

LOGICAL REASONING STEM PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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1. Which argument is most similar to the flaw of inferring broad conclusions from a small, unrepresentative sample?

- A. Concluding a country will have a large population increase because a city observed one-time growth.
- B. Concluding that a policy is effective because a pilot study showed positive results.
- C. Concluding that a drug is unsafe because a single patient had a side effect.
- D. Concluding that a product is popular because it's well-rated on one retailer.

2. If $P \rightarrow Q$ and $Q \rightarrow R$, what can be concluded about P and R?

- A. P and R have the same truth value
- B. P implies R but not conversely
- C. R implies P but not conversely
- D. They are unrelated

3. Two fair coins are flipped. What is $P(\text{at least one head})$?

- A. 0.5
- B. 0.75
- C. 0.25
- D. 1.0

4. All A are B; No B are C. What is necessarily true about A and C?

- A. A and C share some members
- B. No A are C
- C. All A are C
- D. Some C are A

5. Which of the following, if true, would most weaken the apparent conflict in the described system?

- A. The system's parameter changes over time.
- B. The two datasets were collected under different conditions.
- C. The conclusions rely on a single experiment.
- D. The data are noisy but consistent.

- 6. In a parallel reasoning question, what is the essential first step?**
- A. Identify the main conclusion.
 - B. List all premises.
 - C. Determine if the argument is flawed.
 - D. Create a diagram of the argument.
- 7. A tutoring program improves test scores for most participants. The argument: expand the program.**
- A. The program is inexpensive to implement.
 - B. The program has been shared by other districts.
 - C. A randomized controlled trial across several schools showed similar score improvements.
 - D. The program requires extensive trainer certification.
- 8. If P is false and Q is true, is $P \rightarrow Q$ true?**
- A. It depends
 - B. Cannot be determined
 - C. No
 - D. Yes
- 9. Which option best describes how to identify the main conclusion in a reasoning problem?**
- A. Restating the conclusion in different terms.
 - B. Identifying an alternative the argument mentions.
 - C. Looking for a counterexample to the conclusion.
 - D. Paraphrase the conclusion in different terms while preserving meaning.
- 10. If $P \rightarrow Q$ is false, what can be said about P and Q?**
- A. P is true and Q is false
 - B. P is false and Q is false
 - C. P is false and Q is true
 - D. P is true and Q is true

Answers

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1. A
2. A
3. B
4. B
5. A
6. A
7. C
8. D
9. D
10. B

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Explanations

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1. Which argument is most similar to the flaw of inferring broad conclusions from a small, unrepresentative sample?

- A. Concluding a country will have a large population increase because a city observed one-time growth.
- B. Concluding that a policy is effective because a pilot study showed positive results.
- C. Concluding that a drug is unsafe because a single patient had a side effect.
- D. Concluding that a product is popular because it's well-rated on one retailer.

Hasty generalization is at play here: drawing a broad conclusion from a small, unrepresentative sample. Concluding that the country will have a large population increase based on growth seen in a single city takes a one-off, local observation and extends it to a national scale without enough data from other cities or longer time periods. The city could be experiencing temporary factors that don't apply nationwide, so this leap to a global claim relies on insufficient evidence. The other scenarios involve more limited or different kinds of evidence. A pilot study showing positive results is a preliminary step; it's understood that findings from a small study need to be tested with larger, more representative samples before making wide claims. A single patient with a side effect is anecdotal and signals a possible issue, not a definitive rule about all drugs. And a product well-rated at one retailer only shows popularity within that retailer's audience, not across all markets. All of those involve small samples or limited contexts, but the clearest, most sweeping leap to a broad conclusion from a tiny, nonrepresentative sample is the country example.

2. If $P \iff Q$ and $Q \iff R$, what can be concluded about P and R ?

- A. P and R have the same truth value
- B. P implies R but not conversely
- C. R implies P but not conversely
- D. They are unrelated

This question tests how chaining biconditionals works. If P is true exactly when Q is true, and Q is true exactly when R is true, then P is true exactly when R is true. In other words, P and R share the same truth value, so $P \iff R$ holds. That means both directions are true: P implies R and R implies P . An example helps: if P is true, Q is true, and R is true; if P is false, Q is false, and R is false. Therefore, the correct conclusion is that P and R have the same truth value.

3. Two fair coins are flipped. What is $P(\text{at least one head})$?

- A. 0.5
- B. 0.75
- C. 0.25
- D. 1.0

When two fair coins are flipped, each flip has two equally likely outcomes, and the flips are independent, so there are four equally likely result pairs: heads-heads, heads-tails, tails-heads, and tails-tails. The event "at least one head" occurs in the first three pairs, but not in tails-tails. That's 3 favorable outcomes out of 4 total, giving a probability of $3/4$, which is 0.75. Another way to see it is the complement: the only way to have no heads is tails-tail, which has probability $1/4$, so at least one head is $1 - 1/4 = 3/4 = 0.75$.

4. All A are B; No B are C. What is necessarily true about A and C?

- A. A and C share some members
- B. No A are C**
- C. All A are C
- D. Some C are A

Understanding how set relationships translate to what must be true is key here. "All A are B" means A is entirely inside B ($A \subseteq B$). "No B are C" means B has no elements in common with C ($B \cap C = \emptyset$). Since A is a subset of B and B has no elements in C, A cannot have any elements in C either. Put another way, there's no overlap between A and C. So the only necessarily true statement is that no A are C. Because A lies within B and B doesn't touch C, any claim that some A are C, or that all A are C, or that A and C share elements, would contradict the given conditions.

5. Which of the following, if true, would most weaken the apparent conflict in the described system?

- A. The system's parameter changes over time.**
- B. The two datasets were collected under different conditions.
- C. The conclusions rely on a single experiment.
- D. The data are noisy but consistent.

The key idea is that if the system changes over time, its behavior at one moment may differ from its behavior at another, so what looks like a contradiction under a fixed set of parameters can actually be a reflection of evolving conditions. If a parameter drifts, results obtained at different times aren't testing the same situation, which means the apparent conflict isn't a true mismatch in the model but a result of not accounting for time dependence. That makes the conflict weaken because it suggests the system isn't stationary rather than that the conclusions are wrong. The other options don't address this time-varying aspect: different collection conditions can create differences, but they don't inherently reconcile a conflict; relying on a single experiment weakens confidence rather than the contradiction; and noisy but consistent data still supports a stable relationship rather than dissolving a contradiction.

6. In a parallel reasoning question, what is the essential first step?

- A. Identify the main conclusion.**
- B. List all premises.
- C. Determine if the argument is flawed.
- D. Create a diagram of the argument.

In parallel reasoning, the key move is to identify the main conclusion first. Knowing what claim the argument is trying to establish lets you see the exact inferential path from premises to that claim, so you can compare that pattern to other arguments and find one that mirrors it. If you skip this step, you might focus on the wrong aspects of the premises or miss how the reasoning is supposed to flow. Tools like listing premises or diagramming can help later for comparison, and judging flaws isn't the primary goal here. So the best starting point is to determine the conclusion.

7. A tutoring program improves test scores for most participants. The argument: expand the program.

- A. The program is inexpensive to implement.
- B. The program has been shared by other districts.
- C. A randomized controlled trial across several schools showed similar score improvements.**
- D. The program requires extensive trainer certification.

Expanding a program should be based on evidence that its benefits will generalize beyond the original group. A randomized controlled trial conducted across several schools that shows similar score improvements provides strong proof that the gains come from the program itself, not from peculiarities of one site or lucky circumstances. Random assignment minimizes bias, and seeing consistent improvements across diverse settings suggests the effect is robust and likely to occur in new schools too. Other points may touch on cost, spread to other districts, or implementation requirements, but they don't by themselves confirm that the program will work in different contexts. They don't address generalizability or causal impact the way a multi-site randomized trial does.

8. If P is false and Q is true, is $P \rightarrow Q$ true?

- A. It depends
- B. Cannot be determined
- C. No
- D. Yes**

In logic, $P \rightarrow Q$ is true if at least one of P or Q is true. Here P is false and Q is true, so $P \rightarrow Q$ is true, regardless of P. The only way $P \rightarrow Q$ could be false is if both P and Q were false; since Q is true, that isn't the case. So the correct result is Yes. The other options would require uncertainty or both to be false, which doesn't apply here.

9. Which option best describes how to identify the main conclusion in a reasoning problem?

- A. Restating the conclusion in different terms.
- B. Identifying an alternative the argument mentions.
- C. Looking for a counterexample to the conclusion.
- D. Paraphrase the conclusion in different terms while preserving meaning.**

The main idea here is to identify the overarching claim an argument is trying to establish and restate that claim in your own words without changing what it means. Paraphrasing the conclusion in different terms while preserving meaning is the most reliable way to see exactly what the argument is asking you to accept, separate from the supporting details. When you keep the meaning intact, the paraphrase highlights the same assertion the premises are backing, making the conclusion clear and distinct from individual premises or examples. The other options pull you away from that central claim: looking for a counterexample is about testing the conclusion, and identifying an alternative mentioned shifts attention to a different part of the argument rather than its main claim.

10. If $P \vee Q$ is false, what can be said about P and Q?

A. P is true and Q is false

B. P is false and Q is false

C. P is false and Q is true

D. P is true and Q is true

Disjunction means " $P \vee Q$ " is true if at least one of P or Q is true. It is false only when both P and Q are false. So if $P \vee Q$ is false, both P and Q must be false. If either one were true, the statement " $P \vee Q$ " would be true. A quick intuitive example: if P says "it is raining" and Q says "it is sunny," then "it is raining or it is sunny" is false only when neither condition holds, i.e., both P and Q are false.

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Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://logicalreasoningstem.examzify.com>

We wish you the very best on your exam journey. You've got this!

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