

## What will the Critical Analysis and Reasoning Skills Section Test?

The Critical Analysis and Reasoning Skills section of the MCAT exam will be similar to many of the verbal reasoning tests you have taken in your academic career. It includes passages and questions that test your ability to understand what you read. You may find this section to be unique in several ways, though, because it has been developed specifically to measure the analysis and reasoning skills you will need to be successful in medical school. The Critical Analysis and Reasoning Skills section achieves this goal by asking you to read and think about passages from a wide range of disciplines in the social sciences and humanities, followed by a series of questions that lead you through the process of comprehending, analyzing, and reasoning about the material you have read.

Critical Analysis and Reasoning Skills passages are relatively short, typically between 500 and 600 words, but they are complex, often thought-provoking pieces of writing with sophisticated vocabulary and, at times, intricate writing styles. Everything you need to know to answer test questions is in the passages and the questions themselves. No additional coursework or specific knowledge is required to do well on the Critical Analysis and Reasoning Skills section, but you, as the test taker, may find yourself needing to read the passages and questions in ways that are different from the reading required in the textbooks you used in most pre-health courses or on tests like the SAT Critical Reading exam. Passages for the Critical Analysis and Reasoning Skills section—even those written in a conversational or opinionated style—are often multifaceted and focus on the relationships between ideas or theories. The questions associated with the passages will require you to assess the content, but you will also need to consider the authors' intentions and tones and the words they used to express their points of view.

This section is designed to

- test your comprehension, analysis, and reasoning skills by asking you to critically analyze information provided in passages;
- include content from ethics, philosophy, studies of diverse cultures, population health, and a wide range of social sciences and humanities disciplines; and
- provide all the information you need to answer questions in the passages and questions themselves.

Test Section	Number of Questions	Time
Critical Analysis and Reasoning Skills	53 (note the questions are all passage-based)	90 minutes

## **Critical Analysis and Reasoning Skills Distribution of Questions by Critical Analysis and Reasoning Skill and Passages in the Humanities and Social Sciences**

You may wonder how many questions you'll get testing a particular critical analysis and reasoning skill or how many humanities or social science passages you'll see on the test. The questions that you see are likely to be distributed in the ways described below.\*

### **Critical Analysis and Reasoning Skill:**

- Foundations of Comprehension, 30%
- Reasoning Within the Text, 30%
- Reasoning Beyond the Text, 40%

### **Passage Content:**

- Humanities, 50%
- Social Sciences, 50%

\*These percentages have been approximated to the nearest 5% and will vary from one test to another for a variety of reasons. These reasons include, but are not limited to, controlling for question difficulty, using groups of questions that depend on a single passage, and using unscored field-test questions on each test form.

## What is the Content of the Passages in the Critical Analysis and Reasoning Skills Section?

Passages in the Critical Analysis and Reasoning Skills section are excerpted from the kinds of books, journals, and magazines that college students are likely to read. Passages from the social sciences and humanities disciplines might present interpretations, implications, or applications of historical accounts, theories, observations, or trends of human society as a whole, specific population groups, or specific countries.

Of these two types of passages (social sciences and humanities), social sciences passages tend to be more factual and scientific in tone. For example, a social sciences passage might discuss how basic psychological and sociological assumptions help scholars reconstruct patterns of prehistoric civilizations from ancient artifacts. Humanities passages often focus on the relationships between ideas and are more likely to be written in a conversational or opinionated style. Therefore, you should keep in mind the tone and word choice of the author in addition to the passage assertions themselves. Humanities passages might describe the ways art reflects historical or social change or how the philosophy of ethics has adapted to prevailing technological changes.

Critical Analysis and Reasoning Skills passages come from a variety of humanities and social sciences disciplines.

### Humanities

Passages in the humanities are drawn from a variety of disciplines, including (but not limited to):

- Architecture
- Art
- Dance
- Ethics
- Literature
- Music
- Philosophy
- Popular Culture
- Religion
- Theater
- Studies of Diverse Cultures<sup>1</sup>

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<sup>1</sup> Depending on the focus of the text, a Studies of Diverse Cultures passage could be classified as belonging to either the Humanities or Social Sciences

## Social Sciences

Social sciences passages are also drawn from a variety of disciplines, including (but not limited to):

- Anthropology
- Archaeology
- Economics
- Education
- Geography
- History
- Linguistics
- Political Science
- Population Health
- Psychology
- Sociology
- Studies of Diverse Cultures<sup>2</sup>

## What Kinds of Analysis Skills does the Critical Analysis and Reasoning Skills Section Require?

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<sup>2</sup> Depending on the focus of the text, a Studies of Diverse Cultures passage could be classified as belonging to either the Humanities or Social Sciences

The Critical Analysis and Reasoning Skills section assesses three broad critical analysis and reasoning skills. Questions in this section will ask you to determine the overall meaning of the text, to summarize, evaluate, and critique the “big picture,” and to synthesize, adapt, and reinterpret concepts you processed and analyzed. The questions following Critical Analysis and Reasoning Skills passages lead you through this complex mental exercise of finding meaning within each text and then reasoning beyond the text to expand the initial meaning. The analysis and reasoning skills on which you will be tested mirror those that mature test takers use to make sense of complex materials. The skills assessed in the Critical Analysis and Reasoning Skills section are represented below, and each skill is explained in the following sections.

## **Critical Analysis and Reasoning Skills**

### **Foundations of Comprehension**

- Understanding the basic components of the text
- Inferring meaning from rhetorical devices, word choice, and text structure

### **Reasoning Within the Text**

- Integrating different components of the text to increase comprehension

### **Reasoning Beyond the Text**

- Applying or extrapolating ideas from the passage to new contexts
- Assessing the impact of introducing new factors, information, or conditions to ideas from the passage

## **Foundations of Comprehension**

The topics of some passages in the Critical Analysis and Reasoning Skills section will be familiar; some will not. Explanations, illustrative examples, and definitions of significant specialized terms in these passages will help you develop the strong basic foundation needed for answering all the questions you encounter in this section of the MCAT exam.

Additionally, some questions may ask you about the overall meaning of information in the passages or the author's central themes or ideas; others may ask you to select the definitions of specific words or phrases as they are used in context. These kinds of questions help you build the foundation that will allow you to think in new ways about concepts or facts presented in the passages. Paragraph numbers may be included in questions to help you locate relevant portions of the text.

Two sets of skills are the basis of the Foundations of Comprehension questions on the Critical Analysis and Reasoning Skills section.

### **Understanding the Basic Components of the Text**

The most fundamental questions on the Critical Analysis and Reasoning Skills section ask about the basic components of the passages. Comprehension questions at this level may ask you to provide a general overview of the passage or to focus on specific portions of the text. You may be asked to identify the author's thesis, the main point or theme of the passage, examples, or something slightly more complex, such as portions of the passage where the author digresses from the central theme.

In responding to these questions, you need to be able to recognize the purpose of different portions of the target passage: what is the thesis statement, what examples support the main idea, and what statements pose an argument or assumption? An author distinguishes sections of text that indicate the existence of a sustained train of thought, as opposed to an isolated detail, with rhetorical labels such as "for example," "therefore," or "consequently."

You will also need to be able to recognize when an author seems to have drawn upon multiple sources to support a thesis or when he or she presents different points of view in the single passage. It's also important to attend to perspective: does the author present his or her own perspective, or does he or she use verbatim quotations or restatements from the perspective of other sources?

### **Inferring Meaning from Rhetorical Devices, Word Choice, and Text Structure**

Questions may also require you to infer meanings that can't be determined from a superficial reading of the text, such as meanings that the author has implied but did not state directly. You may have to determine how the author has structured the text—for example, through cause-and-effect relationships for discussions in the behavioral sciences, chronologically for historical discussions, or point-and-counterpoint for political science pieces. Identifying the structure should help you understand the passage and determine its purpose. To do that, you will need to understand how the parts of a text fit together via these different kinds of relationships.

You may also need to attend to specific subtle and nuanced rhetorical decisions an author has made to shape his or her ideas, arguments, or discussions and perhaps to complicate a passage's meaning. For example, questions may ask you to explain paradoxes, a highlighted word or phrase, or an unexpected transition in ideas. To answer these questions, look for clues in the context around the specific sections of the passage. You may be asked to identify points of view, other than the author's, presented indirectly through authorial summaries or paraphrases. An author's choice about tone (e.g., humorous, authoritative, satirical) also contributes to—or obscures—meaning, and tone can often communicate the purpose for which a passage is written (e.g., to persuade, instruct, inform, entertain). For example, a satirical piece may at first seem merely entertaining, but a closer examination often reveals that its purpose is actually to persuade.

Some questions at this level may ask about information not specifically stated in the passage, and you must make assumptions based on what the author merely hints at through his or her use of connotative language or figures of speech. Look for the author's expressed point of view and the extent to which he or she uses summaries or paraphrases to introduce others' points of view.

The ending of passages is also fair game for questions at this level. Does the passage have a definitive solution, a partial resolution, or a call for additional research? Does it end with a dramatic rhetorical statement or a joke that leaves unanswered questions? Again, considering these questions requires you to understand how the different parts of the passage fit together to support the central thesis of the author.

## Reasoning Within the Text

Questions that test Reasoning Within the Text differ from those assessing Foundations of Comprehension in that they ask you to integrate separate passage components into a more generalized and complex interpretation of passage meaning. Questions assessing Reasoning Within the Text will direct your attention to an argument, claim, or theme presented in the passage and then ask you to judge the passage according to specific criteria. The criteria could be the logic and plausibility of the passage text, the soundness of its arguments, the reasonableness of its conclusions, the appropriateness of its generalizations, or the credibility of the author and the sources he or she cites. The questions require you to dig beneath the passage's surface as you examine evidence, biases, faulty notions of causality, and irrelevant information and to determine the significance of and relationships among different parts of a passage. Additionally, some questions may require that you analyze the author's language, stance, and purpose. For example, plausible-sounding, transitional phrases may in fact be tricky. If read quickly, the words appear to make a legitimate connection between parts of a passage; however, when subjected to scrutiny, the links they appear to have established may fall apart.

This may sound like a long list of possible critical and analysis skills to have mastered, but they are skills you probably already possess and use every day. Similar to your reactions when you hear someone trying to convince you about something, persuade you to think a particular way, or sell you something, these questions often invite you to doubt and then judge the author's intentions and credibility.

Questioning an author is a legitimate and often necessary analysis strategy that can serve test takers well when making sense of complex text. Answering these questions requires looking beyond contradictions or omission of facts or details to find clues such as vague or evasive terms or language that sounds self-aggrandizing, overblown, or otherwise suspect within the context of the passage. Credible sources—essayists, scientists, lecturers, even pundits—should be both authoritative and objective and should clearly demonstrate expertise. Blatant, one-sided arguments and rigid points of view are easy to identify, but some authors are more nuanced in presenting biased ideas in the guise of objectivity. The key to identifying bias lies in identifying the author's *treatment* of ideas, which you achieve by analyzing and evaluating different aspects of the passage. For example, an author who uses demeaning stereotypes or derogatory labels is not likely to be a source of objective, judicious analysis.

It's important to remember that Reasoning Within the Text questions do not ask you to provide your own personal opinion. You may, in fact, disagree with the author's overall conclusion yet find that the conclusion is a reasonable inference from the limited information provided in the passage. If you happen to know some obscure fact or anecdote outside the scope of the passage that could invalidate the author's conclusion, ignore it. The content of the passage or new information introduced by the questions should be the only sources on which you base your responses. Achieving a good score on the Critical Analysis and Reasoning Skills section depends on this!



## Reasoning Beyond the Text

The final category, Reasoning Beyond the Text, requires you to use one of two analysis or reasoning skills, which in a way can be thought of as two sides of a single coin. Questions assessing the first set of skills ask you to *apply or extrapolate* information or ideas presented in the passage to a new or novel situation—for example, extending information the author presents beyond the actual context of the passage.

The second set of skills involves considering new information presented in a test question, mentally *integrating* this new information into the passage content, and then *assessing* the potential impact of introducing the new elements into the actual passage. Reasoning about new, hypothetical elements should cause you to synthesize passage content anew and alter your interpretation of the passage in some plausible way.

Application and integration questions elicit some of the same kinds of thinking. Both types deal with changes caused by combinations or comparisons, and both test your mental flexibility. They do differ, however, and their distinct requirements are explained in more detail below. Remember, though, that as with questions assessing different levels of analysis and reasoning, you must still use only the content of the passages and the new information in the questions to determine your answers. Keep avoiding the temptation to bring your existing knowledge to bear in answering these questions.

### Applying or Extrapolating Ideas from the Passage to New Contexts

Virtually all questions assessing application or extrapolation skills ask you how the information or ideas presented in the passage could be extended to other areas or fields. This is the kind of high-level analysis and reasoning skill scientists or theoreticians use when they consider a set of facts or beliefs and create new knowledge by combining the “givens” in new ways. Of course, these combinations may or may not result in a successful combination or outcome.

For each application question, the passage material is the “given,” and the test question provides specific directions about how the passage information might be applied to a new situation or how it might be used to solve a problem outside the specific context of the passage. As the test taker, your first task is to analyze the choices offered in the four response options so that you can gauge the likely outcome of applying the existing passage content to the specified new context. Each response option will yield a different result, but each test question has only one defensible and demonstrably correct response option.

The correct answer is the one option that presents the most likely and most reasonable outcome, based only on the information provided in the passage and question. The questions do not assess your personal ability to apply information or solve problems, only your ability to apply information from the question to the passage you have read. For example, if a question asks you to determine the author's likely response to four hypothetical situations, you would choose the response most consistent with what the author has already said or done according to the text of the passage. In determining the correct response, rule out the options that do not fit or are incongruent with the context (e.g., framework, perspective, scenario) created by the passage material.

Application questions sometimes require selection of a response option that is most *analogous* to some relationship in the passage. Here the parameters are broad. Likeness is measured not by inherent similarity but by analogy. Questions dealing with analogies test the ability to identify a fundamental common feature that seemingly different things or processes share. This may sometimes require translating a figurative comparison into equivalent sets of literal terms. However, the task always requires looking beneath surface imagery to discern underlying relationships or paradigms.

### **Assessing the Impact of Incorporating New Factors, Information, or Conditions to Ideas from the Passage**

The essential difference between application and incorporation skills is that the two-part purpose of incorporation questions is to introduce a specific piece of information for you to consider and ask you to assess how ideas in the passage might be affected by its introduction. The premise of these questions is that ideas and information in the passages are potentially malleable, not a fixed framework, as in application questions.

In some incorporation questions, you must find the best answer to a “what if” question by reinterpreting and reassessing passage content with the additional fact or idea introduced by the question. Does the new information support or contradict the inherent logic of the passage? Could the new information coexist with what is already in the passage, or would it negate an aspect of the author’s argument? If the latter is the case, the question could ask what modifications or alterations might need to be made to the passage content to accommodate the new element introduced by the question. Remember, the passage should be considered malleable.

Other forms of incorporation questions may ask you to think about a possible logical relationship that might exist between the passage content and the facts or assertions included in the answer options. The task is to select the one option that, if added to the passage content, would result in the *least* amount of change. The correct response option will present the situation or argument that is most similar to what is outlined in the passage. In other words, you must determine which new fact or assertion would least alter the central thesis the passage has developed.

## Sample Skills Passage and Questions

How will the MCAT exam ask you to demonstrate each of the critical analysis and reasoning skills? The sample passage and questions that follow provide some examples.

### Passage

The exhibition, *The Garry Winogrand Game of Photography*, was a reminder of why so many people consider Winogrand to be one of the great American photographers of the twentieth century. Although they continue to acquire further layers of historical specificity, his street photographs, many of them shot in Midtown Manhattan in the 1950s and 1960s, have lost none of their kinetic immediacy; the best of his animal photographs provide sly, incisive views of the human condition; his pictures from the American road grab the wheel from Walker Evans and Robert Frank to send the genre on an unpredictable detour; in photographing all manner of public events, from antiwar demonstrations to art-world parties to political press conferences, Winogrand added significantly to the pictorial record of midcentury United States history. With his liking for seemingly random compositions and his famous tilted-frame effect, Winogrand made photographs that initially struck many viewers as devoid of formal strengths. Now, however, we can appreciate the subtlety and unexpectedness of his framing and the complex interplay he often achieves between anecdote and form.

In putting together the exhibition, one of the curators, Richard Misrach, decided to focus on an aspect of Winogrand's work to which little attention had been given: the color slides. Winogrand began shooting color photos in the 1950s and continued doing so until the late 1960s. He never explained why he stopped shooting in color, but the difficulty and expense of making color prints and their instability may have contributed to his decision.

Misrach was especially drawn to the photographs Winogrand made at boxing matches in the 1950s, and his selections for the exhibition included eighteen boxing shots. In each, the fighters' bodies are isolated against dark backgrounds and often fragmented by the out-of-focus, quasi-abstract ropes cutting across the frame. In one amazing, weirdly off-center shot, a boxer doubling up from a body blow appears to be ascending into the surrounding void.

This small selection whetted one's appetite for seeing more images from Winogrand's color work. However, it was the slides that caused some of the most heated arguments among curators. Bill Jay objected to the slides being shown in any format because they had never been edited by Winogrand. While the prints in the archive had already been chosen for enlargement by the photographer from contact sheets, Jay pointed out, the slides had undergone no such process. Jay insisted that the archive's hoard of thousands of slides and unproofed negatives should be used only for research and never published or exhibited.

Misrach came to his own defense by saying that if "curatorial laws" were followed, the "real hidden treasures" of the archive would never be seen by anyone. He also observed that Winogrand gave his photographs, slides, and negatives to the Center for Creative Photography without conditions, which implies permission to show and publish the work. If Winogrand didn't want the photographs in his archive to be seen, Misrach argued, he could have simply destroyed them. Indeed, as others remarked, some photographers have sought to exert control over the future of their work by destroying negatives.

Furthermore, some curators argued for the importance of posthumous discoveries of artists' work. And taking the discussion into a wider realm, one curator argued that the "artist is not always in the best position to judge his or her work," citing the example of author Franz Kafka asking Max Brod to destroy his manuscripts and how Brod had ignored the request, to the world's benefit.

*Source: Adapted from R. Rubinstein, Snap Judgments: Exploring the Winograd Archive. Copyright 2002 by Brant Publications, Inc.*

**FOUNDATIONS OF COMPREHENSION EXAMPLE:** Foundations of Comprehension questions test two skills: 1) understanding the basic components of the text and 2) inferring meaning from rhetorical devices, word choice, and text structure. The following question addresses the first of these.

Which of the following best captures the main goal of the passage?

- A. To bring additional attention to Winogrand, unfairly neglected as an important American photographer
- B. To showcase the diversity of Winogrand's subject matter and the genres he explored
- C. To describe the controversy over the appropriate use of Winogrand's archival color slides
- D. To argue that art lovers and scholars have a right to see all of the work that Winogrand left after his death

The correct answer is C. This question asks you to determine which of the four options presented best captures the main goal of the passage.

To answer this question, you must understand the author's main points and arguments and distinguish these from subordinate points. This question illustrates understanding of basic components of text by asking you to identify the primary goal of the passage.

The answer is correct because most of the passage emphasizes the curator's decision. Note that the passage author does not take a clear position on the controversy (making D incorrect). Instead, the author represents multiple perspectives on the controversy, which is the central concern of the passage.

**FOUNDATIONS OF COMPREHENSION EXAMPLE:** Now, let's take a look at a question that tests the second skill in Foundations of Comprehension, which is making assumptions based on the author's inference through the use of rhetorical devices, word choice, and the text structure.

The author's use of the term kinetic immediacy (paragraph 1) to describe Winogrand's photographs most likely refers to the photographs':

- A. ability to capture the hustle and bustle of the city.
- B. incorporation of roadside scenes.
- C. historically significant details and context.
- D. unique compositional strategies.

The correct answer is A. You are asked to determine which of the four options presented most likely refers to the phrase "kinetic immediacy" as used to describe Winogrand's photographs.

Because of the way the term "kinetic immediacy" is used in the context of the sentence in which it appears, the answer is A. The term refers to Winogrand's "street photographs" of New York City, shot decades ago; the author says that the pictures retain their "kinetic immediacy" over time. So the author suggests that the speed and dynamism of the photos is still present, and this is best captured in option A. Because this question asks you to determine the implication of a term or phrase by considering the context of its use, it's an example of the second skill in Foundations of Comprehension.

**REASONING WITHIN THE TEXT EXAMPLE:** Now we'll move on to a question that addresses the next skill, Reasoning Within the Text. The analysis skill related to Reasoning Within the Text is integrating different components of the text to increase comprehension.

The curator who used the example of Max Brod refusing to destroy the manuscripts of Franz Kafka (final sentence) was most likely implying that:

- A. the individual rights of an artist are sometimes outweighed by the greater public and artistic good.
- B. the destruction of an artist's work is never warranted.
- C. once a work of art is created, its destruction is almost a crime against humanity.
- D. great artists will always attempt to keep their works from being seen and must be prevented from doing so.

The correct answer is A. This question asks you to integrate different components of the text to increase comprehension, specifically the way the author has framed his or her use of the example of Max Brod refusing to destroy the manuscripts of Franz Kafka. To answer the question, you must determine the function or purpose of this example, determining which point or argument the evidence of Max Brod refusing to destroy the manuscripts is used to support.

The author provides as evidence the curator's point that the artist may not be the ultimate judge of his or her work. Then the author suggests that Brod ignored Kafka's request that Brod destroy Kafka's work, "to the world's benefit." So both points lead to the conclusion that the curator means to suggest that sometimes aesthetic value and the "good" of the "world" may take precedence over an artist's desire or expressed wish. The answer is A because of the way the passage author has framed his or her use of this example.

**REASONING BEYOND THE TEXT EXAMPLE:** The final Critical Analysis and Reasoning Skills skill is Reasoning Beyond the Text. This skill includes the following two skills: 1) applying or extrapolating ideas from the passage to new contexts and 2) assessing the impact of introducing new factors, information, or conditions to ideas from the passage.

Let's look at a question asking you to apply or extrapolate information or ideas presented in the passage to new or novel situations.

Someone who agreed with Misrach's defense of his choice to show the color slides would be most likely to also approve of:

- A. exhibiting works that an artist had donated to a museum for scholarly purposes only.
- B. examining the rest of Winogrand's unprinted photographs and selecting some for display.
- C. requiring that artists clearly state their intentions for display and publication when donating works to a museum.
- D. organizing an exhibition that included all of Winogrand's work whether previously shown and published or not.

The correct answer is B. This question illustrates the first Reasoning Beyond the Text skill because it asks you to begin with an argument presented in the passage—Misrach’s defense of his choice to show the color slides—and then apply that understanding to a new situation to see if the new situation is analogous to the idea presented in the passage. To answer the question, you must identify the option that matches Misrach’s defense of his choice to show the color slides.

In the final paragraph of the passage, Misrach explains his logic in defense of his choice to show the color slides, including the suggestion that the archive contains some “hidden treasures,” and implying that the curator, not necessarily the artist, might select these. Therefore, option B most closely aligns with the principle behind Misrach’s defense.

**REASONING BEYOND THE TEXT EXAMPLE:** The second skill in Reasoning Beyond the Text involves considering new information presented, integrating this new information into the passage content, and then assessing how ideas in the passage might be affected by this new information. Here is a question asking you to demonstrate the second skill in Reasoning Beyond the Text.

If it were established with certainty that Winogrand did, as the author suggests, stop shooting in color because of the “difficulty and expense of making color prints and their instability” (paragraph 2), this information would best support which of the following arguments?

- A. Winogrand would have liked to have his color slides printed once the technology made this feasible.
- B. Winogrand felt that working in color was stylistically inferior to black and white.
- C. The color slides should be viewed as finished products and not printed.
- D. Winogrand would have returned to photographing in color once the technology improved.

The correct answer is D. This question asks you to assess new information—what it would mean if it was established with *certainty* that Winogrand did stop shooting in color because of the difficulty and expense of making color prints and their instability. You need to decide which of the arguments this new information would best support.

This question illustrates the second skill in Reasoning Beyond the Text because it presents a novel scenario (one not discussed in the passage) and asks you to assess how that novel scenario would affect the arguments in the passage.

If Winogrand had stopped shooting in color because of the technical and financial challenges posed by shooting in color, it follows logically that if he could surmount those challenges, he would likely return to shooting in color. The other options involve assumptions that the information in the question does not support. It does not imply anything about Winogrand’s feelings about printing color slides or about his preference for black and white over color photography.