GMAT Critical Reasoning - Everything you need to know

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The average normal infant born in the United States weighs between twelve and fourteen pounds at the age of three months. Therefore, if a three-month-old child weighs only ten pounds, its weight gain has been below the United States average.

Passage

Which of the following indicates a flaw in the reasoning above?

Ouestion stem

- A) Weight is only one measure of normal infant development.
- B) Some three-month-old children weigh as much as seventeen pounds.
- C) It is possible for a normal child to weigh ten pounds at birth.
- D) The phrase "below average" does not necessarily mean insufficient.
- E) Average weight gain is not the same as average weight.

Answer choices



All men are mortal. Socrates is a man. Therefore, Socrates is mortal.

Premise: All men are mortal + Premise: Socrates is a man Conclusion: Socrates is mortal Deductive: the conclusion is guaranteed

For the past 3 days, Gary has arrived late for work. This morning, while Gary was driving to work, his car got a flat tire. Therefore, Gary will be late for work today.

Premise: Gary late for last 3 days
+ Premise: Flat tire this morning
Conclusion: Gary will be late today

Inductive: the conclusion is <u>not</u> guaranteed



For the past 3 days, Gary has arrived late for work. This morning, while Gary was driving to work, his car got a flat tire. Therefore, Gary will be late for work today.

For the past **53 days**, Gary has arrived late for work. This morning, while Gary was driving to work, his car got a flat tire. Therefore, Gary will be late for work today.

For the past **53 days**, Gary has arrived late for work. This morning, while Gary was driving to work, his car got **4 flat tires**, **and his engine exploded**.

Therefore, Gary will be late for work today.





For the past 3 days, Gary has arrived late for work. This morning, while Gary was driving to work, his car got a flat tire. Therefore, Gary will be late for work today.

For the past 3 days, Gary has arrived late for work. This morning, while Gary was driving to work, his car got a flat tire.

Gary's house is 1 block from work.

Therefore, Gary will be late for work today.





Accept all premises as true!

All pigs can fly. Mount Everest is a pig. Therefore, Mount Everest can fly.





- About 1/3 of Verbal questions (13 to 15 questions)
- Batches of 2 or 3 questions
- Approximately 2 minutes per question
- Test your ability to reason effectively
- Arguments consist of premises and a conclusion
- Conclusion: what the author is trying to convince you of
- Premises: the evidence used to support the conclusion
- **Assumption(s)**: unstated premise(s) necessary to reach conclusion



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Accept all premises as true!



Every hockey fan I know is nice. I do not know Judy, but since she is wearing a hockey jersey, she must be nice.

Premise: All H-fans I know are nice

Premise: I don't know J Premise: J wearing jersey

Assumption: The H-fans I know are representative

+ Assumption: Wearing jersey makes one a fan

Conclusion: J is nice



Researcher: Two years ago, a wolf pack was relocated to Bilford Island. Although the local rabbit population has decreased drastically since the relocation, the wolves are not to blame for this decrease. Our study shows that the unprecedented number of recent rabbit deaths is due to the myxoma virus.

Premise: wolves arrived 2 yrs ago

Premise: rabbit pop. ↓ since Premise: virus caused deaths

+ Assumption: wolves didn't contribute to virus

Conclusion: ↓ rabbit pop. not wolves' fault



Dissecting an Argument

<u>Tips for Identifying Conclusions and Premises</u>

- Watch for trigger words that indicate a conclusion therefore, thus, hence, so, implies, indicates, consequently, as a result, clearly, accordingly, infer, conclude
- Watch for trigger words that indicate a premise
 since, because, for, due to, evidence, on the basis of,
 given that
- Beware of common argument structures
 - 1. Premise, premise, . . . , conclusion
 - 2. Conclusion, premise, premise . . .
 - 3. Conclusion in the question stem



Dissecting an Argument

Until recently, the only fish species living in Chilliwack Lake was the Gigafish. Last month, however, several Sovkafish were spotted in the lake. Unlike Gigafish, Sovkafish do not eat insects; instead, they survive by eating other fish. In other lakes where Sovkafish exist, their populations are limited by Dragonfish, which like to feed on Sovkafish.

Which of the following, if true, most effectively challenges the conclusion that releasing 100 Dragonfish into Chilliwack Lake will allow the Gigafish in Chilliwack Lake to survive?

Summarize:

- the conclusion
- the premises
- any assumptions



Until recently, the only fish species living in Chilliwack Lake was the Gigafish. Last month, however, several Sovkafish were spotted in the lake. Unlike Gigafish, Sovkafish do not eat insects; instead, they survive by eating other fish. In other lakes where Sovkafish exist, their populations are limited by Dragonfish, which like to feed on Sovkafish.

Which of the following, if true, most effectively challenges the conclusion that releasing 100 Dragonfish into Chilliwack Lake will allow the Gigafish in Chilliwack Lake to survive?

Premise: Giga were only fish in lake

Premise: Sovkas now in lake Premise: Sovkas eat other fish Premise: Dragons eat Sovkas

Assumption: Dragons won't eat the Gigas

Assumption: Dragons won't somehow jeopardize Gigas

+ Assumption: 100 Dragons is sufficient

Conclusion: Releasing Dragons will let Gigas live



<u>Tips for Identifying Conclusions and Premises</u>

- Watch for trigger words that indicate a conclusion
 therefore, thus, hence, so, implies, indicates, consequently, as a result, clearly, accordingly, infer, conclude
- Watch for trigger words that indicate a premise
 since, because, for, due to, evidence, on the basis of,
 given that
- Beware of common argument structures
 - 1. Premise, premise, . . . , conclusion
 - 2. Conclusion, premise, premise . . .
 - 3. Conclusion in the question stem

Premise-Therefore-Conclusion test



(watch the entire video here)

3 Most Common Argument Types

- Cause and Effect
- Statistical
- Analogy



Cause and Effect

correlation ≠ causation

Premise: Event X occurs Premise: Event Y occurs

+ Assumption: X is the only possible cause of Y

Conclusion: X causes Y

A recent study reveals that the rate of obesity is higher among senior citizens who watch more than 8 hours of television per day than among senior citizens who watch fewer than 8 hours of television per day. Therefore, obesity among senior citizens is caused by watching more than 8 hours of television per day.

Weaken

- Something else causes Y
- Y causes X
- X and Y are coincidental

<u>Strengthen</u>

- More information
- Eliminate other causes of Y



Statistical

Premise: Information from sample

+ Assumption: Sample represents entire population

Conclusion: Something about entire population

In a recent survey, participants at a Republicansonly dance competition were given a questionnaire. Most of the respondents indicated that they enjoyed singing. Therefore, it can be concluded that most Republicans are outgoing people.

Weaken

- Sample not representative
- Conclusion doesn't match stats
- Flaw in calculations

Strengthen

• Sample is representative



<u>Analogy</u>

Premise: Similarity between X and Y Premise: Similarity between X and Y Premise: Similarity between X and Y

+ Assumption: Sharing some means sharing all

Conclusion: Some other similarity exists

Country X is a democratic, tropical country with a population of 5 million, and Country Y is a democratic, tropical country with a population of 5 million. Since Country X is experiencing widespread crop failures, Country Y must be experiencing widespread crop failures as well.

Weaken

• Entities less similar

Strengthen

• Entities even more similar



Common Argument Types

(watch the entire video here)

Cause and Effect

Premise: Event X occurs Premise: Event Y occurs

+ Assumption: X is the only possible cause of Y

Conclusion: X causes Y

Weaken

- Something else causes Y
- Y causes X
- X and Y are coincidental

Strengthen

- More information
- Eliminate other causes of Y

Statistical

Premise: Information from sample

+ Assumption: Sample represents entire population

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<u>Strengthen</u>

Sample is representative

Analogy

Premise: Similarity between X and Y Premise: Similarity between X and Y Premise: Similarity between X and Y

+ Assumption: Sharing some means sharing all

Conclusion: Some other similarity exists

Weaken

• Entities less similar

<u>Strengthen</u>

Entities even more similar

(watch the entire video here)

Question Types

- 1. Weaken the Argument
- 2. Strengthen the Argument
- 3. Assumption
- 4. Conclusion/Inference
- 5. Method of Reasoning
- 6. Flawed Argument
- 7. Paradox
- 8. Evaluation



(watch the entire video here)

General Strategy

- 1. Read the question stem to determine the question type
- 2. Read the passage (argument) and focus on the required information for that question type
- 3. Check all answer choices



Weaken the Argument Questions

(watch the entire video here)

Premise
Premise
Premise
Premise
Assumption
+ Assumption
Conclusion

(A) New Premise
(B) New Premise
(C) New Premise
(D) New Premise
(E) New Premise

Goal: Find the answer choice that, when added to the argument, undermines the conclusion the most.



General Strategy

- 1. Read the question stem to determine the question type
- 2. Read the passage (argument) and focus on the required information for that question type
- 3. Check all answer choices



Weaken the Argument Strategy

- 1. Identify and summarize the conclusion
- 2. Identify and summarize the premises
- 3. Identify any assumptions
- 4. Check each answer choice while repeating conclusion

Does this weaken the conclusion that...?

5. Check all answer choices



<u>Tips</u>

- 1. Look for common argument types (cause and effect, statistical, analogy)
- 2. Common ways to weaken an argument
 - Undermining an unstated assumption
 - Adding a new premise that hurts the conclusion
- 3. "Weaken" does not necessarily mean "destroy"
- 4. Beware of answer choices that **strengthen** the argument
- 5. Do not try to disprove a premise
- 6. Goal: Weaken the extent to which the conclusion follows from the premises



Strengthen the Argument Questions

(watch the entire video here)

Premise
Premise
Premise
Premise
Assumption
+ Assumption
Conclusion

(A) New Premise
(B) New Premise
(C) New Premise
(D) New Premise
(E) New Premise

Goal: Find the answer choice that, when added to the argument, strengthens the conclusion the most.



(watch the entire video here)

Question stem examples

- Which of the following, if true, would provide the most support for the conclusion of the argument above?
- Which of the following statements, if true, most strengthens the author's argument?
- Which of the following, if true, provides the best indication that Suki's decision was logically sound?
- Which of the following, if true, most strongly supports the recommendation made by the argument?

Which of the new premises improves the argument the most?



Strengthen the Argument Strategy

- 1. Identify and summarize the conclusion
- 2. Identify and summarize the premises
- 3. Identify any assumptions
- 4. Check each answer choice while repeating conclusion

Does this strengthen the conclusion that...?

Example conclusion: Antonio makes the world's best spaghetti

5. Check all answer choices



<u>Tips</u>

- Look for common argument types (cause and effect, statistical, analogy)
- Common ways to strengthen an argument
 - Stating a previously-unstated assumption
 - Supporting or elaborating on an existing premise
 - Adding a new supporting premise
- The goal is not to create a perfect argument
- Beware of answer choices that weaken the argument
- Watch out for answer choices that support a premise but not the conclusion

Avram is world-class sprinter Avram is great chess player + Bonnie is world-class sprinter

Bonnie must be great chess player

(A) Bonnie holds 100m world record X

(B).

(C).

(D).

(E) .



(watch the entire video here)

Premise
Premise
Premise
Premise
Assumption
+ Assumption
Conclusion

(A) Assumption
(B) Assumption
(C) Assumption
(D) Assumption
(E) Assumption

Goal: Find a necessary assumption



Assumption Questions

Question stem examples

- Which of the following is an assumption on which the argument depends?
- The scientist's argument depends on the assumption that
- The conclusion above follows logically if which of the following is assumed?



Assumption Question Strategy

- 1. Identify and summarize the conclusion
- 2. Identify and summarize the premises
- 3. Identify any assumptions
- 4. Look for one of your assumptions among the answer choices
- 5. Check each answer choice against the conclusion

Is this assumption necessary to draw the conclusion that...?

Example conclusion: Hotdogs are bad for one's health



Negation Technique

Basis:

- 1) An assumption is **absolutely necessary** for a conclusion to follow from the premises
- 2) Negating a necessary assumption will **destroy** the argument

Juan has been practicing tennis 3 hours each day for the past 2 years. Therefore, Juan will win the city championship next month.

P: J practicing 3hr/day for 2 yrs

P: J dies before championship

A: Nothing stops championship

+ A: J is eligible to play

C: J will win championship X



A: J lives until championship

A: It is not the case that J lives until championship

P: J dies before championship



Assumption Questions

<u>Tips</u>

- Look for common argument types (cause and effect, statistical, analogy)
- Look for shifts in language between premises and conclusion
- Remember that arguments can have <u>any number</u> of assumptions

Juan has been practicing tennis 3 hours each day for the past 2 years. Therefore, Juan will win the city championship next month.

P: J practicing 3hr/day for 2 mths

A: J lives until championship

A: Nothing stops championship

+ A: J is eligible to play

C: J will win championship



Conclusion/Inference Questions

(watch the entire video here)

+	Premise Premise Premise	(A) Conclusion (B) Conclusion (C) Conclusion (D) Conclusion
?		(E) Conclusion

Goal: Find conclusion that logically follows



Question stem examples

- The statements above, if true, most strongly support which of the following conclusions?
- If the statements above are true, which of the following must also be true on the basis of them?
- Which of the following hypotheses receives the strongest support from the given information?
- Which of the following can be logically inferred based on the statements above?

Identify something that must follow from the premises

Inference question = Conclusion question



Typical Conclusion (in most GMAT questions)

Conclusion is partially supported

For the past 3 days, all of Florida's orange farms have experienced freezing temperatures. Therefore, the number of oranges harvested this year will be less than expected.

Conclusion in a Conclusion question

Conclusion is guaranteed

For the past 3 days, the temperature at every Florida orange farm has not exceeded -5 degrees Celsius.

The statement above, if true, most strongly supports which of the following conclusions?

(A) For the past 3 days, not one Florida orange farm has experienced temperatures above -5 degrees Celsius.



Conclusion Question Strategy

- 1. Identify and summarize the premises
- 2. Draw a conclusion that **must** follow
- 3. Look for your conclusion among the answer choices

Must it be true that...?

- 4. Aggressively eliminate incorrect answers
- 5. Apply a version of the Negation Technique:

The negated conclusion that **contradicts** the premises the most is probably the correct answer.

6. Check all answer choices



(watch the entire video here)

<u>Tips</u>

- 1. Do not stray too far from the premises
- 2. Look for a rewording of a premise
- 3. Conclusions need not involve every premise
- 4. Do not inject assumptions into the argument
- 5. Beware of answer choices that introduce new ideas/words
- 6. Beware of answer choices where the strength of the language does not match the strength of the language in the premises



- Test your understanding of the argumentative strategies employed in an argument
- 3 types of Structure Questions:
 - Method of Reasoning
 - Boldface
 - Parallel Argument



Method of Reasoning questions

Premise Premise

(A) Description of argument

Premise

(B) Description of argument

Premise Assumption

Conclusion

(C) Description of argument

+ Assumption

(D) Description of argument

(E) Description of argument

Goal: Find the best description of the author's argumentative strategy.



Question stem examples for Method of Reasoning questions

- The author's point is made by which method of reasoning?
- Which of the following strategies does Dr. Kwan use to defend his position?
- In the passage, the author develops the argument by ____
- The reporter challenges the spokesperson's position by doing which of the following?

Explain how the author presents his/her argument



Examples of answer choices for Method of Reasoning questions

- The argument arrives at its conclusion by demonstrating the inherent problems with alternative conclusions.
- The author offers a new definition of a term that is central to an opposing argument.
- The argument employs circular reasoning by assuming that which it is trying to prove.

The answer choices are typically generic



Strategy for tackling Method of Reasoning questions

- 1. Read the passage
- 2. For each sentence, ask, "What role does this play in the argument?"
- 3. Identify and summarize the conclusion and premises
- 4. Use generic language to describe the method of reasoning to yourself
- 5. Look for your description among the answer choices
- 6. Check all answer choices



Boldface questions

Premise Premise

(A) Role played by **boldfaced** portion(s)

Premise

(B) Role played by **boldfaced** portion(s)

Assumption

(C) Role played by **boldfaced** portion(s)(D) Role played by **boldfaced** portion(s)

+ Assumption

(E) Role played by **boldfaced** portion(s)

Conclusion

Goal: Find the best description of the role(s) played



Question stem examples for Boldface questions

- In the above argument, the portion in boldface plays which of the following roles?
- In the researcher's argument, the two portions in boldface play which of the following roles?

The passage contains bolded text

Researcher: Two years ago, a wolf pack was relocated to Bilford Island. Although the local rabbit population has decreased drastically since the relocation, the wolves are not to blame for this decrease. Our study shows that the unprecedented number of recent rabbit deaths is due to the myxoma virus.

In the above argument, the portion in boldface plays which of the following roles?



Strategy for tackling Boldface questions

- 1. Read the passage
- 2. For each boldfaced portion, ask, "What role does this play in the argument?"
- 3. Identify and summarize the conclusion and premises
- 4. Use generic language to describe the roles played by the boldfaced portion(s)
- 5. Find the answer choice that most closely matches yours
- 6. Check all answer choices



<u>Tips for Boldface questions</u>

- 1. Look for common roles:
 - Concluding
 - Summarizing
 - Contradicting
 - Providing supporting evidence
 - Providing an example
 - Providing a counterexample
 - Generalizing
- 2. Consider how the second bolded part is related to first bolded part
- 3. Beware of answer choices that are half right and half wrong



Parallel Argument questions

Premise

(A) Complete argument

Premise

(B) Complete argument

Premise Assumption

(C) Complete argument

+ Assumption

(D) Complete argument(E) Complete argument

Conclusion

Goal: Find the argument that employs the most similar argumentative strategy.



Question stem examples for Parallel Argument questions

- Which of the following arguments exhibits a pattern of reasoning most similar to the pattern of reasoning exhibited in the argument above?
- Which of the following is most like the argument above in its logical structure?
- The pattern of reasoning displayed above is most closely paralleled in which of the following?

Find the argument most like the original



Strategy for tackling Parallel Argument questions

- 1. Identify and summarize the conclusion and premises
- 2. Use generic language to describe the method of reasoning to yourself **before** checking the answer choices
- 3. Look for an argument with same structure
- 4. Check <u>all</u> answer choices



<u>Tips for Parallel Argument questions</u>

- 1. Beware of answer choices with same subject matter
- 2. Questions are time-consuming check your time



(watch the entire video here)

- Test your understanding of the argumentative strategies employed in an argument
- 3 types of Structure Questions:
 - Method of Reasoning
 - Boldfaced
 - Parallel Argument



Flawed Argument Questions

(watch the entire video here)

Premise
Premise
Premise
Assumption

+ Assumption

Premise
(A) Main problem
(B) Main problem
(C) Main problem
(D) Main problem
(E) Main problem

Flawed Conclusion

Goal: Find the argument's primary flaw



Question stem examples

- Which of the following identifies the most serious logical flaw in the argument above?
- Which one of the following best identifies the error in reasoning made in the passage?
- The argument is vulnerable to criticism on which one of the following grounds?
- The reasoning in the argument is not sound because it fails to establish that ____

Identify the main problem with the argument



<u>Strategy</u>

- 1. Identify and summarize the conclusion and premises
- 2. Identify any unstated assumptions
- 3. Determine the primary flaw
- 4. Look for your answer among the answer choices
- 5. Check <u>all</u> answer choices



Common Flaws

- Confusing causation with correlation
- Confusing numbers with rates
- Conclusion mismatch
 - Watch out for new words in the conclusion
- Extreme conclusion
- Mistaking necessary for sufficient
- Guilty by association
- Unrepresentative sample



<u>Strategy</u>

- 1. Identify and summarize the conclusion and premises
- 2. Identify any unstated assumptions
- 3. Determine the primary flaw
- 4. Look for your description among the answer choices
- 5. Check <u>all</u> answer choices



Premise Premise + Premise Conclusion	(A) New Premise
	(B) New Premise
	(C) New Premise
	(D) New Premise
	(E) New Premise

Goal: Find premise that resolves the paradox



Paradox Questions

Question stem examples

- The paradox described above is best resolved by which of the following?
- Which of the following, if true, most helps to resolve the apparent discrepancy described above?
- Which of the following, if true, best explains the paradoxical outcome of Dr. Doolittle's experiment?
- Which one of the following most helps to explain the apparent contradiction above?
- Which one of the following, if true, most helps to explain the difference in melting points?

Identify something that resolves the contradictory information



Statistics show that the number of smokers in Maltania has steadily decreased over the past 10 years. However, during the same 10 years, the total amount of tobacco sold by Maltanian tobacco farmers has increased.

Which of the following, if true, most helps to resolve the apparent discrepancy described above?

- Looking for an "aha" premise
- Not testing ability to deconstruct arguments
- Several explanations:
 - Farmers exporting to other markets
 - Big increase in tobacco <u>chewers</u>
 - and more . . .



Paradox Questions

Paradox Question strategy

- 1. Identify the contradictory premises
- 2. Explain the paradox to yourself

e.g., More tobacco sold despite fewer smokers

3. Check the answer choices while reminding yourself of the paradox

Does this explain why...?

4. Check all answer choices



<u>Tips</u>

- Keywords: yet, however, surprisingly, nonetheless, paradoxically
- Unable to identify paradox
 - solution unlikely
 - reread passage <u>or</u> guess and move on
- Beware of answer choices that have opposite effect

Statistics show that the number of smokers in Maltania has steadily decreased over the past 10 years. However, during the same 10 years, the total amount of tobacco sold by Maltanian tobacco farmers has increased.

Which of the following, if true, most helps to resolve the apparent discrepancy described above?

(A) The Maltanian government has introduced stop-smoking programs across the country.



Evaluate the Conclusion Questions

(watch the entire video here)

Premise
Premise
Premise
Assumption
+ Assumption
Conclusion

(A) Question
(B) Question
(C) Question
(D) Question
(E) Question

Goal: Find the question that, when answered, best helps to evaluate the conclusion.



Question stem examples

- Knowing which of the following would be most useful in evaluating the argument?
- Which of the following would be most relevant to investigate in order to evaluate the researcher's conclusion?
- Clarification of which of the following issues would be most important to evaluating the spokesperson's position?

Identify a question that would help gauge the strength of the conclusion



(watch the entire video here)

<u>Strategy</u>

- 1. Identify and summarize the conclusion and premises
- 2. Identify any assumptions
- 3. Check the answer choices by providing an answer to each question and relating it to the conclusion
- 4. Check <u>all</u> answer choices



(watch the entire video here)

<u>Strategy</u>

- 1. Identify and summarize the conclusion and premises
- 2. Identify any assumptions
- 3. Check the answer choices by providing an answer to each question and relating it to the conclusion
- 4. Check <u>all</u> answer choices



- Question type frequencies
- GMAT words
- EXCEPT questions
- Being aggressive



Miscellaneous Tips

GMAT words

Common usage

Everybody likes ice cream = **a lot** of people like ice cream = **most** people like ice cream

GMAT usage

Everybody likes ice cream = **every person** likes ice cream



GMAT words

• Read words in their strongest, most literal sense

all, none, everyone, no one, always, never, each every, anywhere, nowhere

• Some: 1 or more

<u>Some</u> Gigacorp employees are college graduates. ✓ <u>Some</u> countries in Europe are named Italy. ✓ Some of Earth's oceans contain salt water ✓

• Most: More than 50%

<u>Most</u> of Earth's oceans contain salt water ✓



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For additional practice questions, see the bottom of the <u>Critical Reasoning</u> module

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