Lesson 1

Foundations of GRE Logic

VERITAS PREP
ELITE TEST PREPARATION
WELCOME TO THE VERITAS PREP GRE COURSE

This lesson marks the initial installment of the 10-session Veritas Prep GRE Course. In the lesson that follows, and the nine that follow it, you will learn how to approach the GRE from both a content standpoint and a strategic standpoint. These lessons have been developed using one of the hallmark Veritas Prep strategies: “Learning by Doing.” After 15 years of teaching pre-masters students around the world, our top instructors pooled their knowledge to create this collection of GRE strategies and targeted content coverage. In these lessons you will learn by doing challenging problems; you will master the core GRE content that is critical to success; and you will begin to “Think Like the Testmaker,” understanding how the authors of the GRE take these content areas and question types and challenge even the most capable pre-masters students.

Foundations of GRE Logic

This lesson will introduce the GRE format and its question types, and then proceed to a crucial first step in your mission to “Think Like the Testmaker.” You will need to understand logic and the way that it relates to GRE questions. You will learn the common fallacies that lead to tempting, incorrect answers; you will see how correct answers are built; and you will see how to arrive at those answers by logically leveraging information. By the end of this lesson, you will have developed a thought process through which you can efficiently and successfully navigate each type of GRE problem.

The authors of the GRE are careful to use the word reasoning when they refer to any section of the exam (note the titles on the ETS-authored books from which you will complete homework: Official GRE Quantitative Reasoning, Official GRE Verbal Reasoning). The GRE is a reasoning test more than it is a content test. As such, it is only fitting that you begin your study with this coverage of the foundations of GRE logic and reasoning.
THE VERITAS PREP METHODOLOGY

The educational philosophy at Veritas Prep is based on this multi-tiered Bloom Taxonomy, which classifies different orders of thinking in terms of understanding and complexity. To achieve a high score on the GRE, it is essential that you understand the test from the top of the pyramid. In each book, you will learn specifically how to achieve that goal and how that lesson in particular relates to the Veritas Prep Pyramid.

The Veritas Prep Pyramid

Creating ➔ Think Like the Testmaker

Creating is the top of the pyramid in Bloom’s Taxonomy. When you have completely mastered the GRE, you are able to Think Like the Testmaker. You are on top of the pyramid looking down! You don’t just have good content knowledge and lots of practice with GRE problems; you understand how a problem has been made, what makes it hard, and how to break it down. When you Think Like the Testmaker you can:

1. Quickly recognize what the problem is actually asking;
2. Discover hidden information and manipulate it to make it useful;
3. Recognize and see through trap answers; and
4. Create your own plan of attack for any problem.

Applying ➔ Skills Meet Strategy

What makes the GRE difficult is not so much the underlying skills and concepts, but rather the way those skills and concepts are tested. On the GRE, what you know is only as valuable as what you can do with that knowledge. Our curriculum emphasizes learning through challenging problems so that you can:

1. Learn how to combine skills and strategies to effectively solve any GRE problem;
2. Most effectively utilize the classroom time you spend with a true GRE expert; and
3. Stay focused and engaged, even after a long day in the classroom, lab, or office.

Remembering ➔ Skillbuilder

In order to test higher-level thinking skills, testmakers must have some underlying content from which to create problems. On the GRE, this content is primarily:

• Math curriculum through the early high school level
• Vocabulary and reading comprehension skills befitting of a college graduate

To succeed on the GRE you must have a thorough mastery of this content, but many students already have a relatively strong command of this material. For each content area, we have identified all core skills that simply require refreshing and/or memorizing and have put them in our Skillbuilder section. By doing this:

1. Students who need to thoroughly review or relearn these core skills can do so at their own pace, and
2. Students who already have a solid command of the underlying content will not become disengaged because of tedious review of material they’ve already mastered.
Bloom’s Taxonomy of Educational Objectives

Creating
Evaluating
Analyzing
Applying
Understanding
Remembering

The Veritas Prep Pyramid

Think Like the Testmaker
Skills Meet Strategy
Skillbuilder
Think Like the Testmaker

In a phrase, Veritas Prep wants to teach you to “Think Like the Testmaker,” understanding not just a list of skills and facts that fall under “testable content,” but also understanding how the GRE likes to test these skills, how the question structures lend themselves to tricky problem solving, and how the authors design questions to align rewards so that correct answers aren’t just “correct,” but separate average from good, and good from great.

As you go through each book, know that each question provides multiple learning opportunities:

- Why is the correct answer correct?
- Why is the incorrect answer incorrect?
- Why is the incorrect answer tempting?

While some questions are designed to separate test-takers simply at the knowledge level (those without the base ability to accumulate and remember knowledge have little chance at the higher-order skills, so some questions need to provide the exam with that information), most are cleverly written to separate test-takers at higher levels. If you can learn the constructs that allow the GRE to achieve separation at those levels, you will unlock a much more robust understanding of how to take the test.

In the movie Rounders, Matt Damon’s character famously uttered the line, regarding poker, that “if you can’t spot the sucker at the table, you probably are the sucker.” On many challenging GRE questions, if you can’t spot the “sucker choice,” there’s often a high likelihood that you are selecting the sucker choice. For example, consider the question:

If $x^3 < x$, which is greater: $x$ or $0$?

Well, $x$ must be negative, right? If you take a number like 2 to the third power it becomes much larger, but if you take a negative number and cube it it goes farther to the left on the number line. And since they’re essentially asking a positive/negative question (is $x$ bigger than 0?), your mind wants to say that $x$ has to be negative. But the GRE rewards “devil’s advocacy”; the test wants you to consider all available options. And why couldn’t $x$ be a fraction like $\frac{1}{2}$ (which, when you cube it, gets smaller to $1/8$). Leaving a decision a step short without double-checking for not-so-obvious threats can have damaging effects in business or research—and on the GRE.

With the Veritas Prep program, you will learn to Think Like the Testmaker and look down from the top of the pyramid—to anticipate ways that questions will be asked and that concepts can be crafted into questions; to be on guard for the trap answer and to know which traps are likely to appear in which situations; to recognize common question setups and know how to attack them; and to see multiple steps ahead when looking at an intimidating problem, knowing to be patient because you have a good idea where it’s headed. The GRE, ultimately, is a reasoning test, a test of how you think. Through this program you will learn to think much like those who write the questions.
**Recurring Themes in the Veritas Prep Pyramid: Embrace Pattern Thinking**

In each of the lessons, you will learn specific skills and approaches for common problems within that content area. For instance, in the Arithmetic lesson you will learn that most problems do not require any calculations and are based more on a conceptual understanding of how calculations work. Mental/conceptual math is a Guiding Principle throughout the Arithmetic lesson that is also important in other content areas. The top two levels of the pyramid (Think Like the Testmaker and Skills Meet Strategy) contain important recurring themes that are essential to success on the GRE.

The skills that you acquire from each of the Skillbuilders also have important relevance in other content areas. For instance, most exponent problems involve prime factorization, and most equilateral triangle problems involve root manipulation. A Text Completion problem that appears to be testing difficult vocabulary might best be solved by focusing on process of elimination with the easier-to-recognize words that simply cannot be correct. After examining hundreds of GRE problems, you realize quickly that a problem that appears to be testing, say, probability might really be testing your ability to compare fractions. Likewise, problems may appear very different on the surface because they are testing different content areas but actually be constructed using very similar themes or mechanisms. A probability question and a geometry question that are completely different in content might be difficult for exactly the same reason: abstraction and misdirection.

For each problem, we want to highlight these recurring themes so that you get better and better at picking them out, regardless of the question type. For each problem in the lesson, there will be a themed explanation that puts together all elements of the pyramid to help you understand the problem. However, a special emphasis will be put on recurring themes at the middle or top of the pyramid, and those will be highlighted separately. The next few pages explain the important recurring themes for Think Like the Testmaker and Skills Meet Strategy (i.e., application of skills and concepts). These will be highlighted with the appropriate section in the pyramid throughout the book and are mapped out on the next few pages.

**Your Homework: Veritas Prep Strategies On ETS Problems**

With your course registration, you received the *Official GRE Verbal Reasoning Practice Questions* book and the *Official GRE Quantitative Reasoning Practice Questions* book. Your homework will come directly from those official problems so that you can not only practice with GRE strategies and concepts but also develop a feel for how problems are written. Particularly on the verbal side, ETS (the authors of GRE problems) writes with a certain style and flavor with which you should become comfortable, and it is important for you to develop familiarity with ETS’s voice.
Course Syllabus:

Lesson One: Foundations of GRE Logic
Homework: Complete the Arithmetic and Critical Reasoning Skillbuilder lessons

Lesson Two: Arithmetic
Homework: Complete the Algebra Skillbuilder; Complete the Arithmetic section of the Quantitative Reasoning guide (pages 43-51)

Lesson Three: Critical Reasoning
Homework: Complete the Text Completion & Sentence Equivalence Skillbuilder

Lesson Four: Algebra
Homework: Complete the Geometry and Statistics Skillbuilders; Complete the Algebra section of the Quantitative Reasoning guide (pages 65-73)

Lesson Five: Text Completion & Sentence Equivalence
Homework: Complete the Text Completion & Sentence Equivalence sections of the Verbal Reasoning guide (pages 57-65 and 79-87)

Lesson Six: Geometry & Statistics
Homework: Complete the Geometry section of the Quantitative Reasoning guide (pages 85-93)

Lesson Seven: Reading Comprehension
Homework: Complete the Reading Comprehension section of the Verbal Reasoning guide (pages 17-33)

Lesson Eight: Word Problems & Data Analysis
Homework: Complete the Data Analysis section of the Quantitative Reasoning guide (pages 105-118) and Mixed Practice Set 1 from the Quantitative Reasoning guide (pages 139-151)

Lesson Nine: Analytical Writing Measure
Homework: Complete the "Brainstorm" activities from the lesson; write one essay of each type for grading via your student account

Lesson Ten: Quantitative Strategy
Homework: Complete Mixed Practice Sets 2 and 3 from the Quantitative Reasoning guide (pages 173-183 and pages 199-209)
About the GRE

ETS, the company behind the GRE, has named the sections of the exam very deliberately: **Analytical Writing**, Verbal **Reasoning**, and Quantitative **Reasoning**. The test is not so much about what you know as it is about how you apply that knowledge, and the Veritas Prep course will prepare you for exactly that emphasis. First, take a high-level look at how the GRE is formatted:

**The Computer-Based GRE Revised General Test**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Questions</th>
<th>Allotted Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analytical Writing</strong></td>
<td>One “Analyze an Issue” task, One “Analyze an Argument” task</td>
<td>30 minutes per task</td>
</tr>
<tr>
<td>(one section, two separately timed tasks)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Verbal Reasoning</strong></td>
<td>20 questions per section</td>
<td>30 minutes per section</td>
</tr>
<tr>
<td>(two sections)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quantitative Reasoning</strong></td>
<td>20 questions per section</td>
<td>35 minutes per section</td>
</tr>
<tr>
<td>(two sections)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unscored/Experimental</strong></td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>(position varies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>(end of test)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Time</strong></td>
<td></td>
<td>3 hours, 45 minutes</td>
</tr>
</tbody>
</table>

The Analytical Writing section always appears first. The Verbal Reasoning, Quantitative Reasoning, and experimental/unscored sections can appear in any order. In total, you will see two scored Verbal sections, two scored Quantitative sections, and one unscored, experimental section. The experimental section has two purposes: to try out potential future questions and to ensure that scores on the revised exam are similar to scores from previous versions. To ensure that the data gathered is a valid measurement of performance, ETS must prevent you from knowing which section doesn’t count (not that you would be tempted to slack off if you knew it didn’t affect your score, right?). Treat each section as though it will count towards your score.
Content on the GRE

Analytical Writing

This is the first section of the GRE and is designed to test your ability to think critically and communicate effectively. In the “Analyze an Issue” task, you will your own thoughts on an issue of general interest. While you might see one of several different instruction sets, there is no “right answer.” The GRE graders evaluate how well you develop and support your argument.

In the “Analyze an Argument” task, you are presented with a passage in which the writer makes an argument. Your job is to evaluate the logical quality of the argument according to the specific set of instructions given for that passage. The grade you receive will depend on your ability to examine the reasoning and evidence used. Later in the course, you will learn crucial strategies to score well on the Analytical Writing tasks while conserving energy for the tougher sections that follow.

Verbal Reasoning

The Verbal Reasoning sections of the GRE measure your ability to analyze written content and synthesize key information, evaluate sentence structure and logic, and recognize the relationships between various words and concepts. Reading Comprehension makes up roughly half of the Verbal measure and requires you to analyze passages and answer questions about what you read. Text Completion questions require you to complete passages by filling in blanks based on your understanding of the content. Sentence Equivalence also requires you to fill in the blank, but here you are choosing two words that create the same meaning in the sentence as a whole.

Quantitative Reasoning

The Quantitative Reasoning sections test your basic mathematical skills, understanding of basic mathematical concepts, and ability to reason, model, and solve questions using quantitative methods. The main content areas are Arithmetic, Algebra, Geometry, and Data Analysis (basic stats, probability, etc.). You can rest easy knowing that you won’t see math beyond a typical high school curriculum; subjects such as advanced trigonometry and calculus are not tested. You will have an on-screen calculator available to you during this section.

Quant sections feature four question types. Quantitative Comparison asks you to determine the relationship between two quantities. Multiple Choice with One Answer requires you to select one answer from five choices, while Multiple Choice with One or More Answers requires you to select one or more answers from several choices (the question types are more aptly named than creatively named). Numeric Entry questions require you to enter your answer to the question. The question types may appear straightforward, but, as you’ll see later in the lesson, each format offers its own challenges and strategic opportunities.
The Computer-Based Format and You

The GRE is primarily offered as a computer-based test (a paper-based exam is offered a few times a year in certain locations). One of the advantages of the computer-based format is that you get to pick a time and location that fit your needs; you don’t need to show up to an auditorium at 8:00AM on a Saturday as you would for other standardized tests.

The computer-based format also allows ETS to adapt the test to your performance. Perform well on your first Verbal (or Quant) section, and the next one of that type will be more difficult (but with more upside for your score, of course; you won’t be punished for having been successful). Perform poorly, and the next one will be easier. Within a given section, each question counts equally towards your overall section score. Question #1 might be easier for you than #17 is, but getting it right earns you the same number of points. This differs dramatically from “computer-adaptive” tests like the GMAT and the previous version of the GRE, where the adaptivity occurs between questions and harder questions are worth more.

As with a paper-based test, you are able to move freely within a GRE section. You can skip questions and come back to them later, and you can even “flag” questions to remind yourself to go back to them. These features only apply to problems within the current section but the flexibility to review and change your answers will have important strategic implications.

The Paper-Based GRE

While the majority of GRE test centers – including all centers within the continental United States – administer the computer-based GRE, there remains a paper-based GRE exam in select locations where the computer-based option is unavailable. For those who take the paper-based test, the content, question types, and strategies covered in this course will all remain relevant. The major difference is that each Quantitative and Verbal section will be slightly longer: the Quantitative sections on the paper-based tests are 25 questions in 40 minutes and the Verbal sections are 25 questions in 40 minutes.
**GRE Scoring**

Each section of the GRE is scored separately, with score ranges of:

- **Analytical Writing:** 0-6.0 in half-point increments
- **Verbal Reasoning:** 130-170 in one-point increments
- **Quantitative Reasoning:** 130-170 in one-point increments

You will not be provided with an “overall score,” although certain schools and programs will talk about combined scores (just the addition of your Verbal and Quantitative scores for a scale of 260-340). Be certain to consider the admissions requirements and preferences of your target programs for a better idea of how these numbers relate to you and your candidacy. For example, admission to competitive math, engineering, and finance schools will require scores on the extreme high end of the Quantitative Reasoning measure, but potentially be more forgiving on Verbal Reasoning and Analytical Writing. And admission to programs in the humanities will often see a reverse effect. On a general test like the GRE, which can be used for admission to all sorts of graduate programs, there is no “one-size-fits-all” scoring rubric to assess everyone’s candidacy.
The GRE Question Types - Verbal

Officially, the GRE has three types of verbal questions:

- Text Completion
- Sentence Equivalence
- Reading Comprehension

But, strategically speaking, Reading Comprehension comes in four major varieties that deserve specific attention:

- “Critical Reasoning” (one paragraph with one question)
- “Reading Comprehension” (a longer passage with several multiple choice questions)
- “Select All That Apply” (multiple choice problems with multiple answers)
- “Select-In-Passage” (click on the sentence that supplies the answer to the question)

You will spend plenty of time on each type of problem, but the following examples will introduce you to the types of problems you’ll see and the strategies you’ll use.

Text Completion

Text Completion problems come with the basic instructions:

*For each blank select one entry from the corresponding column of choices. Fill all blanks in the way that best completes the text.*

What they’re really asking you to do is select words or phrases for each blank, choosing answers that create a logical meaning for the sentence or paragraph in the prompt. The obvious methodology is to know what the words in the answer choices mean, but this is not simply a vocabulary exercise! You will also be responsible for:

- Recognizing structural/transition language outside the blanks that signal the intent of the prompt.
- Eliminating answer choices that you know do not provide a logical meaning for the prompt (and thereby using process-of-elimination to sometimes arrive at words that you don’t know well, but that are the only plausible choice).
- Inferring the meanings of words based on root and related words.
- Testing combinations of answer choices to find the single combination that works for the entire sentence when there are multiple possibilities for each blank individually.

Text completion problems will come in two varieties: one blank with five choices, or multiple blanks (two or three) with three choices per blank. The following is an example:
1. Because the artist’s previous body of work had been so (i)______________, critics were unable to grasp the (ii)______________ in her later, more refined work.

<table>
<thead>
<tr>
<th>Blank (i)</th>
<th>Blank (ii)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) delicate</td>
<td>(D) subtlety</td>
</tr>
<tr>
<td>(B) brash</td>
<td>(E) grandiosity</td>
</tr>
<tr>
<td>(C) diffident</td>
<td>(F) tact</td>
</tr>
</tbody>
</table>
Learning by Doing: The Whole Prompt Matters

Two context clues are critical for understanding this prompt. The introductory word “Because” signals the intent of the sentence as a cause/effect relationship. Because of the first part of the sentence, the second part is true. The modifying phrase “later, more refined work” at the end is also crucial, because it establishes a meaning for the “effect” part of the sentence. Because the early work was <blank>, critics couldn’t grasp the <blank> in her later, more refined work. This tells you that the early work (first blank) was different from “more refined” and that the second blank has to agree with “more refined.” Therefore, the answers are “brash” (different from refined) and “subtlety” (different from the first blank’s “brash” and in agreement with the “more refined” description).

Note that if the sentence started with “even though” instead of “because,” the entire meaning of the sentence would be different. If that were the case, the first blank would have to have a similar – not different – meaning to the second and to the phrase “more refined.”

Think Like the Testmaker: Subtle Meaning Matters

This problem exemplifies a way in which the GRE Testmaker uses “basic” test prep against examinees on harder problems. It’s common for students to look at structural language like “because” and memorize knee-jerk relationships like “because → the blanks agree” and “although → the blanks disagree.” But language has more nuance than that. Here, the middle of the sentence includes a “negation” word (unable) to shift that conventional “because → agree” meaning to something more subtle. So make sure that you take the time to digest the entire meaning of the prompt without simply relying on one glaring keyword. The keywords are important, but the Testmaker has subtler tools to flip that upside down on you if you’re not reading the entire prompt carefully.
Sentence Equivalence

Sentence Equivalence problems come with the instructions:

Select the two answer choices that, when used to complete the sentence, fit the meaning of the sentence as a whole and produce completed sentences that are alike in meaning.

Similar to Text Completion, Sentence Equivalence relies on the meaning of the sentence and the meanings of the words in the answer choices. And also similar to Text Completion, these problems are assessing not only your vocabulary but also your ability to:

- Recognize structural/transition language outside the blank.
- Use process of elimination to arrive at answers even if you don’t confidently know their meanings.
- Intuit meanings of words based on their roots or context.

The following is an example:

2. Impacted by the forces of globalization and climate change, American farmers are facing an increasingly less efficient existence: their work is more __________ than ever before, but the rewards are much less abundant.

(A) monotonous
(B) onerous
(C) indispensable
(D) toilsome
(E) ample
(F) repetitive
Learning By Doing – Meaning Matters

In this problem, you may notice two pairs of synonyms in the answer choices: monotonous goes with repetitive, and onerous goes with toilsome. So what are you to do? The meaning of the sentence is paramount, and some context clues tell you that the blank has to do with the volume/difficulty of the work, not with the monotony. One is the phrase “less efficient” (more work for less or the same output would qualify for that) and the other is the phrase “but the rewards are less abundant.” That connotes that farmers are working harder for less pay or reward. So since both phrases lead you to “farmers are working harder” you have to pick onerous and toilsome, choices B and D.

Skills Meet Strategy: Learning Vocabulary Through GRE Practice

If you haven’t yet begun work on the Skillbuilder sections of future lessons (particularly Arithmetic, Algebra, and Text Completion / Sentence Equivalence) you should start soon! Those sections will help you to build the core skills and knowledge you need to know for the GRE so that you can add strategy and insight with your classes and homework assignments. In the Text Completion / Sentence Equivalence Skillbuilder, you will learn more about building vocabulary skill through root and related words. This problem is a good example. For the correct answers onerous and toilsome:

Onerous – even if you don’t know the meaning of onerous, if you’ve heard the phrase “the onus is on them now” you probably know from context that “onus” means “burden,” so when you’re looking for a word that means difficult or burdensome, onerous is one that you might want to hang on to.

Toilsome – this is a word that isn’t used nearly as frequently today as it was a century ago, but its root is “toil” which you know to mean work or labor.

The lesson? When you encounter words that you may not know, you can often find roots of the words (for monotonous, “mono” means “one”) or related words to help you intuit the meaning.
Reading Comprehension: Critical Reasoning

Within the family of “Reading Comprehension,” one subcategory of question is the “Critical Reasoning” type, which asks you to read a single paragraph and answer a single question based upon it. You will typically see two of these per GRE Verbal Reasoning section. These problems deal with arguments, and you’ll have to do one of the following:

- Strengthen an existing (and not airtight) argument
- Weaken an existing argument
- Draw a conclusion based on evidence
- Describe how an argument is constructed
- Explain a seemingly paradoxical set of facts

You’ll learn more later in this lesson about how to deconstruct and analyze arguments. In the meantime, here is an example of a Critical Reasoning question:

3. **Military Consultant:** The chain of command in your unit is marred by a serious flaw: your soldiers are so fearful of being disciplined for security breaches within their jurisdiction that they fail to report potential problems to their superiors. And those superiors share the same fear of being seen as lacking control of their units that they fail to fully investigate potential problems and bring them up the chain to you. Consequently, General, you’re likely presiding over several security threats that you’ll never know about.

Which of the following is an assumption required by the consultant’s logic.

A. The general is responsible for the culture that exists within his chain of command.
B. All soldiers near the bottom of the chain of command are fearful of being disciplined for security breaches.
C. The general does not have sources other than the chain of command to alert him to security concerns.
D. Some soldiers do not fear authority figures more than they fear genuine security threats.
E. There is not a feasible incentive system to reward soldiers for conscientiously pointing out security concerns.
Learning By Doing: Dealing With Flawed Logic

When you’re presented with a Critical Reasoning argument that asks you to strengthen or weaken an argument or to determine an assumption it rests upon, the prompt will be a flawed argument (you’ll learn more about logical arguments in the second half of this lesson). Therefore, it’s helpful to determine what that flaw is before you get to the answer choices so that you’re ready for the correct answer when it presents itself.

In this argument, the conclusion is that the general is presiding over several security threats he won’t become aware of, and the rationale behind that is that soldiers and superiors in the chain of command have disincentives to report those breaches to the general. What’s the flaw? Well, why does the security reporting have to come from that chain of command, up from the soldiers? Is there not at least a chance that the general knows of the chain-of-command problem and has hired or deputized someone for the specific purpose of finding those breaches? If you notice that flaw, you should see that answer choice C deals directly with that and essentially says “that’s not a problem.” So answer choice C is correct.

Skills Meet Strategy: Always Be Skeptical Of Words Like Always

As you’ll learn later in the lesson, in order to find fault in a conclusion you only need to prove that it’s “not necessarily” true. You don’t need to prove that it’s completely false. And so in this problem, where the conclusion is “…security threats that you’ll never know about,” you’ve found a flaw if you can show that the general might learn about them.

When you see words like all, always, none, never, and only in a conclusion, remember that just finding one exception to the rule means you’ve found a flaw in that argument.
Reading Comprehension

The other types of Reading Comprehension problems come on passages of up to 5 paragraphs and generally include multiple problems per passage. Those questions will each take one of these forms:

- Multiple choice, select one
- Multiple choice, select all that apply
- Select-in-Passage (click on the sentence that answers the question)

To see these problem types in action, consider the following passage and associated questions.

Many of the dams in the eastern U.S. were originally built for water diversion, agriculture, factory watermills, or other purposes that are no longer useful. Because of the age of these smaller dams, most are now at risk for catastrophic failure or partial failure. In addition, these dams block eastern anadromous fish runs, such as those for Atlantic salmon and American shad, and prevent important sediments from reaching estuaries.

In the western U.S., most of the dams are larger projects that were built for agricultural water diversion in arid country, with hydroelectric power generation as a significant side benefit. As in the eastern U.S., the dams in the Pacific Northwest and California block passage for western anadromous fish species such as Pacific salmon and steelhead trout. Likewise, fish ladders and other passage facilities have been largely ineffective in mitigating the negative effects on local populations such as Pacific salmon, although they have worked somewhat for steelheads.

Because of these negative effects and the questionable usefulness of many dams today, widespread debates over dam removals are taking place across the U.S. While agricultural water diversion and clean, alternative energy sources are important, the safety concerns, ecosystem issues, and management expenses associated with many dams make removal the smarter option in most cases. Such an initiative should place initial emphasis on most of the smaller, outdated dams in the East and the “worst offenders” in the West.

One example of a large western dam that should clearly be removed is the 710 ft. Glen Canyon Dam in Arizona. The negative effects it has on the water quality and riparian habitat of the Colorado River in Grand Canyon National Park are nearly catastrophic. The lake formed by the dam has eliminated more than 160 miles of habitat for endangered Colorado River fish species. The reservoir also loses more than 6 percent of the total annual flow of the Colorado River to evaporation and seepage. With its size and prestige, removal of the Glen Canyon dam would be a monumental and unprecedented step toward improving much of the devastation caused by outdated and now unnecessary dams across the U.S.

Select-In-Passage:

4. Select the sentence that includes the author’s main point in writing this article.
Learning By Doing: Using Structural Language

With longer passages, it’s easy for examinees to get lost in details. That’s why it’s extremely helpful to pay attention to language that signals organization. For example, a word like “therefore” is a typical marker of a conclusion, whereas a word like “however” signals that the author is changing direction. In this passage, a few major markers should stand out to help you find the author’s main point. Often a main point is found in the first paragraph or the last paragraph, but look at the beginning of the last paragraph of this passage: “One example…”. This signals that the last paragraph serves to exemplify or further explain a main point that’s been made earlier, and that sentence goes on to tip off what that point is: “One example of a large western dam that should clearly be removed.” This shows you that the main point, earlier in the passage, has something to do with the removal of dams.

Another important marker of conclusions is the word “because,” which often sets up a cause-and-effect relationship between an important fact (“because the GRE is such an important test…”) and the conclusion that should be drawn from it (“…I should make sure to do all of my homework each week.”). Paragraph three starts with such a cause/effect: “Because of these negative effects…” If you follow that along, you’ll see that paragraph three builds to the author’s main point toward the end of the first sentence “…removal the smarter option in most cases.” The author wants to see most dams removed.
Multiple Choice: Select One

5. It can be inferred from the passage that, in comparison to western dams, eastern dams:

    A. cause more problems in blocking fish habitat.
    B. are used more often for powering factories and mills.
    C. are generally smaller in size and scope.
    D. are generally older in age and less useful.
    E. are more likely to fail catastrophically.
Learning By Doing: Inference Questions Generally Require You To Leverage Information

As you’ll learn in the Reading Comprehension lesson, problems that ask you what can be inferred from the passage will often provide you a relationship in the passage – for example, A is less than B – that you’ll then have to leverage to find the proper answer choice, for example “B is greater than A.” In this problem, you should see that the beginning of paragraph two says that “in the western U.S., most of the dams are larger projects.” So what does this tell you about the aforementioned eastern dams? If western is larger, then eastern must be smaller (choice C).

Note that answer choice D is a very tempting answer. What’s wrong with D? There’s no direct proof for the older age of the eastern dams. From context you likely have a good feeling that they’re older, but as you will learn later in the lesson the standard of proof for an inference on the GRE is that it “must be true.” And since the passage doesn’t prove that eastern dams are older in comparison with western dams, D is not necessarily true.
Multiple Choice: Select All That Apply

6. According to the passage, which of the following can be concluded about western dams?

   A. Western dams are responsible for conditions that have caused at least some fish species to be considered endangered.
   B. Western dams have not had a detrimental effect on steelhead trout.
   C. Some western dams have been harmful to water quality in the waterways around them.
Learning By Doing: Three Questions In One

The biggest challenge in “Select All That Apply” problems is that each answer choice is essentially a problem unto itself. The only “process of elimination” opportunity you have is that at least one answer choice must be correct – there’s no answer for “none” – so if you know for certain that two are incorrect you can select the third. But ultimately you have to consider each answer choice as a yes/no question: Does this choice affirmatively answer the question?

Here, again, you have the opportunity to put your “conclusions on the GRE must be true” skills to work. For choice A, although the last paragraph mentions that the Glen Canyon dam has impacted the habitat of endangered fish, it doesn’t go that step further to say that the Glen Canyon caused that endangerment. As is often true of invalid conclusions on the GRE, this statement might very well be true, but it goes a step too far to be proven by the passage.

Choice B should point you back to the last sentence of the second paragraph, where “…they have worked somewhat for steelheads” may make it sound like steelheads are an exception-to-the-rule that dams have been detrimental. But read up further: the statement is really saying that some of the efforts to reverse that detrimental effect have worked for steelheads, a signal that dams might have negatively affected steelheads. Therefore choice B is incorrect.

If you’re in a time crunch and have definitively eliminated A and B, because one answer has to be correct you could pick C somewhat confidently. But overall you should examine each answer choice (if C turns out to be horribly flawed, then knowing that “at least one” choice has to be right that would be a clue to reconsider the first two choices). Since paragraph four mentions that the Glen Canyon dam – at least one dam – has had a detrimental effect on water quality, it’s safe to select choice C as the correct answer.
The GRE Question Types - Quantitative

On the GRE Quantitative Reasoning section, you’ll face four major categories of questions:

- Multiple Choice: Select One
- Multiple Choice: Select All That Apply
- Numeric Entry
- Quantitative Comparison

Throughout the quantitative curriculum you’ll see plenty of problems of each type. In this section, you’ll see one example of each along with some strategic takeaways to keep in mind as you see these problem types in the future.

Multiple Choice: Select One

You’ve likely seen problems like this on other tests you’ve taken (perhaps the ACT or SAT to get into college), and the instructions are relatively straightforward. From the five answer choices, pick the one that is correct. But you’ll also learn that there are some important tools specific to this problem type as well as some potential traps that you’ll need to be wary of. Consider this example:

7. A certain box contains 14 apples and 23 oranges. How many oranges must be removed from the box so that 70 percent of the pieces of fruit in the box will be apples?

(A) 3
(B) 6
(C) 14
(D) 17
(E) 20
Learning By Doing: Answers Are Assets

On this problem you can certainly set up an algebraic relationship and solve for the correct answer, although one step is a bit tricky and can make that more challenging than many examinees like. Since the question asks for the number of oranges that need to be removed, to say that “apples represent 70% of the new total” in a one-line algebraic equation, you’ll need to account for that, perhaps by:

\[14 = .7(14 + (23 - x))\]

Where the numbers represent “14 apples equal 70% of the total, and that total is represented by the 23 apples (that doesn’t change) plus the new number of oranges.” That new number of oranges is calculated by subtracting x from the 23 we started with.

On many multiple choice problems, however, you have a significantly easier out than the algebra. If you recognize here that the answer choices represent the number of oranges you’re taking away, you can “backsolve” by picking the middle answer choice and determining whether it’s correct, not big enough, or not small enough. In this case, with the middle choice 14, you’d say:

Subtracting 14 oranges leaves 9 oranges. That means 14 apples, 9 oranges, and 23 total pieces of fruit. Since 14/23 is not 70%, C is incorrect. If you’ve done that work on your calculator, you know that 14/23 is a little over 60%, so you need to remove more oranges to make apples represent 70% of the total. So since you’ll need to subtract a little more, there are only two choices left: D and E. If you test D, you’ll find that 23-17 is 6, making the mix 14 apples and 6 oranges, at which point you know that D is correct.

Think Like the Testmaker: Right Answer, Wrong Question

Another common theme on “select one” multiple choice problems is that many such problems include an answer choice that you would pick if you misinterpreted the question. In this problem, many will look to backsolve or perform the algebra this way:

14 apples need to equal 70% of the total

\[14 = .7T\]

\[20 = T\]

20 pieces of fruit – 14 apples = 6 oranges. So the answer should be 6! And people will then, mistakenly, pick choice B.

But wait – the problem doesn’t ask for how many oranges are left, but instead for how many oranges need to be removed. Those who choose B likely have done all the math correctly, but are still marked as wrong because they didn’t double-check the question itself. Simply put, the most popular answer to many GRE word problems is the right answer, just to the wrong question.
Multiple Choice: Select All That Apply

On these problems, you can see quite a few answer choices (unlike “select all that apply” Reading Comprehension problems, which will only have three). The subject matter will often dictate your approach, but a good rule of thumb is to consider each answer choice before you make your final decision, as opposed to just “doing the work” and scanning for the answers that you want. The GRE Testmaker tends to select answer choices carefully, using the “all that apply” caveat to trap those who find some correct answers, but miss one or two that may seem offbeat.

Consider this example:

8. Which of the following values can be expressed as the sum of two different prime numbers?

   A. -5
   B. 3
   C. 5
   D. 11
   E. 13
   F. 14
   G. 23
Learning By Doing: Consider Each Answer Choice

Most “select all that apply” problems are written so that you have to consider each answer choice and determine whether it fits with the question or not. On this one, you should address each choice:

-5 is not the sum of two primes, because prime numbers must be positive.

3 cannot be the sum of two primes, because 2 is the smallest prime number (1, by definition, is not prime)

5 can be the sum of two primes: 2 and 3.

11 cannot be the sum of two primes. An odd number like 11 can only be formed by adding an odd and an even (not two odds or two evens), so since the only even prime is 2, which would mean that the other number would be the nonprime 9, this cannot be done.

13 can be the sum of 2 primes, 2 and 11.

14 can be the sum of two primes, 3 and 11.

23 cannot be the sum of two primes. As you saw with 11, an odd number would require 2 + another prime, and since 2 + 21, a nonprime, is 23, 23 cannot be expressed as the sum of two primes.
**Numeric Entry**

These problems are the most like what you probably remember from high school. There's a math problem, and you have to solve it and provide the answer. You won't see answer choices; you just have to type in what you come up with. For the typewritten answers, a few things are important to note:

- You’ll see one box if the answer should be an integer or decimal, and you’ll see two boxes (stacked vertically with a line in between) if the answer should be a fraction.
- All valid forms of the answer will be marked correct, so if the answer is 1.5 and you type 1.50, you will receive credit.
- Similarly, you do not need to reduce a fraction to be correct ($\frac{10}{4}$ and $\frac{5}{2}$ would each be considered correct answers), but you may need to reduce a fraction to get it to fit in a box, or to come up with an integer or decimal if there is only one box provided.

Try this example:

9. If three identical machines, working simultaneously at their identical constant rates, can finish a job in 20 hours, how many hours would it take ten identical machines to finish the same job?
Learning By Doing: Just Do It

In the Word Problems lesson you’ll learn more about rate problems; for now, just recognize that these Numeric Entry problems require you to just do the work. Here you’re given that three machines work at a rate of one job in 20 hours. Since Rate = Work / Time, you can set up the equation:

\[ 3(R) = \frac{1 \text{ job}}{20 \text{ hours}}, \text{ where you’re saying “3 times the rate of one machine is 1 job in 20 hours.”} \]

That allows you to divide both sides by 3 to find out the rate of one machine working alone. That would make that rate:

\[ R = \frac{1 \text{ job}}{60 \text{ hours}} \]

So with 10 machines working together, you can then multiply the rate of one single machine by 10, creating the relationship:

\[ 10(R) = 10 \left( \frac{1 \text{ job}}{60 \text{ hours}} \right) \]

So \(10R = \frac{1 \text{ job}}{6 \text{ hours}}\) meaning that the job will take 6 hours. Enter 6 in the box.

Skills Meet Strategy: Rate is Inverse to Time

A nice shortcut on this problem is to recognize that in the \(Rate = \frac{Work}{Time}\) equation, Rate and Time are inverses of each other. If you go twice as fast, it will take half as much time. So you can shortcut this problem by recognizing that if you multiply the number of machines by \(\frac{10}{3}\), that will multiply the amount of time it takes by \(\frac{3}{10}\). So to quickly answer this problem, take \(\frac{3}{10}\) of 20 and you’ll get the correct answer 6.
Quantitative Comparison

The most unique type of problem on the Quantitative Reasoning section is the “Quantitative Comparison” problem type. These problems ask you to compare two quantities, Quantity A and Quantity B, and determine whether:

- Quantity A is larger (answer choice A)
- Quantity B is larger (answer choice B)
- The two quantities are equal (answer choice C)
- There is insufficient information to prove an answer (answer choice D)

Answer choice D should stand out as interesting; in most facets of academia, you don’t find yourself rewarded for saying “I don’t know,” but on Quantitative Comparison problems D is a valid answer choice. Not being able to prove an answer is common when, for example, there’s an exception to the rule or when a relationship includes an often-overlooked type of number. For example, consider this problem:

10. x is a positive integer

<table>
<thead>
<tr>
<th>Quantity A</th>
<th>Quantity B</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x^3</td>
</tr>
</tbody>
</table>

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.

Here it might seem that positive numbers always get bigger when you take them to bigger exponents. And although that 3rd power might make you think “well what about negatives?” the stimulus (the section above the quantities) defines x as positive, so negatives don’t matter for this problem. But what about 1? For all other values of x, the cubed term will be much larger than the original term, but if x = 1 the two quantities are equal. Because that one possible value gives you a different answer than the others, you must choose D on this problem.
To practice more with Quantitative Comparison, try this problem:

11. Triangle LMN is isosceles, and angle LNM measures 60 degrees.

<table>
<thead>
<tr>
<th>Quantity A</th>
<th>Quantity B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side LM</td>
<td>Side MN</td>
</tr>
</tbody>
</table>

A. Quantity A is greater.
B. Quantity B is greater.
C. The two quantities are equal.
D. The relationship cannot be determined from the information given.
Learning By Doing: Leverage the Stimulus!

In this problem, you’re given two key pieces of information before you proceed to the fairly-vague quantities themselves. For one, you know that you’re dealing with an isosceles triangle. And then secondly, you know that one of the angles is 60 degrees. While a common refrain here is “well I don’t know anything about the other two angles,” here is where you should leverage those data points. Since, in an equilateral triangle, two angles must be equal, and in a triangle of any kind the angles must sum to 180 degrees, your possibilities are:

Angle LNM measures 60, and the other angles match each other. In this case, the other two have to add to 120 and they have to be the same, so since 120 divided by 2 is 60, all angles are 60.

Angle LNM measures 60 and matches one other angle. This means that those two angles equal 120, leaving exactly 60 left for the third angle, meaning again that all angles are 60.

So because of all this, you now know that this is an equilateral triangle, which means that all sides are the same. So quantity A and quantity B are equal, making the answer to this problem C.

Think Like the Testmaker: When the Problem Zigs, Be Prepared to Zag

You’ll find as you practice Quantitative Comparison problems that some of them are relatively straightforward, just testing whether you know the math. But on more difficult problems, the Testmaker knows your tendencies: when it’s very abstract, you’re inclined to say “I just don’t know” and when an answer looks crystal clear you’re apt to pick it. So the Testmaker can create trap answers, as in this case, by giving an abstract setup that just happens to have enough information, baiting you into quickly picking D and rewarding those who think critically enough to investigate further.

Don’t get paranoid looking for trap answers around every corner, but a good rule of thumb is that if a problem seems to obviously lead to choice D, you should do a little extra work to double check that you can’t leverage the given information just a bit more. And if an answer seems to obviously be A, B, or C, you should take an extra few seconds to scan for an exception to the rule that would make the answer, instead, D.
GRE Logic

What is an Argument?

Throughout the GRE, you will see arguments and be asked to draw inferences and conclusions. One of your essays, for example, is called “Analysis of an Argument,” and on both the Quantitative Reasoning and Verbal Reasoning sections you will be prompted to answer “which of the following is a valid conclusion?” and “which of the following must be true?” On many Reading Comprehension questions, you’ll be asked to strengthen or weaken existing arguments or to assess how the line of reasoning in them is constructed. And then there’s the term “Reasoning” itself, prominent in all GRE messaging to demonstrate that this is a test of reasoning and critical thinking. Clearly, the underpinnings of logical argument construction will be critical to your performance throughout the exam so let’s begin the discussion of GRE strategy and logic with the basics of arguments.

The Greek philosopher Aristotle (384-322 B.C.) first posited the notion that a tool could be used to argue convincingly. (Or did he? He’s credited with that notion, but given the lax recordkeeping from many societies around that time perhaps that conclusion isn’t entirely valid…) His study included grammar, rhetoric, and logic, and he built his teaching of logic upon what he called a syllogism, a three-sentence structure in which the truth of the first two sentences guarantees the truth of the third:

All men are mortal ↔ Premise
Socrates is a man ↔ Premise
Socrates is mortal ↔ Conclusion

A syllogism works if the two premises (which are always treated as facts) are related to each other logically and then prove the third statement. Here, since the second premise (Socrates is a man) directly relates to the first (men are mortal), the two work together to produce a third statement that must be true.

In other arguments, and certainly in many not-necessarily-true GRE arguments, the two premises are not properly linked so the argument draws a conclusion that is not guaranteed. Consider the syllogism:

All men are mortal
Socrates is a dog
Therefore, Socrates is mortal

That argument is clearly flawed. Why? Because the second premise is not logically connected to the first. To believe this argument, one would need to assume that “what is true for men is true for dogs.”
Much of your role with GRE arguments will involve recognizing these logical gaps between premises and conclusions. Similarly, think about this argument:

**All men are mortal**

**Socrates is mortal**

**Therefore, Socrates is a man**

Is this argument valid? It’s not. In the first premise, you learn that being mortal is a necessary condition of being a man: that is, every single man is mortal. However, being mortal is not sufficient to prove that you are a man – in other words, there are many other living things that could be mortal. In the second premise, you learn that Socrates is mortal, but that is not sufficient to prove that he is a man. As you just saw in the previous syllogism, perhaps Socrates is a dog, or any other of the mortal plants or animals.

We will more closely look at flaws in argument shortly, but for now let’s further break down the roles that certain statements play in an argument. As we’ve seen, arguments are constructed of premises (facts) and conclusions (which are drawn from facts).

They also involve context, a topic that the GRE will employ to round out syllogisms into paragraphs (and to force you to process more information). An example of context would be:

*I was thinking about Socrates the other day and noticed something interesting.* (Context)

**Socrates is a man.** (Premise)

**And all men are mortal.** (Premise)

**So Socrates must be mortal.** (Conclusion, based on the premises)
Valid vs. Invalid Inferences

More than other standardized tests that include argument-based Reading Comprehension, the GRE heavily tests your ability to determine whether a given inference is valid or invalid. And the standard for a valid argument is quite clear: in a valid argument, the conclusion MUST BE TRUE based on the premises. Consider the following arguments and syllogisms and determine whether the argument must be true based on the premises.

1. In order to be admitted to Stansbury, a candidate must have at least a 3.5 GPA and at least a 160 on each section of the GRE. Jessie graduated with a 3.7 GPA and scored 162 on each section of the GRE. Therefore, Jessie will be admitted to Stansbury.
2. All students admitted to Hillman must have at least a 3.5 GPA and a combined score of 330 on the GRE. In Theo’s application he reports a 3.6 GPA and a combined 328 on the GRE. Therefore, Theo will not be admitted to Hillman with this application.
3. All platinum accounts include travel insurance. Some accounts with travel insurance require an annual fee, so some platinum accounts require an annual fee.
4. All linebackers play dirty. Some linebackers are Raiders. Therefore, some Raiders play dirty.
5. All widgets are steel. Some widgets are red. Therefore, some steel widgets are not red.
6. Whenever an NBA player is placed on waivers, he is either claimed by another team during the 10-day waiver period or he becomes a free agent. Jimmy, an NBA player, was not claimed during the 10-day waiver period after being waived, so Jimmy became a free agent.
7. All Paretans are Qinkoans. Which of the following conclusions are valid?
   a. All Qinkoans are Paretans
   b. No Paretan is not a Qinkoan.
   c. Some Qinkoans are not Paretans.
8. Despite its fanfare in the press, the Springfield Police Department’s intensive supervision program has had mixed reviews among policemen. The percentage of recently-released inmates arrested under the intensive supervision program is no greater than the percentage of recently-released inmates arrested under the routine supervision program. It can be concluded, then, that intensive supervision is no more effective than routine supervision at preventing released inmates from committing additional crimes.
9. Nationally, drivers who use their headlights during the daytime are less than half as likely to be involved in a daytime car accident as those who do not use their headlights when it’s not required. Therefore, a law requiring the use of headlights at all times would result in at least some reduction in the frequency of daytime car accidents.
10. Anyone who did not cheat on the test answered question #8, a flawed question, incorrectly. Samantha, the class valedictorian and vice-president, answered every question on the test correctly. Which of the following conclusions are true?
   a. No one cheated on the test.
   b. Not everyone cheated on the test.
   c. Not all students refrained from cheating on the test.
   d. Samantha will lose her role as valedictorian.
Common Types of Invalid Inferences

- The conclusion is just a bit more specific than you can prove
- It’s probably true – you’d be stunned if it were false – but you can’t find concrete proof. “Must Be True” vs. “Not Necessarily True”
- Clever Wordplay: the argument gets you to treat two very similar things the same (“Arrests vs. Crimes Committed”)
- You have several necessary conditions for the conclusion to be true, but they’re not sufficient
- You have correlation, not causation

Common Types of Valid Inferences (That You Might Miss)

- The conclusion seems bland (which is what makes it true)
- The conclusion seems to go too far, but it’s covered because it includes all available options
- The conclusion lacks specificity, but it must be true
Solutions

1. Invalid. In the stimulus you’re told that Jessie has met two of the requirements that it takes to be admitted to Stansbury. But you’re not told that these are the only two requirements. Perhaps, as is the case with some international schools, there is also a requirement for a second language. Then you wouldn’t know whether she made that requirement. Or it could be true that she meets the requirements but didn’t even apply, in which case of course she wouldn’t get in. From the prompt it seems probable that she would be admitted, but you don’t know it to absolutely be true.

2. Valid. How is this example different from the previous, which looks quite similar? Here you’re told that Hillman has two requirements, and you’re told that Theo failed to meet one of them. So in this case it doesn’t matter at all whether there are other requirements. Because Theo has failed to meet one of them, you can conclude that he won’t be admitted. Note also the specificity of the conclusion with the phrase “with this application.” That is carefully crafted to avoid the hypothetical “well what if he retakes the GRE?”. Had the conclusion just stated that he wouldn’t be admitted, period, it wouldn’t be airtight because you couldn’t assume that those metrics were permanent.

3. Invalid. “All” and “some” statements require a careful read to determine whether they lead to a valid conclusion. It might help to see the visual:

![Diagram](image)

You know that platinum accounts are all in the “Travel Insurance” category, but you don’t know whether there are other types of accounts that also have travel insurance. And since you know that some – but not necessarily all – travel insurance accounts have annual fees, it could be that the top set of arrows leads to “annual fees” (in which case the conclusion is valid) or that the bottom set of arrows leads to “annual fees” but the top does not (which would make the conclusion invalid). Since you don’t know for certain, the conclusion is not necessarily true.

4. Valid. This problem is essentially the inverse of the previous example. Since all linebackers play dirty, any subset of those linebackers (including those that are Raiders) will play dirty. So this conclusion is valid.
5. Invalid. This example is tricky, as your mind wants to equate “some” with “not all”. But “Some” does not mean the same thing as “not all”, even though colloquially most will use them as synonyms. If all widgets are steel and some widgets are red, it is still logically possible that all widgets are steel AND red – thus the conclusion is not “must be true.”

Look around your classroom right now (or if you’re outside the classroom, think of your network of grad school hopefuls). Is it safe to say that “some of my GRE colleagues would like to achieve a high score on the test?” It is – you may not have interviewed each classmate to gauge their goals, but those with whom you’ve spoken have probably all reported lofty goals. So some of your classmates – those you’ve talked to – want a high score, it’s safe to say. Well, it probably turns out that all of them do – but that doesn’t make you wrong for saying that “some” do. “Some” literally means “not none” or “at least one, possibly all.” “Not all” literally means “not all” (anything but all). The two have quite a bit of overlap on the number line but they do have distinct differences. “Some” potentially means anything from 1 to all, inclusive. And “not all” potentially means anything from 0 to (All – 1), inclusive.

6. Valid. One type of valid-but-often-unsatisfying conclusion is the argument that cites two complementary possibilities (exactly one of which has to be true) and then has a conclusion that says “so if the first one isn’t true, then the second one must be.” For example, you could say “having applied to Harvard, either I get in or I don’t, so unless I don’t get in I’m headed to Cambridge in the fall!” That’s true, but not all that conclusive. Well, this example is the same thing, since either two things could happen (claimed or free agent), it’s necessarily true that if the first one doesn’t happen, the second will.

7. The first conclusion is not valid, and you should see that relatively quickly. Paretans could easily be a subset of Qinkoans (think “all pigeons are birds but not all birds are pigeons”), in which case not all Qinkoans are Paretans. The second conclusion is valid. If all Paretans are Qinkoans, then there aren’t any Paretans that are not Qinkoans. And the third one is tricky, but it’s not valid. Why not? It could be possible that Paretans and Qinkoans are synonyms, in which case the two pools are exactly the same. So while it’s possible that Paretan is a subset of Qinkoan, it’s also possible that they’re the same thing, and that one exception to the rule is enough to show that the third conclusion is not necessarily true.
8. Invalid. This problem involves a classic GRE logic word shift. The premises tell you about the percentage of recently-released inmates arrested, but the conclusion tells you about the percentage of recently-released inmates who committed crimes. Now, those two concepts are related, but they’re certainly not the same thing – it’s a significantly closer man vs. dog, to paraphrase the initial example from this lesson. Since the statistic is about a different concept than the conclusion, the conclusion is invalid.

9. Invalid. This is a classic “causation vs. correlation” setup. The prompt wants you to think that the headlights are a causal factor in the limited number of accidents for those who use them, but play devil’s advocate. Who’s most likely to use headlights when they don’t have to? Very cautious people. So perhaps they avoid accidents not because of the headlights, but because they’re just extremely cautious people who take every available precaution. Then the headlights are just correlated with safety, not a causal driver of it, and the conclusion would be false.

10. The first conclusion is invalid, as we can certainly prove that at least one student, Samantha, cheated. The second is also invalid. You only know about Samantha; maybe everyone cheated (including her) or maybe she was the only one. The third conclusion is valid, although it’s not altogether satisfying. “Not all students didn’t cheat” is less profound than “the valedictorian herself cheated” but this statement is nonetheless true, as it essentially says “at least one person cheated.” And the fourth conclusion is invalid and a good example of a prediction that goes too far; be careful about making predictions in conclusions, as generally speaking it’s a major challenge to prove something about the future with only a few statements in a paragraph.
Select THE Correct Inference

Many GRE Verbal problems will ask you to select one inference – a conclusion that MUST BE TRUE – from a reading passage. Consider the following example:

12. If the minimum wage increases again, Ernesto’s will have to increase the prices it charges for its products. And if that happens, Ernesto’s has a choice: it can spend more on advertising to attract more customers, or its sales and profitability will decrease. But since the extra advertising costs will simply raise total expenses, increasing those costs will still result in an overall decrease in profitability.

Which one of the following conclusions can be logically drawn from the statements above?

(A) Unless the minimum wage increases, Ernesto’s will continue to remain profitable.
(B) If the minimum wage increases, Ernesto’s will no longer be able to remain profitable.
(C) Ernesto’s will see its profitability increase if the minimum wage does not increase.
(D) Ernesto’s will be unable to maintain its current profitability if the minimum wage increases.
(E) If Ernesto’s profitability decreases, then the minimum wage must have increased.
Learning By Doing: Using the MUST BE TRUE Standard

An extremely helpful technique with Inference problems is Process-of-Elimination. Because the correct answer MUST BE TRUE, incorrect answers can be eliminated if they COULD BE FALSE (or are “not necessarily true”). And several choices here are great candidates for that. With choice A, you could throw out a hypothetical to eliminate that: say the minimum wage were to stay the same but Ernesto’s had a fire that shut down its retail store for several weeks and required expensive repairs. That would certainly decrease profitability even without the wage increase. And that hypothetical situation would also disprove choices C and E – a fire, a health code violation, a particularly strong competitor driving prices down…any of these would show that profitability could still decrease even while the minimum wage stays the same. Since these answers all could be false, they’re not proven and you can eliminate them.

Choice B commits the Must Be True sin of going just a bit too far. You can prove that if the wage increases, Ernesto’s will see its profitability decrease. But smaller profits and “not profitable” are two different things. Even a 90+% decrease in profits would still mean that there are some profits, so B is incorrect because it goes too far.

Choice D is correct. Because you know that the wage increase comes with two options – increase advertising or watch sales decline – and that both options result in decreased profitability, you can conclude that profits must decline if the wage increase happens.
Select ALL Correct Inferences

A feature unique to the GRE is the “select all that apply” type of inference question. On these, you’ll only be presented with three answer choices and you need to select at least one (or up to all three). Here the degree of difficulty is a bit higher, as finding one correct inference doesn’t disqualify the others like it does with the “select one” type. However, in some cases you are able to use Process-of-Elimination, because there is always at least one correct answer. So if you’re certain that two choices are wrong but unsure about the third, you can select the third because one of them has to be correct.

To get a feel for these problems, consider the following:

13. If Shero wins the election, McGuinness will be appointed head of the planning commission. But Stauning is more qualified to head it since he is an architect who has been on the planning commission for 15 years. Unless the polls are grossly inaccurate, Shero will win.

Which of the following are logical inferences based on the above?

(A) If the polls are grossly inaccurate, someone more qualified than McGuinness will be appointed head of the planning commission.

(B) McGuinness will be appointed head of the planning commission only if the polls are a good indication of how the election will turn out.

(C) If the polls are a good indication of how the election will turn out, someone less qualified than Stauning will be appointed head of the planning commission.
Learning By Doing: Three Problems In One

On these “select all inferences” problems you need to be cautious with the distinction between “must be true” and “could be false.” For choice A, note that you actually have no idea what will happen if someone other than Shero wins. You know that if Shero wins, McGuinness will get the job, but you don’t know what any other election winners would do. Maybe one or two of them would appoint McGuinness anyway, or maybe they’d choose someone even less qualified than McGuinness. Thinking through these hypotheticals should help you eliminate choice A.

Choice B is very close to being correct but a terrific example of the specificity of “must be true.” If you remove the word “only” it’s airtight: McGuinness WILL be appointed if the polls – which say Shero will win – are a good indication of the election results. But you don’t know that that’s the ONLY way he’ll be appointed. Again, some other winner could still choose to appoint McGuinness, or maybe McGuinness is the only person who really wants the job. “Only” in choice B goes just a touch too far, so B is incorrect.

C has to be correct, given that you know that the polls suggest Shero, and Shero means McGuinness is appointed, and McGuinness is less qualified than Stauning. If the polls are right, McGuinness – someone less qualified than Stauning – will be appointed.

Think Like the Testmaker: Must Be True Doesn’t Mean Must Be Specific

One of the main reasons that choice C is tricky for people is that you can prove something substantially more specific than C: you can prove that McGuinness will be appointed, not just that “someone less qualified than Stauning” will be appointed. So since you have a definitive, detailed conclusion in your mind, it’s easy to eliminate conclusions that don’t adhere to the one you drew.

But remember that the standard here is “must be true.” The correct answer doesn’t have to be entirely specific; in fact, the more bland the conclusion the easier it is to prove. The GRE testmakers know that they can often plant a conclusion in your mind that you’re set on finding in the answers, and that they can slip a less “exciting” correct conclusion past you. So take care to assess the validity of all conclusions, and in particular those that don’t jump off the screen at you as “exciting,” because bland conclusions are easier to prove even if they’re harder to get excited about.
Inferences in Longer Reading Prompts

To this point you’ve seen single-paragraph prompts for inference questions, but on test day you can see prompts that go up to as many as four dense paragraphs. Longer passages come with several questions each, and generally include at least one inference question. To get a feel for how you’d approach one of those, consider this prompt and question:

The geology of the Grand Canyon area exposes one of the most complete and studied sequences of rock on Earth. The nearly 40 major sedimentary rock layers exposed in the Grand Canyon and in the Grand Canyon National Park area range in age from about 200 million to nearly 2 billion years old. Most were deposited in warm, shallow seas and near ancient, long-gone seashores in western North America. Both marine and terrestrial sediments are represented, including fossilized sand dunes from an extinct desert. There are at least 14 known unconformities (breaks indicating different eras of sedimentary deposits) in the geologic record found in the Grand Canyon area.

It is believed that uplift of the region that eventually led to this dramatic exposure of rock started about 75 million years ago during the Laramide orogeny, a mountain-building event that is largely responsible for creating the Rocky Mountains. In total, the Colorado Plateau, where the Grand Canyon is located, was uplifted an estimated 2 miles (3.2 km). The adjacent Basin and Range province to the west started to form about 18 million years ago as the result of crustal stretching. A drainage system that flowed through what is today the eastern Grand Canyon emptied into the now lower Basin and Range province. The opening of the Gulf of California because of seismic activity around 6 million years ago enabled a large river to cut its way northeast from the gulf. The new river captured the older drainage to form the ancestral Colorado River, which in turn started to form the Grand Canyon.

Wetter climates brought upon by ice ages starting 2 million years ago greatly increased excavation of the Grand Canyon, which was nearly as deep as it is now by 1.2 million years ago, when the river volume decreased at the end of that climatic period. Volcanic activity deposited lava over the area 1.8 million to 500,000 years ago. At least 13 lava dams blocked the Colorado River over that time period, forming lakes that were up to 2,000 feet (610 m) deep and slowing excavation of the canyon. The end of the last ice age and subsequent human activity has further reduced the ability of the Colorado River to deepen the canyon. It is unlikely that this amazing geological record will change substantially until major shifts in the river volume and/or direction take place.

14. Which of the following can be inferred from the passage (select all that apply)?

A. The Grand Canyon was formed in part as a result of seismic activity.

B. The excavation rate of the Grand Canyon by the Colorado River is lower today than it was 5 million years ago.

C. Had volcanic activity not dammed the Colorado River for over a million years, the Grand Canyon would be far deeper today than it currently is.
Learning By Doing: Inferences in Longer Passages

Remember that, because of the MUST BE TRUE standard, you will need to find concrete proof in the passage for any inference you mark as correct. What makes this task particularly difficult on longer passages is that, generally, inference questions will make you leverage information to get to that truth: Correct answers can be proven, but it may take a few steps. Choice A is a good example, as the proof takes a few steps but you can find, in the last few sentences of the second paragraph, the sequence: seismic activity --&gt; large river formed --&gt; older drainage formed the Colorado River --&gt; which in turn formed the Grand Canyon. Therefore choice A must be true.

Choice B is a good example of how trap answers look, where the inference seems totally plausible but just isn’t proven beyond reasonable doubt. The passage does state that the excavation rate was quite high 6 million years ago and is low today, but that leaves a million year gap from 6 million years ago to 5 million, so we cannot guarantee that 5 million years ago was also a period of any excavation. Just as today is a relatively dormant period, so too 5 million years ago could have been.

Choice C similarly goes just a bit too far from what can be proven by the passage. You know that the volcanic activity slowed the excavation of the river, but the period of “over a million years” leaves a lot of possibilities for what might have happened had the river not been dammed so it cannot be said with certainty that “the Grand Canyon would be far deeper than it currently is.” Perhaps other factors would have led to the same effect, or the depth would be negligible and not “far deeper.”
Inferences on the Quantitative Section

This inference logic is important on all three phrases of the exam: clearly on the verbal, certainly on the AWA essays, and also on the quantitative section. On the quantitative section, you’re likely to see inference logic manifested in two ways. Consider the problem:

15. Given that xy = y², which of the following must be true?
   (A) x = y
   (B) xy > 0
   (C) If x > 0, then y > 0
   (D) If y < 0, then x < 0
   (E) y = 0
Learning By Doing: Play Devil’s Advocate

When you’re facing a mathematical relationship and a question that asks what MUST be true, one of the greatest tools in your toolkit is the “Devil’s Advocate” approach of finding situations in which that relationship could be false. When you’re playing that game, numbers that you should consider – numbers that tend to react differently – include:

- Negative numbers
- Fractions/decimals/nonintegers
- Zero
- Numbers nearing infinity

And in this particular case, zero is a fantastic devil’s advocate weapon. Suppose, for example, that \( y \) were equal to zero. Then \( x \) could be anything, since \( 0x = 0 \) is always a true statement. That means that \( A \) doesn’t have to be true (although it probably jumps out at you at first glance since it’s true for every other value of \( y \) but zero). And if \( y = 0 \) then \( xy = 0 \), so it’s not greater than zero, eliminating choice \( B \). \( C \) is incorrect for the same logic: \( y \) could always be zero itself, and then not greater than zero. That leaves you with \( D \) and \( E \), and \( E \) is relatively quick to disprove, too, given that if \( x = y \), then \( x \) and \( y \) could be anything just as long as they’re the same. That leaves \( D \), which defines against the “\( y = 0 \)” devil’s advocate option. If \( y \) is negative, then \( x \) has to match \( y \), so \( D \) must be true.

Think Like the Testmaker: Leverage Hints

Do you need to be paranoid on the GRE, worrying about zeroes lurking around every corner? No. It’s a number that could certainly come up, but when it is a crucial number very often the Testmaker primes you for it by putting zeroes in the answer choices or elsewhere in the problem. What makes this a valid “quantitative reasoning” problem and not a “gotcha!” problem is that the problem includes the number 0 in choices \( B \), \( C \), \( D \), and \( E \), and even shows you the lynchpin “what if \( y \) equals zero” verbatim in choice \( E \). As you study the GRE, learn to notice hints that you overlooked on the problems you missed.
### Inferences and Quantitative Comparison

Answer choice D in Quantitative Comparison is often correct precisely because of the “could be false” counterargument to a conclusion that looks upon first glance to be true. So before you conclude that “Quantity A is bigger,” “Quantity B is bigger,” or “the two quantities are the same,” ask yourself for the exception to the rule in which that conclusion you’re about to make MUST be true or whether there’s a case in which it could be false.

Consider this problem:

16. $r$ is the remainder when positive integer $x$ is divided by positive integer $(x - 1)$.

<table>
<thead>
<tr>
<th>Quantity A</th>
<th>Quantity B</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r$</td>
<td>1</td>
</tr>
</tbody>
</table>

A. Quantity A is greater.

B. Quantity B is greater.

C. The two quantities are equal.

D. The relationship cannot be determined from the information given.
Learning By Doing: Could Be False

In an abstract problem like this where all terms are variables, it’s common to get a feel for it by plugging in numbers to see what the relationship looks like. So you might start by saying “what if \( x = 5 \)” (to pick an easy-to-use number). That would mean that \( x = 5 \) and \((x - 1) = 4\), so the problem is 5 divided by 4, meaning that the result is 1 remainder 1, so \( r = 1 \).

If you then tried another pair of consecutive positive integers for \( x \) and \((x - 1)\), you might try 10 and 9, or 100 and 99, and again see that the result is 1 remainder 1. So at this point it might look clear that \( r = 1 \) and the two terms are equal (for answer choice C).

But answer choice D on Quantitative Comparison problems is “the relationship cannot be determined from the information given.” And that really means “I cannot prove a logical conclusion about this relationship,” where the “Could Be False” mentality is ever-important. For many values of \( x \) and \((x - 1)\), the remainder is 1 and the two quantities are a tie. But for one (and only one) critical pairing, \( x = 2 \) and \((x - 1) = 1\), the terms divide with no remainder \((2/1 = 2)\) so \( r = 0 \), and that’s the one place where “\( r = 1 \)” is not necessarily true. So the answer must be D.

Skills Meet Strategy: Critical Reasoning & Quantitative Comparison

When you plug in numbers to test a Quantitative Comparison relationship, remember that choices A, B, and C require the relationship to be absolutely true. “Quantity A is greater” means that “for all allowable situations, Quantity A is greater” (and so on). So using your logic skills on these problems is crucial: once you’ve established a possible “could be true” relationship, a useful goal is to then try to find an instance in which that relationship “could be false” (in which case the answer is D). This will likely lead to your trying different types of numbers: negatives, fractions, the smallest number they’ll allow, the largest number they’ll allow, zero, etc. If you can find the exception to the “obvious” pattern, you’ll have quickly proven choice D to be correct. And if you cannot after trying combinations that look like they might react differently, you can be more confident in your A/B/C choice.
GRE Logic: When The Inference Is Provided, But Flawed

Not all GRE Reading Comprehension problems will ask you to draw inferences. Others will provide arguments that contain inferences, and then ask you how to strengthen or weaken those inferences. The thought process is similar but the operative step is a bit different: instead of asking yourself whether the inference is valid, you’ll also have to ask yourself why it’s invalid.

Now, since you’re basically required to do that on inference problems – unless you’re guessing blindly, you probably have a reason for all the answer choices you discard as invalid – one important difference in these Strengthen/Weaken the conclusion problems is that the invalid conclusions won’t appear as answer choices, but instead they’ll be mixed into the prompt. So a critical first step is identifying just which statement in the prompt is the conclusion. There are four context clues to help you do that:

Three language clues in an argument can lead you to the conclusion:

1) Conclusion Language
   Clues: keywords such as therefore, thus, in conclusion, or so
   Example: Therefore, we should invest in a new auditorium for the school.

2) Call For Action
   Clues: some action that should be taken, based upon premises. Key phrases include we should, they must, it is important that we, etc.
   Example: Like the above – therefore we should invest…
   Or: Because of this revelation, they need to retract their statement immediately.

3) Premise words
   The only reason to indicate a premise is if the conclusion is nearby. If you are merely listing facts (premises) then there is no need to use a premise word. Consider the following: “The analytical writing measure comes first. Photo ID is required of all test takers. The scoring range is from 120 to 170.” These are all stated as facts and do not require any signal words. However, if a conclusion is added then a premise word becomes necessary. For example, “Because the GRE is a very long test, you should take advantage of the available breaks.” Now the word “because” is needed in order to show that the premise is not the conclusion. That is the purpose of a premise word – to indicate that a phrase is not the conclusion. This is usually only done if the conclusion is very near. So when you see a premise word, look for the conclusion to precede or follow the premise that the premise word signals.

The cause/effect technique begs a further explanation of how premises and conclusions are offered. Any conclusion that comes in a GRE argument will have to come with a reason why. This is necessary, because conclusions must be based on something. A standalone statement is not a conclusion in a GRE argument – it must be accompanied by at least one premise. So you can use this function of logic to use “The Why Test” for conclusions.
4) The Why Test

If a statement is made without a reason why, it is not the conclusion. If a statement depends logically upon something else – if there is a reason why – then it could be the conclusion. Try with this statement:

*It is raining, so the parade will be canceled.*

Why is it raining? The sentence doesn’t say – that’s a premise.

Why is the parade canceled? Because it’s raining. The statement offers a reason why, so “the parade will be canceled” is the conclusion.

Now, note this – rarely an argument may have multiple conclusions, but will only have one main conclusion. Consider:

*It is raining, so the parade will be canceled. Therefore, the Rotary Club will need to find a new fundraiser this year.*

Here, the “main conclusion” is that the Rotary Club will need to find a new fundraiser. Why does the club need a new fundraiser? Because the parade will be canceled. Why is the parade canceled? Because it’s raining. The premises and the subordinate conclusion all lead to the main conclusion: the Rotary Club will need to find a new fundraiser.
Finding (and Undermining) Conclusions Drill

When you face Strengthen/Weaken questions – and when you write the “Analyze an Argument” essay for the writing section – you’ll need to find the conclusion of the argument, and then immediately go into critical thinking mode since the conclusion will be flawed. For the prompts that follow, first identify the conclusion, then brainstorm some flaws in the argument. Why might it not be true?

1. It is generally agreed by scientists that the naturally occurring vitamins found in plants and healthy organic foods are more readily absorbed by the body and more effective once absorbed than the synthesized vitamins found in vitamin pills. Such pills are useless, therefore, and should be avoided as nothing but a waste of money.

2. In the last decade there has been a significant decrease in cable television viewing. During this same time, there has been increasing viewership of web-based broadcasts. We can determine, then, that the decrease in cable television viewing must have been caused by people’s preference for web-based broadcasts.

3. Birds need so much food energy to maintain their body temperatures that some of them spend most of their time eating. But a comparison of Mifune, a bird of a seed-eating species, to Rossi, a bird of a nectar-eating species that has the same overall energy requirement, would surely show that Mifune spends more time eating than does Rossi, since a given amount of nectar provides more energy than does the same amount of seeds.

4. People who have a college degree tend to live longer than those who do not have a college degree. This is true for both men and women, and it is true across many different ethnicities and in many different geographical regions. This phenomenon is easily explained because it has been proven that people who have attended college have lifestyles and habits that are well known to increase lifespan: they eat balanced meals, they exercise often, they consider themselves happy, and they tend to have strong relationships.

5. There are far fewer kidneys available for transplants than there are patients who are waiting for a new kidney. As evidence of this, nearly 85,000 patients are currently on the waiting list for a kidney transplant, but last year only 16,000 kidney transplants took place.

Finding Conclusions In Critical Reasoning Problems

Later in the course you will spend more time specifically with Critical Reasoning problems, in which you are often asked to strengthen or weaken an existing conclusion. Sometimes the conclusion will be obvious, while other times – like it was with a few of the examples from the previous drill – you will have to dig deeper in the list of ways for finding conclusions. The following is an example both of how you will need to work to find conclusions AND of one of the major types of logical flaws you should be prepared for on test day:

17. People with major depressive disorder are much more likely to have immune disorders such as lupus and chronic fatigue syndrome than people who are not depressed. This suggests that major depressive disorder reduces the body’s ability to fight infection, because primary infections are thought to cause many of these immune disorders.

Which of the following is an assumption required by the argument above?

A. People who are depressed do not tend to overstate the severity of their symptoms.
B. People with major depressive disorder are less careful than others about protecting themselves from infection.
C. Major depressive disorder does not usually have a very sudden onset.
D. Immune disorders do not cause major depressive disorders in many people.
E. Many immune disorders are known to have causes other than primary infections.
Learning By Doing: The Why Test

To find the conclusion here, look at the phrase “this suggests that.” That phrase screams “the why test” since it calls out that that particular sentence already has a reason why. (Why? “This” – the sentence immediately prior) Then right after the comma you have the word “because,” showing again a reason to believe that middle portion: “major depressive disorder reduces the body’s ability to fight infection.” With that as your conclusion, you can now get to work attacking it.

The primary flaw with that conclusion lies in the evidence in the first sentence. All you know is that people with depressive disorder are more likely to have immune disorders – depressive and immune disorders are correlated. Notice the difference between “likely to have” and “likely to contract (or get)” – the latter example would suggest that one disorder comes before the other, but as it is stated you only know that the two tend to occur together. Since you don’t know which one causes the other (or even if there is a causal relationship either way), the most damaging criticism to the conclusion “depressive disorder causes immune disorder” is the inverse: what if immune disorders left the body more susceptible to depressive disorders? If you’ve caught that common causation-vs.-correlation flaw, you should see that answer choice D is necessary.
**GRE Logic Summary**

The GRE Verbal and Analytical Writing sections are extremely logic-heavy, and on the Quantitative section the Quantitative Comparison problems will require plenty of inference thinking, as well. Therefore it is extremely important that you are comfortable:

- Drawing valid conclusions, using the “must be true” standard
- Leveraging information to logically arrive at conclusions
- Recognizing when conclusions could be true, but are not necessarily valid
- Finding conclusions using a variety of tools including “the Why Test”
- Criticizing flawed arguments and recognizing logical gaps

In the Critical Reasoning, Reading Comprehension, Analytical Writing, and Quantitative Strategy lessons you will continue to hone and practice these skills. As you progress through the Veritas Prep course and continue your GRE studies, pay attention to how often the GRE asks you whether you can draw inferences and why certain inferences are invalid.
GETTING THE MOST OUT OF YOUR COURSE

The Veritas Prep course is designed to optimize the time that you spend studying, and to blend content, conceptual understanding, and strategy to provide you with a comprehensive program to prepare for the GRE. To ensure that you get the most out of your course:

• **Read and complete the Skillbuilder sections of each lesson before class begins.** Particularly for the Arithmetic, Algebra, Geometry/Statistics, and Text Completion/Sentence Equivalence lessons, the GRE tests a wide enough scope of information—and of information that you have largely already learned much earlier in your academic career—that to try to teach all of it from the ground up would take significantly longer than most students can stomach. Your in-class time will cover many of these skills, but its emphasis will be on using the skills to employ strategy and build deeper conceptual understanding.

• **Complete at least half of the homework problems for each lesson within the week that class takes place.** A major educational philosophy behind this curriculum is “Learning by Doing.” By taking what you learn and applying it directly to homework problems, you will build deep knowledge and the ability to effectively employ strategies.

• **Think conceptually.** On its more-difficult problems, the GRE tests many of its skills and concepts in ways that reward you for understanding the entire topic as opposed to the simple recall and use of facts and formulas. As a reasoning-based test, the GRE has a mission to reward you for deeper understanding of and application of its content areas, so study with understanding and strategy in mind.

• **Do not mistake activity for achievement; do not mistake memorization for knowledge.** Many of us have successfully navigated higher education to this point by cramming for tests, grinding out papers, and counting on attendance and participation grades to round out our scores. The GRE is a different animal, and many students are frustrated by putting in time and effort but not seeing results. To succeed on this test, you need to hold yourself accountable for what you learn and not just what you do. Repetition and memorization have their place, but only if they are building blocks toward deeper conceptual and strategic understanding.

• **Do not be discouraged by incorrect answers in class or in homework.** These lessons are designed to focus primarily on problems with above-average difficulty and beyond, using incorrect answers to reveal important takeaways. You should be challenged in each lesson, and to get the most out of this course you should find pride in learning from mistakes.
Solutions to Lesson Problems

1. B, D
2. B, D
3. C
4. First sentence of the third paragraph
5. C
6. C
7. D
8. C, E, F
9. 6
10. D
11. C
12. D
13. C
14. A
15. D
16. D
17. D