

## AP Statistics Exam Tips for Students

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### The Exam Itself

To maximize your score on the AP Statistics Exam, you first need to know how the exam is organized and how it will be scored.

The AP Statistics Exam consists of two separate sections:

#### Section I

40 Multiple-Choice questions      90 minutes      counts 50 percent of exam score

#### SCORING:

1 point for each correct answer  
0 points for each question left blank  
-1/4 point for each incorrect answer

#### Section II

Free-Response questions      90 minutes      counts 50 percent of exam score  
Questions are designed to test your statistical reasoning and your communication skills.

#### SCORING:

Five open-ended problems @ 13 minutes; each counts 15 percent of free-response score  
One investigative task @ 25 minutes; counts 25 percent of free-response score

Each free-response question is scored on a 0 to 4 scale. General descriptors for each of the scores are:

- 4    Complete Response    NO statistical errors and clear communication
- 3    Substantial Response    Minor statistical error/omission or fuzzy communication
- 2    Developing Response    Important statistical error/omission or lousy communication
- 1    Minimal Response    A "glimmer" of statistical knowledge related to the problem
- 0    Inadequate Response    No glimmer; statistically dangerous to himself and others

Your work is graded **holistically**, meaning that your entire response to a problem is considered before a score is assigned.

**Exam preparation** begins on the first day of your AP Statistics class. Keep in mind the following advice throughout the year:

**Read your statistics book.** Most AP Exam questions start with a paragraph that describes the context of the problem. You need to be able to pick out important statistical cues. The only way you will learn to do that is through hands-on experience.

**Practice writing** about your statistical thinking. Your success on the AP Exam depends on how well you explain your reasoning.

**Work as many problems as you can** in the weeks leading up to the exam. Your biggest challenge will be determining what statistical technique to use on each question.

### **On the night before the exam:**

Get a good night's **sleep**.

Make sure your **calculator** is functioning properly. Insert new batteries, and make sure all systems are "go." Bring a spare calculator if possible.

## **During the Exam**

### **General Advice**

**Relax, and take time to think!** Remember that everyone else taking the exam is in a situation identical to yours. Realize that the problems will probably look considerably more complicated than those you have encountered in other math courses. That's because a statistics course is, necessarily, a "wordy" course.

**Read each question carefully before you begin working.** This is especially important for problems with multiple parts or lengthy introductions. Suggestion: Circle key words and phrases as you read the questions.

**Look at graphs and displays carefully.** For graphs, note carefully what is represented on the axes, and be aware of number scale. Some questions that provide tables of numbers and graphs relating to the numbers can be answered simply by "reading" the graphs.

**About graphing calculator use:** Your graphing calculator is meant to be a tool, to be used sparingly on some exam questions. Your brain is meant to be your primary tool.

### **On multiple-choice questions:**

**Easier questions** are generally at the beginning.

**Examine the question carefully.** What statistical **topic** is being tested? What is the purpose of the question?

**Read carefully.** Circle key words and phrases. After deciding on an answer, glance at the circled words and phrases to make sure you haven't made a careless mistake or an incorrect assumption.

**Keep scoring in mind:** (Number Right) minus (one-quarter)(Number Wrong). Careless mistakes hurt. If you can eliminate more than one answer choice, you might benefit by guessing.

**You don't have to answer all of the questions** to get a good overall score.

**If an answer choice seems "obvious," think about it.** If it's so obvious to you, it's probably obvious to others, and chances are good that it is not the correct response. For

example, suppose one set of test scores has a mean of 80, and another set of scores on the same test has a mean of 90. If the two sets are combined, what is the mean of the combined scores. The "obvious" answer is 85 (and will certainly appear among the answer choices), but you, as an intelligent statistics student, realize that 85 is not necessarily the correct response.

**On free-response questions:**

**Easiest question** is usually #1. Do #1 then jump to the investigative task, #6. Read all the remaining questions, #2-5 and do in the order of confidence. **Watch the clock!**

**Do not feel pressured to work the free-response problems in a linear fashion**, for example, 1, 2, 3, 4, 5, 6. Read all of the problems before you begin. Question 1 is meant to be straightforward, so you may want to start with it. Then move to another problem that you feel confident about. Whatever you do, don't run out of time before you get to Question 6. This Investigative Task counts almost twice as much as any other question.

**Read each question carefully**, sentence by sentence, and circle key words or phrases.

**Decide what statistical concept/idea is being tested.** This will help you choose a proper approach to solving the problem.

**You don't have to answer a free-response question in paragraph form.** Sometimes an organized set of bullet points or an algebraic process is preferable.

**Answer each question in context.**

**Make sure you answer the question that was asked.**

### Specific Advice on Free-Response Questions

**On problems where you have to produce a graph:**

**Label and scale** your axes! Do not copy a calculator screen verbatim onto the test.

Don't refer to a graph on your calculator that you haven't drawn. Transfer it to the exam paper. This is part of your burden of good communication.

**Communicate your thinking clearly.**

**Organize** your thoughts before you write, just as you would for an English paper.

Write **neatly**.

Write **efficiently**. Say what needs to be said, and move on. Don't ramble.

The burden of **communication** is on you. Don't leave it to the reader to make inferences.

**Don't contradict** yourself.

**Avoid** bringing your personal ideas and philosophical insights into your response.

When you finish writing your answer, **look back**. Does the answer make sense? Did you address the context of the problem?

**About graphing calculator use:**

**Don't waste time punching numbers** into your calculator unless you're sure it is necessary. Entering lists of numbers into a calculator can be time-consuming, and certainly doesn't represent a display of statistical intelligence.

**Do not write directions for calculator button-pushing on the exam!**

**Avoid calculator syntax**, such as *normalcdf* or *1-PropZTest*.

**Follow directions.** If a problem asks you to "explain" or "justify," then be sure to do so. **Don't "cast a wide net" by writing down everything you know**, because you will be graded on everything you write. If part of your answer is wrong, you will be penalized. **Don't give parallel solutions.** Decide on the best path for your answer, and follow it through to the logical conclusion. Providing multiple solutions to a single question is generally not to your advantage. You will be graded on the lesser of the two solutions. Put another way, if one of your solutions is correct and another is incorrect, your response will be scored "incorrect."

The **amount of space** provided on the free-response questions does not necessarily indicate how much you should write.

If you cannot get an answer to part of a question, **make up a plausible answer** to use in the remaining parts of the problem.

## **AP Prep — Math & Science**

The following strategies were developed by faculty consultants to help you on exam day:

Before beginning to solve the free-response questions, it is a good idea to read them all to determine which ones you feel most prepared to answer. You can then proceed to solve the questions in a sequence that will allow you to perform your best.

In the exam booklet there is an insert that contains the same questions without the blank answer spaces. This can be removed from the booklet and used for reference. No credit is given for anything written on the insert; be sure to write your answers and do all your work for each problem in the pages provided in the answer booklet.

Show *all* your work; partial credit is given for partial solutions to problems. If the answer is not correct, you are not likely to receive credit for correct thinking if the person scoring the examination does not see evidence of this process on paper. If you do work that you think is incorrect, simply put an "X" through it, instead of spending time erasing it completely.

Organize your answers as clearly and neatly as possible, showing the steps you took to reach your solution. If the faculty consultants cannot easily follow your reasoning, you are less likely to receive credit for it.

Many free-response questions are divided into parts such as a, b, c, and d, with each part calling for a different response. Credit for each part is awarded independently, so you should attempt to solve each part. For example, you may receive no credit for your answer to Part a, but still receive full credit for Part b, c, or d. If the answer to a later part of a question depends on the answer to an earlier part, you may still be able to receive full

credit for the later part, even if that earlier answer is wrong.

It is not necessary to *simplify* all numerical expressions or to carry out all numerical calculations. You will generally receive most, if not full, credit for answers that contain expressions like  $\sin 40^\circ$  or  $\ln 2$ , or that contain symbols for irrational numbers.

It is important to pay attention to units for quantities that have them. If you keep track of units as you do calculations, it can help you express your answers in terms of the proper units. It is possible to lose points if the units are wrong or are missing from the answer.

You should *not* use the "scatter shot" approach: i.e., write a bunch of equations hoping that the correct one will be among them so that you can get partial credit. In such cases, faculty consultants may well deduct points for the extraneous or incorrect information.

Useful websites for additional review:

<http://www.cate.org/sms99/writ99/wrthmp.htm>

<http://www.ruf.rice.edu/~lane/rvls.html>

<http://nimitz.mcs.kent.edu/~blewis/stat/stat.html#introduction>

<http://www.stat.uiuc.edu/~stat100/cuwu/>

<http://bcs.whfreeman.com/ips4e/pages/bcs-main.asp?v=category&s=00010&n=99000&i=99010.01&o=>