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# Critical Reasoning

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Print Batch 2016.1

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This book is dedicated to Veritas Prep's instructors, whose enthusiasm and experience have contributed mightily to our educational philosophy and our students' success.

It is also dedicated to the teachers who inspired Veritas Prep's instructors. The lesson that follows was only made possible by a lifelong love of learning and of undertaking educational challenges; we have teachers around the world to thank for that.

Finally and most importantly, this book is dedicated to our thousands of students, who have taught us more about teaching and learning than they will ever know. And to you, the reader, thank you for adding yourself to that group.

### **Personal Dedications**

Veritas Prep is a community of educators, students, and support staff, and these books would not be possible without our cast of thousands. We thank you all, but would like to specifically acknowledge the following people for their inspiration:

Clay Christensen (Harvard Business School), Tom Cotner (Plymouth-Salem High School), David Cromwell (Yale School of Management), Lenore Goshorn (Allen Elementary School), Henry Grubb (Fort Osage High School), Dana Jinaru (Beat the GMAT), Patricia Kenney (University of Michigan), Steven Levitt (University of Chicago), Walter Lewin (Massachusetts Institute of Technology), Lawrence Rudner (Graduate Management Admission Council), Jeff Stanzler (University of Michigan), and Robert Weber (Kellogg School of Management).

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**CREATING** *Think Like the Testmaker*

Creating is the top of the pyramid in Bloom’s Taxonomy. When you have completely mastered the GMAT, 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 GMAT 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 GMAT difficult is not so much the underlying skills and concepts, but rather the way those skills and concepts are tested. On the GMAT, what you know is only as valuable as what you can do with that knowledge. The Veritas Prep curriculum emphasizes learning through challenging problems so that you can:

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



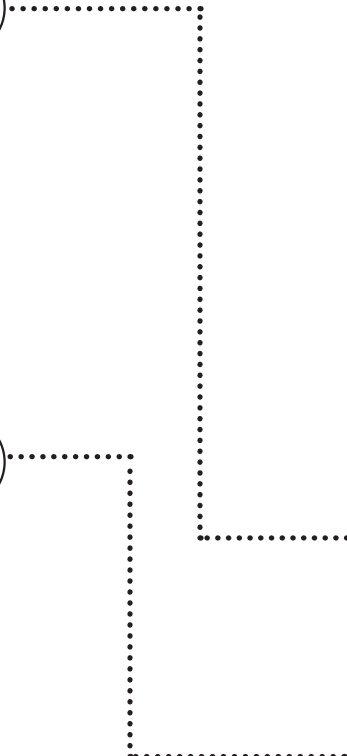
**REMEMBERING** *Skillbuilder*

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

- Math curriculum through the early high school level, and
- Basic grammar skills through the elementary school level.

To succeed on the GMAT 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 a tedious review of material they’ve already mastered.



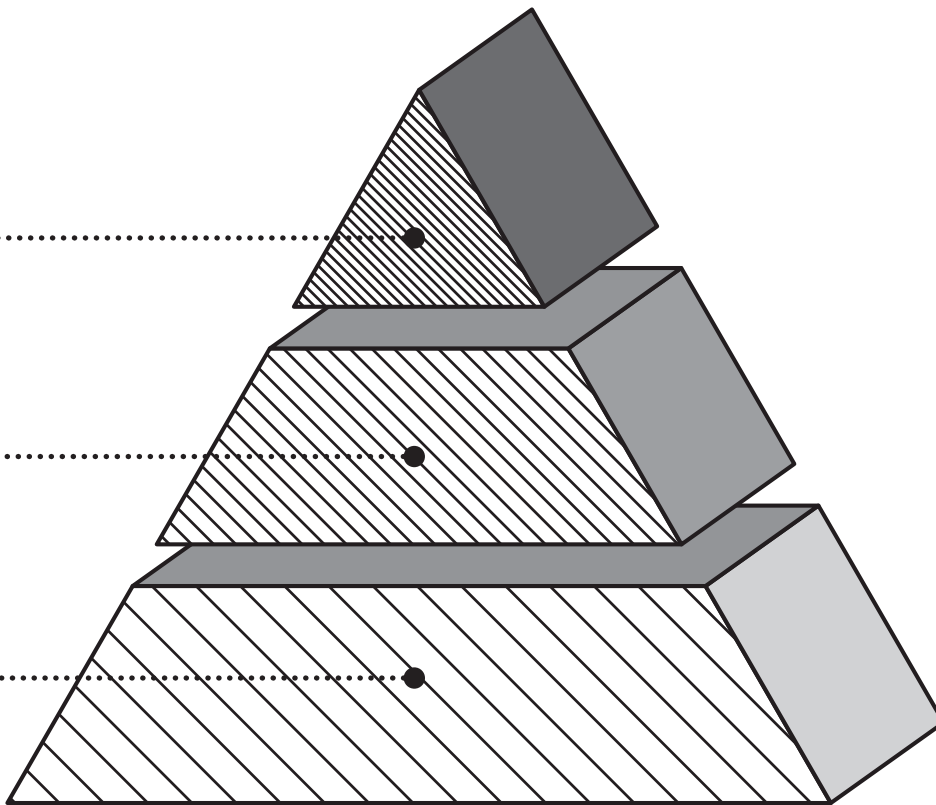


## PREVIEW

As you learned in the Foundations of GMAT Logic lesson, the educational philosophy at Veritas Prep is based on the multi-tiered ***Bloom's Taxonomy of Educational Objectives***, which classifies different orders of thinking in terms of understanding and complexity.

To achieve a high score on the GMAT, it is essential that you understand the test from the top of the pyramid. On the pages that follow, you will learn specifically how to achieve that goal and how this lesson in particular relates to the ***Veritas Prep Pyramid***.

PREVIEW



## **How This Book Is Structured**

*Our Curriculum Is Designed to Maximize the Value of Your Time*

### **The Veritas Prep Teaching Philosophy: Learning by Doing**

Business schools have long featured the Case Method of education, providing students with real-world problems to solve by applying the frameworks they have studied. The Veritas Prep *Learning by Doing* method is similar. In class, you will spend your time applying skills and concepts to challenging GMAT problems, at the same time reviewing and better understanding core skills while focusing your attention on application and strategy. The Case Method in business school maximizes student engagement and develops higher-order thinking skills, because students must apply and create, not just remember. Similarly, the *Learning by Doing* philosophy maximizes the value of your study time, forcing you to engage with difficult questions and develop top-of-the-pyramid reasoning ability.

**An important note on *Learning by Doing*:** In business school, your goal with a business case is not to simply master the details of a particular company's historical situation, but rather to develop broader understanding of how to apply frameworks to real situations. In this course, you should be certain to reflect on each question not simply through that narrow lens (Did you answer correctly? What key word made the difference?), but rather as an example of larger GMAT strategy (How could the exam bait you with a similar trap? How deeply do you need to understand the content to solve this genre of problem more efficiently?).



As you learned in the Foundations of GMAT Logic lesson, there are important recurring themes that you will see in most GMAT problems:



**THINK LIKE THE TESTMAKER**

- Abstraction
- Reverse Engineering
- Large or Awkward Numbers
- Exploiting Common Mistakes
- Selling the Wrong Answer and Hiding the Correct Answer
- Misdirection
- Content-Specific Themes



**SKILLS MEET STRATEGY**

- Guiding Principles
- Problem-Solving Strategies
- Leveraging Assets

**REMEMBER:** Don't mistake activity for achievement! Focus on recurring themes, not just underlying content.

Each book in the Veritas Prep curriculum contains four distinct sections:

1. **Skillbuilder.** We strongly suggest that you **complete each Skillbuilder lesson before class** at your own pace, and return to the *Skillbuilder* when you recognize a content deficiency through practice tests and GMAT homework problem sets.

The *Skillbuilder* section will:

- Cover content that is **vital to your success on the GMAT**, but is best learned at your own pace outside the classroom.
- Allow you to **review and/or relearn** the skills, facts, formulas, and content of the GMAT. Each student will have his own set of skills that are “rusty” or even brand-new, and will find other items that come back quickly.
- **Vary in length** significantly for each book, based on the number of underlying concepts. (For instance, the Advanced Verbal lesson does not have a *Skillbuilder* because you are already building on the concepts introduced in three previous lessons.)

2. **Lesson.** The lessons are designed to provide students with maximum value added from an instructor by:

- Doing in-class problems together (*Learning by Doing*), and
- Analyzing those problems for the recurring takeaways.

With each problem, there will be a detailed explanation that will help you understand how the problem is testing a particular concept or series of concepts, what makes the problem hard, and what underlying skills are required to solve it.

When relevant, there will be particular boxes for *Think Like the Testmaker*, *Skills Meet Strategy*, and *Skillbuilder* when you should be focused on particular aspects of how the question is made or how the underlying content is being tested.

**NOTE:** When doing in-class and homework problems, you should **do your work below the problem**, and you **should not circle the answer** on the actual question (just note it on the bottom of the page). That way, if you want to redo problems, you can simply cover up your work and proceed as if you had never done it.



**3. You Oughta Know.** The *You Oughta Know* sections will round out each lesson and cover:

- Obscure topics that arise infrequently.
- More advanced topics that are not common on the GMAT but do get tested.

While these uncommon content areas do not warrant in-class time, we believe you should have some exposure to these topics before taking the GMAT. Therefore you should **complete these sections before moving to the homework problems**. As with the *Skillbuilders*, the length of these will vary depending on their importance.

**4. Homework Problems.** In many ways, the homework problems are **the most important part of each book**. After refreshing core content in the *Skillbuilder* and then applying that knowledge in the lesson, you must reinforce your understanding with more problems.

Each question is accompanied by a **detailed explanation** in your online student account, as well as a quick-reference answer key on the last page. A majority of questions are above the 50<sup>th</sup> percentile in difficulty, and they are arranged in approximate order of difficulty (easiest to most difficult). By completing all of the homework problems, you will learn all of the different iterations of how concepts and skills are tested on the GMAT.

Homework problems are designed to be challenging, so do not despair if you are answering questions incorrectly as you practice! Your goal should be to learn from every mistake. Students can miss a significant percentage of questions in each book and still score extremely high on the GMAT, provided that they learn from each problem. Embrace the challenge of hard problems and the notion that every mistake you make in practice is one that you will know to avoid on the GMAT when every question counts.





## SKILLBUILDER

True to their name, Critical Reasoning problems measure your ability to think critically. In large part, these questions ask you to read arguments and notice flaws or vulnerabilities within them, noting the potential for alternative explanations (other than the conclusion proffered) and counterarguments.

To sharpen your mind for the in-class Critical Reasoning lesson, this Skillbuilder section will take you through three important thought processes that we introduced in the Foundations of GMAT Logic lesson:

1. Separating arguments into context, premises, and conclusions.
2. Reading Critical Reasoning question stems to quickly understand your role within the argument.
3. Reading arguments critically, and finding flaws and assumptions embedded within them.

With these fundamental skills at your disposal, you can more comfortably and efficiently attack the Critical Reasoning problems that you will see later in the lesson.

### Finding the Conclusion

As you may remember from the Foundations of GMAT Logic Lesson, there are four major ways to find a conclusion in a Critical Reasoning argument:

1. Conclusion language (like “therefore,” “thus,” “in conclusion,” etc.)
2. A call for action (“we should...,” “they must...,” etc.; note that these phrases sound natural with conclusion language in front of them (“therefore, we should...”) and that these phrases should be dependent on some kind of premise)
3. Premise wording to set up a conclusion (“because of X, Y is true” → Y is the conclusion, based on X)
4. The “Why Test”: If the argument gives a reason “why” for a statement, then it could be the conclusion. If it does not attempt to explain “why,” then it must be a premise. Example: *Denzel Washington is in this movie, so I think you’ll like it.* Why is Denzel in the movie? The argument doesn’t explain, so that’s just a premise. Why do I think you’ll like it? Because Denzel is in it—so that statement has a reason “why” and would be the conclusion of that argument.

### Finding the Conclusion Drill

In the drill that follows, please identify the conclusion for each argument.

1. If the Association wants a mayor who will attract more businesses to the town, Cooper is the only candidate it could support. So, since the Association is supporting Cooper, it must have a goal of attracting more businesses to the town.
2. Businesses should never stop innovating if they plan to remain successful. Federtech has decided to return dividends to its shareholders instead of reinvesting its profits. It is likely, then, that Federtech will soon begin its decline in profitability.
3. Artwork is typically valuable because it is either pleasing to the eye or it is introspective about its subject. *The Kramer* is wholly displeasing to the eye, so it must be introspective about its subject. After all, it sold for an extremely high price.
4. Plymouth Township needs its own library. The increased commercial activity in the City of Plymouth has not only made parking near the city library difficult, but the traffic in downtown makes it dangerous for our precious children to ride their bikes to the library and enjoy the pleasure of reading a new book.
5. Over the past 20 years, salaries for law school graduates have drastically dropped while law school tuition has dramatically increased. It should be expected, accordingly, that the volume of applications to law school will soon drop significantly.

### Finding the Conclusion Drill Solutions

1. "So...it must have a goal of attracting more businesses to the town"—We know this because "So...must have" is conclusion language, and "since the Association is..." is premise wording that leads directly to this statement.
2. "Federtech will soon begin its decline"—This passes the Why Test (Why? Because it isn't reinvesting in innovation), and the word "then" helps demonstrate that this statement depends on the others.
3. "...it must be introspective"—This statement leads with the conclusion language "so," and passes the Why Test (Why? Because it doesn't meet the other characteristic of valuable artwork, but we know it has value).



4. “Plymouth Township needs its own library”—This statement is a call for action, and passes the Why Test, as the other statements (difficult parking; dangerous for children) provide reasons for why this library is necessary.
5. “...the volume of applications to law school will soon drop”—The word “accordingly” exists as conclusion language, and this statement passes the Why Test (Why? Because the cost/benefit analysis is looking grim, so people will start deciding the other way).

### Critical Reasoning Question Stems

As you will learn in the lesson that follows, there are four major families of Critical Reasoning questions, and once you have identified the type of question (by reading the question stem first) you can more efficiently read the stimulus with an understanding of which components of the paragraph will be most important. These families are:

**S**trengthen: You are asked to strengthen an existing conclusion.

**W**eaken: You are asked to weaken an existing conclusion.

**I**nference: You are asked to draw a conclusion.

**M**ethod of Reasoning: You are asked to analyze the functions of statements within the argument.

To this point, you have become comfortable analyzing the role of statements within an argument (which is the conclusion; which are essential premises; which are merely context). As you can see in the list above, some questions (Strengthen and Weaken) will hinge directly on your ability to identify and work with a conclusion. Others (Inference) will not have a conclusion, but rather will call on you to draw one based on your reading of the premises. Accordingly, you should know before you begin reading which elements of an argument will be present as you read. In the drill that follows, please identify which type of question you are being asked, as your ability to do so will significantly enhance your ability to read each stimulus efficiently.

**Question Stem Drill**

1. Which one of the following can be correctly inferred from the argument above?
2. Which of the following, if true, most helps to justify the author's conclusion?
3. On the basis of the statements above, which of the following must be true?
4. Which of the following, if true, most calls into question the validity of the author's argument?
5. From which one of the following does the conclusion logically follow?
6. The statements highlighted in **boldface** play which of the following roles?
7. The author's conclusion would be most threatened if which of the following were proven to be true?
8. The statements above best support which of the following?
9. Which one of the following proposals, if implemented together with the proposal made above, would improve the prospects for achieving the stated objective?
10. The conclusion above could not be true unless which of the following were also true?

*Question Stem Drill Solutions: 1. Inference. 2. Strengthen. 3. Inference. 4. Weaken. 5. Strengthen. 6. Method. 7. Weaken. 8. Inference. (Note: The word "support" can be tricky; we'll cover this later in the lesson.) 9. Strengthen. 10. Strengthen.*



## Reading Critically

As you can infer from the previous sections, your success on Critical Reasoning questions will come from your ability to read arguments critically. In Strengthen questions, you need to be able to identify and fill gaps in logic that exist in weak arguments. In Weaken questions, you need to identify and exploit those same gaps. In Inference questions, you will eliminate potential conclusions in answer choices that are not fully supported by the given premises. And many Method questions will ask you to determine the validity or weakness of the argument that you are asked to dissect.

In the drill that follows, please note at least one weakness in each argument that you see. You can weaken arguments by noting particular logical flaws or just by noticing that arguments leave room for an alternative explanation to override the conclusion. For your purposes here, make sure that you proceed with the mindset that each argument is weak, and turn on that critical part of your mind that will help you root out weaknesses.

### Reading Critically Drill

1. If an employer requires an employee to work overtime, that employer is obligated to pay one-and-one-half times the normal wage. But Erin's employer did not require that she work overtime; it was her choice. Therefore her employer is not obligated to pay her at the increased rate.
2. The fact that all five of the news networks declared candidate X the victor is proof that candidate X is, in fact, victorious. After all, it has never been the case that all five networks were wrong about an election outcome.
3. All evidence points to the fact that the Atacama Desert last received direct rainfall 23 million years ago, making it not only the driest place on earth, but also the oldest of all the deserts on earth. Curiously, recent discoveries point to the existence of lakes in a portion of the Atacama Desert as recently as ten thousand years ago. These recent discoveries must, however, be false since no lake can exist without sufficient rainfall.
4. The new High Speed Motors "Impresso" car is the best car ever made. Each one of the parts used on the car is the highest quality part available. Additionally the workers who assemble the car are the most skilled workers from around the world.

5. If the proposed tax cuts are pushed through the legislature this year, they will result in cuts to many vital programs, such as education, senior services, healthcare, and crime prevention. But most people strongly support these programs. Therefore, the proposed tax cuts will not be adopted by the legislature this year.
6. Allowing additional imports of steel from other countries would further reduce domestic steel prices and have a damaging impact on the remaining domestic steel manufacturers. The Trade Council always acts in the best interest of the manufacturing sector in order to preserve as many manufacturing jobs as possible. Therefore the Trade Council will not allow any increase in the volume of imported steel.
7. Each year the committee chooses the best work of art and purchases that work for display in the university library. For the last seven years the one thing that each work of art has had in common is size: All were over 4 feet tall. It is clear, therefore, that size is the main criteria that the committee uses in its selection.
8. Politician: "The president claims that the only way that the country can emerge from the economic downturn and regain its greatness is for the parties to compromise. However, this country is built on definite principles laid out in the Constitution: principles of freedom, justice, and equality. What the president is advocating, therefore, is the betrayal of everything that the founding fathers believed in."



### Reading Critically Drill Solutions

1. The flaw: If the presence of something triggers an outcome (required overtime means increased pay), that does not mean that the absence of that cause leads to the absence of the effect. It is still possible that laws or the policy of the employer require that all overtime work is compensated at time-and-a-half.
2. The flaw: The past is not the future. Because something has not occurred in the past is not proof that it cannot occur in the future. Of course it is unlikely that all five networks are wrong. However, the conclusion does not say that candidate X is “likely” victorious; it states that candidate X “is victorious.”
3. The flaw: There are two pieces of evidence that do not work together. Either the Atacama has not had rainfall in over 23 million years or there were lakes in a portion of the Atacama only ten thousand years ago. One of these facts must be false, but there is nothing to indicate which one. The argument simply names the existence of the lakes as false, when that evidence could just as easily be true and the other fact mistaken.
4. The flaw: Just because something is true about part of a thing, does not mean it is true about the whole thing. Yes, the best parts are used and the best workman, but what if the design is terrible? Remember to think skeptically and critically when you read these arguments. The best parts do not guarantee the best car.
5. The flaw: Just because the tax cuts have an outcome that people do not support does not mean that the tax cuts will not be adopted. This flaw is more a practical flaw that we deal with on a daily basis. Just because most people support something does not mean that the powerful interests will allow it to happen. One way to weaken this argument would be to expose the flaw with an answer choice that said, “The legislature does not always act in a way that is consistent with the wishes of the majority.”
6. The flaw: The conclusion assumes that more jobs would be lost in the steel industry than would be gained in other industries. Perhaps the importation of more cheap steel would help the car domestic industry. If this were an assumption question, we might make this gap in logic explicit and choose an answer that said, “More jobs will be lost in the steel industry due to the lower price of steel than will be gained in other types of manufacturing.”

7. The flaw: Correlation does not equal causation. Just because the seven works have been over 4 feet tall does not mean that this characteristic is the reason the works were selected. It is possible that the committee is interested in other factors, such as how the art represents the university, and the winning entries just happened to be over 4 feet tall. If the conclusion were more limited—for example, “It seems that you can increase your odds of having your work selected if you make it at least 4 feet tall”—then it would be better supported since there is evidence that this has been the case.
8. The flaw: The flaw is a simple trick often used by disingenuous politicians. The word compromise has two distinct meanings. One meaning is to come together for a solution that is agreeable to all parties. This is a positive use of the word and the one that the president meant. The politician then inserts the other, negative definition of compromise: “giving up one’s core principles.” This trick enables the politician to seemingly use the president’s own words against her. If this were a Method of Reasoning question, the correct answer would describe the method of reasoning as “The politician alters the meaning of the president’s words to make them say something that was not intended.”



## LESSON

### Introduction to Critical Reasoning

For each of the GMAT question types, we have assigned a mantra for what the question type is really designed to assess. For Data Sufficiency, for example, it's "resource management," your ability to maximize the value of your resources, determine what is truly necessary to accomplish a task, and know when your assets aren't quite as valuable as meets the eye. For Sentence Correction, it's "decision points," your ability to sift through clutter to determine where you're most able to effect logical, positive change.

For Critical Reasoning, the question type is so aptly named that its theme is, simply, "critical reasoning":

- **Reasoning:** The questions are assigned to assess how **logically, efficiently,** and **effectively** you think, process information, and make decisions.
- **Critical:** The name of the game is to think **critically** and **skeptically**.
  1. Distrust arguments or plans that seem logical on the surface but have significant flaws,
  2. Try to anticipate information that might damage a conclusion, and
  3. Catch fallacies or assumptions that can doom your own thinking.

## Why Does the GMAT Test Critical Reasoning Skills?

If you've been around corporations, you've undoubtedly heard clichés and buzzwords such as *paradigm shift*, *think outside the box*, *yes men*, *groupthink*, and others. What's the common thread in this list? They refer to the need to avoid traditional flaws in thinking, to really analyze decisions, and to consider exceptions or threats to the conventional wisdom. Businesses are often hamstrung by reliance on conventional thinking (often done without actually thinking), so MBA programs seek candidates who will:

- Question the status quo, and
- Create better-reasoned strategies and processes.

After the global financial crisis, we can all agree that banks could have used more people skilled in critical reasoning to attack the generalization flaw in the argument that "home values have traditionally increased in value well beyond their mortgage rates, so we can safely lend even to risky borrowers."

Notice, too, that the evolution of the GMAT has become even more practical toward business, with more and more Critical Reasoning questions based on plans and strategies (much more on this later in the lesson), replacing some of the traditional premise/conclusion argument problems. Sound strategy requires critical reasoning, looking for flaws in logic and seemingly out-of-nowhere threats to effective outcomes. GMAT Critical Reasoning is designed to prepare your mind for the type of reasoning you will employ in business school and beyond, and to reward with admission those minds that are most up to the challenge.

In this lesson you will learn about multiple families of Critical Reasoning questions (Strengthen, Weaken, Inference, and Method of Reasoning), but to be truly effective with Critical Reasoning you should keep the "Weaken" mentality in mind on just about every question. The more critical you are when you read, the better you will do. And, admit it, you like to criticize; we all do.



## Critical Reasoning and the Veritas Prep Pyramid



### **“Core Skills” from Skillbuilder**

- Deconstructing Arguments
- Isolating Conclusions
- How to Categorize



### **“Skills Meet Strategy” Takeaways from the Lesson**

- Guiding Principles
- Learning by Doing



### **“Think Like the Testmaker” Takeaways from the Lesson**

- Selling the Wrong Answer and Hiding the Correct Answer
- Misdirection
- Abstraction
- Content-Specific Themes

## Critical Reasoning Deconstructed

Critical Reasoning accounts for 12 to 14 of the 41 questions on the verbal section of the GMAT.

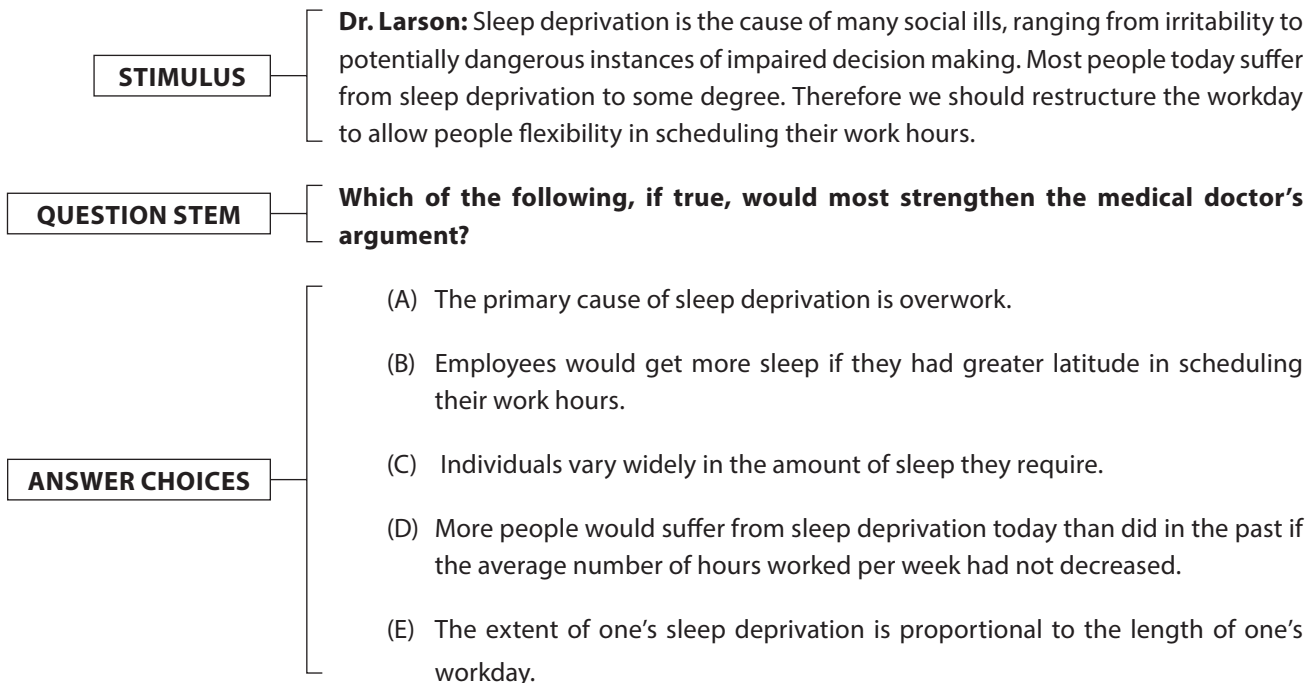
Typically, each question contains:

- A short passage of between 16 and 125 words (the **stimulus**),
- A **question stem**, and
- Five **answer choices**.

Questions appear in order of difficulty based on how well you are doing on the exam.

### Anatomy of a Critical Reasoning Problem

**Official Directions:** Analyze the situation on which each question is based, and then select the answer choice that is the most appropriate response to the question. No specialized knowledge of any particular field is required for answering the questions, and no knowledge of the terminologies and conventions of formal logic is presupposed.





## SECTION 1: CATEGORIZATION AND THE SWIM METHOD

*Sink or SWIM*



## SECTION 1: CATEGORIZATION AND THE SWIM METHOD

### Sink or SWIM

To perform well on Critical Reasoning questions, you need to:

1. Properly identify the question category.
2. Apply the appropriate strategy based on the category.

You will identify question types by *reading the question stem first*, not the stimulus that precedes or follows it.

Over the years, testmakers have created dozens of different question stems, but through years of research Veritas Prep has determined that every Critical Reasoning GMAT question falls into one of four major categories. For each category, you will have a strategy to read, assess, and attack the problem.

For starters, let's address the four categories, which fit into the mnemonic device SWIM:



#### **Strengthen**

Add new information to support an existing conclusion



#### **Weaken**

Add new information that will undermine an existing conclusion



#### **Inference**

Draw your own inference or conclusion



#### **Method of Reasoning**

Analyze and either describe or mimic the line of reasoning

Once you have learned to identify the question stem by category, you can find the correct answer choice with speed and confidence.

## Why Categorize?

The SWIM acronym provides an ideal starting point to set your mind for reading the stimulus. Before you ever read the stimulus paragraph, even though it comes first, you should read the question stem and categorize the question. Why?

- 1. SWIM is constructive.** Educational research supports the theory of constructivism, which suggests that our minds process new information by constructing it on top of some other known information. When you read something, your mind immediately attempts to link that knowledge to something else in your memory bank. **By categorizing, you will automatically link the stimulus you are reading back to previous problems; this will help you quickly deconstruct the argument and anticipate common traps and tricks hidden within the question at hand.** Because Critical Reasoning questions address so many different topics, SWIM allows you build on what you know and avoid getting lost in strange content that doesn't really matter.
- 2. SWIM is instructive.** Each category comes with its own strategy for reading the passage and approaching the answer choices. **Reading and categorizing the question stem first will allow you to immediately approach new information with a strategy in mind and will tell you which portions of the paragraph are most important to you.** Often test-takers lament that the verbal section contains too much information, too many details, and too many opportunities to wear down mentally. There's a strategy for that: By knowing how to read each question efficiently and effectively, focusing solely on what you need to obtain a correct answer, you can conserve mental energy and save valuable time—and you will get many more correct answers as well!
- 3. SWIM is habit-forming.** By becoming intimately familiar with the different question types, you will be more efficient and comfortable on test day. Try to remember the first time you rode a bike. Rest assured that it was not easy. Now it is something you take for granted—something you don't even think about when you do it! The same thing happens on the GMAT: **When your methods are clear and repeatable, then they soon become automatic.** For example, when you see that you have a Method of Reasoning question you know exactly what to do, so you are free to concentrate more fully on the particulars of this stimulus. Strong habits are one of the secrets of high GMAT scorers.



4. **If you don't SWIM, you may sink.** Without categorization techniques, you will make mistakes about what the question is really asking you to do. One of the more effective tools in the GMAT authors' toolkit is the cleverly worded question stem that, for instance, sounds like a Strengthen question at first glance but is really an Inference question. The following drill will illustrate this concept.

### Core Skills Review: Identifying Question Categories

Consider these question stems and determine whether each is asking you to:

1. Strengthen a conclusion that exists within a stimulus, *or*
  2. Draw your own conclusion based on the information in the stimulus.
- **Which of the following best strengthens the argument made above?**
  - **Which of the following is a logical conclusion based on the information above?**
  - **Which of the following best supports the medical doctor's argument?**
  - **The information above supports which of the following?**
  - **The city official's response supports which of the following?**

Certain question stems take a few seconds of real thought to determine your next steps. During those few seconds, you're apt to lose track of the information in the stimulus, anyway. Categorizing will help you to firmly determine your objective **before** you begin to tackle the argument itself.

**The SWIM Method**

	<b>Keyword Triggers</b>	<b>Answer Is</b>	<b>Focus On</b>	<b>Tips</b>
<b>S</b>	<ul style="list-style-type: none"> <li>• <b>Strengthen</b></li> <li>• Justify</li> <li>• Explain</li> <li>• Assumption</li> </ul>	Premise	Conclusion (or Paradox or Plan)	<ul style="list-style-type: none"> <li>• New relevant info</li> <li>• Need not prove</li> <li>• Link premises to specific conclusion</li> </ul>
<b>W</b>	<ul style="list-style-type: none"> <li>• <b>Weaken</b></li> <li>• Undermine</li> <li>• Challenge</li> <li>• Cast doubt</li> <li>• Flaw in logic</li> </ul>	Premise	Conclusion, gap in logic	<ul style="list-style-type: none"> <li>• Reflect: how to criticize</li> <li>• Expose gap in logic</li> <li>• Need not disprove</li> </ul>
<b>I</b>	<ul style="list-style-type: none"> <li>• <b>Inference</b>/Conclusion</li> <li>• Must be true</li> </ul>	Conclusion	Premises in stimulus	<ul style="list-style-type: none"> <li>• Correct answer must be true</li> <li>• Others not necessarily true</li> </ul>
<b>M</b>	<ul style="list-style-type: none"> <li>• <b>Method</b> of Reasoning</li> <li>• Argument technique,</li> <li>• Flaw in logic</li> <li>• Discrepancy</li> <li>• Proceeds by</li> <li>• <b>Boldfaced</b> sentences</li> </ul>	Description of the author's logic	Description of the author's logic	<ul style="list-style-type: none"> <li>• Find accurate description of the logic (or flaw)</li> <li>• Eliminate answers inconsistent with stimulus</li> </ul>



## **SWIM Strategy**

Critical Reasoning questions have three major components: a stimulus, a question stem, and five answer choices.

To read efficiently and effectively, you should plan to read the question stem first, so that you can adjust your focus through the stimulus accordingly. If you are asked to strengthen or weaken an argument, for example, you will want to pay particular attention to the conclusion and how the premises support it. If you are asked to draw an inference, you must supply a valid conclusion based upon the stimulus. Regardless, if you know your role within the argument before you read, you will be more personally invested and therefore reduce the probability of losing focus and needing to reread the question. Consider the following example:

1. It can safely be inferred that there are at least as many trees in Ithaca as there are in Tompkins. More trees were planted in Ithaca in the past two years than in Tompkins.

For which one of the following does the conclusion logically follow?

- (A) More trees were planted in Ithaca in the past two years than in Tompkins.
- (B) Ithaca is the region within which Tompkins is located.
- (C) Tompkins is suffering from an epidemic of tree-virus infection.
- (D) The average annual rainfall for Ithaca is greater than the average annual rainfall for Tompkins.
- (E) The average number of trees cut down annually in Tompkins is higher than in Ithaca.

## LEARNING BY DOING

### *Why Categorize?*

In the previous problem, success depends mainly on the proper categorization of the question stem. If you read it quickly, you could easily assess it as an Inference question, but it is really a Strengthen question. What does a conclusion follow? Premises. So the question is asking for a missing premise. The conclusion in the stimulus is: "There are at least as many trees in Ithaca as in Tompkins." What premise would support this conclusion? If Tompkins is an area inside Ithaca, then it must be true that Ithaca has at least as many trees as Tompkins, so the answer is answer choice B.



### THINK LIKE THE TESTMAKER

#### *Breaking Down Confusing Question Stems*

**NOTE** the subtle wording in the question stem that makes this problem difficult. The author of this question includes the word "conclusion" in the question stem to tempt you into thinking that you're drawing a conclusion, when really you need to strengthen a conclusion. Perhaps the trickiest question stem word of all is the word "support" and its derivatives (supports, supported, etc.).

As you saw in the previous drill, the word "supports" can be used in both a Strengthen capacity and an Inference capacity. As a general rule of thumb, think about the "direction of support":

**If the answer choice supports the stimulus, then it's a Strengthen question.**

Stimulus	.....
	.....
A.	.....
B.	.....
C.	.....
D.	.....
E.	.....



**If the stimulus supports an answer choice, then it's an Inference question.**

Stimulus	.....
	.....
A.	.....
B.	.....
C.	.....
D.	.....
E.	.....





## SECTION 2: STRENGTHEN AND WEAKEN QUESTIONS

*Conclusion Is King*



## SECTION 2: STRENGTHEN AND WEAKEN QUESTIONS

### Conclusion Is King

Although they represent two different categories, Strengthen and Weaken questions require very similar thinking:

1. Read the question stem and identify the question category (SWIM).
2. Find and understand the conclusion.
3. Identify the supporting premises.
4. Identify the logical “gaps” and/or common logical fallacies in the argument.
- 5a. **Strengthen questions:** Select an answer choice that will fill those logical gaps and correct any flaws, making the conclusion ***more likely to be true***.
- 5b. **Weaken questions:** Select an answer choice that will expose those logical gaps and create a flaw, making the conclusion ***less likely to be true***.

Remember: All arguments in Strengthen/Weaken questions have logical gaps! Your job is to read critically and isolate those flaws **before** going to the answer choices. Consider another example:

2. **Dr. Larson:** Sleep deprivation is the cause of many social ills, ranging from irritability to potentially dangerous instances of impaired decision making. Most people today suffer from sleep deprivation to some degree. Therefore we should restructure the workday to allow people flexibility in scheduling their work hours.

Which of the following, if true, would most strengthen the medical doctor's argument?

- (A) The primary cause of sleep deprivation is overwork.
- (B) Employees would get more sleep if they had greater latitude in scheduling their work hours.
- (C) Individuals vary widely in the amount of sleep they require.
- (D) More people would suffer from sleep deprivation today than did in the past if the average number of hours worked per week had not decreased.
- (E) The extent of one's sleep deprivation is proportional to the length of one's workday.



3. **Nate:** Recently a craze has developed for home juicers, \$300 machines that separate the pulp of fruits and vegetables from the juice they contain. Outrageous claims are being made about the benefits of these devices: Drinking the juice they produce is said to help one lose weight or acquire a clear complexion, to aid in digestion, and even to prevent cancer. But there is no indication that juice separated from the pulp of the fruit or vegetable has any properties that it does not have when unseparated. Save your money. If you want carrot juice, eat a carrot.

Which of the following, if true, most calls into question Nate's argument?

- (A) Most people find it much easier to consume a given quantity of nutrients in liquid form than to eat solid foods containing the same quantity of the same nutrients.
- (B) Drinking juice from home juicers is less healthy than is eating fruits and vegetables because such juice does not contain the fiber that is eaten if one consumes the entire fruit or vegetable.
- (C) To most people who would be tempted to buy a home juicer, \$300 would not be a major expense.
- (D) Nate was a member of a panel that extensively evaluated early prototypes of home juicers.
- (E) Vitamin pills that supposedly contain nutrients available elsewhere only in fruits and vegetables often contain a form of those compounds that cannot be as easily metabolized as the varieties found in fruits and vegetables.

## LEARNING BY DOING

### *Focus on Conclusions*

In the Foundations of GMAT Logic Reasoning lesson, you learned the methods for finding conclusions:

- Conclusion Language
- Call for Action
- Premise Language
- The “Why?” Test

In the previous two examples, it is clear why you need to properly isolate the exact conclusion. **Identifying and specifically zoning in on the conclusion of a Strengthen or Weaken argument is the single most important thought process in Critical Reasoning.** In the first example, the conclusion states: “we should give people flexibility in scheduling their work hours.” Clearly, there is a large gap between the premises (which indicate that sleep deprivation is bad) and the conclusion (which suggests that to solve that problem you should give flexibility in scheduling). The correct answer must be something that bridges that gap, and answer choice B does that perfectly: If people would get more sleep with flexibility in scheduling, then the premises lead logically to the conclusion.

The second example is trickier because the conclusion is not as easy to find; there is no transition language to point it out. You must see that both “Save your money” and “If you want carrot juice, eat a carrot” are calls for action. The author’s conclusion is essentially “the juicer adds no value.” Since this is a Weaken question, you need to find something that shows how the juicer adds a value (in other words, a reason to buy the juicer). If people are much more likely to get the nutrients in juiced form, then the juicer does add value (convenience, in this case), and answer choice A thus weakens the author’s conclusion.



### SKILLS MEET STRATEGY

#### *The Conclusion Is King*

Remember that on all Strengthen and Weaken questions, the conclusion is king. Correctly identify the conclusion on a question (and read it precisely!) and you’ll probably get it right; incorrectly identify the conclusion on any question and you’ll certainly get it wrong. When you identify a question stem as Strengthen or Weaken, you must both find and carefully read the conclusion before you move on to answer choices.

**THINK LIKE THE TESTMAKER***Misdirection*

It is important with Critical Reasoning questions to understand the “sucker” choices and even to anticipate what they will be. In the first example, the question addresses a topic where everyone has preconceived notions: When reading about sleep deprivation and work, you automatically think about how much you are working, not flexibility in scheduling. Therefore you are apt to read the first conclusion as “we should shorten the workday” and think that both answer choices A and E are relevant. In the second example, instead of writing the simple conclusion “don’t buy the juicer,” testmakers write “save your money” in order to get you thinking about money. The argument is not “don’t buy the juicer because they are expensive” but rather “don’t buy the juicer because there are no health benefits.” However, your mind is apt to treat this argument as “not buying a juicer will help you save money,” and then you would likely pick incorrect answer choice C. **The writers of the GMAT know that people have a tendency to gloss over details and see what we expect or want to see.** As the famous e-mail forward goes: taht is why you can raed tihs snetnce without mcuh toruble. Don’t hijack conclusions. **Read them exactly as they are and beware of clever misdirection.**

**THINK LIKE THE TESTMAKER***Don’t Confuse Strengthen Answers with Weaken Answers (or vice versa)*

On almost every Weaken question, at least one of the incorrect answer choices strengthens the conclusion, and on almost every Strengthen question, at least one of the incorrect answer choices weakens the conclusion. This is particularly true on problems like the question about the juicer in which the conclusion is negatively worded. Since the conclusion is essentially “don’t buy the juicer” and you are asked to weaken that conclusion, it is a bit confusing. Get rid of the double negative and realize that to weaken the question, you are looking for a reason to buy the juicer! As you can see, answer choice B strengthens the argument, as testmakers know that people will be confused with the negation. **On all Strengthen and Weaken questions, particularly those with negation, beware of the incorrect answer choice that does the opposite of what the question stem is really asking for.**

## Mind the Gap

In the Foundations of GMAT Logic lesson, you learned how to isolate premises and conclusions and to anticipate gaps in logic. For Strengthen questions, in particular, this skill of anticipation is important for several reasons:

1. It makes you more confident in isolating the correct answer.
2. It makes you less likely to be baited by incorrect answers.

What are gaps in logic? Let's review briefly with an example from the Foundations lesson:

**Major Premise: All men are mortal.**

**Minor Premise: Socrates is a dog.**

**Conclusion: Therefore, Socrates is mortal.**

In the example above, the gap is clearly between the two premises. The second premise is not logically connected to the first, so the argument is flawed. If you fill that gap with an additional premise ("What is true for men is true for dogs") then the argument becomes valid.

Consider a simplified version of a previous problem:

**Major Premise: Sleep deprivation is bad and should be avoided.**

**Minor Premise: Most people suffer from sleep deprivation.**

**Conclusion: We should restructure the workday so people have flexibility in scheduling their hours.**

Here, the two premises are logically linked to each other, but the gap lies between the premises and the conclusion. The conclusion needs to be some call to action that will guarantee more sleep, and this one does not. This gap is filled by the premise: "If you give people flexibility, they will sleep more."

For both of these examples, you should be able to anticipate the gap in logic. On actual GMAT questions, the same holds true. For the majority of moderate Strengthen and Weaken questions, you can anticipate the correct answer by isolating gaps in logic (or, as you will see shortly, common logical fallacies). While the correct answer will rarely be the exact problem or gap you have isolated, it will relate to it somehow. **The bottom line on Strengthen and Weaken questions is this: *Be proactive*.** Most test-takers are far too passive on Weaken and Strengthen questions. To highlight the importance of these strategies, consider two examples on the following pages:



## SECTION 2: STRENGTHEN AND WEAKEN QUESTIONS

*Mind the Gap*



4. Opponents of peat harvesting in this country argue that it would alter the ecological balance of our peat-rich wetlands and that, as a direct consequence of this, much of the country's water supply would be threatened with contamination. But this cannot be true, for in Ireland, where peat has been harvested for centuries, the water supply is not contaminated. We can safely proceed with the harvesting of peat.

Which one of the following, if true, most strengthens the argument?

- (A) Over hundreds of years, the ecological balance of all areas changes slowly but significantly, sometimes to the advantage of certain flora and fauna.
- (B) The original ecology of the peat-harvesting areas of Ireland was virtually identical to that of the undisturbed wetlands of this country.
- (C) The activities of the other industries in coming years are likely to have adverse effects on the water supply of this country.
- (D) The peat resources of this country are far larger than those of some countries that successfully harvest peat.
- (E) The peat-harvesting industry of Ireland has been able to supply most of that country's fuel for generations.

## LEARNING BY DOING

### *Anticipate*

---

The logical gap in the previous question should come fairly naturally to you: How can you make a decision about the future of our ecosystem based solely on what happened to Ireland's if you don't know that the two situations are analogous? If the question used Antarctica instead of Ireland, the gap would seem even that much clearer.

If you noticed that gap, you probably anticipated the correct answer to this Strengthen question. You need to fill that gap between the premise (peat harvesting was okay in Ireland) and the conclusion (so you can safely do it here) by showing somehow that the U.S. and Ireland are the same. Answer choice B does that perfectly.



### **SKILLS MEET STRATEGY**

*On Strengthen and Weaken Questions, Be Proactive*

---

One of the core guiding strategies used by good test-takers on Critical Reasoning questions is to be proactive and anticipate the correct answer. While this does not work for Inference questions (as you will learn; however, you can often anticipate the *incorrect* answers on those), it is an essential strategy for Strengthen and Weaken questions. Obviously, if the gap or logical fallacy does not come to you quickly, then you must use the answer choices to determine which one actually weakens or strengthens the conclusion. However, as you will see clearly from the next question, incorrect answer choices will pollute your mind and get you focused on the wrong thing. Whenever possible on Strengthen and Weaken questions, proactively anticipate the correct answer. Your accuracy rate and speed will increase dramatically.

**2****SECTION 2: STRENGTHEN AND WEAKEN QUESTIONS***Mind the Gap*

5. Numerous ancient Mayan cities have been discovered in the Yucatan peninsula in recent decades. The ruins lack any evidence of destruction by invading forces, internal revolts, or disease, and appear simply to have been abandoned. Some archaeologists have theorized that the cities were abandoned due to a severe drought known to have occurred in the region between 800 and 1000 AD.

Which of the following, if true, most strongly supports the archaeologists' theory?

- (A) Ample archaeological evidence of Mayan peasant revolts and city-state warfare exists, but such events could never result in the permanent abandonment of cities.
- (B) No monumental inscriptions created after 900 AD have been found in these cities, but inscriptions dating before that time have been found in abundance.
- (C) Studies of Yucatan lake sediment cores provide conclusive evidence that a prolonged drought occurred in the region from 800 to 1000 AD.
- (D) Climatic studies have documented cycles of intermittent drought in the Yucatan peninsula dating from the present to at least 7,000 years ago.
- (E) The Mayan city Uxmal was continuously inhabited from 500 to 1550 AD.

## LEARNING BY DOING

### *Incorrect Answer Choices Pollute Your Brain*

If you had anticipated a problem or gap in the previous argument before going to the answer choices, it would *not* have been “We don’t know if the drought occurred.” The argument specifically tells you that the **drought was known to have occurred**. However, the argument *is* lacking one very important piece of information. The argument states that a drought occurred between 800 AD and 1000 AD and concludes that this drought must have caused the disappearance of the Maya. However, absolutely no evidence is given that the Maya actually disappeared during the time of the drought. Answer choice B gives you exactly that missing piece of information and is thus correct. Almost any person who is new to critical reasoning makes the mistake of picking answer choice C on this problem because it seems to be important. Had you considered the argument before moving to answer choices, it is unlikely you would have made this mistake.



### THINK LIKE THE TESTMAKER

*Make Sure It’s New Information*

**If an answer choice on a Strengthen or a Weaken question simply repackages a premise that was already given, it is never the correct answer.** The goal with Strengthen questions is to improve the quality of the argument, and the goal with Weaken questions is to lower the quality of the argument. Clearly, if one of the answer choices is simply rephrasing a premise that already exists in the argument, it cannot achieve this goal. Repackaged premises are a common trick used by testmakers on Weaken and Strengthen questions.

**NOTE:** As you will learn in the section on Inference questions, a repackaged piece of information *will be correct on that question type*, because the goal with Inference questions is to pick something that must be true based upon what you have read in the stimulus. For instance, if you learn that Bill is 65 years old in the stimulus of an Inference question, if an answer choice says Bill is over 50 years old, then it would be correct as it *must be true*. On a Strengthen question, that would necessarily be a sucker choice as it is not giving new information.



## Common Logical Fallacies

In addition to minding the gap on Strengthen and Weaken questions, it is important that you become proficient at recognizing common logical fallacies used in Critical Reasoning questions. The faster you are able to recognize these flaws, the faster you can hone in on an answer choice that corrects the problem (Strengthen) or exposes it (Weaken). The three most important logical fallacies on the GMAT are mistaking correlation for causation, generalization, and data and statistical flaws.

### Mistaking Correlation for Causation

Without question, the most common fallacy you will see on GMAT Critical Reasoning questions is mistaking correlation for causation. Consider the following argument:

**Last year researchers in California found that 95% of people with chronic fatigue syndrome (CFS)—a debilitating illness with no known cause—were infected with a rare virus not seen in the general population. Therefore, this virus must be the cause of chronic fatigue syndrome.**

In this argument, the rare virus and CFS are strongly correlated with each other. However, you do not know if one is causing the other. It is certainly possible that the virus is causing CFS, but the following scenario is just as likely: Something else causes CFS, CFS decimates the patient's immune system, and then an opportunistic virus infects the patient. In other words, CFS is really causing infection by the virus, not the other way around. If you were asked to strengthen this argument, then you would want to know that the virus was present at the onset of the illness, as that would increase the likelihood (but not prove) that it is causing CFS.

**NOTE:** Do not assume causation when you note that two things are correlated.

With Critical Reasoning, it is essential to always consider alternative explanations. While not exactly the same fallacy, consider the following statement:

### **It is dark outside, so it must be nighttime.**

Here, the fact that it is dark outside is a premise, leading to the conclusion that "it must be nighttime." But what are alternative explanations? It could be a solar eclipse; it could be wintertime in the Arctic Circle. While the conclusion is likely true, the existence of alternate explanations provides room for a Weaken answer choice. In both this example, and the true "correlation vs. causation" example above, the key to success is recognizing the possibility for alternative explanations or alternative causes.

### Generalization

This is a much easier logical fallacy to understand than the previous one. In an argument, you are not allowed to make broad, sweeping conclusions from isolated examples. Consider the following example:

**John visits his friend Steve in Brooklyn and has to take the F train into Manhattan on his first day visiting. John waits for the train for over an hour and concludes angrily: “The F train is always late.”**

Clearly, you cannot make such a broad conclusion from only one instance. In fact, that conclusion would only be valid if proof was given that every F train in the history of the subway system has been late—clearly an impossible thing to prove! In most cases of generalization there are two simple ways to improve the flaw:

1. Give more examples, or
2. Show that the one example is typical of most examples.

It is important to note, however, that isolated instances can often be sufficient to confirm negatively worded conclusions. Consider a similar example to the one above:

**John visits his friend Steve in Brooklyn and has to take the F train into Manhattan on his first day visiting. The train comes immediately after John arrives on the platform, and he declares happily: “The F train is not always late.”**

Here the argument is valid because the one instance has proved that the F train is not always late.

**NOTE:** Beware of broad conclusions that are based on isolated cases, but understand that individual examples can sometimes be sufficient to prove seemingly broad conclusions.



### Data and Statistical Flaws

This is a broad category that we will cover in much more detail in the Advanced Verbal Strategy lesson. Know this about statistics and data on Critical Reasoning questions: If statistics and/or data are present, you can almost be sure that they are being used improperly. Consider a simple example of a data flaw:

**In the last decade, the number of violent crimes has increased substantially in City X. Therefore, City X should hire more police officers and put a greater emphasis on law enforcement.**

In an example such as this, absolute number data is meaningless. Imagine if the population has doubled in City X during the past decade. The number of violent crimes could have increased substantially, but the number of violent crimes per capita could have decreased dramatically. Here, percentage data is required, and a conclusion such as this could never be properly based on absolute number data.

**NOTE:** When statistics or data are present, make sure that the conclusion logically follows from that information.

### Common Logical Fallacies Summary

On Strengthen and Weaken questions, you are often correcting or exposing one of these common logical fallacies. It is important that you become proficient at recognizing these flaws and that you understand how to correct them:

- For errors relating to correlation and causation, **do not mistake correlation for causation**, and always consider alternative explanations.
- For errors of generalization, **beware of broad conclusions based on isolated instances**, and understand that generalization can be improved with more examples or by showing that one example is typical of most.
- For errors relating to data and statistics, **always be suspicious of conclusions based on seemingly appropriate data**. Make sure that the data being used properly support the conclusion given.

**2****SECTION 2: STRENGTHEN AND WEAKEN QUESTIONS***Common Logical Fallacies*

6. Researchers have found that people who drink five or more cups of coffee a day have a risk of heart disease 2.5 times the average after corrections are made for age and smoking habits. Members of the research team say that, on the basis of their findings, they now limit their own daily coffee intake to two cups.

Which of the following, if true, indicates that the researchers' precaution might not have the result of decreasing their risk of heart disease?

- (A) The study found that for people who drank three or more cups of coffee daily, the additional risk of heart disease increased with each extra daily cup.
- (B) Per capita coffee consumption has been declining over the past 20 years because of the increasing popularity of soft drinks and because of health worries.
- (C) The study did not collect information that would show whether variations in the level of coffee consumption are directly related to variations in level of stress, a major causal factor in heart disease.
- (D) Subsequent studies have consistently shown that heavy smokers consume coffee at about three times the rate of nonsmokers.
- (E) Subsequent studies have shown that heavy coffee consumption tends to cause an elevated blood-cholesterol level, an immediate indicator of increased risk of heart disease.

## LEARNING BY DOING

### *Correlation Versus Causation*

The argument in this problem suffers from the most common of the logical fallacies: mistaking correlation for causation. The researchers note that people who drink more than five cups of coffee a day are much more likely to suffer from heart disease than those who drink less. But does that necessarily mean that the coffee is causing the heart disease? No! Perhaps people who drink five or more cups of coffee are just generally unhealthy people; maybe they don't sleep enough or maybe they are under enormous stress. The coffee might just be an indicator of a person who is more likely to suffer from heart disease, not the underlying cause. Answer choice C clearly identifies this fallacy and indicates that reducing the amount of coffee that you drink might do nothing to reduce your risk of heart disease.



### SKILLS MEET STRATEGY

#### *Focus on Alternative Explanations*

One of the most important thought processes on Strengthen and Weaken questions is to consider alternative explanations for a particular conclusion. **In any Critical Reasoning question in which a cause is given or suggested for some conclusion or outcome, your job is to question that explanation.** If you always think about what else might explain the result other than the given cause, you will become expert at exposing flaws relating to correlation and causation.



### THINK LIKE THE TESTMAKER

#### *Don't Pick the Repackaged Premise*

As you have seen, it is essential that you do not accidentally pick an answer choice that is really just a repackaged premise. On this problem it is particularly tricky. You might read the stimulus, properly isolate the logical fallacy relating to causation and correlation, and then pick answer choice D, thinking that it is the smoking that is really causing the increased risk, not the coffee. This would be a correct answer except that the study "corrected for smoking habits," so the information in answer choice D has already been accounted for in the argument. Always make sure that what you are providing as a correct answer choice provides *new* information on Strengthen and Weaken questions.

**2****SECTION 2: STRENGTHEN AND WEAKEN QUESTIONS***Common Logical Fallacies*

7. **Alonso:** The introduction of a new drug into the marketplace should be contingent upon our having a good understanding of its social impact. However, the social impact of the newly marketed antihistamine is far from clear. It is obvious, then, that there should be a general reduction in the pace of bringing to the marketplace new drugs that are now being created.

Which one of the following, if true, most strengthens the argument?

- (A) The social impact of the new antihistamine is much better understood than that of most new drugs being tested.
- (B) The social impact of some of the new drugs being tested is poorly understood.
- (C) The economic success of some drugs is inversely proportional to how well we understand their social impact.
- (D) The new antihistamine is chemically similar to some of the new drugs being tested.
- (E) The new antihistamine should be next on the market only if most new drugs being tested should be on the market also.

## LEARNING BY DOING

### *Generalization*

The argument in this problem contains a glaring case of another common logical fallacy: generalization. Simplified into syllogism structure, the argument reads as follows:

**Major Premise:** Drugs should not be brought to market if their social understanding is poor.

**Minor Premise:** The social understanding of one drug is poor.

**Conclusion:** We should stop bringing all drugs to the market.

This broad, sweeping conclusion is based on one isolated instance, so clearly the argument is quite weak. What is a great way to improve generalization? Show that the one example is typical of most. Answer choice A does exactly that, showing that most drugs being brought to marketplace are worse than the antihistamine and thus greatly strengthening the argument.



### **THINK LIKE THE TESTMAKER**

#### *Hiding the Correct Answer and Selling the Wrong Answer with Wordplay*

If answer choice A so strongly improves this argument, why do so few people pick it? Because the wording is quite tricky, and most people miss what it is really saying: Most drugs are worse than the one antihistamine, which itself is poorly understood. Instead they read it as “most drugs are better than the antihistamine” and that statement would clearly not strengthen the argument. Answer choice B, on the other hand, appears to strengthen the argument by giving more examples. However, answer choice B does not necessarily strengthen the argument, because the word “some” is too ambiguous. “Some” could mean only one drug, in which case it would not be new information and thus would not improve the argument. Answer choice B relies on a misinterpretation of the word some, a common mistake of many test-takers.



## Strategies for Strengthen and Weaken Questions Summary

Strengthen and Weaken questions typically make up over half of the Critical Reasoning questions that you will see on the GMAT. Therefore it is important that you are familiar with the important strategies summarized below:

- **Properly categorize the question** using the question stem, making particularly sure that you do not confuse a Strengthen question with an Inference question.
- After deciding that the question type is Strengthen or Weaken, read the argument carefully and isolate the conclusion. **Note any gaps or common logical fallacies within the argument.**
- Make sure that you are very specific with the conclusion. The correct answer must strengthen or weaken the exact conclusion, not what you think the conclusion is about! **Be careful not to “hijack” the conclusion.**
- If it is a Strengthen question, consider what piece of information would fill the gap or remove any flaw within the argument. If it is a Weaken question, consider what piece of information would expose or create a flaw within the existing argument.
- After you have read the argument, carefully isolated the exact conclusion, and tried to anticipate the correct answer, look at each answer choice. Pick the one that provides a *new* piece of information (**do not pick a “repackaged premise” from the original argument**) that either strengthens or weakens the conclusion.
- Remember that on almost every Strengthen question, at least one of the answer choices will instead weaken the conclusion, and on almost every Weaken question, at least one of the answer choices will instead strengthen the conclusion. This is particularly true when there is confusing negation in the argument. **Make sure you are picking the answer choice that follows the goal of the question stem.**





## SECTION 3: INFERENCE QUESTIONS

### Must Be True

While you can often predict a close replica of the correct answer choice in a Strengthen or Weaken question, Inference questions are much more an exercise in process of elimination. The standard for a correct Inference answer is that it *must be true*. That means that an incorrect answer is *not necessarily true*—or, in other words, an incorrect answer *could be false*.

“Must be true” is a high standard of proof. Words like “all,” “only,” “and,” etc. are quite limiting, so pay attention to the parameters of each answer choice. If you can find an opportunity for even part of the conclusion to be false, that is your opportunity to eliminate it and move on. Consider an example:

8. 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 one of the following can be properly inferred from the information 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) Either Shero will win the election or Stauning will be appointed head of the planning commission.
- (D) McGuinness is not an architect and has not been on the planning commission for 15 years or more.
- (E) 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

### *Inferences Must Be True*

This question provides an excellent illustration of the “must be true” Inference question standard. While the facts do show that Shero, if elected, will appoint a less-qualified planning commissioner, McGuinness, there is nothing explicit that says Stauning would even be considered under any other regime. You may think that Shero is the only person who would appoint McGuinness, but there is no evidence given for that. The only thing we know here is that a Shero win means that McGuinness, a lesser planning commissioner than Stauning, will be appointed. So while options like answer choice A (if Shero loses, a better commissioner will be appointed) and answer choice B (Shero is McGuinness’s only hope to get the job) may seem probable, they are not necessarily true.

On a question like this, you can eliminate incorrect answer choices by proposing hypotheticals that are consistent with the facts but undermine the answer choice. To eliminate answer choices A, B, and C here the hypothetical “for some reason, anyone who wins will select McGuinness” undercuts all of those answer choices. Only answer choice E is necessarily true.



### SKILLS MEET STRATEGY

*On Inference Questions, Stay Within the Boundaries of the Stimulus*

The biggest mistake that people make on Inference questions is that they go outside the scope and boundaries of the information provided in the stimulus. For instance, in the previous problem, you only learn about what will happen when Shero wins. If Shero loses, you have *absolutely no idea* what will happen, because the stimulus does not tell you anything about that scenario. Answer choices A, B, and C all prey upon the fact that many people assume what might happen if Shero does not win. When you learn to live precisely within the stimulus, your accuracy rate on Inference questions will climb dramatically.



### Focus on Scope

As you learned in the last problem, scope is fundamentally important in determining whether an answer choice must be true in an Inference question. Correct, “must be true” answers stay within the scope of the information given in the stimulus; incorrect, “not necessarily true” answers go beyond the scope of the information given in the stimulus. Consider the following example and focus on staying within the scope of the argument at hand:

9. **Treasure Hunter:** In general, archaeological artifacts found on public property cannot legally be privately owned. But according to centuries-old maritime law, people who risk their lives attempting to rescue a ship in peril are permitted to keep whatever cargo they can salvage. Under this rule treasure hunters clearly are entitled to keep the cargo from ancient shipwrecks that they risk their lives to save from oblivion in public waters.

**Archaeologist:** Not so. These shipwrecks have stabilized over the centuries they have lain underwater. The only danger they are in is from greedy treasure hunters who destroy archaeological evidence in their hurry to loot salable artifacts.

On the evidence of their statements, it can be concluded that the treasure hunter and the archaeologist disagree on which of the following?

- (A) What constitutes an archaeological artifact
- (B) In what sense, if any, an ancient shipwreck can be said to be in peril
- (C) Whether treasure hunters risk their lives when they retrieve artifacts from ancient shipwrecks
- (D) Whether maritime law can ever be applied to a ship that has already sunk
- (E) Whether antique shipwrecks in public waters can properly be said to be on public property

## LEARNING BY DOING

### *Don't Be Baited into Generalization*

Remember: The correct answer on an Inference question must be true. And the previous question provides an excellent example of that. The treasure hunter and archaeologist may well disagree on many grounds, but we can only answer the question based on what is explicitly in the passage. And the key to that lies with the archeologist's rebuttal: "The only danger (these shipwrecks) are in is from greedy treasure hunters...." He chooses to rebut the claim that the ships are in any real danger, having already sunk long ago, meaning that he clearly disagrees with the assertion that they are in peril. Answer choice B, then, must be true.

Answer choice D, while it may seem clear as a point of disagreement in this case, is not necessarily true overall. It is simply too broad, as the argument as stated only pertains to ancient shipwrecks that have long since settled. To say that they necessarily disagree whether the law can "ever" apply to "any ship that has already sunk" ignores plenty of possibilities with recently sunk ships or other aspects of the maritime law code. Answer choice D makes the mistake of generalization, but does so by subtly drawing a broad conclusion to an argument in which narrow circumstances are given. Beware the overly broad conclusion in Inference questions.



### **THINK LIKE THE TESTMAKER**

#### *Misdirection and Precision in Wording*

This problem contains another classic trick used by testmakers. Many people read the treasure hunter's side of the argument and note that an important part of maritime law is that people must be risking their lives for the law to apply: "people who risk their lives attempting to rescue a ship in peril are entitled...." They then see that the archaeologist responds by saying "The only danger they are in....," and they go right to answer choice C and circle it. A more careful reading of the response shows that the archaeologist is talking about whether the ancient shipwrecks are in peril, not the people diving to the shipwreck! **Clever wordplay is one of the most important tricks used by testmakers, so always make sure you are properly interpreting wording.**



## Inference Strategies Summary

While not as common as Strengthen and Weaken questions, Inference questions are nearly certain to show up multiple times on your GMAT exam. To succeed with Inference questions, remember these three critical themes:

- **Make sure that you properly categorize Inference questions. It is easy to confuse them with Strengthen questions.**
- **Correct answer choices on Inference questions must be true.** Regardless of how the question stem is worded, once you determine that the question is asking for a conclusion, make sure the conclusion you pick must be true.
- **Scope is the key to success on Inference questions.** Incorrect answer choices always go a little too far—that is, they go outside what can be guaranteed from the information in the stimulus. Be wary of broad, categorical statements that seem reasonable but are not supported by the information in the stimulus.





## SECTION 4: METHOD OF REASONING QUESTIONS

### Focus on Argument Structure

With Strengthen, Weaken, and Inference questions you are part of the argument; you have some skin in the game. In a Strengthen question, you own the conclusion and your job is to help make it true. In a Weaken question, you're like an attorney cross-examining a witness, eagerly anticipating and trying to find flaw in an argument to disprove the opponent's case. And in an Inference question you're much like a jury: Your job is to rule on a proper decision that must be true.

Method of Reasoning questions have you take a step back from the argument to merely describe it. Here your job is to analyze the way in which an argument is constructed and to select an apt description.

10. **Opponent of offshore oil drilling:** The projected benefits of drilling new oil wells in certain areas in the outer continental shelf are not worth the risk of environmental disaster. The oil already being extracted from these areas currently provides only 4 percent of our country's daily oil requirement, and the new wells would only add one-half of 1 percent.

**Proponent of offshore oil drilling:** Don't be ridiculous! You might just as well argue that new farms should not be allowed, since no new farm could supply the total food needs of our country for more than a few minutes.

The drilling proponent's reply to the drilling opponent proceeds by:

- (A) Offering evidence in support of drilling that is more decisive than is the evidence offered by the drilling opponent
- (B) Claiming that the statistics cited as evidence by the drilling opponent are factually inaccurate
- (C) Pointing out that the drilling opponent's argument is a misapplication of a frequently legitimate way of arguing
- (D) Citing as parallel to the argument made by the drilling opponent an argument in which the conclusion is strikingly unsupported
- (E) Proposing a conclusion that is more strongly supported by the drilling opponent's evidence than is the conclusion offered by the drilling opponent

## LEARNING BY DOING

### *Argument Structure and Precision in Language*

In Method of Reasoning questions, the game is twofold:

1. You must understand the argument and how it is structured, and
2. You must pick the answer choice that properly describes that structure.

Either one of these elements (or both) can make a Method of Reasoning question hard. In this case, it is better to focus on how the answer choices are worded than the argument structure itself. For most students, it is relatively easy to narrow this problem down to answer choice C or D. At that point you can ask yourself simply: Is this person pointing out anything or citing a parallel example? If you point something out in argument, you must specifically reference something in the argument and then discuss it. This person is letting an example speak for itself, so the answer must be answer choice D—citing as parallel. Many people will not pick answer choice D, however, because of the words “strikingly unsupported”. Here is where understanding the argument helps. The conclusion that “no farm could (alone) support our entire food needs, so no new farms should be opened” IS strikingly unsupported. It suggests that there is a huge food need, and that many individual farms need to all contribute. That parallel argument is strikingly unsupported, so answer choice D is absolutely a correct description.



### **THINK LIKE THE TESTMAKER**

*Hiding the Correct Answer  
and Selling the Wrong Answer*

**One of the keys to success on the verbal side of the GMAT is your ability to leverage differences between answer choices.**

Students often report that they can narrow a verbal problem down to two choices but then pick incorrectly in that final choice. **You should know that on almost any difficult verbal problem, there will be something in the correct answer that you don't like and something enticing about the incorrect answer choice.**

Here students are worried about the strong language in answer choice D that states “strikingly unsupported,” so they move toward answer choice C because it seems close enough. While strong language can often be problematic in verbal answer choices, do not automatically dismiss answer choices that contain it. Here, you should focus on the clear difference between “pointing out” and “citing as parallel” but it is easy to get hung up on the other differences and incorrectly pick answer choice C.



## Roles in Boldface

Recently the most common form of Method of Reasoning question has become the “roles in boldface” subtype, in which the question asks you to describe the functions of two different sections (and occasionally only one section) of an argument in boldface or—in questions with just one portion in boldface—to replace the boldface statement with an answer choice that serves the same function.

11. There are those who complain that municipal libraries are outdated and unnecessary. **These same people object to the tax dollars spent funding municipal libraries.** However, these people are missing out on a simple pleasure: reading a great book. **Taken this way, libraries are truly wonderful resources worthy of public funding.**

The two boldface portions play which of the following roles?

- (A) The first is a generalization accepted by the author as true; the second is a consequence that follows from the truth of that generalization.
- (B) The first is evidence that supports one of two contradictory points of view; the second is the second point of view.
- (C) The first is a commonly held point of view; the second is support for that point of view.
- (D) The first is one of two contradictory points of view; the second is the other point of view.
- (E) The first concedes a consideration that weighs against the viewpoint of the author; the second is that viewpoint.

## LEARNING BY DOING

### *Understand Argument Structure*

As you can see from this example, success with roles in boldface questions depends heavily on your ability to properly identify premises and conclusions. Remember from the Foundations of GMAT Logic lesson that everything in an argument must be a premise, a conclusion, or contextual information. If you are unsure about the role of one piece of information, employ the “why?” test. If you use that test on this difficult question, it is likely that you will get it correct. The two boldface sections are each conclusions, and here is how you know: Ask why do **“These same people object to the tax dollars spent funding municipal libraries?”** Because libraries are outdated and unnecessary. As you can see, the first sentence (not boldface) is the premise for the conclusion (boldface). Again for the second **boldface** portion ask why **“are libraries truly wonderful resources worthy of public funding.”** Because of the pleasure of reading a book. The third sentence (not boldface) is the premise for the conclusion (that is boldfaced). Since each **boldface** section is a conclusion, the correct answer is answer choice D. Both answer choices B and E incorrectly describe the first **boldface** portion as a premise when it is really a conclusion.



### SKILLBUILDER

#### *Identifying Premises and Conclusions*

For the most part, boldface problems are exercises in properly identifying conclusions, premises, and contextual information. If you are still struggling with this skill, revisit the Skillbuilder and the section in the Foundations of GMAT Logic book that deals with this important skill.



## Method of Reasoning Strategies Summary

To succeed with Method of Reasoning questions, remember the following:

- **Method of Reasoning questions are easy to categorize.** If the answer choices are describing argument structure or anything is boldface in the stimulus, you know you are dealing with a Method of Reasoning question.
- Boldface questions are the most common type of Method of Reasoning questions.
- Success on Method of Reasoning questions hinges on your ability to:
  1. Understand the argument and **properly identify the conclusion (or multiple conclusions), premises, and contextual information in the stimulus.**
  2. **Pick the answer choice that is accurately describing the boldface sections.** Often the differences in these descriptions are very subtle, but remember that only one answer choice can be correct. Look very carefully at the differences in wording, and figure out what makes one answer choice correct and the other incorrect.
- **Your ability to use the “why?” test and properly isolate conclusions is particularly important on Method of Reasoning questions.**





## SECTION 5: SWIM SUBTYPES AND ADVANCED APPLICATIONS

In the previous sections, you were introduced to the core question types and important strategies and approaches associated with them. In each of these categories—Strengthen, Weaken, Inference, and Method of Reasoning—there are some important subtypes that you will see on the GMAT. In this section you will address each important subtype:

- Strengthen/Weaken questions that involve plans and strategies
- Strengthen/Weaken questions that ask what would be most useful to evaluate a conclusion
- Strengthen questions that involve a paradox instead of a conclusion
- Assumption questions
- Mimic the Reasoning questions

## Plan/Strategy

An increasingly common Critical Reasoning question type involves not a traditional argument, but rather a plan or strategy. These problems put a spin on the Strengthen/Weaken form by focusing slightly less on pure logic and more on practicality. At their core, however, they are Strengthen/Weaken problems, with this as your guiding principle:

***The objective of the plan takes the role of the conclusion.***

When you see a plan/strategy question, be sure to identify the objective of the plan first, and be mindful of the gap between the plan and its intended goal. Consider the following example:

12. Acid rain, caused by high levels of sulfur dioxide and mercury trapped in global air currents, affects one third of China's territory. Coal-fired power plants are notorious for emitting large quantities of these pollutants. To combat the problem, the Chinese national government has set aggressive environmental goals for the next five years. These goals include a 20-percent improvement in energy efficiency and a pledge that, by the end of the five years, 10 percent of the nation's energy will come from renewable resources such as hydroelectric or wind power.

Which of the following, if true, is the best criticism of the Chinese government's strategy as a method for achieving a reduction in acid rain?

- (A) Some forms of air pollution, such as heavy particulate fumes, would not be affected by the suggested energy improvements.
- (B) Once the changes have been implemented, the actual reduction in acid rain would vary from region to region.
- (C) The goals would be forced on every region in China, including those that have no problems with acid rain.
- (D) Acid rain is also caused by other factors, such as volcanic eruptions or pollution from neighboring countries, over which China has no control.
- (E) Regional Chinese officials tend to ignore environmental regulations in order to meet aggressive economic requirements imposed on their regions' industries.

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SECTION 5: SWIM SUBTYPES AND ADVANCED APPLICATIONS

Plan/Strategy

LEARNING BY DOING

*A Better Plan Does Not Weaken the Existing Plan*

The answer on this question is answer choice E, although *many* people will pick answer choice A and, to a lesser extent, answer choice D. In this example, you should first isolate the objective of the plan: to reduce China’s acid rain. The plan is to set aggressive goals that will reduce emissions and thus reduce acid rain. If answer choice E is true and officials tend to ignore environmental goals, then this plan will not work and it clearly weakens the plan. The mistake that people make with this problem revolves around a common trick used on Weaken questions: Testmakers present answer choices that get you thinking about a better plan than the one stated, but do not actually *weaken* that plan. For answer choice A, just because some particulates will not be affected by the current plan does not mean it will not “reduce acid rain”—the stated objective in the plan. People tend to pick answer choice A because they think that the objective is to “reduce all acid rain.” As you learned in the sections on Strengthen and Weaken questions, don’t hijack the conclusion!



SKILLS MEET STRATEGY

*Pattern Recognition*

One reason students struggle with critical reasoning is that they do not get the proper takeaways from problems. Because Critical Reasoning questions contain such diverse topic material, students often don’t realize how similar many of the questions really are. Categorization helps you contend with this problem by grouping questions and learning strategies to repeat for those types. Beyond that, you should also look for repeatedly tested logical fallacies and thinking flaws like the one presented in this problem. The next time you are presented with information suggesting a better plan, will you still think that it weakens the current plan? We have presented you with the most commonly repeated fallacies and flaws in this lesson and in the homework questions.

**When doing critical reasoning, focus on repeating patterns in questions: flaws, tricks, set-ups, and structures that testmakers use over and over again.** Your speed and accuracy will increase dramatically with this increased recognition.

**THINK LIKE THE TESTMAKER***How Your Mind Works*

Critical Reasoning questions are expertly made to get you to make very particular mistakes: to accidentally pick a cleverly repackaged premise in a Strengthen question, to go just outside the boundaries of the stimulus in an Inference question, or to believe that one thing is the cause of a conclusion when other explanations are possible. This example baits you into making yet another common thinking flaw that you are likely to repeat if you don't really understand it. Consider the following argument to help you avoid this mistake in the future:

**In an effort to reduce my electricity bill and my overall carbon footprint, I will remove all of the incandescent light bulbs in my home and replace them with energy-saving fluorescent bulbs.**

Do either of the following statements weaken the plan's likelihood of success?

- (A) Over 80% of my home electricity consumption comes from appliances.
- (B) Replacing the windows on my home with better-insulated windows would reduce my electricity usage by a much greater amount than replacing the light bulbs ever could.

No! They do not! **The presence of a better plan does not weaken the existing plan.** To weaken this plan, one needs to show that the plan is not likely to reach its objective. A correct weaken answer might be "energy-saving fluorescent bulbs light a smaller radius than do incandescent bulbs, so most fluorescent bulb owners simply use a greater number of lamps to achieve optimal illumination." That would show that the per-bulb energy usage may be down, but that the user is likely to use just as much electricity overall.



## Useful to Evaluate

Some Critical Reasoning questions will ask you what information would be most useful to evaluate an argument. Because such questions ask for new information—a premise—or the parameters of a study that would provide such information, these questions can be viewed as either Strengthen or Weaken questions. It is helpful to note, however, that these questions will always feature a stimulus with a gap in logic, and so you should treat them as Weaken questions. Similarly, you will likely find that viewing these with a degree of skepticism—much like the cross-examiner you tend to play when approaching Weaken questions—is the most effective way to determine which information is missing; this is another reason that you will want to treat these as Weaken questions.

13. It is logical to conclude that it is more dangerous to ride in an automobile than to ride on a motorcycle. After all, the National Safety Council estimates that one person in 19,000 will die each year in an automobile, while only one out of every 73,000 will be killed as a motorcyclist.

Which of the following studies would be most useful in assessing the validity of the argument above?

- (A) Comparing the National Safety Council's statistics with those of other nations where traffic laws and conditions are similar
- (B) Expressing the difference between the probability of death among automobile passengers and that of motorcyclists as a percentage of the total number of deaths
- (C) Separating the odds of death due to operating vehicles illegally from those in which the operator is not at fault
- (D) Comparing death rates per thousand members of each group rather than comparing total numbers of deaths
- (E) Comparing the number of deaths that take place on highways versus those that take place on local roads

## LEARNING BY DOING

### *Expose the Flaw*

You were likely able to expose the flaw in the previous question: Not nearly as many people ride motorcycles as drive cars, so of course more people are killed in cars than on motorcycles. The sample sizes for each group are wildly incongruent; the argument is like saying that you are more likely to be injured while walking than while taming a lion. True—but walking is still safer. We just do that so much more than we tame lions that the absolute numbers won't be representative of the risk.

When sample sizes are incongruent, a better comparison comes from taking the per-capita rate (how many from each group) than taking the absolute numbers. And that is what answer choice D correctly does: It standardizes the comparison by expressing the probability on the basis of 1,000 members of each group, and not as a probability of the population (which likely includes billions who do not ride motorcycles) as a whole. Beware of answer choice B. If you read it quickly, you might think it would give the necessary information to properly assess the argument, but it still is not breaking apart the groups and giving the necessary per capita information for each group separately. It is yet another example of a cleverly repackaged premise; the study would not give you any new information.



### SKILLS MEET STRATEGY

#### *Be Wary of Conclusions Drawn from Data*

Most Useful to Evaluate questions on the GMAT involve arguments with data that frequently contain one of the common logical fallacies that you learned earlier in this lesson. Any time that you see data in a Critical Reasoning question, you should distrust how that data is being used. In this example, you should understand that absolute-number data is meaningless because of the incongruent sample size. If you can expose the data flaw immediately after reading the stimulus, your speed and accuracy on “useful to evaluate” questions (and all Strengthen and Weaken questions) will increase dramatically.



## Explain the Paradox

Some Strengthen questions are not written as arguments, per se, but rather situations that involve seemingly paradoxical facts. Consider this example:

**Scientists have discovered that lead paint can cause an array of health problems, particularly in young children. Yet those same scientists have recommended that lead paint not be removed from walls in homes with small children.**

These two statements seem to be incompatible. How could the scientists say that lead paint is bad for children and recommend not removing it? Consider the following answer choice, which would completely resolve the apparent paradox:

**Removing lead paint from walls disperses a great deal of lead dust, which is more easily ingested by children than is paint on walls.**

Strategically, your mission is nearly identical with what you will face on Strengthen questions. There is a logical gap, this time between the two portions of a paradox or discrepancy, and you need to find a premise that links them together.

14. Raisins are made by drying grapes in the sun. Although some of the sugar in the grapes is caramelized in the process, nothing is added. Moreover, the only thing removed from the grapes is the water that evaporates during the drying, and water contains no calories or nutrients. The fact that raisins contain more iron per food calorie than grapes do is thus puzzling.

Which one of the following, if true, most helps to explain why raisins contain more iron per calorie than do grapes?

- (A) Since grapes are bigger than raisins, it takes several bunches of grapes to provide the same amount of iron as a handful of raisins does.
- (B) Caramelized sugar cannot be digested, so its calories do not count toward the food calorie content of raisins.
- (C) The body can absorb iron and other nutrients more quickly from grapes than from raisins because of the relatively high water content of grapes.
- (D) Raisins, but not grapes, are available year-round, so many people get a greater share of their yearly iron intake from raisins than from grapes.
- (E) Raisins are often eaten in combination with other iron-containing foods, while grapes are usually eaten by themselves.

## LEARNING BY DOING

### *Isolate the Paradox and Find the Missing Link*

In this example, you learn that when grapes are turned into raisins, no nutrients are gained or lost, and the only major change is that some sugar is caramelized. You then learn that somehow the iron per food calorie has increased during this process. But how can that be? This is the paradox that you should isolate instead of the normal conclusion on a Strengthen question: How can iron per food calorie increase when no nutrients are gained or lost and the only change is that sugar is caramelized? There must be some missing link that allows these seemingly contradictory statements to stand, and that is what you look for in the answer choices—a new piece of information that when added to this stimulus removes that paradox and logically links the two statements. Notice the importance of reading the “conclusion” (which in this case is the paradox) carefully. The entire paradox deals with “iron per calorie”—not iron per second, iron per year, iron per meal, or iron per handful, as some of the answer choices seek to explain. If the calories from caramelized sugar do not count toward the caloric value, thereby reducing the denominator of that fraction and increasing the overall value, then you can understand how that ratio increased. No iron was gained (what your brain naturally tries to explain) but the calories are no longer counted, so answer choice B is correct.



### **THINK LIKE THE TESTMAKER**

#### *Misdirection and Precision in Wording*

What makes this problem time-consuming and difficult for many students? Clever wordplay and misdirection. Your natural inclination when reading this argument is to come up with some explanation for how more iron could have been created in the drying process. You focus on “more iron,” not “more iron per calorie,” and completely forget that there are two ways to increase a ratio. One is to increase the numerator, and the other is to decrease the denominator. **The importance of reading carefully and being precise with wording cannot be overstated; it is the most important skill in critical reasoning.** Testmakers are always setting clever traps with wording. Don’t fall for them!



## Assumption

Another spin on the Strengthen/Weaken theme is the assumption question type. Assumption questions can be a significantly more difficult cousin of Strengthen questions for one particular reason: You are typically not filling a gap in logic but rather eliminating a deeply embedded possibility that, if true, would be problematic for the question at hand. When a question asks “Which of the following is an assumption required by the argument?” it is really asking “Which one of the following answer choices removes a flaw from the argument that you would probably not have anticipated on your own?”

Another difficulty with assumption questions is that the correct answer tends not to advance the argument farther, but instead to protect the argument from regressing. The correct answer choice often exposes a flaw (usually with difficult and clever language) and then removes that flaw with negation. You might think of correct answers as on assumption questions as “shields,” in that correct assumption answers often protect your argument from an attack that you might not have predicted. Testmakers know you will be looking for a sword (something to advance the argument) when the correct answer choice is usually a shield. Consider the following argument:

**Bill received the greatest number of votes in the school election, so he will become the new president of the student council.**

Seems pretty fair, right? But a cleverly written assumption answer might say:

**Bill was not running for an office other than president.**

or

**The electoral system does not include a provision by which the candidate with the most votes could lose the overall election.**

Note the role of these options: They do not necessarily advance the argument, and they may not have been assumptions that you would have identified on your own. You may well have accepted the argument at face value. And these choices also, like many assumption choices, used negation in them: “Bill was not running...”; “the electoral system does not include...”

One helpful way to navigate this negation, and to better understand the “removes the flaw” nature of many assumption choices, is to use the Assumption Negation Technique on each answer choice. This technique involves negating each of the answer choices (one of which is the correct necessary assumption).

To negate a potential assumption, you will want to take the opposite of:

1. A universal or particular modifier (all → not all; some → none; etc.) in the dominant clause of the sentence,

OR

2. The verb in the dominant clause of the sentence (was → was not; did not run → ran; etc.).

Because answer choices may be worded similar to Sentence Correction prompts, with multiple subordinate and modifying clauses, you will need to note that your negation must change the meaning of the sentence itself, and not merely a tangential component. By trial and error, with practice, this can become natural.

When you use the Assumption Negation Technique, you will find that the correct answer, when negated, will void the conclusion. Going back to Bill's student council example, if we were to negate "Bill was not running for an office other than president," it would become "Bill *was* running for an office other than president." Clearly, then, the conclusion is invalid. That is the benefit of the Assumption Negation Technique: It allows you to see what would happen without the conclusion, and if the direct opposite of the answer choice destroys the conclusion, then the choice itself must be a necessary assumption.

**5****SECTION 5: SWIM SUBTYPES AND ADVANCED APPLICATIONS***Assumption*

15. About two million years ago, lava dammed up a river in western Asia and caused a small lake to form. The lake existed for about half a million years. Bones of an early human ancestor were recently found in the ancient lake-bottom sediments on top of the layer of lava. Therefore, ancestors of modern humans lived in Western Asia between 2 million and 1.5 million years ago.

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

- (A) There were not other lakes in the immediate area before the lava dammed up the river.
- (B) The lake contained fish that the human ancestors could have used for food.
- (C) The lava under the lake-bottom sediments did not contain any human fossil remains.
- (D) The lake was deep enough that a person could drown in it.
- (E) The bones were already in the sediments by the time the lake disappeared.

## LEARNING BY DOING

### *Understand the Assumption Negation Technique*

To apply the Assumption Negation Technique, negate each answer choice and then consider its impact on the conclusion. The correct answer, when negated, will directly undermine the argument. Here are the answers in their negated form:

- (A) There **were not** other lakes in the immediate area before the lava dammed up the river.
- (B) The lake **contained did not contain** fish that the human ancestors could have used for food.
- (C) The lava that lay under the lake-bottom sediments **did contain** any human fossil remains.
- (D) The lake was **not** deep enough that a person could drown in it.
- (E) The bones were **not** already in the sediments by the time the lake disappeared.

When considering the impact that each negation would have on the conclusion, it becomes relatively clear that answer choices A, B, and D are quite irrelevant to whether human ancestors could have lived in that time frame.

Answer choice C is a popular, but incorrect, choice. Look specifically at the conclusion. It only states that ancestors of modern humans lived in this region at this time—not that they were the first. Therefore, it should not matter whether any ancestors were there beforehand. Actually, the presence of such ancestors probably makes it more likely that those we are talking about were, indeed, there at this time. There's precedent that people had been in the region long before! If answer choice C was correct it would have to contradict the conclusion, and it clearly does not do that.

By taking the negation of answer choice E, however, it becomes apparent that the statement directly contradicts the conclusion. If the bones were not in the sediments before 1.5 million years ago when the lake disappeared, you would be left with no evidence of the humans' presence in that area at that time. The entire argument hinges upon the bones found in that sediment; if it turns out that the bones were transplanted there by a more-recent earthquake, perhaps, or an archaeological hoax, the entire conclusion would fail to stand. Accordingly, the argument assumes that "the bones were already in the sediments by the time the lake disappeared" (answer choice E).



### THINK LIKE THE TESTMAKER

#### *Negation*

Testmakers know that it is difficult to properly comprehend information when it is presented negatively. In most assumption questions, the answer choices are presented negatively because they are removing some possibility or stating that some flaw is not present. Generally speaking, it is very difficult to decide whether a negatively worded statement is strengthening an argument but not that difficult to decide if an affirmatively worded statement is weakening an argument. This is the primary value of the Assumption Negation Technique—that it allows you to sort through difficult negation and consider things affirmatively. Always use the Assumption Negation Technique on assumption questions with negatively worded answer choices.

**Assumption Challenge Question**

16. In North America there has been an explosion of public interest in, and enjoyment of, opera over the last three decades. The evidence of this explosion is that of the 70 or so professional opera companies currently active in North America, 45 were founded over the course of the last 30 years.

The reasoning above assumes which one of the following?

- (A) All of the 70 professional opera companies are commercially viable options.
- (B) There were fewer than 45 professional opera companies that had been active 30 years ago and that ceased operations during the last 30 years.
- (C) There has not been a corresponding increase in the number of professional companies devoted to other performing arts.
- (D) The size of the average audience at performances by professional opera companies has increased over the past three decades.
- (E) The 45 most recently founded opera companies were all established as a result of enthusiasm on the part of a potential audience.

**LEARNING BY DOING***Remove the Flaw*

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The previous question should strongly demonstrate the usefulness of the Assumption Negation Technique. Most students will not anticipate the correct answer here (although if you can, it is the best way to get it correct!), and most are also tempted by the way that answer choices A, D, and E advance the argument. If not only are there 45 new operas, but all of them were established on the basis of enthusiasm of a potential audience, that certainly seems to further the idea that there has been a dramatic increase in opera enthusiasm.

However, what if 45 new operas were founded because of audience enthusiasm, but 150 operas closed due to low attendance and apathetic interest?

Then where is your explosion of interest? Assumption Negation Technique shows that answer choices A, D, and E are not necessary:

- (A) **NOT** All of the 70 professional opera companies are commercially viable options. → *Did we need all of them to earn money? What if two are still struggling, or were founded as nonprofit entities to enrich communities, but the others are thriving? The conclusion is still strengthened. Answer choice A is not necessary.*
- (D) The size of the average audience at performances by professional opera companies has **NOT** increased over the past three decades. → *Do we need the average audience to increase? If there are twice as many companies, with twice as many performances, even if the average audience slips a bit there are still quite a few more patrons, evidence of a surge in enthusiasm. Answer choice D is not necessary.*
- (E) The 45 most recently founded opera companies were **NOT** all established as a result of enthusiasm on the part of a potential audience. → *Similar to answer choice A, do we need all of them to be established as a result of enthusiasm? If two or three of them were established with lukewarm reception, the vast majority still reflect enthusiasm. Answer choice E is not necessary.*

**5****SECTION 5: SWIM SUBTYPES AND ADVANCED APPLICATIONS***Assumption*

But consider answer choice B. (**NOTE:** Answer choice C is pretty far out of scope. Other performing arts are irrelevant.) If negated, answer choice B shows a major weakness in the argument as given:

- (B) There were **MORE** fewer than 45 professional opera companies that had been active 30 years ago and that ceased operations during the last 30 years. → If the 45 new operas don't even begin to make up for the number of operas that have closed, then we have no evidence of an explosion in opera interest. For example, if 45 opened but 60 closed, that's a -15 net change in the number of operas. What's worse, our only evidence of increased opera enthusiasm is those 45 new operas; if they themselves don't reflect an increase, then our argument has no merit. Answer choice B, while confusing and maybe even bland as written, when negated shows that it is essential to the argument. The author assumes that the 45 new operas reflect an increase. Otherwise the argument holds no merit.

Notice this about the correct answer here: It does not really "advance" the argument, but rather proposes and then removes a potential flaw. By doing so, it certainly strengthens the argument (that's one less weakness to which it is vulnerable) but probably not in a way that you would anticipate or to which you would gravitate. Therein lies the difficulty in Assumption problems: The correct answer is often one that you wouldn't come up with on your own, but the assumption Negation Technique can alert you to its necessity.

**THINK LIKE THE TESTMAKER***Misdirection/Hiding the Correct Answer and Selling the Wrong Answer*

This problem contains one of the more clever cases of misdirection that you will see on a Critical Reasoning question. After reading the argument it is hard not to say to yourself: "Just because 45 opera companies were founded over the last 30 years, it doesn't mean that people really like opera and it certainly doesn't mean that there has been an explosion of interest in opera." You look automatically for an answer choice that corrects that flaw by linking increased interest with the new opera companies. Answer choice E seems to do just that. However, in the meantime you have missed a much bigger flaw that the testmakers have made you overlook by selling an incorrect answer choice so well. As you learned in the previous question: What if 1,000 companies went out of business in the same period the 45 were founded? Answer choice B removes that flaw with such obtuse language that people miss its importance. It is only after you note the data flaw that you will realize that the other answer choices do not necessarily strengthen the argument.

### **Mimic the Reasoning**

“Mimic the Reasoning” questions are a subtype of the Method of Reasoning category; they are very common on the LSAT but extremely uncommon on the GMAT. These questions provide five arguments as answer choices and want you to pick the one that mimics the argument structure presented in the original stimulus. To succeed on Mimic the Reasoning you should:

1. Focus on structure not subject matter.
2. Mimic any negation that appears in the original argument structure.
3. Make sure elements are linked together using the same logic as the original but that do *not* worry about the order with which those elements are presented.

**5****SECTION 5: SWIM SUBTYPES AND ADVANCED APPLICATIONS***Mimic the Reasoning*

While you will probably not see a Mimic the Reasoning question on the GMAT, it is important to practice a few in case one shows up on your test.

17. Professor Edwards must have revealed information that was embarrassing to the university. After all, to have been publicly censured by the head of the university, as Edwards was, a professor must either have revealed information that embarrassed the university or have been guilty of gross professional negligence, and Edwards's professional behavior is impeccable.

Which one of the following arguments exhibits a pattern of reasoning most similar to that in the argument above?

- (A) According to company policy, employees who are either frequently absent without notice or who are habitually late receive an official warning. Since Ms. Jensen has never received such a warning, rumors that she is habitually late must be false.
- (B) Any employee of Wilkins, Waddel, and Sloan, who discussed a client with a member of the press will either be fired or demoted. But since Wilkins employees never discuss their clients at all, no Wilkins employee will ever be demoted.
- (C) Anyone promoted to supervisor must either have worked on the shop floor for three years or have an influential sponsor. Daniels, therefore, has an influential sponsor, since he was promoted to supervisor after a year on the shop floor.
- (D) To earn a merit salary increase, an employee of TGX must either bring in new clients or develop innovative products. No innovative products were developed at TGX this year, so TGX employees must have brought in many new clients.
- (E) Anyone who is either awarded a letter of commendation or who receives a bonus must be recommended by a company officer. Simon has been recommended by a company officer and will receive a bonus, so he must not have been awarded a letter of commendation.

## LEARNING BY DOING

### *Map Out the Argument Structure*

Like Method of Reasoning questions, Mimic the Reasoning questions hinge on your understanding of argument structure and not on your ability to contribute to (or attack) the argument in question. It is therefore important to divorce the argument from subject matter and outline the direction of the argument in your own terms.

In this question, the argument essentially says (remember that order of presentation does not matter):

An action took place (he was censured). There are only two possible explanations for that action (either he revealed embarrassing information or he was professionally negligent). One of the two possible explanations is eliminated so the other one must be true (his professional behavior is impeccable so he must have revealed information).

In reading the answer choices, your only goal is to find that exact structure, regardless of the order of presentation and the subject matter. Only answer choice C contains this structure:

An action took place (he was promoted). There are only two possible explanations for that action (either he has an influential sponsor or worked for more than three years). One of the two possible explanations is eliminated, so the other one must be true (he did not work for more than three years, so he must have an influential sponsor).

### **THINK LIKE THE TESTMAKER**

#### *Hiding the Correct Answer and Selling the Wrong Answer*

On Mimic the Reasoning questions, the correct answer often “sounds” very different from the original but contains the same argument structure. Often the order of presentation will be very different (as in this case) or the subject matter will be so different that it is hard to link the two in your brain.

**Note this about incorrect sucker choices on mimic the reasoning questions: If an answer choice sounds exactly like the original or contains similar subject matter, it is probably incorrect.** Look carefully to make sure some component is not different in these kinds of answer choices.



## Strategies for Subtypes and Advanced Applications Summary

While the strategies for these subtypes are essentially the same as for their broader category, there are a few important differences to consider.

### Plan/Strategy

- The objective of the plan takes the place of the conclusion.
- If it is a Weaken question, make sure you are actually weakening the plan, not simply considering what could make it better.

### Useful to Evaluate

- These questions are best thought of as Weaken questions. Find the flaw in the argument and you will be able to figure out what missing information is required to better evaluate it.
- Most of these involve the common logical fallacies. Be particular wary of any questionable conclusions formed from data.

### Explain the Paradox

- Instead of isolating a conclusion, you must isolate an apparent paradox or contradiction.
- Make sure the answer you pick is new information that completely resolves the apparent paradox.

### Assumption

- Assumption questions are very common and generally a difficult type for students.
- The Assumption Negation Technique is particularly helpful in dealing with negatively worded answer choices.
- Remember: These are just Strengthen questions, but usually the correct answer is not advancing the argument but rather removing a flaw or possibility that would break down the argument.

### Mimic the Reasoning

- Focus on argument structure, not content.
- The correct answer choice must contain the same logic, but the premises and conclusions do not need to be presented in the same order as the original.
- Any negation needs to be mimicked in the correct answer choice.



**HOMWORK**

18. More and more computer programs that provide solutions to mathematical problems in engineering are being produced, and it is thus increasingly unnecessary for practicing engineers to have a thorough understanding of fundamental mathematical principles. Consequently, in training engineers who will work in industry, less emphasis should be placed on mathematical principles so that space in the engineering curriculum will be available for other important subjects.

Which of the following, if true, most seriously weakens the argument given for the recommendation above?

- (A) The effective use of computer programs that provide solutions to mathematical problems in engineering requires an understanding of fundamental mathematical principles.
- (B) Many of the computer programs that provide solutions to mathematical problems in engineering are already in routine use.
- (C) Development of composites and other such new materials has meant that the curriculum for engineers who will work in industry must allow time for teaching the properties of these materials.
- (D) Most of the computer programs that provide solutions to mathematical problems in engineering can be run on the types of computers available to most engineering firms.
- (E) The engineering curriculum already requires that engineering students be familiar with and able to use a variety of computer programs.

19. After Company K released its low-fat butter substitute into European markets for the first time, it found that it was unable to achieve any appreciable market share. To combat this problem, Company K re-released the product under a new name with great fanfare and a substantial marketing budget, calling it the "new low-fat alternative to butter."

Which of the following, if true, casts the most doubt on the effectiveness of the solution proposed above?

- (A) In many European countries, satisfactory taste and low-fat content are believed to be entirely contradictory.
- (B) The market for yellow fats such as margarine and butter has been slowly shrinking in many European countries due to the emergence of specialized cheese spreads.
- (C) Company K could only feasibly maintain such a marketing budget for 10 to 12 months before scaling down the campaign.
- (D) After Company K attempted a similar marketing strategy in South America, sales of the new product greatly increased.
- (E) In Denmark, the new low-fat butter substitute achieved a market share of 15% within the first year – without any massive marketing campaign.



20. Most pain relievers come with warnings against continuous use longer than 7 consecutive days. While some people might be able to safely use a particular pain reliever for a longer period of time, many people will begin to experience side effects if the warnings are ignored.

The information above most strongly supports which of the following?

- (A) A physician should not advise any patient to take any pain reliever for a period of longer than 7 consecutive days.
- (B) People who are sensitive to one type of pain reliever should not attempt to use a different pain reliever.
- (C) At least some people who take pain relievers for longer than 7 days will experience side effects.
- (D) Any side effects experienced by a patient who has taken a pain reliever for fewer than 7 consecutive days cannot be the result of the pain reliever.
- (E) Anyone who wants to maximize their natural health and well-being should avoid pain relievers entirely.

21. It is inaccurate to say that a diet high in refined sugar cannot cause adult-onset diabetes, since a diet high in refined sugar can make a person overweight, and being overweight can predispose a person to adult-onset diabetes.

The argument above is most parallel, in its logical structure, to which of the following?

- (A) It is inaccurate to say that being in cold air can cause a person to catch a cold, since colds are caused by viruses, and viruses flourish in warm, crowded places.
- (B) It is accurate to say that no airline flies from Halifax to Washington. No single airline offers a direct flight, although some airlines have flights from Halifax to Boston and others have flights from Boston to Washington.
- (C) It is correct to say that over-fertilization is the primary cause of lawn disease, since fertilizer causes lawn grass to grow rapidly and rapidly growing grass has little resistance to disease.
- (D) It is incorrect to say that inferior motor oil cannot cause a car to get poorer gasoline mileage, since inferior motor oil can cause engine valve deterioration, and engine valve deterioration can lead to poorer gasoline mileage.
- (E) It is inaccurate to say that Alexander the Great was a student of Plato; Alexander was a student of Aristotle, and Aristotle was a student of Plato.



22. In an attempt to protect the environment and stop oil companies from sinking a decommissioned North Sea oil platform to the bottom of the ocean, environmental groups ringed the platform with protest boats and demanded that it be towed to land, where it could be dismantled above water. Environmentalists argued that sinking the oil platform would cause irreparable damage to the deep sea ecosystem and release into the ocean over 53 tons of oil residue and heavy metals.

Which of the following, if true, indicates the plan to tow the oil platform to land is ill-suited to the environmentalist group's goals?

- (A) The National Environmental Research Council approved the sinking of the oil platform, calling it the "best practicable environmental option."
- (B) Dismantling the oil platform on land would cost over 70 million dollars, compared to the \$7.5 million needed to secure and sink it in a deep ocean location.
- (C) The release of 53 tons of toxic material into the ocean is very little compared to the volume of very highly toxic materials released by deep sea volcanoes.
- (D) Towing the oil platform into shallow waters poses a massive risk that it may break up on its way to land, releasing the contained pollutants into fragile coastal waters.
- (E) The sinking of the platform is fully in line with internationally approved guidelines for the disposal of off shore installations at sea.

23. Which of the following best completes the passage below?

Some anthropologists theorize that no great city-state has ever been conquered without first being rife with internal conflict. Recently, evidence has been discovered that a great city-state, known as Archaic C, was sacked and occupied by a rival city-state in the first millennium BC. Therefore, if the anthropologists' theory is correct, we can say that \_\_\_\_\_.

- (A) after Archaic C was sacked and occupied, internal divisions remained in the region.
- (B) no internal divisions ever existed in Archaic C.
- (C) Archaic C was not truly a great city-state.
- (D) Archaic C suffered from internal conflict at some point in the first millennium BC or earlier.
- (E) Archaic C was not the first great city-state to be conquered by outside forces.



24. The use of a wood harvesting technique known as clear cutting has had two especially insidious environmental impacts. The first is that it causes erosion, as hillsides that were covered with mature trees are abruptly exposed to the full impact of the elements. The second is that when new trees grow in the area they are often nearly all of the same age and species and therefore highly susceptible to disease and insect infestation.

From the passage above, it can be properly inferred that wood harvesting can continue with fewer negative impacts if which of the following techniques is employed?

- (A) Waiting longer periods between harvests so that the trees will be larger when cut.
- (B) Using selective harvesting techniques that leave some mature trees standing.
- (C) Spraying areas that are clear cut with an insecticide to prevent infestation.
- (D) Leaving some areas uncut, such as those near state parks and along roadsides.
- (E) Planting monocultures, a single species of fast growing tree, in areas that have been clear cut.

25. **Nick:** The best way to write a good detective story is to work backward from the crime. The writer should first decide what the crime is and who the perpetrator is and then come up with the circumstances and clues based on those decisions.

Which one of the following illustrates a principle most similar to that illustrated by the passage?

- (A) When planning a trip, some people first decide where they want to go and then plan accordingly, but for most of us, much financial planning must be done before we can choose where we are going.
- (B) In planting a vegetable garden, you should prepare the soil first and then decide what kinds of vegetables to plant.
- (C) Good architects do not extemporaneously construct their plans in the course of an afternoon; an architectural design cannot be divorced from the method of constructing the building.
- (D) In solving mathematical problems, the best method is to try out as many strategies as possible in the time allotted. This is particularly effective if the number of possible strategies is fairly small.
- (E) To make a great tennis shot you should visualize where you want the shot to go and then determine the position you need to be in to execute the shot properly.



26. Heavy consumption of alcohol causes impaired judgment, a loss of fine motor skills, slower reaction times, a decrease in visual acuity, and other short-term symptoms. Since alcohol can be metabolized in the average person's body at a rate of 0.015 BAC (or "blood alcohol content") per hour, a severely intoxicated individual with a BAC of 0.15 should be symptom-free after 10 hours. After this time, if the individual exhibits similar symptoms, such symptoms cannot be caused by alcohol.

Which of the following, if true, most seriously weakens the conclusion above?

- (A) Some symptoms normally associated with alcohol consumption may resemble symptoms caused by prescription drugs or even drowsiness.
- (B) Increases in BAC are based on the amount of alcohol consumed rather than the number of drinks (some drinks contain more alcohol than others).
- (C) Heavy alcohol consumption has numerous long term effects such as cirrhosis of the liver, stomach ulcers, and birth defects.
- (D) The metabolic rate of alcohol varies according to a person's health, weight, diet, and genetic predispositions.
- (E) Some people, due to an acute sensitivity to alcohol, cannot even reach a BAC of 0.15 before becoming violently ill.

27. When astronomers observed the comet Steinman-Arnet 3 becoming 1,000 times brighter in September 1995, they correctly hypothesized that its increased brightness was a result of the comet's breaking up. When comets break up, they emit large amounts of gas and dust, becoming visibly brighter as a result. However, their observations did not reveal comet Steinman-Arnet 3 actually breaking into pieces until November 1995, even though telescopes were trained on it throughout the entire period.

Which of the following, if true, most helps to resolve the apparent conflict in the situation above?

- (A) Comets often do not emit gas and dust until several weeks after they have begun to break up.
- (B) The reason comets become brighter when they break up is that the gas and dust that they emit refract light.
- (C) Gas and dust can be released by fissures in a comet, even if the comet is not broken all the way through.
- (D) The amount of gas and dust emitted steadily increased during the period from September through November.
- (E) The comet passed close to the sun during this period and the gravitational strain caused it to break up.



28. To get into a top MBA program **one must have five years of work experience and a 90<sup>th</sup> percentile GMAT score**. Alexis has a 95<sup>th</sup> percentile GMAT score and five years of experience in the work force, so **Alexis must be accepted into a top MBA program**.

The two portions in **boldface** play which of the following roles?

- (A) The first is a piece of evidence; the second is a conclusion that must be true based on the evidence presented.
- (B) The first is a piece of evidence; the second is a conclusion that is not necessarily true based on the evidence presented.
- (C) The first is a conclusion that follows from the evidence; the second is a piece of evidence.
- (D) The first is a conclusion that is not necessarily true based on the evidence; the second is a piece of evidence.
- (E) The first is the conclusion of the author; the second is a cause-and-effect relationship that supports the conclusion.

29. Despite radical fluctuations during the previous decade, unit labor costs (that is, the manufacturers' average labor cost per unit produced) in country Q have remained unchanged for the last several years. However, during this period of stabilization, the average hourly wage of manufacturing laborers has increased by 7.2%.

Which of the following, if true, most helps to explain why the increase in hourly manufacturing labor cost of manufacturing labor in country Q has not led to an increase in average unit labor cost?

- (A) Inflation has caused the purchase prices of goods manufactured in country Q to increase at the same rate.
- (B) The increase in the average cost of manufacturing labor per hour has occurred despite decreases in the raw material costs.
- (C) During the same period, manufacturing productivity (units produced per laborer per hour) increased at the same rate as did wages.
- (D) In the last few years, there has been a shift in the economy of country Q, leading to more service-oriented jobs and fewer manufacturing jobs.
- (E) When the hourly compensation rate increases, it is possible to hire workers with greater skill levels.



30. The search for NEOs (or “Near Earth Objects”) has intensified greatly within the last few years with the emergence of a virtual army of amateur astronomers. By combining their observations into a single database at the Smithsonian Astrophysical Observatory, “backyard scientists” are capable of accurately determining the orbits and motions of asteroids that could hit the Earth. Indeed, in recent years much of the burden for accurately evaluating the risks posed by NEOs has been shouldered by amateur astronomers. Therefore, we should reserve larger, professional telescopes for uses other than finding NEOs.

Which of the following, if true, most seriously weakens the argument above?

- (A) Because of their numbers, amateur astronomers as a group are much more efficient than are individual professional telescopes at accurately determining NEO orbits.
- (B) Because large telescopes are often controlled by governments or institutions, professional scientists do not always have full discretion to use these telescopes any way they would like.
- (C) Most amateur astronomers do not have any professional training in astronomy.
- (D) NASA has set a goal of finding at least 90% of the estimated 1000 NEOs larger than 1 kilometer in diameter.
- (E) Amateur astronomers primarily provide follow-up observations after NEO discoveries have been made by the use of larger, computerized telescopes.

31. From 1994 to 2001, violent crime in New York City steadily decreased by over 50%, from a rate of 1,861 violent crimes per 100,000 people in 1994 down to 851 violent crimes per 100,000 people in 2001. Criminologists have partially attributed this drop to proactive policing tactics such as “broken window policing,” wherein city officials immediately fixed small acts of vandalism and, as a result, lowered other types of criminal behavior. During this same period, the rate of violent crime in the United States steadily decreased by 28% (down to 500 violent crimes per 100,000 people).

Which of the following conclusions is best supported by the information above?

- (A) The decrease in the total crime rate in the United States caused the decrease in New York City’s crime rate.
- (B) New York City spends more per capita on law enforcement than does the rest of the United States.
- (C) If the rest of the United States were to adopt law enforcement tactics similar to those of New York City, national violent crime rates would continue to fall.
- (D) Between 1994 and 2001, the violent crime rate in New York City was consistently higher than the national average.
- (E) The violent crime rate in New York City will soon be below the national average.



32. Pharmaceutical manufacturers have long claimed that one of the main reasons they give doctors free drug samples is so that doctors can pass the medicine along to poor patients. However, a new study shows that high-income, well-insured individuals receive considerably more prescription drug samples than do low-income, poorly insured individuals. This is because doctors favor affluent people with health insurance.

Which of the following, if true, most seriously jeopardizes the validity of the explanation for why high-income individuals receive more free prescription drug samples than low-income individuals do?

- (A) Independent medical clinics not affiliated with large hospitals receive only a small percentage of the free drug samples distributed by pharmaceutical manufacturers.
- (B) Because of the associated costs, low-income people see doctors less often, if at all.
- (C) Some medical offices refuse to treat individuals for conditions that are not critical or life-threatening if the individual does not have the means to pay for the treatment.
- (D) Once the free drug sample supply in a doctor's office is gone, the patients are forced to pay for their prescriptions.
- (E) Though they claim to give doctors free drug samples in order to help poor patients, the real reasons pharmaceutical companies do it are to increase brand awareness and to influence the doctor to prescribe these drugs more often.

33. In the early 20<sup>th</sup> century, ivory poaching led to the near extinction of the black rhino and the African elephant. As a result, numerous African nations supported a complete ban on all ivory sales. This ban has been in effect since 1989. The governments of South Africa, Botswana, and Namibia have recently put up for auction thousands of tons of confiscated ivory horns and tusks, in spite of the continued moratorium. However, the three governments have the full support of the same conservationists who helped impose the 1989 international ban on ivory sales.

Which of the following, if true, contributes most to an explanation of why conservationists support South Africa's, Botswana's, and Namibia's auction of ivory?

- (A) The international demand for ivory has decreased significantly since 1989.
- (B) Most wild black rhinos and African elephants live outside of South Africa, Botswana, and Namibia.
- (C) Once the tons of confiscated ivory are auctioned, the market will be flooded with ivory, making poaching economically impractical.
- (D) If it were not for the auction, the confiscated ivory could never be used and would have to remain in government warehouses.
- (E) Due to major conservation efforts, black rhino and African elephant populations have slowly but steadily increased in the last few years.



34. Recent market research has indicated that, because Globaltech's current line of cellphones has remained the same over the last few years without adding any cutting-edge features that consumers demand, it has lost considerable market share in the industry. So, in an attempt to regain market share, Globaltech has proposed a new line of cellphones with the capability of synchronizing various household appliances such as computers, light switches, and even toasters.

Which of the following, if true, provides the strongest reason to expect that the proposed line of cellphones will be successful in regaining market share?

- (A) Engineers have only recently been able to discover a cost-effective way to remotely control household appliances through cellphones.
- (B) An increasing number of countries throughout the world now have more cellphones than people.
- (C) The number of appliances that can be remotely controlled through a cellphone signal has more than tripled in the last few years.
- (D) Globaltech's market share began decreasing at the same time as it stopped adding new features to its cellphones.
- (E) In today's economy, the new time-saving ability to remotely control appliances is being demanded by more and more consumers.

35. Researchers have recently discovered that approximately 70% of restaurant lemon wedges they studied were contaminated with harmful microorganisms such as bacteria and fungal pathogens. The researchers looked at numerous different restaurants in different regions of the country. Most of the organisms had the potential to cause infectious disease. For that reason, people should not order lemon wedges with their drinks.

Which of the following, if true, would most weaken the conclusion above?

- (A) The researchers could not determine why or how the microbial contamination occurred on the lemon wedges.
- (B) The researchers failed to investigate contamination of restaurant lime wedges by harmful microorganisms.
- (C) The researchers found that people who ordered lemon wedges at restaurants were equally likely to contract the diseases caused by the discovered bacteria as were people who did not order lemon wedges.
- (D) Health laws require lemons to be handled with gloves or tongs, but the common practice is for waiters and waitresses to handle them with their bare hands.
- (E) Many factors that have nothing to do with lemons affect the chance of an individual contracting a disease by coming into contact with bacteria. These factors include such things as the health and age of the individual as well as the status of his or her immune system.



36. The administrative budget in the Central Valley school district is proportional to the value of the valley's property tax base, the chief source of funding for the school district. As revenue from property taxes increases, each budget segment of the school district is increased proportionately.

Which of the following statements, if true, is the best basis for a criticism of the Central Valley's budgeting policy as an economically sound budgeting method for school districts?

- (A) The school district might continue to pay for past inefficient allocation of funds.
- (B) The revenue from property taxes has remained relatively unchanged for the last decade.
- (C) Student performance is affected by fluctuations in the overall school district budget.
- (D) Many Central Valley taxpayers have complained about the high property tax rates in the area.
- (E) The current budgeting system has little impact on whether parents decide to take their children to non-district funded classes.

37. A newspaper article in the Smithville Herald argued that the strength of unions was declining. The article's evidence was the decreasing number and size of strikes as though the reason for the unions' existence was to organize strikes. Surely, in a modern industrial society, the calling of a strike is evidence that the negotiating position of the union was too weak. Strong unions do not need to call strikes. They can concentrate their efforts on working with others in the labor market to achieve common goals, such as profitable and humane working conditions.

The argument criticizing the newspaper article employs which one of the following strategies?

- (A) Questioning the accuracy of the statistical evidence that the newspaper article uses
- (B) Detailing historical changes that make the newspaper articles' analysis outdated
- (C) Reinterpreting evidence that the newspaper article uses as indicating the opposite of what the newspaper concludes
- (D) Arguing that the newspaper article's conclusion is motivated by a desire to change the role of unions
- (E) Pointing to common interests among unions and management



38. Members of the staff at the local daycare suggest that parents would have more incentive to pick up their children on time if the parents were assessed a fine after arriving more than 10 minutes late to pick up their children.

Which of the following, assuming that it is a realistic possibility, argues the most strongly against the effectiveness of the suggestion above?

- (A) By replacing social norms with market norms, fines might induce parents to weigh the “costs” of picking their children up late and, as a result, to frequently choose to be late.
- (B) There might be irreconcilable disagreements among the daycare staff about whether the late fines should be imposed.
- (C) Late fines might cause some parents to enroll their children in other daycares.
- (D) Removing the late fine policy might actually increase the number of tardy pick-ups.
- (E) Some parents might pick up their children late no matter what level of fine is imposed against them.

39. When Germany was asked to pay 132 billion gold marks in war reparations following World War I, the German government had to print money to pay its bills, drastically devaluing the currency. In response to this anticipated devaluation, Germans began spending their money while it still had purchasing power, almost completely depleting the monetary stores of domestic banks.

Which of the following, if true and taken together with the information above, best supports the conclusion that the devaluation of the German mark was likely to continue?

- (A) The recipient governments of the war reparations began to demand that the reparations be paid in goods and commodities, such as coal.
- (B) The amount of 132 billion gold marks was the largest war reparations amount ever levied to that point.
- (C) In the post-World War I period, the German government had only two options for preventing complete economic collapse: print money or take out loans from domestic banks.
- (D) Printing currency causes inflation when the money is not based on hard assets such as gold or land.
- (E) The more consumers make purchases, the more money is returned into a country's economy.



40. **Sam:** During recessions, unemployment typically rises. Thus, air pollution due to automobile exhaust decreases during a recession, since fewer people commute in cars to jobs and so cars emitting pollutants into the air are used less.

**Felipe:** Why would you think that air pollution would decrease? During a recession, fewer people can afford to buy new cars, and cars tend to emit more pollutants as they get older.

Which of the following most accurately describes how Felipe's response is related to Sam's argument?

- (A) It calls into question the truth of the premises that Sam uses to support his conclusion.
- (B) It makes an additional claim that can only be true if Sam's conclusion is false.
- (C) It presents an additional consideration that weakens the support given to Sam's conclusion by his evidence.
- (D) It argues that Sam's conclusion is true, although not for the reasons Sam gives to support that conclusion.
- (E) It presents an argument showing that the premises in Sam's argument support an absurd conclusion that Sam has overlooked.

41. Before 1986 physicists believed they could describe the universe in terms of four universal forces. Experiments then suggested, however, a fifth universal force of mutual repulsion between particles of matter. This fifth force would explain the occurrence in the experiments of a smaller measurement of the gravitational attraction between bodies than the established theory predicted.

Which one of the following, if true, most strengthens the argument that there is a fifth universal force?

- (A) The extremely sophisticated equipment used for the experiments was not available to physicists before the 1970's.
- (B) No previously established scientific results are incompatible with the notion of a fifth universal force.
- (C) Some scientists have suggested that the alleged fifth universal force is an aspect of gravity rather than being fundamental in itself.
- (D) The experiments were conducted by physicists in remote geological settings in which factors affecting the force of gravity could not be measured with any degree of precision.
- (E) The fifth universal force was postulated at a time during which many other exciting and productive ideas in theoretical physics were developed.



42. In a recent study, a group of subjects had their normal daily caloric intake increased by 25 percent. This increase was entirely in the form of alcohol. Another group of similar subjects had alcohol replace non-alcoholic sources of 25 percent of their normal daily caloric intake. All subjects gained body fat over the course of the study and the amount of body fat gained was the same for both groups.

Which of the following is most strongly supported by the information above?

- (A) Alcohol is metabolized more quickly by the body than are other food and drinks.
- (B) In the general population, alcohol is the primary cause of gains in body fat.
- (C) An increased amount of body fat does not necessarily imply a weight gain.
- (D) Body fat gain is not dependent solely on the number of calories one consumes.
- (E) The proportion of calories from alcohol in a diet is more significant for body fat gain than are the total calories from alcohol.

43. When investigators discovered that the director of a local charity had repeatedly overstated the number of people his charity had helped, the director accepted responsibility for the deception. However, the investigators claimed that journalists were as much to blame as the director was for inflating the charity's reputation, since they had naively accepted what the director told them and simply reported as fact the numbers he gave them.

Which one of the following principles, if valid, most helps to justify the investigators' claim?

- (A) Anyone who works for a charitable organization is obliged to be completely honest about the activities of that organization.
- (B) Anyone who knowingly aids a liar by trying to conceal the truth from others is also a liar.
- (C) Anyone who presents as factual a story that turns out to be untrue without first attempting to verify that story is no less responsible for the consequences of that story than anyone else is.
- (D) Anyone who lies to advance his or her own career is more deserving of blame than someone who lies in order to promote a good cause.
- (E) Anyone who accepts responsibility for a wrongful act that he or she committed is less deserving of blame than someone who tries to conceal his or her own wrongdoing.



44. **Some analysts predict that next year will see total worldwide sea shipping tonnage increase by 2% over the current year.** However, captains of freight ships generally expect that worldwide shipping tonnage will decrease next year. **At issue is the amount of freight that will be shifted from sea ships to freight airplanes as compared to growth in the overall demand for freight transport.** The analysts believe growth in demand will outstrip the shift to freight airplanes; the ship captains believe the opposite.

The two portions in **boldface** play which of the following roles?

- (A) The first portion is evidence that supports a position; the second portion is a position that is not necessarily true based on the evidence.
- (B) The first portion represents one of two opposed positions; the second portion describes the underlying reason for the difference in position.
- (C) The first portion represents one of two opposed positions; the second portion is evidence in support of that position.
- (D) The first portion is evidence that supports a position; the second portion is evidence that supports an opposed position.
- (E) The first portion represents one of two opposed positions; the second portion represents the opposing position.

45. In one study engineering students who prepared for an exam by using toothpicks and string did no worse than did similar students who prepared by using an expensive computer with sophisticated graphics. In another study, military personnel who trained on a costly high-tech simulator performed no better on a practical exam than did similar personnel who trained using an inexpensive cardboard model. Therefore, one should not always purchase technologically advanced education tools.

Which of the following principles, if valid, most helps to justify the reasoning above?

- (A) One should use different educational tools to teach engineering to civilians than are used to train military personnel.
- (B) High-tech solutions to modern problems are ineffective unless implemented by knowledgeable personnel.
- (C) Spending large sums of money on educational tools is at least as justified for nonmilitary training as it is for military training.
- (D) One should not invest in expensive teaching aids unless there are no other tools that are less expensive and at least as effective.
- (E) One should always provide students with a variety of educational materials so that each student can find the materials that best suit that student's learning style.



46. It is proposed to introduce mosquitoes into the wild with genetic alterations that destroy their disease-carrying capacity. In this way, the dangerous wild population could eventually be replaced with a harmless one without leaving room for another disease-transmitting type to flourish. One candidate gene would interfere with the mosquito's finding mates; another would cause destruction of a disease parasite before the stage at which it could be transmitted; another would disable the mosquito's own resistance to disease, so that it would die before transmitting the disease.

Which of the following identifies a discrepancy in the proposal above?

- (A) It is presupposed that the three genes would prove equally easy to isolate and insert into the cells of the mosquitoes.
- (B) Two of the ways of destroying disease carrying capacity in the wild would jeopardize the goal of the proposal.
- (C) It does not take into account positive roles that mosquitoes play in the environment, such as serving, in the larval stage, as food for fish.
- (D) None of the proposed alternatives would ensure that there would be fewer mosquitoes in any given area.
- (E) Evidence is not presented to show that each alternative method has been successfully tested on a wide scale.

47. Zoologists seeking evidence that the Gigantopithicus (giant ape) once inhabited a certain region are digging into the middle and lower layers of a mound of earth. Gigantopithicus is known to have gone extinct before Neanderthal man came into existence. The bottom of the middle layer contains some Neanderthal bones, but the lower layer does not.

Which of the following conclusions is best supported by the evidence above?

- (A) The Neanderthals represented by the fossilized bones were not native to this region but wandered to it from another, distant region.
- (B) The Gigantopithicus species lived for a long time before it became extinct.
- (C) The middle layer does not represent the period in which Gigantopithicus lived.
- (D) Zoologists will not find any evidence of Gigantopithicus in this region.
- (E) The lower layer represents the period during which Neanderthal man lived.



48. **McBride:** The proposed new fuel efficiency standards, if implemented, will discourage the manufacture of full-size cars. This prospect is troubling because when a subcompact and a full-size car collide, the people in the subcompact are more likely to be seriously injured than if theirs had also been a full-size car. The new fuel efficiency standards should therefore be opposed.

**Leggett:** But whenever any two cars collide, it is more likely that someone will be seriously injured if one of the cars is a full-size car than if neither of the cars is full-size. Thus, the new fuel efficiency standards should be supported precisely because they discourage the manufacture of full-size cars.

McBride's and Leggett's statements commit them to disagreeing about the truth of which one of the following?

- (A) The manufacture of full-size cars should be discouraged.
- (B) Fuel conservation is less important than safety in the event of a collision.
- (C) When a full-size car and a subcompact car collide, the occupants of the full-size car are less likely than the occupants of the subcompact car to be seriously injured.
- (D) Reducing the number of full-size cars on the highway will reduce the frequency of collisions between automobiles.
- (E) The new fuel-efficiency standards will encourage automobile manufacturers to build more subcompact cars.

49. A scholar discovered an unlabeled nineteenth-century recording of someone reciting a poem written by Walt Whitman. During the nineteenth century, recordings of poetry were not made for wide commercial sale. Rather, they were made either as rare private souvenirs of the voices of famous poets or as publicity stunts in which actors recorded poems that were familiar to the public. Since the Whitman poem in the recording was never even published, it is likely that the voice in the recording is actually Whitman's.

The argument proceeds by...

- (A) offering several pieces of evidence, each of which independently points to the same conclusion.
- (B) distinguishing a phenomenon into two subtypes and then for a particular case eliminating one of those subtypes.
- (C) offering a general principle and then demonstrating that the general principle is violated in this particular case.
- (D) showing that two apparently mutually exclusive alternatives are actually compatible with each other.
- (E) explaining the historical context of an incident in order to demonstrate that each of the two possible scenarios involving the incident is as likely as the other.



50. Maas is, at best, able to write magazine articles of average quality. The most compelling pieces of evidence for this are those few of the numerous articles submitted by Maas that are superior, since Maas, who is incapable of writing an article that is better than average, obviously must have plagiarized the superior ones.

The argument is most vulnerable to criticism on which of the following grounds?

- (A) It simply ignores the existence of potential counterevidence.
- (B) It generalizes from atypical occurrences.
- (C) It presupposes what it seeks to establish.
- (D) It relies on the judgment of experts in a matter where their expertise is irrelevant.
- (E) It infers limits on ability from a few isolated lapses in performance.

51. Despite the fact that antilock brakes are designed to make driving safer, research suggests that people who drive cars equipped with antilock brakes have more accidents than those who drive cars not equipped with antilock brakes.

Each of the following, if true, would help resolve the apparent discrepancy described above EXCEPT:

- (A) Most cars equipped with antilock brakes, are, on average, driven more carelessly than cars not equipped with antilock brakes.
- (B) Antilock brakes malfunction more often than regular brakes.
- (C) Antilock brakes require expensive specialized maintenance to be even as effective as regular brakes that have not been maintained.
- (D) Most people who drive cars equipped with antilock brakes do not know how to use those brakes properly.
- (E) Antilock brakes were designed for safety in congested urban driving, but accidents of the most serious nature take place on highways.



52. Although many seventeenth-century broadsides, popular ballads printed on a single sheet of paper and widely sold by street peddlers, were moralizing in nature, this is not evidence that most seventeenth-century people were serious about moral values. While over half of surviving broadsides contain moralizing statements, and it is known that many people purchased such compositions, it is not known why they did so, nor is it known how their own beliefs related to what they read.

Which of the following, if true, most strengthens the argument?

- (A) Like other forms of cheap seventeenth-century popular literature, surviving broadsides seem mostly to have been of rather low literary quality and to have been written by hack writers.
- (B) In many moralizing ballads, the moral content was confined to a single stanza expressing a pious sentiment tacked onto a sensationalized account of the crime and adultery.
- (C) Some seventeenth-century ballad sellers also sold some sermons printed in pamphlet form.
- (D) The clergy occasionally stuck broadsides warning about the danger of strong drink on the doors of seventeenth-century alehouses.
- (E) Well-educated people of the seventeenth-century held broadsides in contempt and considered broadside peddlers to be disreputable vagrants.

53. A few people who are bad writers simply cannot improve their writing, whether or not they receive instruction. Still, most bad writers can at least be taught to improve their writing enough so that they are no longer bad writers. However, no one can become a great writer simply by being taught how to be a better writer, since great writers must have not only skill but also talent.

Which one of the following can be properly inferred from the passage above?

- (A) All bad writers can become better writers.
- (B) All great writers had to be taught to become better writers.
- (C) Some bad writers can never become great writers.
- (D) Some bad writers can become great writers.
- (E) Some great writers can be taught to be even better writers.



54. When a group of people starts a company, the founders usually serve as sources both of funding and of skills in marketing, management, and technical matters. It is unlikely that a single individual can both provide adequate funding and be skilled in marketing, management, and technical matters. Therefore, companies founded by groups are more likely to succeed than companies founded by individuals.

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

- (A) A new company is more likely to succeed if every founding member contributes equally to the company's initial funding than if some members contribute more funds than others.
- (B) Some founding members of successful companies can provide both funding and skills in marketing, management, or technical matters.
- (C) New companies are more likely to succeed when their founders can provide adequate funding and skills in marketing, management, and technical abilities than when they must secure funding or skills from nonfounders.
- (D) Founders of a new company can more easily acquire marketing and management abilities than technical abilities.
- (E) A new company is more likely to succeed if its technical experts are also skilled in management and marketing than if they lack management or marketing skills.

55. Dead, rotting logs on the forest floor provide the habitat for a small mammal, the red-backed vole, which subsists almost entirely on the portion of certain specialized fungi that grows aboveground. The fungi-spores are deposited on the forest floor by the voles. Some of the fungi that develop from these spores form underground sheaths around the fine roots of the growing trees and assist the trees by processing and sharing nutrients and producing an antibiotic that protects the trees from disease.

The information above provides the most support for which one of the following conclusions?

- (A) The presence of rotting logs on a forest floor can have beneficial effects on the trees around them.
- (B) The red-backed vole is usually able to derive nutrients from the spores of the fungi it eats.
- (C) Young, growing trees could not survive without the voles to distribute the spores of certain fungi.
- (D) The spores of certain fungi cannot remain viable above the ground but must be deposited near the roots of trees.
- (E) Dead and decaying trees are the ideal environment for the growth of certain fungi.



56. Environmentalist: It takes less energy to make molten glass from recycled glass than from raw materials. Once the recycled glass or raw materials have been turned into molten glass, making bottles from recycled glass follows the same process as making bottles from raw materials. Obviously, soft drink bottlers who make a large percentage of their bottles from recycled glass have significant energy savings. Therefore, by using recycled glass instead of glass made from raw materials, bottlers can lower their costs and benefit the environment at the same time.

Which one of the following is an assumption on which the argument relies?

- (A) The process of making bottles from plastic that has been recycled is not significantly more energy efficient than is the process of making bottles from glass that has been recycled.
- (B) The amount of glass that is currently recycled each year is enough to supply the major soft drink bottlers with materials for a large percentage of the glass bottles they make that year.
- (C) Most consumers are not able to distinguish bottles made from recycled glass from glass bottles made from raw materials.
- (D) Purchasing and transport costs are not so much greater for recycled glass than for raw materials that they outweigh the savings in energy costs resulting from the use of recycled glass.
- (E) The process of making molten glass from recycled glass requires fewer steps than does the process of making molten glass from raw materials.

57. Concerns for the environment have led chemists to develop plastics that are degradable. All degradable plastics, which are potentially useful packaging materials, need just the right conditions to break down. Some need exposure to sunlight, some need to be buried in soil, and some need to be submerged in water. It should be cautioned that some degradable plastics leave residues of unknown toxicity.

If all of the statements above are true, which one of the following must also be true?

- (A) Some materials that are potentially useful for packaging leave residues of unknown toxicity.
- (B) Some degradable plastics need both sunlight and submersion in order to break down.
- (C) Some materials that need sunlight in order to break down are not potentially useful packaging materials.
- (D) Some materials that leave residues of unknown toxicity are not degradable plastics.
- (E) Some materials that need to be buried in soil to break down leave residues of unknown toxicity.



58. **Gerrit:** While browsing in a record store I noticed that one copy of a recording I wanted had mistakenly been priced at a quarter of the list price. When I finally reached the cashier, I was told that the price had been mismarked and I would have to pay the full list price. Since I had wasted an hour standing in line, the retailer was morally obligated to sell me the recording at the lower price.

**Saskia:** I disagree. You knew that a mistake had been made, and you were simply trying to take advantage of that mistake.

Which one of the following principles, if established, would most help to justify Saskia's position?

- (A) The price displayed on an item in a retail store morally constitutes an irrevocable offer to sell the item at that price.
- (B) Customers of retail stores are morally entitled to profit from any mistakes that the retailers make in marking prices.
- (C) Retailers are morally entitled to update marked prices periodically in order to reflect changes in manufacturers' suggested prices.
- (D) Retailers are morally obligated to meet expectations about prices that they have intentionally encouraged their customers to hold.
- (E) Retailers are morally obligated to sell an item to a customer at a mismarked price only if that customer was genuinely misled about the intended price by the mismarking.

59. The retail price of decaffeinated coffee is considerably higher than that of regular coffee. However, the process by which coffee beans are decaffeinated is fairly simple and not very costly. Therefore, the price difference cannot be accounted for by the greater cost of providing decaffeinated coffee to the consumer.

The argument relies on assuming which one of the following?

- (A) Processing regular coffee costs more than does processing decaffeinated coffee.
- (B) Price differences between products can generally be accounted for by such factors as supply and demand, not by differences in production costs.
- (C) There is little competition among companies that process decaffeinated coffee.
- (D) Retail coffee-sellers do not believe that consumers are content to pay more for decaffeinated coffee than for regular coffee.
- (E) The beans used for producing decaffeinated coffee do not cost much more before processing than the beans used for producing regular coffee.



60. According to recent study data, greenhouse gas emissions from fossil fuel-based vehicles are a major contributor to global climate instability. One plan to reduce greenhouse gases within the United States is to encourage the production of corn-based ethanol fuels. Such “biofuels” burn cleaner and therefore emit fewer harmful chemicals into the atmosphere. To encourage production, financial incentives could be given to companies to make the switch to biofuel technology.

Which of the following, if true, would cast the most doubt on the effectiveness of the plan to reduce greenhouse gas emissions by encouraging the production of corn-based fuels?

- (A) Before any law is enacted to provide financial incentives to biofuel companies, it must pass with a majority vote in both houses of Congress.
- (B) While ethanol currently makes up less than 4 percent of the motor fuel used nationally, the corn used in ethanol production constitutes 14 percent of the domestic crop.
- (C) Corn-based ethanol production increases food prices and consumes large amounts of water.
- (D) The fertilizer used in the cultivation of biofuel crops releases nitrous oxide, a potent, long-lived greenhouse gas into the atmosphere.
- (E) The scientific study of greenhouse gas emissions was conducted by a university that received funding from prominent agricultural lobby groups who would benefit greatly from new legislation.

61. The purpose of a general theory of art is to explain every aesthetic feature that is found in any of the arts. Pre-modern general theories of art, however, focused primarily on painting and sculpture. Every pre-modern general theory of art, even those that succeed as theories of painting or sculpture, fails to explain some aesthetic feature of music.

The statements above, if true, most strongly support which one of following?

- (A) Any general theory of art that explains the aesthetic features of painting also explains those of sculpture.
- (B) A general theory of art that explains every aesthetic feature of music will achieve its purpose.
- (C) Any theory of art that focus primarily on sculpture or painting cannot explain every aesthetic feature of music.
- (D) No pre-modern general theory of art achieves its purpose unless music is not art.
- (E) No pre-modern general theory of art explains any aesthetic feature of music that is not shared with painting and sculpture.



62. **Raymond:** Although some people claim it is inconsistent to support both freedom of speech and legislation limiting the amount of violence in TV programs, it is not. We can limit TV program content because the damage done by violent programs is more harmful than the decrease in freedom of speech that would result from the limitations enacted by the legislation.

Which one of the following principles, if valid, most helps to justify Raymond's reasoning?

- (A) In evaluating legislation that would impinge on a basic freedom, we should consider the consequences of not passing the legislation.
- (B) One can support freedom of speech while at the same time recognizing that other interests can sometimes override it.
- (C) When facing a choice regarding the restriction of freedom of speech, we must decide based on what would make the greatest number of people the happiest.
- (D) If the exercise of a basic freedom leads to some harm, then the exercise of that freedom should be restricted.
- (E) In some circumstances, we should tolerate regulations that impinge on a basic freedom.

63. People who have political power tend to see new technologies as a means of extending or protecting their power, whereas they generally see new ethical arguments and ideas as a threat to it. Therefore, technical ingenuity usually brings benefits to those who have this ingenuity, whereas ethical inventiveness brings only pain to those who have this inventiveness.

Which one of the following statements, if true, most strengthens the argument?

- (A) Those who offer new ways of justifying current political power often reap the benefits of their own inventions.
- (B) Politically powerful people tend to reward those whom they believe are useful to them and to punish those whom they believe are threats.
- (C) Ethical inventiveness and technical ingenuity are never possessed by the same individuals.
- (D) New technologies are often used by people who strive to defeat those who currently have political power.
- (E) Many people who possess ethical inventiveness conceal their novel ethical arguments for fear of retribution by the politically powerful.



64. Zebra mussels, a nuisance when they clog the intake pipes of nuclear power plants and water plants along the Great Lakes, have some redeeming qualities. Since the mussels feed voraciously on algae that they filter from the water that passes by them, bags of zebra mussels suspended in the discharge streams of chemical plants significantly improve water quality, even removing some hazardous wastes.

Which one of the following is most strongly supported on the basis of the statements above, if they are true?

- (A) Zebra mussels arrived in the Great Lakes on transatlantic freighters and, since they have no natural enemies there, are rapidly displacing the native species of clams.
- (B) If the mussels spread to areas of the Mississippi River where native clams provide the basis for a cultured-pearl industry, that industry will collapse because the mussels are unsuitable for such use and would displace the clams.
- (C) There is no mechanical means available for clearing intake pipes by scraping the mussels from them.
- (D) The algae on which the mussels feed would, if not consumed by the mussels, themselves clog the intake pipes of nuclear power plants and water plants.
- (E) Any hazardous waste the mussels remove from chemical-plant discharge will remain in the mussels, if they do not transform it, and they then must be regarded as hazardous waste.

65. During the recent economic downturn, banks contributed to the decline by loaning less money. Prior to the downturn, regulatory standards for making bank loans were tightened. Clearly, therefore, banks will lend more money if those standards are relaxed.

The argument assumes that...

- (A) the downturn did not cause a significant decrease in the total amount of money on deposit with banks, which is the source of funds for banks to lend.
- (B) the imposition of tighter regulatory standards was not a cause of the economic downturn.
- (C) the reason for tightening the regulatory standards was not arbitrary.
- (D) no economic downturn is accompanied by a significant decrease in the amount of money loaned out by banks to individual borrowers and businesses.
- (E) no relaxation of standards for bank loans would compensate for the effects of the downturn.



66. 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.

The argument relies on which one of the following questionable assumptions?

- (A) Birds of different species generally do not have the same overall energy requirements as each other.
- (B) The nectar-eating bird does not sometimes also eat seeds.
- (C) The time it takes for the nectar-eating bird to eat a given amount of nectar is not longer than the time it takes the seed-eating bird to eat the same amount of seeds.
- (D) The seed-eating bird does not have a lower body temperature than does the nectar-eating bird.
- (E) The overall energy requirements of a given bird do not depend on factors such as the size of the bird, its nest-building habits, and the climate of the region in which it lives.

67. **Sylvia: Some psychologists attribute complex** reasoning ability to reptiles, claiming that simple stimulus-response explanations of some reptiles' behaviors, such as food gathering, cannot account for the complexity of such behavior. But since experiments show that reptiles are incapable of making major alterations in their behavior, for example, when faced with significant changes in their environment, these animals must be incapable of complex reasoning.

Which one of the following is an assumption required by Sylvia's argument?

- (A) Animals could make major changes in their behavior only if they were capable of complex reasoning.
- (B) Simple stimulus-response explanations can in principle account for all reptile behaviors.
- (C) Reptile behavior appears more complex in the field than laboratory experiments reveal it to be.
- (D) If reptiles were capable of complex reasoning, they would sometimes be able to make major changes in their behavior.
- (E) Complex reasoning and responses to stimuli cannot both contribute to the same behavior





**ANSWER KEY****LESSONS**

1. B	10.D
2. B	11.D
3. A	12.E
4. B	13.D
5. B	14.B
6. C	15.E
7. A	16.B
8. E	17.C
9. B	

**HOMEWORK**

18.A	34.E	50.C	66.C
19.A	35.C	51.E	67.D
20.C	36.A	52.B	
21.D	37.C	53.C	
22.D	38.A	54.C	
23.D	39.C	55.A	
24.B	40.C	56.D	
25.E	41.B	57.A	
26.D	42.D	58.E	
27.C	43.C	59.E	
28.B	44.B	60.D	
29.C	45.D	61.D	
30.E	46.B	62.B	
31.D	47.C	63.B	
32.B	48.A	64.E	
33.C	49.B	65.A	

