are several strategies you can use to help boost your score on the Free Response section of the AP Environmental Science exam. One of those strategies is to avoid the use of vague and “flowery” terms and phrases. These terms and phrases may sound descriptive, but they frequently say little and provide none of the detail needed to earn credit. To avoid them you should try to explain yourself as best as possible using more detail. The following is a listing of these terms and phrases to try to avoid:

1. “bad for the environment / planet”
2. "cause environmental degradation"
3. "cause global warming and pollution"
4. “change” (Instead of specifying increase or decrease.)
5. “destroy the environment”
6. “disrupt the environment”
7. “disturb the environment”
8. “ecofriendly”
9. “good for the environment”
10. “global solution”
11. “global catastrophe”
12. “harm the environment”
13. "harmful / dangerous chemicals" (Without specifying.)
14. "stop global warming"
15. “sustainable” (Without elaboration.)
16. "help keep the habitat cleaner"
17. “human footprint”
18. “human impact”
19. “incentivize the system”
20. "kill all the plants/animals/wildlife"
21. "make it illegal" or "the water law" or "the air law" (Without identifying relevant laws.)
22. "make it more / less expensive" (When referring to incentives.)
23. “mother nature “
24. “overconsumption of natural resources”
25. “pollute the environment”
26. "pollute the water / air / soil" (Without specifying.)
27. “restore the environment”
28. “repair the damage”
29. “save the Earth/planet”
30. “toxins”, “pollution”, “chemicals” & “health effects” (Without specifying.)
31. “_____ the habitat” (impact, change, alter)
32. “_____ the ecology” (destroy, restore, maintain, support, harm, compromise, reinvent...)

Ideas to consider as you apply this list in your writing:

- a. If a fourth grader could say it, it is too vague.
- b. Be careful with absolutes, will it really kill all the animals? Will the entire ecosystem be harmed?
- c. If it asks anything besides identify, you should write at least two sentences. One stating your clear, specific answer and another providing supporting evidence, examples or a detailed description.
- d. If you find yourself writing something vague, follow it up with a specific example. (Name a specific chemical that will cause the pollution and explain its impacts, name a specific specie or type of specie that would be impacted and explain how, name a specific law or specific possible law that will illustrate whatever you are talking about, etc.)
- e. Often wrong but never in doubt: even if you are making it up, make it sound good and confident. (Be specific. You might be right, but you will not get any credit if you are not specific enough. No "maybe" or "might" unless there is actual scientific uncertainty.)

Part 1: Take the following vague, weak, or incorrect statements from Unit 1 and create strong, detailed, correct statements.

Example:

Question: How does fossil fuel combustion affect children?

Weak response: Burning fossil fuels can contaminate food which hurts children.

Example strong: Coal combustion releases mercury into the air which mixes with rain and is deposited into waterways. The mercury in the water biomagnifies in the food chain. When children eat seafood, they ingest mercury which can lead to memory problems as a result of mercury poisoning.

1.1) Question: Describe the impacts of habitat destruction on animals.

Weak response: If humans continue to destroy ecosystems, all the animals will die.

Strong Answer:

1.2) Question: Describe the negative effects of anthropogenic activities on biomes, and state a policy, other than banning activities, governments could create to mitigate the effects

Weak response: To stop deforestation in terrestrial biomes, governments should make it illegal to chop down trees.

Strong Answer:

1.3) Question: Explain how human activities are negatively affecting aquatic biomes.

Weak response: Aquatic biomes suffer from human pollution.

Strong Answer:

1.4) Question: Summarize how the Industrial Revolution has impacted the carbon cycle.

Weak response: Changes in the carbon cycle have led to air pollution.

Strong Answer:

1.5) Question: Describe how industrial agricultural practices have impacted the nitrogen cycle.

Weak response: Nitrogen pollution hurts the water.

Strong Answer:

1.6) Question: Excluding fertilizer, describe how industrial agricultural practices have impacted the phosphorus cycle.

Weak response: Degradation of the soil, negatively impacts the phosphorus cycle.

Strong Answer:

1.7) Question: Describe how urban areas have altered the hydrologic cycle.

Weak response: Buildings harm the hydrologic cycle.

Strong Answer:

1.8) Question: Summarize how humans can increase primary productivity.

Weak response: Primary productivity increases when humans live more sustainably.

Strong Answer:

1.9) Question: Explain the importance of primary consumers on all trophic levels.

Weak response: When we harm primary consumers, all trophic levels are disrupted.

Strong Answer:

1.10) Question: Justify the following statement, "Governments should place a tax on meat, but produce should not be taxed."

Weak response: Because of the second law of thermodynamics, we should incentivize vegetarianism.

Strong Answer:

1.11) Question: Describe how human activity can impact food webs.

Weak response: A large ecological footprint can destroy food webs.

Strong Answer:

Unit 2

2.1) Question: Describe the importance of biodiversity.

Weak response: We should protect biodiversity to save the planet.

Strong Answer:

2.2) Question: Explain two ways humans disrupt ecosystem services.

Weak response: Harmful chemicals and deforestation can disrupt ecosystem services.

Strong Answer:

2.3) Question: Summarize the importance of island biogeography.

Weak response: Island biogeography is good for the environment.

Strong Answer:

2.4) Question: Describe how ecological disturbances impact the environment.

Weak response: Ecological disturbances change the environment.

Strong Answer:

2.5) Question: Give an example of a positive impact a natural disturbance can have on the environment.

Weak response: A natural disruption to ecosystem, like fire, can be good for soil in the environment.

Strong Answer:

2.6) Question: Explain why some species are better suited for a changing environment.

Weak response: Some species have adaptations to tolerate pollution.

Strong Answer:

2.7) Question: Describe the importance of secondary succession.

Weak response: Secondary succession restores the environment.

Strong Answer:

Unit 3

3.1) Question: Differentiate between a generalist and a specialist species. Give an example of each

Weak response: Specialist species are more likely to go extinct like Pandas not cane toads.

Strong Answer:

3.2) Question: Explain why r-selected species have more offspring than K-selected species.

Weak response: Offspring of r-selected species die more often than K-selected species.

Strong Answer:

3.3) Question: Describe two differences between late loss survivorship curve and early loss survivorship curve.

Weak response: Early loss species die young and late loss species die when they are old.

Strong Answer:

3.4) Question: Define carrying capacity and explain why demographers debate earth's human carrying capacity

Weak response: The amount of people that can live on earth is unknown because too many variables must be considered.

Strong Answer:

3.5) Question: Explain why predator play relationships exhibit negative feedback.

Weak response: Predators eat prey which causes a decrease in prey numbers.

Strong Answer:

3.6) Question: Describe the differences in appearance of the age structure diagram of a population in the Transitional stage and Post-Industrial stage.

Weak response: The age structure diagram of the Transitional stage looks more like a pyramid but Post-Industrial is more straight.

Strong Answer:

3.7) Question: Explain why the total fertility rate is different in a developed nation compared to a developing nation.

Weak response: The total fertility rate is higher in a developing nation compared to a developed nation.

Strong Answer:

3.8) Question: Explain why human populations experience growth and decline.

Weak response: Populations grow when more babies are born than people die.

Strong Answer:

3.9) Question: Summarize the differences between birth and death rates in the Transition phase and Industrial phase of the demographic transition.

Weak response: Birth rates are high in the Transition stage and low in Industrial stage, but death rates are low in both.

Strong Answer:

Unit 4

4.1) Question: Describe what happens when two tectonic plates collide along a subduction zone, and explain how subduction leads to volcanic activity.

Weak response: One plate slides under another plate at a subduction zone, and this shakes the earth.

Strong Answer:

4.2) Question: Describe two soil conservation practices that are designed to decrease soil erosion.

Weak response: Drip irrigation and conservation tillage reduce erosion.

Strong Answer:

4.3) Question: Explain how soil particle size determines porosity and permeability.

Weak response: Large soil particles have large permeability.

Strong Answer:

4.4) Question: Identify and describe the lowest two layers of the atmosphere.

Weak response: The stratosphere and the troposphere are the lowest layers of the atmosphere. They contain greenhouse gasses and weather.

Strong Answer:

4.5) Question: Describe the Coriolis effect and how it contributes to global wind patterns.

Weak response: The Coriolis effect makes winds move clockwise in the northern hemisphere which causes wind patterns.

Strong Answer:

4.6) Question: Deforestation can affect water quality. Identify one change that can occur in the water quality of streams within a watershed that has been deforested. Explain how deforestation can lead to this change.

Weak response: Less trees from deforestation leads to more pollution and lower water quality.

Strong Answer:

4.7) **Question:** Describe the cause of Earth's seasons.

Weak response: When the Earth is close to the sun, it is summer, and when the Earth is far from the sun it is winter.

Strong Answer:

4.8) **Question:** Explain how the rain shadow effect changes weather in a coastal area.

Weak response: The rain shadow effect causes less rain in some areas and more rain in other areas.

Strong Answer:

4.9) **Question:** Distinguish between El Niño and La Niña.

Weak response: El Niño leads to a warm Pacific Ocean and La Niña leads to a warm Pacific Ocean.

Strong Answer:

Unit 5

5.1) **Question:** Explain tragedy of the commons and give a current example.

Weak response: Air pollution hurts everyone and is a tragedy of the commons.

Strong Answer:

5.2) **Question:** Describe two negative environmental impacts that result from clearcutting.

Weak response: Erosion and less oxygen are two negative impacts that result from clearcutting.

Strong Answer:

5.3) **Question:** Explain how the Green Revolution changed agriculture and led to population growth.

Weak response: The Green Revolution led to more food and people didn't starve.

Strong Answer:

5.4) **Question:** Describe two advantages of crop rotation.

Weak response: Crop rotation leads to less fertilizer and pests.

Strong Answer:

5.5) **Question:** Describe two advantages of drip irrigation.

Weak response: Drip irrigation causes less salinization and erosion.

Strong Answer:

5.6) **Question:** Describe 2 ways farmers can control pest populations.

Weak response: Farmers can rotate crops and use biocontrol.

Strong Answer:

5.7) **Question:** Explain one advantage and one disadvantage of meat from animals raised in CAFOs.

Weak response: Meat from animals raised in CAFOs is cheap but can have diseases.

Strong Answer:

5.8) **Question:** Describe a cause of and a problem related to overfishing.

Weak response: People accidentally kill bycatch which destroys the ocean food web.

Strong Answer:

5.9) Question: Describe one ecological and one economic impact of natural resource extraction through mining.

Weak response: Mining creates jobs but can cause acidic drainage.

Strong Answer:

5.10) Question: Describe one positive and one negative effect of urbanization on the environment.

Weak response: Impervious surfaces hurt the water cycle, but people can also use mass transit.

Strong Answer:

5.11) Question: Explain the variables measured in an ecological footprint.

Weak response: Ecological footprints compare resource demands and waste production required for an individual or a society.

Strong Answer:

5.12) Question: Explain the concept of sustainability.

Weak response: Sustainability means not using all the resources.

Strong Answer:

5.13) Question: Describe 2 methods for mitigating problems related to urban runoff.

Weak response: Cities should decrease runoff from roads and buildings.

Strong Answer:

5.14) Question: Describe integrated pest management and give an example.

Weak response: IPM is not using pesticides.

Strong Answer:

5.15) Question: Describe 2 sustainable agricultural practices.

Weak response: Crop rotation and no-till plowing helps soil last longer.

Strong Answer:

5.16) Question: Describe one benefit and one drawback of aquaculture

Weak response: Aquaculture helps wild fish but can increase fish diseases.

Strong Answer:

5.17) Question: Propose 2 methods for mitigating human impact on forests.

Weak response: Prescribed burns and only purchasing sustainable wood products will mitigate the human impacts on forests.

Strong Answer:

Unit 6 & some 8

6.1) Question: Explain two differences between nonrenewable and renewable energy sources.

Weak response: We will always have renewable resources but nonrenewable can disappear.

Strong Answer:

6.2) Question: Compare the trends in energy consumption in developed and developing nations.

Weak response: Developed nations consume for energy.

Strong Answer:

6.3) Question: Identify 3 types of fossil fuels and their uses.

Weak response: Coal, tar sands, and natural gas can be used as energy sources.

Strong Answer:

6.4) Question: Identify 3 types of fossil fuels and explain why they are not distributed evenly throughout earth's surface.

Weak response: Petroleum, coal, and natural gas only developed under certain conditions millions of years ago.

Strong Answer:

6.5) Question: Describe two effects of fracking for crude oil or natural gas on the environment.

Weak response: Hydrologic fracturing can cause water and air pollution.

Strong Answer:

6.6) Question: Describe one negative and one positive effect of the use of nuclear energy on the environment.

Weak response: Nuclear energy does not release greenhouse gasses but the waste is dangerous.

Strong Answer:

6.7) Question: Describe one negative and one positive effect of the use of biomass in power generation on the environment.

Weak response: Ethanol does not release net CO₂ but corn needs a lot of fertilizer to grow.

Strong Answer:

6.8) Question: Describe one negative and one positive effect of the use of solar energy in power generation on the environment.

Weak response: Solar energy farms are big and destroy the environment, but panels do not release greenhouse gasses.

Strong Answer:

6.9) Question: Describe one negative and one positive effect of the use of hydroelectricity in power generation on the environment.

Weak response: Hydroelectric dams hurt fish but do not make any waste.

Strong Answer:

6.10) Question: Describe one negative and one positive effect of the use of geothermal energy in power generation on the environment.

Weak response: Geothermal energy can release hydrogen sulfide but no greenhouse gasses.

Strong Answer:

6.11) Question: Describe one negative and one positive effect of the use of hydrogen fuel cells.

Weak response: Hydrogen fuel cells make no air pollution, but they cost a lot of money.

Strong Answer:

6.12) Question: Describe one negative and one positive effect of the use of wind energy in power generation on the environment.

Weak response: Wind energy kills birds but is renewable.

Strong Answer:

6.13) Question: Describe a method for conserving energy in your home and describe a method for conserving energy on a large scale.

Weak response: Using less electricity in your home and driving an electric car will conserve energy.

Strong Answer:

8.6) Question: Explain how nuclear power plants create thermal pollution and describe an effect of thermal pollution.

Weak response: Water cools the equipment but when released it harms fish populations.

Strong Answer:

8.8) Question: Identify one pollutant released by an energy source and describe how it biomagnifies in the food web.

Weak response: Lead can come from coal and cause eagles to have weak egg shells.

Strong Answer:

8.9) Question: Fossil fuel combustion creates a significant amount of waste. Identify a type of waste created when burning a fossil fuel and explain what happens to this waste when disposed of properly.

Weak response: Waste from crude oil is stored in large tanks at factories.

Strong Answer:

8.14) Question: How does fossil fuel combustion affect children?

Example weak: Burning fossil fuels can contaminate food which hurts children.

Strong Answer:

Unit 7 and some 9

7.1) Question: Identify two sources of air pollutant and describe their effects on the environment.

Weak response: Burning coal and driving a car cause global warming.

Strong Answer:

7.2) Question: Explain a cause and impact of photochemical smog and describe a method to reduce it.

Weak response: Air pollution causes photochemical smog which makes people sick. You can reduce it by not driving a car.

Strong Answer:

7.3) Question: Describe thermal inversion and its relationship with pollution.

Weak response: Thermal inversions trap pollutants because the layers in the atmosphere are reversed.

Strong Answer:

7.4) Question: Describe one natural source and two anthropogenic sources of CO₂ and particulates.

Weak response: Volcanoes, electricity generation and driving cars release CO₂ and particulates.

Strong Answer:

7.5) Question: Identify two indoor air pollutants and describe their sources and effects on human health.

Weak response: Carbon monoxide and lead make people sick.

Strong Answer:

7.6) Question: Identify two ambient air pollutants and explain how they can be reduced at the source.

Weak response: CO₂ and NO₂ come from burning coal and you can burn less coal.

Strong Answer:

7.7) Question: Identify one source and describe two effects of acid deposition on the environment.

Weak response: Burning coal makes acid rain which increases the pH of rivers and soil.

Strong Answer:

7.8) Question: Describe two human activities that result in noise pollution and its effects.

Weak response: Construction and automobile traffic cause noise pollution which causes stress on people and animals.

Strong Answer:

9.3) Question: Explain how the greenhouse effect makes earth habitable.

Weak response: The greenhouse effect makes earth warm.

Strong Answer:

9.4) Question: Explain why greenhouse gasses have increased in the past 150 years and describe one ecological effect of the increase.

Weak response: Combustion of fossil fuels releases greenhouse gasses and this causes global warming.

Strong Answer:

9.5) Question: Describe two impacts of global climate change.

Weak response: Global climate change causes ocean acidification and higher sea levels.

Strong Answer:

9.6) Question: Describe two impacts of ocean warming.

Weak response: Coral bleaching and thermal expansion are two impacts of ocean warming.

Strong Answer:

9.7) Question: Explain a cause of ocean acidification and describe 2 impacts that results from ocean acidification.

Weak response: Ocean acidification is the result of fossil fuel combustion. Ocean acidification causes coral bleaching and less shellfish.

Strong Answer: