

Chapter Two: Doing Your Best on the GRE

The GRE is a standardized examination administered by ETS (Educational Testing Service). Because graduate school applicants' majors, courses, schools, difficulty and currency of courses vary, some graduate schools rely on GRE scores as the only data with a consistent scale. While GRE scores have a limited predictive value in identifying talented scientists or engineers, some graduate schools use your scores to make decisions regarding selection of students. The weight given to your scores varies between schools, so it would be beneficial to contact program administrators/directors or admissions officers and inquire about the importance of the GRE in the selection process. It is also valuable for you to be familiar with the exam and know how you might improve your score.

General Information:

The GRE website (<http://www.gre.org>) contains a lot of useful information about the test, including the cost, the opportunity to register for the test and information on acquiring resources to prepare for the GRE.

- The exam is given year-round; testing centers are listed on the website
- The exam is administered on a computer. More about this later!
- Currently you may take the test once a month, up to 5 times a year.
- You receive your scores on the verbal and quantitative sections immediately after taking the computer-graded exam.
- Because trained human graders score the writing sections, you and the schools you designate to receive them will receive your writing scores later by mail.
- Some graduate schools require that you take a subject GRE. These are given twice a year, in November and April. Generally, you can choose among the different subject tests offered and take the test the program requires or the one on which you expect to do the best.

Reasons for Preparing for the GRE

1. You can improve your GRE skills and scores with study and practice.
2. The skills you develop while preparing for the GRE (vocabulary, logical writing, etc.) will benefit you in ways other than improving your score on a standardized test. You will learn many new words as you progress through graduate school. The same skills you develop improving your

GRE vocabulary will be applicable to learning new scientific terminology. The new vocabulary you learn will make you a more effective writer and speaker in graduate school and later in your career. Learning precise language to characterize people will be an asset in writing essays about yourself (personal statement), or even writing letters of recommendation someday.

What Good is a Sophisticated Vocabulary to a Scientist or Engineer?

Why would a scientist or engineer benefit from expanding their vocabulary to include words that are more familiar to an English or sociology major? A Ph.D. is not a technical degree. It denotes the highest level of formal education. And you never know where an education will lead you. You might become a faculty member, even the dean of a graduate school in a university and need to interact with people from many different departments who speak a different “language” than that typically used by scientists or engineers.

Growing up in the Rio Grande Valley of Texas, Richard Tapia, Ph.D. never imagined that he would become a world famous mathematician and be appointed to national committees that study education of mathematicians, engineers and scientists. His colleagues speak an educated language, as do many people in leadership positions.

Enriching my vocabulary became personal to me the day that I was to present a talk for members of the National Academy of Sciences. I arrived very early, so early that the committee members invited me to have lunch with them. It wasn’t long before it was clear that the conversation sounded like “GREse”. I not only understood those erudite leaders, I could participate in the discussion because I had been helping students build their vocabulary. Can you image how nervous I would have been when it was time to present my talk if I had been intimidated by the lunch conversation? The talk was very well received and I learned another lesson in the value of general knowledge.

What is a Good GRE Score?

- 550+ on the individual quantitative and the verbal sections are good scores
- 4.5-5 in writing is a good score
- 700+ in each area, the quantitative and the verbal, is a great score.
- 5-6 in writing is a great score.

The scoring scales will change in October, 2006.

- Scoring in the 70th percentile is strong and recommended by some Ph.D. programs. A few programs focus on applicants with scores above the 90th percentile.

Consult program administrators or faculty regarding applying to a school that lists average GRE scores that are higher than yours. The GRE score is only one component of your application. Many schools accept students with lower GRE scores than they indicate they desire.

Resources to Prepare for the GRE

1. Use the ETS website: <http://www.gre.org> for information, sample questions, diagnostic tools and strategies for test preparation.
2. Purchase or borrow review book(s) to help you prepare to do your best on the GRE. There are a number of useful review books including those produced by ETS, Cambridge, Kaplan, Princeton, and even Cliff's Notes. The test does change, so it is best to use current review books. If your scores on specific sections are low consider more preparation with specific books like the Kaplan Math Review or the novel *Tooth and Nail* by Elster and Elliot (more about this resource later).
3. Check out prep-courses offered on your campus or through commercial organizations. Many courses cost hundreds of dollars and may not be necessary as long as you are motivated and use other resources wisely. How motivated can you be to save \$800? Some course providers might give you a discount. It never hurts to ask if you can justify the request.

Preparing for the GRE

1. Understand the test and know what to expect.
2. Familiarize yourself with the test structure and rules.
3. Use diagnostic test results to develop a personal study plan.
4. Review your skills and build your knowledge. Use the workshops provided in this book for general strategies and review books for specific information. It is likely that it will take weeks to months to build your skills. Intensive cramming in a short time typically doesn't raise scores, except in the area of increasing your test familiarity. Building skills takes time. There are no short cuts to success.
5. Take practice tests (some on the computer). Take the official test when your scores plateau or you run out of time to take the test before application deadlines.

How Can GRE Scores Influence Your “Acceptance” to and by Graduate Schools?

Anjelica Gonzalez was an African American/Hispanic woman engineering major at Utah State University when she saw a flyer advertising the SMART Program and decided it sounded interesting. She found her place in science that summer, using her engineering skills to answer biological questions. Her application to BCM’s Structural and Computational Biology and Molecular Biophysics Ph.D. Program was strong. The committee was especially impressed with her GRE scores,



which had risen significantly after participating in the SMART GRE Prep Workshops. Anjelica was not only admitted, she was “accepted” by the faculty as a top candidate. The unique inter-institutional nature of the SCBMB Program and the eagerness with which faculty recruited her, convinced Anjelica to return to BCM to continue her education. Like most participants in the SCBMB program, she had to take a number of courses to build the interdisciplinary background required of students. She rotated through five labs, each with a different focus, before she found just the right place to conduct dissertation research.

While Anjelica was the second under-represented minority in the SCBMB Program, she was the first US woman to enter the program. Women of any ethnicity are still under-represented in mathematics, computational and engineering sciences. Anjelica found friends among other female Ph.D. students, including three African American women who started

graduate school the same year and developed a friendship that helped them deal with many issues. As with most Ph.D. projects, Anjelica encountered problems, but she solved them. She developed an amazing system to use microscopes and computers to monitor the attachment and movement of immune cells in real time under defined conditions. She identified six molecules that are pivotal in attachment and spreading processes with applicability to immunology, atherosclerosis and cancer metastasis. A few weeks before she defended her dissertation, Anjelica tied for the

first place research presentation at the SCBMB Retreat. The day before she received her official diploma and hood signifying attainment of the Ph.D., she was notified that her dissertation project was selected as the most outstanding in the nation by the Federation of Clinical Immunology Societies. Yeah, girls can win the game, too. And they're not going to let a test stand in their way of achieving their dreams.

The GRE Computer Adaptive Test (CAT) (as of October, 2005)

1. Structure of the GRE CAT

Verbal	30 min	30 questions
Quantitative	45 min	28 questions
Analytical Writing		
Issue task	45 min (2 choices)	
Argument task	30 min (no choice)	

2. Adaptive Nature of CAT

- The CAT is adaptive, which means it reacts to your responses and adjusts the questions it gives you based on which questions you answer correctly.
- ETS has developed about 100,000 pre-tested questions, ranked in difficulty (easy, medium, hard). You are awarded different point values for answers depending on the difficulty of each question.
- Each question is randomly selected from a defined level.
- The difficulty of a question is adjusted based on your previous answers. If you get answers right, you get harder questions. If you get answers wrong, you get easier questions.
- Because you are penalized for not finishing the test, you should guess intelligently at the end if you are running out of time.

3. CAT Rules

- You must answer the questions in the order they appear.
- You must confirm each answer before you can see the next question. This is your chance to change an answer.
- You cannot go back to previously answered questions.

- You cannot skip questions. Eliminate answers that you can, guess intelligently.
- You cannot take calculators into the test.
- You cannot take paper into the test.
- The testing center will provide you with scratch paper.
- You may write anything you can remember on your scratch paper, even before the test begins (for example, math formulas or values of square roots).
- You should set up a numbering scheme on your paper so that you can keep track of answers you eliminate or write down key words from the reading passages.
- You must turn in your scratch paper when you finish the exam.

The GRE will still be given on a computer in 2006, but the CAT will be replaced by a test where everyone gets the same questions.

General Strategies for Improving GRE Scores: Since ETS changes the GRE about every two years, the best strategy is to focus on building general skills on enhancing vocabulary, reading comprehension, logical thinking, mathematical comparisons, interpreting graphs and constructing logical essays.

1. Use information from web-sites:
<http://www.gre.org>: test information, PowerPrep, on-line diagnostics
<http://ets.org/criterion/highered/>: writing evaluation and advice.
2. Use the results of your diagnostic exams to focus your study efforts on areas in which you are weakest.
3. Create a personal study plan, focus on the areas in which you need most work.
4. Take an official prep-course, if the price is affordable.
5. Use strategies that fit your optimal mode of learning (individual studying, group studying, flash-cards, etc.).
4. Use multiple review books and resources, share resources with friends.
5. Take as many practice tests as feasible, including some on the computer.
6. Learn the directions for each section.
7. Learn how to recognize answers you can eliminate (Power of Elimination).
8. Train physically as well as mentally. You need to build up your back and neck muscles. Walk, jog, swim or lift weights (books or cans of food make good light weights).

Preparing for the Verbal Section of the GRE

The lowest initial GRE score for most science majors is the verbal score.

The score that requires the most extended time to improve is the verbal score.

Vocabulary is the heart of the verbal section, so...

1. Learn the most commonly encountered words

1. Review books have lists of “favorite words”
2. You will not be asked to give definitions of words. You will only need to know enough about a word to use it or eliminate it as a choice
3. Remember, some words have multiple uses
4. GRE likes unusual word uses; think outside the box

2. Learn root word, prefixes, suffixes to improve your ability to guess the meaning of unfamiliar words.

1. Many words are composed of syllables with general meanings.
2. Learn the connotation of words: knowing the emotional impact can often lead you to select or eliminate answers.
3. Many prefixes/suffixes have positive or negative connotations. Sometimes you only have to eliminate wrong connotations.
4. To decipher a word you don't know, look for...
prefix, suffix, root word, context cues, relationship to another language.

3. Learn the relationships of words

1. Make “trees” of words with related meanings: synonyms, antonyms, or the same root.
2. GRE likes words that describe characteristics.

4. Make and use flash cards. Carry them with you!! It works!!!

Write a prompt word whose meaning you know on the note card. Write a line or two of words with similar meanings. Leave room to add new words. On a lower line or the back of the card, write antonyms of the prompt word.

One participant in the SMART GRE Prep Workshops increased her verbal score by 200 points by studying her flashcards 20 minutes a day, while she waited for and rode the bus.

5. Learn to speak “GREse”

Practice your new words in English with each other. Javier Sanchez would come to me each day and say a sentence using a new “GRE word” he had just learned. The sentence had nothing to do with our conversation, but he knew I was a safe person with whom to practice his “new language”. He improved his English language skills and vocabulary significantly between the SMART program and starting graduate school. He won two fellowships to support his Ph.D. study at BCM.

6. Read at a more advanced level, dictionary in hand.

If your verbal score is below 400 we suggest that you consider reading the novel *Tooth and Nail* by Elster and Elliot. This novel was designed to help people improve their SAT verbal scores, but it works for improving verbal GRE scores. The novel highlights words that are likely to appear on the GRE and gives you context cues to their meaning. There is a glossary in the back with the definitions of the highlighted words. Students who have used this resource believed it helped them enhance their vocabulary. Then move onto more sophisticated literature. If you like novels like *Pride and Prejudice*, read them. Ok, you can watch the movie, too. Tom Clancey even uses some GRE type words in his novels. Isaac Asimov’s original *Foundation* includes a page near the beginning filled with GRE type words.

I. Vocabulary Building for the GRE

MAKE AND USE FLASH CARDS:

Create flashcards listing a key word whose meaning you know, then add related words, including some you don’t ordinarily use or even know when you start the list. List words that are different parts of speech from the key word. Index cards are a perfect size for flashcards and can be carried in a purse, pocket or backpack so that you can review them while you are waiting between classes, in lines or for a bus. When you make the cards, employ as many facets of learning as possible to make more mental connections between the words and cues to remembering them. Writing involves kinesthetic learning. Seeing the words involves visual learning, but if you say the words out loud you also activate auditory learning. If you say the words with an emotion that fits, you add an emotional cue to the word. Use position and color to help you remember meanings. Write words with positive connota-

tions in a color you like, and words with negative connotations in a color you don't like. The GRE loves to evaluate "degrees", especially in analogy questions. Write words that are "less than" the prompt word on the left side of the card and words that are "greater than" on the right. For example:

HASTY			
impetuously	quickly	accelerated	urgent

TREE RELATIONSHIPS go beyond synonyms or antonyms. Start with a common word you know and add related words. A thesaurus or even Google can be a great way to identify related words. Use the following examples for guidance:

STORE			
Synonyms/words that convey a similar idea:			
stock	reposit	accumulate	hoard
pantry	lode	vault	depository

Antonyms/words that convey an opposite idea:				
waste	consumption	deplete	exhaust	ephemeral

HASTY				
Related to similar meaning:				
quick	impetuous	accelerated	bustle	urgency
indeliberate	brusque	expedite	precipitate	

Related to opposite meaning:				
languish	dawdle	deliberate	lethargy	placid

LEARN PREFIXES, SUFFIXES, and ROOT WORDS

Many review books include a list of prefixes, suffixes and root words that are very helpful in deciphering words you encounter on the GRE. Even if you don't know the exact meaning of a word, you can often derive hints from knowing the general meaning of a syllable.

mis-	(wrong)	mistake, misplace, misappropriate, misconstrue
mal-	(bad)	maladjusted, malnourished, malfunction, maladroit
-less	(lacking)	helpless, fruitless, thankless, fetterless
sequ-	(follow)	sequence, sequel, subsequent, obsequious
strict-string	(bind)	strict, stricture, constrict, stringent, astringent

Building a Vocabulary that Opens Doors of Opportunity

One year, a participant in the SMART GRE Prep Workshops scored an almost



perfect score on the verbal diagnostic test. What was more surprising was that he attended the workshops on building vocabulary, when he clearly didn't need to do so. During the group exercises, I noticed that he was providing very good advice to others in his small group on deciphering the meaning of words, in a very humble way. The other students had no idea how high his score was, they just recognized that he was helping them. When the session ended, I asked him why he had spent his time in a session he obviously didn't need to attend. His response was that he had no excuse for not scoring very high in the verbal section. He had attended a very challenging high school that was known for emphasizing vocabulary. But

it was dinner conversations that made the most difference in building his extensive, sophisticated vocabulary. "Dr. Slaughter, my dad sounds like a GRE passage. I had to take a dictionary to the dinner table every night, because he would ask me questions with words I didn't know and wait for me to answer him. I can help other students develop their vocabulary, who haven't had my experiences." I was impressed. About a year later I saw his dad and related the story. He confirmed what his son told me. So I asked, "How did you develop your vocabulary? Did your father or mother teach you in the same way?" He laughed and said that no, his parents hadn't attended college and had a limited vocabulary. When he decided he wanted to pursue advanced education he had to learn new words the hard way. He didn't want his children to have to do what he did to score high enough on tests to be admitted to a school.

I tell this story at every verbal workshop and point out to students that they will be the ones who will teach their children, cousins, sisters and brothers, and friends new vocabulary through their own use of unfamiliar words within a context in which they can be understood. The dream of America is each generation passing along knowledge to the next to enhance opportunity so that people can reach their potential.

So what happened to our helpful SMART Program participant, Damon Tomlin? He became a BCM Ph.D. student and already has a first authorship on a high visibility paper published in a top science journal. We need to develop scientists and engineers from every group in America, and that includes white guys from affluent, educated households. Some of them are very talented and really nice.

II. Analogy Section (maybe eliminated in the future)

The GRE has included a section on analogies for many years. In October of 2006, the analogies section will be eliminated. ETS has provided limited information regarding the changes to the test as of October of 2005. Check the website for updates. The revised test will place greater emphasis on reading comprehension. If you have a choice about when to take the test, you may wish to consider this change in scheduling your exam date and take the test on which your skills are the strongest.

The task for the analogy section is to choose the pair of words that most closely match the relationship of the words in the given stem pair.

1. The only right answer will be the choice with a same type of clear and necessary relationship that matches the words in the stem pair.
2. The right answer must conform to the same parts of speech as in the stem pair, for example the only correct match to a stem with a noun: adjective is an answer with a noun:adjective format.
3. The correct answer must be in the same order as the words in the stem pair, for example, cause:effect will not match effect:cause.
4. You may need to evaluate the choice on more than one level to find the best match. The relationship of two choices may be correct but you need to consider other levels of comparison like the connotation or that the matched terms are related to weather or personal characteristics.

Strategies to improve your ability to answer analogy questions

1. Familiarize yourself with the types of analogies that you might encounter on the GRE.
2. Practice characterizing comparisons between words in the stem pair
3. Keep building your vocabulary
4. Practice analogy questions

A. Typical Analogy Relationships:

Opposites or synonyms

Opposites	abate : intensify accolade: criticism aggrandize: minimize
Synonyms	arduous: strenuous, taxing audacious: daring, bold

Action and activity

sob: sadness	action/meaning
run: marathoner	action/performer
lecture: class	action/recipient

Cause and effect

equivocate: confuse	exonerate: restore reputation
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Specific and general

scientist: physicist	President: politician
drama: theatrical performance	

Parts and whole

lecture hall: university	island: archipelago
chapter: book	movement: concerto

Degrees

bold: audacious	speak: mumble
wind: hurricane	embarrass: mortify

Function

implore: convince	protection: refuge
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Characteristics or conditions

oppress: subject
somber: cheer

liberate: free
honesty: reputable

Time or space

eon: moment

election: inauguration

B. Analogy Practice:

Choose the second pair of words that most clearly matches the relationship between the first pair.

1. teeth: comb

hair:brush
step:ladder
pulley:rope
picture:hook
door:library

2. sorrow:devastated

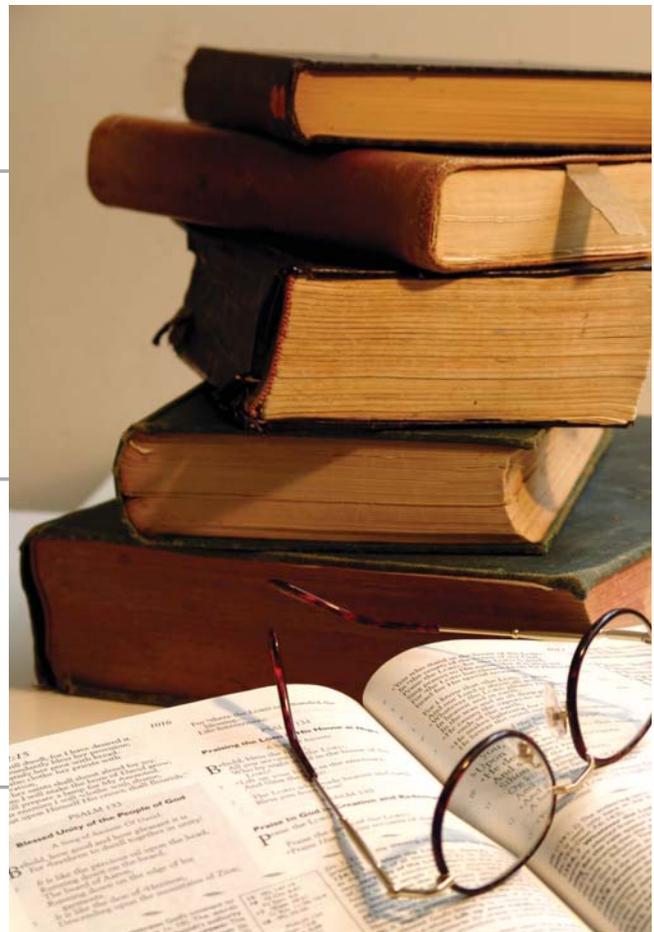
joy:happiness
sadness:glee
hunger:famished
glad:ecstatic
praise:laud

3. lecture:learn

assist:gain favor
criticize:denigrate
criticize:correct
information:confuse
traffic laws:issue tickets

4. university:school

book:library
jeweler:merchant
sculptor:artist
judge:lawyer
Nobel Prize:award



Analogy Practice Answers:

Choose the second pair of words that most closely matches the first pair of stem words.

	Explanations
1. teeth: comb hair:brush → step:ladder pulley:rope picture:hook door:library	part vs. whole analogy
2. sorrow:devastated joy:happiness sadness:glee → hunger:famished glad:ecstatic praise:laud	degrees analogy clues: part of speech
3. lecture:learn assist:gain favor criticize:denigrate → criticize:correct information:confuse traffic laws:issue tickets	function analogy
4. university:school book:library jeweler:merchant sculptor:artist judge:lawyer → Nobel Prize:award	double characterization subset or type of entity, also a degree comparison

Why bother to get comfortable using analogies?

Scientists and engineers often use analogies to explain unfamiliar terms or ideas to others. Many of your family members actually want to know what you do and need analogies to visualize complex situations. If you teach, you will find analo-

gies to be very helpful in explaining ideas to students. Analogies can be useful in describing your work in a grant proposal or to potential investors in your new device.

Who can forget the “kitchen sink” analogy used by Augusto Adone in the movie *Lorenzo’s Oil*, as he and his wife Michaela tried to understand how the lack of an enzyme caused the myelin in Lorenzo’s brain to deteriorate trapping their son inside his body? I tell students they really understand their projects when they can explain it to their grandparents. Of course it defeats the purpose of the “simplify the explanation” if the grandparent is Mattie Melnick or Rose Busch, who are accomplished scientists.

III. Sentence Completion

The goal of sentence completion questions is to find the best word or set of words that completes a sentence based on the context cues

Read the sentence and think of choices that make sense

The clues to finding the right word for sentence completion questions often involve identifying cue words that indicate whether you are looking for similar or different words

1. **Focus on signal or cue words**
 - similar:** “and”, “comparably”, “likewise”, “similarly”, “therefore”, “thus”
 - correct choice will be similar words
 - contrasting:** “although”, “but”, “despite”, “however”, “in contrast”, “or”, “on the other hand”, “rather”, “unfortunately”, “unless”, “while”, “yet”
 - correct choice will be words that differ in meaning
 - time frame:** “afterward”, “heretofore”, “previously”, “subsequently”
 - versions of no:** “no”, “not”, “not ever”, “never”, “under no circumstance”

2. **For two blank sentences you may need to start with one answer and see if it fits, then see if the other fits**
 - Can eliminate some choices because one obviously doesn’t fit
 - May fill in the second blank first
 - Careful, some choices make sense for one half of the sentence, but not the other

3. **Think about “good” versus “bad” words**
Even if you don’t remember the meaning of a word exactly, you may know if the word represents something good or bad
The tone of the sentence will give you clues as to the right “emotion”.
4. **If you don’t know the meaning of some of the words**, eliminate any choices that you can; use prefixes, suffixes, root words for clues for other words.

IV. Reading Comprehension

Scientists must develop excellent reading skills. The reading comprehension portion of the GRE tests your ability to understand both short and long reading passages. The passage will appear on the screen. Every fifth line will be numbered, to provide you with an orientation to the passage. Some passages are longer than can fit on the screen, but you can scroll up and down. You can use the numbering effectively to guide you in jotting down key words or phrases on your scratch paper as you read the passage. Questions will be shown one at a time. Questions typically have five choices from which you select the best answer. You can move back and forth between the passage and the question section. The questions on your exam may ask you to identify the main idea, interpret the author’s tone or opinion, provide factual information, or draw an inference from the passage or show other evidence that you understood the passage. Beginning in October, 2006 the GRE will place greater emphasis on reading comprehension and eliminate the analogy questions. Test takers will be asked to identify sentences in the passage that relate the same idea as a prompt statement. Check the GRE website for upcoming information.

A. EFFECTIVE READING FOR THE GRE

1. **Identify the main idea of the passage.**
Almost every passage has a main idea. Keep the main idea of the passage in mind while reading or answering questions. **Wrong answers will often be inconsistent with the “big picture.”**
2. **Recognize the sense of each paragraph.**
Long passages are organized in paragraphs. Jot down phrases and a main idea for each paragraph on your scratch paper with a nearby line number denoted,

for example, “25 faunal migration” for information that starts on line 27 about faunal (animal) migration. If you need to refer back to the passage for details to answer a question, you will know how to find the information without rereading the entire passage. **Knowing the scope and tone of the work will allow you to eliminate answer choices that represent matters outside the spectrum of the passage.**

3. Be an active reader.

Most of the time people read passively, that is they don't pay enough attention to grasp what they are reading. You must comprehend – not learn - what you are reading. **You must be a very active reader.** Think about what you are reading. Paraphrase confusing or complicated parts. Ask yourself questions as you are reading. When you do these things, you don't just absorb the passage, you attack it. Jot down what seem to be important points – often names - with a line number.

4. Don't try to “learn” or remember the passage.

On standardized tests you only need to retain information long enough to answer the questions. Many of the details in the passage are completely unnecessary for answering the questions. **It is ineffective to read the passage for detail.** You can, and should, **go back to find the detailed information that is needed to answer a specific question.**

5. Eliminate wrong answer choices.

You may need to use the process of elimination to determine the correct answer. There are usually **some answer choices that will be clearly wrong. Look for this type of choice, and eliminate it.** Pick the correct answer from the remaining choices. One of the best tools to use to eliminate wrong answers is to set up a grid or list on scratch paper where you can X out wrong answers and focus on the remaining choices. If you eliminate three choices, you increase your chances of picking the right one from 20% to 60%.

6. Use the passage to direct your answers.

Everything that you need to answer the questions is provided by the passage. Be cautious in using outside knowledge. **The author of the passage may have a very different perspective from views with which you are familiar.** Remember many questions ask, “According to the author...”

EFFECTIVE USE OF SCRATCH PAPER FOR GRE READING COMPREHENSION

Test appearance

- The GRE reading sections will be passages of different length.
- Some will be too long for all of the passage to appear on the screen at once.
- You may have to scroll up and down on the screen to see parts of the passage.
- The questions will appear one at a time.

Making notes

- One of the biggest differences in taking the GRE on the computer is that you can't circle and underline important things on the reading passages, like people did in the paper test- so don't do it on practice exams.
- Each fifth line is numbered – so use this to your advantage. When you spot a word or phrase that seems important – jot down a reminder and a line number. You don't have to count and list the exact line number, just get close. For example, line 37 says, "Increased concentrations of greenhouse gases enhance greenhouse effect, trapping more heat near the Earth's surface." (from Princeton Cracking the GRE).
- Note could say: 35 greenhouse gas or even GH gas
- Maybe you want to list "25 A opin" (for the author's opinion of an article listed on line 27)
- You need just enough of a reminder to find something in a long paragraph.
- Working out a system of abbreviations and numbering ahead of time as you review material and take practice tests will be very valuable.

B. CHOOSING CORRECT ANSWERS TO READING COMPREHENSION QUESTIONS:

Here are some important tips to remember about the GRE:

1. The GRE doesn't use absolute statements, unless the question is an "According to the author or passage...".
2. None of the correct answers will mention points not relevant to the question.
3. None of the correct answers will raise a topic outside the scope of the passage.
4. None of the correct answers will be outrageous or have a tone not seen in the passage.
5. None of the correct answers will include extreme statements.

Therefore, eliminate any answer choice that:

1. makes absolute statements that use words like “always, never, under every circumstance”, unless the question is an “According to the author” type.
2. mentions something you did not read in the passage.
3. is too detailed or specific, for general or inference questions.
4. uses extreme or overly emotional language.
5. misrepresents the information in the passage.
6. repeats a large portion of the passage.

THE QUANTITATIVE SECTION:**I. General Quantitative Pointers**

The GRE tests very general math skills. You probably learned this math in high school. Most GRE math will be a review, but you may need to use review books to remind yourself or learn how to solve the problems encountered on the quantitative section of the GRE. Kaplan produces a Math Review that many of our students find helpful. A review group composed of people with different math strengths can be helpful in saving you time on acquiring pointers or the fastest way to approach problems. The timed nature of the GRE tests the ability to eliminate the wrong answers and identify the right answers quickly, not by brute force. In addition to questions that test algebra and geometry skills, problems will test logic skills. Many complex geometric figures can be broken down into simple figures with sides or angles that you can deduce from simple rules. Some problems will involve equations or numerical comparison. Some questions will involve “word” problems for which you will need to write equations and solve them to determine the right answer. Some questions involve interpretation of graphs or tables, skills often used by scientists and engineers. There are no questions that relate to calculus or trigonometry on the general GRE.

The Composition of the Quantitative Component is typically

- General Arithmetic: 1/3
- Algebra: 1/6
- Geometry: 1/3 (will be reduced in October, 2006)
- Graphs: 1/6
- Word problems make up one-quarter of the quantitative problems

Pointers for preparing for the Quantitative GRE Exam

1. **Review math symbols:** =, ≠, <, >, ≤, ≥, ∑
2. **Review math formulas.** Go over things like the area of a circle, the quadratic equation, the equation to determine the length of the hypotenuse. Flash cards are especially helpful for reviewing formulas.
3. **Review math operations** like multiplying, square roots, exponents, decimals, fractions, factoring, consecutive integers, positive X negative numbers, primes, etc.
4. **Review geometry:** triangles, comparing sides and angles; dissecting complex figures into simple forms where you can determine values.
5. **Memorize common values:** π (3.14 is close enough) square roots (up to 144), common triangle sides
6. Don't be panicked by **variables**, even strange ones with made-up definitions.
7. Learn to **approximate** without lengthy calculations.
You can eliminate many answers immediately
Use common sense; check the units.
In the future, there will be a simple calculator on the computer that will be used to derive actual numbers for some questions.
8. Comparison questions all use the same form.
You must compare the values in Column A and Column B.
Column A is either equal to (=), less than (<), or greater than (>), column B, or the comparative value of A and B "cannot be determined" from the information given in the problem.
The answer cannot be "cannot be determined" if both sides contain known numbers (square roots, may be positive or negative number).
9. **Always simplify;** this is sometimes all that is needed to determine the correct answer. Break down your computation into workable steps.
10. **Read the entire question,** especially word problems carefully before embarking on the math.
11. Don't assume the figures are drawn to scale unless specifically stated.
Draw! A picture may be worth a thousand words.
12. You can **work backwards from the answer choices** if necessary. Try starting with the middle value. **Assign values** to variables if time allows.

II. Analyzing Charts and Graphs

This part of the exam tests your ability to interpret information displayed in graphs. Questions combine interpretation of text and figures. More than one graph or table may be required to answer a question. Sometime the figures cannot all be seen on the screen at the same time and you have to scroll up and down to see them. You may need to convert fractions to/from percentages (review this skill).

There are 3 basic kinds of graphs

- 1) Pie charts - used to represent the parts of a whole or %
- 2) Line graphs - used to represent mathematical relationships
- 3) Bar graphs - used to compare data

1. Pie charts- must add up to 100%

Questions usually involve the ratio of different groups
 May involve percentages or fractions
 May need to draw from information in a reading problem

2. Line graphs-have no lower or upper limit, although 0 is often, but not always, the start.

Check the **units** on both axes
 Measurements may be **continuous or discontinuous**
 Scales **may be linear**, but not guaranteed
 Graphs **may not begin at 0**; only part of a range may be shown

3. Bar graphs (histograms)-used to compare groups to each other

Check **units** on both axes
 Measurements may be **continuous or discontinuous**
 Scales **may be linear**, but not guaranteed
 Graphs **may not begin at 0**; only part of a range may be shown
Negative values may be used

You may **not see all of the graphs that relate to a question on the screen at the same time**. Scroll up or down to get to the “right” graph for the question.

Rely on the numbers if given, not the way the graph “looks” to you, but **sometimes** no exact number is provided and **you have to approximate a value by looking at the graph**. In these cases, the right answers are far enough apart that error in approximating the value shouldn’t lead you to the wrong answer. You could even eliminate two answers that are so close together that approximation wouldn’t work.

You do not need to do exact calculations to answer many questions. Practice manipulating approximate values, like 33% as $\frac{1}{3}$ or 15% as $\frac{1}{6}$.

III. Final Tips for the Quantitative Section



1. Always avoid unneeded, lengthy computations. Use approximations and logic.
2. When working with variables, remember that they can represent any number, unless otherwise stated, this includes fractions, decimals, zero, negative, and positive numbers. Don't get panicked if the variable are not a, b, x, or y.
3. Examine all the graphs and figures before working the problem. The answer may be made more obvious in the figures than in the text.
4. Examine the comparative nature of the two columns in comparison questions before doing the math. Often, the answer is obvious without a complicated computation.
5. Never guess "cannot be determined" in a comparison question unless the question contains variables or geometric figures or square roots.
6. Make sure your answer is in the requested units. Classic wrong answers list the correct numerical value, but in the wrong units.
7. Always make sure your answer choice is reasonable.
8. Check your math with the answer choices. If your answer isn't a choice, then you have made a miscalculation.
9. The incorrect answer choices are picked for a reason. They often represent the result of a possible error (decimal point) or misinterpretation of the question.

10. Don't presume that because you are a math minor you don't need to practice or even review material for the quantitative portion of the GRE. You probably haven't used some of the math skills since high school. A diagnostic test score will give you enough information to know how much effort you need to spend to get a good score on this part of the GRE.

THE ANALYTICAL WRITING SECTION

I. Description of the GRE Writing Assessment

What skills does it measure?

The GRE writing assessment gives you the opportunity to display critical thinking and analytical writing skills. It assesses your ability to articulate and support complex ideas, analyze an argument, and supply focused and coherent discussion. It is NOT a test of specific content knowledge, and there is no single best answer. For these reasons and because you will be developing your own well-reasoned responses rather than selecting answers from a multiple-choice list, the assessment provides very different information about your abilities than that provided by the General Test. Your writing is not expected to be a finished, polished essay. It is considered draft writing, where the ideas and how you present them are more important than perfect grammar.

The assessment consists of two analytical writing tasks:

1. "Present your Perspective on an Issue" task: 45-minutes

Currently, you are given a choice between two "Issue" topics. Each states an opinion on an issue of broad interest and asks you to discuss the issue from any perspective(s) you wish, as long as you provide **relevant reasons and examples to explain and support your views**.

This task requires you to construct your own argument by taking a position and providing evidence supporting your views on the issue.

Issue Topics: Relate to a broad range of subjects from the fine arts and humanities to the social and physical sciences. Issue topics are designed to elicit the kinds of complex thinking and persuasive writing that university faculty consider important for success in graduate school. No topic requires specific content knowledge.

In the future, it has been proposed that the GRE will not use pre-set prompts. You will be presented one prompt, so the time limit will be reduced to 30 minutes.

2. “Analyze an Argument” task: 30-minutes

You will **NOT** have a choice of “Argument” topics, but will instead be given an argument to analyze. The “Argument” task presents a different challenge from that of the “Issue” task. It requires you to critique a given argument by discussing how well reasoned you find the argument. You will need to consider the logical soundness of the argument based on the data given to support it rather than to agree or disagree with the position it presents.

This task requires you to critique someone else’s argument by assessing its claims and evaluating the evidence it provides.

Argument Topics: are based on a range of familiar subjects and situations. No topic requires specific content knowledge.

The Published Pools of “Issue” and Argument Prompts

Everyone should spend some time preparing for the GRE Writing Assessment. Currently ETS publishes the entire pool of prompts used on the test. You might find it useful to review the entire Issue and Argument pools. You can download the published pool from the following web site: www.gre.org/writing.html or you can obtain a copy by writing to GRE Program, PO Box 6000, Princeton, NJ 08541-6000. Practice writing essays with a few prompts, but don’t try to prepare an essay for every possible choice. You will get the hang of writing essays from practicing with a few topics.

Changes to how the prompts will be selected in the future will be announced on the GRE website. ETS may begin using a broader base of prompts to eliminate pre-prepared essays. ETS constantly struggles with people trying to find ways to cheat on their tests.

Scoring Guidelines for the Analytical Writing Section

The GRE writing assignments are graded on a 0-6 scale with 6 as the highest score. The scores are reported in 0.5 point increments. The scoring guidelines are provided on the GRE website.

II. STRATEGIES FOR THE “PRESENT YOUR PERSPECTIVE ON AN ISSUE” TASK

Understanding the “ISSUE” Task

This section of the test assesses your ability to think critically about a topic of general interest and to clearly express your thoughts about it in writing.

Each topic in this section makes a claim about an issue that test takers can discuss from various perspectives and apply to many different situations or conditions. Your job is to present a compelling case for your own position on the issue.

Read the topic carefully; Think about the claim from several points of view; make notes about the position you want to take; think of examples that you want to develop more fully in your essay. The examples can be from something you have read, learned in class or know from general knowledge.

It is important that you address the central issue; however, you are free to take any approach you wish. For example, you might:

- completely agree or disagree with the claim
- question the assumptions of the statement
- qualify any of its terms, especially if the way you define a term is important to developing your perspective on the issue
- point out why the claim is valid in some situations, but not in others
- evaluate points of view that contrast with your own perspective
- develop your position with reasons that are supported by several relevant examples or by a single extended example

Whatever position you take, you must make your position clear. Leaders must often analyze complex problems, so taking a position, but citing an alternate hypothesis or example of a situation that disagrees with your general position reflects your ability to think broadly. Be sure if you do this that you don't appear indecisive.

Understanding the Context for Writing: Purpose and Audience

This is an exercise in critical thinking and persuasive writing whose purpose is to see how well equipped you are to develop a compelling argument supporting your own perspective on an issue. Your audience consists of college and university faculty who are trained as GRE analytical writing readers.

Preparing for the "ISSUE" Task

You will need to know how to use reasons, evidence, and examples effectively to support your position on an issue.

1. Carefully read the prompt and make sure you understand the issues involved.
2. Think about the issue in relation to your own ideas, to what you have read, to people or facts you know. This is the knowledge base from which you will develop reasons and examples for your argument.

3. Decide what position on the issue you want to take and decide what compelling evidence (reasons and examples) you can use to support your position.



Have Fun Preparing for the “Present Your Perspective on an Issue” Task

Can you actually have fun preparing for the GRE? Yes, of course. It all depends on how you approach developing the skills and mindset to prepare for doing your best on the GRE, or anything else in life. The “Present Your Perspective on an Issue” task is a perfect example of how you can enjoy preparing for the GRE.

Print the list of prompts from the GRE website. Take them with you when you get together with friends who are preparing for the test. Discuss issues while you prepare or have dinner, go shopping, wait for the movie to start, drive to the club where you dance, jog or whatever you do for fun. Yes, you can talk about basketball scores or skirt lengths for a little while, but will those topics

affect your future? Spending time sharing ideas and getting more comfortable with expressing your opinions may affect where you go to graduate school and your entire career. Invest your time as wisely as you will invest your money in the future.

Writing the “Present Your Perspective on an Issue” Essay

1. Take no more than 10 minutes to jot down a few notes to guide your writing.
2. Start writing your essay with a clear statement of your position.
3. Develop the examples to support your position. Use several examples or an extended example to support your position. Rearrange points to improve the logical flow. For example, don’t place your alternative hypothesis or example in the middle of the points supporting your position.
4. Close with a summary statement that reinforces your position.

5. Use “GRE type vocabulary”, when you can use sophisticated words properly. Don’t just throw in words because they sound good. Never use a word in an essay if you are not sure of its meaning.
6. Be sure to allow at least 5 minutes to proof read your essay, substitute a more sophisticated term for a common word, add a transitional sentence or phrase.

III. STRATEGIES FOR THE “Analyze an Argument” TASK

Understanding the “ANALYZE AN ARGUMENT” Task

This section of the test assesses your ability to analyze and critique claims and to clearly express your thoughts about them in writing. The prompt will include data and conclusions. You are to present a compelling case for your own analysis of the claim, based on the data given and your assessment of its strengths and weaknesses.

Understanding the Context for Writing: Purpose and Audience

This is an exercise in critical thinking whose purpose is to see how well equipped you are to develop a compelling argument supporting your own criticism of someone else’s claim. Your audience consists of college and university faculty who are trained as GRE analytical writing test readers.

Preparing for the “ANALYZE AN ARGUMENT” Task

1. Carefully read the claim and make sure you understand the evidence and conclusion(s). Conclusions may be preceded by words like however, thus, therefore, evidently, hence, in conclusion.
2. Make brief notes (only words or phrases) on your scratch paper about the points you will make in your essay.
3. Decide how strong you think the evidence is relative to the statements of the claim. Is the claim too global and overstated? Describe hypothetical situations or circumstances that were not considered. Are any statistics presented valid? Are there alternative explanations for the claim other than the evidence presented?

Writing the Essay for the “ANALYZE AN ARGUMENT” Task

This analysis is like reviewing a scientific paper, so the time you spend in developing this skill will be a good career investment.

1. **State your position clearly.** It is unlikely that you will completely agree with the claim. It is your job to find flaws in the claim. Discuss the logical soundness of the author’s case. Raise issues that you believe were not considered in making the claim. Discuss alternative explanations. Point out illogical conclusions.
2. **Do not** confuse this assignment with the “Present a Perspective” task. Do not discuss whether you agree or disagree with the position. Address whether the evidence presented supports the claim adequately. Do not express your own personal views.

Psyching-Up to Succeed on the GRE or at Anything

1. Remember you are in training for the mental Olympics.
Start, or continue, eating a **healthy diet**; limit the sugar
Strengthen your stamina, back and neck muscles
Swim or jog or walk; lift light weights, if possible
2. **Assess your mental frame of mind during test taking**
Think back to your practice exams, the SAT, class exams
Do you get nervous or do you start depressed and paralyzed?
Nervous reactions: heart is racing; dry mouth; jittery; sick at stomach;
jump around from one question to the next; trouble
concentrating on a question
Paralytic reactions: frozen; slow start; doubts about ability; uncertain
about answers; can’t make up your mind

Learn to **alter your mental attitude**; experiment with mental images; find those that work; practice them. If you start practicing visualizing your images for 20 minutes a day, you will reach the point at which you can slip into a productive frame of mind in seconds. Your goal is not to go to sleep, at least not while you’re taking the GRE, but to relax enough to concentrate. Old calendars are great visual cues when you start testing and practicing images. They’re really cheap at the end of a year.

Strategies to combat nervousness:

Think about calm peaceful environments (forest; mountains; seashore)

Zen out before you start (meditate; pray; remember positive thoughts)

Imagine working at a steady productive pace

Feel your heart slow down; breathing deepen; muscles relax; sense of calm

Strategies to combat paralysis:

Psyche yourself or hit the caffeine, if it doesn't cause bad side effects

Imagine a great success; pick a mental image that works

Imagine you are participating in an exhilarating sport (skiing, sailing or anything else that works, but doesn't distract you). Feel the blood rushing through your veins; your breathing strengthen; an energetic feeling coursing through your body.

Great tactic to use when you are exhausted from attending an undergraduate research conference.

3. Final preparation

A week before the exam

Review flashcards of math formulas and vocabulary

Review as many vocabulary lists as possible; practice quantitative problems

Take a practice test on the computer, if possible, including writing essays

Find your test site

Night before and day of the exam

Review directions for all sections, if necessary

Try to get a good night's sleep before the test

Eat what works for you: meal; carbohydrates; bring change or a snack

Dress comfortably (layers are good for temperature control)

Remember to go to the bathroom before you start the test

Arrive early; get scratch paper; **write anything you want on scratch paper**

Do your own personal mental attitude check; slip into your mental routine

Remember you prepared for this- you deserve to do well and achieve your dreams!