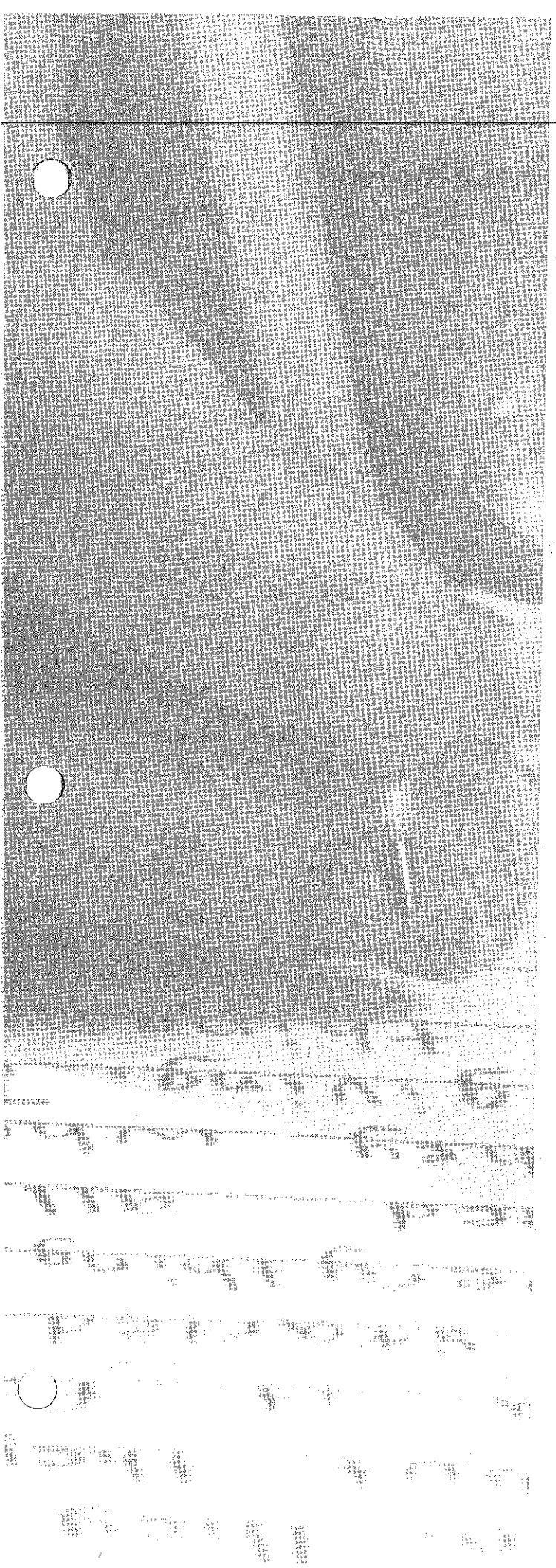


Chapter 1 How to Approach Multiple-Choice Questions

THE PRINCETON REVIEW APPROACH

There are basically two ways to prepare for the AP Environmental Science Exam.

- Know absolutely everything about everything. Bad idea.
- Review only what you need to know, and tackle the test strategically. Good idea.

This is The Princeton Review's way—and the best way—to improve your score.

Rather than trying to teach you everything there is to know about environmental science, we at The Princeton Review focus on test-taking strategies. Naturally, we'll review some hard science as well. But rather than cluttering your brain, we'll look only at the environmental science you need to know for the test, explaining and highlighting key concepts along the way.

First, we'll give you some simple, straightforward strategies for tackling multiple-choice questions and for writing free-response answers. Let's now take a closer look at how to approach the multiple-choice section.

The Two-Pass System

Proven Techniques
The two-pass system allows you to pick up easy points from the start!

The AP Environmental Science Exam covers a broad range of topics. There's no way, even with our extensive review, that you will know everything about every topic in environmental science. So, what should you do?

Adopt a two-pass system. The two-pass system entails going through the test and answering the easy questions first. Save the more time-consuming questions for later. (Don't worry—you'll have time to do them later!) First, read the question and decide if it a "now" or "later" question. If you decide this is a "now" question, answer it in the test booklet. If it is a "later" question, come back to it. Once you have finished all the "now" questions on a double page, transfer the answers to your bubble sheet. Flip the page and repeat the process.

Once you've finished all the "now" questions, move on to the "later" questions. Start with the easier questions first. These are the ones that require calculations or that require you to eliminate the answer choices (in essence, the correct answer does not jump out at you immediately). Transfer your answers to your bubble sheet as soon as you answer these "later" questions.

Watch Out for Those Bubbles!

Because you're skipping problems, you need to keep careful track of the bubbles on your answer sheet. One way to accomplish this is by answering all the questions on a page and then transferring your choices to the answer sheet. If you prefer to enter them one by one, make sure you double-check the number beside the ovals before filling them in. We'd hate to see you lose points because you forgot to skip a bubble!

Process of Elimination (POE)

On most tests, you need to know your material backward and forward in order to get the right answer. In other words, if you don't know the answer beforehand, you probably won't answer the question correctly. This is particularly true of fill-in-the-blank and essay questions. We're taught to think that the only way to get a question right is by knowing the answer. However, that's not the case on Section I of the AP Environmental Science Exam. You can get a perfect score on this portion of the test without knowing a single right answer—provided you know all the wrong answers!

What are we talking about? This is perhaps the most important technique to use on the multiple-choice section of the exam. Let's take a look at an example.

41. The long-term storage of phosphorus and sulfur occurs in which of the following?

    (A) Bacteria
    (B) Rocks
    (C) Water
    (D) Plants
    (E) Atmosphere

Applied Strategies
It is often easier to identify a wrong answer than a right answer. Use POE to get rid of bad answers!

Now if this were a fill-in-the-blank-style question, you might be in a heap of trouble. But let's take a look at what we've got. You see the elements phosphorus and sulfur in the question, which leads you to conclude that we're talking about elements. Right away, you can probably remember that these aren't normally components of water, so you can eliminate (C). Also, plants don't live a long time, so sulfur and phosphorus can't be stored for the long-term in plants, right? Get rid of (D). The same goes for bacteria, so lose (A). You're left with (B) and (E). If you know that neither of these elements is a significant component of the atmosphere, then you can get rid of (E) and see that the best answer is (B), but even if you don't, you have a fifty-fifty chance of guessing the correct answer at this point.

We think we've illustrated our point: Process of Elimination is the best way to approach the multiple-choice questions. Even when you don't know the answer right off the bat, you'll surely know that two or three of the answer choices are not correct. What then?

Aggressive Guessing

As mentioned earlier, you are scored only on the number of questions you get right, so we know guessing can't hurt you. But can it help you? It sure can. Let's say you guess on five questions; odds are you'll get one right. So you've already increased your score by one point. Now, let's add POE into the equation. If you can eliminate as many as two answer choices from each question, your chances of getting them right increase, and so does your overall score. Remember: Don't leave any bubbles blank on test day!

Word Associations

Another way to rack up the points on the AP Environmental Science Exam is by using word associations in tandem with your POE skills. Make sure that you memorize all of the words in the Hit Parade, which is Chapter 12 of this book. Know them backward and forward. As you learn them, make sure you group them by "association," since ETS is bound to ask about them on the AP Environmental Science Exam. What do we mean by "word associations"?

Let's take the example of air pollution. You'll soon see from our review, and possibly your course study, that there are several compounds associated with various types of air pollution; for example, ozone, VOC, and nitrogen oxides are all words and terms that are associated with air pollution. Now take a look below at a typical question about pollution.

2. All of the following are important in smog production EXCEPT

   (A) photochemical reactions
   (B) stratospheric ozone
   (C) tropospheric ozone
   (D) volatile organic compounds
   (E) nitrogen oxides

This might seem like a difficult question, but let's think about the associations we just discussed. The question asks us about smog. Answer choices (C), (D), and (E) are all terms that we've associated with air pollution. Therefore, we can eliminate them. Maybe you're unsure about whether or not photochemical reactions are part of air pollution, but since you know for sure that stratospheric ozone has nothing to do with smog production (or for that matter air pollution) you might guess that it's the correct answer (and you'd be right!).

We'll explain what these words mean in Chapter 9, in which we discuss pollution, but the point is that without even wracking your brain, you've managed to get this down to two answer choices—not bad! You would have a fifty-fifty chance of guessing correctly on this question.

By combining the associations we'll offer throughout this book with aggressive POE techniques, you'll be able to rack up points on problems that might have seemed particularly difficult at first.

Mnemonics—or the Environmental Science Name Game

One of the big keys to simplifying biology is to organize terms into a handful of easily remembered packages. The best way to accomplish this is by using mnemonics. A mnemonic, as you may already know, is a convenient device, such as a rhyme or phrase, for remembering something. Environmental science is all about names: the names of chemicals, processes, theories, etc. How are you going to keep them all straight without a little help?

For example, the major components of air pollution are

- **s**ulfur dioxide — SO_2
- **p**articulates
- **l**ead — Pb
- **o**zone — O_3
- **n**itrogen dioxide — NO_2
- **c**arbon monoxide — CO

The first letter of each component spells SPLONC, which is otherwise known as Some Pollution Lands On Nature Constantly. Learn the mnemonic and you'll never forget the science!

Mnemonics can be as goofy as you like, so long as they help you remember. Be creative! Remember: The important thing is that you remember the information, not how you remember it.

Identify Question Types

Many of the traps on the AP Environmental Science Exam deal with the way in which the question is asked. Here's information about a few types of multiple-choice questions that might look unfamiliar to you.

EXCEPT/NOT/LEAST Questions

About 10 percent of the multiple-choice questions in Section I are EXCEPT/NOT/LEAST questions. With this type of question, you must remember that you're looking for the wrong (or the least correct) answer. The best way to approach these is by using POE.

More often than not, the correct answer is a true statement, but is wrong in the context of the question. Cross off the four that apply, and you're left with the one that does not. Here's an example of this type of question.

27. All of the following are components of integrated waste management EXCEPT

(A) Using canvas bags that can be reused rather than disposable bags
(B) Using old appliances for construction of artificial reefs
(C) Using disposable diapers instead of cloth diapers
(D) Using reused glass bottles
(E) Using planking made from recycled plastic

If you don't remember anything about integrated waste management, you should at least understand that the question is asking about waste. So, which of the choices does *not* deal with a way to reduce or reuse waste? Well, (C) would result in more, and not less, waste; and it is the correct answer. Remember, the best way to answer these types of questions is: Spot all the right statements and cross them off. You'll wind up with the wrong statement, which happens to be the correct answer.

Unspecified One-or-More

A type of multiple-choice question that is actually a multiple-answers question (how's that for a curve ball?) called the Unspecified One-or-More question. These questions are designed to have you select all of the correct answers, though they do not prompt you on how many might be correct. In this case, you need to carefully analyze each answer, independent of the other answers. Be sure to consider each choice carefully, determine which ones are correct, and then look at the answer options to see which one corresponds with the selection of answers you have determined are correct. Here's an example of this type of question.

1. The rain shadow effect may cause which of the following?

I. Drier conditions on the leeward side of mountain ranges.
II. Warmer conditions on the windward side of the mountain ranges.
III. More light on the leeward side of the mountain ranges.

(A) I only
(B) II only
(C) III only
(D) I and III only
(E) I, II, and III

The correct answer is (A). Mountains cause warm, moist air to rise and compress, ultimately creating rain on the windward side of mountains. As a result, the leeward sides of mountains are much dryer. Therefore the correct answer must have something to do with precipitation or moisture. In considering each answer independently, the first answer is clearly correct but the second two are not.

Shared Answer Bank

These are designed to provide a common answer bank for several questions. It is important to know that choices may be used once, multiple times, or never in a certain problem set. Here's an example of this type of question.

Questions 1-3 refer to the following kinds of fishing methods

(A) Trawling
(B) Purse Seining
(C) Pot and Trap
(D) Longlining
(E) Gilnets

1. This method produces the greatest amount of benthic bycatch.

2. This method produces the least amount of bycatch.

3. This is the most common industrial method of fishing.

The answer to 1 is (A), the answer to 2 is (C), and the answer to 3 is (A). All choices are fishing methods. It is clear here that several answers were not used, but option (A) was used twice. Don't assume that each potential answer choice will only be used once—this question type is tricky and, as we said before, some answer choices may be used once, multiple times, or never.

Chapter 1 Drill

Let's practice some of these different types of multiple-choice questions that you just learned about. For answers and explanations, see Chapter 13.

1. Once numbering more than 20,000 birds, the Hawaiian goose (or "Nene") was reduced to 30 individuals by 1918. After listing on the Endangered Species List in 1967, the population increased from 400 birds in 1980 to 1,600 in 2008. Calculate the annual growth rate from 1980 to 2008.

   (A) 13%
   (B) 7%
   (C) 5%
   (D) 2.5%
   (E) 2%

2. Why is the barrier island such a fragile habitat?

   I. Climate change may cause sea level rise that can cover the island.
   II. Coastal development may remove protective dunes and mangrove colonies that exist on some barrier islands.
   III. Storms can cause erosion of barrier islands.

   (A) I only
   (B) II only
   (C) I and II only
   (D) II and III only
   (E) I, II, and III

3. Residents of suburbia may notice a decline in the population of house cats at the same time that they hear the yip of coyotes more frequently in their neighborhood. What type of population control mechanism is exhibited in this ecosystem?

   (A) top-down control
   (B) bottom-up control
   (C) keystone succession control
   (D) competitive advantage control
   (E) commensalism control

4. Marine hypoxic or "dead zones" caused by humans are

   (A) primarily caused by nutrient pollution
   (B) areas of such low oxygen concentration that animal life mostly dies
   (C) often attributed to agricultural run-off
   (D) stimulated by algae overgrowth
   (E) all of the above

5. The greatest cause for fishery depletion and collapse is

   (A) invasive species
   (B) aquaculture technologies
   (C) pollution
   (D) overexploitation and overharvesting
   (E) habitat destruction and loss

6. All of the following sources produce non-point sources of pollution EXCEPT

   (A) large diesel shipping trucks
   (B) smokestack of a chemical manufacturing company
   (C) urban runoff from parking lots
   (D) agricultural waste from a cattle stockyard
   (E) wind carrying sand particles from the desert out to sea

7. In the year 2000, a country had a population of 10 million people with a birth rate of 6.3% and a death rate of 1.3%. If these rates remain constant and there is no migration, the population of that country will be close to 40 million in _____.

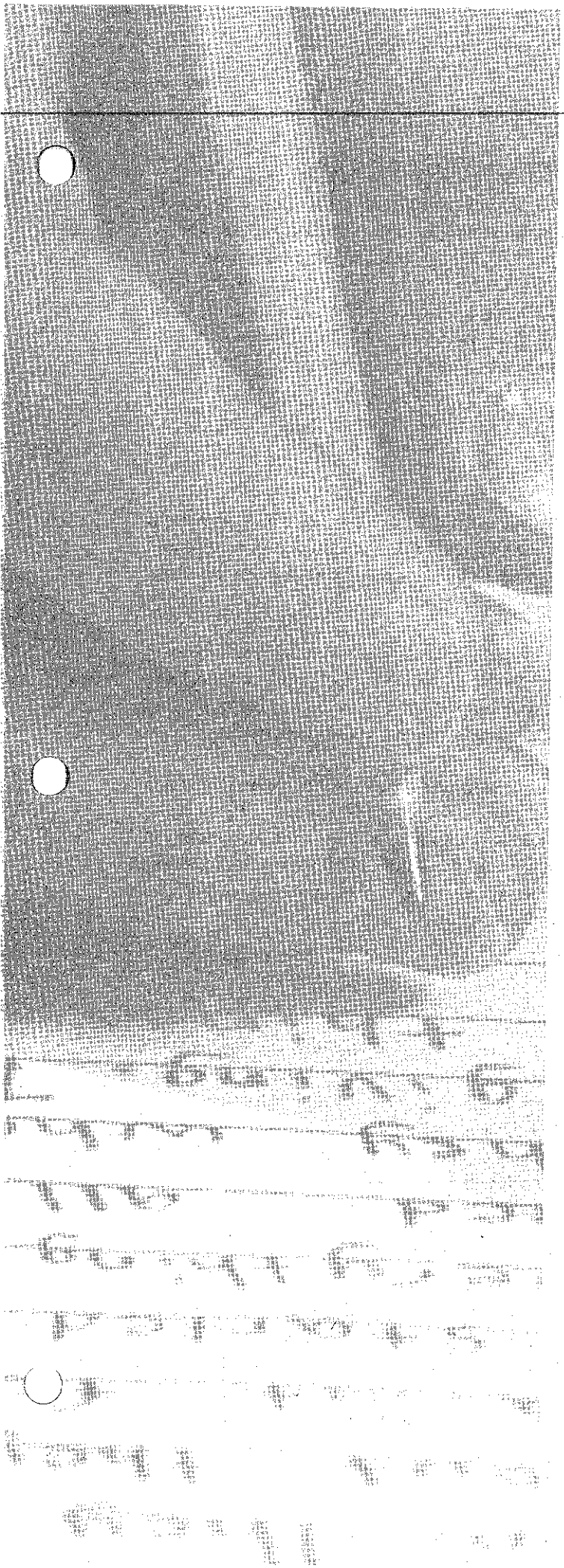
   (A) 2005
   (B) 2014
   (C) 2018
   (D) 2028
   (E) 2038

8. The Dust Bowl

   (A) was caused solely by a particularly bad drought
   (B) only lasted for about a year
   (C) was largely a result of deep-till farming practices on the Great Plains
   (D) was prevented because of the poor price of wheat in the 1920s
   (E) caused the dust from the Great Plains to blow only as far as Chicago

9. The nitrogen cycle may include all of the following processes EXCEPT

   (A) respiration
   (B) assimilation
   (C) fixation
   (D) ammonification
   (E) combustion



Chapter 2 How to Approach Free-Response Questions

THE ART OF THE FREE-RESPONSE ESSAY

You're given four essay questions to answer in 90 minutes. That's only 22 minutes per question. Each of these four questions will present a scenario and ask you to answer several smaller questions (generally 3 to 4). You can get a maximum of 10 points per free-response question, and you need to answer every part of the question to get all 10 points. Each question has a certain grading rubric assigned to it, which is what the essay readers use to give you points for your responses. The best way to rack up points on this section is to give the graders what they're looking for. Fortunately, we know precisely how to do this.

Now or Later?

On this test, one of the free-response questions will be a document-based question, or DBQ, and one will be based on data that will be provided to you. The third and fourth questions will be synthesis or analysis questions, and one of those will probably require you to perform some simple calculations.

While you do have to answer each of these questions, you do *not* need to answer them in order. The best strategy is to read the scenario (not the sub-questions) and decide if this is a question you want to attempt now or later. Do this before reading the next scenario. If you decide to do it later, move on to the next question.

If you decide to do it now, look at the questions and start answering them. Remember the grading rubric, and make it easy for the grader to give you points. If the question asks for two solutions, label the solutions (for example, "a" and "b") so the grader can easily find them. If the question asks for a calculation, show all your work, including any formulas you are using. If the question asks you to plot something, clearly label the x and y axes and any relevant point or area on the chart.

Do the Math

Yes, there is math in environmental science. However, you should be able to deal with it easily using a pencil and paper. For example, if you are asked to calculate the cost of heating a 2,000-square-foot house during a Midwestern winter, the answer will be a round number or otherwise easily manipulated figure like $500, not $327.67. Keep in mind that you are not allowed to use a calculator on this test, and remember to provide units with all of your numbers!

Hot-Button Terms

The ETS essay graders have a checklist of key terms and concepts that they use to assign points. We like to call these "hot-button" terms. Quite simply put, for each hot button that you include in your essay, you will receive a predetermined number of points. For example, if the essay question deals with photochemical smog, the ETS graders are instructed to give students two points for writing: "In

the presence of sunlight and heat, VOCs (volatile organic compounds), NO_x, and ozone combine to form smog"—or something very similar to that. So where do you find these key terms? Funny you should ask—they are at the end of each chapter in this book, in a section we like to call "Key Terms." Make sure you have a grasp of all of the words in those lists, and use them as hot buttons in your essays.

Make an Outline

As you read the question, brainstorm a list of terms and concepts you want to cover. Use the sub-questions to help you with your list of terms and concepts. Next, draft an outline that will help you organize them into some logical order. While you do not get points for organization, a well-organized essay is easier to write (and more importantly, easier to grade). The best way to organize your response is to write a clear, simple outline (just a couple of bullets per section). Outlining should take no more than about two to three minutes.

Of course, if you just composed a list of key scientific terms, you wouldn't be writing an essay. It is important to remember that the four free-response questions are essay questions, and they need to be written in paragraph style. An answer that's written as a list or an outline is not acceptable and will not be scored. On average, you will need to write no more than one or two paragraphs for each question.

If the question asks for two examples, give just that—two examples. If you present more than two examples, the grader may not even count them toward your score. Make sure you read carefully and provide just what the question asks for.

Label All Diagrams and Figures

Sometimes it's easier to present a diagram or figure as part of your essay. You may illustrate your answer, but all illustrations should be labeled and discussed in the verbiage of your answer. Remember to properly label your diagram or figure; otherwise the ETS graders will give you no more than partial credit for your work.

Know the Labs Covered in Your AP Course

At least one of the four essay questions will be experimentally based. Sometimes the questions will refer back to a laboratory experiment conducted in your AP class. Consequently, the laboratory component of your course is an integral part of this exam. In Chapter 11 we'll review some of the laboratory experiments you may have performed in your AP Environmental Science class.

Review Your Answers

After answering all parts of a question, give yourself a couple of minutes to review your answers before moving to the next question. Remember, once you are done with a question, you are DONE. Do not go back to a question you have completed—even if you have time at the end of the test.

Practice, Practice, and More Practice!

The only way to get good at writing an essay in 22 minutes is to keep at it. Try out the strategies you've learned in the practice questions found on the next page plus in the free-response questions found at the end of each content chapter in Part V.

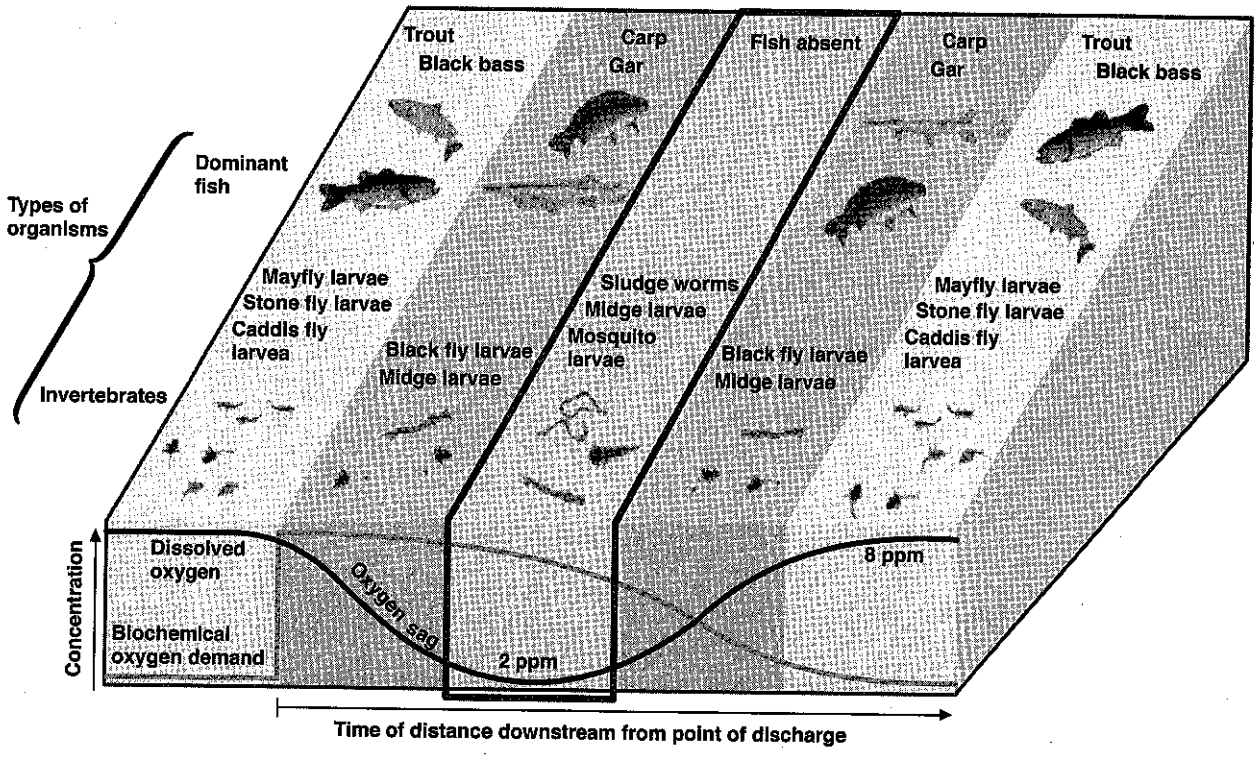
Chapter 2 Drill

Keeping in mind the things that we just covered when tackling free-response questions, try out some of these questions for practice. For answers and explanations, see Chapter 13.

1. Before 1880, the North American black-tailed prairie dog population thrived in the hundreds of millions and shaped the Great Plains temperate grassland ecosystem for over 200 other species of plants and animals observed living on or near prairie dog burrow colonies. But, by 1972, the population was estimated to be approximately 3,100 with the projection of becoming extinct by 2000. Since 1972, the population has increased from 3,100 individuals to approximately 12,400 in 2012.

   (a) Calculate the population growth rate from 1972 to 2012.
   (b) Identify and describe TWO major causes for the original decline of these species.
   (c) Identify and describe one likely ecological impact of the loss of black-tailed prairie dogs in the grassland biome.
   (d) Make one economic or one ecological argument for protecting the black-tailed prairie dog or another endangered species that you identify and one economic or one ecological argument against it.
   (e) Identify and describe one piece of United States or international legislation that is in place to prevent the decline of species or encourage the regrowth of species population.

2. The diagram below is of diversity downstream from the point of discharge from a sewage treatment plant.



   (a) Explain the limiting factor that is responsible for these different zones, creating different biodiversity levels in each area.
   (b) Explain the health of the stream as you move downstream from the point of discharge based on what you notice about changes in biodiversity.
   (c) Sewage wastewater treatment plants mimic some of the same elements of wetlands in improving water quality before it reaches streams. Explain how wastewater treatment plants perform these equivalent responsibilities in the primary and secondary treatments.
   (d) Describe one possible pollutant to target during disinfection of wastewater before is final release back into nature and describe method of sewage wastewater treatment that is meant to disinfect water.

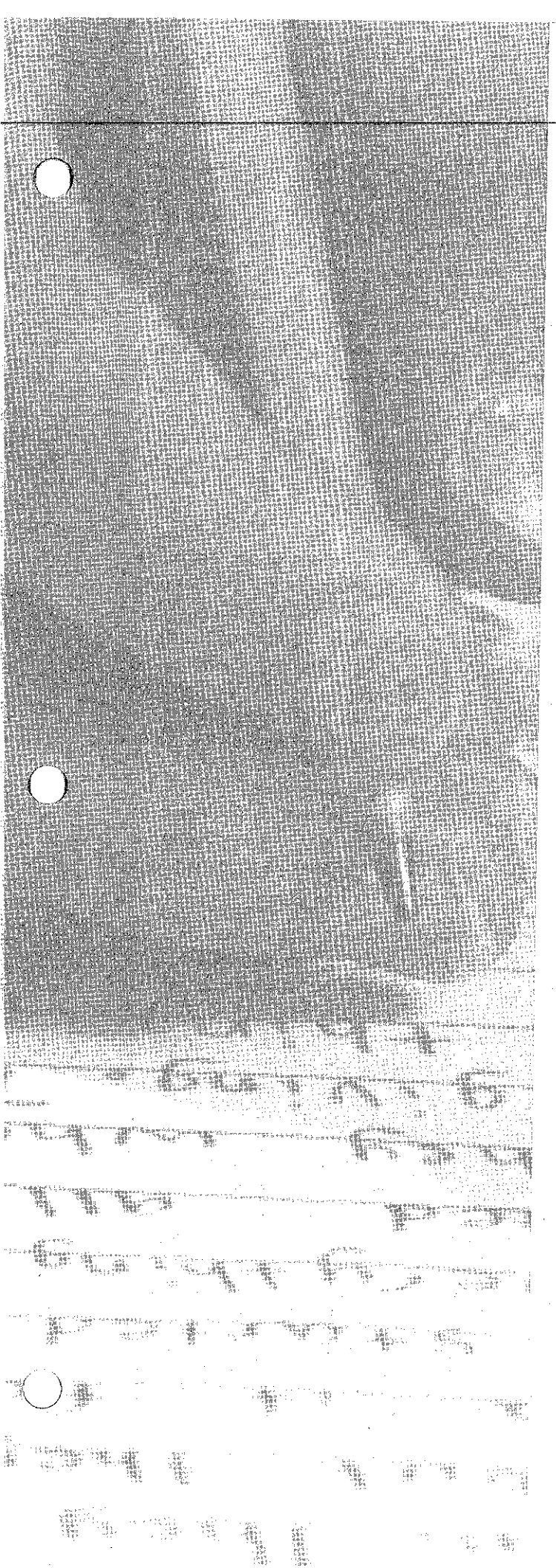
3. Your growing city of 500,000 people has realized they need to produce another waste-stream destination. You are appointed the chairman of the committee to make the decision of which is the best facility for your community. The two options open for discussion are either the development of a new sanitary landfill or an incineration facility. You must select only one of these options

(a) Provide TWO environmental reasons why your recommendation is better than the alternative.
(b) Identify and describe one social and one economic reason why your recommendation is better than the alternative.
(c) A local recycling company has concerns about how your recommendation may affect their business. Use the assumptions below to answer the questions that follow. For each calculation, show all work.

Recycling company pay out	5 cents
Recycling income from wholesaler	7 cents
Mileage of recycling truck	10 miles per gallon
Fuel cost	$2 per gallon
Recycling truck daily distance travel	100 miles
Truck driver pay	$100 per day

(i) Calculate the gross income the company would need to make weekly in order to earn a $350 profit.
(ii) Calculate how many cans must be recycled to make a profit $50 per day.

(d) Describe TWO conservation measures (other than recycling) that the city could take to reduce the total amount of waste the city outputs.



Chapter 3 Using Time Effectively to Maximize Points

Very few students stop to think about how to improve their test-taking skills. Most assume that if they study hard, they will test well, and if they do not study, they will do poorly. Most students continue to believe this even after experience teaches them otherwise. Have you ever studied really hard for an exam, then blown it on test day? Have you ever aced an exam for which you thought you weren't well prepared? Most students have had one, if not both, of these experiences. The lesson should be clear: Factors other than your level of preparation influence your final test score. This chapter will provide you with some insights that will help you perform better on the AP Environmental Science Exam and on other exams as well.

PACING AND TIMING

A big part of scoring well on an exam is working at a consistent pace. The worst mistake made by inexperienced or unsavvy test takers is that they come to a question that stumps them, and, rather than just skip it, they panic and stall. Time stands still when you're working on a question you cannot answer, and it is not unusual for students to waste five minutes on a single question (especially a question involving a graph or the word EXCEPT) because they are too stubborn to cut their losses. It is important to be aware of how much time you have spent on a given question and on the section you are working on. There are several ways to improve your pacing and timing for the test:

- **Know your average pace.** While you prepare for your test, try to gauge how long you take on 5, 10, or 20 questions. Knowing how long you spend on average per question will help you identify how many questions you can answer effectively and how best to pace yourself for the test.
- **Have a watch or clock nearby.** You are permitted to have a watch or clock nearby to help you keep track of time. It is important to remember, however, that constantly checking the clock is in itself a waste of time and can be distracting. Devise a plan. Try checking the clock after every 15 or 30 questions to see if you are keeping the correct pace or need to speed up. This will ensure that you are cognizant of the time but will not permit you to fall into the trap of dwelling on it.
- **Know when to move on.** Since all questions are scored equally, investing appreciable amounts of time on a single question is inefficient and can potentially deprive you of the chance to answer easier questions later on. If you are able to eliminate answer choices, do so, but don't worry about picking a random answer and moving on if you cannot find the correct answer. Remember, tests are like marathons; you do best when you work through them at a steady pace. You can always come back to a question you don't know. When you do, very often you will find that your previous mental block is gone, and you will wonder why the question perplexed you the first time around (as you gleefully move on to the next question). Even if you still don't know the answer, you will not have wasted valuable time you could have spent on easier questions.

- **Be selective.** You don't have to do any of the questions in a given section in order. If you are stumped by an essay or multiple-choice question, skip it or choose a different one. In the section below, you will see that you may not have to answer every question correctly to achieve your desired score. Select the questions or essays that you can answer and work on them first. This will make you more efficient and give you the greatest chance of getting the most questions correct.
- **Use Process of Elimination on multiple-choice questions.** Many times, one or more answer choices can be eliminated. Every answer choice that can be eliminated increases the odds that you will answer the question correctly. Review the section on this strategy in Chapter 1 to find these incorrect answer choices and increase your odds of getting the question correct.

Remember, when all the questions on a test are of equal value, no one question is that important. Your overall goal for pacing is to get the most questions correct. Finally, you should set a realistic goal for your final score. In the next section, we will break down how to achieve your desired score and ways of pacing yourself to do so.

GETTING THE SCORE YOU WANT

Depending on the score you need, it may be in your best interest *not* to try to work through every question. Check with the schools to which you are applying. Do you need a 3 to earn credit for the test? If you do well on 60 of the multiple-choice questions, plus earn a decent score on at least 3 of the free-response questions, you will get a 3.

Years ago, AP exams eliminated the "guessing penalty" of a quarter of a point for every incorrect answer. Instead, students are assessed only on the total number of correct answers. It is really important to remember that if you are running out of time, you should fill in all the bubbles before the time for the multiple-choice section is up. Even if you don't plan to spend a lot of time on every question and even if you have no idea what the correct answer is, it's to your advantage to fill something in.

On the next page is a table to give you an idea of how many questions you need to attempt to get the score you need. Realize that these numbers are approximations and will vary from year to year depending upon test performance. From these data, it becomes readily apparent that you must attempt and perform well on the essays to have a chance to score a 4 or 5. As you take practice tests, you can use this information to evaluate how best to get the score you want and what areas of the exam are hindering your progress. You can calculate your own score on the Practice Tests in this book using the worksheets on pages 46 and 381. There are multiple ways to achieve your desired score. It is important to remember that guessing is no longer penalized and that you must put in the energy and effort on the essays to perform well.

How to Get the Score You Want		
Composite AP Score	**Multiple-Choice Questions**	**Free-Response Questions**
5	All	3
	75	4
4	All	2
	80	3
	60	4
3	All	1
	80	2
	60	3
	50	4

TEST ANXIETY

Everybody experiences anxiety before and during an exam. To a certain extent, test anxiety can be helpful. Some people find that they perform more quickly and efficiently under stress. If you have ever pulled an all-nighter to write a paper and ended up doing good work, you know the feeling.

However, too much stress is definitely a bad thing. Hyperventilating during the test, for example, almost always leads to a lower score. If you find that you stress out during exams, here are a few preemptive actions you can take.

- **Take a reality check.** Evaluate your situation before the test begins. If you have studied hard, remind yourself that you are well prepared. Remember that many others taking the test are not as well prepared, and (in your classes, at least) you are being graded against them, so you have an advantage. If you didn't study, accept the fact that you will probably not ace the test. Make sure you get to every question you know something about. Don't stress out or fixate on how much you don't know. Your job is to score as high as you can by maximizing the benefits of what you do know. In either scenario, it is best to think of a test as if it were a game. How can you get the most points in the time allotted to you? Always answer questions you can answer easily and quickly before you answer those that will take more time.
- **Try to relax.** Slow, deep breathing works for almost everyone. Close your eyes, take a few, slow, deep breaths, and concentrate on nothing but your inhalation and exhalation for a few seconds. This is a basic form of meditation, and it should help you to clear your mind of stress and, as a result, concentrate better on the test. If you have ever taken yoga classes, you probably know some other good relaxation techniques. Use them when you can

(obviously, anything that requires leaving your seat and, say, assuming a handstand position won't be allowed by any but the most free-spirited proctors).

- **Eliminate as many surprises as you can.** Make sure you know where the test will be given, when it starts, what type of questions are going to be asked, and how long the test will take. You don't want to be worrying about any of these things on test day or, even worse, after the test has already begun.

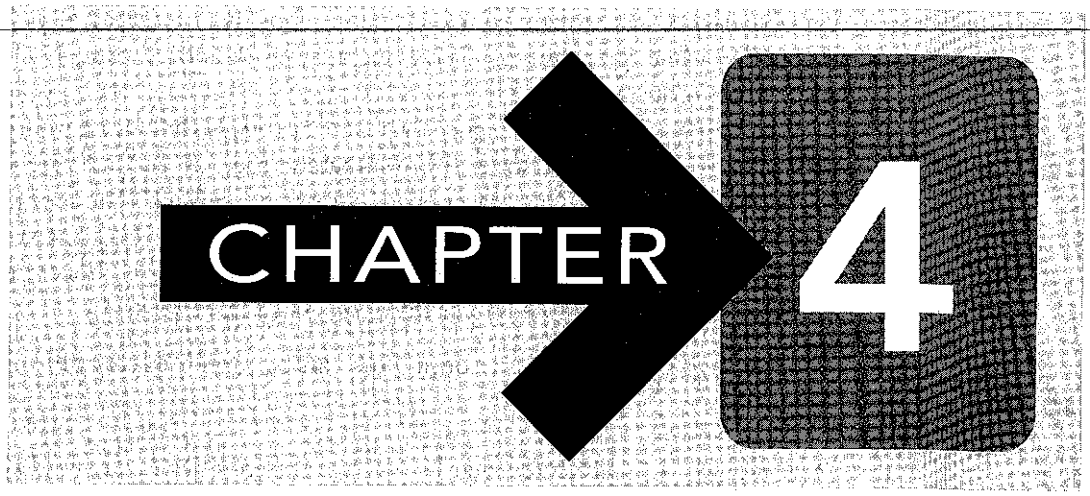
The best way to avoid stress is to study both the test material and the test itself. Congratulations! By buying or reading this book, you are taking a major step toward a stress-free AP Environmental Science Exam.

Work Hard, Play Hard
Remember to give yourself small rewards as you prepare for the AP Environmental Science exam.

REFLECT

Think about what you've learned in Part III, and respond to the following questions:

- How long will you spend on multiple-choice questions?
- How will you change your approach to multiple-choice questions?
- What is your multiple-choice guessing strategy?
- What will you do before you begin answering a free-response question?
- How will you change your approach to the essays?
- Will you seek further help, outside of this book (such as a teacher, tutor, or AP Students), on how to approach multiple-choice questions, the free-response questions, environmental science labs, or a pacing strategy?



Approaching Each Question Type

IN THIS CHAPTER

Summary: A few reminders and tips on handling different question types to raise your AP score.

Key Ideas

Multiple-Choice Questions

- Read each question carefully.
- Try to answer the question before looking at the answer.
- Toss out wrong answers first.
- Draw a picture in the margin if it helps.
- Limit the time you spend on each question.
- Leave a question and move on if you have no idea. It won't count against you.

Free-Response Questions

- Print if your handwriting is tough to read.
- Be clear and try not to ramble. Organize your thoughts.
- Illustrate your answer with a graph or picture if it helps.
- Save time by giving one-word answers if possible.
- If a question asks *how* something happens, briefly explain *why* it is environmentally important.

Multiple-Choice Questions

As you probably know from years of test taking, there are special strategies used to answer each question type. Multiple-choice and free-response questions make the most of what you know.

Past experience also affects your confidence (positive or negative) on different test types. Personally, I like questions that have one answer. Period. Too many choices make me less, rather than more, comfortable.

I had an environmental science professor in college that wrote multiple-choice questions with the answers: (a) never true, (b) moderately true, (c) true, (d) often false, and (e) always false. Picking the right answer was excruciating and confused me so much I didn't feel fairly tested on my true knowledge level. However, some people are great at eliminating red herrings offered in multiple-choice questions and sail through without breaking a sweat. Here is how they do it. Multiple-choice questions have three parts:

1. The *stem* grounds the question. This can be presented as a fill-in-the-blank sentence, rather than a question.

   Example: It is projected that by 2015, a dozen cities in the world will have populations between __ and __ million residents. **Answer:** 15 and 30.

2. The *correct answer.* This is the single choice that best completes a sentence or answers a question.

   Example: What percent of the atmosphere is nitrogen? **Answer:** 79%.

3. *Distracters* (known in mystery stories as *red herrings*) take the reader in wrong directions. On tests, they are wrong answers thrown in to make students work for the right answer.

   Example: All the following are important water conservation methods except
   a. better farming techniques
   b. oscillating sprinkler systems
   c. dry cooling systems
   d. preventable runoff
   e. irrigation canals

   Answer: Oscillating sprinkler systems (all the answers are meant to seem reasonable).

We all learn and approach tests differently. Some students zero in on the right answer quickly. Others spot distracters, eliminate them, and then find the right answer like a sculptor chipping away at a block of granite. In this book I've included a few silly answer choices just for fun. Here are several tips to think about when taking the AP Environmental Science Exam.

1. *Read each question carefully.* Okay, it's a no-brainer, but it's easy to overlook a negative distracter or other test writing trick. Look at the following:

   Example: Which of the following is not a major metal used in the United States?
   a. Gold
   b. Nickel
   c. Sulfur
   d. Manganese
   e. Lead

   Answer: If a student zipped through this question, didn't see the *not,* and didn't know sulfur was a nonmetal, he or she might waste time rereading the question and trying to find the right answer. In this case, the word *which* points to a single choice and helps sort out the negative question. Just remember to watch for words like *not, most, least, always,* and *never.*

2. *Look before you leap* (or think before you look). If you know something about environmental science, you might know the right answer without looking. Terrific! Make use of that skill to save time and disappoint tricky test writers who have given a lot of thought to creating crafty distracters. Read the question, answer it in your mind, and *then* look at the possible choices before choosing the right one.

   Example: A _____ is a species or group of species whose impact on its community or ecosystem is much larger and more influential than would be expected from simple abundance.

   Answer: Since you remember the answer is *keystone species,* you fill in the blank mentally before looking at the answer choices. This saves time, takes you quickly past distracters, and boosts your confidence.

3. *Relax. Some questions are just plain easy.* Believe it or not, some questions are straightforward and easy. If you get to the test and find a question that takes you 10 seconds to answer, don't jinx your answer with doubt because it's easy. Some answers are easy.

4. *To guess or not to guess.* A lot of students wonder whether or not they should guess. No points are deducted for wrong answers, so if you do not know the correct answer, go ahead and guess! You have a 1 in 5 (20%) chance of being right. If you can eliminate some answers, your odds of making the right choice go up. For example, if you can narrow the choices down to two, you have a 1 in 2 (50%) chance of picking the right answer.

5. *A picture is worth a thousand words.* Have you seen copies of Leonardo da Vinci's notes? He sketched out his ideas. Many students are very visual, and a quick drawing in the test book margin can make a question a lot easier to answer.

   Example: When a population first overshoots the carrying capacity of an environment, its numbers are

   a. at their highest
   b. at their lowest
   c. near the average
   d. not related to carrying capacity
   e. set for the remainder of the cycle

When a species multiplies to the extent that it uses all local resources, it will experience dieback until resources are renewed and balance attained, as shown in Figure 4.1.

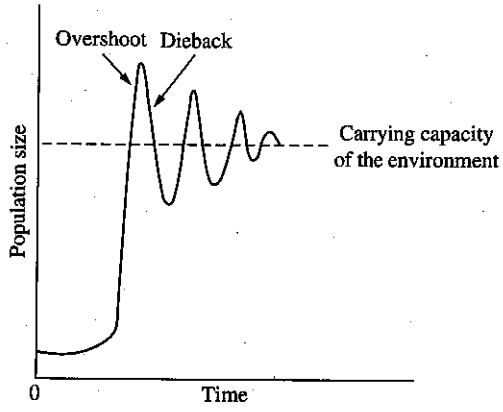
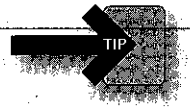


Figure 4.1 Population Overshoot



6. *Pace yourself.* Unlike the NASCAR races, there is not a pace car for AP exams. You have to do it yourself. If you don't know the answer to a question, skip it. You can always come back to it. It's better to move on. Remember, you only have a little over a minute (72 seconds) per question. You can still score well on an unfinished exam because unanswered questions are not counted against you. When you keep going, you raise your chances of finding and correctly answering more questions. Pay attention to your pace on the diagnostic and practice exams.

7. *Think, but don't dwell.* If you know the answer or can narrow down the choices, great. However, questions you spend too much time pondering are going to cost you time that could be used for "easy" questions. After working through *Five Steps to a 5: AP Environmental Science,* you will be prepared. Allow your mind to dropkick a tough question. If you have extra time, you can always go back to it.

8. *Worst case scenario.* Changing an answer is usually not a good idea. Overthinking and/or second guessing are often behind answer changing. Don't do it unless you have a *really* good reason to change. Plus, you take a chance of confusing the grading computer by poorly erasing your first answer.

9. *Fill them up!* Make sure you fill in answer circles fully. It only takes an extra couple of seconds and could make a difference. Also, every few questions, make sure you are filling in the answer circle to the matching question. It will be a disaster if you miscount. Definitely double check question numbers with answer circles when you turn a page.

Free-Response Questions

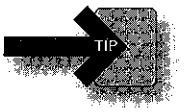
The score of the free-response questions is equal to one-half of your grade. Since it counts a lot, you have to know the material. Unlike multiple-choice questions, guessing from a list of choices isn't an option. However, there are tips to help you get every point possible from your answers.

1. *Readability.* For a grader to give you all the points you deserve, he or she needs to be able to read your answers. So print if necessary, be organized, and make sure your answers make sense. If they do, you'll score higher.

2. *Follow through, even if you goof up.* Sometimes, when you're halfway through a question, you realize you made an error or bad assumption. If it's really huge, go back and fix it. If it's small, it's better to keep going (maybe with an explanation) so the reader knows your thought process. You probably won't get a point for the wrong answer, but you'll get points for your revised answers.

3. *Seeing is believing.* At times, it is easier to explain something with a sentence or two and a graph, than a rambling explanation that loses the reader.

4. *Mandatory drawing.* There are some questions that ask you to draw a structure, cycle, or system. You won't receive drawing points if you answer with text. Label your graph completely, leaving no doubt in the reader's mind that you understand the answer.



5. *Avoid long-winded answers.* Free-response questions are not your chance to write a long saga like *Gone with the Wind.* If a word or number answers a question, write it down and move on to the next part of the question.

6. *Capture gems.* Some questions ask how one variable affects another. For example, one population may decrease while another increases. If there is the possibility of receiving two points, don't just say "it decreases" (*how* it is affected), but add "due to the drain on mutually needed resources" (*why* it is affected).

7. *Pick and choose.* Free-response questions have several parts. If you don't understand or know the answer to one part, all is not lost. Keep going! Some parts can stand alone. If you goof up or just don't know something, find what you do know. You'll get points for all your right responses.

8. *Time in a bottle.* Budget your time. Spend a minute or two reading the question and planning your response.

9. *Points, points, and more points.* Free-response questions have different parts worth 1 to 3 points each. If you answer all the parts correctly, you receive the maximum number of points. It is important to at least try to answer each part. You will not lose points and may gain one. However, if you skip a part and then write twice as much on the next part, you won't receive any more points than the maximum for that part.

10. *Circle the wagons.* Outlines are a good way to save time, prevent wandering answers, cover all the points, and write a well thought out response. Although you are not graded on the quality of your writing, anything that makes a reader's job easier makes him or her your friend.

11. *Memory game.* Sometimes your mind continues to work on a skipped question. Don't fight it. Keep going, answering what you can. If you have time at the end of the test and your memory has snagged the briefly blocked answer, go back and fill it in.

12. *Answer what is asked.* This seems obvious, I know, but some people try to overthink the question. Remember, with free-response questions you either know the answer (or some part of it) or you don't. Concentrate on answering what is asked. You'll save time and get more points overall.