Solutions

Conditional Reasoning Concepts Solutions (Q. 1 to 25)

1. E

The two absolute and one relative fact presented in the stimulus can be summarized as follows:

Fact 1 (absolute): Taproot = ½ Plant height

Fact 2 (absolute): >2x (avg. rainfall) ⟶ Above average height

Fact 3 (relative): More rain tends to promote growth

Since the false chicory's taproot is always ½ as long as the plant is tall, if the plant grows taller, so will its taproot. Given that rain makes the plant grow taller, it is reasonable to conclude that if a false chicory plant receives greater than twice the average rainfall of the species' usual habitat, then it will have a longer taproot than that of an average-sized false chicory plant. **Answer choice (E) is therefore correct.**

Answer choice (A): Even though rain makes the false chicory plant grow taller, there is no reason to suspect that rainfall is the only factor affecting its height (and by extension the length of its taproot). The plant with a shorter taproot could have had a disease that prevented it from growing longer. Furthermore, it is entirely possible that both plants received more than twice the average rainfall of the species' usual habitat – the taller plant simply received more rain than the shorter one.

Answer choice (B): This is a Mistaken Reversal of Fact 2. Just because a taproot is longer than average does not mean that the plant received more than twice the average rainfall. It is possible for it to have received less than twice the average rainfall, and still enough rain to enable it to grow taller. It is also possible that the length of its taproot is entirely due to other causes, such as synthetic pesticides or fertilizers.

Answer choice (C): This is a Mistaken Negation of Fact 2. It is entirely possible that the taproot grew longer for other reasons having nothing to do with the amount of rain received by the plant. Rainfall is just one factor affecting the height of the plant (and the length of its taproot).

Answer choice (D): Even though rain makes the false chicory plant grow taller, there is no reason to suspect that rainfall is the only factor affecting its height (and by extension the length of its taproot). Therefore, if two groups of plants are identical in height, it is entirely possible that they received different amounts of rain.

2. **(A)** Every socialist political philosopher (SPP) and every communist political philosopher (CPP) of the twentieth century was influenced by Rosa Luxemburg (IRL). So, if you were a SPP, then you were IRL. Furthermore, if you were a CPP, then you were IRL.

SPP or CPP → IRL

No one who was influenced by Rosa Luxemburg advocated a totalitarian state.
What about this one? Translate before reading on.

If you were IRL, then you did not advocate a totalitarian state (ATS):
IRL → ~ATS

Taking both of these together, the link should be clear!

SPP or CPP → IRL → ~ATS

By making this connection, we can infer a number of things:

(A) No early twentieth-century socialist political philosopher advocated a totalitarian state.

If no SPP advocated a totalitarian state (ATS), then if you were an SPP, you did not ATS.

SPP → ~ATS

This is exactly one of the inferences we made by connecting the two conditionals. **This is the correct answer.**

(B) Every early twentieth-century political philosopher who did not advocate a totalitarian state was influenced by Rosa Luxemburg.

We know that IRL →~ATS. This was given to us. Answer (B) says ~ATS → IRL. An illegal reversal! While it might be true, we can't infer that it is true for certain. Eliminate it.

(C) Rosa Luxemburg was the only person to influence every early twentieth-century political philosopher who was either socialist or communist.

We can't know if she was the only person. This is way too extreme. Eliminate it.

(D) Every early twentieth-century political philosopher who was influenced by Rosa Luxemburg and was not a socialist was a communist.

We don't know this to be true from the information given. There could have been people who were influenced by Luxemburg but were not socialist *or* communist.

(E) Every early twentieth-century political philosopher who did not advocate a totalitarian state was either socialist or communist.

Perhaps there were political philosophers who did not advocate a totalitarian state but were, say, anarchists or libertarians rather than socialists or communists. From the stimulus, we didn't learn anything we can infer about ~ATS.

3. (E) We're told to assume that the statements in the argument are true, so we need not doubt, for example, whether the policy will indeed be unpopular either with the faculty or among students. From our initial read, what we know is that the stimulus contains some suggestions of what to do if a parking policy is unpopular with either the faculty or the students, then states that the policy will indeed be unpopular with either the faculty or the students.

The correct answer is (E), and it is provable based on the text.

We can notate this as follows: ~PF → M

If it is unpopular among students, we should adopt a new policy.

~PS → N

And, it is bound to be unpopular either with the faculty or among students.

If this statement is true, we know that if it is popular with the faculty, it must be unpopular with the students, and if it is popular with students, it must be unpopular with the faculty.

We can represent these two relationships in this way:

PF → ~PS

PS → ~PF

Note that this statement is not a biconditional and does *not* mean that if the policy is unpopular with either group, it must be popular with the other. This would be an illegal reversal of the terms.

The four relationships we know are as follows:

$\sim PF \rightarrow M$
$\sim PS \rightarrow N$
$PF \rightarrow \sim PS$
$PS \rightarrow \sim PF$

If you can see the links easily, go ahead and write them out quickly:

$PS \rightarrow \sim PF \rightarrow M$ (If it's popular with students, we should modify it.)

$PF \rightarrow \sim PS \rightarrow N$ (If it's popular with faculty, we should adopt a new policy.)

Now, let's see if any of our answers match one of the two chains above.

(A) We should attempt to popularize this parking policy among either the faculty or students.

It's tough to match this answer up with the conditionals above, and that's with good reason: whom we ought to popularize this policy with is not discussed.

(B) We should modify this parking policy only if this will not reduce its popularity among students.

M reduce PS.

Reducing popularity also is not discussed. Notice that in no way can we manipulate any of the known conditionals so that M acts as a trigger that results in this particular consequence.

(C) We should modify this parking policy if modification will not reduce its popularity with the faculty.

Again, reducing popularity is not in any of our conditionals.

(D) If the parking policy is popular among students, then we should adopt a new policy.

$PS \rightarrow N$

This answer is a mix-up of the conditionals we laid out above. It's not inferable.

(E) If this parking policy is popular with the faculty, then we should adopt a new policy.

PF → N

This is indeed provable. It's the second of our two chains.

4. E

SF → ~H

H → ~SF

Answer choice (A): One reason answer choice (A) is incorrect is because it only refers to serious problems, not serious financial problems as in the stimulus. Even if the answer correctly referred to serious financial problems, it would still be incorrect because it would be a Mistaken Reversal of the first sentence and a Mistaken Negation of the third sentence.

Answer choice (B): The answer choice can be diagrammed ~SF → H. This answer is incorrect because it is the Mistaken Negation of the first sentence.

Answer choice (C): This answer choice would be diagrammed the same way as answer choice (B), and it is incorrect for the same reasons.
Answer choice (D): The answer choice can be diagrammed as ~H → SF.

Answer choice (E): This is the correct answer. Answer choice (E) is the contrapositive of the first sentence and a repeat of the third sentence.

5. (C) KS = keyboarding skills

AUC = able to use a computer

WEWP = able to write your essays using a word processing program

Sentence 1: ~KS → ~AUC

Sentence 2: ~AUC → ~WEWP

Chain: ~KS → ~AUC → ~WEWP

~KS → ~WEWP

WEWP → KS

Answer choice (A): This is a Mistaken Negation of the chain inference and is therefore incorrect. The diagram for this answer choice would be:

KS → WEWP

Answer choice (B): This is a Mistaken Reversal of the chain inference and is therefore incorrect. The diagram for this answer choice would be:

WEWP → KS

Answer choice (C): This is the correct answer, and this answer is the contrapositive of the chain inference.

Answer choice (D): This answer is a Mistaken Negation of the second sentence and is therefore incorrect. The diagram for this answer choice is:

AUC → WEWP

Answer choice (E): This answer is a Mistaken Reversal of the second sentence and is therefore incorrect. The diagram for this answer choice is:

~WEWP → ~AUC

6. (A)

The argument begins with a statement that contains two necessary conditions:

SS = involved in any serious scandal

SS_P → ~R and ~C

Answer choice (A): This correct answer is a result of the Repeat argument form enacted in the stimulus.

Answer choice (B): This answer is a Mistaken Negation of part of the conditional statement in the first sentence.

Answer choice (C): This answer is a Mistaken Reversal of part of the conditional statement in the first sentence.

Answer choice (D): This issue is not addressed in the stimulus.

Answer choice (E): While this answer is possibly true because the stimulus limits the discussion to "politicians known to be involved in any serious scandals," there is no evidence to prove that some politicians avoid detection and censure. Thus, this answer is incorrect.

7. (E)

The author concludes that international law is not effective, because it is not supported by a police force. But just because police enforce laws, does it follow that that's the only way they can be enforced? Well, there perhaps are other alternative ways that international law can be effectively enforced; why is the editorialist so sure that the international police could effectively enforce international law? He doesn't say, so that's what the needed assumption must spell out.

This question gives us a conditional relationship:

A to B … Effective Law (EL) → Effective Enforcement Mechanism (EEM),

- B to A will be wrong
- A not to B not will be wrong
- B not to A not will be correct

So, we have … **B not** to **A not** $\sim\!\!EEM \rightarrow \sim\!\!EL$

The stimulus then tells us that police are one form of EEM. It then concludes that because there is no international police force, international law isn't effective, or:

$\sim\!\!Police_{International} \longrightarrow \sim\!\!EL_{International}$

From here, we can see that in order to justify the conclusion, we need to show that lack of a police force leads to a lack of an effective enforcement mechanism, or:
$\sim\!\!Police_{International} \longrightarrow \sim\!\!EEM_{International}$

Answer choice (E) provides this missing link in the conditional chain, and is the correct answer.

Answer choice (B) gives us a Mistaken Negation **(B to A)** of the conclusion, or:

$Police_{International} \longrightarrow EL_{International}$

The reason why answer choice (B) is not a necessary assumption has to do with peculiarities of conditional statements as assumptions.

Answer choice (B) gives a Mistaken Reversal™ of the author's assumption. The author assumes that for international law to be effective, there must be an international police force. This may be diagrammed thus:

Effective International Law ⟶ International Police Force

Answer choice (B) gives us the converse of this statement:

International Police Force ⟶ Effective International Law

The author does not have to believe that an international police force would be sufficient to ensure we have effective international law. The author only must believe that an international police force is necessary for effective international law.

In other words, it could be possible, even with an international police force, that international law be ineffective. The author views an international police force as a precondition for effective international law; however, there could be other factors that would make international law ineffective, even if there were an international police force.

(A) How laws are obeyed or enforced is immaterial to the argument. Rather, the editorial is clearly stating that the power of the police to enforce—obedience aside—is enough to make effective law.

Conditionally, it appears as: Obey command → obedience mechanism.

One issue here that people often note is the idea of a "command" versus the concept of "laws" in the stimulus. The other issue in this answer is one of quantity.

Is it really that the author believes that no one will obey, or just that at least some won't? (And remember, assumptions are about minimalist ideas, in the sense that it is the very least that the author must assume, so this quantity difference is important).

Again, this difference can more easily be seen by negating the answer. How would the author respond if you said: "Some people will obey a command even without an obedience enforcement mechanism." He or she would probably say, "That's great that some people will do that, but for a law to be effective in a society, we still need that enforcement mechanism." Basically, it's not about that some people will obey but more about that some people won't. In that sense, this answer would be more attractive if it read: "Some people won't obey a command unless mechanisms exist to compel obedience." If you negate that, it means that everyone will obey a command even without enforcement mechanisms. That would cause the author a lot more problems.

(B) mischaracterizes the author's assumption. The author isn't assuming that international police is a means to effective law. The author is assuming that international police is the only means to effective law. Nothing else.

(C) The differences between international law and that of an individual society extend far beyond the Scope of this argument. For all we know, this could be just one of many differences.

(D) The author does not need to assume that this is the primary purpose of a police force. The police force can have other purposes and still fulfill its necessary duty of enforcing laws to make them effective.

(E) Correct! explicitly adds the chain link, by stating flatly that only an international police force could effectively enforce international law. Couldn't it be possible for local police to enforce international law? The author is assuming that the answer to these questions is no. Answer (E) expresses that necessary assumption.

The author is basing that conclusion idea on the lack of an international police force, and assuming that such a force is needed for for enforcement. Why does the author assume this? Because if other methods were out there for enforcing the law, the argument wouldn't make sense (for example, what if domestic police forces in each country could effectively enforce the international laws?).
To help clarify this idea, let me use the analogy of, "We don't have any power in the house for lighting, so we can't read anything in the house." Here, my argument rests on assuming that the presence of power and electric lights is needed for us to read. But, what if it is daytime? Or if we have candles, or flashlights?

Going back to the original argument and answer choice (E), hopefully the relationship is somewhat clearer. Because this is an Assumption question, you can also negate the answer, and that will reflect a bit of the discussion above.

8. D

- If great art then expresses a deep emotion
- If not express a deep emotion then not great art
- If art expresses an emotion then creator capable of experiencing that emotion
- If creator incapable of that emotion then art cannot express experiencing an emotion

Combine the statements:

If a creator is incapable of experiencing deep emotion

then

art cannot be great

The stimulus can be diagrammed as follows (each statement is followed by its contrapositive): X to Y means Y not to X not is correct.

$GA \rightarrow E_{Deep}$ $\quad$ $\sim\!\!E_{Deep} \rightarrow \sim\!\!GA$

$\sim\!\!CE \rightarrow \sim\!\!E$ $\quad$ $A \rightarrow CE$

The first arrangement could be stated as, "if a work of art is great, then it is a work of art expressing deep emotion." The second arrangement could be stated as, "if the creator of a work of art is not capable of a certain emotion, then the work of art cannot express that emotion."

Combining:

$GA \rightarrow CE_{Deep}$ $\quad$ $\sim\!\!CE_{Deep} \rightarrow \sim\!\!GA$

If we are looking at a piece of great art, then, we can be certain that its creator has the ability to experience deep emotion. So, an artist who cannot experience deep emotion cannot create great art.

A. A computer can create an artwork that expresses sorrow or love only if it has actually experienced such an emotion.

   We cannot rule out such a possibility because the stimulus is concerned with the prerequisites of great art, while this answer choice discusses art more generally. If computer can create art expressing sorrow / love then has experienced that emotion. For art to express an emotion, its creator must be *capable* of experiencing an emotion. This answer choice distorts that into "*has* experienced" an emotion. Eliminate.

B. The greatest art is produced by those who have experienced the deepest emotions. **Extreme**. The stimulus says nothing about the *greatest* art. Eliminate.

C. An artwork that expresses a deep emotion of its creator is a great artwork.
   If art expresses deep emotion then great art

   We know that a great work of art will be one that expresses an emotion, but do we really believe that every time someone puts paint to canvas while extremely happy (or extremely sad) a great work of art is going to emerge? Certainly not: the diagramming above will remind us that the starting point is "if a work of art is great…." An artist can be ecstatic and nevertheless turn out a mediocre piece. This answer choice could be

false, so it is gone. This flips the necessary and sufficient terms in the logic of the first sentence. Being able to express deep emotion is necessary, not sufficient, for great artwork. Eliminate.

D. As long as computers are constructed so as to be incapable of experiencing emotions, they will not create great artworks. **Correct.**

If incapable of experiencing emotions then won't create great art

This matches the analysis perfectly.

Based on the contrapositive (Y not to X not) of our inference above, we can see that if an entity cannot experience deep emotion, then that entity cannot produce great works of art. This answer choice discusses computers that have no emotion at all, but any entity incapable of experiencing a single emotion would be incapable of experiencing the deep ones. This choice is confirmed by the facts of the stimulus, so it is the correct answer.

E. Only artworks that succeed in expressing deep emotions are the products of great artists.

Only signifies a necessary condition.

If product of great artist, then succeeds in expressing deep emotion

Outside the Scope. Great art must express deep emotions, but perhaps not everything produced by a great artist is great art. Eliminate.

The claim here is basically that the products of great artists are limited to artworks that express deep emotion. This claim deviates significantly from the conditional statement in the first sentence, which only talks about great artworks, not great artists. Since the stimulus does not support this assertion, so this choice can be ruled out of contention.

9. A

Summary:

- Most (over half of) remaining forests are just fragments of what they once were.
- These fragmented forests have "typically" lost their ability to sustain themselves.
- Fragmented forests are refuges for some of the world's endangered species.

- Regular intervention by resource managers is ***necessary*** for fragmented forest to maintain all plant/animal species.

To paraphrase the given set of statements: if a threatened forest is going to continue to be a viable home for all the plants and animals that are living there, then a forest ranger "resource manager" will have to come and help out on a regular basis. Furthermore, the majority of forests _ the last refuge of many endangered species - are now threatened, and have lost the ability to sustain themselves. From these statements we can infer (A), that if the forest rangers don't help, many forests will lose at least a species. We can infer this because we know that the forests are unable to support themselves and require help if they are to support all the species that currently live therein.

The stimulus tells us that regular interventions by resource managers are a requirement for the forest to maintain its **full** complement of plant and animal species. This leaves open the possibility that, without the intervention, they can still maintain **some** of their animal species, and it's possible that the endangered ones are the ones that would survive.

This forester tells the story of the world's remaining forests, which have significantly dwindled from what they once were. They are home to many endangered species but are not self-sustaining. The final sentence in the stimulus is a conditional statement:

To maintain all of their respective plant and animal species, these forests *require* resource manager intervention:

- X to Y … maintain all species ⟶ resource manager intervention

Y not to X not: ~~intervention~~ ⟶ ~~can maintain all species~~

Only **correct answer choice (A)** is confirmed by the information presented in the stimulus. This is the correct answer choice, restating the contrapositive diagrammed above. If there is no intervention, not every species can be maintained.

A. Most of the world's forests will lose at least some of their plant or animal species if no resource manager intervenes. **Correct.** This matches the deduction above.

B. Unless resource managers regularly intervene in most of the world's remaining forests, many of the world's most endangered species will not survive. This choice is unsupported since the argument does not outline which animals are specifically threatened. This is a tempting answer since we know that the forests include these threatened species, but we're not sure if the threat they face is related to the lack of help from the forest ranger. **Extreme.** Fragmented forests contain some of the world's most endangered species. It is impossible to determine whether many such species would be lost without intervention in most of these forests. Eliminate.

C. A fragmented forest ecosystem cannot sustain itself in the long term if it loses any of its plant or animal species. This choice is reversed logic. We are told that a fragmented forest will lose some species if the forest is not assisted, not that the loss of the species will lead to the fragmentation of the forest. **Distortion.** It is not clear that the loss of a single plant or animal species would make a forest unsustainable. Eliminate.

D. A complete, fully functioning forest ecosystem can always maintain its full complement of plant and animal species even without interventions by resource managers. This choice is unsupported; indeed it is the opposite of what the statements suggest. **Extreme** ("always") and Outside the Scope. It's not known what complete, fully functioning forest ecosystems can do. Eliminate.

E. At present, resource managers intervene regularly in only some of the world's fragmented forest ecosystems. **Outside the Scope.** We have no way of knowing what resource managers are currently doing. Eliminate.

10. Correct answer: (E)

We're asked for an inference, so let's see how the argument is constructed. The argument proceeds from general comments about the author's criteria for novels to a specific claim that Peter Lee's San Francisco novel "passes her test." Sentences 1 and 3 make it clear that it is a necessary condition of her full enjoyment that the novel earn her trust by the author's knowing a city "at least as well as she does." Thus, since Lee's novel passes her test, it would have to be true that, in the opinion of the reviewer, Lee does know San Francisco at least as well as she does; and **(E)** just restates that.

(A) The reviewer's enjoyment of a good novel is increased by her trust. We can't infer from this that she enjoys any novel whose author she trusts.

(B) essentially reverses the terms in sentence 3—something we are not allowed to do. The reviewer might well trust novels that are set in unfamiliar locales. The logic here starts from a conditional statement: "When I read a novel set in a city I know well..." We therefore don't know what it takes to gain the reviewer's trust in all other cases—it's very possible that she trusts a novelist whose book is set in a city alien to her, so **(B)** cannot be inferred.

(C) All we can infer about Lee's first novel is that—since it, too, passed the reviewer's test—it was set in a city the reviewer knew well, and Lee's knowledge of it at least matched her own.

But that city may or may not have been S.F.

(D) As we saw above in **(B)**, we don't know how the reviewer feels about books set in cities unknown to her.

Here, everything follows from a novel in question being set in a city the reviewer knows well. How does the reviewer respond to novels set in cities she doesn't know well? We can't possibly know, which is why **(B)** and **(D)** fail as proper inferences.

11. A

IMP = inspired musical performances

GS = audience treated to a good show

SL = sophisticated listeners in the audience

UMR = understand one's musical roots

First sentence: IMP → GS

2. Second sentence, first part: GS → SL

3. Second sentence, second part: SL -→ UMR

Chain of all statements: IMP → GS → SL → UMR

Answer choice (A): This correct answer is a contrapositive of the chain created by the first two statements above. The diagram for this answer choice is:

~SL → ~IMP

Answer choice (B): This answer choice is a Mistaken Negation of the chain created by the second and third statements above. The diagram for this answer choice is: ~GS → ~UMR

Make sure you do not miss the "if" in the middle of the answer choice.

Answer choice (C): This answer choice is a Mistaken Reversal of the chain of all statements. The diagram for this answer choice is: UMR → IMP

Answer choice (D): This answer choice is a Mistaken Negation of the chain created by the second and third statements above. This answer choice is identical to answer choice (B), and the diagram for this answer choice is:

$\sim GS \rightarrow \sim UMR$

Answer choice (E): This answer choice is a Mistaken Reversal of the chain created by the first two statements above. The diagram for this answer choice is:

$SL \rightarrow IMP$

12. B

The information given allows us to make various deductive inferences. First, if each segment that significantly supports Ms. Puerta also significantly supports Mr. Quintana, then it follows, based on Mashika's statement, that no segment of the electorate that significantly supports Mr. Quintana also supports Mr. Ramirez. In other words, to support Ms. Puerta implies not supporting Mr. Ramirez; therefore, if the segments supporting Mr. Quintana include all the segments supporting Ms. Puerta, there can be no segments that support both Mr. Ramirez and Mr. Quintana. However, Salim tells us that there is such a voter segment: at least one segment significantly supports both Mr. Quintana and Mr. Ramirez. From this, it follows that the hypothesis if those segments also provide support to Mr. Quintana must be untrue; in other words, there exists at least one segment of the electorate that significantly supports Ms. Puerta but not Mr. Quintana.

A. We are told that there is a segment that significantly supports both Mr. Quintana and Mr. Ramirez, but this provides no basis for concluding that there is also a segment that significantly supports neither of the two.

B. Correct. The previous explanation indicates that at least one segment supports Ms. Puerta but not Mr. Quintana.

C. If support for Ms. Puerta and support for Mr. Ramirez are mutually exclusive, then this must be false given that we know that at least one segment supports Mr. Ramirez.

D. The information provided indicates that this is false: there is at least one segment that significantly supports Ms. Puerta but not Mr. Quintana.

E. If support for Ms. Puerta and support for Mr. Ramirez are mutually exclusive, then this must be false given that we know that at least some segments support Ms. Puerta.

13. D

If a garden doesn’t have enough water and sunlight, and if the soil is not rich, then the garden will not be productive.

If	*~ enough sun/ water AND ~ rich soil*	→	*garden unproductive*

The author then concludes that Patricia's Garden will be productive. The evidence is that she has rich soil and her garden is in a perfect spot to get water and sunlight.

The logic dictates what would happen if Patricia did not have the right conditions for her garden. However, consider the appropriate contrapositive of that logic. If a garden is productive, then it must have plenty of sun and water or the soil must be rich.

If	*garden productive*	→	*enough sun/ water OR rich soil*

This shows that all those great conditions (plenty of sun and water, rich soil) are merely necessary. Unfortunately, having those conditions does not guarantee that the garden will be productive. In creating the contrapositive, the author mistakenly negated without flipping.

If	*enough sun/ water AND rich soil*	→	*garden productive*

This is a perfect example of an author treating necessary conditions as if they were sufficient, and the correct answer will address this flaw.

(D) is correct.

(A) is irrelevant. There is no ambiguity as to the meaning of "ideal" in this context, so the author has no obligation to provide a specific definition.

(B) describes the flaw of confusing causation and correlation. However, there is no given correlation. The entire argument is based on conditional logic.

(C) describes the flaw of reversing causality. However, if any causal relation could be inferred, it would be that sun, water, and good soil cause productive gardens. The author does not mistake this for its reverse (i.e., that productive gardens cause the presence of sunshine, water, and good soil).

(E) describes the flaw of representativeness. However, the conclusion is only about Patricia's Garden. The argument does not use her garden to draw a conclusion about gardens in general.

14. D

In any Inference stimulus, you should work with the strongest statements first, since they're most likely to lead to clear deductions. Skip the second sentence for the moment.

First Sentence:

If coffeehouse OR restaurant → public place

If ~ public place → ~ coffeehouse AND ~ restaurant

Third Sentence:

If ~ comfortable public place → ~ well-designed

If well-designed → comfortable public place

If comfortable public place → spacious interior

If ~ spacious interior → ~ comfortable public place

If well-designed → comfortable → spacious interiors

(D) must be true on the basis of the statements. Since coffeehouses and restaurants are public places, it follows (from the combined third-sentence statements) that well-designed coffeehouses or restaurants are comfortable and thus have spacious interiors.

(A) reverses the logic in the last statement. It reverses the terms in the statement without negating them. The fact that all comfortable restaurants have spacious interiors doesn't mean that all restaurants with spacious interiors are comfortable—any more than saying "All of my books are in English" means "All books in English are mine."

(B) is a Distortion. Artwork is but one necessary component of most well-designed public places. That doesn't ensure that having artwork means the place is necessarily well-designed.

(C) is Extreme. Knowing that most well-designed public places feature artwork tells us nothing about the types of establishments they are. Maybe the public places with art are restaurants, libraries, or schools.

(E) reverses the logic in the last statement. Again, this answer does not correctly negate the terms in order to form a proper contrapositive. While all non-spacious public places are not well-designed (because they are uncomfortable), this tells you nothing about public places that *are* spacious. Some may be well-designed and others not, for reasons entirely separate from spaciousness.

15. Correct answer: (B)

The argument is a conditional chain—a prediction of what the author believes will happen if the city gets rezoned: new water and sewer systems, and then new apartment houses will be built; schools will become overcrowded; over-congested roads will lead to new roads. We learn in the next to last sentence that a bigger tax bite will be needed for those civic improvements. Hence answer choice **(B)** is a proper inference: If the new apartment buildings (a result of the rezoning) are built, then the tax bite (a necessary condition for the civic improvements that will follow those apartment buildings) will increase.

(A) is a classic distortion. "Unless they band together, the rezoning will be approved" means that in the absence of the citizens banding together, the rezoning will go through. We cannot, however, presume that that banding together would necessarily halt the rezoning (and all the subsequent developments). Maybe they would all go through anyway. **(C)**, **(D)**, and **(E)** The stimulus more or less argues that if the rezoning plan goes through, Glen Hills' rural atmosphere might be destroyed (by the sequence of events described). We are not, however, permitted to assume that the failure of the plan will ensure the continuation of that rural atmosphere—but that's just what **(C)** does.
Likewise, if the apartment buildings are built, taxes will go up; but **(D)** just denies both terms. That's logically forbidden, as is **(E)**'s inference that not building the apartment buildings will result in no overcrowded schools or congested roads.

16. E

(A) The only students that we know for sure are taking art are also taking physics, which means they can't take literature. There might be other students who are taking art and literature (without physics), but we don't know for sure whether or not they exist.

(B) Nah. We know some students are taking physics and art. And we know that none of those students can take literature. But that doesn't mean there can't be other students taking literature and art, without physics.

(C) The only thing we know about rhetoric is that it can't be taken with physics. This can't possibly be used to prove that there are students who are taking rhetoric but not literature. Do we even know that anyone is taking rhetoric? We are not sure.

(D) Nah. Nobody is taking literature and physics. And nobody is taking rhetoric and physics. But that doesn't mean nobody taking rhetoric is taking literature.

(E) We know there are “several” students who are taking both physics and art. Let’s give one of them a name: Jack. Jack is taking both physics and art. The first premise says Jack can’t take both literature and physics. Since Jack is taking physics, he can’t take literature. So um… Jack is taking physics and art, but not literature. Therefore, there are students (like Jack) who are taking art but not literature. This is proven by the facts, so it’s going to be the correct answer.

A through D were all speculative, but E is proven to be true because of Jack. **Our answer is E.**

17. C

Two uncertain statements followed by a conditional statement:

- Most (over half of) vets are devoted to bio.
- Most (over half of) vets love animals.

The correct answer will directly contradict the stimulus; the four wrong answers could be true in light of the stimulus.

Because both uncertain statements involve over half of the vet population, there must be some overlap. At least one vet must be devoted to bio and love animals. The Formal Logic statement applies to any prominent vet.

A. Some veterinarians have a greater love for biological science than for individual animals. **Irrelevant Comparison.** Most vets have at least one of these characteristics; the stimulus doesn't compare between them, however. Eliminate.

B. Most veterinarians love animals and have an interest in biological science. **Could be true.** Most vets have one of these characteristics; it might be true that most have both. Eliminate.

C. Prominent veterinarians at some veterinary research centers are intensely devoted to the biological sciences but do not feel any pronounced affection for animals. **Correct.** This choice contradicts the final sentence: There are no prominent vets who are seriously interested in bio but don't care intensely for animals.

D. Few veterinarians at university research centers chose their profession primarily because they love animals. **Could be true.** Most vets overall choose their profession primarily because of their love of animals. This may not be true of those at research centers. Eliminate.

E. Most veterinarians who are not prominent regard an understanding of the biological sciences as the most important quality for success in their profession. **Could be true.** The stimulus is silent on vets' opinions about what leads to success in the profession. Eliminate.

18. Correct answer: (A)

A quick characterization of the choices tells us that the four wrong ones will all be things that could be true, and that the correct answer must be false. This means we're looking for an answer choice that directly contradicts the stimulus in some way. The first two sentences of the stimulus set up two different statements: If any prisoner attempts to escape from Chelas and Stelma's sector, then they must leave their stations in pursuit, but unless they are in pursuit of a prisoner, they cannot leave their stations until relieved. The final sentence of the stimulus gives us a concrete piece of information—

at the end of a shift, Chelas had violated the rules and Stelma had not. We don't know exactly how the violation occurred, but we'll look through the choices to see what exactly could (and could not) have happened.

(A) must be false, and is correct. If this were the case, both Chelas and Stelma would have violated the rules. For the record:

(B) could be true. Perhaps Chelas left his station in violation of the rules before 9PM Eliminate.

(C) could be true. Stelma could have pursued a prisoner trying to escape (and thus left her station). If Chelas did not pursue that prisoner, he would have violated the rules. Eliminate.
(D) could be true. Chelas left his station in violation of the rules, and Stelma did not. Eliminate.

(E) could be true. Chelas could have left for a reason besides pursuing the prisoner—say, if he knew he'd violated the rules and was trying to get away.

19. E

Let's break the stimulus down:

Horrific ⟶ threatening So, NOT threatening ⟶ NOT horrific

Dangerous ⟶ threatening So, NOT threatening ⟶ NOT Dangerous

Inspire revulsion ⟶ horrific So, NOT horrific ⟶ NOT inspire revulsion

So,

Inspire revulsion ⟶ horrific ⟶ threatening

The combined statement above is sufficient to confirm correct answer choice E.

Answer choice (E): the most important part is that all monsters that inspire revulsion are threatening:

Inspire revulsion ⟶ threatening

This was a direct inference from the chain described above. Those combined statements are enough to confirm E, because we can infer that the final condition is necessary for the first sufficient condition in a conditional chain.

For example, if A ⟶ B ⟶ C, then A ⟶ C.

20. A

The stimulus defines what a superconductor is and asserts that its economic feasibility depends on finding a substance that superconducts at a temperature above minus 148 degrees Celsius. The only potential substance would be an alloy of niobium and germanium, but such alloys superconduct at temperatures no higher than minus 160 degrees Celsius.

If economically feasible → superconduct above minus 148

If ~ superconduct above minus 148 → ~ economically feasible

If superconduction → alloy of N and G → superconduct minus 160 max → ~ economically feasible

SO … Superconduction is not economically feasible.

(A) matches the deduction described above. While extreme, this choice is supported by the definite statements in the stimulus.

(A) is correct because we're told that superconductors will only be economically feasible if there's a substance that conducts at over -148 degrees C, but the only substances that are contenders max out at -160 degrees. If the only possible substances don't work, then there is nothing that will work.

(B) is a 180 because it contradicts the stimulus. According to the stimulus, the only feasible superconductor would be an alloy of niobium and germanium ("must be an alloy . . .").

(B) is the opposite of what we're told -- these are the only possible substances.

(C) is a Distortion on two fronts. According to the stimulus, superconduction at temperatures *above* (not *below*) minus 148 Celsius is necessary (not sufficient).

(C) is also the opposite -- it has to be above, not below, -148.

(D) is a 180 because it contradicts the stimulus. According to the stimulus, alloys of niobium and germanium can superconduct at minus 160 Celsius and below ("no higher than minus 160 degrees").

(E) is Out of Scope and Extreme, as other uses of alloys of niobium and germanium—beyond superconductors—are not discussed and could well be economically feasible.

(E), on the other hand, is incorrect because we only know these won't become economically feasible **as superconductors** -- but maybe there will be other uses for these alloys that will be economically feasible! Maybe they're really efficient for car manufacturing, or something!

(D) is incorrect because we're told -160 is the maximum for these alloys, which certainly doesn't prohibit them from conducting at lower temperatures -- in fact, it strongly implies that they do.

Above minus 148 degrees is anything warmer than minus 147 degrees. So minus 120 degrees would be above minus 148 degrees. Also 70 degrees (a typical California day) would be above minus 148 degrees.

No higher than minus 160 degrees means minus 161 degrees or colder. So minus 200 degree (really cold!) would be no higher than minus 160 degrees.

***

If superconductors are economically feasible, then there is a substance that superconducts at a temperature above minus 148 degrees Celsius.

EF --> SA (148)

If there is a substance that superconducts at a temperature above minus 148 degrees Celsius, then it must be an alloy of niobium and germanium.

SA (148) --> A(N+G)

No substance that superconducts at a temperature above minus 148 degrees Celsius.

~SA (148)

Combining the first and third statement we can infer answer choice (A).

If the use of superconductors is economic feasible ---> there is a substance that super conducts at a temperature above minus 148 degrees (or in other words, 147 and above) ---> that substance must be an alloy or niobium and germanium.

BUT, unfortunately, "such alloys" (in this case, alloy of niobium and germanium) superconduct at temperatures no higher than minus 160 degrees Celsius.
Wait.. what did we need to know about economically feasible options again? Right.. they would be able to conduct at temperatures above minus 148. ABOVE, meaning 147 and below.

But if these can conduct at no higher than minus 160, that means they DEFINITELY cannot go to 147, because the highest they can go is 160, but they are free to go LOWER, 161--- and onward downward.
So what can we infer? Well.. it looks like superconductors cannot be economically feasible. Hey, that's what (A) says.

Let's check out the wrong answers.

(B) The latter half of this conditional statement is just unsupported. We don't know anything about other substances.

(C) We don't know this. This suggests that being able to super conduct at temperatures below minus 148 is SUFFICIENT, but we don't know this. It seems to suggest in the stimulus that rather than a sufficient condition, it was a necessarily condition. Therefore we cannot draw conclusions from it.

(D) Actually the passage suggests otherwise. It says "such alloys superconduct at temperatures no higher than minus 160 degrees Celsius" in the stimulus.

(E) We don't know if it will NEVER be economically feasible. Maybe in the future some new technology will make it possible, but cannot draw inferences into the past based on the information we are given.
A, the correct answer, says that *superconductors* will never be economically feasible. That's proven by the stimulus, which tells us that nothing will ever meet the requirements of the job (be made of those two particular substances and function at a high enough temperature).

Answer E tells us that *use of the alloys* will never be economically feasible. The stimulus proves nothing of the sort! We cannot use them to make economically feasible superconductors, but perhaps we can use them in other ways? Maybe we can make cars or dishwashers or ashtrays out of them? Perhaps those alloys could be used for all kinds of products and processes other than superconductors, all of which would be cost effective, maybe even massively profitable? Sure, that could happen, because the stimulus gives us no reason to think it couldn't.

When the stimulus gives us certain, conditional statements as this stimulus did, we can often make certain conclusions. The author states that:

- if superconductors are to be feasible, they must conduct below above -148 Celsius
- If they conduct above -148 Celsius, they must be composed of an alloy of niobium and germanium
- If they are be composed of an alloy of niobium and germanium, the superconductor will **not** conduct above -148 Celsius

-148c is 148 degrees below zero, and -160c is 160 degrees below zero. -160c is 12 degrees COLDER than -148c, which means it is lower, not higher! As the numbers get larger on the negative side of the number line (or X axis, if that helps), the amount is getting smaller, not larger.

21. C

We can translate the stimulus as follows:

#1 If FS, then LS and No WF.

#2 Contrapositive: If WF or No LS, then No FS.

#3 If CL, then WF

#4 Contrapositive: If No WF, then No CL.

#5 If TS, then CL.

#6 Contrapositive: If No CL, then No TS.

The stimulus concludes by telling us that the plant has LS and CL. Scanning through our if-then statements above, we know that this plant with CL must also have WF (line #3), and if it has WF, then in has no FS (line #2). LS is not a trigger, so we can't conclude anything else. Scanning the answer choices, we see that WF and no FS is **(C)**, which is the correct choice.

Fuzzy --> Long Stems

Fuzzy --> ~White Flowers

Curled --> White Flowers

push these two things together and we get...

Curled --> White Flowers **--> ~Fuzzy**

Thorny --> Curled

push these two things together and we get...

Thorny --> Curled **--> White Flowers --> ~Fuzzy**

Here is the list of all the formal logic, pushed all together:

Thorny --> Curled **--> White Flowers --> ~Fuzzy**

Curled --> White Flowers **--> ~Fuzzy**

Fuzzy --> Long Stems

Prompt: Long Stems & Curled

What we know: X must have white flowers and ~fuzzy

(C) fits this.

Relations given: Fuzzy seeds ---> long stem Fuzzy seeds -/-> white flowers

Curled leaves ---> white flowers
Thorny seedpods ---> Curled leaves ---> white flowers (from above)

Note that these all are single direction relations. So long stem does not imply fuzzy seeds. Only fuzzy seeds imply long stem is present.

Specimen has long stem and curled leaves. Long stem doesn't imply anything because it is not at the left side in any relation.

“Curled leaves” implies white flowers. So the specimen has white flowers.

But note this relation: Fuzzy seeds -/-> white flowers

Fuzzy seeds implies that white flowers cannot be there. If white flowers are there, it means there must be no fuzzy seeds. Had there been fuzzy seeds, white flowers would not have been there.

So we get that the specimen has white flowers but lacks fuzzy seeds.

Answer (C)

22. E

If standards committee quorum → 6 PM start time

If awards committee quorum → 7 PM start time

The stimulus gives us two conditional statements each with its own CP:

SCQ ⟶ GA@6. CP: NO GA@6 ⟶ NO SCQ

ACQ ⟶ GA@7. CP: NO GA@7 ⟶ NO ACQ

SCQ ⟶ GA@6 ⟶ NO GA@7 ⟶ NO ACQ

ACQ ⟶ GA@7 ⟶ NO GA@6 ⟶ NO SCQ

The time of the assembly is set if either committee reaches its quorum. However, each committee reaching a quorum would result in a different start time for the assembly. So, only one committee could possibly get a quorum. It should also be noted that it's possible neither quorum will be met. In that case, there is no restriction on time. The assembly could still begin at 6 PM or 7 PM, or maybe any other time (e.g., 8:51 PM). In short, there are three possible outcomes: 1) Standards committee has a quorum, and the assembly is at 6 PM. 2) Awards committee has a quorum, and the assembly is at 7 PM. 3) Neither committee has a quorum, and the assembly can be scheduled at any time.

(E) must be true. If the standards committee has a quorum, the assembly will start at 6 PM, not 7 PM, and thus it's impossible for the awards committee to also have a quorum.

(A) could be false. If the assembly does not begin at 6 PM, then, by contrapositive, it must be true the standards committee doesn't have a quorum. However, that doesn't mean the awards committee does.
It's possible neither committee has a quorum.
(B) could be false. There's no guarantee that either committee has a quorum. It's possible that both committees fail to meet a quorum.

(C) gets the Conditional Logic backwards. The standards committee having a quorum is sufficient to guarantee a 6 PM start time. However, it's not necessary. The assembly could still begin at 6 PM even if the standards committee does not have a quorum (as long as the awards committee also does not have a quorum).

(D) is incorrect due to the same logic as **(A)**. If the assembly does not begin at 7 PM, then, by contrapositive, it must be true the awards committee doesn't have a quorum. However, that doesn't mean the standards committee does. It's possible neither committee has a quorum.

Stimulus Breakdown:

CONDITIONAL 1:

If SC has quorum, then GA begins at 6.

CONDITIONAL 2:

If AC has quorum, then GA begins at 7.

Answer Anticipation:

Whenever we receive more than one conditional on GMAT, we ask ourselves if they can be chained together.

Indeed they can.

"If SC has quorum, GA starts at 6, so GA doesn't start at 7, so AC doesn't have quorum".

This also works in contrapositive form,

"If AC has q, GA starts at 7, so SC doesn't have quorum."

We can't prove that one of them does have a quorum and the other doesn't (because it's possible that neither of them have a quorum). But we can definitely prove that the SC and AC do not both have quorums.

Correct Answer: E

Answer Choice Analysis:

(A) Nope, this makes it seem like SC or AC are bound to have a quorum, but it's possible they both don't.

(B) Nope, same as (A).

(C) No, that's just an illegal reversal of the first sentence.

(D) Nope, nothing would guarantee that either committee DOES have a quorum.

(E) Yup! They can't both have a quorum.

Takeaway/Pattern: By simply writing the two conditionals and their contrapositives, we can see the four (right-side) ideas that are provable with this info:

We can prove the GA starts at 6.

We can prove the GA starts at 7.

We can prove that SC does not have a quorum.

We can prove that AC does not have a quorum.

Those are the only eligible ideas we can prove.

First, we have two conditional statements in the stimulus:

Quorum $_{\text{Standards}} \longrightarrow$ Begin 6

Quorum $_{\text{Awards}} \longrightarrow$ Begin 7

There is no conclusion presented, and so the Must Be True question stem that follows the stimulus should be no surprise.

Note that while it appears that the two statements are unrelated, that's not the case. They both refer to the same "general assembly," which means immediately that *both quorums cannot happen* because you cannot have the same meeting "start" at two different times (by definition there is only one starting time for any given meeting). If this were a Logic Game, you'd say that the two quorums cannot both occur, but that neither must occur. So, neither could have a quorum, or exactly one could have a quorum.

With the idea above, let's look at each answer choice:

Answer choice (A): While we know that both cannot have a quorum, we do not know that if one *doesn't* have a quorum that the other does; perhaps there's no meeting at all.

Answer choice (B): This can be eliminated for the same reason as answer choice (A). Just because the standards committee does not have a quorum does not force the awards committee to have a quorum.

Answer choice (C): This is a Mistaken Reversal of the first sentence. It sounds attractive, but we don't know about any other meetings or reasons the general assembly might begin at 6, and there could be something else happening that causes a 6 PM assembly.

Answer choice (D): If the general assembly does not begin at 7 PM, then we know that the awards committee did not have a quorum. But, that fact does not then mean that the standards committee has a quorum (as outlined above and in (A) and (B)).

Answer choice (E): This is the correct answer. Since the general assembly cannot start twice, there is no way for both committees to have a quorum. Thus, once the standards committee has a quorum, then the awards committee cannot have a quorum.

The key term to note here is "begin." The two conditionals cannot both be true because a meeting can only begin at one time. Let's think about it in another way. Instead of thinking about the general assembly, let's use an example of a concert.

If Britney Spears is an opening act, then the concert starts at 6.

If Justin Timberlake is an opening act, then the concert starts at 7.

The concert can only have one start time. It can't start at both 6 and 7. If it starts at 6, it has already started by 7. If it starts at 7, it couldn't have already started by 6.

Similarly here, there's only one time that the general assembly can begin. If it begins at 6, it can't begin at 7. If it begins at 7, it can't have started at 6.

23. E

The professor presents several pieces of Conditional Logic. First, to accurately judge the greatness of literary works, one needs specialized training.

If judge greatness → specialized training

That training is also necessary for being a literary professor.
If literary professor → specialized training

The final claim is that most readers don't have that necessary training.
If part of the vast majority of the reading public → ~ specialized training

The third statement can be combined with the contrapositive of the first: Because most readers don't have the necessary training, they cannot accurately judge the greatness of literary works. Likewise, the third statement can be combined with the contrapositive of the second: that same lack of necessary training means that most readers cannot be literary professors. The correct answer is likely to draw at least one, if not both, of these Conditional Logic–based conclusions.

(E) is correct. Accurate judgment requires specialized training. Because most readers don't have that training, it can be deduced (via contrapositive) that they can't accurately judge.

(A) is not necessarily true. By the second claim, because John's professor is a literary professor, she must have the necessary specialized training. However, by the first claim, having that training is still only necessary for judging works of literature accurately. It is not sufficient, and is thus not a guarantee that she's able to do so.

(B) is not necessarily true. The specialized training is necessary for being a literary professor, but it could be necessary for other jobs, too. So, even if one is not a literary professor, one could still receive that training and thus have what's necessary to accurately judge works of literature.

(C) is Out of Scope. The last claim only states that most readers don't have access to the training, but there is no suggestion that those people should have access to it.

(D) is not necessarily true. It is only said that the majority of the reading public does not have access to the training.

However, there could still be plenty of readers who do have access to that training, and that very well could include literature professors.

Stimulus Breakdown:

READ FOR: Conditional / Causal language (secondarily for Quantitative / Comparative language)

Conditionals:

"ability to judge greatness --> years of training"

"becoming a lit professor --> years of training".

("only" = right side, and the Req'd thing is always the Right side)

Fact: Most readers don't have these years of training.

Answer Anticipation:

When we get multiple conditionals, we ask ourselves, "Do they chain together?" When we get any conditional, we ask ourselves "Is there any thing we're told about that triggers this rule (or its contrapositive)?"

These two conditionals don't chain together, because they have the same right side. But we could create a compound conditional and say that "If you don't have specialized training, then you can't judge greatness AND can't be a lit professor".

Do we have any facts that would trigger this rule? Yes, the final sentence says "most people who can read don't have this specialized training". So what does the rule allow us to infer?

"most people who can read Can't Judge Greatness AND Can't Be Lit Professor".

Correct Answer: E

Answer Choice Analysis:

(A) No, the LP doesn't need to believe she can judge greatness. Because she's an LP, we know she's had years of training. But having the training doesn't guarantee you can judge greatness .. It's just necessary to judge greatness.

(B) No, this reads "if you're not an LP, you can't judge greatness". We don't have any conditional logic like that. We have "If you're an LP, you've had training" and "If you can judge greatness, you've had training". You can't chain those together to get what (B) is saying. More conversationally, it's compatible with the LP's beliefs that people besides lit professors also might have years of training. We know it's rare, but it doesn't need to be exclusie to lit professors.

(C) As soon as we see "should", we should leave this answer behind. Nothing in the text had normative language.

(D) What a crazy thing to say. No, the lit professor can still consider herself to be part of the reading public. She's part of the minority of the reading public that has access to specialized training.

(E) YES, as we predicted. We know that "most readers CAN'T JUDGE GREATNESS and CAN'T BE LIT PROFESSORS". This provides us with one of the facts we inferred.

Takeaway/Pattern: Most Inference questions reward our ability to combine ideas using Conditional or Causal language. When you read for

Conditional language and see "only after" and "what is required", you know they're testing conditional logic. See if anything chains together. See if there are any facts provided that might trigger one or more of the rules.

It's necessary for LP's to get this training, but it's not sufficient. LP's may need something in addition to the training (the triple special training in Oxford, an innate competency w/ literature, etc.) to be able to judge works accurately. The majority of the reading public, however, does not have access to the specialized training and thus is missing a necessary condition for being able to judge works accurately (E).
The conditional statements in this stimulus establish a few things for us:

If the professor is to be believed, then accurately judging the greatness of literary works requires years of specialized training: accurately judge ⟶ training

The professor has that training: prof ⟶ training

The vast majority of the reading public does not have that training: public ⟶ NO training

So we need to be careful about what inferences we attempt to draw! Namely, we can say with certainty that the vast majority of the reading public will not be able to accurately judge the greatness of works of literature, since they lack the required element for doing so: specialized training. And that's precisely what (E) tells us! It's simply a combination of the last sentence and the contrapositive of the first.

Diagrammed you'd have the following:

public ⟶ NO training ⟶ NOT accurately judge

(A), on the other hand, is a Mistaken Reversal trap, where just because the professor has the necessary condition satisfied (she has the specialized training) doesn't guarantee that we can go in reverse against the arrow in the first sentence and say that training tells us she can judge accurately! Put another way: meeting the term at the end of an arrow doesn't allow you to go backwards and arrive conclusively at the first, sufficient term.

Diagrammed it would look like this, where the arrows don't flow in a single direction:

accurately judge ⟶ training ⟵ professor

Note how we can't get from one end piece to the other without running into the pointy end of an arrow...that means we're stuck! So (A) is trying to get you to commit that classic error, and is therefore incorrect.

The stimulus said that the "vast majority" of the reading public does not have access to that kind of training. That's not the same as saying that NONE of the reading public have access to that level of training! It leaves room for a small minority to have the training, and that would include those

literature professors that have it. Literature professors can, in fact, be part of the reading public - they are just in the minority who are able to judge the greatness of literature because of their specialized training!

Answer choice (A) is a statement that simply could be true, but not one that must be true. But answer choice (A) is also a Mistaken Reversal--a classic answer choice trap that it's important to recognize because it's a trick the test often uses to try to lure test takers into choosing an incorrect answer. Be sure to check out Jon's response (quoted below) which describes in detail why the conditional reasoning relationship in answer choice (A) does not follow from the conditional reasoning rules we have in the stimulus.

24. C

The first statement is pure Conditional Logic. If someone is a highly successful entrepreneur, then that person's main desire is to leave a mark on the world. The inventor then differentiates highly successful entrepreneurs from everyone else. Highly successful entrepreneurs always implement solutions when they see them, and they are the only people to do so. Everyone else is too interested in other things (i.e., leisure time or job security) to implement every solution they see.

There are two claims about highly successful entrepreneurs, so it helps to see how they can be combined. These people are the only ones who implement every solution they see. And their main desire is to leave a mark on the world. So, if there's someone who implements every solution they see, that person could **only** be a highly successful entrepreneur and thus must be focused primarily on leaving a mark on the world:

If implement all solutions → highly successful entrepreneur → main desire to leave mark

As for everyone else, they may not implement every solution they see. However, that doesn't mean they do nothing. And as for their main desire, it may also be to leave a mark on the world, but it could be something else, too. Remember that the correct answer must be true and should not just be merely possible.

(C) is correct. Highly successful people are the only ones who implement every solution they see and, for all of them, their main desire is to leave a mark on the world.

(A) is a Distortion. First, it's never actually claimed that most people are not highly successful entrepreneurs. However, even if that reasonable assumption is made, it's not that those people don't want to leave a mark on the world at all. It just isn't necessarily their main desire.

(B) is not supported. People who invariably implement their solutions are highly successful entrepreneurs, and there's no indication how much, if any, interest they have in leisure time or job security.

(D) is a Distortion. Highly successful entrepreneurs do implement every solution they see, so implementation is surely not impacted by any interest in leisure time or job security. However, that doesn't mean interest in leisure time or job security doesn't impact the ability to see those solutions in the first place.

(E) is another Distortion. The main desire of highly successful entrepreneurs is to leave a mark on the world, not to implement their solutions to problems. So, anyone whose main desire is to implement solutions is not a highly successful entrepreneur. And there's no suggestion that all such people would actually leave a mark on the world.

Stimulus Breakdown:

highly successful entrepreneur → main desire to leave mark on the world

highly successful entrepreneur ↔ (see solution → implement solution)

~ highly successful entrepreneur → too interested in leisure or job security to always implement solution

Correct answer: (C)

Answer choice analysis:

(A) Unsupported: The stimulus tells us about characteristics of highly successful entrepreneurs, and tells us about people who are not highly successful entrepreneurs, but never mentions what percentage of all people fit into each of those categories. Based on the information in the stimulus, we can't infer that most people do not want to leave a mark on the world, or why people don't. We know why some people don't implement solutions to problems, but not why people do not want to leave a mark on the world.

(B) Unsupported: We know that people who invariably implement solutions are highly successful entrepreneurs. But we don't know if all of those entrepreneurs, or any of them, have an interest in leisure time or job security.

(C) Correct. This is a connection that we predicted above.

(D) Unsupported: We know that a highly successful entrepreneur's interests in leisure and job security don't prevent her from implementing solutions, but we have no idea if they affect her ability to *see* solutions.

(E) Out of Scope: We don't know anything about people whose main desire is to implement solutions. We know about people whose main desire is to leave a mark on the world.

"unique" in many contexts would only tell us for sure that "others = lack it".

It wouldn't tell us for sure that "members = have it".

If we say **"Crow's Disease is unique to the Trash Can Islands",**

then we know that

Anything that ISN'T in the Trash Can Islands is free from Crow's Disease.

but we don't know that

Everything IN Trash Can Islands HAS Crow's Disease.

The reason this is a biconditional is because the trait we identify as unique to successful E's is that "WHENEVER they see a solution, they implement it". And the sentence itself begins as a categorical statement about 'successful E's'.

If we said, "Post Traumatic #Blessed Syndrome is unique to highly successful entrepreneurs", it would mean 'only found within their ranks', not 'found throughout all of their ranks'.

But if we say "highly successful E's are unique in that they have six toes on each foot", then we are implying that the trait applies to all highly successful E's.

If we saw someone implementing a solution they see, we wouldn't be able to tell if they were highly successful entrepreneurs because we wouldn't know if they necessarily implement a solution WHENEVER they see a solution? It could have just been that one time, or 50% of the time? Because of the "not always" in the 3rd sentence, seeing someone implement a solution they see wouldn't be enough to trigger the biconditional, correct? we would need to know that someone implements a solution whenever they see one in order for it to be triggered.
A trigger like in (B) guarantees that we're talking about a highly successful E, since it says "people who *invariably* implement their solutions".

But if we had a trigger that was just saying

"Anyone who implements their solution", it wouldn't guarantee that we're talking about highly successful E's.

The speaker tells us that highly successful entrepreneurs are **unique** in one regard. This also means that whenever you find someone who, when they see a solution to a problem, they implement that idea, they are a highly successful entrepreneur. HSEs are the **only** people who do this.

This creates a biconditional statement, which I diagrammed as follows: HSE $\longleftrightarrow$ "see solution, implement it"

Conditional 1: HSE $\longrightarrow$ DLM

Conditional 2: HSE_{SP} $\longleftrightarrow$ II

Combined: II $\longleftrightarrow$ HSE $\longrightarrow$ DLM, or II $\longrightarrow$ DLM

So the "See Problem" bit would be moved to a subset/subscript of the Highly Successful Entrepreneur group, and more importantly, the last two

sentences combined to create a biconditional statement, as only the HSEs are always motivated to implement their idea. This gets us to the correct answer, (C), before we've even looked at the choices.

All we can tell from the stimulus about those who are interested in leisure time or job security is what we get from the last sentence, and the last sentence tells us that "All other people" have that interest (too much interest!) in leisure time or job security.

When that sentence says "all other people," it's contrasting them with the highly successful entrepreneurs from the previous sentence, i.e. they are not the highly successful entrepreneurs who implement solutions whenever they see them. Since the "all other people" do not implement solutions whenever they see them, we have no basis for saying whether those who **do** invariably implement solutions (the highly successful entrepreneurs from the second sentence) have any interest in leisure time or job security. So we simply don't have the information we need to make the assertion answer choice B makes, and it therefore doesn't have to be true.

Note the biconditional by the use of the term unique. The HSE's are unique in this way. That means, if someone sees a solution, and implements it every time, that person has to be an HSE. By saying that something is unique to a group of people, that means if you see the unique thing, it's required to apply to that group of people.

Let's look at some more familiar examples.

The Earth is unique the solar system for having just one moon.

Just one moon $\longrightarrow$ Earth.

Tom Brady is unique among quarterbacks for having seven Superbowl rings.

7 rings $\longrightarrow$ Brady

Another way to think about it is by thinking of the meaning of the word "unique." If you are unique, you are the only one. Only is one of our necessary indicators. Unique represents the same idea here as only.

Ultimately though, conditional diagramming comes down to practice, practice, practice. The more you do it, the easier it becomes. Practicing hard questions, like this one, builds your conditional reasoning skills.

The entire phrase "whenever they see a solution, they implement the idea" is one of the conditions of the biconditional. The other is "highly successful entrepreneur". Because it's a biconditional, it doesn't matter what order those two things go in. I could say:

highly successful entrepreneur $\longleftrightarrow$ implements solution as soon as they see it

From the first sentence:

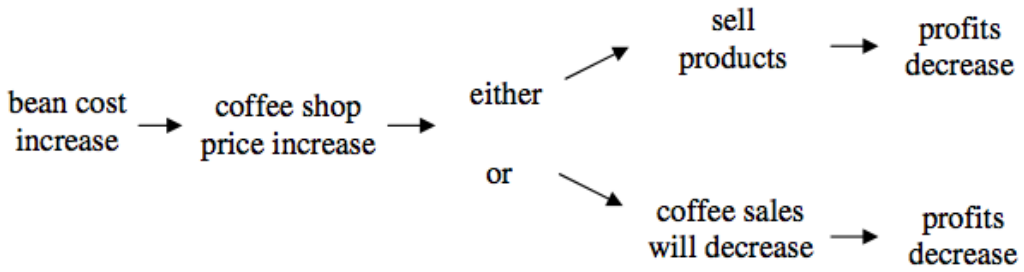
highly successful entrepreneur ⟶ mark on world

Biconditionals are reversible, so the combination of these leads to:

implements solution as soon as they see it ⟷ highly successful entrepreneur ⟶ mark on world

That's just what answer choice (C) says.

25. C



Price of beans ↑ → Prices ↑ → Sell non-coffee products → Profitability ↓

OR

Coffee sales decrease → Profitability ↓

The first three sentences are pretty straightforward, if you break them down one at a time:

If the cost of coffee beans continues to increase, the Coffee Shoppe will have to raise prices. (If CB up →P up)

If the Coffee Shoppe has to raise prices, either it will add non-coffee products or coffee sales will decline. (If P up → NC or CS down)

If it adds non-coffee products, profitability will decrease. (If NC → Pr down)

The Coffee Shoppe can avoid a decrease in profitability only if coffee sales do not decrease.

That means: profitability will not decrease only if coffee sales do not decrease. Translate “only if” into “then,” and we get, “if profitability does not decrease, then no coffee sales will not decrease.” (If Pr not down → CS not down)
The contrapositive of this last statement (If CS down → Pr down): if coffee sales decrease, then profitability will decrease too.

Combine all these statements: if the price of coffee beans keeps going up, it will have to either add non-coffee products or increase the price of coffee, and either way, its overall profitability will drop.

That’s **(C)**. Let’s test this against the choices:

(A) is a classic reversal. We know that if coffee bean prices continue to increase, profitability will decline, but the reverse is not necessarily true. Eliminate.

(B) Likewise, we know that certain events will trigger a decline in profitability, but nothing here precludes other causes.

(D) is all right except that it says “decrease” where it should say “increase.” This is a trap for the careless reader.

(E) Coffee sales increasing isn’t referenced at all in the stimulus, nor is it the necessary result of anything we’re given.

The argument is based on a conditional chain with two necessary conditions. The claims to be connected are:

1. If the price of beans rises, the prices at the shop will go up
2. If prices go up, the either a. they must sell noncoffee products, or b. coffee sales will go down
3. If either of those things happens, profitability will decrease

Stringing these all together in a conditional chain (as Nikki has done in a post below in this thread) should give us everything we need to select the correct answer, just by following the chain or else its contrapositive.

Answer choice (A): This is a Mistaken Reversal of the conditional chain, saying that if the last Necessary Condition occurs, the Sufficient Condition must occur. That's backwards, and thus incorrect.

Answer choice (B): Another Mistaken Reversal here, saying that the last thing in the chain occurring proves that at least one of the Sufficient Conditions must occur. Backwards again, so also incorrect.

Answer choice (C): This is the correct answer choice. This follows the logic in the chain, saying that if the first Sufficient Condition in the chain occurs, the last Necessary Condition must also occur. Because it follows the chain in the correct direction, without improperly negating any terms along the way, it must be true.

Answer choice (D): Decreasing the price of coffee beans is not a part of our conditional chain, and in any event this answer looks somewhat opposite from what the stimulus said. It's *increasing* the price of beans that will get us to decreased profits.

Answer choice (E): Neither of the conditions in this answer needs to happen - it could be that the price of beans remains the same or decreases and that coffee sales also decrease at the same time. The stimulus proves nothing about the price of beans going down, but only about what must happen if that price goes up.

The premises, when connected in a conditional chain, produce the following diagram:

Note that we used the contrapositive of the last sentence when creating the chain.

So, what's the bottom line? If the bean prices continue to increase, profitability will go down regardless of whether they decrease coffee sales or start selling noncoffee products. Both options lead to the same result. This conditional construction is matched in answer choice (C).

Answer choice (A) contains a Mistaken Reversal of that construction. The profitability decrease is a necessary, not a sufficient condition, for the bean prices going up. A decrease in profitability could have resulted from many other factors, having nothing to do with the price of beans.

"Without" is a conditional indicator that works in the same way as "unless," "until," and "except." Diagramming statements with these terms is a two step process that we call The Unless Equation:

1.) Whatever term is modified by "unless," "until," "except," and "without" is the necessary condition.
2.) The remaining term gets negated before it becomes the sufficient condition.

So, let's apply it to answer choice (D): "The price it pays for coffee beans cannot decrease without the Coffee Shoppe’s overall profitability also decreasing."

Step 1: "Without" modifies "the Coffee Shoppe’s overall profitability also decreasing." So that is our necessary condition.
Step 2: The remaining term is "the price it pays for coffee beans cannot decrease." To negate this, take out the "cannot" so it becomes: "the price it pays for coffee beans decreases."

Thus, the diagram looks like this:

Price the Coffee Shoppe pays for coffee beans decreases $\longrightarrow$ Coffee Shoppe's overall profitability decreasing

So, if the price the Coffee Shoppe pays for coffee beans decreases, then the Coffee Shoppe's overall profitability must also be decreasing.

Stimulus Breakdown:

If the price of beans goes up -> CS prices go up.

If CS prices go up -> they'll start selling noncoffee or less coffee.

Selling noncoffee stuff would lower profits.

And selling less coffee would decrease profits.

Answer Anticipation:

Putting that together, it sounds like CS is gonna have lower profits if the price of beans goes up. More specifically, if price of beans goes up -> CS increases prices -> starts selling noncoffee stuff (which decreases profits) or sells less coffee (which decreases profits).

Answer Choice Analysis:

(A) Illegal reversal. We know "if beans' price goes up -> profit goes down", but this reads backwards.

(B) Illegal reversal. We know "if sell noncoffee stuff or coffee sales go down -> profit decreases".
(C) Correct! "price of beans keeps going up -> profit goes down".

(D) This says "price of beans goes down -> profit goes down".

In other words, we could infer X -> Y, and this answer is saying "~X -> Y".

(E) We're not limited to these two options. It's possible that the price of coffee stays where it is and CS's coffee sales also stay where they are.

CR Marathon Solutions

Sectional Test 1 Solutions

Solutions

1. C

The author begins with a piece of Conditional Logic: A government practice that could lead to abuse of power should not be performed unless there's a compelling reason to do so. The author provides an example of keeping secrets, which can be justified. However, when the reasons are not compelling or when even the existence of the secret is not revealed, that can lead to an abuse of power.

It helps to translate the opening Conditional Logic and its contrapositive.

If undertake practice that could lead to abuse → compelling reason

If ~ compelling reason → ~ undertake practice that could lead to abuse

The author claims that keeping secrets can be justified, in which case there must be a compelling reason for doing so. However, the author then says secrets are often kept for insubstantial reasons, in which cases it is not justified to keep those secrets. The author also says that concealing the existence of a secret could also lead to abuse of power. Again, by the logic, there would need to be a compelling reason for concealing that fact. Otherwise, there's no justification.

(C) is supported. By the statements, concealing a secret could lead to abuse of power, and the logic dictates such action should not be undertaken unless there's a compelling reason.

(A) is Extreme. If the act is not justified, it's probably because there's no compelling reason to do it. However, there's no indication that this happens in most cases. At worst, the author says that insubstantial reasoning happens "too often," but that doesn't necessarily mean most of the time.

(B) is a Distortion. If there's a compelling reason to keep a secret, that just means the keeping of that secret may be justified. That doesn't mean it won't facilitate abuse of power.

(D) is Extreme. If they don't have a compelling reason to conceal information, then they should not conceal that information . . . if it would lead to abuse of power. However, there's no certainty that all such information absolutely will lead to an abuse of power.

(E) is a Distortion. The requirement for keeping a secret is that there's a compelling reason to do so. Even if keeping a secret does make it easier to abuse power, a compelling reason can override that concern.

Stimulus Breakdown:

We're reading to combine ideas, using CONDITIONAL, CAUSAL, QUANTITATIVE, or COMPARATIVE ideas.

CONDITIONAL: If a govt practice facilitates the abuse of power and there's no compelling reason to do it, it shouldn't be done.

Keeping secrets qualifies, and too often it's done for insubstantial reasons.

CONDITIONAL: When govt officials conceal that they're keeping a secret, this facilitates more abuse.

There are many conditional/causal claims here. It sounds like when the govt keeps a secret, it enables abuses of power. And when they conceal that secret, it enables abuses of power. And according to the first sentence, those practices should not be undertaken.

(A) "Most" cases? We can't quantity that it's more than 50%.

(B) This is making a fake negation out of the rule in the first sentence.

(C) Yes, this seems fair. If there's no compelling reason, then practices that enable abuse of power shouldn't be done. "Concealing a secret" enables abuse of power. Thus, it shouldn't be done.

(D) "Guilty" sounds very new, and the facts were describing "facilitating" the abuse of power / "opening up the opportunity". So, there's nothing about the govt. officials themselves being the ones committing the abuse.

(E) This says "if keeping govt secrets WOULD make it easier to abuse power, then govt officials shouldn't keep secrets." This is too definitive and sweeping, because the first sentence allows for possible exceptions where you might have a compelling reason to do something that might facilitate the abuse of power.

If conceal a secret -> enables abuse --> shouldn't be undertaken unless there's a compelling reason

"Too often" ≠ most

We can say, "Innocent people are too often sentenced to death".

"Too often, I forget to send my dad something for Father's Day".

Does that mean that "Most people sentenced to death are innocent"? Of course not.

Does it mean that "on most Father's Day's, I've forgotten to send something?" Nope.

"Too often" is a subjective term. It has no precise quantifiable floor, other than "at least a few times".

There's another problem with (A) as well.

We only discuss cases in which the government officials conceal from the public the information that "they are keeping a secret".

"Sometimes" = at least once. There is no ceiling for this term. It could be higher than 50% of the time. It could be 100% of the time.

These are true statements:

"Sometimes, human babies are born on Earth."

"Sometimes, horses can gallop."

So unfortunately (A)'s lack of support is wrapped up in a technical understanding of both of these quantity terms.

We could say, "Sometimes lawyers are honest, upright people, but too often they are immoral predators." In the end, you can't quantitatively specify whether more/less than 50% of lawyers are immoral predators.

"Concealing information" ≠ "keeping secrets", in the sense that there seems to be daylight between stuff that might be concealed to protect privacy, but still available to authorities / Freedom of Information requests.

The common sense understanding of "keeping secrets" has to do with things like "We plan to invade Norway at midnight .... We have alien spaceships in a lab underground in New Mexico", not stuff like "we are concealing information about who died in this plane crash until we've had a chance to privately tell the family members of the dead people".

- P1: Undertake government practice that might facilitate abuse of power ⟶ Compelling reason to do so
- P2: Keeping of government secrets (example of) government practice that might facilitate abuse of power
- P3: Conceal fact that keeping a government secret (example of) government practice that might facilitate abuse of power

Answer choice (A): We do not have sufficient evidence to infer whether government officials are not justified in concealing information in *most* cases, only that they do so "too often."

Answer choice (B): We do not know that an abuse of power will not occur in the event that the government has a compelling reason to keep a secret. Such an abuse might occur even though there is a compelling reason to keep this secret. The compelling reason is a necessary precondition for keeping a secret, but an abuse of power may occur anyways.

Answer choice (C): This is the credited response. If a government official is justifiably keeping a secret, this official is engaging in a practice that from P2 and P3 is an example of a practice that might facilitate the abuse of power. We know from P1 that if a government engages in a practice that might facilitate the abuse of power, it must have a compelling reason to do so. Therefore, we have sufficient evidence to justify the statement in this answer choice.

Answer choice (D): Concealing information without a compelling reason to do so is a violation of the principles articulated in the stimulus, but we do not have evidence that such concealing of information is itself an abuse of power.

Answer choice (E): We have no information in the stimulus to address the concept of relative ease or difficulty with which an official could commit an abuse of power. This concept is outside the scope of the problem.

Take a look at the last sentence of the stimulus. There are two risks at play here--first, keeping a secret; second, not telling the public that you have a secret.

With that in mind, look at choice C, which focuses on the second risk. Even if you are justified in keeping the secret, there should be a compelling reason for concealing the existence of the secret.

The correct answer choice must be true; it does not necessarily have to narrow which government officials (or, more accurately, when government officials) are justified in keeping secrets. This question is specifically asking you to make an inference: arrive at a conclusion that you know to be true

based on the stimulus, but that is not explicitly stated in the stimulus.

The stimulus author certainly believes that a government official can be justified in keeping secrets (sentence three). But the author does not say that a government official can only be justified in keeping secrets when doing so does not facilitate the abuse of power (sentence one and two combine to suggest that, generally, the practice of keeping secrets might facilitate abuse of power).

It cannot be inferred from that stimulus the only justification for keeping secrets is where doing so does not facilitate the abuse of power. In fact, based on those sentences paraphrased above, it is likely that the author accepts that a government official can be justified in keeping a secret that facilitates the abuse of power (for example, where other considerations like national security outweigh the risk of abuse).

We really only have one conditional statement, the one given in the first sentence (the contrapositive of this is used as well). It diagrams out to:

May Facilitate Governmental Abuse of Power (MFGAP) ⟶ Compelling Reason (CR)

Contrapositive:

~~CR~~ ⟶ ~~MFGAP~~

The only other important bit of information here is that keeping secrets is a thing that falls under the rubric of MFGAP, everything else is too uncertain to conditionalize ("sometimes," "may") so we can infer:

$MFGAP_{KS}$ ⟶ CR_{KS}

~~CR_{KS}~~ ⟶ ~~$MFGAP_{KS}$~~

And that's it. The rest is just fluff designed to confuse, especially the bit about keeping secrets about keeping secrets; in that case, both instances of keeping secrets, both the original secret and the knowledge that the government knows the original secret, must be justified by a compelling reason. So, we looking for an answer choice that shows the secret is justified in being kept only with compelling reason, which is what (C) says.

"Any government practice that might facilitate the abuse of power should not be undertaken," i.e.,

Might Facilitate Abuse ⟶ ~Undertake.

The "Unless" formula (which also applies to "except" statements) would require us to negate that entire conditional and make it the sufficient condition for the except portion of the statement.

~(Might Facilitate Abuse ⟶ ~Undertake) ⟶ Compelling Reason.

The sufficient condition resulting from that diagram is a bit of a beast to understand, but what it's essentially saying is "If it's not the sort of situation where the practice might facilitate abuse and you should not undertake it," in other words "If it's a situation where you SHOULD undertake the practice even though it might facilitate abuse."

2. D

The heart of the argument is as follows: If the press were *not* a profit-making institution, it would be subsidized and subject to outside control—there'd be no other alternative. Furthermore, it's easy to get subsidies for propaganda, but it's *impossible* to get subsidies for honest journalism. We can infer from this last statement that if the press produces honest journalism, it isn't subsidized. Combine that with the statement that the only possible alternatives are a subsidized press and a profit-making press. What's the conclusion? If the press produces honest journalism (and therefore is not subsidized), then it *must* be profit-making—and that's choice (D).

To check such an answer, consider its contrapositive. "If it's not gonna make a profit (i.e., if it's subsidized), then it's not gonna be honest." Just what the author says! *An inference, remember, is a statement that is virtually certainly to be true based on the stimulus. And in a large number of cases on the GMAT, the correct answer will be the contrapositive of something the stimulus author stated.*

(A) can't be inferred; the argument says that if the press is not profit-making, then it will be subsidized and subject to outside control. This does *not* mean that if the press isn't subsidized it will of necessity be *free* of outside control—a profit-making, outside-controlled press is still a possibility.

(B) makes a similar mistake—even if it's true that the press that doesn't produce propaganda doesn't get subsidies, that doesn't imply that the press that doesn't get subsidies doesn't produce propaganda.

(C) is completely confused—the argument says that if the press isn't subsidized it *must be* a profit-making institution. Finally, we showed that, as (D) says, the passage implies that if the press produces honest journalism, then it must be profit-making

(E) commits the error of turning this around and concluding that if the press is profit-making, it must be honest. We most definitely can't conclude that!

The stimulus contains several conditional relationships that can be diagrammed as follows:

PM = profit making

Sub = subsidy

OC = outside control

HJ = honest journalism

Third and fourth sentences: ~~PM~~ → Sub → OC

Last sentence: HJ → ~~Sub~~

The third and fourth sentences indicate that if the press doesn't make a profit, then it must be subsidized, and if the press is subsidized then outside control occurs.

The last sentence indicates that subsidies and honest journalism do not occur together, and thus honest journalism will not be subsidized.

Answer choice (A): This answer is a Mistaken Negation of the second half of the first diagram above and is thus incorrect.

Answer choice (B): This answer is a Mistaken Reversal of the second diagram above and is therefore incorrect.

Answer choice (C): This answer states that if a press is not subsidized then it cannot be a profit-making institution. According to the information in the first diagram above, if a press is not profit-making, then is must be subsidized. Via the contrapositive it follows that if a press is not subsidized it must be a profit-making institution. Since the contrapositive contradicts the information in answer choice, answer choice (C) is incorrect.

Answer choice (D): This is the correct answer. This answer links the statements in both diagrams above. According to the second diagram above, if a press produces honest journalism, it cannot be subsidized. This can be diagrammed as:

HJ → ~~Sub~~

According to the contrapositive of the first half of the first diagram above, if a press is not subsidized, it must be a profit-making institution. This can be diagrammed as follows:

~~Sub~~→ PM

By combining the two statements we reach the following diagram:

HJ → ~~Sub~~ → PM

It follows that a press that produces honest journalism must be a profit-making institution and thus answer choice (D) is correct.

Answer choice (E): This answer is a Mistaken Reversal of answer choice (D) and is therefore incorrect.

The stimulus provides that "the only alternative is **subsidy, and with it, outside control**." In other words, **if** you choose the subsidy alternative, **then** you are also choosing outside control.

The stimulus contains several conditional relationships, which need to be diagrammed. The third and fourth sentences indicate that if the press doesn't make profit, then it must be subsidized, which requires outside control:

(1) NOT profit making ⟶ Subsidy ⟶ Outside control

The last sentence suggests that subsidy and honest journalism are incompatible with each other:

(2) Subsidy ⟶ NOT honest Journalism

The two diagrams can be linked together. According to the contrapositive of the second diagram, if the press produces honest journalism, it cannot be subsidized:

honest journalism ⟶ NOT subsidy

Using the contrapositive of first diagram, we can further conclude that without subsidy, the press needs to be a profit-making institution:

NOT subsidy ⟶ profit making

From this chain relationship, we can conclude that honest journalism requires the press to be a profit-making institution:

honest journalism ⟶ NOT subsidy ⟶ profit making

This prephrase agrees with answer choice (D), which is the correct answer choice.

Subsidy and support aren't exactly the same thing; however, subsidy is a *type* of financial support. The author poses a rhetorical question ("who would support it?), and then proceeds to answer it by claiming that "the only alternative is subsidy." Thus, we can conclude that "subsidy" is a necessary condition for a non-profit institution to survive (recall that the word "only" is a necessary condition indicator).

Also, just because it is easy to get subsidy for propaganda does not mean that subsidy requires propaganda. The conditional relationship between subsidies and propaganda is left unclear.

If the press survives --> profit making or subsidized.

PS--> PM/S

If subsidized --> not honest journalism.

S --> ~HJ

The contrapositive on this latter statement:

If HJ -->~S.

So if the press survives, and it is not subsidized, it follows that it must be profit making.

Or If HJ --> PM

This corresponds to answer choice D.

Indeed, "the only" is always immediately followed by a sufficient condition (unlike "only if," which introduces a necessary condition). For instance:

The only way to eat Oreos is to forget what's in them.

Eat Oreos ⟶ Forget

(Contrapositive: Remember ⟶ Don't eat Oreos)

The only people who never fail are those who never try.

Never fail ⟶ Never try

(Contrapositive: Sometime try ⟶ Sometime fail)

So, the statement "The only alternative is subsidy" means that if there is any alternative (to making money), it will require subsidy:

Alternative ⟶ Subsidy

Now, let's think about this stimulus holistically. In the first two sentences, the author tells us that the press needs to make money to survive:

Survive ⟶ Make money (i.e., profit-making)

In the third and fourth sentences, we learn that there is an alternative to making money: if the press were not profit-making, it would require subsidy. When the author says that "the only alternative is subsidy," you need to think about what this means in the context of the previous sentence: the only alternative to what? To making money, of course. In other words, if the press were NOT profit-making, it would need subsidy to survive:

NO profit-making ⟶ Subsidy

The author goes on to say that no one would subsidize honest journalism, meaning that if the press were to receive subsidies, it will not produce honest journalism:

NO profit-making ⟶ Subsidy ⟶ NO honest journalism

The contrapositive of this chain likely validates the correct answer choice:

Honest journalism ⟶ NO subsidy ⟶ Profit-making

The stimulus contains conditional relationships, and so the conclusion can be formally deduced from them. The relevant relationships can be diagrammed as follows:

The press has to make money to survive.

Survive ⟶ Make money

If the press were not profit-making, the only alternative is subsidy and, with it, outside control.

NOT make money ⟶ Subsidy

No one will subsidize honest journalism

Honest journalism ⟶ NO subsidy

Using the contrapositive of the second relationship, we can combine the last two into the following conditional chain:

Honest journalism ⟶ NO subsidy ⟶ Make money

This prephrase agrees with answer choice (D).

Survival ⟶ Making Money

Well, this is true in a particular case, to wit for Profit Making Institutions.

By definition, a Profit-Making Institution Makes Money:

PMI ⟶ MM

Now let's go to your other observation: "The only alternative is subsidy." First, we know that in the absence of Making Money, we necessarily have Subsidy.

~~MM~~ ⟶ Subsidy

Who is receiving these subsidies? Not Profit-Making Institutions. In other words:

~~PMI~~ ⟶ Subsidy

Now you have to connect these thoughts a couple steps further. With subsidy, outside control:

~~PMI~~ ⟶ Subsidy ⟶ Outside Control

What do we know **for sure** about Outside Control? It implies no Honest Journalism:

~~PMI~~ ⟶ Subsidy ⟶ Outside Control ⟶ ~~Honest Journalism~~

Profit Making Institutions Must Make Money. If you're not Making Money, you're getting Subsidies and Outside Control. This makes it impossible to do Honest Journalism.

**

press survives ⟶ money/profit

In other words, the press has to make money to survive.

"If the press were not profit-making, who would support it? The only alternative is subsidy..." suggests the first diagram should instead be:

press survives ⟶ money/profit OR subsidy/OC

This reflects that the press *either* has to make a profit to survive, or else it can only survive with subsidy/outside control. The last sentence could be diagrammed:

subsidy ⟵some⟶ propaganda

subsidy ⟷ honest journalism

It's that last piece that gets you to the right answer. If you put the above diagrams together, you know that if the press survives, it's because it made money, or else because it relied on subsidy. But the last diagram tells us that honest journalism never gets subsidies. So, if the press is to produce honest journalism (and implicitly survive in doing so), then only way it can do so it by making money/profit.

The first two sentences set up the following conditional chain:

To survive, the press must make a profit, which requires pandering to public sentiment, or:
Survive ⟶ MP ⟶ PPS

Then we have a second conditional string set up by the last three sentences:

The press doesn't make a profit, so it requires subsidies, which means it must make propaganda, which requires that it not engage in honest journalism, or:
~~MP~~ ⟶ Sub. ⟶ Prop. ⟶ ~~HJ~~

and the contrapositive:

HJ ⟶ ~~Prop.~~ ⟶ ~~Sub.~~ ⟶ MP

Showing that honest journalism ultimately requires making a profit, according to the stimulus. The contrapositive of the conditional chain is often the inference that the test makers are looking for in the correct answer to a Must Be True question involving conditional reasoning, so prephrasing HJ ⟶ MP would be the recommended thing to look out for amongst the answer choices. Sure enough, (D) ends up being a restatement of that inference.

First, the fact that the press is a profit-making institution is not a sufficient condition. There is no relationship in the stimulus that is equal to "if the press is profit-making, then it makes money to survive", which is what your first diagram represents. Instead, "it has to make money to survive" is equivalent to "if it is to survive, then it must make money", or:

Survive ⟶ Money

If the press is NOT profit-making, then it must be subsidized and subject to outside control.

~~Profit~~ ⟶ Subsidy & Outside Control

Finally, the phrase "no one will subsidize honest journalism" has a tricky structure. We see claims like this that start with "no" or "none" frequently, and those terms actually negate the necessary condition. If no one will subsidize honest journalism, then if it is honest, it will not be subsidized, and if it is subsidized it will not be honest. You have your negation on the wrong side in your diagram. It should be:

Honest ⟶ ~~Subsidy~~

Subsidy ⟶ ~~Honest~~

Putting this last bit together with the one prior, we can build a chain, like so:

~~Profit~~ ⟶ Subsidy ⟶ ~~Honest~~

or

Honest ⟶ ~~Subsidy~~ ⟶ Profit

The conditional indicator phrase in the last sentence is "no one." We treat that (along with "no," "none," and "no one who") as a sufficient condition indicator, although it's tricky because then you have to negate the remaining (the necessary) condition when you diagram it.

So, in the sentence "No one will subsidize honest journalism," the phrase "No one" modifies "subsidize." Thus, we diagram subsidy as the sufficient condition. Before diagramming honest journalism as the necessary condition, we must negate it. Thus, the diagram becomes: Subsidy ⟶ NOT Honest Journalism. The contrapositive that other posts in this thread have noted would then be: Honest Journalism ⟶ NOT Subsidized.

1) not profit making -->subsidy--> outside control

2) honest journalism --> no subsidy

Contrapositive=> subsidy-->not honest journalism

To combine 1) and 2):

Not profit making-->subsidy--> not honest

Not profit making-->not honest

Contra-positive=>honest journalism-->profit making

The last sentence says that "no one will subsidize honest journalism."

The word "no" is sometimes used as a conditional trigger. For example:

No slow cars are fun to drive.

Slow Car --> ~Fun to Drive

In this case you could do the same and set up:

Subsidy --> ~Honest Journalism

And by contrapositive:

Honest Journalism --> ~Subsidy

The stimulus states: "If press were not profit-making, who would support it? The only alternative is subsidy..." This statement, when condensed, really just translates into: "If the press were **not profit-making**, the only alternative is **subsidy**", which diagrams into:

~PM --> S

Then this fourth sentence goes on to give details about happens if subsidy occurs (**outside control** is guaranteed) and this diagrams into:

S --> OC

Combining those two conditional statements gives:

~PM --> S --> OC

3. C

"A democracy will function well only if the electorate is moral and intelligent." Or remember that *"only if" signals a necessary condition, so it is the "then" clause in a simple if/then statement,* so it must also be true that "If a democracy is functioning well, then the electorate is moral and intelligent." And note that inclusive "and"—it's not an "or." *Think through the contrapositive properly.* It must be true that if the voters are neither moral nor intelligent, then the democracy won't be functioning well. *Reverse and negate both terms, remember.* So **(C)** has it right.

(A), on the other hand, claims that if the electorate is moral and intelligent, a democracy will function well. But the intelligence and morality of the electorate are necessary conditions, not sufficient ones. It could be true that, although the electorate is moral and intelligent, insane dictators keep trying to take over, and thus a given democracy is having trouble functioning well. All kinds of other factors could come in, so (A) is out.

(B) is wrong for much the same reason. There could be reasons other than the lack of morality or intelligence on the part of the electorate that could preclude a democracy from functioning well.

(D) and (E) reflect the same problem as (A) and (B). All of these choices confuse necessary conditions with sufficient conditions. *You can turn conditional logic inference questions into "gimmes" as soon as you truly understand the implications of the stimulus.*

This stimulus presents a simple conditional statement. We know that "only if" introduces the necessary variable, so we can diagram this statement as follows:

DFW ⟶ Moral + Intelligent

When we note such a clear example of conditional reasoning, we should draw the contrapositive as well. That is, if there is no morality, or no intelligence, amongst the electorate, the democracy will not function well:

- ~~Moral~~ or ~~Intelligent~~ ⟶ ~~DFW~~

This is a Must Be True question, so the correct answer choice must be supported by what we have read in the stimulus.

Answer choice (A): This is a Mistaken Reversal of the statement in the stimulus. The original statement claims that if democracy is to function well, there must be a moral and intelligent electorate.

Answer choice (B): It is not known what must be true if a democracy does not function well, only what must be true if a democracy does function well. Also, there is no indication that one situation or the other must happen, but instead that if democracy functions well there must be a moral and intelligent electorate.

Answer choice (C): This is the correct answer choice. If it is not true that the electorate is both moral and intelligent, then the democracy cannot function well. This is the Contrapositive of the original statement and is thus the correct answer.

Answer choice (D): Again, nothing is known about what must be true if the democracy does not function well, only what must be true if it is to function well. This is a Mistaken Negation of the original statement because it negates the sufficient and necessary conditions without reversing them.

Answer choice (E): This is the same Mistaken Reversal error as in answer (A). The answer choice could be restated as: if the electorate is moral and intelligent, then it must be true that a democracy will function well. In this form it is more obvious that the sufficient and necessary conditions have been mislabeled.

The term "only if" is a necessary condition indicator. The conditional statement, re-ordered, would read:

A democracy will function well *only if* the electorate is moral and intelligent.

This would be diagrammed as:

Function well ⟶ moral electorate and intelligent electorate

On the contrapositive side, if either morals or intelligence is lacking in the electorate, that guarantees that a democracy will not function well:

NOT moral or NOT intelligent ⟶ NOT function well

By itself, the "either/or" construction is potentially inclusive of both. Thus, if we have, "I will eat either an apple or a banana," the correct diagram would be:

NOT A ⟶ B

NOT B ⟶ A

You *can* eat both; you just can't eat neither. In other words, you must eat *at least* one fruit: an apple or a banana, but may eat both as well.

On the other hand, if the statement claims that "I will eat either an apple or a banana, but not both," then the diagram has two elements to it:

"<u>either/or</u>":

NOT A ⟶ B

NOT B ⟶ A

"...<u>but not both</u>":

A ⟶ NOT B

B ⟶ NOT A

When combined, the diagram for "either A or B, but not both" would look like this:

A ↔ NOT B

B ↔ NOT A

(B) gives us an either/or statement about what must be true. The stimulus, though, doesn't state whether either is true but instead only gives a conditional statement.

~function well OR ~moral and/or ~intelligent

Answer E is saying that it can never be the case that the Necessary condition occurs and the Sufficient does not occur, but of course that isn't true, because the Necessary condition is ALWAYS free to occur, even when the Sufficient does not. "At the same time" just means "both situations occur."

"Only" indicates a necessary condition, so your conditional diagram would be:

democracy functions well --> electorate is moral & electorate is intelligent

The valid contrapositive is represented by the credited response, (C):

~electorate is moral / ~electorate is intelligent --> ~democracy functions well

(A) is a mistaken reversal.

Are these two statements the same?

Only if you have skis can you go skiing.

If you have skis, you can go skiing.

They're not the same. The first sentence describes a requirement of skiing.

We could rephrase the first sentence as its contrapositive:

If you don't have skis, you can't go skiing.

But that's not the same as saying "if you have skis, you can go skiing." You need more than skis to go skiing. Snow is helpful.

This question is just testing our knowledge of conditional logic.

We can represent "If X, then Y" as

X --> Y

The ONLY thing we can otherwise infer from that rule is the contrapositive, in which we negate both ideas and flip their order.

~Y --> ~X (you read '~Y' as 'not Y')

One extra layer of complexity is that if you have an AND or an OR on either side of the arrow, you switch it when you write the contrapositive.

Have Driver's License --> Passed Written AND Passed Driving Test

contrapositive:

~Pass Written OR ~Pass Driving --> ~Have Driver's License

Similarly,

Dem. Functions Well --> Moral AND Intelligent

contrapositive:

~Moral OR ~Intelligent --> ~Dem. Functions Well

== other answers ==

(A) an illegal reversal of the original statement (going from X--> Y to Y --> X)

(B) no reason to be that pessimistic. It could be true that a democracy DOES function well and the electorate IS moral and intelligent.

(C) correct contrapositive

(D) illegal negation (going from X --> Y to ~X --> ~Y)

(E) this is also assuming the illegal reversal of the original (it assumes that if Y is true, then X must be true)

4. E

Each of the conditional statements defines a condition necessary for a result (phrases like "unless" and "only if" signal the necessity). But just because a necessary condition has been met doesn't mean that the result must occur. In the first sentence, cease fire violations will occur *unless* negotiations begin soon. And negotiations *do* begin soon—the stem says so. But it's still possible that the cease-fire violations will occur, because a quick start to negotiations is only *necessary* for avoiding violations, not necessarily sufficient for doing so. Therefore, when asked for a statement that need not be true, we have to choose **(E)**—it's *possible* that violations don't occur, but it's just as possible that they do. And as for all the additional conditions and clauses in the stimulus?

(A) No negotiations can occur until the international troops have demonstrated that they can control aggression; if negotiations do begin, the international troops must have fulfilled this condition.

(B) is essentially the same inference as (A); as the last sentence says, when the international troops show they can counter aggression, they thereby suppress a major incentive for the sides to resume fighting.

(C) follows from the second sentence; negotiates can begin *only if* other countries have exerted pressure on the two sides.

(D) follows from the second part of the second sentence; an agreement will emerge *only if* other countries pressure the two sides throughout the negotiations.
This stimulus consists of rules that can be diagramed as conditional statements.

UNLESS negotiations begin soon, the cease fire will be violated:

- ~~Violated~~ → Negotiations begin soon,
- ~~Negotiations begin soon~~ → Cease fire Will be violated.

Negotiations will be held ONLY IF other countries apply pressure:

- Negotiations → Pressure
- ~~Pressure~~ → ~~Negotiations.~~

An agreement will emerge ONLY IF pressure continues:

- Agreement → Pressure continues

- ~~continued pressure~~ → a~~greement.~~

No negotiation held UNTIL troops demonstrate ability to enforce cease-fire:

- Negotiations→ Troops demonstrate
- ~~demonstration~~ → ~~negotiations~~.

The question stem instructs us to pay attention to the case in which negotiations have begun. In that case, we know that there has been pressure, and that troops have demonstrated some ability to counter aggression.

Answer choice (A): This is definitely inferred, so this choice is wrong.

Answer choice (B): This is inferred, because the stimulus states that when the troops demonstrate ability to counter aggression, they suppress a major incentive for the two sides to resume hostilities, and we have already inferred that the troops have demonstrated that ability. This choice is incorrect.

Answer choice (C): This is definitely inferred, so this choice is wrong.

Answer choice (D): This is inferred, because it is a restatement of one of the conditions in the stimulus. Since the stimulus tells us that for negotiations to be successful, international pressure must continue, we know that international action IS NECESSSARY for resolution, or that resolution DEPENDS on international action. This choice is wrong.

Answer choice (E): This is the correct answer choice. Since this is a Mistaken Reversal of the first statement, this choice might not be true, which is a good answer to a Must Be True EXCEPT question.

The statement "agreement ⟶ continued pressure" cannot be easily linked to the other statements, which all deal with negotiations. Here are the diagrams:

pressure from other countries

Cease fire ⟶ Negotiations ⟶ and

show of force to suppress incentive to fight

Agreement ⟶ Continued pressure

If the answer is yes, then this answer would be wrong. But the answer is not yes, and the reason is that that making that inference would be a Mistaken

Reversal. Here's how that works:

The diagram to the first sentence is:

~~Violated~~ → Negotiations begin soon

The question stem then adds in the info that "Negotiations begin soon." This creates the following combination of premises:

Premise: ~~Violated~~ → Negotiations begin soon

Premise: Negotiations begin soon

Do those two premises result in the conclusion that ~~Violated~~? No, they do not. Consider the following example:

Premise: To get 800 on the GMAT, you must study (800 ⟶ Study)

Premise: Martin studied for the GMAT

Do the two premises above result in the conclusion that Martin will get 800? No, he *might* get 800 but it is not for sure. The reason we call it a Mistaken Reversal is that the relationship looks like this:

- Premise: 800 ⟶ Study

  Premise: Study ⟶ 800(conclusion)

That's the same reversal arrangement with answer choice (E), and thus E cannot be concluded for sure. Since E is not necessarily the case, it is the correct answer.

Answer choice E is a Mistaken Reversal of that claim, because negotiations beginning is not sufficient to prove that nobody has violated the cease fire, but rather is necessary in that case. While it may be true that nobody has violated the cease fire, it could also be true that someone has violated it and negotiations began anyway!

As to answer choice B, if negotiations will begin soon, per the question stem, then we know that troops have demonstrated their abilities (per the last sentence of the stimulus), and we know further that a major incentive has been suppressed (also per that last sentence). Since we can follow the conditional chain from "negotiations begun" all the way to "major incentive has been suppressed", answer B is something that must be true, and is therefore an incorrect answer in this EXCEPT question.

The first statement in the stimulus can be diagrammed as ~NBS --> CFV. The contrapositive would be ~CFV --> NBS.

In the question stem, the four incorrect answer choices will be statements that can be inferred as true from the fact that negotiations have begun. For the purposes of addressing answer choice (E) let's just focus on the above conditional statement. The state of affairs where negotiations have begun (NBS) is on the necessary side in our contrapositive statement. When we're simply told that we have a necessary condition (as we're told in the question stem), there's really nothing we can infer, which is why (E) is the correct answer here.

First statement is (~CFV --> NBS),

The contrapositive would be ~NBS --> CFV.

Here's the formal logic solution to this question...

1. ~CV --> NB
2. NB --> CP
3. AE --> CP
4. NB --> TCA
5. TCA --> SIF

Here are the translations.

~CV = ceasefire is not violated
NB = negotiations begin
CP = countries pressure
AE = agreement emerge
TCA = troops counter aggression
SIF = suppress major incentive to fight

From the question stem, we learn that negotiations do begin. Then the question says each of the following must be true EXCEPT.

(E) is tricky but is the reversal of the 1st conditional above. Remember reversals and negatives are not logically inferable, so while it could be true, it doesn't have to be. Only the contrapositive is inferable from a conditional.

(A) must be true from the 4th conditional above

(B) must be true from combining the 4 and 5th conditionals above

(C) must be true from the 2nd conditional

(D) must be true from the 3rd conditional above

Based on the third statement from above, *an agreement will emerge only if countries continues such pressure*. This is a rule, that is always applicable. At any time before or after an agreement has been reached, reaching that agreement does depend on the actions of other countries - they must continue to pressure the two sides to reach an agreement.

The question stem wants to know what must be true at the time negotiations begin. We're not being asked to connect the term "negotiations" across the conditional relationships within the stimulus, but rather infer from one of the statements given that information in the question stem will trigger the application of the conditional rule.

If negotiations are held, international troops enforcing the cease-fire have demonstrated their ability to counter any aggression from either side.

What it really says is that "Unless negotiations begin soon, the cease-fire will be violated." If you put that it in "if/then" form, it would read, "If the cease fire has not been violated, then negotiations did begin soon." Given that we know that the negotiations did begin soon, we cannot say whether or not the cease-fire has been violated. We cannot reverse the logic of the conditional statement and infer anything from the fact that negotiations did begin soon.
Think of it this way...

If I live in New York City, then I live in New York State. But given that I live in New York State, does that then imply that I live in New York City? Not necessarily. That could be false.

5. E

Paraphrase the stimulus piece by piece. The term “miniature,” although used by many nurseries to label fruit trees, is not used in the same way by all nurseries. Take, for example, the Stark Sweet Melody nectarine tree. Some nurseries label it exclusively as miniature, while others do not. What is certain, though, is the conditional logic relationship in the final statement:

If a fruit tree variety is not suitable for growing in a tub or a pot → not correctly labelled “miniature.”

The contrapositive of the conditional logic here reads as follows:

If correctly labelled “miniature” → suitable for growing in a tub or pot.

Choice **(E)** provides a correct translation of the conditional logic statement (recall that “unless” translates as “if not.”) So, if the Stark Sweet Melody tree is not suitable for growing in a tub or a pot, then some nurseries mislabel it as miniature. From the example in the stimulus, you already know that some nurseries label these trees as miniature. Thus, choice **(E)** must be true.

(A) is too broad. There’s no way to know what “most” nurseries do, given the stimulus speaks only to “many nurseries.” Further, only the Stark Sweet Melody variety of nectarine trees is addressed here, not fruit trees in general.

(B) reverses the relationship with its use of “*un*suitable.” That directly contradicts the assertion in the stimulus that the labelling is correct only if the trees are *suitable* for growing in a tub or pot.

(C) is too extreme. Miniature trees are only mislabeled if they are not suitable for growing in a tub or a pot. It is unknown that *every* Stark Sweet Melody tree is unsuitable in this way.

(D) is possible but not necessarily true. It could be true that at least one nectarine tree is indeed miniature but is not labelled as such. However, that is not a known fact based on this stimulus.

The stimulus establishes that *some* nurseries label Stark Sweet Melody nectarine trees as "miniature" while others do not. In addition, if a variety of fruit tree is not suitable for growing in a tub or a pot, it cannot be correctly labeled "miniature." The contrapositive of this statement shows that if a tree is correctly labeled "miniature," then it must be suitable for growing in a tub or a pot:

- Correctly labeled "miniature" $\longrightarrow$ Suitable for growing in a tub or pot

The stimulus does not provide any information as to whether Stark Sweet Melody nectarine trees are suitable for growing in a tub or pot. Therefore, there is not enough information in the stimulus to determine whether any of these Stark Sweet Melody trees are correctly labeled "miniature."

Answer Choice (A): This statement is unknown based on the facts. We only know that some nurseries label Stark Sweet Melody nectarine trees as "miniature." However, since we do not know whether Stark Sweet Melody trees can be grown in a tub or pot, we have no idea whether these trees are correctly labeled. Therefore, we do not know whether *most* nurseries *mislabel* some of their fruit trees.

Answer Choice (B): This answer choice is an Opposite Answer. The only way a nursery can correctly label a tree "miniature" is if it *is* suitable for growing in a tub or pot. This answer choice states the only way some nurseries label their trees "miniature" is if the trees are *unsuitable* for growing in a tub or a pot.

Answer Choice (C): This answer choice is similar to answer choice (A) in that there is not enough information in the stimulus to determine whether Stark Sweet Melody trees are correctly labeled "miniature." Without additional information about whether Stark Sweet Melody trees can be grown in tubs or pots, this answer choice is unknown.

Answer Choice (D): The stimulus provides no information about the nectarine trees that are *not labeled* "miniature." The conditional rule in the last sentence of the stimulus provides a standard for when it is correct to actually *label* a tree "miniature." This test provides no information about when it is correct *not* to label a tree "miniature."

Answer Choice (E): This is the correct answer choice. Using the Unless Equation, this answer choice can be translated as, "if all nurseries correctly label Stark Sweet Melody trees, then the trees must be suitable for growing in tubs or pots." Note that the logical opposite of "some nurseries mislabel" is "all nurseries correctly label." Since some nurseries do label their Stark Sweet Melody trees "miniature", for this labeling to be correct it is necessary that the Stark Sweet Melody variety be suitable for growing in tubs or pots.

The stimulus contains a set of four facts. The first three sentences are not conditional statements, because they are no absolute. Instead, they reference only part of a group, and are examples of formal logic. The final statement, which provides an absolute relationship, is conditional.

In this case, the conditional relationship in the last sentence is "if a variety of fruit tree is not suitable for growing in a tub or a pot, no tree of that variety can be correctly labeled "miniature."' This relationship could be diagrammed as:

~~suitable for growing tub/pot~~ ⟶ ~~correctly labeled miniature~~

Answer choice (E), the correct answer, presents the contrapositive of this relationship, and does so using an "unless" statement and referring specifically to the Start Sweet Melody variety: "unless the Stark Sweet Melody variety of nectarine tree is suitable for growing in a tub or a pot, some nurseries mislabel this variety of tree." This statement could be diagrammed as:

correctly labeled miniature$_{swm}$ ⟶ suitable for growing tub/pot$_{swm}$

Answer choice (E) is not drawing an inference from the connection of the third stimulus sentence to the fourth, but rather is applying the conditional rule contained entirely within the fourth sentence, doing so in the case of a tree that was mentioned in the third sentence.

Answer choice (A) is incorrect because it involves an error of formal logic and a reliance on facts not in the stimulus. In the stimulus, we were told that "many" nurseries do one thing, and that "some" nurseries do another. However, we weren't told what percentage or numbers of nurseries do either, so "most" is not supported. Nor is it inherently contained in "some" or "many", nor is it a properly inferred reversal of either term. For you to select answer choice (A), you would need more detailed information regarding the numbers of nurseries who identify their trees in these ways.

Answer choice (B) presents a conditional relationship that could be diagrammed as:

at least one correctly labeled$_{swm}$ ⟶ ~~suitable for growing tub/pot$_{swm}$~~

In other words, this answer choice says that in order for at least one nursery to have correctly labeled this type of tree, then the variety must not be a miniature. This answer choice implies that all nurseries have labeled the tree as not being miniature, which is inconsistent with the passage.

Answer choice (C) says that any variety of tree labeled miniature is labeled incorrectly, implying there are no trees of that variety that are miniature. The facts in the stimulus do not provide us enough information to determine whether or not there are, in fact, any trees of this variety that are miniature. So, this choice requires information not provided by the stimulus and thus fails the Fact Test.

Answer choice (D) is required information about a broader category of tree than discussed in the stimulus (i.e., nectarine trees generally), and so is incorrect.

Here's what we know:

1. Some nurseries label SSM as "mini." Others do not.

2. Correct label of "Mini" ⟶ Suitable for growing in a tub/pot.

Obviously, not all nurseries can be correct in their labeling practices, unless there are subspecies of the SSM, some of which can be grown in a tub and others that cannot. We have no evidence that such a possibility exists, so clearly some of the nurseries mislabeled the SSM. This does not mean, however, that some nurseries have correctly labeled SSM. Even if the variety is suitable for growing in a tub or a pot, that doesn't automatically mean that the "mini" label is correctly applied to that variety! To conclude otherwise would be to make a Mistaken Reversal of the last sentence.

Answer choice (B) implies that if a nursery correctly labeled the SSM (presumably, as "non-mini"), then the variety is NOT suitable for growing in a tub/pot. If a variety is not suitable for growing in a tub/pot, then that variety is clearly "non-mini." However, that does not mean that if a variety is "non-mini," then it is unsuitable for growing in a tub/pot - this would be a Mistaken Reversal of our inference.

6. E

Nursing schools can't attract more able applicants unless two problems are solved (low wages and bad conditions). It stands to reason then that if these two problems are NOT solved, as posited in **correct choice (E)**, then the schools will NOT attract a greater number of able applicants. Add that to what follows: If the applicant pool doesn't increase (and we just saw that in choice (E) it doesn't), then either one of two things will happen: lower admissions standards or a shortage of nurses. Finally, we're told that if either one of *these* things happens (as must be the case according to (E)), then the current high quality of health care cannot be maintained. It takes a few steps, but (E) is inferable from the stimulus.

(A) and (C) both confuse the necessary condition in the first sentence for a sufficient one. (A) interprets "the number of applicants will not increase unless the problems are solved" to mean "if the problems are solved the number of able applicants *will* increase," while (C) takes it one step further to guarantee the maintenance of high-quality health care.

(B) and (D) both fail on the grounds that a non-increase in applicants can mean *either* a lowering of standards *or* a shortage of nurses. For (B), no increase doesn't necessarily mean lower standards; it could mean shortage. In (D), failing to solve the problems will prevent an increase, but this need not lead to shortage—it could lead to lower standards only.

The first sentence of the stimulus uses the term "unless" and can be diagrammed as follows:

- AGN = attract greater number of applicants PS = problem solved

  Statement: AGN $\longrightarrow$ PS

  Contrapositive: ~~PS~~ $\longrightarrow$ ~~AGN~~

Remember, the clause modified by "unless" becomes the necessary condition and then the remainder of the statement is negated to form the sufficient condition.

The second sentence requires some manipulation on the part of the test taker. The first part of the sentence, which states that "if the pool of able applicants to nursing school does not increase beyond the current level," can be equated with the phrase "cannot attract a greater number of able applicants than they currently do" in the first sentence:

AGN = attract greater number of applicants PNI = pool of applicants not increase

~~AGN~~ = PNI

Using the contrapositive of the first sentence results in:

~~PS~~ $\longrightarrow$ ~~AGN~~ = PNI

Adding this diagram to the remainder of the second sentence we arrive at the following diagram:

- AGN = attract greater number of applicants PNI = pool of applicants not increase

  LS = lower entrance standards S = shortage of nurses

  ~~PS~~ $\longrightarrow$ ~~AGN~~ = PNI $\longrightarrow$ LS or S

The final sentence makes it clear that with either a lowering of standards (LS) or a shortage of nurses (S), the high quality of health care cannot be maintained (HQM):

- ~~PS~~ ⟶ ~~AGN~~ = PNI ⟶ LS or S ⟶ ~~HQM~~

Thus, if problems are not solved (~~PS~~), then the high quality of health care cannot be maintained (~~HQM~~), and it follows that **answer choice (E) is correct**. Please note that answer choice (E) utilizes the classic GMAT trick of introducing the sufficient condition in the middle of the answer choice via the use of the word "if." Many students expect to encounter conditional statements in the "usual" order (sufficient condition first, necessary condition second) and fall prey to mis-diagramming answer choices such as (E). For the record, there is no proper or standard order for introducing conditions. Necessary conditions can be introduced first or sufficient conditions can be introduced first, and you can expect to encounter both presentations on the GMAT.
Additionally, because of the complexity of linking the various statements together, in this problem you should expect that the correct answer will link the first and last terms together.

Answer choice (A): This is a Mistaken Negation of the first part of the chain.

Answer choice (B): If the pool does not increase, then there will be lower standards OR a shortage. Since this answer overlooks the shortage, it is incorrect.

Answer choice (C): This is a Mistaken Negation of the chain.

Answer choice (D): If they fail to solve problems, then there will be lower standards OR a shortage. Since this answer overlooks the lower standards, it is incorrect.

Answer choice (E): This is the correct answer choice, for the reasons explained above.

The first sentence provides the following:

increase applicants --> solve problems (of low pay, high stress)

And the contrapositive:

NOT solve these problems --> NOT increase applicants

And the second sentence provides the following:

NOT increase applicants --> lower std or fewer nurses

These statements link up as follows:

NOT solve these problems --> NOT increase applicants --> lower std or fewer nurses

And the final sentence provides that either of those last two outcomes (lower standards or fewer nurses) will mean that the current quality cannot be maintained:

NOT solve --> NOT increase --> lower standard --> NOT maintain quality
or
fewer nurses --> NOT maintain quality

This leads us to correct answer choice E, which provides that if the problems are not solved, the current standard will not be maintained.

Neither (B) nor (D) need to be true, because you are presented with two options: if the applicant pool doesn't increase, you need to EITHER lower the entrance standards, OR experience a shortage of nurses. Either of these options will lead to a decreased quality of healthcare, but neither is a must.

Nursing schools can't get more applicants unless the solve wage and stress problems:

More applicants ⟶ solve wage and stress problems

Contrapositive:

NOT solve problems ⟶ NOT more applicants

If they don't get more applicants, that means either lower standards or a shortage:

NOT more applicants ⟶ lower standards
or
shortage

Linking this with the contrapositive above, we get the following:

NOT solve problems ⟶ NOT more applicants ⟶ lower standards
or
shortage

Answer choice B:

NOT more applicants ⟶ lower standards

We cannot confirm that schools will lower their standards because of the "or" in the stimulus diagram--there might be a shortage of nurses instead.

Answer choice D:

NOT solve problems ⟶ shortage

We cannot confirm that this would lead to a shortage, for basically the same reason--the "or." The schools might lower their standards instead of having to deal with a shortage.

The first sentence gives a conditional rule using the word "unless," which can be diagrammed as:

Sufficient	⟶	Necessary
increase # applicants	⟶	low wage/high stress problem solved

The next sentence tells us what happens if the applicant pool does *not* increase:

		lower entrance standards
~~increase # applicants~~	⟶	or
		acute shortage of nurses

And, we are told, lowering the standards will not necessarily avert a shortage of nurses.

Finally, we are told that with either of the necessary conditions from the second sentence, "the current high quality of health care cannot be maintained."

Here, the correct answer choice is (E). It says that *if* the problem of low wages and high stress (the necessary condition from the first sentence) are not solved, then the current high quality of health care cannot be maintained (i.e., the necessary condition from the last sentence). So, (E) is testing us on the contrapositive chain connecting the first sentence to the last sentence across the negated common term of "low wage/high stress problem solved."

Answer choice (B) is incorrect because it improperly states definitively that the profession will have to lower its entrance standards. This was only one of two possible necessary conditions. It was that the standards would have to be lowered *or* there would be an acute shortage of nurses. We cannot say with certainty which necessary condition will occur.

As with answer choice (B), answer choice (D) is incorrect because the "acute shortage of nurses" was only one of the two possible necessary conditions. It may be the case that the entrance standards are lowered. So, this is a could be true, rather than a must be true, answer choice.

The stimulus tells us that nursing schools can't attract more applicants unless the problems of low wages and high stress are solved. That's conditional (note the "cannot") so we can represent it like this:

More applicants ⟶ Solve problems

The contrapositive then is:

NOT solve problems ⟶ NOT more applicants

Keep in mind of course that the "original" and the "contrapositive" are two versions of the same thing, so if you started with what I've shown above as the contrapositive that's totally okay!

Next, we're told that if schools don't get more applicants, they'll have to either lower entrance standards or face a shortage of nurses. Again, the strong language indicates conditionality:

NOT more applicants ⟶ Lower standards or Shortage

Because there's a shared term in this new statement and the original contrapositive—NOT more applicants—we can link them:

NOT solve problems ⟶ NOT more applicants ⟶ lower standards or shortage

Last, we're told that if either lower standards or a nurse shortage occurs then the high quality of health care cannot be maintained. Another piece to the chain above:

NOT solve problems ⟶ NOT more applicants ⟶ lower standards or ⟶ NOT high-quality healthcare

shortage

So far so good, hopefully. Now we need to prove an answer choice.

Answer choice (C): This is a classic Mistaken Negation. It says: Solve problems ⟶ High quality healthcare. That's the exact opposite of what we have above: NOT solve problems NOT high-quality healthcare. Remember, when your sufficient condition is gone (in this case when we don't see "NOT solve problems," or one of the other sufficient) you know NOTHING. Saying simply "solve problems" means you can't go anywhere.

Answer choice (E): Pay attention to the “if” in this statement. Whatever “if” modifies starts the chain, so (E) gives us this: [If] NOT solve problems ⟶ NOT high-quality healthcare. That’s exactly what we have above when we follow the arrows from the first term all the way to the last term.

So, let's look at what we have here:

More applicants ⟶ Solve problems

NOT more applicants ⟶ Lower standards or Shortage

On first glance, we can't link those two conditionals because 1) the term in common " more applicants" is positive in the first conditional but negative in the second, and 2) it's in the sufficient in both, so we couldn't link them even if they were the same.

Both of these issues can be solved though by taking the contrapositive. And so, our first statement becomes

NOT solve problems ⟶ NOT more applicants

That links easily to our second statement, and we can easily make a chain.

NOT solve problems ⟶ NOT more applicants ⟶ lower standards or shortage

"Nursing schools cannot attract a greater number of able applicants than they currently do unless the problems of low wages and high-stress working conditions in the nursing profession are solved."

Since the sentence contains the word "unless," this should be a reminder to follow the formula for such phrasing--whatever is modified by the word unless becomes the necessary condition (placed on the right of the arrow), and the remainder is negated and placed as the sufficient condition (to the left of the arrow). Thus, this sentence would be diagrammed:

Nursing schools attract greater number of applicants ⟶ low wages solved AND high-stress working conditions solved

In other words, if nursing schools attract a greater number of able applicants, then this must be because both low wages and high-stress working conditions have been solved. The contrapositive of this would be:

~~low wages solved~~ OR ~~high-stress working conditions solved~~ ⟶ ~~Nursing schools attract greater number of applicants~~

In other words, if either low wages have not been solved, or high-stress working conditions have not been solved, then nursing schools will not attract a greater number of applicants than they currently do.

It's important to stay with the habit of separately diagramming such variables as these that can appropriately be separated. Doing so will help make sure that you catch things like changing the "and" to an "or" when diagramming the contrapositive.

7. D

The second sentence has the Conditional Logic key phrase “only when,” which is the same as “only if” and can be translated to:

If nahcolite forms → atmosphere contains at least 1,125 ppm carbon dioxide.

The first sentence indicates that during the Eocene epoch, nahcolite formed.

A classic and predictable Inference answer links the two sentences. Nahcolite formation is the common link here. The Eocene saw the formation of nahcolite, which requires at least 1,125 ppm carbon dioxide in the atmosphere. Thus, it can be inferred during some part of the Eocene, the atmosphere contained carbon dioxide concentrations of at least 1,125 ppm. While the correct Inference answer can come from anywhere in the stimulus and thus may be less predictable than argument-based questions, making a deduction by combining statements can be helpful. Scan the choices for that deduction.

(D) is an exact match to the prediction. Notice how vague the wording is: “at least 1,125 parts…during at least some part of the Eocene epoch.” Correct answers on Inference questions will often be tentative, so that they aren’t more extreme than the facts in the stimulus.

(A) is Outside the Scope. The stimulus discusses only 50 million to 52 million years ago. You are told nothing about what has occurred since the Eocene epoch.

(B) is an Extreme statement unsupported by the evidence. The stimulus provides the minimum carbon dioxide levels needed for nahcolite production, and you can deduce that they were present for at least some of the Eocene epoch. However, you have no way of knowing how much levels fluctuated, whether greatly or at all.

(C) goes well beyond the scope of the stimulus. The stimulus contains no information on what causes lakes to be salty. Nahcolite formed in salty lakes 50–52 million years ago, but it cannot be inferred whether that saltiness was at all related to the carbon dioxide level.

(E) has the same problem as **(A)**. The stimulus does not discuss post-Eocene events. Just because the stimulus happens to discuss significant nahcolite deposits during this time period, you cannot infer that they did not occur during other time periods as well.

In this stimulus the author discusses the fact that large deposits of nahcolite, a rare mineral, were formed in salty lakes during the "Eocene epoch," between 50 and 52 million years ago. In order for nahcolite to form in salty water, the atmosphere must have at least 1125 parts per million of carbon dioxide.

Answer choice (A): The author provides no basis for comparing the carbon dioxide levels in the atmosphere during the Eocene epoch with the levels since the Eocene epoch, so this choice cannot be confirmed by the information in the stimulus and it cannot be the right answer to this Must Be True question.

Answer choice (B): There is no mention of the degree of carbon dioxide fluctuation during the Eocene epoch, so this is not the right answer to this Must Be True question.

Answer choice (C): The lakes discussed were salty, and at some point, during that period the atmosphere must have had at least 1125 parts per million of carbon dioxide (we know this based on the fact that nahcolite formed there during that period). This single instance does necessarily speak to a correlation between the saltiness of the lakes and the carbon dioxide levels of the atmosphere. This choice cannot be confirmed by the information in the stimulus, so it should be ruled out of contention.

Answer choice (D): This is the correct answer choice. Since the nahcolite discussed in the stimulus was formed in salty lakes, and the author provides that such formation requires a minimum of 1125 parts per million of carbon dioxide, this choice is confirmed by the information in the stimulus and must be the right answer to this Must Be True question.

Answer choice (E): The author's discussion is limited to one instance of nahcolite formation, but that does not mean that no other such deposits have been found.

Stimulus Breakdown:

CONDITIONAL: If Nah forms, then the atmosphere has at least 1,125 ppm of CO2.

FACT: Nah formed in salty lakes 50-52 million years ago during Eocene epoch.

We derive "50-52 million years ago, during the Eocene epoch, at some point the atmosphere had at least 1,125 ppm of CO2.

(A) Too specific: "most" of the time since then?

(B) Too strong: levels "fluctuated greatly"?

(C) Unknown comparison: we can't compare the saltiness of lakes at different time periods.

(D) YES! That's what we inferred by applying the rule in the 2nd sentence to the fact in the 1st sentence.

(E) Extreme: "NO" significant deposits "AT ANY TIME".

8. E

"Fall more slowly" = "fall less rapidly."

If X (slower to adopt new tech than competitors), then Y (prod costs fall more slowly than competitors).

But if Y (prod costs fall less rapidly = prod costs fall more slowly), then Z (prices fall less rapidly).

Choice (E) can be derived from using the contrapositive on both of these statements: If NOT Z (prices fall AS or more rapidly as competitors), then NOT Y (prod costs fall AS or more rapidly). Continuing back to the first statement, if NOT Y (prod costs fall AS rapidly), then NOT X (not slower to adopt new tech = as fast as competitors to adopt new tech). Put it together, it adds up to (E).

(A) The concept of "raising prices" is never mentioned in the original stimulus and is *not* the opposite of "not lowering prices as rapidly." The latter will definitely result in a country being squeezed out of the global market. As for a consequence of the former (raising prices), we can't infer a thing.

(B) Adopting technology slower than competitors will lead to being squeezed from the global market, but the author never states that this is the *only* way a company can be squeezed from the global market. There may be other ways a competitor gets squeezed from the global market (e.g., political instability in a country) that don't involve technology. In other words, adopting technology slower than competitors is *sufficient* for being squeezed out of the global market, but we can't infer, as (B) does, that it's a *necessary* condition.

(C) Did you catch the scope shift in this one? The mere adoption of new manufacturing techniques is not the issue; it's whether a country's manufacturers' adoption of said techniques (or technology) is faster or slower than that of its foreign competitors. (C) fails to compare how quickly the different countries adopt technology, and is thus not inferable.

(D) As seen above in (B), it's possible for a group to be squeezed out of the market for a reason other than differences in the rate of technological adoption.

This stimulus consists of the following conditional rules:

Slower to Adopt Technology → Production costs fall more slowly

Production costs fall more slowly → Unable to lower prices as rapidly

Unable to lower prices as rapidly → Squeezed out of market.

You should infer that if a country's manufacturers are slower than are other countries to adopt new technology, that country will be squeezed out of the global market. The contra positive also follows: if a country is still in the global market, its companies have been adopting new technology as quickly as those of other nations.

Answer choice (A): This choice is unsupported, and incorrect. It is similar to a mistaken negation of the last statement. Furthermore, you should not assume from the stimulus that the only way to raise prices is to have squeezed foreign competitors out of the market, or even that an incapability or unwillingness to lower prices at all would lead to being squeezed out of the global market, since the stimulus was only about the relative capability to

lower prices. It is possible that none of the countries could lower prices.

Answer choice (B): This is a mistaken reversal, and is incorrect.

Answer choice (C): This is a mistaken reversal, and is incorrect.

Answer choice (D): This is a mistaken negation, and is incorrect. It is necessary, not sufficient, to adopt technology.

Answer choice (E): This is the correct answer choice. The first two statements can be linked together to show that if a company does not adopt technology as quickly, it will not be able to lower its prices as rapidly. The contra positive is that if a country can lower its prices as rapidly, it adopts technology as quickly as its competitors.

slower to adopt tech --> more slowly falling production costs --> CANNOT lower prices rapidly --> squeezed out of the market.

Then, we can take one big contrapositive, starting at the end, working backwards, and negating as we go:

NOT squeezed out --> CAN lower prices rapidly --> NOT more slowly falling costs --> NOT slower to adopt tech.

It is the diagram above that confirms answer E as the last answer choice.

Slower adopt tech --> prod costs fall slower --> unable lower prices as rapidly --> squeezed out of global market

Answer choice A isn't so much a mistaken negation as it is just a misstatement of the idea given in the stimulus. We know that if a country can't lower prices as rapidly as other countries, then that country will get squeezed out of the global market. A says that if prices go up (so a different idea than lowering prices more slowly) it is BECAUSE they have squeezed competitors out (different than being squeezed out themselves). Emphasis on "because" up there as well, since we're dealing with conditionality in the stimulus, and A is causal (hence, wrong).

D is closer to a mistaken negation: we know if slower to adopt tech eventually that country will be squeezed out. D says adopt tech at same rate (so not slower) then neither group will be squeezed out (not squeezed out). But that deals with different relationships than the ones we're given, so it is incorrect.

For instance, sticking with our speed/rate example, if I say "To win the race I must be the fastest" (Win --> Fastest), negating "fastest" means I won't win because that's the contrapositive, but I don't have to negate it by saying "slowest." That would certainly work, but all I know I need to negate it is "Not fastest," which might be "slowest," but it also might mean "equally fast as someone/everyone else."

A mistaken negation of that would be "I didn't win so I wasn't the fastest," and a mistaken reversal would be "I was the fastest so I won." Why are both

of those possibly not true? Well maybe I was the fastest but something else kept me from winning: I was disqualified because I ran outside of my lane, or I tripped ten feet from the end and didn't finish, etc.

The important factor in ruling out A is the word "because". So, though you could try to interpret this answer choice as mistaken negation (loosely), as Jon has noted, the crucial factor is that the answer choice is imposing a causal relationship that isn't supported by the passage. Beyond that, I would try to be careful about not over-thinking the substance of the answer choice. As long as you notice that the cause stated here is not supported by the premises, you have more than enough information to rule out the answer choice.

For the contrapositive of the chain in this stimulus, scroll up to Steve's explanation from a few years back - he has it all charted out. Also, read what Jon had to say here about using logical opposition to create those contrapositive statements - we don't have to say "faster" to negate "slower", we just have to say "not slower" (which allows for a tie - two countries could adopt new technologies at the same rate and thus neither would be slower than the other).

Answer B, as explained in the original post in this thread, is a Mistaken Reversal of a portion of our conditional chain. We know that if a country adopts new tech more slowly than a competitor (which is the same as saying the competitor country does so faster) then that country will be squeezed out of the market. That links the first sufficient condition in the chain to the last necessary condition. Answer B puts those two statements in reverse order without negating them - if squeezed out, then slower to adopt new tech (competitor did it faster). We can't make those sorts of backwards claims in conditional reasoning - we can only go in the original direction or else use the contrapositive where we both reverse the order AND negate the terms. If NOT squeezed out, then NOT slower to adopt new tech - that's a valid statement.

Answer C has the same problem - a necessary condition (prices lowered faster) is used to prove a sufficient condition (adopted new tech). Again, no going backwards without also negating!

Answer D is a Mistaken Negation. It tells us that when a sufficient condition (adopting new tech more slowly) does NOT happen (because they are moving at the same speed, neither is slower than the other), a necessary condition (squeezed out) also does NOT happen. We can't just negate the terms! To make a valid claim we would have to reverse AND negate. There could be other ways to squeeze out a competitor, so adopting tech at the same speed proves nothing.

Yes, "more slowly" and "less rapidly" are synonymous.

Slower to Adopt Technologies = SAT

Production Costs Fall Slower = PCFS

Slower to Reduce Prices = SRP

Out of Global Market = OGM

SAT ⟶ PCFC ⟶ SRP ⟶ OGM

Now to the answer choices you highlighted:

Answer Choice (A): There is no diagramming here. It completely leaves the world of conditionals and enters the twilight zone of causality. Notice the word "because." Also everything about prices in the stimulus is comparative. This answer choice makes an absolute statement about raising prices without respect to what anyone else is doing. There is absolutely nothing we can do with this answer.

Answer Choice (D): Here you have to translate the information in the answer choice into a format that is compatible with your initial diagram. "Manufacturers adopting technologies at same rate as foreign competitors" for our purposes is equivalent to NOT Slower to Adopt Technologies, or ~~SAT~~. Here we have negated a sufficient condition, but commit a Mistaken Negation™ Error (Denying the Antecedent/Fallacy of the Inverse). Diagrammed it looks like this:

- *~~SAT~~ ⟶ ~~OGM~~*

Answer Choice (E): This is the credited response. Here we're messing around with the contrapositive (my browser wants to autocorrect "contrapositive" into "contraceptive." Glad I caught that!) of our original conditional chain. "Manufacturers lowering prices as rapidly as foreign competitors" as above should be translated into NOT Slower to Reduce Prices, or ~~SRP~~. "Adopt new technologies at least as fast as competitors" should be translated as NOT Slower to Adopt Technologies, or ~~SAT~~. This answer choice makes the inference that:

- ~~SRP~~ ⟶ ~~SAT~~

This is a valid inference because if the SRP condition is false, then we have failed to meet a necessary condition for SAT. Put a different way, if manufacturers are NOT slower to reduce prices, then these manufacturers must NOT be slower to adopt technologies.

Here's what answer choice C is saying:

Production costs fall more slowly ⟶ Competitors Adopted New Tech
It's not exactly a mistaken negation, because saying that the competition adopted new tech is not the same as saying this country adopted tech more slowly. But it's a close cousin to a mistaken negation, assuming that costs falling more slowly tells us something about new technology, when in fact it tells us nothing about that.

More accurately, the problem with C is that it brings up something new, the idea of the competition adopting new tech without reference to the relative speed of that adoption. Speed matters!

Answer Choice A: Don't diagram. It's a cause/effect assertion about what is motivating manufacturers to do something (they raise prices BECAUSE OF squeezing out foreign competitors). There are no cause/effect assertions about why a manufacturer does something in the stimulus, so this answer is wrong.

Answer Choice B: Squeezed out of market ⟶ Slower to adopt new technology

Answer Choice C: Production costs fall more slowly than competitors ⟶ Competitor adopted new technology

Answer Choice D: ~~Slower to adopt new technology ⟶ Squeezed out of market~~

Answer Choice E: ~~Unable to lower prices as rapidly ⟶ Slower to adopt new technology~~

Here's a basic map of the statements given:

If a country's M (manufacturers) are slower to adopt new tech -- > Then it's production costs will fall more slowly.

If production costs fall more slowly -- > then it will not be able to lower prices as rapidly.

If it cannot lower prices as rapidly -- > will get squeezed out of the global market.

Notice that all the conditional statements fit nicely into a chain (this is NOT usually the case) and so they can all be connected to one another --

(paraphrasing a bit)

slower to adopt tech -- > slower to lower production costs -- > slower to lower prices -- > will get squeezed out of global market.

The only answer that is provable is (E).

The reason is because we know that...

If they adopt tech more slowly, it is *guaranteed* that they will lower prices more slowly.

Therefore, if they didn't lower prices more slowly, they must not have adopted tech more slowly.

So, the contrapositive would be:

not squeezed out of global market --> *not* slower to lower prices --> *not* slower to lower production costs --> *not* slower to adopt tech

Answer choice (E) says that if a country's manufacturer is **not slower to lower their prices,** then they are **not slower to adopt technology.** Remember, the original statement and the contrapositive are both valid, and you always go left to right to form "if/then" statements using the chain.

9. E

The first two sentences tell us two things about people under the age of 18: They can't be profs and they can't vote. The next sentence gives us three new facts about "brilliant" people. Some are profs, some can vote, and some are under 18. Great. From this, a few deductions may have jumped out at you, but you were probably better off tackling the choices:

(A) We know that no profs are *under* 18, but some might be exactly 18.

(B) We know that some brilliant people fall into those categories, but there might also be brilliant, nonacademic, non-voting senior citizens out there.

(C) and **(D)** are true in real life, but aren't inferable based on the stimulus. For all we know, all legal voters are profs **(C)**. Similarly, it could be that all profs are either legal voters, brilliant, or both.

(E) Since some under 18's are brilliant, and under 18's can't vote and can't be profs, we can deduce that some brilliant people (the under 18's) are neither legal voters nor profs. So **(E) must be true and is therefore correct.**

Rule: Professor $\longrightarrow$ NOT under 18

Contrapositive: Under 18 $\longrightarrow$ NOT professor

Further, the author provides that if you are under 18, you cannot vote legally:

Rule: Under 18 ⟶ NOT vote legally

Contrapositive: Vote legally ⟶ NOT under 18

The author of the stimulus then closes with three separate "some" rules, which can be linked in each case to the rules from above:

some brilliant people are professors: BP ⟻some⟼ Profs ⟶ NOT under 18

some brilliant people are legal voters: BP ⟻some⟼ vote legally ⟶ NOT under 18

some brilliant people are under 18: BP ⟻some⟼ under 18 ⟶ NOT vote legally

(Recall that those under 18 can't be professors): BP ⟻some⟼ under 18 ⟶ NOT professor

As we can see from the linked rules above, there are some brilliant people (those under 18) who are neither professors nor legal voters.

With "no X are Y" statements, although a normal conditional (and its contrapositive) represent the information, the Double-Not Arrow is more compact. Thus:

professor ⟷ under 18

and

able to vote legally ⟷ under 18

This also implies things like:

able to vote legally ⟶ ~~under 18~~

which might be easier to represent as

able to vote legally ⟶ 18+

We could similarly say:

professor ⟶ 18+

Note that the stimulus does not say that everyone who can vote is a professor, nor that all professors can vote. Thus, the chain you have does not correctly represent those relations, and the reversal of the first part still would not represent those relations.

That last sentence involves three different "some" relations:

brilliant person ⟷ professor

brilliant person ⟷ legal voter

brilliant person ⟷ under 18

As far as the answers:

Answer choice (A), note, says that no professors are 18, so that means none are *exactly* 18. We have no idea. This is not opposite, just unknown, too-specific information.

Answer choice (B) is wrong for exactly the reason you noted. Nothing more to say!

Answer choice (C) is new information.

Answer choice (D) is new information

Answer choice (E) is correct not because there could be, but there *must be* brilliant people under 18, per the last phrase of the last sentence. Because those people are, by the first two Double-Not Arrows, too young to be professors or legal voters, there are some brilliant people who are neither professors nor legal voters.

The first two statements tell us the following:

professor ⟶ ~~under 18 years old~~
and
able to vote ⟶ ~~under 18 years old~~

We can also take the contrapositive of the first statement to get the following:

under 18 years old ⟶ ~~professor~~
and

under 18 years old ⟶ ~~able to vote~~

what this tells us is that there are at least two things that you know about someone if you know that they are under the age of 18: they are not a professor and they cannot vote.

Neither of these pairs of statements can be combined to allow for additional inferences. There is no way to know if all professors vote, or if everyone who can't vote is not a professor. Making either of these inferences would require making a Mistaken Negation or a Mistaken Reversal of one of the two conditional statements. This is a relatively common mistake that speakers make in Flaw in the Reasoning questions that involve conditional relationships.

Lacking other facts, there is no inference you can make about B and C if you are given

A ⟶ B
and
A ⟶ C

Similarly, there is no inference you can make about X and Y if you are given

X ⟶ Z

Y ⟶ Z

As you may know, you can't diagram a Some or Most statement. Only All or None statements can be turned into conditional logic.

Whenever you see "No A are B" you can translate that as "All A are ~B"

So,

Prof --> 18+

under 18 --> ~Prof

under 18 --> ~Vote Vote --> 18+

But we want to use the conditionals to add on anything else we know about each of those people.

Some brilliant = prof, **18+**

Some brilliant = voters, **18+**

Some brilliant = under 18, **~prof, ~voter**

A) It said Professors can't be UNDER 18, but they could be 18.

B) There's no way to prove anything about ALL brilliant people, when we only got info about SOME brilliant people.

C) There's no way to link voters to professors (since those 2 conditionals didn't chain together)

D) We didn't get any info about people who were NOT brilliant.

E) Yup! This is our last line of inferences. Since some brilliant ppl are under 18, we know some brilliant people aren't professors and aren't voters.

10. E

The two most helpful terms in the short stimulus are “some” and “no one”—the former we understand to mean “at least one,” while the latter excludes all members of a group from a particular situation. “Many” is simply not as helpful, because we have no way of telling which people this “many” refers to. So, it’s a good strategy to look to combine the first sentence with the first part of the second sentence. The first sentence tells us that at least one planner / construction rep (nothing wrong with shortening the terms to that) has an interest in the decisions. But no planner lives in the suburbs, so if we combine these facts, we can say conclusively that there must be at least one non-suburbanite (the planner from above) who has an interest in the decisions. That’s the same as saying that some (at least one) persons interested in the decision don’t live in the suburbs, choice **(E)**. You may have noticed another deduction: It must be true that some construction reps don’t live in the suburbs, since the planners in question, none of whom live in the suburbs, are “those representing the construction industry.”

(A) Getting rid of the double negative, (A) translates into “all persons with significant interest in the decisions are in the construction industry.” This need not be true—nothing forbids non-construction industry members outside of the committee from having major interest in the committee’s decisions. (A) requires a strategically-inserted “only” in the first sentence in order to be true.

(B) No one on the committee itself lives in the suburbs, sure, but, as with (A), nothing prevents people *not* on the committee from having a financial interest in the committee’s decisions. And who knows where those people live? —it could be anywhere, suburbs included. Again, it would take an “only” somewhere in the first sentence to make (B) work.

(C), (D) As mentioned above, this notion of “many” working in the suburbs is vague—which ones are they? We simply don’t know, which is what creates the possibility that both (C) and (D) are false. In (C), it’s possible that the “many” planners working in the suburbs don’t coincide at all with the

“some” who have a significant financial interest in the decisions. If these latter folks were the only ones interested in the decisions, then (C) would be false. Likewise, for (D): Nothing prevents *all* of the planner/construction reps from working in the suburbs. Again, this all comes back to the ambiguity in this context of the word “many.”

"Some" means one or more, so you can diagram conditionality something like this:

PC (planning committee members)

some

-------> FI (financial interests)

PC ----> slash LS (live suburbs)

So, if PC, then some FI, and no LS. There is an overlap, in that any PC with FI are also no LS, since every PC is no LS. Thus, answer E, "Some persons with significant financial interests in the planning committee's decisions do not live in the suburbs", is correct.

"Planning committee members --> do not live in suburbs".

As for answer A, it may resemble a mistaken reversal, since it says, "sig financial interests ⟶ constr. industry", whereas the stimulus says "plan. com. members in const. industry ⟶ sig financial interests".

Answer B is overbroad, since many people not on the committee may also have big financial interests.

As for answer D, actually, you can't infer that some don't work in the suburbs; we don't know that. Just as with answer C, you can't assume that some DO work in the suburbs: in answer D, you can't assume that some DON'T! Watch those unwarranted assumptions!

"Some planning committee members...have significant financial interests in the committee's decisions."

PCM ⇜some⇝ SFI

and

"No one who is on the planning committee lives in the suburbs."

PCM ⟷ Sub

The trick here is that "some" statements are completely reversible. Once we reverse the first rule we have:

SFI ⇜some⇝ PCM

which can now be linked to the second rule:

SFI ⇜some⇝ PCM ⟷ Sub

So, if we drop the common term of "PCM" we can conclude that:

SFI ⇜some⇝ NOT Sub (Some people with Significant Financial Interests in the committee's decisions do NOT live in the Suburbs).

1.) Changing many to some is totally fine - as you note, they both mean "at least one but less than all"

2.) In terms of how to think about PCM and representing CI (I'll call that RCI) - two things. Number one, yes, all of those who represent the construction industry and are PCMs are PCMs, and the reverse isn't really applicable because RCI is a descriptor of some PCMs. Let me describe it this way: all blue shorts are shorts, but not all shorts are blue. So, you are correct there. Second, the RCI thing does end up being irrelevant, but we don't know that to start.

3.) Now to the answer choices...

(A) isn't really wrong because of the distinction you note. But the logic is wrong - if "No persons with significant financial interests in the planning committee's decisions are not in the construction industry" then that would mean all persons with significant financial interests in the planning committee's decisions are in the construction industry. But we don't know that to be true: it is a mistaken reversal of the (correct) fact that all planning committee members representing the construction industry (PCMRCI) have significant financial interests in the committee's decisions (SFICD) - PCMRCI ⟶ SFICD. The mistaken reversal would be SFICD ⟶ PCMRCI, in other words, that all people with significant financial interests in the planning committee's decisions are in the construction industry...but that isn't necessarily true.

1. some members ---> financial interest

2. member --> ~live suburbs

3. many members ---> work suburbs

Take a moment to see what overlaps. We cannot be sure that the "some" and the "many" have any overlap at all. (Only two "most" statements are guaranteed to overlap.) The only overlap we have is from 1 to 2 and from 2 to 3.

We can conclude that some members with financial interest do not live in the suburbs. (1+2)

We can also conclude that some members work in the suburbs but do not live there. (2+3)

Finally, we can conclude that some members neither live nor work in the suburbs. (2+3)

So the question is, which choice is provable?

As you can see, (E) is a straightforward combination of statement 1 and 2, though there is an element that is easily overlooked: the word "persons."

We know from combining statements 1 and 2 that some MEMBERS with financial interest do not live in the suburbs. This is because some members have financial interest, and members do NOT live in suburbs.

Therefore, as (E) says, some "PERSONS" with financial interest (the construction industry members) do not live in the suburbs. This is because, naturally, it is reasonable to infer that members are persons.

Now, notice the word "persons" in (B)

There are three statements that rely on logic: either conditional statements or quantified statements.

We can use notation to see the statements more clearly.

PCM some SFI

PCM ---> ~LS

PCM some WS

We can combine the first and second statement to get

SFI some ~LS

and we can combine the second and third statement to get

WS some ~LS

But we cannot draw an "all" or a "no" statement regarding people who have "significant financial interests," as is addressed in answer choice (B).

(Formal Notation Key: PCM = planning committee member, LS = lives in the suburbs, WS = works in the suburbs, SFI = significant financial interests)

Further note on reading quantified statements: "A some B" can be read as "some A's are B's."

C is wrong because it is possible that all the planning committee (PC) members with a significant financial interest (SFI), as well as all non-PC members with a SFI do not work in the suburbs. We're only given that some PC members work in the suburbs, so it's possible that all the PC members who work in the suburbs do not have an SFI. We're given no restrictions on where non-PC members work, so it's also possible that all non-PC members with SFI do not work in the suburb.

One thing to notice is that the entire stimulus is about the planning committee members.

Some PC have SFI.

Some PC are CI.

No PC live in suburbs.

Some PC work in suburbs.

Now, we also know, from the first sentence, that there's some crossover between the *PC-SFI* and *PC-CI* groups, but we don't know how much.

What's critical to see though is how much we *don't* know. We don't know anything about the ***whole group*** of *SFI*, or *CI*, or *live-suburbs*, or *work-suburbs*! Why not? Because all of our information is simply about the *PC* who do or do not do those things! We don't know a thing about the *non-PC* who do any of that.

The only answer choice that we can absolutely support is **(E)**: some *SFI* do not *live in the suburbs*.

To figure out if this is supportable, start with the *SFI*. We know from the first sentence that at least one person is on the *PC* with an *SFI*. Let's call him **Joe**. We also know that *NOBODY* on the *PC* lives in the suburbs - and that includes Joe. So, there's at least one person - Joe - who is *PC*, *SFI*, and doesn't *live in the suburbs*.

(A) and (B) Both of these answers attempt to make a claim about the entire group of *SFI*. But we only have information about the *SFI* on the *PC*. If there are *SFI* who are not on the *PC*, we don't have a clue what they do - whether they live in the suburbs, whether they are in the construction industry, etc.

(C) and (D) Both of these answers take 2 groups that may overlap completely, partially, or not at all and tries to pin them down.

(C) We don't know that *SFI* and *work-suburbs* overlap at all. We know at least one *SFI* is on the *PC*. And we know that at least one work-suburbs is on the *PC*. They don't have to be the same person though.

(D) Similarly, *CI* and *work-suburbs* might overlap completely - i.e., have exactly the same members. All we know is that some *CI* are on the *PC*, and some *work-suburbs* are on the *PC*. The two groups might be the same people.

The first sentence doesn’t preclude the possibility of having *PC-SFI* who are not *CI*. The first sentence simply says that some *PC-CI* are also *SFI*. It does not explicitly say that ONLY those *PC-CI* are *PC-SFI*.

The stimulus tells us that some planning committee members have significant financial interests, but it does not tell us that everyone in the universe with a significant financial interest is actually on that planning committee!

If I told you that some of the apples at the store were red, would that mean that red things only exist at the store? Of course not! So red would be a subgroup of apples at the store, but it could also be a subgroup of *stuff outside the store*. We don't have any knowledge about that!

So, what if there were a guy named Bob who had a significant financial interest in the committee's decisions, but was **NOT** himself a planning committee member. That's okay - the stimulus does nothing to prevent his existence. And let's say Bob lived in the suburbs. Again, there's nothing in the stimulus to stop that from happening. So, it could be possible that someone with a significant financial interest lived in the suburbs - as long as they weren't on the planning committee to begin with.

Chains can be diagrammed in any direction so long as the variables within the arrows maintain their position relative to their respective arrow (i.e., A------>B cannot be reversed to B------>A but can be switched to B<-------A. This says the same thing).

When looking at the Logic Ladder and words synonymous to "some", "many" falls into this category. Some=Many, therefore, many can be substituted with some to make the proper additive and inherent inferences.

A <--many--> -E = A <--some--> -E

Combine common variables: A

D <------ A <--some--> -E, which can therefore be inferred to D <--some--> -E

QL doesn't allow combining 'All' with 'many' statements, when 'All' statement is up first, consider:

A ------> D

A --(many) ~E Therefore, Nothing

1) *Persons with significant financial interests in the committee's decisions* could be (i) committee members, or (ii) non-committee members. For example, imagine there were 4 construction companies in town. The CEO of one of those got elected to office in the local government. As a guy with knowledge of construction/planning he also got on the planning committee. Does he have financial interests when it comes to the planning of the construction of a new municipal recreation facility? You bet! What about the other three CEOs? Sure, they also have interest. So, of the four persons with significant financial interests in the committee's decision one is a committee member and the other three are not members.

2) Does anyone on the committee live in the suburbs? No! This means that the one guy (from our example above) who is a committee member and has significant financial interests in the committee's decision does not live in the suburbs, either.

3) The conclusion from 2) above says exactly what (E) states: some persons with significant financial interests in the planning committee's decisions (in our case that is the one CEO who is a committee member) do not live in the suburbs. Do we know where the other three CEOs live? No!

Because of 1), 2), and 3), the **correct answer choice is (E)**.

11. E

Here’s what we know: There is public support for the project; the critics acknowledge it. “If the critics were right about this” (referring to something that comes earlier), then there would NOT be support. But there is support, so guess what? The critics must be wrong. About what? About “this.”

What's "this"? It's what the critics "maintain" in the first sentence: Public funding for the project is justified only if the public can see the benefit. In other words, the critics believe that the public seeing the benefit is required for public funding to be justified—the "only if" tells us that. And if the critics are wrong in thinking so, as we deduced above from the latter part of the stimulus, then the public seeing a benefit is NOT required for the justification of the public funding, **choice (E)**.

(A) goes too far. An indication of the public benefit associated with a project may not be necessary, but that doesn't mean that it's irrelevant.

(B), (C) The argument concerns the requirements for justification. The critics argue that something is necessary to justify continued funding, but the scientist's argument is set up to imply that this belief is wrong, that such a requirement does not exist. We cannot tell from the argument, therefore, whether the funding is actually justified (B) or what would best indicate such a justification (C). The scientist doesn't get into all that—she merely argues (albeit in a roundabout way) that the critics' criterion for justification is bogus.

(D) 180*:* The scientist's argument suggests that the public supports the project despite the fact that no benefit to the public is indicated.

Let's try to break down the scientist's statements. First, he points out that critics have said that continued funding is justified only if public benefit can be indicated. Then he says that if this were true, we wouldn't see the public support that we're seeing.

If the critics' position were true, we wouldn't be seeing the public support -- but we *are* seeing the public support, so the critics' position is *not* true!

Notice that the position in question is a conditional statement that doesn't weigh in on the facts of the situation. The wrong answers will test our understanding of that distinction.

(E) is correct. It makes our inference explicit. If the indication of public benefit is not a requirement, i.e., a *necessary condition*, for continued funding, then the critics' position is false.

(A) is incorrect. For one, we're talking about whether benefits can be *indicated,* not just whether they exist; second, although we can infer that it's not a requirement, to say that it's "irrelevant" is to go too far.

(B) is tempting, but we can't conclude anything about whether funding is justified! The only thing we can infer about is whether the indication of public benefits is necessary to justify the funding. And no, to answer your question: whether funding is *in fact* justified has no bearing on whether the indication of public benefits is a necessary condition.

(C) is out of scope, for starters: the scientist doesn't say anything about the relationship between public support and the justification of funding. Also, "surest" indication? That should raise an alarm.

(D) is incorrect. It causally connects two elements from the scientist's statements that we have absolutely no basis to connect.

The critics' position is this:

Continued public funding justified for project ---> Indicated how public can benefit from project

However, the scientist states that if the critics were right about that, then there would be not be the tremendous support that actually exist.

In other words,

[Continued public funding justified for project ---> Indicated how public can benefit from project] ---> ~Tremendous public support

However, there is tremendous public support!

So that means that our conditional is not true.

How do you show that a conditional statement is not true?

You show that sufficient condition **DOES NOT NEED THE NECESSARY CONDITION.**

Continued public funding justified for project ---> ~Indicated how public can benefit from project

Thus, E is correct that the necessary condition of public benefit does not have to be fulfilled.

"If the critics were right about this, then there would not be the tremendous public support for the project that even its critics acknowledge."

Critics right ---> ~Tremendous Public Support

"Critics right" refers to this conditional statement that they posited in the stimulus:

Continued public funding justified ---> Indicated how public will benefit

However, the last part in the last line of the stimulus is so crucial. "...then there would not be the tremendous public support that even its critics acknowledge." That is saying that the critics agree that there is tremendous public support.

That would invoke the contrapositive. That would let us conclude that the critics would not be right about their conditional statement.

We show the sufficient without the necessary, which is choice (E): That indication is not a necessary condition of justifiable continued public funding.

This argument has two statements essentially. The first sentence is not something the author is claiming to be true, so we should not really express it as true. The second sentence is clever, elegant, and tough to deconstruct. Essentially you get two ideas that structurally look like:

A ---> B

~B

From this we could infer ~A.

In this case A = (FJ ---> IBP) and B = PS

Notation Key: FJ - continued funding is justified, IBP - indicate how the public will benefit, PS - tremendous public support

So the stimulus actually says

1. (FJ ----> IBP) ---> ~PS

2. PS

The tough part is seeing that it is implied there is tremendous public support; "that its critics acknowledge."

Using contrapositive argument structure we can infer

~ (FJ ---> IBP)

Or "it's not the case that continued funding being justified is sufficient to infer that we've indicated how the public will benefit, nor is indicating how the public will benefit a requirement of continued funding being justified - best expressed in answer choice (E).

(A) is too strong. It's not that there is no relationship between indicating how the public will benefit and continued funding being justified, but rather that there isn't the one specific relationship advocated by the critics.

(B) cannot be inferred. We cannot know for certain whether continued funding is or is not justified.

(C) is not supported. We are not using the public support to address whether the funding is justified but whether funding being justified would imply that we've indicated how the public will benefit.

(D) is out of scope. We do not know why there is tremendous public support, just that it's there.

The Public Support premise is indeed the last sentence.

So we know that the first part of the stimulus established:

Continued public funding justified ---> Indicated how public will benefit

That is the conditional some critics believe.

The last sentence tells us that if the critics' conditional were true [Funding Justified ---> Indic. Pub. Benefit] then there would not be public support for the project that even the critics admit exist.

So we have established this new conditional:

Critics conditional true ---> ~PS

And the last sentence indicates that there is indeed PS.

We can now use the contrapositive to get to the idea that the critics conditional is not true.

To say a conditional is not true is to say that the necessary condition is not actually necessary. That is what E states.

In this case, our conditional wasn't triggered by a UNIVERSAL like "all", it was triggered by a REQUIREMENT, "only if".

Justifying public funding REQUIRES that you've indicated the public benefit.

If someone was wrong to say ^ that ^, then just negate that sentence.

Justifying public funding DOES NOT REQUIRE that you've indicated the public benefit.

That puts us in a much better position to like (E).

Public funding justified ⟶ indication of how public will benefit

The stimulus concludes that if the critics are correct, then there would not be public support.
Based on this, I question whether the principle above should be followed considering that there would not be public support for the funding even if there is an indication of how the public will benefit.

The scientists here are basically arguing that the critics are wrong - there's no indication of how the public will benefit, but there is still strong public support, and it should be funded. Therefore, E is correct.

The problem with answer choice (B) is that it references drugs that are "being tested," but not necessarily being *marketed*. Since we do not know whether the drugs referenced in answer choice (B) are being brought to the marketplace, (B) has no impact on the conclusion.

Critics claim that it is required that we can indicate how the public will benefit.

The scientist disagrees with that requirement, which is why **(E) is the correct answer.**

(A) says that public benefit is irrelevant. There are two reasons why that does not describe the scientist's position.

First, the scientist disagrees that public benefit is a requirement. He doesn't say it's irrelevant. For instance, the scientist could believe that public benefit is a sufficient reason, even though it's not a necessary reason.

Second, the scientist didn't say that public benefit is irrelevant. He only said that being able to specify the benefit is not a requirement. In other words, the disagreement between the critics and the scientist is about whether it's necessary to be extremely specific about how the public will benefit.

12. A

If you start with the most concrete statement—that all effective teachers are good communicators—you can quickly tie it into the first statement. Because those lecturers are both effective teachers and eccentric, it has to be true that they are good communicators as well, so they, at least, are as **(A)** describes: people who are both good communicators and eccentric.

(B) commits the now familiar flaw of reversing the if/then statement. That all effective teachers are good communicators absolutely does not mean the reverse.

(C) No statements are made regarding ineffective teachers, so you cannot draw any inference about them.

(D) makes an unwarranted leap. There may be many lecturers—perhaps most—who are good communicators but not "effective teachers," and if so, you have no way of gauging their eccentricity.

(E) is half right (the first half of (E) is just the "but" clause repeated verbatim), but half wrong (*all* effective teachers are good communicators).

Since the stimulus has no conclusion, one can reasonably expect that the correct answer choice will be an additive inference drawn from these premises. Examining each premise individually will allow for a determination of which inferences can correctly be drawn.

1. "Most lecturers who are effective teachers are eccentric."

- ET = lecturers who are effective teachers
- ECC = eccentric

ET $\xrightarrow{\text{most}}$ ECC

Because "most" statements are not universal, they do not have a valid contrapositive. However, this premise does yield the inherent inference that some people who are eccentric are effective teachers (and vice versa), or ECC $\xleftrightarrow{\text{some}}$ ET

2. "Some non-eccentric lecturers are very effective teachers."

~~ECC~~ = non eccentric

~~ECC~~ $\xleftrightarrow{\text{some}}$ ET

Like "most" statements, "some" statements have no logical contrapositive. Also, "some" statements can only be combined with universal relationships

to create additive inferences. Thus, there are no additive inferences between the first and second premises of this argument.

3. “Every effective teacher is a good communicator.”

- GC = good communicator

$$ET \longrightarrow GC$$

This final premise yields a contrapositive ("Those who are not good communicators are not effective teachers") and can be combined with our existing premises to form additive inferences. For example, one can now conclude that some non-eccentric lecturers are good communicators by combining the second and third premises:

- ~~ECC~~ some ET ⟶ GC, therefore: ~~ECC~~ some GC

Also, the inherent inference from the first premise can be combined with the third premise in the following manner:

- ECC some ET ⟶ GC, therefore: ECC some GC

Since all "some" relationships are inherently reversible, this inference is identical to answer choice (A).

Answer choice (A): This is the correct answer choice. As demonstrated above, the first premise contains an inherent "some" inference ("Some lecturers who are eccentric are effective teachers"). This "some" inference, together with the third premise, leads to the additive inference that "Some lecturers who are eccentric are good communicators." Reversing this relationship yields "Some good communicators are eccentric."

Answer choice (B): This is simply a Mistaken Reversal of the third premise. Some good communicators may not be effective teachers, so this answer is incorrect.

Answer choice (C): From the third premise, one can infer that those who are not good communicators will not be effective teachers. However, this inference cannot be combined with any other premise or inference to determine whether or not such people will be eccentric. Thus, this answer is unsupported by the stimulus.

This is a very common incorrect answer choice in "some"-based formal logic questions, as test takers often mistakenly presume that "Some are XYZ" implies that "Some are not XYZ." In other words, just because it can be determined that some non-eccentric lecturers *are* effective teachers (from the second premise; reversed: some lectures who are effective teachers are not eccentric) does not mean that some no eccentric lecturers *are not* effective teachers (or vice versa; that some lectures who *are not* effective teachers are not eccentric).

Answer choice (D): The terms "effective teacher" and "good communicator" are not logically equivalent. Being a good communicator does not necessarily ensure that one will also be an effective teacher. Thus, the latter term (good communicator) cannot correctly be substituted for the former (effective teacher) in the first premise.

Answer choice (E): According to the third premise, it is not possible for someone to be an effective teacher without being a good communicator. Since this answer choice contradicts one of the premises, this inference cannot be correct.

If every effective teacher is also a good communicator, and most lecturers who are effective teachers are eccentric, there must be some non-zero number of lecturers who are effective teachers, good communicators, and eccentric all at once.

Most effective lecturers ⟶ eccentric

some (not)eccentric ⟶ effective

Effective ⟶ good communicator

From here can we combine the first and the third conditionals to say:

most effective ⟶ good communicator + eccentric

The stimulus can be diagrammed as follows:

Effective lecturers $\overset{\text{most}}{\rightarrow}$ Eccentric

Effective lecturers $\overset{\text{some}}{\leftrightarrow}$ non-eccentric

Effective ⟶ Good communicator

If most effective lecturers are eccentric, it follows that some eccentric people are effective lecturers. But, according to the last sentence, every effective teacher is a good communicator. So, some eccentric people are good communicators (and vice versa).

Answer choice (D) conflates two of the logic chains in a way that reaches a conclusion unsupported by the facts in the prompt.

From the stimulus, we know that:

Effective Teachers $\overset{\text{most}}{\rightarrow}$ Eccentric

and that every

Effective Teacher ⟶ Good Communicator

However, we don't have anything that can connect "Lecturers who are good communicators" with anything else. The facts in the stimulus establish that every effective teacher is a good communicator, but it doesn't follow that every good communicator is an effective teacher.

There could be some good communicators who are not effective teachers. If that's the case -- that is, if we're dealing with a pool of lecturers that are good communicators but not effective teachers -- then we cannot make any deductions about whether these lecturers are eccentric or not. We only have information about eccentricity as it relates to effective teachers.

Analogous argument:

Most children who attend the party are happy.

But some unhappy children are at the party.

Every person at the party is an inspiration.

Answer (A): THUS, at least some inspirational people are happy (we know that for sure... there are children at the party who are both inspirational and happy).

Here's what (C) says:

THUS, some children who are not at the party are unhappy.

What do we know about children NOT at the party? Nothing! We know that "some unhappy children are at the party," but we don't know for sure if there are other unhappy children out in the world. After all, "some" could mean "all."

Taking out the negatives like that won't work when manipulating conditional logic.

If "~A some ~B"

that does NOT imply

that "A some B"

It's possible that the manipulation led you to the correct answer in a previous situation, but it's definitely not a manipulation permitted by logic.

The problem with answer choice (D) is two things:

1. The slight mismatch from "effective teachers" to "good communicators," which is NOT inferable within the information provided in the rest of the answer choice.

2. Reversed logic (good communicators -m-> eccentric). If we wanted to give this choice the benefit of the doubt with the slight mismatch noted before, the answer choice goes in the wrong direction. To make this question correct, it should have gone from effective teachers -m-> eccentric -s-> good communicators.

We're given,

Effective teacher --> Good communicator.

So maybe you were thinking the first sentence,

"Most L's who are effective teachers are eccentric"

could be turned into

"Most L's who are good communicators are eccentric"

After all, if you're an effective teacher, I know you're a good communicator, so why can't we just swap in one label for the other?

Here's the problem, via analogy:

US President --> Male

Given the statement:

"Most US Presidents have lived in the White House

can I turn that into

"Most males have lived in the White House"

??

Of course not.

Even though every US president has been a male, making a statement about "most US Presidents" is VERY different from making a statement about

"most males".

Similarly, making a statement about "most L's who are effective teachers" is very different from a statement about "most L's who are good communicators".

Or if you prefer numerical examples ...

there are 100 L's who are effective teachers.

51 of them are eccentric, 49 are non-eccentric.

(All 100 of those teachers are good communicators, since they're effective)

Meanwhile, there could be 1000 L's who are good communicators.

Can we really prove that 501+ of them are eccentric?

We don't even know how many of them are effective teachers. We need 51 of them at a minimum to be effective (because we already stated that 51 ppl are effective/eccentric/good communic). But that's it. The other 949 are up for grabs. No reason they have to be eccentric.

Even if it is hypothetically true that "Effective Teacher" is a much larger group than lecturers, we can still infer

ET (that are lecturers) MOST Ecc.

The text gives us that which relates to the specific smaller group, those that are both Lecturers and are Effective teachers. It is this group that is our focus. Whether or not the group is just a portion of the larger group, we know what is true based of the smaller group of those that are both lecturers and effective teachers.

As noted above in this discussion, we can drop the subject (Lecturers) in our notation, since that which leads to our inference is something that is true of all of those who have a particular distinction (of being effective teachers), including those who are lecturers + effective teachers.

Sectional Test 2 Solutions:

1. C

Sentence 1:

If stop carbon dioxide buildup → reduce burning of fossil fuels

Sentence 2:

If a country reduces burning of fossil fuels → country reduces gross national product
The third sentence requires you to equate "the costs of an action" with "reduce its gross national product." It translates to:

If a country is willing to bear costs → won't bear costs single handedly

In other words:

If a country reduces its gross national product → a country won't do it alone

Finally, the conclusion says, if we are to stop the catastrophic consequences of atmospheric carbon dioxide—or, in other words:

If we are to stop carbon dioxide buildup → _____

All three of the pieces of evidence can be linked together to create:

If we are to stop carbon dioxide buildup → a country won't do it alone

Thus, the blank in the conclusion should be filled with an answer that indicates that the countries reducing their emissions will not single-handedly bear the costs of doing so. In other words, the answer should indicate that there will be a global push to stop carbon dioxide buildup. This stimulus could be summarized pretty simply: to stop carbon dioxide buildup, the world has to reduce the burning of fossil fuels. Doing so, however, would reduce a nation's gross national product, and a nation wouldn't be willing to be the only one to do that. Therefore, if there is any hope of fixing the problem, all nations must participate.

(C) indicates that multiple nations would have to participate. An international agreement on emissions standards would put countries on equal footing and prevent one country from bearing the costs single-handedly.

(A) is a 180 because avoiding the consequences of excessive carbon dioxide requires that nations become *more* concerned with pollution than economic burdens.

(B) may be initially temping because it includes an international scope. However, the stimulus discusses countries, not corporations, so this choice is Out of Scope. It's not clear whether a reduction in emissions by multinational corporations would be sufficient.

(D) is both Out of Scope and Extreme. While trust might impact whether countries are willing to enter into some sort of agreement to share the burden, trust is not mentioned anywhere in the stimulus. Additionally, distrust might not need to be completely *eliminated* for countries to work together voluntarily (or to be forced to by an international body).

(E) is Extreme. The stimulus merely indicates countries have to work together, not that they need to be merged into a world government.

Conclusion: Terrible consequences of too much atmospheric CO2 are unavoidable unless we do ____.
Evidence: Stopping the excess of CO2 requires burning less fossil fuel. Burning less fuel would reduce a nation's GNP. And no nation will be willing to singlehandedly pay the cost for something that benefits everyone.

Given that we need to reduce fossil fuel usage and that doing so lowers GNP, how do we get countries to do so without feeling like they're singlehandedly bearing the costs for something that benefits everyone? Well, why does it have to be singlehandedly? If everyone collectively agreed to reduce fuel by a given percentage, then everyone would be equally (proportionally) bearing the costs.

(A) This is the opposite of what we'd need. They would have to be MORE concerned with global warming than with lower GNP.

(B) "Multinational corporations" kinda comes out of nowhere. This solution might actually work, but it seems counterintuitive. If NATIONS are unwilling to voluntarily reduce their GNP for the sake of global benefit, then why would profit-driven CORPORATIONS be willing to do so?

(C) Looks good! This sounds like nations decide to do this collectively, so that none of them feel like they're "singlehandedly" bearing the costs.

(D) Extreme: distrust is ELIMINATED? The issue here is less about distrust then fairness. IF we had an international agreement, then we would probably have to trust that other nations would follow through as promised. But this answer is making it seem like "trust" is our initial stumbling block, while the stimulus identified "an unwillingness to singlehandedly bear the costs" as the dealbreaker.

(E) Extreme: Whoa. Slow your roll there, E. Although a world government probably WOULD have a better chance enacting global restrictions on fossil fuel, it's an incredibly strong and far-fetched leap to go from this stimulus to world government. The lead up language is that "in order to solve the problem, we'll NEED this". Do we NEED a world government or just SOME form of international cooperation? (C) manages to solve the problem in the 2nd to last sentence in a much more realistic, conservative, attainable way.

There are a couple of problems with B:

1) it talks about "multinational corporations" - and the stimulus discusses "nations"

2) ‘voluntary’ really wouldn't work here - even if statement said 'nations' i think that voluntary is not strong enough - any nation could not follow

Eliminate E because it was too far of a leap from the stimulus. Establishing a world government is just too far from that. Sure, that could be a way to accomplish the burning of less fossil fuels, but it isn't the only way, and choice E itself doesn't really connect to actually reducing the amounts of fuels burned.

Conclusion: Catastrophic CO2 is ***unavoidable*** unless *something*.

So, without that *something*, we are **DOOMED**. We **NEED** that *something* to save us! It is the only way!

What we know from the stimulus is that there's no way to achieve the necessary emissions standards by using a solitary country - so if we're going to save ourselves, we need something other than a single country's efforts.

There's nothing in the stimulus that indicates we absolutely have to have a world government to save us from the CO2 **(E)**. It could theoretically work, if that government-imposed emissions standards, but there are ways to succeed at controlling CO2 without resorting to the world government approach. Since we don't absolutely need it, this cannot be our answer.

(C) takes a far softer approach - we need internationally agreed upon standards. If we need the emissions standards, and we can't use single countries, then we need some 'multi-country' effort! If we don't get that, we won't get the emissions standards imposed. And if we don't get emissions standards imposed, we can't reduce the burning of fossil fuels. And if we can't reduce the burning of fossil fuels, the excessive CO2 buildup cannot be stopped!

Note that you could diagram this as formal logic:

Reduce CO2 --> reduce FF burn

Reduce FF burn --> impose strict emission standards

Impose strict emission standards --> no single country

THUS: CO2 not reduced UNLESS _____

Link all those conditionals, and it becomes clear that CO2 cannot be reduced unless we find a multi-country emissions standard solution!

Stimulus breakdown:

1.) CO_2 build up can only be stopped by stopping the burning of fossil fuels

2.) any country that would stop the burning of fossil fuels would reduce its GNP

3.) No nation would be willing to stop the burning of fossil fuels BY ITSELF, because they alone would lose GNP and would thus be at a disadvantage

4.) Therefore, CO_2 damages can only be curtailed by....

(A) All nations become LESS concerned with pollution? This right away seems like a bad answer. I think if this was reversed, perhaps it would be better. For example, if it said all nations become less concerned with ECONOMIC BURDENS OF PREVENTING IT and more concerned with pollution.

However, the language is reversed and I think this is intentional. if you don't read slowly, it could confuse you. However, I'm not sure how great of an answer this would be anyway. If it were reversed, it would probably be an answer I kept and moved on - but since it is not, eliminate it.

(B) This is a bit confusing because of the talk of multinational corporations, and the fact we are probably prephrasing looking for words such as "multinational". However, we are not concerned with corporations. We are looking for something that links all the countries agreeing to some sort of limitation on the burning of fossil fuels. Eliminate this.

(C) Correct

(D) Distrust among nations? This was never an issue. Eliminate.

(E) Seems so far off. Has nothing to do with anything here. eliminate.

(C) provides us with the international agreements we would need (remember, we need multiple countries to agree) on emission standards.

‘The stimulus is focused on countries and the costs involved in a country ‘unilaterally imposing emissions standards. The line before the conclusion is key to understanding answer choice (B): "No *nation* will be willing to bear singlehandedly the costs of an action that will benefit everyone. It is obvious, then, that the catastrophic consequences of excessive atmospheric carbon dioxide are unavoidable unless_____." Thus, the author is driving at a solution that doesn't involve just a single nation, but more likely collective action between nations.

Answer choice (B): The stimulus is focused on countries and nations, and far less on corporations. So, although the test makers cleverly throw in "multinational" here, this answer is still about corporations, not nations.

Answer choice (**C**): "International" agreements is a reference to agreements between countries, meaning that this answer is in line with the focus on

countries in the stimulus.

Answer choice (E): This answer goes too far. Nothing in the stimulus suggests we need a world government, but instead that something involving collective action is more necessary. The test makers would say that this goes beyond the bounds of the "logically completes" task in the question stem.

Answers (B) and (E) are the kind of answers that would, in certain cases, justify the conclusion, but we are looking for something that is closer to the line of reasoning used in the stimulus, and so answers that go in a different direction (B) or well past the author's reasoning (E) will be incorrect.

2. B

If we are to remain competitive in global economy (X) → we have to overcome current math education crisis (Y) … If we have to overcome current math education crisis (Y) → we have to use successful teaching methods (Z) … If we have to use successful teaching methods → we have to spend significant amount of time studying outside of class (P)
Y leads to P, so ~P leads to ~Y

(B) Unless means if not … so, ~P leads to ~Y … CORRECT

(A) reverses the Conditional Logic of the stimulus without negating. It indicates "If Z → X."

(C) is an Irrelevant Comparison. The relative importance of mathematics to other subjects is Out of Scope. The stimulus just discusses the connection between math education and staying competitive in the global economy.

(D), like **(A)**, reverses the Conditional Logic of the stimulus, without negating. Remember that "only if" means *then*, so translated into if/then form, **(D)** becomes: If students spend a significant amount of time outside of class studying mathematics → we succeed in remaining competitive in the global economy. That's "If Z → W."

(E) is like **(A)** and **(D)** in that it treats students studying outside of class as a sufficient idea, whereas it is a necessary term in the stimulus. Additionally, this choice is too tentative, saying studying "would help," whereas the argument speaks in concrete terms.

Competitive --> overcome crisis.

(note, "only if" is not the same as "if". "Only if" always comes right before a necessary condition)

2nd sentence:

"Requires" always comes right before a necessary condition, so we symbolize the 2nd sentence as

Overcome crisis --> successful teaching methods

3rd sentence:

The trigger word is "No", as in "No A's are B's". The "No" should be attached to the 2nd idea.

No A's are B's = All A's are ~B's

No NFL players are female = All NFL players are ~female.

Here, the 2nd idea in the sentence is already negative, "does NOT get students to spend signif out of class time", so when we negate it, it turns positive.

Succ. teaching method --> DOES involve signif. out of class time

Finally,

(A) uses "if" again, and this is set up in order already.

(B) uses "unless", which is the other tricky trigger word.

(Crisis can NOT be overcome) unless (signif. time out of class)

becomes

Crisis CAN be overcome --> Signif. time out of class.

(C) "as important" is a baseless comparison ... It's an easy way to make a trap answer out of some concept we talked about.

(D) "only if" indicates a necessary condition, so this looks like

Signif time outside of class --> Remain Competitive

(This, again, is reversed logic. we could infer the other direction)

(E) We have a series of required conditions here.

Remaining competitive in the global economy

requires

overcoming the crisis in math education

which requires

employing successful teaching methods

which requires

getting students to spend a lot of time on math outside of class.

(E) If we DON'T get students to spend a lot of time outside class then we WON'T remain competitive. But from that, can we say that if we DO get students to spend a lot of time outside class it will HELP us to remain competitive?

Not really.

Being President of the US

requires

that you are at least 35 years old.

From that, can you infer that being at least 35 years old HELPS you to become President of the US?

No method of teaching a subject can succeed that does not get students to spend a significant amount of time outside of class studying that subject.

You must realize that (B) itself does not imply that a significant amount of time studying will be sufficient to overcome the current crisis in mathematics - it is the necessary but not the sufficient condition.

Remain Competitive $\longrightarrow$ Alleviate Crisis

Alleviate Crisis $\longrightarrow$ Employ Successful Teaching Methods

Teaching Subject Succeeds $\longrightarrow$ Students Spend Time Outside of Class Studying

We can write out answer choice (B) as "Overcome crisis --> Students study outside of class." We can infer this by combining the second and third sentences that you diagrammed. If we know "Overcome crisis --> successful teaching methods" and "successful teaching methods --> Students study outside of class," we can combine them to find **answer choice B.**

Answer E is a simple Mistaken Reversal. We cannot say that having the necessary condition would prove that we have the sufficient condition. We MIGHT be able to say that it MIGHT help, but this is a Must Be True question, and the correct answer has to be absolutely foolproof. While E seems like it's reasonable, it's not foolproof, because we still might have unsuccessful teaching methods, which means the crisis in education would still be ongoing, which means we could not remain competitive. Answer E is a definite "maybe," but that's just not good enough when we want something that must be true!

3. E

The second sentence can be translated into Conditional Logic:

If brain scans help → subjects give accurate verbal reports

The third sentence describes how brain-scanning technology is not useful when the condition described in the second sentence is not satisfied.

The first sentence gives background context, so it cannot be the main point. The third sentence refers back to information given in the second sentence, so it is subordinate to the second sentence. Thus, the second sentence, which states a necessary condition, is the main point. The correct answer will suggest that brain-scanning technology is useful to researchers *only* when the researchers can rely on the accuracy of verbal reports given by subjects while their brains are being scanned.

(E) matches the prediction.

(A) is Extreme. It describes what would be true if researchers could not rely on the accuracy of verbal reports given by subjects having their brains scanned.

(B) is also Extreme. Although researchers do need accurate verbal reports, that does not mean there is no way to get them. The correct answer to a Main Point question adds no information to the stimulus, nor does it make an inference based on the stimulus.

(C) is a Distortion. The author never suggests how the results of brain-scanning research should be evaluated. Although it is necessary to have accurate verbal reports, the author does not indicate that they should be viewed with “great skepticism.”

(D) is another Distortion. If researchers can trust the accuracy of verbal reports of brain-scan subjects, then researchers can get useful information from brain scans. Brain scans, however, do not give useful information about the accuracy of verbal reports given by subjects.

Break down the Stimulus:

Conclusion: In order for brain-scanning to give us useful data, we have to be able to trust the verbal reports of the people being brain-scanned.

Evidence: If there's a mismatch between what the subject reports and what he actually thinks, then the brain-scan data wouldn't really be accurate data about the right thoughts.

A) Never said. This is just reinforcing a feeling a student might have: "This guy seems pessimistic. He doesn't think brain-scans are gonna help because we can't trust the verbal reports of the subjects." We're not being asked "what ELSE might this author say?" We're being asked "What DID this author conclude?"

B) Never said. Same as (A).
C) Never said, trying to appeal to the same perceived-pessimism behind (A) and (B). The argument was totally descriptive and thus neutral.

D) Never said.

E) This matches the second sentence.

Notice the word "must" in the second sentence - the sentence that represents the main conclusion of the argument. The "must" introduces a requirement, just as "only if" introduces a requirement in answer choice (E).

The argument begins with a statement that brain scans are useful, then goes on to provide a requirement of that utility, and then goes on to justify why that requirement is true. The justification is of the second sentence - making that the conclusion. Let's look at the incorrect answers on this one though:

(A) limits brain scans in a much more severe way than the argument suggests.

(B) is not necessarily true based on the argument.

(C) is a potential suggestion one would make based on the conclusion, but does not actually represent the conclusion.

(D) is true, but does not have any support for it in the argument, so cannot be the main conclusion.

The issue here has to do with how *necessary* the reliability of people's reports of their thoughts are. Let's revisit the language of the stimulus:

Researchers *must* be able to rely on the accuracy...

The "must be" is key. "Must" introduces a necessary condition for the success of researchers' efforts, diagrammed thus:

- Info helps researchers ⟶ Researchers able to rely on accuracy of reports

4. A

First, there will be a textbook with essays from different authors. At least one of three authors (Lind, Knight, or Jones) will be included. At most two of the three authors will be included. If Knight is included, then Jones is, too.

The Conditional Logic statement and its contrapositive are as follows:

If Knight → Jones

If ~ Jones → ~ Knight

So, if Knight is selected, then Jones is, too. That means the maximum number has been reached and Lind must be rejected.

If Knight → ~ Lind

And the contrapositive of that statement must also be true (otherwise, all three would be selected):

If Lind → ~ Knight

While there could be other statements that must be true based on this stimulus, the stimulus seems designed to lead to the prediction that if Lind is selected, then Knight must be rejected. Scan the answer choices looking for that statement, knowing that if it isn't there, you can eliminate wrong answers by checking them against the information in the stimulus.

(A) matches the prediction. If the textbook includes Lind, it can't also include Jones because an appearance by Jones would also mean an appearance by Knight. Then all three authors would be there in violation of the prohibition that the textbook cannot contain all three authors.

(B) is possible, but does not have to be true. It could be false because the textbook could contain two essays, one each by Jones and Knight. It could also include two essays, one each by Lind and Jones. Although the stimulus says the textbook contains essays by "several different authors," it does not say that Jones, Knight, and Lind are the *only* possibilities, so it's possible that just one of them appears in the textbook.

(C) could be false. Knight's essay could be included along with Jones's, or Knight could also be the only one of the three authors in the textbook.

(D) could be false. It is possible to select Lind and reject Jones (which would lead to rejecting Knight), leaving Lind as the only one of the three authors in the textbook. Although the stimulus says the textbook contains essays by "several different authors," it does not say that Jones, Knight, and Lind are the *only* possibilities. If they were the only three possibilities, then **(D)** would definitely be true because Lind and Knight were deduced to be mutually exclusive, so including Lind would also mean including Jones to reach "several authors." However, the stimulus does not limit the textbook to just those three, so **(D)** need not be true.

(E) could be false. It is possible to reject Lind and select either both Knight and Jones or just Jones.

Let's just think of the groups that could be formed:

Singles: L or J (no K alone because it requires J)

Doubles: KJ or LJ (no KL because that would be KJL)

Based on those four possible selections we should be able to quickly find the answer that must be true:

A. True. We cannot have K and L because that would mean K, L, and J (K --> J) and we can't have all three.

B. Not true. Can have double groups.

C. Not true. Can have KJ

D. Not true. Can have L alone

E. Not true. Can have KJ with no L

There is a difference between essays and authors. Meaning, it is possible for a single author to have written multiples essays in the book. Thus, when you break down the stimulus, there is an opening there so that only one of the three authors is selected (and not two, as you thought).

Let's look at the stimulus more closely. The first sentence shows plurality on both essays and authors: "An editor is compiling a textbook containing essays by several different authors." This could mean one or more essays by each author are included. Note also that this simply says "authors," and the reference in the next line mentions three specific authors, but based on this sentence, there could be more authors in play. Thus, when the next sentence says, "The book will contain essays by Lind, Knight, or Jones...," it's possible that just one is selected, but that multiple essays from that person are included. This is how they get past the "essays" objection you raised, and it then cancels your question about the Uniqueness Theory applying to the two answers.

One way around this issue is to realize that under your interpretation of the scenario—that exactly two from the group L, K, or J selected—there are

multiple correct answers (A, D, and E are all correct when exactly two are selected). The rules of the section would tell you that is impossible, and thus you would have to go back to the stimulus to re-evaluate your analysis.

Final note, one issue you ran into in your analysis was that this statement is misleading: "L ⟶ K or J." LK is ruled out by the stimulus, because if you choose L and K, you then get J, which violates the stimulus statement that you can't have all three.

5. B

The first sentence translates to “if in the neighborhood, then permitted to swim at some time during each day pool is open. The second sentence translates to “if under age 6, then not permitted to swim between noon and 5.” The final sentence translates to “if between 5 and close, then reserved for adults.”

Given that everyone in the neighborhood is allowed to swim at some time, but that kids under age 6 aren’t allowed to swim in the afternoon or evening, it looks like these kids (if there are any in the neighborhood) will have to be allowed into the pool in the morning.

(B) must be true because if there is a kid under 6, that kid will need to be allowed into the pool in the morning.

(A) could be false because the stimulus provides no information about how many children of any age are in the neighborhood.

(C) could be false because the stimulus provides no information about how many adults swim in the pool.

(D) could be false because the stimulus provides no information about whether or not children actually swim in the pool when it is open.

(E) could be false because the stimulus informs us that children over age 6 are allowed to swim in the afternoon. Therefore, these children could swim without necessarily breaking the rules that the stimulus provided information about. Also, no information is given about the rules prior to 12 P.M., so it still remains possible children could swim then without breaking the rules.

We are given the following 3 statements: First, Biba's Neighborhood --> Permitted to Swim; Second, 12-5pm --> No Children under 6; Third, 5pm-Close --> Adults Only.

That leaves us wondering ... when are the children under 6 permitted to swim? Well, first we're assuming that there are children under 6 years old. If there aren't any such children, there isn't an issue. But if there are children under 6 years old, then must be permitted to swim before 12pm.

(B) is correct. We were wondering whether there were children under 6 and when they would be permitted to swim at the neighborhood pool.

(A) could be false. There could be a ton of children under 6 years old, so long as they permitted to swim in the pool before 12pm.
(C) could be false. This answer choice speculates on the number of adult users of the pool after 5pm.

(D) could be false. We are not given information about whether there are children over 6 years old in Biba's neighborhood.

(E) could be false. The statements leave open the possibility that children over 6 years old can swim in Barton pool between 12-5pm.

Stimulus tells us:

-Everyone in Biba's neighborhood (minimum age to maximum age) is allowed to swim at some time during Barton pool open hours = (in neighborhood -> allowed to use pool sometime during open hours)

-12 to 5 PM: swimmers must be >= 6 years old

-5 PM to Close: swimmers must be only adults (likely 18), so swimmers absolutely have to be > 6 years old

(B) is the correct answer because

1) it gives us a **hypothetical situation**: "if there is a child under the age of 6 (for the sake of example, let's say this child, Sam, is 4) in Biba's neighborhood"
+
2) **applies the information given in the stimulus to come up with what must be true/the necessary condition of the hypothetical situation**:

Given the information above, we know that 4-year-old Sam cannot swim from 12 to close. Yet, we also know that EVERYONE, including Sam, gets to swim at some point during the pools open hours. Thus, the pool must have additional open hours, which could only be before 12 PM.

Incorrect answer choices don't have to be true, aka: could be false

(A) We are not given an information about how many children under the age of 6 are living in the neighborhood. It's possible that TONS of kids under the age of 6 live in Biba's neighborhood.

(C) We are not given any information about the # of children who are 6+ or the # of adults. What if only 10 children (0 adults) swim in the afternoon from 12 - 5 PM, but 100 adults swim from 5 PM to close? The pool would generally be more crowded after 5 PM, not less crowded.

(D) We are not given info about frequency of pool visits; we only know who/when people are permitted/not permitted to swim. It is absolutely possible that children don't ever go to the pool. Maybe they are too busy with other activities.

(E)"Any" makes this answer wrong. As long as the child is >= 6 years old, he/she is not breaking any rules.

The conditional relationships in the stimulus can be diagrammed as follows:

Live in Biba's neighborhood --> permitted to swim at some time during each day
Swim between 12-5 PM --> above the age of 6 only

Swim between 5 PM and closing --> adults only

So logically, if Biba's next-door neighbor (i.e. someone who lives in her neighborhood) has a child under the age of 6, and everyone in the neighborhood is permitted to swim at some time during the day, then the pool must be open before noon. Recall that after 12 PM, no children under the age of 6 are permitted to swim. So, in the scenario described in answer choice (B), if the Barton Pool were not open before noon, the neighbor's child will be out of luck - which violates the conditional relationship in the first sentence.

When you take all of "Everyone in Biba's neighborhood is permitted to swim at Barton Pool at some time during each day that it is open. No children under the age of 6 are permitted to swim at Barton Pool between noon and 5 P.M. From 5 P.M. until closing, Barton Pool is reserved for adults only.": then, if someone's permitted to swim--as the stimulus says they are--, and is under 6, it can't be after 5 p.m., and can't be after noon. So, the pool must be open before noon.

D. The stimulus talked only of the schedule for accessibility to the pool, but we have no idea if anyone ever actually does swim. Being permitted to do something isn't equivalent to necessarily doing that thing.

Maybe the pool has been contaminated with toxic waste and no one wants to even dip their toes in the green sludge? Or perhaps the afternoon is when the pool employees release chlorine-tolerant killer sharks to swim their laps and its best to stay out of the water for a few hours... Obviously exaggerated examples, but it hopefully helps to show the difference between being permitted to swim and actually swimming.

We also know that children under six aren't permitted to swim between noon and 5pm. That means this answer is also dubious in that it limits any potential 'children' swimmers to those between six and whatever is decided as the highest range for childhood.

One thing that should have stood out here is that everyone in the neighborhood is permitted to swim. Based on the swim times in the stimulus, only children over 6 are covered. There's a period of time for 6 and up, a period of time for only adults, but children under 6 are not addressed. They couldn't come during the periods already discussed, because those periods are already limited to other age groups. So, if there are any children under 6 in the neighborhood, they must be allowed to swim at a different time. The times listed cover noon until close, so the only other time available would be in the morning.

Answer choice (B) describes that situation. There's a child in the neighborhood under 6. They would have to open the pool before noon to have a time when that child would be permitted to swim. The stimulus tells us there must be a time everyone in the neighborhood can swim. That means they must open at a time that allows swimming at the ages of anyone in the neighborhood. That doesn't mean that anyone actually shows up during those hours. It just means it's open and allowed.

Just because something is permitted doesn't mean it's required. That should have made it easy to knock out at least answer choice (D).

6. D

If garden and living → can visually merge into room separated by single space sliding glass doors

Then the stimulus provides information about what happens in such areas both in warmer and colder weather. Also, Conditional Logic, the second statement, about warmer months, translates into:

If sliding doors → visual merger is created ***are open OR visual merger intensifies***

The final statement, about colder months, is another Conditional Logic one. Translate it into:

If garden is well → visual merger strong coordinated with the living room AND the garden contributes strong visual interest

(D) must be true based on the stimulus. The stimulus says that in the summer, the visual merger can occur so long as the sliding doors between the garden and living are open, no matter whether or not the garden contributes strong visual interest.

(A) distorts the Conditional Logic in the stimulus by treating the idea of a well-coordinated living room as if it were sufficient to guarantee a garden with strong visual interest. However, in the stimulus, both these ideas together are sufficient conditions for a strong visual merger between a living room and garden. For the record, here is the translation of **(A)** as well as its contrapositive:

If garden is well → garden contributes ***coordinated with strong visual interest living room***

If garden ~ contribute → garden is ~ well strong visual interest coordinated

(B) distorts the last statement of the stimulus in two ways. It translates to:

If visual merger → garden is well coordinated with living room

First, this is an incorrect contrapositive of the final statement of the stimulus (it reverses without negating). Second, this answer choice leaves out the other sufficient condition, the idea of a garden contributing strong visual interest. For the record, here is the translation of **(B)** as well as its contrapositive:

If living room and → garden is well garden merge in coordinated cold weather

If garden ~ well → living room and garden coordinated ~ merge in cold weather

(C) incorrectly contraposes the second statement in the stimulus. This answer choice would translate to:

If visual merger is created → sliding doors are open

This reverses the second Conditional Logic statement without negating it. If the doors are open, the effect is created or intensified. To achieve that effect, it is not *necessary* for the doors to be open. For the record, here is the translation of **(C)** and its contrapositive:

If garden and living → doors open ***room merge in summer***

If doors ~ open → garden and living room ~ merge in summer

(E) contradicts the logic of the stimulus. In the stimulus, the idea that sliding glass doors *may* be open in summer is presented as an illustration, rather than as a piece of the Conditional Logic. In other words, summer is just one time when sliding doors would likely be open. Even when it isn't summer, though, the logic about what happens when the doors are open still applies.
For the record, **(E)** and its contrapositive can be translated as:

If ~ summer → opening doors ~ ***intensify merger effect***

If opening doors → summer intensifies merger effect

In this stimulus, a designer states that any garden and adjoining living room separated by sliding glass doors can become a single space visually. When the doors may be open, as in the summer, the "single space" will be created if it does not already exist. If the visual single space does exist already, this effect will be magnified:

- Sliding doors open ⟶ create single space *or* intensify pre-existing single space

Even during the colder months, the effect will remain, *if* the garden is coordinated with the room and contributes a strong visual interest on its own:

- Garden coordinated *and* contributes strong visuals ⟶ single space effect remains

The question stem asks which answer is most strongly supported by the designer's statements, so we should locate the answer choice in accordance with the above conditional rules.

Answer choice (A): This answer choice provides the following conditional statement regarding a room with the sliding glass doors closed:

- Garden coordinated ⟶ contributes strong visual interest

This statement runs contrary to the information provided in the stimulus, referenced above, which states in the winter, when the door is closed, the single space effect will continue if the garden is coordinated with the room and if the garden contributes a strong visual interest of its own:

- Garden coordinated *and* contributes strong visuals ⟶ single space effect remains

This answer choice incorrectly characterizes the strong visual interest single space effect as the sole necessary condition for being coordinated with the room, so this answer choice is incorrect.

Answer choice (B): This answer choice provides the following incorrect conditional reasoning:

- Single space effect ⟶ garden well-coordinated

This answer choice is contrary to the conditional reasoning provided in the stimulus:

- Garden coordinated *and* contributes strong visuals ⟶ single space effect remains

Since this answer choice reverses the sufficient and necessary conditions, and leaves out any reference to contribution of a strong visual interest, this choice is incorrect.

Answer choice (C): This answer choice is also contrary to what is said in the stimulus, which tells us that a visual single room effect can be created if the doors are open. The designer also states that the effect can be intensified by opening the doors:

- Sliding doors open ⟶ create single space *or* intensify pre-existing single space

Since we are told that the open sliding glass doors have the potential to *intensify* a single space effect, we know that they are not always required to *create* such an effect.

Answer choice (D): This is the correct answer choice. According to the stimulus, the contribution of a strong visual interest doesn't even come into play in the summer, during which the opening of the sliding doors creates a single space effect if it didn't already exist. If this effect was already present, opening the doors intensifies it:

- Sliding doors open ⟶ create single space *or* intensify pre-existing single space

Because a garden can visually merge with an adjoining living room and form a single space in the summer, even if it does not contribute a strong visual interest of its own, this answer choice is correct.

Answer choice (E): The designer provides conditional reasoning regarding sliding glass doors. The first rule concerns open sliding doors, and the author points out that this may happen in the summer. This does not imply that the same course of action in the winter would not have the same results, so this answer choice is incorrect.

If sliding doors open

AND

the areas already visually merged (the effect exists) ⟶ The effect with be intensified

If sliding doors open

AND

They did not visually merge (the effect did not exist) ⟶ The effect will be created

For this question we have the second sentence stating that **if** the sliding doors open, **then** we will necessarily be able to create a merging of the garden with the living room. And that **if** we have visually merged the two together, **then** we will necessarily intensify the merger by opening the sliding doors. The third sentence says that **if** the garden is well coordinated **and if** it contributes a strong visual interest on its own, then the effect remains quite strong in the colder months.

Answer choice A says that in order for a garden to be well coordinated with the living room, it must contribute strong visual interest. This answer choice simply does not follow from the conditional statements in the stimulus. There is no requirement of contribution of a strong visual interest in the second sentence (or the first), therefore it is not true that a visual merger depends on, in any way (especially in the summer when the sliding doors are open), this particular condition (contributing visual interest). So, A is out. Hopefully that is clear.

Answer choice C says that in order for the living room and garden to visual merge in the summer, the doors must be open. However, we know this is true from the second sentence, which states that opening doors can intensify an already-existing visual merger, implying that one must necessarily be capable of existing prior to said-opening. Hopefully that is clear as well.

And then, finally, just to round things out, **D is the correct answer**, given the implication of the sufficient condition in the third sentence, which contemplates the existence of this visual merger in the absence of the garden having a strong visual interest on its own via implication.

The designer says a lot. It's pretty difficult to weave these statements together into some sort of second or third level inference by just reading them. The question stem does ask for what must be true, so let's analyze the answer choices carefully as we look at them.

(A) ends by saying "unless the garden contributes strong visual interest." This implies that the garden contributing a strong visual interest is a necessary condition. "Strong visual interest" is preceded by the word "if" in the stimulus. So, stimulus states that "a strong visual interest" is a sufficient condition. The answer choice implies that it's necessary, so answer choice cannot be inferred.

(B) Ends by saying "unless the garden is well coordinated with the room." The key word is "unless" implying that having a "garden well-coordinated with the room is necessary. In stimulus know that it's sufficient with the key word "if." This answer choice has mistaken a sufficient for necessary condition.

(C) Also mistakes a sufficient for necessary condition. The answer choice finishes by saying "unless the doors are open." The word "unless" indicates a necessary condition. The stimulus says, "If the sliding doors are opened." The word "if" indicates a sufficient condition. Thus, answer choice (C) is not correct.

(D) Must be true. "Even if" implies neither sufficiency nor necessity. So, you could cross out everything including and after the words "even if" without changing the meaning of the statement. The stimulus says in the first sentence that "any garden and adjoining living room ... can visually merge into as single space."

(E) Mistakenly assumes necessity. "The summer" is not a required condition of anything according to stimulus. Answer choice (E) says that the summer is a necessary condition when it qualifies the statement with "Except in summer." Thus, one cannot infer answer choice (E).

Answer choice (B) suggests that "the garden is well coordinated with the room" is a necessary condition. We know this from the word "unless." The stimulus however, introduces that same idea with "if," suggesting that it is a sufficient condition.

Thus we can say that answer choice (B) mistakes a sufficient condition for one that is necessary.

Notice the weakness of both the claim in the stimulus and in answer choice (D). The answer choice can get away with not qualifying the claim because it's so weak: A garden *can* visually merge...

A garden *can* merge with an adjoining living room even if the two are separated by glass doors, according to the stimulus.

Because of the weakness of the claim, the statement can seem like a broad generalization. For example, suppose baseball players who bat right-handed can be hit by a left-handed pitcher. From that we can still say that baseball players can be hit by a left-handed pitcher.

Any garden and adjoining living room that are separated from one another by sliding glass can visually merge into a single space.

(D) A garden can visually merge with an adjoining living room into a single space (the even part you can ignore).

Sliding glass is not indicated to be a necessary or sufficient condition of the 'merging into a single space.

Select (D) simply by realizing it is a restatement of the first sentence.

7. C

If Addictive → withdrawal causes most users extreme psychological and physiological difficulty

(C) matches the definition of *addictive* at the end of the stimulus even though it is worded in the negative:

If Addictive → "that" is* not *true for most habitual users

But do not leave vague pronouns in your paraphrase; substitute the word that "that" stands for:

If Addictive → ceasing to use with little or no psychological or physiological difficulty not true for most habitual users

That is the same as:

If Addictive → withdrawal causes most users extreme psychological and physiological difficulty

(A) confuses necessity and sufficiency. Rather than indicating what is necessary to qualify as addictive, this choice provides what is sufficient to guarantee something is addictive. It takes the final sentence of the stimulus and reverses the Conditional Logic.

(B) is a 180. The definition of others, which the author and medical experts dispute, would deem fewer substances addictive. The definition used by medical experts appears to be the status quo, so its usage would not cause fewer substances to be deemed addictive.

(D) is Outside the Scope of the statements because it deals with a substance that is nonaddictive and that people have not ceased using. It does not map out as the contrapositive of the stimulus, which would be:

If withdrawal does not → nonaddictive cause most users extreme difficulty

(E) is a 180 because the author does put forth what she considers an "adequate" set of criteria. Additionally, **(E)** is even easier to eliminate as Extreme because of the word *impossible* which is not supported in the stimulus.

(A) has two complicating issues. First, the answer choice mistakes necessity for sufficiency. The stimulus relies on the phrase "only if", whereas the answer choice relies on the word "if." And second, it's not about one person having difficulty ceasing to use a substance, it's about a majority of people having difficulty.

(B) is tempting, but we don't know how many substances fall into the addictive category using the various definitions.

(C) is correct. It says that a substance is addictive only if it is difficult for most users to quit. This is directly taken from the final sentence.

(D) is irrelevant. It's not about use that makes something addictive. It's about difficulty in quitting.

(E) Is not quite true. The author challenges one definition of addiction, but doesn't imply that a definition isn't possible.

Notice that under the system the author believes is inadequate, we see that all a substance needs to be considered nonaddictive is for some people to cease use of. Under the adequate system, substances won't get such an easy pass. Now if it causes the majority of folks discomfort during the cessation process, it will not be considered addictive.

So answer choice (B) represents something we would expect to be false! It's the opposite of what we want.

We don't actually know what the expert feels about how this new adequate criterion he mentions in the conclusion would impact the number of substances that are deemed addictive. Notice that after the "however" he says if we use the criteria that some have suggested (as described in the preceding sentence) then some addictive substances would be nonaddictive. The expert is actually arguing AGAINST this criterion so we can't infer B since the adequate criterion is the one, he suggests in his conclusion as opposed to the one advanced by "some" in the first sentence. Moreover, the criterion after the "however" is actually inadequate and not adequate.

We have no way of knowing what the standard is at present, so B can't be right. There were only two standards given and neither was averred to be the present standard. So, while it's tempting to think that we should make a comparison between the two, it is not supported by the stimuli.

Last sentence: If addictive --> withdrawal causes most habitual users extreme psych and phys difficulty.

Answer C says the same thing in a tricky way: If addictive --> not true for most users (where the "not true" is the first part of the answer: some habitual users experience no psych or phys difficulty).

C = If addictive --> most habitual users DO experience extreme psych and phys difficulties.

In terms of the formal logic of the last sentence and (C), we can translate the last sentence like this:

If addictive --> most habitual users who try to quit will suffer extreme difficulty

That's from the stimulus. Then, (C) muddles a lot of stuff together, but it essentially says:

If addictive --> what's true for a few habitual users ISN'T true for most habitual users

or in other words:

If addictive --> most habitual users will experience at least some difficulty when they try to quit

If addictive --> most habitual users who try to quit will suffer extreme difficulty

(C) says

If addictive --> most habitual users who try to quit will face more than a little difficulty.

So if we take as true that quitting will cause most people to suffer "extreme difficulty," then quitting must also cause most people to suffer "more than a little difficulty."

Here's an analogy:

Given: To go to B-school, you must have completed four years of college.

Inference: To go to B-school, you must have completed at least one year of college.

The inference and the given are not identical, but one year of college is a ***necessary stop*** on the way to four years of college. Therefore, the inference "must be true" based on the given. Similarly, if quitting an addictive substance causes extreme pain, then it must also cause a little pain, since a little pain is a ***necessary stop*** on the way to extreme pain.

Following the first sentence of the stimulus, the next sentence begins with "some have suggested..." which typically suggests that the author does not in fact agree with the opinion being stated by. This is confirmed by the next sentence. The following sentence goes on to tell us what is wrong with the beliefs of the "some people" mentioned in the former part of the stimulus, suggesting that the authors opinion is about to be revealed.

The author suggests that a substance is addictive ONLY IF..

We know that introduces the necessary condition. So we can draw out the statement like this:

addictive --> withdrawal from its habitual use causes most users extreme psychological and physiological difficulty. This correct answer choice is contingent on us understanding this statement.

Lets get into the answer choices.

(A) This is a mistaken reversal. If we glance back to the condition statement, we will see that it is suggesting that the necessary condition leads to the sufficient, which is not something we can infer. Common wrong answer.

(B) We don't know if fewer substances would be deemed addictive or not, we are just not given this information. We don't know how many drugs are considered addictive according to what criteria.

(C) Here is the right answer.

We know that if something is addictive, it causes the user a lot of grief if he tries to quit. This is what is being said here, in a convoluted conditional statement. I'll try to parse out the language.

A substance that users could quit without much grief would NOT be addictive, according to our conditional above. The "only if" statement in the latter part of this answer choice suggests that although there are some people that can quit this substance without many issues, for MOST users that is not the case. So what does this mean? It means for MOST users its really hard to quit this drug. So it is addictive!

(D) We need to know about the person quitting and withdrawing in order to draw any inferences. This talks about the habitual USE of a drug, but not about what its like to quit said drug. Perhaps if you stay on a drug your whole life, you never face psychological or physiological issues.

(E) Again, we don't know this. Impossible is a really strong word, and the stimulus actually suggests the author has found a somewhat adequate measure to determine whether or not a substance should be considered addictive or not.

(A) There are two problems with this. First it switches around the necessary and sufficient condition of the conditional statement in the last sentence. Secondly this answer choice only has "one" user that withdrew experiencing psychological and physiological difficulties, whereas the stimulus has "most users", we don't know if this person in question is part of that group. A third issue is that we don't know if this person is even a habitual user.

(B) This is not at all inferable from the stimulus. We don't know the number of substances that are classified as addictive under the prevailing definition, nor do we know the number that would be classified as addictive if an adequate definition were employed.

(C) This is correct. Essentially it is saying that a substance is addictive only if most of its habitual users cannot cease to use it without psychological or physiological difficulties.

(D) This could be true but need not be true given the information we're told in the stimulus. The uses the psychological and physiological effects WITHDRAWAL by most habitual users as a metric to determine whether substance is indeed addictive. This uses the effects of USING the drug as a metric for determining addictiveness, completely different. Eliminate.

(E) Nope.

Everything in this argument stems from the last sentence: this sentence contains a convoluted conditional logic statement that can be used to prove one of the choices correct.

The below diagram can be used to illustrate the last sentence, particularly the last half of that sentence: “a substance is addictive only if its withdrawal...causes most users...difficulty.”

Addictive → most users have withdrawal difficulties

The correct answer will probably mimic the conditional statement at the end of the paragraph.

(A) This is, at best, an incorrect reversal of the last sentence. Withdrawal difficulties → addictive. (This also does not acknowledge that the last sentence of the paragraph references most users having withdrawal problems.

(B) This choice would require numerical comparisons of how many substances are presently deemed addictive to how many terms would be deemed addictive under a different definition. But the expert never actually states how many terms are presently deemed addictive. In fact, the expert never states the present definition of addiction, just two proposed definitions of addiction.

(C) This has massive amounts of distracting elements, but at its core, this choice says “a substance...is addictive only if that is not true for most habitual users.” The tricky element is decoding what the word ‘that’ refers to in the quoted text. This ‘that’ actually refers to “users can cease to use with little or no difficulty.” Further translated, the choice, in essence, is “a substance is addictive only if most users cannot cease to use it with little difficulty. This a good paraphrase of the last sentence of the prompt paragraph.

(D) This choice fails because it does not hinge on difficulties due to withdrawal.

(E) The author thinks that addiction is definable: that is the last sentence.

8. D

The stimulus contains several Conditional Logic statements related to two distinct scenarios:
quotations from older works and modern works. In each of the first three statements, the sufficiency trigger of *if* is used to indicate the beginning of the Conditional Logic statement.

If older AND archaic → preserve archaic form AND infrequent AND ~ interfere

If older AND archaic → may modernize with a AND frequent textual note

If older AND archaic → modernize with a AND frequent general statement in AND already modernized the preface more than once

If modern AND → correct without typographical error explanation

(D) is supported by the passage. **(B)** and **(D)** are good places to start because they focus on when an editor *may* modernize. **(D)** matches the *however* distinction, which indicates that if archaic punctuation occurs frequently, then the editor may modernize. The frequency in an older work with archaic styles triggers the ability to modernize, so this choice is correct, even though it also includes interfering with reader comprehension. There is nothing in the stimulus to indicate that interfering with reader comprehension would preclude the editor from modernizing.

(A) fails to clarify which type of work is being edited. If it's a modern work, the last sentence indicates that corrections, unlike modernizations, do not need explanations. In this case, **(A)** would contradict the stimulus. However, without knowing the type of work, it cannot be determined if **(A)** must be true or false.

(B) also focuses on the "*may* modernize" aspect. However, it is a Distortion because in regard to modern works, the style manual only gave instructions regarding typos, but not necessarily for archaic spellings.

(C) is Extreme because the stimulus merely indicates when an editor *may* modernize and never states that an author *should* modernize. Additionally, the first Conditional Logic statement has "do not interfere with a reader's comprehension" on the sufficient side of the statement. So when contraposed, "interfere with a reader's comprehension" would end up on the necessary side, and thus would not trigger any action whether or not it was recommended (should) or just allowed (may).

(E) is a Distortion of the third Conditional Logic statement. A general statement in the preface is part of the modernization of a frequent error that is fixed in several places, not just a fix that is made in "only one of several similar instances."

The short answer is that the stimulus never tells us what should happen when an editor corrects the spelling of a quoted word and the word occurs only once. Instead, the stimulus discusses what happens when such modernization occurs in more than one quotation. Since the stimulus doesn't discuss the sufficient condition of answer choice (A), then the stimulus doesn't address answer choice (A) at all.

Answer choice (D) though can be inferred from the claim that "if [archaic spellings and styles] occur frequently, the editor may modernize them."

Well in order for one of those conditional relationships to be the correct answer the stimulus would need to discuss what happens when A occurs.

So, for the same reason why answer choice (A) was eliminated in the discussion earlier, so too can we eliminate answer choice (C).

For answer choice (A) the stimulus never tells us what should happen when an editor corrects the spelling of a quoted word and the word occurs only once.

For answer choice (C) the stimulus never tells what should happen if the spelling interferes with reader comprehension.

Can you see how the stimulus never addresses the sufficient condition of answer choice (C)?

As far as the "archaic" vs. "older work" distinction goes that you're wondering about on answer choice (D), notice that the stimulus does actually use the phrase "older works." Also, notice that the answer choice states that the punctuation is going to be "modernized." That means that it isn't currently modern as your question suggested.

(E)'s sufficient clause (modernizing only one of several similar instances of quoted punc) is also not in the stimulus.

Read the sentence starting with "However" closely. The sufficient condition is one where there is similar modernizing in more than one quotation. The answer choice states that there are several instances where it happened, but only ONE is modernized. Thus, we do not have the sufficient clause needed to support (E)...even though the necessary clause matches up.

If one wants to argue that the answer choice (A) refers to an archaic work, the explanation/note is still unsupported, because the correction is "infrequent." Obviously, we do not know if it's interfering, so this doesn't quite get to invoking preservation.

Instead of having similar modernizing in more than one place, we're getting dissimilar modernization, since the modernizing is not similarly applied to all cases.

It is telling us what happens if they occur frequently. It does not talk about reading comprehension like the first statement did.

Answer choice A does not distinguish between a modern work or an archaic work, so we cannot say that this statement must be true.

B) We know that obvious typos in modern works can be corrected without an explanation. We do not know if this must be true.

C) We have information regarding what to do when 2 things happen, ~frequent and ~interfere RC.

We know nothing about what happens when interfere RC.

Analogous situation:

~A and ~B ---> C

Do we know what happens if B? No! We do not even know what happens if ~B! We have to have both A and B to determine something.

D) We know what happens with archaic spelling and punctuation issues when they occur frequently ---> you can modernize them.

"An editor may modernize punctuation directly quoted from an older work if that punctuation occurs frequently and is written in Greek."

A ---> B

A and Z ---> B

You can replace Z with any variable, but as long as A requires B, we know that when an A is present, the B will be required.

if you know A --> B

and I tell you,

A and Z are happening,

do you know if B is happening?

You do! Because the rule is that **whenever** A happens, B happens.

So a rule that says

Freq. --> may modernize

will get triggered any time Freq. happens.

The first sentence really announces our general presumption: let's KEEP the older spellings, as long as they're not a big deal in terms of frequency/comprehension. The only time we ARE told to get rid of them is when they are frequent, and we should explain that we're modernizing

them when we do. We can fix typos without warning people.

(A) it might be a typo the editor corrects, and those don't need to be explained.

(B) no, pretty sure we were supposed to EXPLAIN any modernizations (fixing a typo is NOT a modernization).

(C) no, pretty sure only Frequency was offered as a case where we WOULD modernize.

(D) Sounds reasonable. Double whammy: frequent AND confusing.

(E) This sounds backwards. The preface option was for when we modernized MORE than once.

The stimulus provides that if archaic spellings are frequent, the editor can change them.

So, again, frequent occurrence is enough (sufficient) to allow changes:

frequent occurrence ⟶ allow for changes

That means that frequent occurrence that *also* interferes is **more than enough** to allow for changes to be made:

frequent occurrence
and ⟶ allow for changes
interfere

Let's consider another example: Let's say that you don't like chocolate. If I give you a bowl of chocolate ice cream, you will turn it down:

chocolate ice cream --> you turn it down

But what about if I offer you a bowl of chocolate ice cream with chocolate sauce? That's **more than enough** to guarantee that you turn it down--but you will still turn it down:

chocolate ice cream
and ⟶ you turn it down
chocolate sauce

Frequent occurrence is enough to allow changes:

That means that we might add several conditions and still not affect the basic outcome tat frequent occurrence ⟶ allow changes.

In the example from the stimulus:

frequent occurrence
and ⟶ allow for changes
interfere

And from your example, even if they don't interfere, frequent occurrence is still enough to allow for changes:

frequent occurrence
and ⟶ allow for changes
NOT interfere

The first two sentences of the stimulus are diagrammed as follows:

~frequent + ~interfere --> preserve

frequent --> ~preserve

The fact that the punctuation occurs frequently is sufficient to find that the editors may modernize the punctuation. The additional statement about interfering with reading comprehension is irrelevant, since according to the logic of the second sentence, frequency is *sufficient.*

The first statement states a rule that applies to older works, direct quotations in those works, and specifically the archaic spelling and punctuation in those direct quotations. It says that if the spellings/punctuations are infrequent and don't interfere with reader comprehension, then they should be preserved. Notice how answer choice C is, in essence, a Mistaken Negation of that conditional rule: if the spelling DOES interfere, then you should NOT preserve it. A Mistaken Negation must be wrong on a Must Be True question.

The second statement applies to the same categories (older works, direct quotations, archaic spellings/punctuations), and says if the spellings/punctuations occur frequently, then the editor may modernize them (EITHER with a note in the text, OR with a general statement in the preface, depending on how many quotations are modernized). Notice how answer choice D is right on the mark for this rule. It's about an older work, a direct quotation, and an archaic punctuation. It says that if the archaic punctuations occur frequently, the editor may modernize them. Bingo! Notice also how answer choice E contradicts this rule. It says for just one modernization to put the explanation in the preface. That's against this rule, which says for just one modernization, you should put the explanation in the text (not the preface).

The third statement is about different categories (modern works, quotations, typographical errors). It says the errors may be corrected without explaining them. Notice that the problem with answer choice A is that we don't know if it's talking about modern works or older works. So we don't know whether this rule (make the correction with no explanation) or the "older works" rule (make the correction, but include an explanation) applies. Notice also that the problem with answer choice B is that it's talking about modern works, but the only rule we have about modern works is for typographical errors. We don't know what the rule is for archaic spellings in modern works.

9. B

Main or first or last --> capitalize
If NOT first or last: articles, prepositions, conjunctions with <5 letters --> NOT capitalize

(B) is inferable (provable) because it starts with a word in the middle that should be capitalized. What do we know it CANNOT be? It can't be an article, preposition, or conjunction with <5 letters. (B) references that this word we're discussing can't be an article or short conjunction.

(A) may be tempting, but let's figure out why it's NOT provable. It suggests that the only reason a preposition or conjunction should be capitalized is if it's a first or last word. Is there any other possibility? If you're not sure, review the rules above. This word could be a main word of the title.

(C) is suspicious since it starts with "all," but that's not grounds for expulsion - the problem with (C) is that some prepositions and short conjunctions should be capitalized, those that begin a title, for example.

(D) is not provable - we haven't learned about lots of other types of words and how to handle them. What about proper names, for example!

(E) is not provable - we only learned when those words should not be capitalized.

If main word OR → capitalized first word OR last word

If article in middle of → ~ capitalized title OR preposition/conjunction of fewer than five letters in middle of title

(B) is correct as it is the contrapositive of the Conditional Logic in the second sentence that indicates the results of knowing that a word in the middle of the title *is* capitalized. It could also be inferred that it is not a preposition with fewer than five letters.

Answer choice (A): This choice is incorrect, because a preposition or conjunction of five or more letters might be capitalized even mid-title.

Answer choice (B): This is the correct answer choice. Any article or conjunction that is mid-title and less than five letters should never be capitalized. Thus, it must not be shorter than five letters.

Answer choice (C): This answer choice is incorrect because first and last words in a title should always be capitalized, even if they are prepositions or conjunctions.

Answer choice (D): This is incorrect for the same reason that answer choice (A) is incorrect; a preposition or conjunction of five or more letters might be capitalized even mid-title.

Answer choice (E): This is a potentially tricky wrong answer choice. Capitalization of mid-title, 5+ letter preposition/conjunction is not explicitly prohibited by the rules, it is not dictated either. We can't presume capitalization of such to be proper in any context.

10. E

The stimulus provides three facts. First, some 20th-century art is great art. Then, two Conditional Logic statements:

If great art → original ideas

If ~ influential → ~ great art

great art → influential

So, great art → original ideas + influential

If great art → original ideas AND influential

If ~ original ideas OR ~ influential → ~ great art

Also, recall that some 20th-century art is great art. This type of *some* statement does not yield a contrapositive, but it can be interpreted two ways. It means that out of all the 20th-century art, there is at least one piece of great art, and also that out of all the great art, there is at least one piece of 20th-century art. Finally, remember that any modestly phrased answers are more likely to be true and thus are candidates for elimination on this EXCEPT question, while forceful answers are more likely to be
the correct answer.

(E) does not have to be true and so is correct. This choice indicates that for art to be influential, it must involve original ideas. This would diagram as:

If influential → original ideas

The statements in the stimulus cannot be contraposed or combined to yield such a deduction. You know that great art is both influential and original, but the stimulus doesn't say what *influential* would trigger. Because you cannot know for sure if this answer choice is true, it does not follow logically from the statements and thus is the correct exception.

(A) is a modestly phrased statement that must be true. Because all great art involves both original ideas and is influential and because some great art exists (as some 20th-century art is great), it must be true that some influential art involves original ideas.

(B) is another modestly phrased statement that must be true because some 20th-century art is great, and great art must also involve original ideas.

(C), while forceful, is a valid logical deduction from the statements. It states the main deduction made above:

If great art → influential AND original ideas

(D) is a modestly phrased statement that must be true because some 20th-century art is great, and thus it must also involve original ideas and be influential.

Stimulus Breakdown:

Great art -> original ideas.

Great art -> influential.

Some 20th century art is great art.

We have a couple conditionals, so we should see if they chain together. They do not, although, we could say that "Great art -> original ideas and influential". We also have a specific fact that might trigger the conditionals. Since some 20th century art is great, we know that some 20th century art is influential, and some 20th century art involves original ideas.

(A) Can be inferred. We know that some 20th century art is great, which means it is influential and involves original ideas.

(B) Can be inferred. We predicted this.

(C) Can be inferred. This would be diagrammed as "Great art -> influential and involves original ideas"

(D) Can be inferred. We predicted this.

(E) Cannot be inferred. This tries to create a conditional relationship between "original" and "influential". We weren't given anything like that. This is the same as being told "All NFL players are athletic and all NFL players are wealthy" and then inferring "only athletic people are wealthy".

Knowing that *some* twentieth-century art is great art is of limited use for us in terms of making inferences. It doesn't guarantee that a piece of twentieth-century art is great or not great, and it doesn't guarantee that great art is or isn't from the twentieth century.

For the first sentence, I think it's best to think of it in its original form:

Some 20th century are is great art.

Great art -- > original ideas.

- Influential --> - great art.

Great art -- > original ideas.

- Original ideas --> - Great art

- Influential --> - great art

Great art --> Influential

(A) We know for certain that there are some great paintings that are both influential and original. Therefore, we know for sure that some influential

art must involve original ideas.

(B) We know some 20th century art is great, and all great art involves original ideas. Added together, we can see that some 20th century art involves original ideas.

(C), in formal notation, would translate to G --> I and O. We know this is true. Since we know that all great art is influential and original, we know that only art that is influential or original can be great (if it wasn't influential or original, it couldn't be great).

(D) can be inferred by combining all three statements we are originally given.

(C) connects together two elements -- influential and original -- in a manner that can't be proven by the text.

In formal notation, (C) would translate to I --> O.

Based on this answer, if artwork is influential, it MUST BE TRUE that it involves original ideas. Therefore, I -- > O. (I must mean O).

Based on this answer it doesn't have to be true that if an artwork is original, it must be influential.).

G --> I, and G -- > O, but this does not mean I -- > O.

1) 20th Century ---Some ---> Great Art.

2) Great Art --> Original Ideas.

3) ~ Influential --> ~ Great Art

CP: Great Art --> Influential.

Connect them together and we get this:

20th C ---some --> Great Art --> Original Ideas + Influential Art

Main Inferences:

20th C --some --> Original ideas.

20th C---some --> influential.

Or both!

Original ideas ---some---> Great Art (some original ideas are great art work).

Influential art ---some--> Great Art (some influential art is great art).

(A) We know that all Great Art = original + influential.

So, it must be true that some - or at least one - influential art work involves original ideas, since all great art is both influential and original

(B) 20th C -- some --> original ideas. (Yup, see diagram above).

(C) Great art --> influential + original ideas (Yup, see diagram above).

(D) 20th C ---Some---> influential + original ideas (Yup, see diagram above).

(E) Influential --> Original ideas (not supported by our diagram).

The diagram for answer choice (E) would be:

Influential ⟶ Original Ideas

Some influential art involves original ideas but we can't say that ALL influential art involves original ideas. So, answer choice (E) does not follow logically from the statements in the stimulus and is therefore our correct answer.

Answer choice (C), on the other hand, looks like this:

Great Art ⟶ Influential + Original Ideas

This comes directly from your diagrams (points 2 & 3).

Answer choice (E) claims that the only kind of art that is influential is the kind that contains original ideas—that influential art is *limited* to art containing original ideas. While this *could* be true, as you alluded to, it is not *dictated* to be true based on the stimulus.

11. E

If understanding a word requires knowing the dictionary definition, then it also requires understanding each word of that definition. The stimulus then mentions that some people (including all babies) don't know the dictionary definitions of the words they say.

If need to know definition → Need to know words in definition

By the contrapositive:

If don't need to know → Don't need to know words in definition the definition

The last claim states that all babies (and potentially some other people) don't know the dictionary definition of their words but that doesn't mean they don't understand those words. That would be true *if* knowing the definition is not necessary to understanding. It's not worth predicting an answer in this case. Instead, check each answer to find one that must be true.

(E) is correct. Babies don't know the definitions of any of their words, so if some of them understand their words anyway, then (as this answer suggests) knowing the definition isn't necessary for understanding.

(A) takes the argument in the opposite direction from where the author is going. The author might well concede that some babies don't understand some of the words they utter. However, this is not a conclusion regarding understanding a word and knowing its dictionary definition, the author's concern.

(B) is possible, but it presents a conclusion without linking it logically to the preceding evidence (about babies). We are looking for a statement that "follows logically from the statements above."

(C) doesn't quite work. The first half suggests that even if one is unaware of a word's definition (as babies are), the words *can* be understood. However, that doesn't mean (as the second half says) that the babies *will* understand them. Maybe only adults can understand words in this way.
(D) provides an improper negation of the Conditional Logic of the first statement. The Conditional Logic in the stimulus states that if you *do* need to know the definition of a word, then you must understand the words in the definition. However, it doesn't say anything about what would be the case if you *don't* need to know the definition.

The stimulus establishes that if some skill - understanding a word - requires specific knowledge - knowing it's definition - then that skill requires some other specific knowledge - knowing the meaning of all the words in that definition. It must be, we can assume, that it's because knowing a definition requires knowing the meaning of all of the words in that definition. The stimulus goes on to give us one more tid bit: babies don't know the definition of some of the words they utter. So, those babies don't have that special knowledge- knowing the dictionary definition - that is supposedly required.

(E) capitalizes on this fact by noting that if babies are able to understand words, then it turns out the special knowledge actually is not necessary, since babies manage to understand words without it.

[U = understanding a word; KD = know a definition; KW = know all words in a def; B= babies!]

(U --> KD) --> (U --> KW)

B (all) --> ~ KW (for some words)

The most important thing here is to notice that the first statement is NOT stating that (U --> KD), it simply is playing out the hypothetical effect of that being true.

We can infer something based on that, since that hypothetical effect is stated as a fact: If we turn it into this: (A --> B) --> (A --> C), what is missing? It requires (assumes) B --> C. So, we know that (KD --> KW), knowing a definition requires knowing the words in that definition.

Answer choice (E) states that if there are some babies who understand all the words they utter, then understanding a word doesn't require knowing all the words in the definition. In short, this must be true because it establishes that U --> KD would NOT be true if Babies U, since we already know that KD is not true (from the stimulus). It'd be as if I suggested that it might be possible that loving someone requires knowing his or her name, but, if we find out that someone loves someone without knowing her name, then that suggested rule is not true.

(A) is extremely tempting! But we don't know this; we only know that babies don't know the definitions of some words they utter. IF we knew that knowing the definition was necessary for understanding a word (if we assumed that the hypothetical conditional statement were true), this would be a valid inference. But it may be the case that it's not true that U --> KW.

(B) is very tempting and similar to (E). However, it jumps to saying that it's not true that U --> KD, but we haven't learned that the necessary part (U --> KW) is not true. It's particularly tempting also because it seems to be where the argument "is heading", but that's sloppy, non-lawyerly reading.

(C) this might be true -- babies are uttering some words for which they don't know the definitions, however we don't know that they understand a thing they are saying. This answer establishes that U --> KD is not true, but then infers that ~ KD --> U.

(D) from sheer mental exhaustion this answer choice might be tempting! However, it's negating the sufficient side of the initial statement, which does not mean we can negate the necessary side.

(D) establishes that ~ (U --> KD) --> ~ (U --> KW), which is a negation of both sides. In common sense talk: if the rule about understanding a word requiring knowing it's definition is not true, does that mean we don't need to know the words in the definition -- maybe, but maybe not! But notice, the answer choice expands this to state that you don't need to know ANY other word. That's quite a leap (and it's a leap within an illegal negation of logic).

You actually don't need to use the second part of the greater conditional to infer (E). All you need is this:

Understanding word --> knowing it's definition

If we know that babies understand all words they utter, as (E) proposes hypothetically, then according to the proposed rule, babies would know the definitions of all the words they utter. However, we know from the stimulus that babies in fact do not know the dictionary definitions of all the words they utter. So, the bold rule above is not true, as (E) states.

NOT know definitions --> NOT understand words

And we know that babies trigger the sufficient for at least some of the words they utter, so they should end up NOT understanding some of the words they utter. So, as (E) suggests – contra-positively? - the rule must not be true.

We're given two statements in the stimulus.

1. (UW ---> KD) ---> (UW ---> UWD)

2. B ---> ~KD

Notation Key: UW = understand a word, KD = know the definition, UWD = understand all the word in the definition, B = babies

The first statement is actually bait. It's not used in arriving at the correct answer.

Using the second statement and the "if" part of answer choice (E):

B some UW

B ---> ~KD

We can infer:

UW some ~KD

If some people (namely babies) can understand words without knowing the dictionary definition of a word, then understanding a word does not always involve knowing its dictionary definition. Keep in mind that to refute the idea that A requires B, you do so by showing that some A's are not B's. So given that

UW some ~KD

we know that

~(UW ---> KD)

In English: it is not true that understanding a word requires knowing its dictionary definition.

Here's an similar example.

"If" part of answer choice (E):

Some babies understand all the words they utter.

B <-s-> UW

Second statement in the stimulus:

All babies do not know the dictionary definition of all the words they utter.

B ---> ~KDD

If we add these two statements together we can infer:

UW <-s-> ~KDD

Which says understanding a word does not always involve knowing its dictionary definition.
In this case we're told if understanding a word means knowing it's dictionary definition, then it means understanding the words that make up that definition. Let's symbolize this as:

If UW means Know Dict Def --> Know Words in Def

So the contrapositive would be:

~Know Words in Def--> ~UW means Know Dict Def [Note: This doesn't mean you don't understand the word. It means understanding a word DOESN'T MEAN you have to know its dictionary definition]

We don't know if any of this is true or not. Because it's an "if." It's like being told, "If the world ends tomorrow, you'll do Y." I can take that as 100% true, but we have to wait and see if the world ends tomorrow.

This is what is happening here. The first part isn't triggered until we know that "UW means Know Dict Def." So, in (A), we have no clue if they understand the words they utter or not. We don't know if the first sentence in the stimulus even applies. It's not that it DOESN'T apply. It's that we have no clue whether it does or not, and so (A) is not a valid inference.

We're all just saying that if you have these two ideas:

babies utter words for which they don't know the dictionary definition
+
some babies understand all the words they utter

then you can prove

understanding a word doesn't ALWAYS involve knowing its dictionary definition

If, as answer choice E provides, there is even one baby ("some") who understands all of the words he or she says, and we already know from the stimulus that all babies use words for which they don't know the dictionary definition, that means that at least some babies (at least one, to be precise) utter words that they understand but for which they do not know the dictionary definition. This would confirm that understanding a word does not always involve knowing its dictionary definition.

Knowing dictionary definition is necessary for understanding a word ------> Understanding words in definition is necessary for understanding a word

You could abbreviate that however you want but the meaning behind your abbreviation should match the meaning I've outlined.

The last sentence then tells us that babies use some words that they don't know the dictionary definitions of.

We can't combine those two sentences to make any inferences because the author doesn't tell us whether or not babies understand the words they utter.

Answer choice (A) is incorrect because, though we know babies use some words they don't know the definitions of, we don't know whether understanding the dictionary definition is actually necessary for understanding a word. We only know that if knowing the definition IS necessary, then we must also understand the words in the definition. Therefore, we can't make any conclusion about whether babies understand all the words they use or not.

Answer choice (B) also can't be proven with the information we have. Based on those two sentences, we don't know whether people understand words without knowing the definition or whether they just use words they don't understand.

Answer choice (C) is incorrect because even if you can understand words without knowing their definitions, that doesn't mean that babies understand the words they're using. They might not understand the dictionary definition AND the word.

Answer choice (D) is incorrect. Even if you can understand a word without understanding its dictionary definition, that doesn't mean you can understand it without understanding ANY other word.

Answer choice (E) is correct. If babies understand ALL of the words they utter, including the "some" the author told us they utter without knowing the dictionary definition of, then that means that they can understand a word without knowing the dictionary definition.

Answer A is tempting, but if you diagram the stimulus, you get

always knowing dictionary definition $\longrightarrow$ understanding words

slash always knowing dictionary definition, subscript babies (babies don't always know dictionary definition)

Since "understanding words" is the necessary, not the sufficient, a baby, even if he/she doesn't know a dictionary definition, could somehow understand the words in the definition. (That may sound stupid, but I'm just following the diagramming. Maybe the "understanding" is on some emotional, non-logical level, maybe?)

So, we don't know babies utter individual words they don't understand. But answer E makes sense, because even if some babies understand, we know from the stimulus that none of them know the dictionary definition.

understanding a word ⟶ knowing dictionary definition ⟶ understanding words in that definition

people ⟵some⟶ slash knowing dictionary definitions of some of the words they utter

babies ⟶ slash knowing dictionary definitions of some of the words they utter

A is tempting, but since

knowing dictionary definition ⟶ understanding words in that definition

"Understanding words" is the necessary, not the sufficient. The necessary is often a larger set than the sufficient. (E.g., "Every fish is an animal", and "animal" is a larger set than "fish".) So one could understand words in a dictionary definition (the necessary), without knowing the dictionary definition (the sufficient), sort of as if you have a dream, and you understand the words in the dream, but you don't understand the whole dream. To understand the whole dream, you would have to understand all the words in it; but you could misunderstand the whole dream, while still understanding the words in it. The larger set "understand the words in the dream" includes the subsets "understands the whole dream" and "doesn't understand the whole dream". Whew!

So, a baby, even if he/she doesn't know a dictionary definition, could somehow understand the words in the definition. (That may sound stupid, but I'm just following the diagramming. Maybe the "understanding" is on some emotional, non-logical level, maybe?)

So, we don't know babies utter individual words they don't understand. But answer E makes sense, because even if some babies understand, we know from the stimulus that none of them knows every single dictionary definition of every word he/she utters.

The reason A is incorrect is because we don't know for sure that understanding a word always involves knowing its dictionary definition; we just know what happens IF that is true.

The first sentence is not absolutely true. We only know what happens IF it is true. This is a formal logic problem, rather than conditional reasoning. Try to think of the first sentence as an argument that is being made, and the second sentence as a piece of evidence that seems to contradict that argument.

the qualifier "*some* people" which usually requires special handling. For instance, if "some monkeys are smart," we usually diagram this as monkeys ⟵some⟶ smart. Formal Logic is no longer a significant part of the test, and in fact this question can be understood without knowing its mechanics. If you're curious about it, it's something we discuss in a supplemental Virtual module under Lesson 8, available on the Online Student Center.

The reasoning in this problem contains a rare form of "nested" conditional statements, where a conditional relationship is itself a condition (sufficient or necessary) in another conditional relationship.

Now, let's take a look at the stimulus at hand.

UW = Understand Word

KDD = Know the dictionary definition

UW_{DD} = Understand all words in the dictionary definition

- $(UW \longrightarrow KDD) \longrightarrow (UW \longrightarrow UW_{DD})$

The question is this: what if some people (such as babies) don't know the dictionary definitions of some of the words they utter? In other words, what if $\cancel{KDD}_{(babies)}$? The important thing to recognize is that this fact alone doesn't necessarily mean that babies don't understand the words that they utter, because the relationship between understanding a word and knowing the D.Def of that word is not necessarily a given: *it is merely a hypothetical* (if....), functioning as a sufficient condition for the necessary condition in the above diagram. My prephrase would instead be this:

Either some babies don't understand all the words that they utter, OR ELSE THEY DO understand them, in which case the conditional relationship between understanding a word and knowing its dictionary definition is just bogus.

This agrees with answer choice (E): if some babies understand all the words that they utter without knowing the dictionary definition of these words (as the stimulus indicates), then clearly understanding a word doesn't involve always knowing its definition. To disprove a conditional relationship, all you need to do is show that the sufficient condition can occur in the absence of the necessary condition. That's precisely what (E) suggests, concluding that the conditional relationship is not true.

Answer choice (A) is incorrect, as previously explained, because it doesn't contradict a premise. It contradicts a hypothetical - there is a big difference between the two! The conditional relationship between understanding a word and knowing its dictionary definition is not an absolute given. It's merely a hypothetical that *would* be true *only if* a certain necessary condition is met.

In other words, it's entirely possible that babies understand *all* of the words that they utter, even if they don't know their dictionary definitions. Why? Because that's the implication of the contrapositive of the first sentence: if understanding a word doesn't always involve understanding all the words that occur in the dictionary definition of that word, then a baby (or anyone) can understand a word without knowing its dictionary definition. This is simply the contrapositive of the first sentence.

We are not given any way to judge how people are able to unable to understand words in the stimulus. The first sentence of the stimulus presents a hypothetical way to define "understanding a word, " but doesn't commit to thinking that's the correct definition. So...we actually don't know if anyone understands or fails to understand any words. I don't know what "understanding" means in this stimulus. It's not defined. Answer choice (B) is therefore incorrect because it requires new information.

Answer choice (E) does not indicate that babies need to understand all the words they utter. It's a conditional statement. As with any conditional, stating the sufficient condition of it does not commit one to thinking the sufficient condition is true. Consider the following:

"If I take a break for lunch now, I'll be working until at least 8 PM tonight."

Nothing there commits me to have to take a break for lunch now. I'm just expressing the consequences of doing so, were I to do so. I might even use that conditional to prove to myself that I don't want to take a break for lunch now, because I'd otherwise be working later than I desire.

Similarly in the present stimulus, the author is not claiming that some babies, or any babies, understand all the words they utter. The author is simply stating what consequences would happen if some DID. So, let's think: if some babies understand all words they utter, and we know already from the stimulus that no baby knows the dictionary definition of every word it utters, then those "some babies" in the sufficient condition of answer choice (E) understand at least one word such that they don't know its dictionary definition. Thus, that sufficient condition, if true, would prove that someone understands a word without knowing its dictionary definition. That proves the necessary condition true, so the conditional is a valid inference from the stimulus. Thus, answer choice (E) is correct.

12. B

The first sentence provides two statements:

If more consumers downtown → profits increase
If cost of living decreases → more consumers downtown

And the last sentence provides one more:
If profits increase → downtown traffic congestion must have decreased

If cost of living decreases → more consumers → profits increase → congestion decreases

(B) must be true based on the Conditional Logic. Cost of living decreases will lead to an increase in consumers, which the first sentence of the stimulus tells us will increase the profits of businesses. Remember that the correct answer to an Inference question need not synthesize *all* of the statements in the stimulus; it simply must be true based on one or more of them.

(A) gets the logical chain backward. Decreases in traffic congestion don't guarantee anything according to the stimulus (they're *necessary* for increased downtown business profits).

(C), like **(A)**, reverses the chain of logic.

(D), like **(A)** and **(C)**, also reverses the chain of logic.

(E) confuses the sufficient and necessary conditions in the first sentence. The only thing an increase in profits guarantees is that traffic congestion has decreased.

This stimulus provides a number of conditional statements. First, if the number of consumers who live downtown increases, the profits of downtown businesses will go up as well:

- #dt consumers increase ⟶ dt profits increase

Next, the council member points out that if the cost of downtown living decreases, the number of consumers living downtown will surely increase:

- cost of dt living decrease ⟶ # dtconsumers increase

These first two conditional statements create a conditional chain:

- cost of dt living decrease ⟶ #dt consumers increase ⟶ dt profits increase

Finally, the council member provides, the downtown profits won't increase unless traffic decreases. To diagram this statement, we can apply the unless formula:

The condition that follows "unless" is the necessary condition, and the other condition gets negated:

- dt profits increase ⟶ traffic decrease

In other words, downtown profits do increase, we know that traffic must have decreased.

Answer choice (A): The conditional statements in the stimulus provide that a traffic decrease is necessary for downtown profits to increase, but a decrease in downtown traffic is sufficient to draw no inferences.

Answer choice (B): This is the correct answer choice, confirmed by the conditional chain diagrammed above. The council member established that if the cost of living downtown decreases, the number of consumers living downtown will increase, which, in turn, will lead to increased profits for downtown businesses.

Answer choice (C): Since a decrease in downtown traffic is sufficient to conclude nothing, this choice cannot be the right answer to this Must be True question.

Answer choice (D): This answer choice is wrong for the same reason as answer choices (A) and (C). Decreasing downtown traffic is necessary for downtown business profits to increase, but this traffic decrease is sufficient to conclude nothing, as is reflected in the diagram above.

Answer choice (E): If downtown business profits increase, the stimulus provides, downtown congestion must decrease, but there is no way to conclude what will happen to the number of consumers living downtown.

First sentence - If MCL (More Consumers Living there) -> P+ (Profits Increase)

Second sentence - If CL- (Cost of Living decreases) -> MCL (aha, I think I see a link before me!)

Third sentence, bringing in the Unless Equation - If P+ -> TC- (Traffic Congestion decreases) (and yet another link in the chain!)

Notice that while the third sentence is adding a new requirement, as you put it, that requirement ends up tracking along nicely in our conditional chain. The end result of all those statements is this:

CL- -> MCL -> P+ -> TC-

Once we have it all strung together, you can see that B works nicely. Most of the wrong answers want to treat a decrease in traffic congestion (TC-) as a sufficient condition, but it's not sufficient for anything and so those can't be right.

Break down the Stimulus:

More Consumers --> Profits Up ; Cost of Living Down --> More Consumers ; Profits Up --> Traffic Down

We can link these statement up in a big chain:

Cost of Living Down --> More Consumers --> Profits Up --> Traffic Down.

Any piece of this chain, or the entire thing, or the contrapositive of any piece of the chain or the entire thing, could be the correct answer.

A) This illegally reverses our chain and is therefore a standard trap answer.

B) Correct! This is a piece of our chain. Don't be deterred by the fact that it doesn't address the chain in its entirety. A common way the test writers will try to throw you off the scent of the correct answer in MBT questions is to make the correct answer accurate but incomplete. Don't be fooled! If it has to be true, it's correct, regardless of whether there are other things that have to be true as well.

C) Another illegal reversal, this time of only part of our chain.

D) Yet another illegal reversal, this time of only part of our chain.

E) Again, another illegal reversal, this time of only part of our chain.

The word "guarantee" implies a conditional relationship, but it's better to not think of it the same way as "if" or "unless". Instead think of the term that provides the guarantee as the sufficient condition.

Take the statement: studying hard guarantees a good score on your final exam.

SH ---> GS

SH = study hard, GS = good score

Other words like this on the sufficiency side would be: enables, allows, and ensures. And on the necessary side: requirement, precondition, and precept. All of these words refer their respective terms, but don't necessarily introduce them.

(A), (C), (D) can all be eliminated quickly as they make a necessary condition (downtown traffic congestion decreases) into a sufficient condition.

(E) is classic mistaken reversal.

Decrease COL DT ---> More consumers live DT ---> Profits increase DT Biz ---> DT traffic congest decrease

(B) is the right answer.

There is not really going to ever be a need for the distinction you're worried about between interpreting the last sentence as a guarantee or a prerequisite.

Here's the main reason you're getting confused, I think.

Saying that X is REQUIRED for Y definitely implies a chronological order. (X before Y)

but

Saying that X is GUARANTEED by Y does not imply a chronological order.

Having a driver's license is REQ'D for being a legal driver.
and
being a legal driver GUARANTEES to me that you have a driver's license.

In both cases, the license came first.

To get (B) right, we don't need to consider the last sentence. The last sentence does not say, "But none of that was true, unless ...."

"If cost of living decreases, number of consumers living there will increase."

and we have a rule that says

"if number of consumers living there increases, profits will increase"

so we can derive (B), that

"if cost of living decreases, then profits increase."

If the cost of living has decreased, then we can also infer that traffic congestion has decreased. We don't need to be told that. The rules we were given say that:

if # living incr -> cost of liv decr --> profits incr --> traffic congestion decr.

So as soon as cost of living decreases, we automatically get 'profits increase' and 'traffic decreased'.

If cost of living DECREASES, more consumers WILL LIVE

If more consumers LIVE there, profits WILL INCREASE

The last sentence attaches the future verb to profits, making it seem like traffic congestion would be interpreted as the first event.

So we can write it as,

If traffic congestion DOES NOT decrease, profits will not increase

and then its contrapositive becomes

If profits have increased, then we know that traffic congestion did decrease (previously).

13. (A)

If L → VSO If L → VSF If VSO → H so If L → H If VSO → DO → CT
If L → VSO → DO → CT

(A) is a perfect restatement of this combination, even using the same “required” that the stimulus does. This is the correct answer.

(B) is a classic reversal: If CT → VSO.

(C) We know from the first sentence that language must use verbal signs for feelings, but only the use of verbal signs for objects is linked to conceptual thought by the stimulus. We can't be sure that (C) is true.

(D) could be tempting if you made a mistake and combined our two sets of statements; we know that if an animal uses language, it must be human, and it must be capable of conceptual thought, but we don't know that *all* humans use language and thus conceptual thought.

(E) We can't be sure whether this choice is true; perhaps the vocal expression of hunger requires conceptual thought, but the stimulus doesn't tell us so.

This stimulus yields a lengthy chain relationship:

- Lang ⟶ Verb Signs Feel + Verb Signs Objects ⟶ Disting ⟶ Concept Thought.

Thus language depends on four things, and answer choice (A) (language requires conceptual thought) is proven true.

Answer choice (A): This is the correct answer choice. As discussed above, the diagram shows that language requires verbal signs for objects, which require distinguishing objects from other objects, which requires conceptual thought.

Answer choice (B): This is a Mistaken Reversal (Concept Thought ⟶ Verb Signs Objects).

Answer choice (C): The ideas of conceptual thought and feelings are never related in the stimulus.

Answer choice (D): We are only told that humans can ask for certain objects by name, but to try to interpret this to mean that all humans are capable of language, and then to interpret that to mean that all humans are capable of conceptual thought, would be too strong of an assumption.

Answer choice (E): We do not know anything about the relationship between non-human animals and conceptual thought or language.

Ability to distinguish ⟶ human

ability to distinguish ⟶ conceptual thought

We can't connect those two necessary conditions. We don't know if all humans are capable of conceptual thoughts based on the passage.

Answer choice (A): There are three important claims that rely on conditional logic. Combining all three yields the result that conceptual thought is

required for language - answer choice (A).

Statement 1
Language requires the use of verbal signs.

Statement 2
Using verbal signs requires the ability to distinguish objects from other objects.

Statement 3
Distinguishing objects from other objects requires conceptual thought.
Thus: Language requires conceptual thought. Or conceptual thought is required for language.

(A) is the correct answer

(B) is backwards. Combining the second and third premise we can establish that conceptual thought is required for the use of verbal signs.

(C) is crazy. Sure it's possible to think conceptually.

(D) is close. Some humans are capable of conceptual thought. We know that humans in general have conceptual thought, but that doesn't mean that every human has conceptual thought. This attributes a characteristic of a group to each member of the group. Common GMAT fallacy.

(E) is not necessarily true. Maybe for some of the animals other than humans, vocal expression does require conceptual thought. The train of reasoning proves that the vocal expressions for humans require conceptual thought, not that humans are the only ones whose vocal expressions require conceptual thought.

But only people who score 800 can go to Harvard.

That statement implies a requirement. It is saying that if you can go to Harvard, then you score 800.

We do not know what happens if you score 800. Perhaps your GPA is a train wreck. Perhaps robbing the neighborhood bank has caught up with you.

The organizing term is actually "only" alone. The word "but" is serving another purpose, and you'll want to be on the lookout for this!

Sectional Test 3 Solutions

1. D

Any store that sells fish, but not birds, sells gerbils; and if a store is independently owned, it does not sell gerbils.

If fish AND ~ birds → gerbils

and

If independently owned → ~ gerbils

To make an inference by joining these statements, make the contrapositive of the second statement:

If gerbils → ~ independently owned

Using "gerbils" as the common term, join the statements to reveal:

If fish AND ~ birds → ~ independently owned

Therefore, we know that no independently owned pet store in the city sells tropical fish but not exotic birds. When evaluating answer choices in Conditional Logic Inference questions, remember: given a sufficient condition, the necessary condition can be inferred; but given a necessary condition, nothing can be inferred!

(D) is the exact prediction.

(A) is a Distortion. This answer reverses the sufficient and necessary terms of the proper inference.

If ~ independently owned → ~ birds

In the facts of the stimulus, "not independently owned" is a necessary condition following from the fact "the store sells gerbils." An inference cannot be drawn from a necessary condition.

(B) is Outside the Scope. No facts link stores that sell both fish and birds with stores that sell gerbils. The only connection with stores that sell gerbils given is with stores that sell fish but not birds. This statement may or may not be true.

(C) is Outside the Scope. The word "some" to qualify stores that sell gerbils takes this answer choice beyond the facts given, since the only facts we are given about stores that sell gerbils pertain to all of them. This statement may or may not be true.

(E) is Outside the Scope. No facts allow any inference about independently owned stores that do not sell fish. The facts state that independently owned stores don't sell gerbils, and from this it follows that they don't sell "fish but not birds." But no inference can be drawn about those that do not sell fish.

The author presents several statements about the pet stores in West Calverton. These can be diagrammed as follows:

- Most pet stores in the area sell exotic birds: Pet stores $\xrightarrow{\text{most}}$ Exotic birds

  Most that sell exotic birds also sell tropical fish: Exotic birds $\xrightarrow{\text{most}}$ TFish

These two statements can be linked as follows:

- Pet stores $\xrightarrow{\text{most}}$ Exotic birds $\xrightarrow{\text{most}}$ TFish

The author then presents a somewhat complicated conditional rule: that if a pet store sells tropical fish, but not exotic birds, then it must sell gerbils. Further, any store that sells gerbils is not an independently owned West Calverton pet store:

- Tropical fish + ~~Exotic birds~~ $\longrightarrow$ Gerbils $\longrightarrow$ ~~Independently owned WC pet store~~

The author draws no conclusion in this stimulus, and this fact set is followed by a Must Be True question stem, so we know that only one answer choice will be dictated to be true by the statements in the stimulus.

Answer choice (A): The author provides that independently owned pet stores in West Calverton never sell gerbils, but provides no information about non-independently owned pet stores in the city. This choice fails the Fact Test and should be eliminated from contention.

Answer choice (B): The only information we have regarding gerbil selling is that it is not done by independently owned pet stores in West Calverton. The author has provided some information about stores that have tropical fish and no birds, but nothing about the pet stores that carry both. Since this choice is not confirmed by the information in the stimulus, it cannot be the correct answer to this Must Be True question.

Answer choice (C): Regarding the pet stores in the area that sell gerbils, all we can say is that they are not independently owned. It is possible that some (perhaps one) do sell exotic birds, but this is not dictated to be true, so this choice should be ruled out.

Answer choice (D): This is the correct answer choice; it is confirmed by the conditional statements presented in the second half of the stimulus. From those statements we know that a store selling tropical fish with no exotic birds must also sell gerbils—and any store that sells gerbils is not an independently owned West Calverton pet store.

Answer choice (E): The final sentence in the stimulus tells us that no independently owned pet stores in the area sell gerbils. This is the only reference to independently owned pet stores and can be diagrammed as follows:

- Gerbils $\longrightarrow$ ~~Independently owned West Calverton pet store~~

The contrapositive of this statement would be diagrammed as follows:

- Independently owned West Calverton pet store $\longrightarrow$ ~~Gerbils~~

Since the author has provided no information about the independent pet stores that do not sell tropical fish, we cannot confidently assert that such stores sell exotic birds, and this cannot be the correct answer choice.

pet stores $\overset{\text{most}}{\longrightarrow}$ sell exotic birds

exotic birds $\overset{\text{most}}{\longrightarrow}$ tropical fish

This does not mean that most pet stores sell both. Imagine there are 10 stores. 6 sell exotic birds. 4 of those sell tropical fish. Then the statements in the stimulus are true, but "most pet stores sell both exotic birds and tropical fish" is not correct.

As far as the second conditional (third once we split up the first as I did above), it ought to look like this:

(tropical fish + ~~exotic birds~~) $\longrightarrow$ gerbils

Thus, we can take the contrapositive of the second:

~~gerbils~~ $\longrightarrow$ (~~tropical fish~~ or exotic birds)

And connect that with the final conditional to get a chain:

independent pet store $\longrightarrow$ (~~tropical fish~~ or exotic birds)

Answer choice (C) is wrong because it merely could be true.

Answer choice (D) is correct because it says no independent store sells tropical fish and not exotic birds. Our chain says that all independent stores either do not sell tropical fish or do sell exotic birds. None can do the opposite. That's exactly what answer choice (D) says - none do the opposite of what the chain says (remember how to negate "and" and "or" statements; "either a store does not sell tropical fish or it does sell exotic birds" means the same as "a store does not both sell tropical fish and fail to sell exotic birds).

Answer choice (E) is not necessarily true. Remember the rules about negating compound conditions.

Since we know that independently owned pet stores don't sell gerbils, we can chain this to the contrapositive of the earlier conditional statement telling us that any pet store selling tropical fish but not exotic birds must sell gerbils. The trick to creating that contrapositive is to remember, as Robert explained above, that forming the contrapositive of a conditional statement using "and" (or, as in this case, "but") requires changing the "and" or "but" to an "or" when you negate that condition. In this case that gives us the following:

Original conditional statement:

- Tropical Fish **and (but)** ~~Exotic Birds~~ $\longrightarrow$ Gerbils

Contrapositive:

- ~~Gerbils~~ $\longrightarrow$ ~~Tropical Fish~~ **or** Exotic Birds

Thus we know that without gerbils, a pet store must **either** not sell tropical fish **or** sell exotic birds. You are right therefore that (E) is wrong because it tells us that independently owned pet stores must satisfy both of these conditions, when all that we know must happen is that they need to have one or the other.

We are told that any store that sells tropical fish but not exotic birds sells gerbils. So:

fish + ~birds $\longrightarrow$ gerbils.

But it sounds like you misread that as ONLY those stores which sell fish but not birds sell gerbils, which would look like this:
gerbils $\longrightarrow$ fish + ~birds

and would give us the contrapositive,

birds or ~fish $\longrightarrow$ ~gerbils.

Remember, to say 'any X is Y' and to say 'only X are Y' are two very different statements. I think what you did here was confuse the two.

(1) PS $\xrightarrow{\text{most}}$ EB $\xrightarrow{\text{most}}$ TF

(2) TF + ~EB $\longrightarrow$ G

(3) G $\longrightarrow$ ~PS_I (independent PS)

Answer choice D essentially seemed to capture the inference following from combining (2) and (3) TF + ~EB $\longrightarrow$ ~PS_I

We know that

[sell tropical fish and don't sell exotic birds --> sell gerbils]

and we know that

[independently owned --> does not sell gerbils].

Since they've given us two conditionals with an overlapping ingredient (do/don't sell gerbils), we should try to chain them together if possible. We'd get "If independently owned --> don't sell gerbils --> don't sell tropical fish or do sell exotic birds".

Does anything force there to be a store that sells gerbils AND exotic birds? Nope.

A) "most" is extreme. How could we speak to the 51% or more of stores that aren't independent? Do we have any facts that say "Most big-chain pet stores in WC have THIS trait"? No.

B) Is it impossible to sell tropical fish, exotic birds, and gerbils? Was there a rule that said if you sell one, you can't sell the other? No. There's nothing that says if you DO sell this, you CAN'T sell that.

C) Does anything force there to be a store that sells gerbils AND exotic birds? Nope.

D) This says "If independent --> NOT (tropical fish and not exotic birds). This looks like the chained conditional we anticipated. Approached conditionally, we would distribute the NOT on the right side to get "If Independent --> NOT sell tropical fish or DOES sell exotic birds". Looks like what we anticipated! Conversationally, we would remind ourselves what we know about indie stores. They don't sell gerbils. If they don't sell gerbils, the 2nd sentence says there's no way it's the type of store that "sells tropical fish but not exotic birds". So we know that no indie store is the type of store that "sells tropical fish but not exotic birds".

E) This says "If indie and doesn't sell tropical --> does sell exotic". This also resembles our conditional. If you're indie, we know you don't sell gerbils and you either don't sell tropical fish or DO sell exotic birds. Okay, well these stores DON'T sell tropical fish. There's no way or reason to infer that they DO sell exotic birds. This is like if we had a rule that said "If you come to the party, you bring wine or you bring dessert" and then tried to infer "Anyone who comes to the party and brings wine also brings dessert". This answer choice would have been correct had it read "Any indie store that DOES sell tropical fish DOES NOT sell exotic birds".

In WC, most stores sell birds. Most of those also sell fish.

If a store sells fish and NOT birds --> sells gerbils

No independent store sells gerbils. (Gerbils --> not independent)

I wouldn't bother diagramming the "most" statements here. I would just make the obvious connections involving the conditional statement and the final sentence:

fish and NOT birds --> not independent

This is (D).

PS most EB most TF (which is all irrelevant, really)

TF and -EB --> G --> -IO

so IO --> -G --> -TF or EB

so this is what D) says--that no independently owned pet store sells TF but not EB. Thanks to the negation, you know that the opposite is the case! Independently owned pet stores DON'T sell TF but DO sell EB.

You actually have to negate the AND in the conditional sentence of (D) to OR as well! So, it could be translated as follows: "If you are an independently owned pet store, then you sell no tropical fish OR exotic birds." This is verbatim what the conditional logic string gives us!

We can’t chain the whole stimulus since "most" isn’t conditional logic (remember that conditional statements are guarantees, and something being "mostly" anything isn’t a guarantee).
The first sentence tells us that most WC pet stores sell EB, and most of these sell TF. So we know from this that there are at least some stores that sell both EB and TF. This ends up being irrelevant to the answer choices.

We can chain the second sentence, however, since words like "any" and "no" are absolutes, and therefore guarantees. The second sentence goes has

two parts.

TF + ~EB --> G

The contrapositive of this statement is:

~G --> ~TF or EB

When finding the contrapositive of a statement that contains an "and," flip the "and" to an "or" when you negate it. This negation tells us that the COMBINATION of TF and ~EB can't happen.

Here's Part 2 of the sentence:

IPS in WC --> ~ G

The contrapositive of this statement is:

G --> ~IPS in WC

We can chain Parts 1 and 2 together like this:

TF + ~EB --> G --> ~IPS in WC

and find the contrapositive of that chain:

IPS in WC --> ~G --> ~TF or EB

^Another way of saying this is that if you're an IPS in WC and you sell tropical fish, then you also sell exotic birds. Likewise, if you're an IPS in WC and you don't sell exotic birds, then you also don't sell tropical fish. **At least one of our sufficient conditions (~TF, EB) must be met at all times**; an ISP can't sell tropical fish but not exotic birds.

(D) tells us this. It tells us that if you're an IPS in WC, then you can never simultaneously sell tropical fish but not exotic birds. **Such a situation would mean neither sufficient condition (~TF, EB) was being met.** And that's impossible!

(E) is wrong because it's giving us an either/or statement, which would be diagrammed as:

~TF --> EB

Contrapositive:

~EB -->TF

Either/or statements tell us that at least one, in this case TF or EB, must be present and leaves open the possibility for both to be present. But this is not what the inference we derive from the stimulus is telling us.

The inference we derive from the stimulus says:

IPS --> ~TF or EB

Contrapositive:

TF and ~EB --> ~IPS

This essentially means that any independently owned pet store that sells tropical fish must also sell exotic birds. However, it is possible for an independently owned pet store to sell neither tropical fish and exotic birds. For that reason, answer choice (E) is wrong. It is not necessary, as (E) states, for independently owned pet stores to sell at least TF or EB.

By chaining the conditionals given, we arrive at the inference IPS --> EB or ~TF.

Answer D says "No IPS sells TF but not EB." Conditionally, this means IPS --> ~(TF & ~EB). Applying the ~ (the "not"), we get IPS --> ~TF or EB, which thus matches the inference we had before going in the answer choices. This is due to the fact that when negating and/or, we have to switch the terms.

Another way to understand "No IPS sells TF but not EB" is that it means "IPS --> cannot [both] sell TF and not sell EB." This is true because according to our inference, If you are an IPS then you must sell EB or not sell TF. Rina was saying how if these stores sold TF, they would have to sell EB. And if these stores did not sell EB, they must also not sell TF. This is because when the Necessary Condition is an "or" statement with two things, one of those things **must** happen when the Sufficient Condition is triggered. Thus, if the first thing doesn't occur, then the other must. If an IPS sold TF and did not sell EB, this would violate the inferred conditional since neither of the things would happen, which is why they cannot do this, thus making answer D correct.

An IPS could sell both, since the EB Nec. Cond. is still being met. They could sell neither, since the ~TF Nec. Cond. is still being met. Or they could sell EB and not sell TF, since both conditions are being met.

2. B

Unless an antibiotic kills the bacteria completely, the bacteria will "inevitably" become more resistant to it. Identify the Conditional Logic, and then jot down a translation:

If ~ eliminate → greater resistance

If ~ greater resistance → eliminate

At the moment, there is no antibiotic that can kill bacteria X completely.

If current antibiotic → ~ eliminate X

If eliminate X → ~ current antibiotic

Here, you can predict that if a current antibiotic is used against X, it won't eliminate X, which in turn means that X will become more resistant to it:

If current antibiotic → ~ eliminate X → greater resistance

Step 4: Evaluate the Answer Choices

(B) matches your prediction perfectly. It combines the two Conditional Logic relationships as in Step 3.

(A) is Outside the Scope. It makes a claim about the likelihood of developing an antibiotic that can kill X. However, the fact that X currently beats all of our antibiotics doesn't mean that we won't be able to develop a stronger one. The stimulus doesn't provide any information one way or the other.

(C) also talks about the feasibility of completely killing X, which is Outside the Scope. In particular, the stimulus offers no information about the effects of combining two antibiotics.

(D) distorts the information in the stimulus. X is a bacterial species, so it will grow more resistant to antibiotics over time, but that's not the same thing as becoming more "virulent."

(E) is Outside the Scope but tempting because it talks about X, antibiotics, and resistance, all of which were discussed in the stimulus. However, the stimulus offers no information about the antibiotics that have been used against X. In fact, as far the as the stimulus is concerned, no antibiotics might ever have been used against X at all.

The stimulus contains a fact set and features conditional reasoning, which is identifiable by the use of the necessary condition indicator "unless" in the first sentence. Applying the Unless Equation, the phrase modified by "unless" becomes the necessary condition, whereas the remainder is negated and becomes the sufficient condition. However, you should notice the sufficient condition indicator "any" modifying the clause "antibiotics used against the bacteria," which needs to be factored into the relationship.

Thus, if the bacterial species does not become resistant to the antibiotics used against it, then either the antibiotics did not completely eliminate the bacterial species, or no antibiotics were used against it:

BR = Bacterial resistance
CE = Complete elimination of bacteria
AU = Antibiotic used against bacteria

Premise: ~~BR~~ → CE or ~~AU~~

Contrapositive: AU and ~~CE~~ → BR

In the contrapositive form, if any antibiotic is used against the bacterial species and that antibiotic does not completely eliminate it, the bacterial species will develop greater resistance to that antibiotic. Some students would prefer to diagram the contrapositive first, since the "unless" modifier is logically equivalent to the phrase "if not."

The second premise tells us that no single antibiotic now on the market is powerful enough to eliminate bacterial species x:

Premise: $\cancel{CE}_x$

Therefore, we can use the contrapositive of the conditional relationship in the first premise to prephrase the conclusion that if any antibiotic is used against bacterial species x, the species will become more resistant to it (since the other sufficient condition has already been established):

Conclusion: AU → BR_x

This prephrase is tremendously helpful in attacking the answer choices and immediately proves that answer choice (B) is correct. Because stimuli containing conditional reasoning in combination with Must Be True questions frequently produce contrapositive answer choices, you should apply the contrapositive and prephrase an answer choice based on the contrapositive.

Answer choice (A): On the basis of the evidence presented in the stimulus, we cannot estimate the likelihood that an antibiotic can be developed to eliminate bacterial species x. Although no single antibiotic now on the market is powerful enough to eliminate bacterial species x completely, it is impossible to predict what can happen in the future.

Answer choice (B): This is the correct answer choice, which predictably contains the contrapositive of the first sentence of the stimulus: because no single antibiotic now on the market is powerful enough to eliminate bacterial species x, any antibiotic used against the bacterial species will become more resistant to it.

$$\begin{matrix} CE_x \\ \text{and} \\ AU \end{matrix} \longrightarrow BR_x$$

Answer choice (C): At first glance, this may seem like an attractive answer. If no single antibiotic now on the market is powerful enough to eliminate bacterial species x completely, is it not likely that the only way of completely eliminating bacterial species x is by combining two or more antibiotics? Unfortunately, we are looking for an answer that Must Be True, not just likely to be true. There is always the possibility that there are other ways to completely eliminate bacterial species x (take across-the-board mandatory immunizations, for instance). Because we have no information as to whether there are other ways to eliminate the bacterial species in question, this answer choice cannot be proven by the stimulus and is therefore incorrect.

Answer choice (D): Although no single antibiotic is powerful enough to eliminate the bacterial species x, perhaps there are other ways to eliminate it (vaccinations, a combination of several different antibiotics, etc.). Even if those ways did not work, it would still be unreasonable to conclude that the bacterial species in question will inevitably become more virulent. The topic of virulence was never discussed in the stimulus, and therefore cannot be proven by the information in it.

Answer choice (E): This appears to be an attractive answer because we do know that a bacterial species will inevitably develop greater resistance within a few years to any antibiotics used against it, unless those antibiotics can completely eliminate it. Clearly, no antibiotic on the market can completely eliminate bacterial species x. However, we cannot be 100% certain that the bacteria today is more resistant to some of the antibiotics that have been used against it in the past, because we do not know when (or whether) these antibiotics were actually used. The author clearly states that it takes a few years for the bacterial species to develop greater resistance to any antibiotic that fails to completely eliminate it. Therefore, if the ineffective antibiotics were used only a few months ago, we cannot expect that the bacteria are more resistant to them today than it was before they were used.

The problem with answer C here is the very strong claim of "only". How do we know, based on the stimulus, that the only way to eliminate X is through a combination of antibiotics? Maybe I could instead develop a vaccine, or use some fancy old-school phage therapy or attack it with phytochemicals instead of antibiotics? Maybe I could drop a nuke on it? Perhaps I could take all the organisms that carry X and isolate them somewhere, and then wait for all those organisms and their offspring to die off, thereby driving X to extinction due to a lack of hosts?

Now, if C said "the only way that *antibiotics* could completely eliminate X would be to use two or more in combination", then we would be on to something, and that might be a really good answer. But C, as it is now, just goes too far to be proven by the limited scope of the stimulus.

The key to understanding Choice (E) is that the Stimulus told us that bacteria will **inevitably** gain resistance unless it is eliminated by the antibiotic.

Choice (E) does not account for how much time has passed since Bacteria X has been exposed to the antibiotics, so we cannot be sure whether it has **yet** gained some resistance.

The term "any" here isn't a separate conditional term. It is a part of an overall conditional phrase. Remember that when we are diagramming conditionals, there could be indicators terms used in ways that aren't actually indicating a conditional as well as conditional statements that don't have sufficient/necessary indicators. The key is always to be to understand the core conditional relationship. X requires Y.

Here the conditional statement that includes the word "any" includes it internally and not as a conditional indicator. It uses any as a quantity term. So the sufficient condition here is that "if a bacterial species doesn't develop a resistance to any antibiotic used." The "any" isn't an additional sufficient condition within the conditional, but is used to point out that it applies to any one antibiotic.

(E) is just not something that is supported in the argument above. (E) is making a comparison between the resistance of bacterial species X to antibiotics prior to being used against it and after being used against it. But there is absolutely no comparison being made between the two from the stimulus.

NOT develop greater resistance to antibiotic --> eliminated species completely

CANNOT eliminate species completely --> ???

We are told in the second sentence that there is no single antibiotic now on the market powerful enough to eliminate bacterial species X completely. So what do we know??

The contrapositive of the first sentence tells us that the bacterial species WILL develop greater resistance to antibiotic being used against it, which is nicely phrased in (B).

~DGR ---> E

CAntiB ---> ~E

From these we can conclude that if a current antibiotic is exposed to the bacterial species X, the bacteria will develop greater resistance.

CantiB ---> DGR

Lets look at the correct answer choices:

(A) is a baseless prediction, since the claims are only about what is presently the case.

(C) is untrue. It may be true that the only present way for antibiotics to completely destroy bacterial species X is through a combination of two or more of them, but there could be other ways of eliminating bacterial species X that do not involve antibiotics.

(D) plays on an interesting term. Virulence is the degree of pathogenicity - not important exactly what it means but it does not mean "resistance" to antibiotics. We might never make progress on beating bacterial species X, but if we never use antibiotics on them, they may never develop greater resistance to them nor become more virulent.

(E) is untrue. We don't know whether any antibiotics have been used agains bacterial species X.

So let's say no antibiotics have ever been used against X.

Is it true to say "X is more resistant to some antibiotics that have been used against it than it was before they were used"?
No, it really can't be true. The statement is not conditional. It makes a positive claim that this species *is* more resistant to antibiotics that *have* been used against it.

So if no antibiotics have ever been used against X, then (E) is full-fledged false.

I think your EDIT comment is a good angle ... we could have used some antibiotics on X yesterday, and we would not necessarily yet see X be more resistant to it.

You should also consider that the first sentence says

IF an antibiotic doesn't eliminate completely ""> bacteria develops more resistance

We know that all antibiotics on the market TODAY can't eliminate X completely, but (E) does not specify whether the antibiotics in question are ones on the market today. So (E) could also be falsified by considering antibiotics NOT on the market that DO eliminate X completely, in which case the conditional would not apply to those antibiotics.

Let's say that X-Away is an antibiotic now on the market.

What do we know about it based on the stimulus?

We know from the last sentence, that X-Away, by itself, is not powerful enough to eliminate X completely.

What does the first sentence tell us about antibiotics that aren't powerful enough to eliminate a bacterial species?

The 1st sentence says, "if an antibiotic can't eliminate a species completely, then the species will inevitably develop greater resistance within a few years to it."

So we know that if X-Away is used to treat bacterial species X, then X will inevitably develop greater resistance within a few years to X-Away.

That's what (B) is saying would apply to ANY antibiotic we pick, provided it's available on the market.

Do you disagree with any of the inferences we made there? If not, then (B) is correct. Anything available on the market does not have the power by itself to kill X, thus, according to the 1st sentence, X will develop greater resistance to it in the future if we use it against X.

Why is E wrong?

1. There's no evidence that any antibiotic has EVER been used against X

2. Bacteria develops greater resistance "within a few years", so it's possible that we only recently started using antibiotics on X and X hasn't had time to develop any increased resistance.

3. This answer choice could be invalidated by antibiotics that are NOT now on the market.

3. B

The opening statement tells you that engineers have created a better traffic flow on the (oddly named) Krakkenbak Bridge. This is followed by some Conditional Logic. If the city hadn't invested in computer modeling technology, the increased traffic flow wouldn't have happened. Furthermore, if traffic flow on the bridge hadn't increased, the city wouldn't have resolved its financial predicament.

The Conditional Logic statements can be combined to form one string of logic:

If ~ investment in modeling technology → ~ increased traffic flow → ~ resolution to financial problems

The correct answer will conform to this string of logic or its contrapositive.

(B) is a perfect match to the logic. From the first Conditional Logic statement, you know that not investing in modeling technology would have prevented the increased traffic flow. In turn, from the last statement, you can determine that this would have prevented the city from resolving its financial predicament.

(A) goes Outside the Scope by discussing competing computer modeling software. The Conditional Logic in the stimulus doesn't specify a specific computer modeling package. Even if the city chose a different software package, it might still have resolved the traffic flow problem and, in turn, the financial predicament.

(C) distorts the information. While there was an increase in traffic *flow* (i.e., the movement of cars), that doesn't mean there were more cars.

(D) is Extreme. This choice discusses the effect of not making computer modeling technology a top priority. However, to increase the traffic flow, the city merely had to invest in such technology; nothing in the stimulus says it was the highest budgetary priority.

(E) mentions the mayor's motives for pushing computer modeling technology. However, while the technology did help with traffic flow, there's no evidence that this was the reason for the mayor's advocacy. Maybe he was just doing his buddy at the software firm a favor and got lucky.

This conditional reasoning question appears more complex than it is due to the fact that the conditional language is all in the negated form. The question becomes much easier to work with if you take the contrapositive of the conditional statements, thus translating them from the negative into the positive. Conceptually, we can think about the conditional statements as attempting to tell us what is *necessary* for each sufficient condition to happen. Breaking down the language in the stimulus to the bare-bones idea in each statement will make any Sufficient-Necessary problem easier to manage.

Looking at the stimulus, we see a chain of conditional relationships. The increase in traffic flow required the city to make the investment in modeling technology. The resolution of the city's financial predicament required the increase in traffic flow. We can note that the increase in traffic flow is the

common term. We can diagram the relationship between both statements as follows:

Resolution of financial predicament ⟶ Increase in traffic flow ⟶ City to make investment
Once we can see the simple chain, we are ready to turn to the answer choices.

Answer choice (A): Information unrelated to the conditional chain above is unlikely to be correct. In a Must Be True question, we are limited to what we know for certain from the facts in the stimulus. The stimulus provides no background on how the city decided on the particular modeling software used. The stimulus lacks information to support this answer choice.
Answer choice (B): This is the correct answer choice. This is the contrapositive of the conditional chain. If the city did not make an investment, the financial predicament would not have been resolved. This is because the resolution required the increased traffic flow, which in turn, required the investment.

Answer choice (C): From the stimulus, we know that the bridge can handle increase in rush-hour traffic flow. This answer choice does not limit itself to rush-hour; it states a fact about the day as a whole. We cannot draw any inference about the number of cars that cross the bridge in an average day, just about the short rush-hour periods. While this answer choice may seem likely to be true, and in fact could be true, remember that we are looking for the answer choice that *must* be true.

Answer choice (D): Like in answer choice (A), we do not have information about how the city made the decision to use the modeling software, or how the ultimate decision to go forward with the change to the bridge was made. Notice here that the unsupported portion of the answer choice was at the very end of the answer choice, and students who merely scan the answer choices or who are in a rush might miss the additional unsupported information.

Answer choice (E): Similar to answer choices (A) and (D), this answer choice is incorrect due to a lack of information. We do not know why the mayor supported getting the modeling software. We just know that he did purchase it. There could have been additional uses for the software.

First, look at each sentence and identify any conditional relationships. The first sentence has none, but the second sentence does, so start with the conditional indicator word "had" (which works like "if" and introduces a sufficient condition). The first part of that second sentence becomes:

~~Invested in Computer Modeling~~ --> ~~Increased Traffic Flow~~

Do the same with the next statement in that second sentence, focusing on the key indicator word "if", and you get:

~~Increased Traffic Flow~~ --> ~~Financial Problems Resolved~~

String those two together to make your conditional chain, and answer choice B turns out to be an easy leap from your first term to your last one.

Remember that when dealing with negative statements you can handle them one of two ways: 1) take the contrapositives and turn them into positive

statements or 2) approach them very mechanically and diagram them with a not-symbol/slash, then just connect them like any other conditional statements.

There are 2 conditional statements in the stimulus, and the correct answer choice (B) simply applies the transitive property and combines them.

~ICM ---> ~IT

~IT ---> ~FPR

Notation Key: ICM - invest in computer modeling, IT - increased traffic, FPR - financial predicament resolved

From these 2 claims we can infer

~ICM ---> ~FPR

If they had not invested in computer modeling, they would not have resolved the city's financial predicament - best expressed in answer choice (B).

Let's look at the incorrect answer choices:

(A) plays the "what if game." We don't know what would have happened had the city chosen a competing computer modeling software package.

(C) may be tempting if you fail to notice that the statements only discuss "rush-hour traffic".

(D) is unsupported. We aren't given any information to confirm that either the mayor was involved in the decision nor that investing in computer modeling technology was the highest budgetary priority last year.

(E) is unsupported. We aren't given any information to confirm that the mayor was involved in the decision nor were we given information to suggest even if the mayor was a supporter of the investment in computer modeling technology why the mayor would have supported such a choice.

Since all three conditionals (the two from the stim and the one from choice A) used the same wording of "X would have have occurred without Y", it didn't mess you up that in each case you were writing them backwards.

So be careful and make sure you understand why the wording of "X wouldn't have occurred without Y" is symbolized as X --> Y

Otherwise, you'd risk missing (A) if it had been (equivalently) stated as

(A) If the financial predicament was resolved, then the city chose a competing package.

4. D

The author provides information about special discount coupons for Frequent Viewers club members at a place called VideoKing. The information states the two ways that members can get the coupons: (1) Members who have rented more than ten videos in the past month can only get the coupon where they last rented a video, and (2) members who have not rented more than ten videos in the past month can only get the coupon at the Main Street location. Then there's information about Pat, who it should be noted is *not* described as a Frequent Viewers club member. Pat has not rented more than ten videos in the past month, and she can get the coupon at the Walnut Lane location.

Pat's case is rather curious. She hasn't rented more than ten videos in the past month. If she were a Frequent Viewers club member, she would only be able to get the coupon at the Main Street location. However, she can get it at Walnut Lane. This gives us two important pieces of information. First, Pat is
definitely not a Frequent Viewers club member (otherwise she would be forced to get her coupon at Main Street). Second, knowing that she's not a member and that she can get the coupon, we know that these coupons must be available to some nonmembers as well (restrictions unknown).

(D) is correct. Since Pat can get the coupon and she isn't a member (given that she doesn't have to follow the rules ascribed to members), it must be true that some nonmembers can get the coupon.

(A) reverses the Conditional Logic of the stimulus. While Main Street is the only location where members who've rented fewer than ten times can get the coupon, that doesn't mean these are the *only* people who can get the coupon at Main Street. Just consider the case of a member who has rented more than ten times in the past month and whose last rental was from Main Street.
(B) doesn't follow from the stimulus. The only individual you learn about is Pat, who *isn't* a member. There may or may not be members who've rented fewer than ten times.

(C) contradicts the logic. The conditions are mutually exclusive—members can't satisfy both (you can't both rent and not rent more than ten videos)—and each condition allows for picking up the coupon at only one location.

(E) doesn't follow because Pat isn't a club member. Since no rules are provided for nonmembers, there's no way to tell if she can get the coupon at locations other than Walnut Lane.

The author sets out the rules for members of the Frequent Viewers club to obtain a special coupon. If the member has rented more than ten movies in the last month, they can only obtain the coupon at the store from which they last rented. If they rented ten or fewer, they can only obtain the coupon from the Main Street location. From these facts, we can derive two separate conditional rules:

- <u>Sufficient</u> <u>Necessary</u>

More than ten ⟶ Coupon at store from which they last rented

Ten or fewer ⟶ Coupon only from Main Street

The stimulus then provides the information that Pat, who has rented fewer than ten movies, can obtain her coupon at Walnut Lane. Immediately, we can see a problem. The conditional rules above state that if Pat rented ten or fewer movies, she can only obtain the coupon the Main Street store. This apparent conflict is the key to the question, and it is worth the time to figure out what additional information is present in the stimulus. On a closer read, we discover that the conditional rules only apply to those in the Frequent Viewers club. If Pat is not in Frequent Viewers club, the conditional rules above would not apply.

Answer choice (A): This is a mistaken reversal. The conditional rule states that the if the member rents ten or fewer movies, they must get the coupon from the Main Street store, but it does not say the only people who can get the coupon there are members of the Frequent Viewers club with ten or fewer rentals.

Answer choice (B): Even though the stimulus sets out rules for how members of the Frequent Viewers club who rent ten or fewer movies can get the coupon, it does not say that there are any members of the Frequent Viewers club to whom the rule would apply. We do not know anything about the members of the club. We only know the rules of the club, and information about Pat.

Answer choice (C): This answer choice must be false. Either members of the club will have rented ten or fewer videos, in which case they must get the coupon from Main Street, or they will have rented more than ten videos, in which case they must get the coupon from the store from which they last rented. The conditional rules mean that members of the club can only get the coupon from a single specific location.

Answer choice (D): This is the correct answer choice. As discussed above, Pat's situation did not fit into either conditional rule. The only way that she could have rented ten or fewer movies, and received her location at a store other than Main Street, is if she was not a member of the Frequent Viewers club. This must mean that non-members can also receive coupons.

Answer choice (E): The rules do not tell us anything about when people cannot get coupons; it only gives information about when members can get coupons. As with any Must Be True questions, any answer choice that lacks support in the stimulus is incorrect.

Statements 2 and 3 are very strong conditional statements (note the "only" in each of them) and together they basically say that whether Frequent Viewers club members have rented more than ten videos in the past month or not, there is ONLY one location they can get the special discount coupon from. Therefore, answer choice (C) doesn't follow because it says that some members can get the coupon from more than one location.

The stimulus also tells us that Pat has not rented more than ten movies in the last month. If Pat is also a member of the Frequent Viewers club, that would mean he would ONLY be able to get the special discount coupon from the Main Street location. But the stimulus tells us that he can get the coupon from the Walnut Lane location. At first, it sounds like Pat is violating our rules! Until we realize that maybe Pat is not a member of the Frequent Viewers club. Our rules only apply to members of the club; we don't have any rules about people who are not members.

Since Pat's example violates the Frequent Viewers club rules, that tells us he isn't a member of the Frequent Viewers club. And since we know that Pat can still receive a special discount coupon, that tells us that some (at least one) non-members can receive the special discount coupon. So answer choice (D) is supported.

Be careful when prephrasing Must Be True questions. Sometimes, we think we have a good, specific prephrase. But there are often multiple things that Must Be True. So don't get too attached to one specific prephrase. Also, in this case, The Walnut Lane location can't be on Main Street....it's on Walnut Lane! When you don't see your prephrase in the answer choices, try not to get discouraged. Go through each of the options and try to decide whether they are things that absolutely Must Be True.

Answer Choice B could be true, but we don't have enough information to know whether or not some members of the club have not rented more than ten videos. We know that Pat has not rented more than ten videos, but based on the facts we have, we have to conclude that Pat is also not a member of the club since he is not bound by the rules that apply to club members.

Imagine you are a member of the club. Now, how many videos have you rented? If it's 10 or fewer, you have one option - you must go to Main Street. You cannot go to more than one location. What if you rented more than 10? Then you must go to the last place you rented. You have no other option. Those are the only choices for members, and every member must, logically and mathematically, be in only one of those categories. There's no way you can simultaneously be in both groups. So no matter what, if you are a member you have only one location at which you can get your coupon. Answer C is a "Cannot Be True" answer - it's impossible!

"Not more than 10" includes 10! If you rented exactly 10, then you did not rent more than 10, and so if you are a member, you must get the coupon at Main Street. "Not more than 10" and "more than 10" combine to cover every numeric possibility from 0 to infinity.

If you are a member, you can get the coupon. If you are a member that rented MORE than 10 (10 is not enough), you go to the last place you rented. If you cannot get it from the last place you rented, then you are not a member who rented more than 10 videos - that's the contrapositive of the previous rule. That doesn't mean you can get the coupon elsewhere, like Main Street, because perhaps some people (non-members, maybe) can't get it at all.

If you are a member who rented 10 or fewer (not more than 10), you *must* get it from Main Street or not at all. Main Street is your only option.

The correct answer has nothing to do with rules for different locations, because there ARE no such rules. The rules are about members and how many videos they've rented. Pat has not met the sufficient condition in the first rule (more than 10), so it simply doesn't apply to her, and she hasn't met the necessary condition of the second rule, triggering the contrapositive of that rule and proving she is not a member who rented 10 or fewer videos. We now know that she cannot be a member, but since she can still get the coupon, it must be that some non-members (at least Pat) can get it. That's answer D!

Rule 1: Members of the club with 10+ rentals can get coupon only where they last rented a movie.

Rule 2: Members of the club with 10 or fewer rentals can only get coupon at Main St. location.

Facts: Pat has rented 10 or fewer videos and can receive the coupon at Walnut Lane location.

We need to figure out how these rules apply to Pat's situation. We know that Pat has rented fewer than ten videos, so we would think according to rule 2 that Pat can ONLY get the coupon at the Main Street location. But we don't even know if Pat is a member of club, so can we really apply those rules? Actually, COULD Pat even be a member of the club? If Pat were a member of the club and she had under 10 rentals, she'd only be able to get the coupon at the Main Street location. Since we know she CAN get the coupon at Walnut Lane, she must not be a member of the club!

(A) No, it might be that non-club members can receive it there. It might also be that club members with 10+ rentals, whose MOST RECENT rental was at Main St, can also get it there.

(B) We only know about Pat, and she's NOT a member of the club, so we have no way to prove this.

(C) We only know about Pat, and she's NOT a member of the club, so we have no way to prove this.

(D) This is what we figured out. Pat is NOT a member of the club. And we know he has a coupon, so we can prove that "at least one person NOT in the club can get the coupon".

(E) We couldn't possibly prove this weird connection exists. We don't really know WHAT rules, if any, govern Pat, given that she's NOT a club member and we were only given rules about club members.

The only way Pat's situation could avoid breaking the rules was to realize "she must not be a club member".

First:

Member & >10 movies--> Coupon @ latest location

Second:

Member & 10 or fewer movies --> Coupon @ Main Street

Now what do we know about Pat? We know that he got the coupon at Walnut Lane and that he rented 10 or fewer movies.

At this moment take a look at the first conditional. How can we play around with it? Now, look at the second one and you will see that we can negate the right hand element of the conditional relationship since we know that Pat got his coupon from NON main street shop.

Okay so we get the following:

- (coupon @ Main street)--> - member OR - (10 or fewer)

We know that since Pat did get 10 or fewer rents, he must not be a member!! YAY!!! get it?

That's why (D) is the answer

(B) is not provable because we don't know if there are any members who have rented less than 10 videos. Moreover, the correct answer (D) relates to an inference that Pat, who has rented less than 10 videos) is not a member.

E is incorrect because it doesn't tell us whether Pat is actually a member or not and also it's the opposite of what we'd expect given the information in the stimulus. Assuming Pat was a member, then given that she hasn't rented more than 10 in the past month, we'd expect her to be able to receive the discount coupon.

Right, the first conditional is troublesome because the trigger is

"Member and 10+ videos" ... that doesn't apply to Pat, so this takes us nowhere.

If we write the contrapositive of the first rule, the trigger is

"Not renting from the VK location last rented from" ... we have no idea whether that applies to Pat. We know Pat is renting from Walnut Lane, but we have no idea if that was the last location he rented from.

Meanwhile, when we write the contrapositive of the second rule, the trigger is

"Not renting from Main Street location" ... we KNOW that applies to Pat, since he's renting from Walnut Lane.

So we know that Pat CAN'T be a "Member who has not rented 10 or more videos".

Since we know Pat "has not rented 10 or more videos", then we can infer that Pat must not be a Member.

Since the 2 rules hinged on "more than 10" vs. "not more than 10", I just focused my attention on the second rule since we were told that Pat was "not more than 10".

The second rule should have forced Pat to get the coupon from Main Street. But since Pat got his coupon from Walnut Lane, there had to be some way that the 2nd rule didn't apply to him. Oh! Maybe he's not a member.

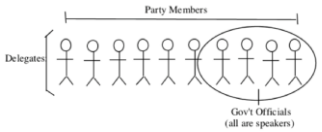
5. C

The stimulus gives two absolute statements. The first can be translated as follows:

Delegate to convention → party member

The second translates as follows:

Government official at convention → speaker



Additionally, you know that *some* delegates to the convention are government officials.

You can link the statements through the "government officials." If some delegates to the convention are government officials, then you know that those particular people who overlap are also both party members and speakers. In other words, some people fulfill all four roles: delegates to the convention, government officials, party members, and speakers.

(C) matches the prediction.

(A) incorrectly reverses the logic of the first statement in the stimulus. Any GMAT question dependent on Conditional Logic will likely have at least one answer that involves an incorrect contrapositive of the Conditional Logic in the stimulus.

(B) could be true but does not have to be. It's possible no speakers at the convention aren't diplomats and aren't party members. Or, in other words, eliminating the double negative, it's possible that all the speakers at the convention are delegates or party members or both.

(D) incorrectly reverses the Conditional Logic of the last statement in the stimulus without negating it.

(E) isn't supported by the stimulus. This translates to: If government official → party member. But you know only that *some* government officials (those who are also delegates to the convention) are party members. There may be government officials at the convention who are not delegates. You don't know if they are party members or not.

This stimulus is comprised of three formal logic statements:

First, every convention delegate is a party member:

- delegate ⟶ party member

Second, some delegates are government officials: Since "some" is a relationship that goes in both directions, this could be shown as:

- delegates  officials

...or in the other direction:

- officials  delegates

The first two statements can be linked as follows:

- officials ⟷some delegates ⟶ party member

(This leads to the inference that some officials are party members (specifically, the officials who are delegates).

The third statement is that each official at the convention is a speaker:

- official ⟶ speaker

The third statement can also be linked to the second, as follows:

- delegates ⟷some officials ⟶ speaker

The linked statement above leads to the inference that some delegates are speakers (specifically, the ones who are officials).

Finally, all three statements can be linked together as follows:

- party member ⟵ delegates ⟷some officials ⟶ speaker

The linked statements above lead to the combined inference that some delegate-party members are official-speakers.

Answer choice (A): The author provides that every delegate is a party member:

- delegate ⟶ party member

but that doesn't mean that every party member is a delegate. The most that could be said from that side of the relationship is that some party members are delegates:

- party member ⟷some delegates

Answer choice (B): The author provides no information about non-delegates or non-party members, so this choice cannot be confirmed by the stimulus and should be ruled out of contention.

Answer choice (C): This is the correct answer choice, as it provides that some speakers are delegates. Again, since the some relationship goes in both directions, this also provides that some delegates are speakers, an inference validly drawn from the linking of the author's second and third statements.

Answer choice (D): The third statement in the stimulus is that each official at the convention is a speaker:

- official ⟶ speaker

This allows the inference that some speakers are government officials, but it does not allow one to infer that every speaker at the convention is a government official.

Answer choice (E): As discussed, the linking of the first and second statements lead to the inference that some officials at the convention are party members. Since this choice goes well beyond “some,” to “every,” it cannot be confirmed by the information in the stimulus, fails the Fact Test, and should be ruled out of contention.

In GMAT-world, "some" includes ALL. If I say that some of the delegates are government officials, it allows for the possibility that they all are. It would be a completely true statement if I said "some human beings require air and water to live" because all do, and some includes all. That's not the way we talk in everyday life - when we mean all, we say all instead of some - but that is often the way we see things on the GMAT.

Now, all that aside, the ‘some vs all’ issue really doesn't matter all that much in this case when we are evaluating answer B. Do we have any proof that there are speakers who are not delegates or party members? We know that all the delegates are party members, that some of the delegates are government officials, and all of the government officials are speakers.

speaker <---- Govt ⟵some⟶ Delegate ⟶ Party Member

Where is the rule, though, that says not all speakers are members or delegates? Couldn't it be true that at least one speaker is not a government official, or a party member, or a delegate? Could these rules still apply and yet allow a speaker from some other group - say, a special guest speaker? While B COULD be true, this is a MUST be true question, so you have to prove it based on the info in the stimulus. What info proves B? None.

Take another look, make sure you are not confusing the "some" concept or reading this as a Could Be True question, and see if it isn't easier now to eliminate B. If it still isn't clear, come back here for more help. We'll be here!

We can ride that train from Govt to Delegate to Party, but along the way we have to take into account that it's "some" riding that train, not necessarily all. That's the problem with answer E - it claims that ALL the Govt folks must be party members, but we can only prove that SOME are (the ones who are Delegates). I can't make the leap that every Govt official is a Party member, because there could be one Govt official there who is NOT a delegate and therefore doesn't have to be a Party member.

We’ve got three statements to work with here, let’s take a look:

1. Every delegate to the convention is a party member

2. Some delegates are government officials

3. Every government official at the convention is a speaker at the convention

(C) concludes that some speakers are delegates. We know that some of the delegates are government officials and from this we know that some government officials are delegates. Couple that with the fact that every one of the government officials will speak and we can conclude that some of the speakers will be delegates. Bingo!

(A) is unsupported by the statements. Knowing our inference rules here is useful. If every A is B, what can we conclude? The answer is that some B is A. For (A), we know every delegate is a party member, but we cannot conclude the reverse: that every party member is a delegate. Eliminate.

(B) concludes that some of the speakers are neither delegates nor party members. What do we know about the speakers? From the second statement, we know that some of them are government officials. Since government officials make up some of the delegates, we can also say that some of the speakers are delegates, and therefore party members. That's as far as we can go though; eliminate.

(D) makes the same mistake as A. We know every government official is a speaker; we cannot conclude the reverse. We can't conclude anything about all speakers. Eliminate.

(E) is unsupported by the statements. Can we conclude anything about every government official? Only that they're all speakers. Eliminate.

Note that A, D, and E all make strong inferences using words like every and all. To be clear, this doesn't mean they're wrong, but the most extreme part of any claim is the most likely to have overreached, so when we're eliminating, it's helpful to focus on those parts.

We're looking at all of the delegates, but government officials, speakers, and party members are not necessarily completely represented; there could be member of those groups not at the convention. Using the diagram, we could eliminate (A) because there could be other party members out there, (D) because there could be other speakers out there, and (E) because there could be other government officials out there. The diagram doesn't support (B)'s contention but certainly supports (C).

E.

1. Delegate ---> Party Member

2. Delegate (some) Government Official ---> Speaker

E says: GO ---> PM

But this is an invalid linkage

Remember, that SOME can go "both" directions, unlike "most". They can also " reverse" a necessary portion of a statement.

Like this:

So:

1. Delegate to convention--> Party Member

2. SOME Delegate to convention are Govt officials

3. If Govt Official---> speaker at convention

Let’s connect the terms through linkage:

Speaker < ---Gov't officials SOME Delegate --> Party Member

Immediately, one can note the following inferences:

#1: Delegate SOME Speaker

#2: Govt official SOME party member

Sure, there's other more easier inferences as in

Govt official SOME speaker and vice versa
and

Govt official Some delegate and vice versa

Answer choice C is a perfect match.

Some speakers at convention are delegates. If you notice, this is the inference we made in #1. Some people would claim but this is the opposite of what we had. That's true. The beauty of "Some", however, is that the opposite is warranted and allowed.

Reason for why E is wrong:

EVERY Delegate at the convention is Party Member.

SOME Delegate at the convention are Government Officials. Can you infer from this statement that Government Officials at the convention are all Delegates? No, we don't know. There might be some GOs at the convention who are not Ds, therefore are not PMs, such as GOs who take care of the security. So E is wrong by saying Every GO at the convention is a party member. But if it is "every GO who is a D is also a PM", then it is correct.

6. E

Testosterone protects brain cells from damage and can lower levels of beta-amyloid in the brain. Beta-amyloid helps cause Alzheimer's disease, and people whose brain cells are susceptible to injury are probably more likely to get Alzheimer's disease.

Testosterone can likely help prevent Alzheimer's disease because it reduces the level of beta-amyloid and protects brain cells from injury. We can write this succinctly in Conditional Logic terms:

If testosterone → decrease in beta-amyloid

If beta-amyloid → Alzheimer's

(E) is correct. If testosterone reduces levels of beta-amyloid, which in turn provides some protection from Alzheimer's disease, then it follows that a decline in testosterone will increase the risk of Alzheimer's disease.

(A) is Extreme. According to the stimulus, people whose brain cells are susceptible to injury are "probably more susceptible" to Alzheimer's. Both "probably" and "susceptible" are tentative words. It is extreme to say that *everyone* who is susceptible *will* eventually develop Alzheimer's disease.

(B) is Extreme. Beta-amyloid levels contribute "causally" to Alzheimer's disease, but saying the disease is entirely dependent on beta-amyloid levels goes beyond the facts provided in the stimulus.

(C) is a Distortion. This answer choice incorrectly reverses the causality. People whose brain cells are susceptible to injury (something testosterone protects against) are susceptible to Alzheimer's disease, but the stimulus never says it works the other way around.

(D) is also a Distortion. The argument states that susceptibility to brain cell injury can contribute to developing Alzheimer's disease. Limiting the risk of brain cell injury *only* to people with Alzheimer's disease distorts the relationship presented in the stimulus.

This stimulus provides facts in the first two sentences, and then asks you to complete the third sentence. The facts relate to the effect of testosterone on brain cells. Apparently, testosterone protects brain cells from injury, while also reducing the levels of the protein beta-amyloid in the brain. This information suggests a link between testosterone and Alzheimer's disease, because beta-amyloid

causally contributes to Alzheimer's disease, and people whose brain cells are susceptible to injury are probably more susceptible to Alzheimer's disease.
The facts in the stimulus connect testosterone levels to Alzheimer's disease, in that people who lack testosterone will be at greater risk for Alzheimer's disease, because they will be more prone to brain injury, and will have higher beta-amyloid levels.

Answer choice (A): The stimulus told us that those whose brain cells are susceptible to injury are *probably* more susceptible to Alzheimer's. This answer choice exaggerates that risk by stating definitively that if a person's brain cells are susceptible to injury then they *will* develop Alzheimer's disease.

Answer choice (B): We know from the stimulus that beta-amyloid *contributes* to Alzheimer's disease. This answer choice goes too far by treating beta-amyloid levels as the *sole cause* of Alzheimer's disease.

Answer choice (C): The facts established that low testosterone levels can create a greater risk for Alzheimer's disease. This answer choice *reverses* that relationship, by saying Alzheimer's disease causes a reduction in testosterone levels.

Answer choice (D): The stimulus told us that increased susceptibility to brain injury is a risk factor for Alzheimer's disease. This answer choice both reverses that relationship and *exaggerates* it, saying that Alzheimer's disease is necessary for being at risk for brain cell injury.

Answer choice (E): This is the correct answer choice, because a decrease in the testosterone level decreases the protection of brain cells from injury, which probably increases susceptibility to Alzheimer's disease. Also, the reduction in testosterone could impede the reduction of the protein beta-amyloid, a causal contributor to Alzheimer's disease.

7. E

The first two sentences state that all good garden compost can be used for soil drainage and fertility, and they assert that the best compost is dark brown in color and between 40 and 60 percent organic matter. But, for drainage and fertility purposes, one should not use compost that emits a strong ammonia smell, because the organic matter in such compost has not sufficiently decomposed.

The stimulus states that any good garden compost can be used for soil drainage and fertility. Note that this also means that if the compost cannot be used for drainage or cannot be used for fertility, then it is not good garden compost. Additionally, since compost that emits a strong odor of ammonia should not be used for drainage and fertility, it is therefore not good garden compost. Find an answer choice that makes this connection.

(E) is correct and matches your prediction. No matter what color the compost, the last sentence in the stimulus states that compost emitting a strong ammonia odor should not be used for drainage and fertility. Since the compost in this choice emits a strong smell of ammonia, it should not be used for drainage and fertility, and it is therefore—based on the Conditional Logic—not good garden compost.

(A) is Outside the Scope. The stimulus provides no information about compost that is 80 percent organic matter, nor does it link organic matter percentage and decomposition. This choice cannot be supported by information in the stimulus.

(B) is Outside the Scope. The stimulus does not provide information about compost that is less than 40 percent organic matter and is not dark brown in color. Moreover, the stimulus does not provide information about what will make soil less fertile or worsen soil drainage.

(C) mixes up the Conditional Logic. The stimulus says the best compost is between 40 and 60 percent organic matter and dark brown. That could be translated as "If the compost is the best, then it's between 40 and 60 percent organic matter AND dark brown." It doesn't logically follow that if the compost is 50 percent organic matter AND dark brown, then it is good. This reverses the Conditional Logic without negating. For example, you know that if the compost has a strong ammonia smell (i.e., has not sufficiently decomposed), then it can't be used for drainage and fertility and thus it isn't good. So, there could be compost that is between 40 to 60 percent organic matter and dark brown but is still not serviceable because it is not sufficiently decomposed.

(D) is Extreme. The stimulus's logic train says that if organic matter is not sufficiently decomposed, then the compost is not good. The contrapositive would be if the compost is good, then the organic matter is sufficiently decomposed. But "good" is different from "best," and "sufficiently decomposed" is different from "completely decomposed."

This stimulus presents a fact set of conditional relationships.

First, the stimulus provides that any good garden compost may appropriately be used for soil drainage and fertility.

GGC = good garden compost

USDF = may be used for soil drainage and fertility

- GGC $\longrightarrow$ USDF

Next, the best compost is 40 to 60 percent organic matter and is dark brown in color. We will diagram best compost (BEST) as a subscript of good garden compost (GGC).

$GGC_{BEST} \longrightarrow$ 40-60% organic + dark brown

However, compost that emits a strong ammonia smell should not be used for drainage and fertility.

SAS = compost that emits a strong ammonia smell

- SAS $\longrightarrow$ ~~USDF~~

Finally, a strong ammonia smell in compost means the organic matter has not sufficiently decomposed.

SD = sufficiently decomposed

- SAS $\longrightarrow$ ~~SD~~

Given that the stimulus is comprised of a fact set, it should not be a surprise to find that this is a Must Be True question. Whenever you have multiple conditional reasoning statements in a Must Be True question, you should be on the lookout for an inference based on a combination of the relationships, and you must always be on the lookout for a contrapositive of one of the relationships to play a role.

Here, an inference is permissible based on the combination of the first and third facts. In the first sentence, we are told that any good compost may appropriately be used for soil drainage and fertility (GGC $\longrightarrow$ USDF). The term USDF appears again in the third fact, though stated in the negative (SAS $\longrightarrow$ ~~USDF~~). By considering the contrapositive of the first fact (~~USDF~~ $\longrightarrow$ ~~GGC~~), we can create this conditional chain:

- SAS $\longrightarrow$ ~~USDF~~ $\longrightarrow$ ~~GGC~~

We drop the common term (~~USDF~~) to get the additive inference: compost that emits a strong ammonia smell is not good garden compost:

- SAS $\longrightarrow$ ~~GGC~~

Answer choice (A): This choice is incorrect because the stimulus provides no information that relates the percentage of compost that is organic matter to the sufficient decomposition of the organic matter within the compost. As do choices (B) and (C), this answer choice attempts to confuse you regarding the percentages contained in the stimulus.

Answer choice (B): This choice is incorrect because it improperly infers the reverse of the information presented in the stimulus. The fact that the best compost, which contains between 40 and 60 percent organic matter, is appropriate to use for soil drainage and fertility does not necessarily imply that compost with less than 40 percent organic matter will produce the reverse effect.

Answer choice (C): This choice is incorrect because it ignores the separate condition that the compost be dark brown in color.

Answer choice (D): Similar to (C), this answer choice ignores the color of the compost. Also, the facts did not state that the compost must be *completely* decomposed in order to be good, just that it must be *sufficiently* decomposed.

Answer choice (E): This is the correct answer choice, because the stimulus told you that compost with a strong ammonia smell should not be used. Therefore, regardless of the color of the compost, the stimulus supports the statement that compost with a strong ammonia smell is not good garden compost.

you have to realize that BGC is a subset of GGC, and that not all composts that are 40-60% organic matter and dark brown are necessarily good garden composts, so the

40-60%OM and DB $\longrightarrow$ GGC

represents a Mistaken Reversal, as the setup in the post above shows. This conditional ends up acting as a red herring, however, as the critical A $\longrightarrow$ B $\longrightarrow$ C inference needed to answer this question is:

GGC $\longrightarrow$ SD&F

and its contrapositive

~~SD&F~~ $\longrightarrow$ ~~GGC~~

and

SAS $\longrightarrow$ ~~SD&F~~

Combine the contrapositive of the first conditional and the second conditional and we have:

SAS $\longrightarrow$ ~~SD&F~~ $\longrightarrow$ ~~GGC~~

or the inference

SAS $\longrightarrow$ ~~GGC~~

Answer choice (E) expresses this, as the color is irrelevant, but the fact that the compost is emitting a strong ammonia smell means that it isn't good garden compost.

Let's break this down starting with the stimulus.

Good compost ⟶ Can be used for drainage/fertility

Best compost ⟶ 40-60% organic
Best compost ⟶ Dark brown

Smelly compost ⟶ ~~can be used for drainage/fertility~~
Smelly compost ⟶ ~~decomposed~~

From this we can also make the connection that good compost ⟶ ~~smelly compost~~

So, **C** has two conditions for being **good** compost:

1. Compost is 50% organic. **This tells us nothing, since being within the 40-60% organic range is the necessary condition for being the best compost. Conditionally, it doesn't trigger anything and logically, there's no connection to being good compost here.**

2. Organic matter is sufficiently decomposed. This triggers the contrapositive of "Smelly compost ⟶ ~~decomposed~~", which tells us that this compost isn't smelly. The only other conditional statement not being smelly relates to is "good compost ⟶ ~~smelly compost~~." However, since ~~smelly compost~~ is the necessary condition here, it triggers nothing and thus makes no connection to the compost **C** describes as being good compost.

C might be good compost or it might not be, but the answer choice tells us nothing useful to determine that.

Remember that all answers are either 100% right or 100% wrong on the GMAT, so a good strategy to use is to try to take down the wrong answer choices logically.

E also has two conditions.

1. dark brown (this is the necessary condition of "Best compost ⟶ Dark brown," thus it becomes irrelevant. It also relates to the best compost not to good compost. This statement is ultimately there to distract you from the second statement which is the key to this question:

2. it smells. Because we know "good compost ⟶ ~~smelly compost~~", we can take the contrapositive here "smelly compost ⟶ ~~good compost~~." We now know that **E's** smelly compost isn't good compost. **E** is most strongly supported.

The best compost is good compost. The author is certainly suggesting that good compost exists, and so the best compost must be a subset of that group.

(D) "Sufficiently decomposed" does not equal "completely decomposed.

(E), on the other hand, is correct because of the conditions* in the stimulus:

good compost --> can use for drainage/fertility

strong ammonia smell --> cannot use for drainage/fertility --> not good compost

(E) tries to throw you off with that bit about the compost being dark brown (since that is one characteristic of the best compost, which, as you said, would certainly qualify as good and thus suitable for drainage/fertility use), but ultimately you're just following the conditional chain* starting at "ammonia" and ending up at "not good."

Recognize that this is an INFERENCE question, so they allow certain levels of jumps to be made, but not others.

For example, you can't jump from

Tommy has a car

to

Tommy likes cars

But you can jump from:

When Tommy leaves early, it gives him the opportunity to go fishing

to

Tommy occasionally goes fishing

That's the equivalent of your question about "should". If they say you shouldn't do something, it's fair to assume the most logical reason (i.e. the compost is bad). Whether you like it or not, that's the reality! So let's keep those rules in mind as we go through the answers:

(A) No connection was ever drawn between the percentage of organic matter and how much it was decomposed. These do not inform each other.

(B) The passage says that the best compost is 40-60 percent organic and dark brown, but that doesn't mean any other percentage/color will be HURTFUL. Like (a), this one tries to connect up the two separate issues, color/percent and decomposition.

(C) Though we know that these two qualities (50 percent organic and good decomposition) make for good compost, we don't know about OTHER qualities that could ruin it. For example, we could have compost that's 50% organic and sufficiently decomposed, but the other 50% is plastic, or on fire! That wouldn't be good!

(D) As you've been discussing, the passage never says it should be COMPLETELY decomposed, only sufficiently. For all we know, TOTAL decomposition is actually bad! Also, we don't know the spectrum of decomposition versus goodness. It could be that perfect (best) compost, the decomposition is RIGHT at the line of sufficiency.

(E) Correct! The passage goes out of its way to say that strong ammonia smell alone is a reason not to use compost, so this will fly.

8. C

The first sentence is a pure Conditional Logic statement. The second sentence is a bit "fuzzier"; on the GMAT, "most" means "more than 50 percent." Both can be diagrammed as conditional statements.

If shown at LN → Canadian
If prize winner at LN → 50%+ chance of prize at int'l festival

All films shown at Lac Nichoutec Film Festival are Canadian films, so any prize-winning film there is Canadian. Thus, any film from the Lac Nichoutec Festival that went on to win international prizes is Canadian. But there are important limits to what you can deduce here. Nothing in the stimulus tells you how many prize winners the festival produced or how many international film festivals there are. Therefore, it's important to avoid drawing inappropriate inferences. You don't know, for instance, that most international prize winners were from Lac Nichoutec (or from Canada for that matter). Only one choice will be unequivocally true.

(C) must be true. All films at the Lac Nichoutec Film Festival were Canadian, and most of the prize winners also won prizes at international festivals, so *some* Canadian films won prizes at international film festivals.

(A) is a Distortion. This choice draws an inappropriate inference that Canadian entries to international film festivals were limited in some way. Many Canadian films that did not win prizes at Lac Nichoutec, or were not even shown at that festival, could have still been shown at international festivals.

(B) is Extreme, as well as Outside the Scope. The Lac Nichoutec festival might have shown only a tiny fraction of all the films produced this year in Canada, and the stimulus gives you no reason to assume otherwise.

(D) is a Distortion. On the GMAT, "most" means "greater than half" but has no upper limit. It is possible that every single film that won a prize at Lac Nichoutec was also shown at an international festival. Furthermore, the stimulus tells us about films from Lac Nichoutec that won prizes at international festivals, not about films that were simply shown at international festivals.

(E) is also a Distortion. The stimulus tells you nothing about international film festival prize winners from countries other than Canada. Don't quibble that this seems unlikely in real life; the stimulus asks for what must be true *based on "the above statements*." Given only the stimulus here, it is possible that Canadian films swept every international film festival and won every single award.

The Lac Nichoutec (LN) Film Festival features only Canadian Films; if a movie was featured in that festival, we know that it must have been Canadian:

- LN Film Fest ⟶ Canadian

...and most of the prize winners at that festival were also winners at international film festivals:

- LN Film Fest Winners $\xrightarrow{\text{most}}$ International Film Fest Winners

Since we have limited information about the overall group of international film fest winners, the most we can say about that group is that at least *some* of them were winners at the LN Film Fest:

- International Film Fest Winners $\xleftarrow{\text{some}}$ LN Film Fest

In a stimulus such as this one, in which two formal logic statements are presented, it is always a good idea to link the statements if possible, as follows:

- International Film Fest Winners $\xleftarrow{\text{some}}$ LN Film Fest $\longrightarrow$ Canadian

Based on the chain statement above, we can infer that at least some of the international film festival winners were Canadian (International fest winners $\xleftarrow{\text{some}}$ Canadian)

Answer choice (A): The stimulus provides very limited information regarding Canadian international film fest winners; all we can say with confidence is that there was at least one LN film fest winner that also won an international prize. Since there is no way to know whether the majority were shown at the LN film fest, this choice cannot be confirmed by the information in the stimulus and should be ruled out of contention.

Answer choice (B): Even though the festival shows Canadian films exclusively, there is no way to know how many Canadian films were *not* shown at the festival (there could be a million of them). Without more information, there is no way to properly infer that the majority of all Canadian films were featured at the one specific film festival that was discussed.

Answer choice (C): This is the correct answer choice, confirmed by the chain relationship discussed above.

Answer choice (D): The term “most” includes the possibility of “all”, so it is entirely possible that every Lac Nichoutec film fest winner also won an international prize. Since this choice cannot be confirmed by the information in the stimulus, it fails the Fact Test and cannot be the correct answer to this Must Be True question.

Answer choice (E): Based on the information provided in the stimulus, it is possible that the Lac Nichoutec film fest featured every single international film fest winner. Since this answer is not necessarily accurate based on the limited information provided, this cannot be the right choice.

True, "shown" is not always synonymous with "won". Good eye. However, sometimes one can read too much into language, and in this case, maybe it's all right to assume "shown" really is more-or-less synonymous with "won". (It's sort of a judgment call, and not always clear.)

Moreover, "most of the films that won prizes at that festival also won prizes at international film festivals" lends support to the idea of Canadian films being the ones shown at the international festivals. E.g., maybe, as you say, a non-Canadian film or two could be given special mention at a Canadian festival by winning without showing, say, a "lifetime achievement award" or something. But "most of the films" implies a good number of films, maybe,

not just an occasional outlier of having a film that somehow wins without even being shown, which is inherently unusual. So, it's likely that Canadian films winning prizes at the festival went on to get other prizes at international ones.

The reason (D) is wrong is that there isn't any information in the stimulus about what portion of the films are also shown at international festivals.

Festival --> Canadian

Festival -m-> International

(C) Canadian <-s-> International

(A) International -m-> Festival, could be false

(B) Canadian -m-> Festival, could be false

(D) Festival <-s-> ~International, could be false

(E) International <-s-> ~Festival, could be false

The overlap is that both sentences talk about films that were shown/won awards at the LN festival.

If you won a prize at a film festival then that film must have been shown at that festival.

Does that HAVE to be true? Not really, but if we were to argue with this question by saying, "What if you *weren't* shown at the festival but still won an award?" we'd be guilty of doing what they warn us against at the beginning of every LR section:

So the overlapping fact in our two sentences is about the films that where shown and won an award at the festival.

We know

1. they were all Canadian

2. most of them also won prizes at international festivals.

So, yes, as (C) says, we know that at least one film that won a prize at an international festival was Canadian.

If you wanted to diagram this, you'd be using this formula.

All A's are B.

Most A's are C.

Thus, some B are C

All [winners at the LN festival] are Canadian.

Most [winners at the LN festival] also won prizes at international festivals.

Thus, some Canadian films won prizes at international festivals.

9. D

The dilemma: if an action is taken (shift sorting to residents), one negative result will result (recyclables go to the dump). If the same action is not taken (don't shift sorting to residents), a different negative result will occur (city goes over on sanitation budget).

Since the two triggers in the stimulus are just an on/off switch for the same action (shift the sorting requirement or don't shift it), you can conclude that the city is stuck between the horns of the dilemma. The correct answer will lay this out: either the city is going to wind up with more recyclables in its landfill, *or* it's going to exceed its sanitation budget. One or the other of those results will occur.

(D) matches the prediction and lays out the two horns of the dilemma you identified. There is no way for the city to stay within budget without shifting the sorting of recyclables to residents. That shift, in turn, will cause an increase in recyclables that get thrown out with the garbage destined for the city dump.

(A) is too specific. The author's statements make clear that, under the new sorting system, *some* residents will start tossing recyclables out with the garbage. Whether *most* will continue to recycle cannot be established from the statements here.

(B) is a conditional statement that does not follow from the stimulus. The author's statements make clear that, under the new sorting system, some recyclables that are currently put into the recycling would end up at the landfill instead. There's not enough information to say that *all* those who continue to recycle will sort their recycling. Perhaps some will put out their recycling unsorted.

(C) cannot be deduced from the information in the stimulus. We know that without requiring residents to sort their recycling, the city cannot make its overall sanitation budget. But **(C)** deals with two specific totals within the budget: the current annual cost of sorting recycling and the expected annual cost of sending garbage to the landfill. Without more information, those cost categories are irrelevant. It could be that landfill costs are always higher than sorting costs, but if the resident sorting program reduces the sorting costs more than it increases the landfill costs, it would still help the city make its budget.

(E) makes a mistake with the Conditional Logic in the stimulus. The last sentence in the stimulus states that implementing resident sorting is necessary for the city to stay within its sanitation budget. **(E)** mistakenly states that implementing resident sorting is sufficient for the city to stay within its budget. Even without taking the time to translate the Conditional Logic involved, it should be clear that you cannot deduce the statement in **(E)** without more information: How many new trucks will the city have to buy? Will the population of the city increase? And so on.

The stimulus presents a fact set driven by conditional reasoning. Applying the Unless Equation to the last sentence, the phrase modified by "unless" becomes the necessary condition, whereas the remainder is negated and becomes the sufficient condition:

- Sorting = Sorting requirement
  GR = Garbage recyclables
  LR = Landfill recyclables

Budget = Sanitation department stays within budget

Statement (1): Sorting ⟶ Increase GR

Statement (2): Increase GR ⟶ Increase LR

Statement (2): Budget ⟶ Sorting

By combining these three conditional statements, we can infer that the amount of recyclables in landfills will have to increase if the sanitation department is to stay within budget:

- Budget ⟶ Sorting ⟶ Increase GR ⟶ Increase LR

This prephrase is tremendously helpful in attacking the answer choices and immediately proves that answer choice (D) is correct.

Although the relationships described also contain elements of causation ("this will result in…"), the language in the second sentence suggests an inevitable, absolute outcome typical of a conditional relationship. Additionally, the causal reasoning in stimuli containing fact sets does not warrant the same level of scrutiny as does the conditional reasoning in them, especially when the latter suggests the presence of chain relationships (as is the case here).

Answer choice (A): The information contained in the stimulus cannot help us determine whether *most* of the city's residents will continue to recycle after the sorting requirement is implemented. All we know is that many of them will put more recyclables in with their regular garbage. What proportion of residents continue to recycle is entirely unknown.

Answer choice (B): We cannot be certain if *all* of the city's residents who recycle will actually comply with the sorting requirement, if implemented.

Answer choice (C): Granted, the annual cost of sorting recyclables is likely to decrease after the new sorting requirement is implemented, while the cost of sending garbage to the landfill will probably increase. However, we do not know the *relative* value of these two costs before the new requirement is implemented, which means that we cannot calculate their relative value after. It is entirely possible, for instance, that the annual cost of sending garbage to the landfill *already* exceeds the current cost of sorting recyclables.

If the sanitation department is to stay within budget, there is only one conclusion we can draw (assuming all other costs and revenues remain constant): the *added* cost of sending garbage to the landfill cannot exceed the *savings* that would result from not having city workers do the sorting.

Answer choice (D): This is the correct answer choice, as it matches the additive inference of the chain relationship outlined above:

- Budget ⟶ Increase LR

Answer choice (E): This answer choice is incorrect, because it is a Mistaken Reversal of the third sentence:

- Sorting ⟶ Budget

requiring sorting ⟶ recyclables thrown away

not requiring sorting ⟶ not within budget

And then the contrapositive: within budget ⟶ required sorting

So we now know that if they stay within budget, it means they required sorting, which means recyclables were thrown away.

If people have to sort their recycling, they'll just throw more into the trash, resulting in more recyclables ending up in the landfill.

And if the sorting requirement is NOT implemented, then the sanitation dept. will exceed its budget.

It looks like they start with opposite triggers:

"if people have to sort -> more R's in trash -> more R's in landfill",
and
"if people don't have to sort, sanitation dept will exceed its budget".

Whenever we have multiple conditionals, we need to see if they chain together (often, contraposing one is needed to see the chain). Indeed, we could say
"if SD doesn't exceed budget -> ppl ARE required to sort -> more R's in trash/landfill".

(A) Too Specific: "most". We have no idea if 51% vs. 49% will recycle.

(B) Too Strong: "all". We have no way to guarantee that ALL people act in a certain fashion.

(C) Unknown Comparison: We have no way to compare the yearly cost of sending trash to the landfill with that of sorting R's.

(D) Yes! If the SD stays within budget, we know that the sorting requirement was implemented, which means that more R's will end up in the landfill.

(E) Illegal negation of "if we DON'T do sorting, they WON'T stay in budget".

We know that: **requirement --> more recyclables w/ regular --> more recyclables in landfill**. This will incur some sorting cost, but then the prompt concludes that

-requirement --> -stay within budget
(CP: stay within budget --> requirement)

Combining both statements above, we know that

stay within budget --> requirement --> more recyclables w/ regular --> more recyclables in landfill, which is basically what (D) says.

Incorrect Answer Choices:

(A) We have no information on what most city's residents will do when the sorting requirement is implemented.

(B) We have no information on what the residents who continue to recycle will do.

(C) Just because the city stayed within budget doesn't give us any information on the comparative cost of sending garbage to landfill and sorting recyclables. Maybe it's the other way around, but the budget is still within plan. We have no idea which way they're "staying within budget".

(E) Illegal reversal of logic.

B isn't necessarily supported. Just because there's a policy / law / mandate doesn't necessarily mean people will follow it. Also, it could be people other than residents who are doing the sorting (robots, etc.). Also, they could be recycling by other means (re-use or private recycling companies).

As it even mentions in the prompt: if that requirement is enacted, many residents will just put more of their recyclables in the trash as opposed to taking the time to sort the stuff out. There's no reason to believe just because the requirement is enacted that people will follow it to the T.

10. E

In order for birds or mammals to contract West Nile virus, they must be bitten by an infected mosquito:

If contract W.N.V. → mosquito bite

If ~ mosquito bite → ~ contract W.N.V.

Mosquitoes can get the virus from biting infected animals—although it's important to note that this isn't the *only* way for mosquitoes to get the virus. The stimulus then offers some random history about the virus (which feels like fodder for trap answers). However, the last line offers some important information:

Humans can catch the virus, but in humans it's never strong enough to infect a biting mosquito.

There's Conditional Logic here that can be connected. The last line states that some humans have become infected. According to the first line, this can happen only through mosquito bites, so some humans have definitely been bitten by infected mosquitoes. However, the last line states that humans can't infect mosquitoes. In other words, if mosquitoes get the West Nile virus, it can't be from biting an infected human. So the combination of all this information is: Any animal (including a human) that contracts the disease must have been bitten by a mosquito, which in turn must have become infected by a source other than humans. Don't spend a lot of time predicting one particular answer. Just look for something that directly follows from this information.

(E) must be true. As stated in the final sentence of the stimulus, humans can't carry enough of the West Nile virus to infect a biting mosquito. Therefore, an infected mosquito, bird, or nonhuman mammal must have brought the disease to North America.

(A) is unsupported. If enough infected mosquitoes bit humans, West Nile virus most certainly could become common.

(B) is unsupported because only infected mosquitoes can transmit the virus. The area with the highest density of mosquitoes could be teeming with *un*infected mosquitoes.

(C) is unsupported. While humans can't transmit the virus back to mosquitoes, humans may well show symptoms of infection.

(D) is an unsupported comparison. The virus may have originated in Africa, but nothing in the stimulus indicates that it affects more people there. Remember that the correct answer to an Inference question must be supported *by the statements in the stimulus* alone.

This is an inference question, so we are out of the assumption family and no longer concerned with whether the stimulus contains an argument. Instead, we simply gather the facts from the stimulus. Then we ask: what else do I know?

We are told 1) birds and mammals can get West Nile only through mosquito bites; 2) mosquitoes become infected by biting infected birds or mammals; 3) WN came to America in the 1990s; and 4) though humans can get the virus, mosquitoes can't get WN by biting humans.

No obvious inferences or connections jump out, which is fine. It is often difficult to predict the tested inference, but it can still be beneficial to briefly stew over the facts to see if they whisper anything in your ear. After letting them marinate, let's take the facts to the answer choices and see which answers are supported.

(A) *Never be common*? Does the stimulus discuss how common the disease is in humans? No. And "never" is a strong word that the stimulus would really have to back up. Such strong words in inference questions should raise your hackles. "Never" is not supported. Eliminate.

(B) Again with the "common." Does the stimulus discuss whether and where the disease is common in North America? No. Eliminate.

(C) Symptoms? Do you know what the symptoms of WN are after reading the stimulus? Me neither. Eliminate.

(D) Tempting maybe, because WN was first detected in northern Africa and only made it to North America during the 1990s. We might think WN does better in its homeland than in North America, but maybe WN loved grunge music and flannel shirts and really flourished once it got here and now WN infects more people in North America than northern Africa. It's possible. The stimulus never mentions how many people, on any continent, contract WN. Eliminate.

That leaves (E) *West Nile virus was not carried to North America via an infected person*.

Is this information supported? Yes. We know the disease can only spread to birds and mammals after a bite from an infected mosquito, and we also know mosquitoes can't catch WN from people. So, if the only instance of WN in North America was in a person, could it spread to anything else? Nope. Something other than a human must have brought the infection over here. Perhaps zombies? At any rate, this is our answer.

PROCESS OF ELIMINATION

Answer A: "Will never" out

B: "most common in regions with highest density of mosquitos". Really, maybe mosquitos like isolation and they avoid high dense mosquito population. Who knows.

C) Some people will 1) NEVER and 2) SHOW SYMPTONS... I was stuck on these one, but then I remembered my good old friend POE, and he whispered "SYMPOTNS", where in the stimulus are they mentioning such thing.

D) Infects more people in Africa the North America? But the stimulus says that's people SOMETIMES get infected. Not supported More /less who knows?

E) is supported

B - this is wrong because it is telling us that west nile virus is most common in NA(the parts with highest density of mosquitos)

first off, there is no evidence telling us that west nile is most common in NA. One would think that it would be most common in Africa since it only relatively recently spread to America. So, no support for saying it is most common in America in the stimulus. Eliminate.

E- this is correct because you can safely infer this from the stimulus, there is ample evidence to support this view point. Humans cannot infect any mosquito. Mosquito's however can infect birds and mammals. So yeah we can infer that it was not spread to America by an infect person since if it was..... it would be the infected person who spread the disease in North America. From the stimulus though, it doesn't tell us that humans can infect anybody. So this is safe to infer.

C- no support. nothing in the stimulus says this or leads to this

A- nope, somewhat contradicted and way 2 strong

The wording of **"West Nile virus was not carried to"** contains essentially two different meanings, and it felt very annoying to NOT clearly understanding those different meanings are (although the fact that there are two different implication itself came to me later as I kept on trying to understand this question).

First of all, "carried to" could mean literally and physically moving an object from A to B. So, if we think of "carry" in this sense, it feels like this is supported by the stimulus. Because, since the stimulus said, "**the virus was originally detected in northern Africa and spread to North America**", it could easily have been the case where an American traveling northern Africa got bit by a mosquito with the virus, and came back to US. In a sense that this virus has been physically carried from Africa to America, this sounds very well COULD BE supported. In fact, it's hard to imagine there had never been this case unless vaccination process is flawless. The bottom line is that we are not 100% certain although it is possible.

However, physically transportation is NOT what it is entailing essentially.

Another sense that this "WNV was not carried to N. America" implies is that, since we already know this virus HAS spread to N. America, **the first time this virus was transported and CAUSED the spread** was NOT via an infected person. Although subtle, the virus that's "carried to" here indicates the VERY virus that started the whole process of infection in N.America. (Before I was able to word this out, it felt like there was a little tumor in my brain that I really want to scratch but unable to reach my finger) In this sense, this is 100% supported by the stimulus, because it's given that *"the virus never becomes abundant enough in human blood to infect a mosquito"*, which is necessary for the virus to spread out.

In other words, although there could have been an infected person from Africa coming to N.America, that virus never got to be spread out due to a given reason. Consequently, in a sense whether the first virus that caused the spread in N.America has been via an infected person or not, it MUST NOT be true.

Yeah, in the context of diseases, a "carrier" is often meant to mean "someone who is infected with a disease and capable of spreading it, though not necessarily exhibiting any symptoms."

Fact: birds and mammals can be infected with West Nile virus only through mosquito bites

bird or mammal infected with West Nile ⟶ infected by mosquito

Fact: mosquitoes become infected with the virus when they bite certain infected birds or mammals

Fact: virus originally detected in northern Africa and spread to North America in the 1990s

Fact: humans sometimes catch West Nile virus, but the virus never becomes abundant enough in human blood to infect a mosquito

mosquito infected with West Nile ⟶ ~~infected by human blood~~

Your prephrase in this question is that you can join the first and last facts presented in the stimulus to create an additive inference: since a human cannot infect a mosquito with West Nile, and birds and mammals can be infected with West Nile only through mosquito bites, then the disease is not spread by humans.

The incorrect answers will not contain information supported by the facts in the stimulus, either because they are not mentioned by the facts, are not inferable from the facts, or are contradictory to them.

Answer choice (A): The facts states that humans "sometimes" catch West Nile. The word "sometimes" is the logical opposite of "all the time," and includes the possibility of something that would be considered common. At very least, the definitive prediction that the virus will never be a common disease among humans is not supported the facts.

Answer choice (B): While this answer seems reasonable from a common sense perspective, it presents new information. The facts did not provide any information concerning where West Nile is most common.

Answer choice (C): This choice is intended to trick people who confuse the fact that the virus does not become abundant enough in human blood to infect a mosquito with the virus not being abundant enough in human blood to cause symptoms of illness. The stimulus contains no information

regarding when or how people become symptomatic.

Answer choice (D): The stimulus stated only that West Nile was originally detected in northern Africa. It did not provide any information regarding where more people are infected.

Answer choice (E): This is the correct answer choice. While the language "carried" is ambiguous, with the language potentially referring to West Nile coming to North America but not spreading, the context in the stimulus implies this choice refers to the disease spreading to North America in the 1990s. Since the combination of the first and last sentences tells you that West Nile cannot be spread by humans to mosquitoes, birds or mammals, you can infer that West Nile was not carried to North America via an infected person.

Let's take a look at the first and last sentences:

1. Birds and mammals (incl. humans) can be infected with West Nile virus *only* through mosquito bites.

2. Humans cannot infect a mosquito.

So, how was the virus carried to North America in the 1990s? Clearly, it was not via an infected person, because such a person could not have infected any mosquitos (last sentence). And, since birds and mammals can *only* be infected through mosquito bites, it would have been impossible to spread the disease in North America if the carrier was a human.

If you diagram the first and last sentence, this is what you get:

Birds and mammals infected ⟶ infected by mosquito bites

Mosquito infected ⟶ NOT infected by human

The way you connect them involves an unstated inference, which is that if something was infected by a mosquito bite, the mosquito that bit it was also infected by the virus somehow. It's pretty tricky since we're looking at a cycle of behavior here (something gets infected, then it infects something else). So you can create a conditional that looks something like this:

Birds and mammals infected ⟶ infection was by mosquito bites ⟶ those mosquitos must have been infected ⟶ the mosquitoes were not infected by humans.

11. E

In Spanish 101 last semester, most students had perfect attendance. However, every student who earned a grade below B minus missed at least one session. You know that most students had perfect attendance. You also know that every student who got a grade below B minus did not have perfect attendance. Put those two statements together, and it must be true that most students in Spanish 101 last semester got a grade of B minus or higher. Here's the second sentence of the stimulus in Conditional Logic, along with its contrapositive:

If grade below B minus → missed at least 1 session

If didn't miss session → grade not below B minus

Most students, according to the first sentence, didn't miss a session. Therefore, most students didn't get grades below B minus.

(E) is, therefore, correct.

(A) is not a valid inference because the grade threshold between those who missed class and those who didn't was B minus. Beyond that, you don't know what grade anyone earned. For example, it's possible the highest grade in the class was a B plus. It's also possible those specific students that got an A minus or higher were not part of the majority of students that attended every class.

(B) is a Distortion. You know that each student who scored below B minus missed at least one session. Nevertheless, these "B minus or below" students could be a small portion of the overall number of students who missed class.

(C) is close, but it doesn't have to be true. Those students with perfect attendance could have all gotten a grade of B minus. **(D)** doesn't have to be true. Based on the stimulus, it could be true that the group of students who missed one or more classes is the exact same group that received a grade lower than B minus.

This stimulus contains facts involving the use of Formal Logic. The first statement is that *most* of the university's Spanish 101 students last semester attended every class session. We can diagram this statement as:

- $\text{Student}_{\text{Spanish 101}}$ $\xrightarrow{\text{most}}$ attended every class session

Next, we are told that each student with a grade lower than a B- missed at least one session. We can diagram this just like we do with any conditional relationship, recognizing that missing at least one session is logically identical to "did *not* attend every class session":

- $\text{Student}_{\text{lower than B-}}$ $\longrightarrow$ ~~attended every class session~~

and the contrapositive:

- attend every class session $\longrightarrow$ ~~Student~~$_{\text{lower than B-}}$

We can connect the first, "most" relationship to the contrapositive of the second relationship across the common term "attend every class session":

- $\text{Student}_{\text{Spanish 101}}$ $\xrightarrow{\text{most}}$ attended every class session $\longrightarrow$ ~~Student~~$_{\text{lower than B-}}$

Based on this connection, we can infer that most students who took Spanish 101 at the university last semester received a grade of B- or higher (i.e., not lower than B-).

The question stem identifies this as a Must Be True question. Our prephrase is the inference made above, that most students who took Spanish 101 at the university last semester received a B- grade or higher.

Answer choice (A): Since the stimulus did not tell us about students who received a grade of A- or higher, we cannot make this inference.

Answer choice (B): This answer choice contains a reversal of what we know from the stimulus. We know that every student who received a grade lower than a B minus missed at least one class session, but we cannot simply reverse that statement to say that most people who missed at least one class session received a grade lower than a B minus. At most, we can say that *some* people who missed at least one class session received a grade lower than a B minus.

Answer choice (C): This is a tricky answer choice, because it is very close to our actual prephrase. However, this answer choice is incorrect because it leaves out the possibility of those students receiving a B minus, stating that most of the students received a grade "*higher* than B minus."

Answer choice (D): The only rule we have that associates grades with attendance is the second rule, which told us about students who received a grade *lower than* a B minus. We cannot infer anything about the attendance of those students who received a grade of B minus or higher.

Answer choice (E): This is the correct answer choice, and it restates our prephrase, that most of the Spanish 101 students received a grade of B minus or higher.

A is wrong here because we just cannot know, based on this info, about any A- students. B is wrong because we just don't have enough info about the students that missed some classes.

"most" Imagine that there are 100 students, and at least 51 of them attended every class and also got at least a B-. They had to have gotten at least that grade, because any lower grade would mean they had missed a class. This proves answer E to be correct - more than half the class got at least a B-.

If every student with less than a B- skipped a class, just one student fits that description.

Now, we have 48 students about whom I know nothing at all. What grade did they get? Did they miss any classes? It's all up in the air.

This isn't about *why* they got a certain grade, or *what effect* attending class had - it's just about numbers.

Answer Choice (B) is incorrect because the stimulus leaves open the possibility that there could be many students who missed at least one class but still received a grade of a B minus or higher.

The last sentence of our stimulus tells us:

B minus (or lower) $\longrightarrow$ Missed a class (or more)

To say that if you missed a class, then you probably got a B minus, (as answer choice (B) does), would be a Mistaken Reversal! We can only read a conditional from left (sufficient condition) to right (necessary condition). So if a student got a B minus, then we know something (in this case, that he or she missed a class). But if a student missed a class, we don't know *anything* about that student's performance.

For example, say that 3 students in the class received a grade lower than a B minus. From our stimulus, we know that all 3 of those students must have missed at least one class. However, there could be 20 other students that missed a class but all got an A plus! The stimulus never rules out that possibility. So we don't know whether most students who missed a class got a B minus or lower, which means answer choice (B) is incorrect.

Stimulus Breakdown:

S101 Students -most-> Perfect attendance

C+ or lower → ~Perfect attendance

Rephrase "lower than a B-" as "C+ or lower". I'm expecting some trap answers about students with a B-.

Second, the statements have overlapping terms, but I'll need to take the contrapositive to combine them.

S101 Students -most-> PA

PA → B- or higher

_____

S101 Students -most-> B- or higher

Two things here. First, when we take the contrapositive, we rewrite the term to be "B- or Higher". Second, this argument is asking for an inference surrounding a quantified statement - the "most" statement. Learn the rules to combine them! We have flashcards to help.

A quick way to "math it out" and find that the inference here is a "most" (when most inferences from quantified statements are "some" statements) is to start with 100 S101 Students. Based on the statements, we know a minimum of 51 had perfect attendance, all of whom received a B- or higher. So at least 51/100 students received that grade, and thus most received that grade.

The correct answer will almost certainly be "Most S101 students received at least a B-."

(A) Out of scope. It's not even certain that anyone received an A- or higher, since we only know about students who beat a B-.

(B) Illegal reversal of that second conditional.

(C) Tricky! We can infer that most students received a B- or higher; this answer tries to mess that up by stating they beat a B-. It could be the case that

almost everyone received exactly a B-.

(D) Illegal reversal/negation of the second statement.

(E) Exactly what we predicted! If you learn the quantifier rules, you can knock this question out in under a minute.

In answer C, half or more of the students in the class could have received a grade of B- or lower. This is because all grades lower than B- were students who missed at least one class, but notice that it says "a grade lower than B minus" which means that several or even all of the students who attended each class received a B- (they just cannot be below that grade). If so many students received exactly a B-, then we cannot say that most received higher than B-.

The stimulus states that students who received a grade lower than B- missed at least one class, which is to say, the highest grade these students received was a C+. The stim also states the most students attended every class session.

(C) neglects the grade of an actual B-, because it states that most received a grade "higher than B-".

(E) is correct because it includes that grade of B- when it states that more than half received a grade "of B- or higher".

Most A's are B
+ All B's are C.

Thus, Most A's are C.

Most S101 students had perf attendance.
+ ALL perf attendance had B- or higher.

Thus, Most S101 students had a B minus or higher

That's what our correct answer (E) says.

We know that they have a B- or higher.

"Given that they have a B- or higher, do they HAVE to have an A- or higher?"

No, they could all have B-, B, or B+.

12. C

The student wants to find a book that she quoted in her research paper. From there, the student builds a logical chain:

No book means no accurate citation, and no accurate citation means no quotation, and the paper will be better with a quotation than without one.

If ~ book → ~ accurate citation → ~ quotation → paper not as good

By stringing those statements together, it becomes clear that if the student doesn't find the book, the paper's quality won't be optimal. Search for this in the answer choices.

(C) is a match for this prediction.

(A) doesn't properly complete the argument. Nothing in the argument suggests that the student must include a citation at all, let alone an inaccurate one.

(B) isn't a valid inference. The student's statements indicate that she will complete the paper no matter what. The only question is how good the paper will be, depending on whether the student finds the book.

(D) is a 180, it goes against the student's statement that "without an accurate citation, I will be unable to include the quotation."

(E) is unsupported because the student gives every indication that there will be a completed paper, quotation or no quotation.

If no book --> no accurate citation

if no accurate citation --> no include quote

if no include quote --> paper won't be as good as it could be!

We can string those together! Three answer choices start with "if I don't find the book", but only one ends with something we can link to! **(C)** concludes that without the book, the paper will suffer - i.e., it won't be as good as it could be!

Let's take a look at each of the incorrect answers:

(A) Why would we have to include an inaccurate citation? We still might find the book, and without the book, the conditionals indicate we'd just remove the quote!

(B) Nothing indicates that the paper can't be completed! We might not be able to include the quote without the book, but we could still finish the paper!

(D) Without the book, the conditionals above tell us that we won't use the quote, NOT that we'll use it without the right citation!

(E) Again, without the book, we can just remove the quote, and still presumably finish the paper.

This stimulus contains an argument whose conclusion is missing, replaced by a blank line. The student tells us that there is a quote that he wants to include in his research paper, but that he is unable to find the book containing the quote. If he cannot find the book, he tells us, he cannot prepare an accurate citation. And without an accurate citation, he cannot include the quotation in his paper. Based on this evidence, and the claim that the research paper would be significantly better with the quotation than without it, the student reaches a conclusion that is not contained in the stimulus.

This is a Main Point—Fill in the Blank question. Our prephrase is that the correct answer choice will provide the student's conclusion. The argument was conditional, and can be diagrammed as:

Sufficient		Necessary/Sufficient		Necessary/Sufficient		Necessary
~~find book~~	$\longrightarrow$	~~accurate citation~~	$\longrightarrow$	~~include quotation~~	$\longrightarrow$	paper worse

The student's conclusion is likely to be a restatement of the conditional chain described above, dropping out the common, middle terms. In other words, our prephrase is that the student concludes that if he does not find the book, then the paper would be worse, in that it does not include the quotation (~~find book~~ $\longrightarrow$ paper worse).

Answer choice (A): This answer choice is incorrect because we do not know whether the student will find the book. Also, even assuming the student cannot find the book, this answer choice would still be incorrect because the student told us that he cannot include an incorrect citation in his paper.

Answer choice (B): As with answer choice (A), this answer choice is incorrect because we do not know whether the student will ultimately be able to find the book. All we know is that if the student does not find the book, then the student cannot include the citation.

Answer choice (C): This is the correct answer choice because it properly describes a conclusion that flows from the student's evidence. The student's paper will suffer because he will not be able to include the quotation in it, since we know that the paper would be better with the quotation than without it.

Answer choice (D): As with answer choice (A), this answer choice is inconsistent with the stimulus, which told us that the student cannot include an inaccurate citation in the paper.

Answer choice (E): The student did not say that he cannot finish the paper without the citation, merely that his paper will not be as good without the citation as it would be with it.

"Without the book, I will be unable to write an accurate citation, and without an accurate citation, I will be unable to include the quotation."
=
IQ (include quote) ⟶ WAC (write accurate citation) ⟶ B (have the book)

Remember that "without" is the same as "unless" so you negate the sufficient condition and leave the necessary condition unchanged. From here, I took the contrapositive of the whole thing just to be safe, but when I started looking through the answers, none of them made sense or connected from anything I had written out, so I went back to the stimulus to read, and the secret was in the last sentence:
"Hence, since the completed paper will be much better with the quotation than without,"
=
BP (better paper) ⟶ IQ (include quotation)

This is the missing piece in the question that I'm assuming throws everyone off. If you take the contrapositive of this, you get:

NOT B ⟶ NOT WAC ⟶ NOT IQ ⟶ NOT BP (worse paper)

Answer choice C follows this reasoning, since it gives you:

NOT B ⟶ NOT BP

If I do not find the book, my research paper will suffer

Answer Choices -

A: NOT WAC (inaccurate citation)

B: Being unable to complete the research paper is not entirely relevant to the chain of reasoning we have

C: Correct

D: Doesn't make sense since if you include the quote, then you must have an accurate citation,
this answer choice states: IQ ⟶ NOT AC which is not correct

E: Again, completing the research paper is not relevant

Sectional test 4 Solutions

1. B

The stimulus creates a chain of requirements. First, before the government health service pays for patients to take Antinfia, it requires that the manufacturer prove the drug's cost-effectiveness. However, doing so requires clinical trials, which, in turn, require widespread circulation of the drug. Nevertheless, widespread circulation isn't possible unless the government health service financially supports Antinfia.

If gov't pays → Antinfia provides cost-effectiveness info → massive clinical trials → widespread circulation → gov't pays

This just creates an infinite loop of A → B → C → D → A.

The government health service will not pay to cover Antinfia prescriptions until other conditions are met, which themselves will not happen until the government health service begins paying for Antinfia. Thus, it can be deduced that none of the actions listed in the stimulus will occur.

(B) is a valid inference. According to the stimulus, widespread circulation requires government aid. So if government aid is not forthcoming, then widespread circulation will never occur.

(A) is Extreme. The stimulus indicates only that the government health service will not pay for Antinfia without cost-effectiveness data. It cannot be assumed that such a requirement applies to all medicines.

(C) is Out of Scope and wholly speculative. The stimulus never discusses patients or their possible actions.

(D) is Out of Scope. The author never makes any recommendations or expresses any opinion regarding what the government health service *should* do.

(E) is a Distortion. The chain in the stimulus shows that such data will never be gathered. So it is impossible to know whether or not Antinfia is cost-effective.

In this stimulus, the government health service and PharmCo, a drug manufacturer, appear to be at odds. The health service's position is that if PharmCo does not provide detailed information about the cost-effectiveness of Antinfia, an influenza medication, then it will not pay for patients to take it. PharmCo's response is that it will not be able to provide the data the government wants unless the health service pays for Antinfia, because the massive clinical trials required to obtain the data cannot happen until the drug is in widespread circulation, which can only happen if the government pays for patients to take it.

Although the question stem is worded strangely, this is a Must Be True question. However, notice that the reason the language in the question stem seems strange is that it announces a weaker standard of proof than we normally have for Must Be True questions. This means that the correct answer choice may contain language that we may typically consider inappropriate for a Must Be True question. Given the conditional language of the positions taken by both the government service and PharmCo, we can infer that the government health service will not pay for patients to take the influenza medicine. This is because the health service's requirement and PharmCo's requirement are incompatible. They both are demanding that the other take the first step.

Answer choice (A): This answer choice is incorrect because it is overly broad. The facts in the stimulus dealt only with Antinfia, so we cannot make any inferences about what the government health service does generally.

Answer choice (B): This is the correct answer choice, because we were able to infer that the government will not pay to put Antinfia into widespread circulation, and PharmCo's statement told us that the only way for the drug to be in widespread circulation is for the government to pay for it.

Answer choice (C): There is no indication from the stimulus that the patients will pay for the Antinfia themselves. Although the stimulus mentioned patients, it made no mention of their willingness or ability to pay for the drug. To the contrary, PharmCo told us that the drug will go into widespread circulation only if the government pays for it.

Answer choice (D): The operative word in this answer choice is *should*. The use of "should" implies the application of a rule to the facts. Since the stimulus did not contain a rule, we cannot conclude that the government should pay for patients to take the drug.

Answer choice (E): The issue in the stimulus was who was going to pay for the widespread distribution of the Antinfia, which was required before we could answer the question of the drug's cost-effectiveness. Since the widespread distribution will not occur, we cannot say whether or not the drug is cost-effective.

First sentence - we have an "until" in there, and that is one of our special necessary indicators. That sentence should be diagrammed something like this:

Gov Pays --> Pharm provides details about cost effectiveness

Next sentence, we continue that chain, because "requires" is another necessary indicator. Now we add this:

Pharm provides details about cost effectiveness --> massive clinical trials

Third sentence has two conditional phrases, so let's take them one at a time. First one has another until, requiring that special approach again. That phrase looks like this:

massive clinical trials --> widespread circulation

Last phrase has the necessary indicator "only if", and looks like this:

widespread circulation --> Gov pays

We are back where we started! Link those all up and you get this long chain:

Gov Pays --> Pharm provides details about cost effectiveness --> massive clinical trials --> widespread circulation --> Gov pays

Compare this to yours, and it looks like you have some stuff going right (your first one leaps over a couple steps in the chain, but it's true, and your last one matches my last one) and some stuff going wrong (your second one looks like we got a negation wrong and maybe reversed the order - spend some time with that and let's see how you got there).

Reviewing this chain, we can see that we have a catch-22 going on here - if the Gov pays, the gov pays, but that requires a bunch of other stuff first, which can't happen until the Gov pays. The Gov won't pay until this stuff happens, and this stuff won't happen until the Gov pays. We're stuck - nothing can ever get done. That's why B is the correct answer here - we will never get to a point where any of this stuff happens, because nobody is willing or able to go first and start the chain of events moving!

What we have here is a series of premises which, when put together, shows us an impossible situation, a classic Catch-22. You can't have the funding until you've had the trials, and you can't have the trials until you're in widespread circulation, which cannot happen until you've got the funding. What must be true? You'll never get the funding, never be in widespread circulation, and never have the trials.

Be careful with the language "bring in." On any Must Be True question (whether "Must Be True," or the slightly less demanding "Most Strongly Supported/Most Likely To Be True"), you will not be asked to "bring in" any information beyond what is already contained in, or implied by, the stimulus. Now it's true that in almost every case the correct answer will not be explicitly stated in the stimulus. But the correct answer "necessarily follows from" the information in the stimulus.

Even though there is a soft overlap between Must Be True and Assumption questions (in that the standard for both is "necessity"), you should not apply the Assumption Negation Technique on any form of Must Be True question (whether "Must Be True" or "Most Likely To Be True" or "Most

Strongly Supported"). That technique is designed specifically for Assumption questions, and it will not work on Must Be True questions.

You can't have the funding until you've had the trials, and you can't have the trials until you're in widespread circulation, which cannot happen until you've got the funding. What must be true? You'll never get the funding, never be in widespread circulation, and never have the trials.

Since the facts, when combined, lead inexorably to the claim in answer choice B

Notice that, in a purely mechanical way, you can compare the "content" of answer choice B against the stimulus. Antinfia is the subject of nearly every sentence of the stimulus (thus supported). The drug's being "in widespread circulation" is a subject explicitly mentioned in the second-last line of the stimulus (thus supported). The only element of answer choice B not explicitly mentioned in the stimulus is the verb "will never be," connecting Antinfia to widespread circulation. That prediction is supported by the Catch-22 nature of the facts.

The government has to pay before we can have the clinical trials, but they will not pay until the clinical trials have already been done. Each thing has to come first, so neither will ever happen!

Stimulus Breakdown:

PC doesn't provide info → Gov't won't cover A
PC provide info → Massive clinical trials
Not in circulation → No trials
Circulation → Gov't covers A

It's time to take some contrapositives to see what we can link up.

Gov't cover A → PC provided info → Massive trials → Circulation → Gov't covers A

Wait, what's going on here? The conditional loops back in on itself? That's weird, but it means that each of these is a necessary condition for itself (and for all of the other elements in the chain). Since there's a timeline here - one thing won't happen *until* another thing happens - *and* those things are each necessary for the other to happen, it seems as if A is doomed to not be covered.

As a simplified parallel, think about this situation:

McLane: I won't give you the ransom until you give me the artwork!

Gruber: I won't give you the artwork until you give me the ransom!

In that situation, no one will get anything, because each individual has stated the other event must happen first. Same thing here - PC won't be able to

run trials until the government pays for it; the government won't pay for it until trials are run. As Wesley might say, we're at an impasse.

(A) Generalization. The stimulus is only about one drug, and this answer choice generalizes to all.

(B) Bingo. While this answer is extreme, the language in the stimulus is conditional, which is equally strong. Since A can't be in widespread circulation until the government pays for it, and the government won't pay for it until it's in widespread circulation, A is not going to be released unless someone flinches (and we're told to treat both sides' statements as true, so that's not gonna happen).

(C) Out of scope. The argument never talks about people paying for it themselves.

(D) Out of scope. The argument never talks about what "should" happen.

(E) Degree. Since there isn't evidence it's cost-effective (that's the piece of information the government is asking for), we can't infer whether it is or is not cost-effective.

"Until" is the time condition of "unless." And that's the dagger in your argument. Because "until" indicates a time condition (before/after), there cannot be a simultaneous occurrence of widespread circulation and the government health service pays for Antinfia.

So if we cannot have widespread circulation until the government pays for Antinfia, Antinfia will never be in widespread circulation - answer choice (B).

Incorrect Answers

(A) generalizes from a claim made about the drug Antinfia to all drugs.

(C) assumes that some people will want Antinfia even though the government health service will not pay for it.

(D) is out scope. Nothing is known about what "should" happen.

(E) is too strong. We can only say that we don't know whether it's cost effective.

"If" is to "when," "unless" is to "until." Both "until and "when" are the time conditions of "unless" and "if" respectively. So, "until" implies a time condition suggesting before and after.

2. A

The library preservationist discusses an upcoming restoration project, presenting several conditions manuscripts must meet if they are to be restored. First, the preservationist says *most* of medieval manuscripts of acknowledged cultural significance will be restored and that therefore *some* medieval manuscripts of suspect authenticity will be restored. Additionally, the preservationist presents two necessary conditions that must be met for a manuscript to be restored:

If restored → safety ensured

If restored → frequently consulted

There is a variety of certainty levels within these statements. The two Conditional Logic statements are the most certain, while the statements about *most* and *some* manuscripts are less so. It is likely that the correct answer will combine one of the definite statements with one of the less definite statements, and the resulting deduction will almost certainly be a *some* statement. Also, because this stimulus provides somewhat unfortunate information, that will almost certainly be the focus of the right answer. Because *some* medieval manuscripts of suspect authenticity *will* be restored, yet manuscripts will be restored *only if* researchers frequently consult them, it can be deduced that researchers frequently consult some medieval manuscripts of suspect authenticity.

(A) matches the prediction.

(B) is Extreme. Only *most* of the medieval manuscripts widely acknowledged to be of cultural significance will be restored, and thus their safety during the process can be ensured. The stimulus doesn't provide information about those manuscripts that will not be restored.

(C) mentions both conditions necessary for restoration. However, **(C)** is not a deduction that can be made. While all the manuscripts *that will be restored* are those that can be restored safely and are frequently consulted by researchers, it is not necessarily true that all those that *can* be restored safely are *also* frequently consulted. Just because it's true that if A → B and C, that doesn't mean that if B → C.

(D) is not supported by the information in the stimulus. While there is a reference to physical deterioration, there are no statements concerning which manuscripts are most susceptible to deterioration.

(E) is not a deduction that can be made from the statements. While researchers must frequently consult any manuscript that is to be restored, only *most* of the culturally significant manuscripts will be restored. Those that aren't restored may be culturally significant but not frequently consulted.

The preservationist provides the guidelines for determining which of the library's collection of medieval manuscripts will be restored to protect against their continual physical deterioration. The library will restore those manuscripts that are of "widely acknowledged cultural significance" that are frequently consulted by researchers, but only if the safety of the manuscripts can be guaranteed

during the restoration process. The preservationist also concedes that this policy means that "some medieval manuscripts whose authenticity is suspect will be restored."

We can infer from the preservationist's concession that it must be the case that some manuscripts whose authenticity is suspect are of widely acknowledged cultural significance, are frequently consulted by researchers, and can be kept safe during the restoration process.

Answer choice (A): This is the correct answer choice. Do not worry that the answer choice does not reference the cultural significance of the manuscripts or the fact that they can be kept safe during the restoration process. In a Must Be True question the correct answer choice does not have to provide all of the things that must be true based on the stimulus, so long as what is included must be true.

Answer choice (B): This answer choice is incorrect because the preservationist did not say that they would restore *all* of the medieval manuscripts widely acknowledged to be of cultural significance. Rather, the stimulus told us that all of those to be restored would be of such significance.

Answer choice (C): As with answer choice (B), all we can say is that all of the manuscripts to be restored are those whose safety can be ensured during the restoration process.

Answer choice (D): The stimulus did not provide any basis for determining which of the manuscripts is more susceptible to deterioration. This is a somewhat tempting answer choice because it makes real-world sense that manuscripts that are frequently consulted by researchers would be at a heightened risk of deterioration.

Answer choice (E): We cannot say that it must be true that not a single medieval manuscript is both rarely consulted by researchers and widely acknowledged to be of cultural significance. For example, there may be a manuscript that is so significant that it has been thoroughly examined in the past and therefore is no longer directly consulted by researchers.

widely acknowledged/culturally sig $\overline{\text{most}}\rightarrow$ restored $\longrightarrow$ safety ensured / frequently consulted

authority suspect $\leftarrow\!\overline{\text{some}}\!\rightarrow$ restored $\longrightarrow$ safety ensured / frequently consulted

The second chain there implies that there are some things the authenticity of which is suspect and which will still be restored, while anything restored is frequently consulted. Thus, some suspect things are frequently consulted.

Widely acknowledges culturally significant $\overline{\text{most}}\rightarrow$ restored

medieval manuscripts that are of widely acknowledged cultural significance $\overline{\text{most}}\rightarrow$ restored

"This means that some medieval manuscripts whose authenticity is suspect will be restored" can be diagrammed as:

medieval manuscripts whose authenticity is suspect $\leftarrow\!\overline{\text{some}}\!\rightarrow$ restored

However, you do not use the "unless" equation for this sentence - "only manuscripts whose safety can be ensured during the restoration process will

be restored." The word "only" is a Necessary Condition Indicator. Thus, this would be diagrammed as:

Restored ⟶ manuscripts whose safety can be ensured during the restoration process

"Manuscripts that are not frequently consulted by researchers will not be restored" can be diagrammed as:

Manuscripts that are not frequently consulted by researchers ⟶ not restored

The contrapositive is: restored ⟶ manuscript is frequently consulted by researchers

To put it all together:

Medieval manuscripts that are of widely acknowledged cultural significance most restored

Medieval manuscripts whose authenticity is suspect some restored

Restored ⟶ manuscripts whose safety can be ensured during the restoration process

Restored ⟶ manuscript is frequently consulted by researchers

Answer Choice (A) can be inferred because there are some medieval manuscript whose authenticity is suspect that are restored. And ALL manuscripts that are restored are frequently consulted by researchers. Thus, "Some of the medieval manuscripts whose authenticity is suspect are frequently consulted by researchers."

If I say "Most bananas are yellow," it's a one-way relationship. If I take all the bananas in the world, most of them will be yellow. If I take all the yellow fruit in the world, I can't infer that most will be bananas. There could be a lot of lemons in the mix! So the arrow only goes one way.
Bananas most Yellow.

However, the word "some" is a two-way relationship. If I say "Some bananas are yellow," that means there's at least one yellow banana out in the world. Which means there's at least one yellow fruit that it is a banana. And there's at least one banana that is a yellow fruit. So it goes both ways. I write that as Banana some Yellow. Note that it really isn't saying a whole lot. It's a lot easier to prove that statement than the first one.

But the distinction is important. Just like a conditional relationship, you can't go backwards. You have to follow the arrow!

Stimulus Breakdown:

1) Med. + Significant -most-> Restored

2) Suspect Med -some- Restored

3) Restored → Safety guaranteed

4) Not frequently consulted → Not restored

4c) Restored → Frequently consulted (contrapositive to get terms to line up - now they all talk about "Restored")

There is a lot of overlap in that the statements all talk about documents being restored. Also, there are a lot of quantifiers floating around. Because of this, I'd get the statements written down on my page (see the Stimulus Breakdown) and then look for answer that can come from a combination. However, I wouldn't actually infer all the combinations ahead of time - if there are more than 2 or 3, I'll head straight to the answers.

Answer choice analysis:

(A) Bingo. This is 2 + 4.

(B) Degree. Only "most" of these documents will be restored, not all of them.

(C) Degree/reversal. This answer choice both reverses #3 and is too strong ("all" - if you reverse an "all" statement, it becomes a "some" statement).

(D) Comparative. The stimulus is binary (consulted vs. not; safety guaranteed vs. not), so an answer talking about "most" doesn't align. The most consulted manuscript could still be rarely consulted.

(E) Degree. Only "most" of these documents will be restored. Additionally, this reverses some of the statements it's trying to combine.

3. A

The two claims both provide Conditional Logic. The first is about unemployed artists, who are all sympathetic to social justice:

If unemployed artist → sympathetic to social justice

The second is about employed artists, none of whom are interested in fame:

If employed artist → ~ interested in fame

Taking the contrapositive of the first statement allows the two claims to be combined. Notice that the negation of unemployed is employed, and vice versa. The contrapositive of the first statement is:

If ~ sympathetic to social justice → employed artist

According to the second claim, employed artists are not interested in personal fame. Thus, it can be concluded that artists who are not sympathetic to social justice are also uninterested in personal fame:

If ~ sympathetic to social justice → employed artist → ~ interested in fame

By the contrapositive, any artist that *is* interested in personal fame *is* sympathetic to justice:

If interested in fame → unemployed artist → sympathetic to social justice

(A) correctly combines the logic.

(B) is a Distortion. It starts from the necessary term of the second Conditional Logic statement. However, there is no deduction that follows from those that are uninterested in fame.

(C) goes backward on the logic. By the second claim, employed artists are *not* interested in personal fame, but that doesn't mean all *un*employed artists *are* interested in fame. **(C)** negates without reversing.

(D), like **(C)**, goes backward on the logic, but this time it is the logic of the first claim. All unemployed artists are sympathetic to justice, but there could be employed artists who are also sympathetic to justice.

(E) distorts the logic of the second statement. Clearly, all artists must be either employed or unemployed. That means all artists must be either sympathetic to social justice (if employed) or *not* interested in fame (if unemployed).

The first fact is that if you are an unemployed artist, then you are sympathetic to social justice. To avoid the double negative that would result from negating "unemployed," we will use the term "employed artist," but negate it:

- Sufficient Necessary

  ~~employed artist~~ ⟶ sympathetic to social justice

Next, we are told that if you are an employed artist, then you are not interested in the prospect of great personal fame:

- Employed artist ⟶ ~~interested in great personal fame~~

We can combine these terms by means of a contrapositive. So, if we take the contrapositive of the first rule,

- ~~Sympathetic to social justice~~ ⟶ employed artist

and combine it with the second rule across the common term of "employed artist," we can get the additive inference that if you are not sympathetic to social justice, then you are not interested in the prospect of great personal fame:

- ~~Sympathetic to social justice~~ ⟶ employed artist ⟶ ~~interested in great personal fame~~

and the contrapositive of that inference:

- interested in great personal fame ⟶ ~~employed artist~~ ⟶ sympathetic to social justice

Answer choice (A): This is the correct answer choice, because it properly describes the contrapositive to the additive inference described above:

- interested in great personal fame ⟶ sympathetic to social justice.

Answer choice (B): This answer choice improperly treats being uninterested in great personal fame (~~interested in great personal fame~~) as a sufficient condition, when that term was only ever used as a necessary condition.

Answer choice (C): Here, the answer choice gives the Mistaken Negation of the second rule.

Answer choice (D): In this case, the answer choice is the Mistaken Reversal of the first rule.

Answer choice (E): This answer choice is incorrect because the second rule told us that employed artists are *not* interested in the prospect of great personal fame. In order for this answer choice to be correct, the second fact must have said that employed artists are interested in great personal fame.

**

The stimulus tells us:

1) not employed --> social justice
2) employed --> not fame

While these two conditionals may not look connectable at first glance, if we contrapose the second statement, we'll get: *fame --> not employed.*

Now we can connect them!

fame --> not employed --> social justice

That link is precisely what **(A)** gives us: *fame --> social justice*!

Note that we could have had the contrapositive of the link be the correct answer as well: *not social justice --> employed --> not fame*

Now, for the wrong answers:

(B) *not fame --> social justice* There's no way to make that link!

(C) *not employed --> fame* Illegal reversal of statement #2!

(D) *social justice --> not employed* Illegal reversal of statement #1!

(E) Harder to diagram, but it's essentially *not fame --> social justice* and *not social justice --> fame*. But there's nothing preventing some artists out there from being neither. Only the unemployed artists have to be into social justice. The employed ones could be into neither fame nor social justice.

4. B

The stimulus presents three separate Conditional Logic statements:

If sound-insulated → quiet enough for home appliances

If quiet enough for home appliances → appropriate for institutional settings

If EM motor → ~ quiet enough for home appliances

If sound-insulated → appropriate for institutional settings

However, another link can be made between the first and third statements. If you contrapose the first statement, you get:

If ~ quiet enough for → ~ sound-insulated home appliances

That can be combined with the third statement to yield:

If EM motor → ~ sound-insulated

(B) matches the second deduction.

(A) is an incomplete contrapositive of the first deduction. It reverses without negating.

(C) could be true, as there may be a lower noise standard for institutional settings. So even though EM motors aren't suitable for home appliances, it is possible that some could be used in institutional settings. However, this is not something that must be true.

(D) is an incomplete contrapositive of the first statement in the stimulus. It reverses without negating.
(E) could be true, but does not have to be. Based on the stimulus, motors that *can* be used in homes can also be used in industrial settings; however, the stimulus does not indicate whether or not motors that *can't* be used in homes (such as EM motors) can be used in industrial settings.

This stimulus presents a fact set containing three conditional relationships. The first relationship tells us that when a motor is sound-insulated, it is quiet enough to be used in home appliances. We diagram this relationship as:

SI = sound-insulated

HA = quiet enough to be used in home appliances

Sufficient		Necessary
SI	⟶	HA

Next, we are told that a motor quiet enough to use in home appliances (HA) is quiet enough to use in institutional settings:

IS = quiet enough to use in institutional settings

.....HA	⟶	IS

However, if a motor is manufactured by EM Industries, then it is not quiet enough to use in home appliances:

EM = manufactured by EM Industries

.....EM ⟶ ~~HA~~

and its contrapositive, to make use of the common term HA:

.....HA ⟶ ~~EM~~

We can combine these terms together to get additive inferences, starting with the first and second relationships:

SI ⟶ HA ⟶ IS, which we can shorten to SI ⟶ IS

to gain the inference that if a motor is sound-insulated (SI), then it is quiet enough to use in institutional settings (IS).

We can also combine the first and third relationships together:

SI ⟶ HA ⟶ ~~EM~~, which we can shorten to SI ⟶ ~~EM~~

to gain the inference that if a motor is sound-insulated (SI), then it is not manufactured by EM Industries (~~EM~~).

The question stem indicates that this is a Must Be True question. Our prephrase is that the correct answer choice may test us on any of the conditional relationships or inferences described above.

Answer choice (A): Diagrammed as IS ⟶ SI, this is a Mistaken Reversal of our first inference (SI ⟶ IS).

Answer choice (B): This is the correct answer choice. Diagrammed as EM ⟶ ~~SI~~, this is the contrapositive of our second inference (SI ⟶ ~~EM~~).

Answer choice (C): While the stimulus tells us that a motor quiet enough to be used in home appliances can be used in institutional settings, the evidence does not tell us whether motors that are too noisy for use in home appliances can be used in institutional settings.

Answer choice (D): Diagrammed as HA ⟶ SI, this is a Mistaken Reversal of our first relationship (SI ⟶ HA).

Answer choice (E): As with answer choice (C), the stimulus does not tell us whether motors that are too loud for use in home appliances can be used in institutional settings.

It's true that the second sentence tells us that IF a motor is quiet enough to use in home appliances, THEN it can be used in institutional settings. In conditional terms, the diagram of that relationship would be: QE ⟶ IS. The necessary condition in that relationship (indicated by the term "THEN") is "can be used in institutional settings." What you have to remember is that any necessary condition is something that could potentially be present with OR without its sufficient condition. So, a motor might be able to be used in an institutional setting but NOT be quiet enough to use in home appliances. Since that possibility exists, we can't infer solely from the fact that EM's motor are not quiet enough to use in home appliances that they cannot be used in institutional settings. To make that inference would be to make a mistake PowerScore calls a "Mistaken Negation" (taking the absence of a sufficient condition as proof that a necessary condition didn't happen).

Here's a simpler (real-world true) example: IF you attend a law school, THEN you must have applied to that law school. In conditional terms, the diagram of that relationship would be: Attend ⟶ Apply. The necessary condition in that relationship is "applied (to the law school)." It can occur (someone can apply) with or without that person ever attending that law school. So, just because someone does NOT attend a particular law school doesn't mean that person did NOT apply to that school. Indeed, a person might apply and then decide not to attend (for whatever reason), or they might apply and then not be admitted, etc.

Since this is an *inference* question, the correct answer will be unpredictable, but fully supportable from the information in the stimulus.

So, let's sort out all the information in stimulus! Everything in the stimulus is about motors.

1) sound-insulated --> quiet enough for home apps

2) quiet enough for home apps --> institutional settings

3) All the EM manufactured motors are [NOT quiet enough for home apps]
Now, I could have written that third piece of information a few ways. I might have written as a conditional (If EM --> NOT quiet), or kept the 'none' language. I find it easiest, though, to consider that this is telling me that certain motors have a certain characteristic: [not quiet enough for home apps].

Interestingly, [NOT quiet enough for home apps] does not appear to be in our information....at least, not until we contrapose something. If we contrapose #1 though, we get:

If NOT quiet enough for home apps --> NOT sound insulated

This fully supports answer choice **(B)**! If the EM motors are NOT quiet enough for home apps, then they must NOT be sound insulated!

(A) This is an attempt to connect #1 and #2, but it's an illegal reversal of the combination. A proper combination would read: *If sound insulated --> institutional settings*

(C) Maybe this is true, but we have no idea! All we know is they aren't quiet. That certainly doesn't guarantee that some of them can be used in

institutional settings!

(D) This is an illegal reversal of statement #1!

(E) If we know that the motors AREN'T quiet, we can't connect that to anything about institutional settings. The only way to make this connection would be to assume that *if not quiet --> not institutional settings* - and that would be an illegal negation of statement #2!

Only answer **(B)** is fully supportable by the information we are given in the premise.

5. C

If successful economy → flourishing national science community

If flourishing national science community → young people excited

If young people excited → good communication

Connect the chain of Conditional Logic statements to produce the following:

If successful economy → flourishing national science community → young people excited → good communication

If successful economy → good communication

You can deduce, therefore, that good communication between scientists and the public is necessary for a successful economy. Likewise, you can deduce the contrapositive that if there is not good communication, there will not be a successful economy.

(C), when translated into Conditional Logic, states the prediction exactly.

(A) incorrectly reverses the Conditional Logic of Sentence 3.

(B) is Extreme. While the stimulus provides necessary conditions, it never describes the *extent* to which one thing depends on another, nor does it argue that anything depends *principally* on anything else. Degrees of dependence are never discussed in the stimulus.

(D) is also Extreme. The stimulus shows that *many* (at least 1) young people need to get excited about science, not *most* (more than half). Additionally, although more subtle, the stimulus only addresses what is essential for a *successful* economy, whereas **(D)** indicates what is essential for a nation's economy in general, whether successful or not.

(E) is Out of Scope. The stimulus never talks about the success of scientific endeavors. So although communication was mentioned as a requirement for sparking interest in young people, it was not mentioned as a requirement for the success of scientific endeavors.

This stimulus provides a fact set containing three conditional statements that we can chain together. First, the science teacher tells us that a flourishing national scientific community is necessary for a successful economy. We can diagram this relationship as:

SE = successful economy

FNSC = flourishing national scientific community

Sufficient Necessary

SE ⟶ FNSC

Next, we are told that in order to have a flourishing national scientific community, it must be the case that many young people become excited enough about science that they resolve to become professional scientists:

MYPE = many young people become excited enough about science that they resolve to become scientists

FNSC ⟶ MYPE

Finally, the teacher tells us that to have that excitement among many young people, it must be the case that there is good communication between scientists and the public:

GCSP = good communication between scientists and the public

MYPE ⟶ GCSP

Combining these three relationships across the common terms FNSC and MYPE produces this conditional chain:

SE ⟶ FNSC ⟶ MYPE ⟶ GCSP

The question stem identifies this as a Must Be True question. The correct answer choice will focus on the conditional chain described above, testing on

any portion of the chain or on its contrapositive.

Answer choice (A): This answer choice is incorrect for two reasons. First, the stimulus discussed the need for *good* communication between scientists and the public, not just communication. Next, this choice treats communication between scientists and the public as *sufficient* for young people becoming excited about science, while the stimulus identified such communication as *necessary* for young people to become excited about science.

Answer choice (B): This answer choice elaborates on the relationship presented in the second sentence of the stimulus. It is true that in order to have a flourishing national scientific community, it must be the case that many young people become excited enough about science that they resolve to become professional scientists. But, we were *not* told that the *extent* to which the scientific community flourishes depends *principally* on the number of excited young people.

Answer choice (C): This is the correct answer choice, because it restates an additive inference we learned from the conditional chain. Using the Unless Equation, in which the term modified by the word “unless” becomes the necessary condition and the remainder of the sentence is negated and becomes the sufficient condition, we can diagram this answer choice as:

Sufficient		Necessary
SE	⟶	GSCP

Answer choice (D): The stimulus provided that *many* young people must be excited about science. This answer choice changes that fact to say that *most* of the young people must be excited about science.

Answer choice (E): We were told that good communication between scientists and the public is necessary to spark many young people to become excited enough about science that they resolve to become professional scientists. This answer choice impermissibly expands on that idea to say that good communication is required for *any scientific endeavor*.

We know that a flourishing community requires that many young people be excited, but we don't know that that is the principle requirement. It could be one of many requirements, and perhaps even a fairly minor one!

Also, is it all about the number, or just that there be "many," whatever that means? If 10 is "many," allowing for some amount of flourishing to occur, will 20 mean that the country flourishes more? Is there a direct, proportional relationship required here? I don't think so - it's just "if flourish, then many excited young people." Once we cross the "many" threshold, the extent of flourishing might be unaffected by the number, but by other factors.

Mainly, when the stimulus is so completely conditional, you should be looking for a conditional answer like C, rather than one about relative importance like B.

"essential" means necessary.

Here are some other phrases/words that do as well:

requires

in order to ___ you must ___

prerequisite

necessitates

depends on

This paragraph is giving us lots of Conditional ideas (signified by 'essential', 'requires', 'necessary').

Typically, when an Inference question gives us Conditional ideas, we should symbolize them and see if they chain together (unless you're really good at mentally doing so).

These definitely chain together ... basically in the order they're given to us.

Successful economy ---requires--> flourishing scientific comm.

flourishing scientific com. --requires--> young excitement

young excitement --requires--> good communication

Putting that all together (and slightly abbreviating), we have

Succ Econ --> Flourish Scien --> Excitement --> Good Comm.

~Good Comm -> ~Excite -> ~Flourishing Scien -> ~Succ Econ

(A) Backwards logic.

Good comm --> Excitement

(B) This somewhat reflects the conditional chain correctly, but "the extent", "principally", and "the number" place this whole relationship on a continuum. The more kids that are excited, the more our national scientific community flourishes? It seems too numerically specific for the info we were given.

(C) This works. It is just saying

Succ Econ --> Good Communic.

That's our chain!

(D) "many" vs. "most" ... not the same

(E) we can't speak to whether Good Communic. is required for ANY scientific endeavor. That's too broad.

6. C

There are three pieces of information on which to focus. First, commercial fertilizers contain *only* macronutrients, meaning they contain macronutrients and nothing else. Second, there is a Conditional Logic statement indicating that there are two necessary conditions for maintaining healthy soil to support a lawn: macronutrients and trace amounts of micronutrients. Third, micronutrients are depleted from the soil when grass clippings are collected instead of left to decay.

Combining the two pieces of concrete information indicates that commercial fertilizers lack one of the two necessary ingredients to maintain healthy soil for lawns. Thus, you can deduce that using commercial fertilizers is not sufficient to maintain healthy soil for lawns *if* clippings are raked up.

(C) is correct as it is the deduction produced by combining the information in the stimulus. These lawns would lack the requisite micronutrients.

(A) does not have to be true. Because the information in the stimulus pertains only to "widely available commercial fertilizers," it is possible that other fertilizers provide both the macronutrients and micronutrients necessary for healthy soil.

(B) could be true, but does not have to be. As with **(A)**, the stimulus does not provide information about any other fertilizers that might be available to homeowners. While the stimulus does say commercial fertilizers contain *only* macronutrients, that's not the same as saying *only* commercial fertilizers contain macronutrients, as this answer choice does.
(D) is an attractive answer but has some subtle Distortions. First, the stimulus is limited to soil for lawns, while this choice addresses the needs of soil in general. It is possible, for example, that soils for forests or some other area do not require regular additions of fertilizer. Second, commercial fertilizers are not *required*, just the macronutrients they contain. So, if there is another source of macronutrients, the commercial fertilizers are not needed.

(E) is Extreme. Just because commercial fertilizers are insufficient to compensate for the micronutrients lost from removed lawn clippings does not mean they are *unable* to maintain healthy soil for lawns and gardens. Perhaps there is another other way for homeowners to acquire those micronutrients from somewhere else.

This stimulus presents information about the nutrients required for lawns to remain healthy. Many homeowners regularly add commercial fertilizers to their lawns and gardens, so that they can maintain a healthy balance of nutrients in the soil. However, it appears that using these commercial fertilizers isn't enough. The widely available commercial fertilizers contain only macronutrients, namely nitrogen, phosphorus, and potassium. However, to remain healthy in the long term, soil for lawns requires more than just macronutrients. It also requires trace amounts of micronutrients such as zinc, iron, and copper. The micronutrients are depleted when grass clippings are raked up rather than allowed to decay and return to the soil.

As described above, since the widely available commercial fertilizers do not contain trace amounts of micronutrients, then using only these fertilizers is not enough to maintain a healthy lawn over the long term. Some source of the listed micronutrients must be used in addition to the commercial fertilizer.

Answer choice (A): The stimulus said only that the widely available commercial fertilizers do not contain trace amounts of certain micronutrients. This fact does not preclude the possibility that some single fertilizer, though not a widely available, commercial fertilizer, contains both the macronutrients and micronutrients necessary for maintaining soil's long-term health.

Answer choice (B): This answer choice is incorrect, because it is a reversal of the information in the stimulus. The facts in the stimulus were that the widely available commercial fertilizers contain only macronutrients. It did not say that the macronutrients are available only in commercial fertilizers.

Answer choice (C): This is the correct answer choice. As described above, the stimulus stated that for a lawn to remain healthy long term, both certain macronutrients and trace amounts of certain micronutrients are required. The widely available commercial fertilizers do not contain the micronutrient trace amounts, and raking up grass clipping prevents the clippings from returning the micronutrients to the soil. So, the widely available commercial fertilizers are not sufficient to maintain a healthy balance of nutrients in soil for lawns where grass clippings are not allowed to decay and return to the soil.

Answer choice (D): The stimulus did not identify commercial fertilizers as the only source of the required macronutrients. Thus, it is not supported to say that commercial fertilizers are required for soil to remain healthy in the long term. Rather, it is providing a regular source of the listed macronutrients and trace amounts of the listed micronutrients.

Answer choice (E): Similarly to the issue of macronutrients and commercial fertilizer in answer choice (D), the stimulus did not establish that grass clippings are the only source of the trace amounts of micronutrients required for having a healthy lawn in the long term.

The stimulus says that healthy soil need both macro- and micronutrients. It also tells us that commercial fertilizers have those macronutrients and that grass clippings have the micro ones. But does it say that healthy soil needs commercial fertilizers? No, my liege, it does not!
Here's a quick analogy for you: I need chocolate in order to stay happy, and M&Ms have chocolate in them. Do I need M&Ms to stay happy? Nope - they might help, but so might a Hershey bar or a brownie or some chocolate ice cream. It's not the M&Ms that I need but the chocolate found in them, much like soil doesn't need commercial fertilizers but rather the macronutrients found in them.

The author tells us that the commercial fertilizers have only one kind of nutrient, and soil needs another kind as well in order to stay healthy. That's enough for us to conclude that the commercial fertilizers do not provide a "healthy balance", because they are unbalanced, missing something essential to long term health. Don't get too picky about them using different terms here! And if micronutrients are required for long term health, doesn't that indicate that their absence is unhealthy?

For this question, the stimulus tells us that if we don't allow grass clippings to decay, then the soil micronutrients are depleted. And so, we can properly infer that if we don't want soil micronutrients to become depleted, then we must allow the grass clippings to decay. And indeed, if this was

what answer choice stated, then it would be a correct statement, given the content of the stimulus. HOWEVER, answer choice E goes a step further, and indeed, this step takes us off the ledge!

Answer choice E says we are *unable* to maintain long-term health of the soil, if we don't allow the grass clippings to decay.

That's like saying, well if you let your vision decay (I mean let is a rather loose term here), then you will be able to see. But we could get glasses, right? We could get contacts, heck, I could get laser vision surgery. In other words, the depletion of the healthy state does not equate to the maintenance of a long-term health, since it presumes that once depleted, there is no way to get it back.

Basically, it's the idea that answer choice E falsely equates the depletion of the nutrients with the failure to maintain health in the long-term, i.e., it failed to consider affirmative acts you could take to restore nutrients lost.

Answer choice (C) says that the widely available commercial fertilizers are *not* alone sufficient, so the fact that certain things are necessary doesn't really seem to be a problem with this answer. If two things are separately necessary for another thing, then neither alone is sufficient - that's exactly avoiding a Mistaken Reversal, not committing one, because it's *denying* that a necessary condition is sufficient. If MAC and MIC are both necessary for HLT, then surely neither one is alone sufficient for HLT. But that's what answer choice (C) says.

The stimulus states that "many" homeowners use commercial fertilizers. How many? We don't know. All we know for certain is that some do. Next we're told about "widely available" commercial fertilizers. What does "widely available" actually mean? Does it mean "most?" Not necessarily. We just know that some commercial fertilizers only contain macronutrients. In fact, we don't even know if these "widely available" ones are the same ones that "many" homeowners use. Nothing in the stimulus guarantees that these have to be the same. However, we do know that all "widely available" commercial fertilizers contain only macronutrients.

We also know that the widely available commercial fertilizers won't keep lawn soil healthy in the long term, because they only contain macronutrients, not micronutrients. Finally, we know that if grass clippings are raked, certain micronutrients are depleted from the soil.

We can summarize the stimulus using two quantified statements and three conditional statements:

homeowners < some > use commercial fertilizers

commercial fertilizers < some > contain only macronutrients

widely available comm. fertilizers → contain only macronutrients

lawn soil healthy long term → macronutrients and micronutrients

grass clippings raked → micronutrients depleted

The information in the stimulus must prove that the correct answer is true. Incorrect answers might involve reversed logic, or suggest a connection between the "some" statements in the stimulus when that connection isn't actually guaranteed.

(A) Unsupported. We only know that "widely available commercial fertilizers" contain only one type of nutrient. There might be other fertilizers that contain both.

(B) Unsupported. Some homeowners use commercial fertilizers, and some commercial fertilizers contain these nutrients, but homeowners might have access to these nutrients through other sources.

(C) Correct. This can be inferred from the three conditional statements:

grass clippings raked → micronutrients depleted

widely available comm. fertilizers → contain only macronutrients

~ macronutrients OR ~ micronutrients → ~ lawn soil healthy long term.

(D) Unsupported. We know that soil requires the presence macronutrients to remain healthy, but nothing in the stimulus states that soil can only get these macronutrients from commercial fertilizers. There might be other ways for the soil to receive these nutrients. There's also a detail creep in (D): the stimulus states that the nutrients must be present, but never states that "regular addition" is required.

(E) Unsupported. Homeowners who rake their grass clippings might be removing a source of nutrients, but they might be able to add nutrients to keep the soil healthy. Nothing in the stimulus prevents this from being true.

This is an inference question, so let's go over what we know. We can diagram this stimulus conditionally, but note that we don't have to. The only true

conditional statement here is the last sentence.

We can break that down into three statements:

1. Healthy lawn soil --> contains enough macronutrients
2. Healthy lawn soil --> contains enough micronutrients

and

3. Grass clippings raked --> micronutrients deplete

Note that Statement 3 includes the possibility that the depletion could be replenished. All we know is that the micronutrients will at least temporarily go down. Think of it like this:

I eat Thanksgiving dinner --> I gain weight

The above scenario doesn't mean I get fatter and fatter with each Thanksgiving that passes. It could be true that I gain a little weight after the holidays, but then I work out or eat a bunch of salad and lose the weight.

Ok, back to the scenario.

We know that unraked grass clippings are one source of micronutrients. We also know that commercial fertilizers are one source of macronutrients from the earlier part of the stimulus. (Keep those micro and macro nutrients straight!)
(C) is supported. Let's look at the contrapositive of Statement 1:

not enough macronutrients --> unhealthy lawn soil.

We know that commercial fertilizers, which provide macronutrients, are never sufficient for a healthy lawn soil according to the stimulus; "enough macronutrients" is not a sufficient condition here. We'd have to negate the logic to make it so.

We additionally know from Statement 2 that:

not enough micronutrients --> unhealthy lawn soil.

(C) presents a scenario in which micronutrients have been depleted (no lawn clippings). In order to achieve healthy lawn soil, we would need a new source of micronutrients. Yet commercial fertilizers provide no such thing. So we would need something in addition to commercial fertilizers to get

our lawn healthy.

(E) is unsupported, but I see why it's seductive! While lawns require micronutrients, there might be sources of micronutrients other than lawn clippings. Yes, the micronutrients will go down because the homeowner rakes his lawn, but perhaps the homeowner can replenish the depleted micronutrients with compost, manure, whatever.

(A) is unsupported. We only know about commercial fertilizers. Perhaps a non-commercial fertilizer can provide both macro and micro nutrients.

(B) is similar to (A). Maybe a non-commercial fertilizer can also provide these things.

(D) presumes that there are no sources of macro and micronutrients other than commercial fertilizers and lawn clippings.

7. E

'Serious attention' and 'careful attention' are going to be considered the same on the GMAT.

First, more than half of the fiction books the editor has published came from agents. Second, the rest of the fiction books the editor has published came directly from fiction writers from whom the publisher requested manuscripts. Third, if a nonfiction manuscript was seriously looked at or published, then it came from a well-known person, or the editor requested the manuscript from the author after reviewing a proposal.

While there are some differences in terms of how the editor got the fiction and nonfiction manuscripts that were published, there is also a notable similarity. For both fiction and nonfiction, the editor requested some manuscripts directly from authors. For published fiction, when the editor did not request a submission, the manuscript came from a literary agent. For published nonfiction, when the editor did not request a submission, the manuscript came from a well-known person.

(E) must be true. There are only two types of unrequested manuscripts that the editor has published. First, for fiction, unrequested manuscripts were submitted by literary agents. Second, for nonfiction, unrequested manuscripts were written by well-known people. **(E)** describes the nonfiction manuscripts that were neither requested by the editor nor submitted by literary agents, but that were written by well-known people.

(A) isn't supported by the stimulus. Other than those from renowned figures, unrequested *nonfiction* manuscripts wouldn't get serious attention, but the stimulus doesn't say how many of those there are. Additionally, the editor doesn't say if unrequested *fiction* manuscripts get serious attention or no. Those coming from literary agents are likely unrequested and may very well get thoughtful review. Furthermore, information is only given on fiction manuscripts that were published, which means there could be others that received attention but were not published. With all the uncertainty, it is impossible to say if "most" (more than 50 percent) unrequested manuscripts don't get serious attention.

(B) doesn't have to be true. First of all, the renowned authors in the answer choice (doesn't specify whether they're fiction or nonfiction) are not necessarily the same as the renowned figures in the stimulus (nonfiction authors only). Second, it's possible that most of the books published (other

than those by renowned authors) are nonfiction books whose manuscript the editor requested after reviewing the proposal. The stimulus gives two Conditional Logic statements that list the four sources for the editor's published books; no information is provided that lets you infer anything about which source type contributes the *most*.

(C) is a Distortion of the Conditional Logic. The argument says that if a *nonfiction* book is given serious attention, then it is from a renowned figure *or* was solicited. So, **(C)** fails to consider those requested nonfiction manuscripts.

(D) makes an Irrelevant Comparison between the level of care the publisher uses in considering manuscripts directly submitted versus those submitted by a literary agent. The stimulus discusses careful consideration ("serious attention") only in the context of nonfiction manuscripts, not in the context of manuscripts in general. Additionally, no information is provided in the stimulus about what *levels* of care are given to each type of manuscript. For example, it is not known if the fiction manuscripts that are requested or those that come from literary agents receive more attention. Additionally, only published works of fiction are discussed in the stimulus; careful consideration may also be given to other unpublished works of fiction.

The editor discusses the types of books considered and/or published by the publishing house. The editor treats fiction and non-fiction works separately. Regarding fiction books, the editor says that most of the books of fiction they, meaning the publishing house, has published were submitted by literary agents. The rest of the published books of fiction were received directly from fiction writers from whom the publishing house requested submissions. We can use the word "some" to diagram this remainder.

As to nonfiction manuscripts, the editor provides an absolute rule: no nonfiction manuscript is given serious attention, let alone published, *unless* it is from a renowned figure or the publishing house has requested the manuscript after careful review of the writer's book proposal. Although this is a complicated rule, with compound sufficient and necessary terms and the term "unless," the use of the Unless Equation will make it more manageable. To review, the facts in stimulus were:

Fact:

most of the books of fiction we have published were submitted by literary agents for writers they represented

books of fiction published most submitted by literary agents for writers they represent

Fact:

the rest were received directly from fiction writers from whom we requested submissions

books of fiction published some received directly from writers from whom we requested submissions

Fact:

no nonfiction manuscript has been given serious attention, let alone published, unless it was from a renowned figure or we had requested the manuscript after careful review of the writer's book proposal

not submitted by literary agents → submitted by writers after we requested submissions

For nonfiction manuscripts:

given serious attention or published → from renowned figure OR was requested after review of proposal

Since there are no obvious connections to be made between these terms, do not waste time attempting to prephrase which of these relationships will be tested by the question. Simply be aware of the relationships, and be certain to focus on which relationships are implicated by the language in each answer choice. Be careful to avoid Mistaken Reversals and other unsupported uses of the relationships in the stimulus.

Answer choice (A): This answer choice is incorrect because it relies on knowing the number of unrequested manuscripts the publishing house has received from renowned figures, a number not provided in the stimulus.

Answer choice (B): As with answer choice (A), this answer choice relies on knowing numbers not available in the stimulus. The remaining category of book is a nonfiction manuscript requested by the publishing house after careful review of the writer's proposal. The number of these manuscripts requested by the publishing house is unknown, as are any other numbers detailing how many books of each type the publishing house publishes. Without these numbers, the comparison made in this answer choice, as with that in answer choice (A), is not supported by the stimulus.

Answer choice (C): This answer choice fails to include those nonfiction manuscripts requested by the publishing house after careful review of the writer's book proposal.

Answer choice (D): The editor did not draw this distinction between books of fiction submitted by literary agents for writers they represent and books of fiction received directly from fiction writers from whom the publishing house requested submissions.

Answer choice (E): This is the correct answer choice. According to the stimulus, an unrequested manuscript not submitted by a literary agent must be a nonfiction manuscript. The conditional relationship created by the third fact described above provided that if a nonfiction manuscript is given serious attention, then it must be the case that it was from a renowned public figure or was requested by the publishing house after careful review of the writer's book proposal. Since this answer choice refers to *unrequested* manuscripts *not* submitted by literary agents that the publishing house has published, it must be the case that the manuscripts were written by renowned figures.

Answer choice (E) also says "not submitted by literary agents," and any unrequested manuscripts that eventually led to publication must have been submitted by literary agents, by the first sentence. Thus, the work cannot be a work of fiction. If it was unrequested, then if it was published and nonfiction, as it must be, it must have been by a renowned figure, as answer choice (E) says.

Let's focus on Answer Option (A)'s specific language of "most" to start off with. Recall that most is greater than 50% on the GMAT.

Now even though this is a formal logic question, the question stem's "properly inferred" language still demands that the correct answer choice pass the Fact Test of a Must Be True question. And Answer Option (A) is clearly referring to the last sentence of the stimulus which is just a normal, conditional rule, as diagrammed above. In other words, it does not talk about "most" or "some" it merely gives us a conditional rule with multiple 'sufficients' and necessaries coupled by "or" on either side of the arrow. But that rule, does NOT tell you anything about the quantity of the unrequested manuscripts even if you tried to do a contrapositive with them. Put another way, if you heard that rule in the last sentence, but then I told you that most of the unrequested manuscripts that the publishing house received were from world-renowned authors, would that make Answer Option (A) then false? Because perhaps that is the case.

We simply don't know anything about the quantity of the unrequested manuscripts received (and who they were from) in relation to the attention given to them by the publishing house.

Two sources for published fiction books: requested submissions or unrequested submissions by literary agents.

Two sources for published non-fiction books: requested submissions or unrequested submissions by renowned figures.

Answer choice E because any unrequested submissions published are by literary agents or renowned figures.

For fiction books we published:

most were submitted by literary agents

not submitted by literary agents → submitted by writers after we requested submissions

For nonfiction manuscripts:

given serious attention or published → from renowned figure OR was requested after review of proposal

It's important to notice that some information in the stimulus is about books of fiction, while some is about nonfiction. Watch out for incorrect answers that try to connect these in a way that isn't supported by the stimulus.

(A) Unsupported. Nonfiction manuscripts from renowned authors, and fiction manuscripts submitted by literary agents, could be given serious

attention without being requested. These could represent a large percentage of the manuscripts received.

(B) Unsupported. The stimulus tells us about nonfiction works by renowned authors, and about books of fiction, but doesn't compare the two in terms of numbers that are published.

(C) Contradicted. We know that a nonfiction manuscript that is not from a renowned author might be given careful attention if the publisher requests it.

(D) Unsupported comparison. We know that the publishing house publishes works submitted directly by writers, and also publishes ones submitted by agents. Nothing tells us that ones submitted by writers are less likely to receive careful attention.

(E) This is correct. The stimulus states that the publishing house has only published four types of manuscripts: ones that have been requested from fiction writers; ones that have been requested from nonfiction writers; ones that are submitted by agents; and ones from renowned figures. If they published an unrequested manuscript, and it wasn't submitted by an agent, it must be the work of a renowned figure.

**

Published Fiction and Published/Seriously Considered Non-Fiction.

For Pub. Fiction, we know that **most** of it was submitted by literary agents, and the **rest** was received as a result of direct requests. So we know that any piece of published fiction must fall into one of these categories.

For Pub./SC Non-Fic, we know that **some** percentage of the manuscripts came from renowned figures, and the **rest** were requested "after careful review of the writer's book proposal." So we know that anything that falls outside these two categories wasn't seriously considered or published.

On to the answer choices:

(A) Too strong. We don't know whether most unrequested manuscripts are given serious attention or not, because for the entire fiction category, we don't know what manuscripts were seriously considered -- we only know which were published.

(B) Again too strong, we just don't know enough -- we don't know anything about the proportion of renowned authors publishing non-fiction, let alone fiction.

(C) Narrow scope. We know that the editor requests manuscripts after "careful review of the writer's book proposal." So a manuscript can have received careful/serious attention (slight term shift, I don't think it's too bad, but I'd be nervous if I thought this were the right answer) if it is not either fiction or the work of a renowned figure. Also, we don't know anything about what fiction manuscripts receive careful attention.

Another way we can detect its wrongness is to think, "if something got careful attention, did it HAVE TO BE fiction or from a renowned figure?" No, there's a third possibility: it could be a nonfiction manuscript requested after careful review of the book proposal.

(D) Unsupported. We know nothing about how likely it is that any one manuscript will be considered.

(E) Finally, the **correct** answer! It looks a little dangerous, because it does include extreme language--"Any unrequested manuscripts"--but it's talking about published manuscripts, and we know that published manuscripts fall into one of the four categories above. With the two types of requested manuscripts out of the way, and the literary agent-submitted ones ruled out, the only option left is that the manuscript must have been written by a renowned figure.

Another weird part of the last sentence is the "let alone been published". It seems to indicate that 'being given serious attention' is a precursor to being published. So it's safe to assume that if a nonfiction manuscript got published, it was given serious attention.

(E) tells us that something was published. It was NOT requested. It was NOT submitted by a literary agent. That eliminates every possibility except for the 'renowned figure' one.

The trick with answer E is that the category of books that E is referencing ELIMINATES fiction and is just in reference to NONFICTION.

It eliminates the category of fiction via the contrapositive.

Then, we deduce that whatever "manuscripts" they are referring to in E is in regards to Nonfiction. They can still be by renowned figures.

8. E

The stimulus contains multiple Conditional Logic statements that can be diagrammed.

Sentence 1: Apologize → must be to person wronged AND for having wronged that person

Sentence 2 and 3: Apologize sincerely → acknowledge acted wrongly AND intend to not do it again

Sentence 4: Accept apology sincerely → acknowledge a wrong AND not hold grudge

Here, sentences 2 and 3 can be combined to show that the trigger of apologizing sincerely has two results: acknowledging a wrongful action and intending to not repeat the wrongful act. Also, notice that a necessary condition of both a sincere apology and a sincere acceptance of an apology is the acknowledgement of a wrong. Therefore, employing the contrapositive, without an acknowledgement of a wrong, there can be neither a sincere apology nor a sincere acceptance of an apology.

While not really contradictory, it is curious that both the apology and the acceptance of that apology have the same necessary condition. Scan the choices for an answer that must be true based on that curious coincidence.

(E) matches the prediction. Both the sincere offering and sincere accepting of an apology require the acknowledgement of a wrongful act. This answer could be translated as:

If sincere apology and accept apology sincerely → acknowledge wrongful act.

This follows the logic of sentences 2 and 4.

(A) is a Distortion of the contrapositive of sentence 3. The answer focuses on action rather than intent. When translating Conditional Logic statements in the Logical Reasoning section, while it is important to make the diagrammed statement as concise as possible, it is also vital to retain important qualifiers and/or go back to the stimulus to double check an answer before selecting it.

(B) is not supported by the statements. The conditions for a sincere acceptance in the last sentence do not require that the apology was sincere. This is an example of an answer that could well make sense to a test taker in the real world, but is not supported by the stimulus itself.

(C) is an incomplete contrapositive of the logic of the first sentence (a common wrong answer trap in any question with Conditional Logic). The first sentence indicates that a sincere apology requires a wrongful act against a person. This answer flips that (without negating it) to indicate that a wrongful act requires an apology.

(D), like **(B)**, improperly connects sincere apologies and sincere acceptances, which is not deducible from the statements; the only connection is the similarity that both require the acknowledgement of a wrong. For example, if the apology cannot be accepted because the person wronged still wants to hold a grudge then that would not impact whether or not the apology was sincerely offered.

The author of this stimulus presents a number of requirements that go along with giving a sincere apology, and with sincerely accepting an apology. First, one should apologize only to someone that person has wronged, and only for having wronged them. Further, a sincere apology requires acknowledgment of one's wrongful act, and an intention not to repeat that wrongful act:

sincere apology offering ⟶ acknowledgement of wrongful act + intention not to repeat wrongful act

Finally, the author provides that a sincere acceptance of an apology requires both acknowledging the wrongdoing and a vow not to hold a grudge:

sincere apology acceptance ⟶ acknowledgement of wrongful act + vow not to hold a grudge

Answer choice (A): The author provides that a sincere apology requires the intent not to repeat the act; however, a subsequent repeat offense does not necessarily mean that the requisite intent was absent at the time of the apology. This choice fails the Fact Test and should be ruled out of contention for this Must Be True question.

Answer choice (B): According to the information provided in the stimulus, the sincere acceptance of an apology requires acknowledgement of the wrongful act and a vow not to hold a grudge. The author does not say that the apology has to have been offered sincerely, so this choice is not confirmed by the information from the stimulus.

Answer choice (C): The stimulus specifies that one should apologize only for having wronged another person, not that a sincere apology is due for having committed any wrongful act, so this choice can be ruled out of contention.

Answer choice (D): The author provides that a sincere apology offering requires acknowledgement of the wrongful act and intent not to repeat the act, but the stimulus does not specify that the apology be capable of being sincerely accepted, so this choice is not confirmed by the stimulus and cannot be the right answer to this question.

Answer choice (E): This is the correct answer choice. As is reflected in the conditional diagrams in the discussion of the stimulus, a sincere apology offering requires acknowledgment of the wrongful act, as does a sincere apology acceptance, confirming this as the correct answer to this Must Be True question.

Diagram the first sentence as:

Apologize -> To the person wronged AND for having wronged the person.

It's important to know that you could have wronged someone, but that doesn't mean you have to apologize! But if you DO apologize, it's necessary that it be to the person wronged and for having wronged them.

Here's the next sentence diagrammed: Apologize sincerely -> Acknowledging that one acted wrongfully.

But the third sentence has a Conditional Reasoning Indicator that is special: "Unless." When you encounter the word "unless," it's a necessary condition, and you negate the other part to get the sufficient condition. So again, I'm just treating this mechanistically. I'm not thinking about whether it makes *sense*. I'm not conceptualizing it in my head. So I would diagram this as:

Apologize -> Intend not to repeat harmful act. I negated "cannot apologize" to simply "apologize."

Here's the last sentence diagrammed: Accept apology sincerely -> acknowledge a wrong AND vow not to hold a grudge.

So let's put it all together (and of course, on the real test you won't be typing out explanations, so the diagrams will be right there in one place):

Apologize -> To the person wronged AND for having wronged the person.

Apologize sincerely -> Acknowledge that one acted wrongfully.

Apologize -> Intend not to repeat harmful act.

Accept apology sincerely -> Acknowledge a wrong AND vow not to hold a grudge.

So treating this mechanistically, let's diagram answer choice (A) and (E).

Answer choice (A): Apologize and repeats the wrongful act -> Not sincere. Looks pretty good, but I've hit a snag. The third sentence is about intent, not about action. Apologizing sincerely requires an INTENT not to repeat the harmful act. Someone who repeats the wrongful act may have intended not to repeat it when they apologized. If I were doing this question, I probably wouldn't think about it so deeply and just keep it. It has an "off" word (repeating the act, rather than intending to repeat the act), but I'd keep it in case nothing else looks good.

Answer choice (E): Ah, the word "unless" again. Remember, "unless" signals a necessary condition, and you negate the other part to get the sufficient. I'm doing this mechanistically. I diagram this as:
Apology sincerely offered and accepted -> acknowledge a wrongful act occurred

YES! It's a perfect match. The stimulus told me that acknowledging you acted wrongfully is a requirement for apologizing sincerely. And acknowledging the wrong is a requirement for accepting an apology sincerely. It's a perfect match, as you always hope on a Must Be True question.

Acknowledging a wrongful act occurred is one of two necessary conditions that must be fulfilled for both offering and acceptance of a sincere apology. In both diagrams, not acknowledging that a wrongful act occurred may act as a sole sufficient condition, so neither offering nor acceptance of a sincere apology would be possible. Consider:

~~Acknowledge Wrongful Act~~ $\longrightarrow$ ~~Offer a Sincere Apology~~ + ~~Accept a Sincere Apology~~

If someone says: “in order to please my wife on our anniversary, I must remember the occasion, bring her flowers, and either cook dinner or take her out to a nice restaurant.”

Now, if it is their anniversary and the husband pleased my wife, what must be true?

I remembered the occasion.

Must that be true? Of course! It was one of the requirements. Is that *everything* that must be true? No, but it's still true, isn't it?

We see the word "unless" in the answer. So we diagram the entire answer as a conditional; the part you're looking at won't have a "cannot" in it at all when the Unless Equation is used on it.

"Cannot do A and B unless C" = (A + B) ⟶ C

So:

(apology sincerely offered + same apology sincerely accepted) ⟶ each person acknowledges wrongful act

A conditional relationship is a universal relationship - every time the sufficient happens, the necessary must happen. If you have two qualities such that the presence of one guarantees the presence of the other, there is a conditional. So looking at "One cannot sincerely accept an apology that was not sincerely offered", is that a universal relationship? Sure - every time an apology fails to be sincerely offered, it cannot be sincerely accepted. This situation isn't really one where indicators are absent - "cannot" expresses necessity. "X cannot happen" means "it is necessary that X fails to happen".

(A) and **(C)** can be eliminated instantly because we don't have any triggers that contain committing (or repeating) wrong acts. **(B)** and **(D)** can be eliminated because they attempt to connect sincere offering and sincere accepting - since both of those elements appear only in triggers, there's no way to connect them directly!

9. D

The information discusses a company called Moradco. Most of its mines in Velyena have never violated regulations, while every one of its gold mines worldwide *has* violated regulations. The last claim provides a little Conditional Logic. If one of Moradco's mines is a gold mine, it has violated regulations:

If gold mine → violate

By contrapositive, any mine that has *not* violated regulations is *not* a gold mine:

If ~ violate → ~ gold mine

By that logic, because most of the mines in Velyena have *not* violated regulations, most of the mines in Velyena must *not* be gold mines.

(D) is the right logical deduction.

(A) is not supported. There's no information on the number of mines Moradco operates anywhere.

(B) is not supported. There's no information on how many mines Moradco operates anywhere.

(C) is a Distortion. *Most* of the mines in Velyena have never violated regulations. But there could still be plenty that *have* (say 50 of its 500 mines in Velyena). Those mines could all be gold mines and could certainly be the majority of Moradco's worldwide gold mines.

(E) is a Distortion. While most of the mines in Velyena are not gold mines, that could be an exceptional area. It's still possible that Moradco is predominantly gold mines throughout the rest of the world.

If you're one of M's gold mines, you've **definitely violated** environmental regulations at some point.

Meanwhile, most of M's mines in V have **never violated** an environmental regulation. What is that friction telling us? Most of M's mines in V aren't GOLD mines.

A) Out of scope comparison. We know nothing about other companies.

B) We don't have any way of tallying up # of gold vs. # of V.

C) Is this the same as our prephrase? "Most of M's mines in V aren't GOLD mines". No this is "Most of M's gold mines aren't V mines."

D) Bingo.

E) No way to judge "the world".

The correct answer is D.

But what if there are only 2 gold mines in the world operated by Moradco, and they're both in Velyena. If Moradco has 100 copper mines in Velyena and only 2 gold mines (which violate regulations), answer choice C does not necessarily follow and it's much more likely that D is correct.

These two answers are basically a reversal of the elements.

For answer C we are not told whether the majority of the gold mines are or are not located in Velyena. But to test the truth of this answer choice if we said for a moment that the majority of gold mines were located in Velyena, the argument could still be true since there could simply be even more of the other types of mines in Velyena than there are gold mines. That means that C is not necessarily true based upon the truth of the argument.

10. B

Here's a helpful paraphrase of the stimulus: If an accident 1) causes personal injury *or* causes over $500 in property damage, *and* 2) the driver is able to report the accident, then the driver is required to report the accident to the DMV. Ted (a driver in an accident) is not required to report his accident.

From the fact that Ted is not required to report his accident, you can infer that *either* 1) Dan's accident did not cause personal injury *and* did not cause over $500 in property damage *or* 2) that Dan is not capable of reporting his accident. At least one of those conditions must be true.

(B) must be true based on the stimulus. Being a driver in an accident that caused over $500 in property damage would require a report *unless* the driver was incapable of reporting.

(A) is a Distortion. If Dan is incapable of reporting, he is released from the requirement to report. In the case of his incapacity, we can draw no valid conclusions about the type or extent of injuries and damage.

(C) is Outside the Scope. If the accident did not cause personal injury and did not cause property damage in excess of $500, then the rule does not require anyone to report. Moreover, there is no indication that this was a two-car accident or that any other person was involved. It is possible, of course, that another rule requires someone to report the accident (say a witness or an emergency worker), but any other rule is Outside the Scope of this stimulus.

(D) is a Distortion. Injury is certainly one reason a driver might be incapable of reporting an accident, but nothing in the rule or its application in the stimulus suggests that it is the only reason. What if bad weather knocked out the phones at 911 and the DMV, for example? Ted could be unhurt but still incapable of reporting the accident.

(E) cannot be guaranteed. For one, **(E)** is not strong enough to release Ted from an obligation to report. To do that, we would need to know that no one was injured *and* that the accident did not lead to more than $500 in property damage. The other possibility is of course that Ted is not required to report simply because he's unable to do so, even if there was an injury or $500 or more in property damage.

It's saying If A, then B, unless C.

Example:

If Hillary runs, then she'll become President, unless Jeb Bush is the Republican nominee.

The way you handle these is you add the unless "if not" consideration to the trigger.

If H runs and Jeb Bush is NOT the Repub nominee, H will be Pres.

Does that feel right?

We're basically saying, as long as Jeb Bush isn't the nominee, we can safely say "if Hillary runs, she'll be Pres".

So the conditional here would look like

If you're in an accident with personal/property damage $500+
and
you're capable of reporting the accident
then
you're required to report the accident.

Cleaned up:

Damage is $500+ AND Capable --> Req'd

The contrapositive would be

~Req'd --> ~Damage of $500+ OR ~Capable of reporting.

Since they provide us with the fact of "~Req'd", we get to make this INFERENCE:

~Damage of $500 OR ~Capable of reporting

Since at least one of those ideas must be true, I would expect GMAT to potentially give us some conditional that looks like

"If it's not the first thing, it's the second thing"

(A) It might be that he's Incapable AND there was $500+ damage. "OR" means "at least one". This answer choice is acting like it's Thing 1 or Thing 2, **but not both**.

(B) This looks good. This is the "if thing 1 doesn't apply, then thing 2 must apply".

(C) Where did this "someone else is required" idea come from? We didn't get any rule about that.

(D) We can't make this leap conditionally. Conversationally, there are multiple ways to be incapable of reporting an accident ... injury is one way .... phone is dead / no service is another.

(E) It's possible that people WERE injured and there WAS $500+ property damage. The reason he's not required might just be that he's incapable of reporting.

~incapable --> REQUIRED REPORT for accident personal injury/$500+

with the contrapositive

~REUIRED REPORT for accident PI/$500+ --> incapable

Ted not required

For me the question of "report" or "not report" was the essence of the conditional chain, along with "capable" or "incapable". These are the terms we're actually considering in this argument, given that the accident meets certain requirements. So to me it made sense to lump those requirements under the "report" term. If we're dealing with an accident with personal injury of $500+, then this conditional rule speaks to the situation. If not, then we can't say anything. Understanding this allows for this simplified notation.

So the stem then tells us that Ted isn't required to report. Think of this as an additional premise to consider in conjunction with the conditional chain. So to sum up our evidence we have:

The question asks for an inference. Using the conditional chain, and the new information about ted, we have to conclude something. In other words, Ted MUST be the SC. We can't END at ted. So we need to work off the contrapositive, where we already have ~required in the SC.

A) Knowing that we have to work off of the contrapositive, "if incapable" is the same as saying "if NC". The term "if NC" never triggers anything. This leads nowhere, eliminate.

B) "damage of $500" and "not required" together trigger the SC of the contrapositive. "incapable of reporting" then fits the SC of the contrapositive, and is what the answer choice says. We can infer this. Correct answer.

C) We know nothing about anyone who is not ted. And none of the conditional statements say anything about anyone else reporting. The conditional relationship doesn't speak to this, so this cannot be inferred. incorrect.

D) Like A, we're starting here with "if NC". This is a logical flaw, incorrect.

E) If this is true, we go nowhere in our conditional chain. Incorrect.

(B) This looks good. This is the "if thing 1 doesn't apply, then thing 2 must apply".

If A, then B, unless C = If ~C and A, then B.

(PI or >$500)

and ⟶ Report

CR

(PI = personal injury happened in the accident; >$500 = more than that much in property damage happened; CR = capable of reporting)

That is, if there was either personal injury or more than $500 in damage, AND you are capable of reporting, then you must report.

The contrapositive is:

~~Report~~ ⟶ ~~CR~~ or (~~PI~~ and ~~>$500~~)

In other words, if you are not required to report, then EITHER you are incapable of doing so OR there was no personal injury AND there was not more than $500 in property damage.

Thus, if Ted is not required to report (the sufficient condition in the contrapositive above), then it must be true that either he is incapable of reporting the accident or else there was no personal injury resulting from his accident and any damage that resulted from it did not exceed $500. One of these possibilities is what we need to look for among the answer choices.

Answer choice (A): Ted being incapable of reporting would mean he was not required to report it, but it would tell us nothing about the amount of damages involved. This does not have to be true and is therefore a loser.

Answer choice (B): This is the correct answer choice. This matches our prephrase, in that damages in excess of $500 would require Ted to report the accident unless he was incapable of doing so, and since he is not required to report he must therefore be incapable.

Answer choice (C): The stimulus tells us nothing about who may be required to report an accident other than a driver, and it may be possible that nobody is required to report it. Perhaps all the drivers are incapable? Or perhaps there was no personal injury and the damages did not exceed $500? Ted not having to report proves nothing about anyone else involved.

Answer choice (D): This answer is essentially identical to answer A, with the additional problem that it focuses on injury specifically to Ted himself,

whereas the stimulus would require a capable driver to report the accident if anyone, including someone other than himself, was injured. Ted being incapable proves nothing about anyone being injured, including Ted.

Answer choice (E): This answer is only one half or an either/or necessary condition, with the other half being "Ted is not capable of reporting the accident." It is not necessarily true that there was no personal injury or that there was not damage in excess of $500, as both of those things could have happened and it could still be the case that Ted is incapable of reporting and therefore not required to do so.

If a driver is not required to report, then EITHER there was not property damage over $500 and no personal injury OR the driver is incapable of reporting OR BOTH. If there is EITHER property damage over $500 and/or personal injury AND the driver is capable of reporting, then the driver is required to report. Seems like that matches your diagram, basically. An answer choice that said "If there is property damage over $500, then there was no personal injury" would not be correct, because you could have property damage or personal injury or both and be required to report.

E is wrong because E is just saying one of the two you labeled A and B (personal injury and property damage) occurred; but if either occurred, even if it wasn't both, he would be required to report, unless he was incapable.

Let's do a bit of intermediate "translation" here between the information in the stimulus and the symbolization:

1. If someone's involved in an accident that causes more than $500 in property damage OR personal injury, then that person must report the accident.
2. The only way this person wouldn't have to report this $500+ damage/personal injury accident is if the person is incapable of doing so.
3. So, put these two statements together into one: If involved in accident with (more than $500 of damage OR personal injury) & capable of reporting accident, then must report accident.
4. Ted didn't have to report his accident.

What do you know about Ted? How's it possible he didn't have to report his accident? There are only two (three in a sense) ways possible that he didn't have to report his accident: EITHER there was not more than $500 damage AND NO personal injury OR he was incapable of reporting OR BOTH not more than $500 damage AND NO personal injury AND incapable.

Answer choice (B) hits this on the head: If more than $500, then must be incapable.

Answer choice (E) doesn't address the possibility that Ted was incapable of reporting the accident.

"If it is not true that an accident involving personal injury or damages greater than $500 must be reported, then the driver involved must be capable of reporting it." That of course makes no sense - if the conditional claim is not true, and those conditions do not require reporting, then who cares whether someone is capable of reporting? I expect that is not what you meant with that diagram, so if this response ends up not helping, hit us up again.

We know that Ted need not report the accident. But we know that if the accident involved personal injury, he would have to report it if he was able to. Also, if the accident involved damage to personal property greater than $500, he would have to report it if he was able to. So why doesn't he have to report it? There are two options:

1. He isn't capable, in which case nothing else matters, he is off the hook

2. There was no personal injury AND there was not more than $500 in damages to personal property

So, what must be true? Either he is incapable, or he is capable but none of that other stuff happened.

Another way to deal with these complex conditionals is to break them into smaller rules. One rule is "If there is personal injury and the driver is capable, he must report", or:

PI
& ⟶ RA
CR

The other is "if there is damage to personal property greater than $500 and the driver is capable, he must report", or:

D>$500
& ⟶ RA
CR

Now you can deal with the contrapositives of both rules on their own with ease! Ted doesn't have to report, so per the first rule, either he is not capable of reporting or there was no personal injury, and per the second rule, either he is not capable of reporting or there was no damage to personal property greater than $500. That latter one proves answer B to be correct!

There are two possibilities that the stimulus sets up that would not require a driver in an accident to report it: either the damage didn't reach $500, in which case we wouldn't know whether they'd be required or not, or there was $500 in damage but the driver was incapable of reporting. As a Must be True question, we need 100% certainty; the second case is the only one that's certain, so it's the Prephrase that we need to go with. (B) matches this Prephrase perfectly, making it correct.

(E) does a sleight-of-hand with the language, where it switches "incapable" for "injured." These are not necessarily the same things, and can't be treated as such. It's wrong on this count, but also in that it still allows the possibility of the damage being less than $500: because we don't know what is or isn't required in that scenario, we can't make any inferences about it and thus can't attain the level of certainty needed for a Must be True question.

11. D

According to the mayor, every street in town will get at least one monthly sweeping. However, some neighborhoods will qualify for additional sweepings if needed. If a qualified neighborhood requests extra sweepings, it will receive them.

If qualified & request → swept more than once/month

Any neighborhood that needs extra sweeping and asks for it will get it. Sounds great! Just remember that this does *not* exclude other neighborhoods from getting extra sweepings. While neighborhoods that need the extra sweeping will definitely be qualified and have any requests approved, other neighborhoods could get an extra sweeping, too. The correct answer will follow the absolute logic of the mayor's statements.

(D) is logically sound. The very last sentence says that such requests "*will* be satisfied immediately," so that means the one monthly sweeping plus any requested interim sweepings.

(A) is a Distortion. The mayor cites "excessive dirt" from *major* construction jobs as a qualification, but that doesn't mean any old construction job will qualify a neighborhood.

(B) is a subtle Distortion. All requests for additional sweepings will be approved, but what if a qualified neighborhood doesn't put in a request? In that case, they could still get just their single monthly sweeping. So, **(B)** does not have to be true.
(C) is a Conditional Logic Distortion. While qualified neighborhoods are guaranteed extra sweepings (upon request), that doesn't mean *only* those neighborhoods can get extra sweepings. Other neighborhoods may be eligible, too.

If swept more than once/month → qualified

(E) is another Conditional Logic Distortion, which could be considered just the contrapositive of **(C)**. While other neighborhoods may not be guaranteed extra sweepings (as qualified ones are), that's not to say they'll definitely be denied.

If ~ qualified → ~ swept more than once/month ***(even if requested)***

The stimulus of this fact set is filled with conditional reasoning indicators, including "every," "if," and "all." This should alert the test-taker to grab their pencil or pen and start diagramming, for the question will likely be based on that reasoning and easily answered once all the pieces are put in place.

The first sentence gives us this relationship:

SIT (Street In Town) ⟶ Sw1+M (Swept at least Once a Month)

The second sentence can be diagrammed as:

NMFS (Need More Frequent Sweepings) ⟶ QIS (Qualified for Interim Sweepings)

Finally, we get a multi-conditional claim:

QIS
+ ⟶ SwI (Swept Immediately)
RIS (Request Interim Sweeping)

From this we can build a chain - if a street needs to be swept more frequently, and asks to be swept in the interim (meaning between the monthly sweepings), they will be swept immediately. That means that they will not have to wait the whole month for their usual sweeping, but will get one sooner. That is a pretty good prephrase, but we should also be on the lookout for a contrapositive, such as "if a street is not swept immediately then either it did not request an interim sweeping or it did not qualify for one."

Answer choice (A): "Construction Under Way" is NOT a sufficient condition for qualifying for interim sweeping. The street has to NEED more frequent sweeping, and construction is only mentioned as one possible source of the extra mess (and only major construction is actually mentioned, so maybe minor construction won't be enough).

Answer choice (B): Being qualified for an interim sweeping isn't sufficient - the neighborhood also has to request that sweeping to guarantee that it will happen immediately instead of waiting for the regular monthly sweeping.

Answer choice (C): This is a Mistaken Reversal of a portion of the final conditional claim. It could be true that some street gets swept more often even if it is NOT qualified and even if nobody requests it. Being qualified and requesting an interim sweeping is sufficient, but that doesn't mean it is necessary!

Answer choice (D): This is the correct answer choice. This follows from our conditional chain and must be true. If a street is qualified and requests an interim sweeping, they will get one immediately. The fact that they call it an "interim" sweeping very strongly suggests that it is not the usual monthly sweeping, but happens sooner than it otherwise would. Some might want to quibble and say "okay, but they could then delay the next sweeping so they still only get one per month," but the stimulus was about getting "more frequent" sweepings, not just an earlier one!

Answer choice (E): Essentially the same as answer C, this is a Mistaken Negation of the conditional rules in the stimulus. Qualified streets where neighbors submit a request will be swept immediately, but so might some other streets.

Take a look at this phrase: "All requests for interim sweepings from qualified neighborhoods will be satisfied immediately."

How will that be request be satisfied? By interim sweepings. What are interim sweepings? Why, these are sweepings more than 1x per month! You said that the neighborhood will get an *immediate* sweep, but the request is for *interim* sweepings (i.e. more than 1x/month).

Break down the 2nd sentence:

"If a neighborhood needs more frequent sweepings, due to excessive dirt from major construction for example, that neighborhood will be qualified for interim sweepings." could b diagrammed as:
Need for more frequent sweepings (i.e. more than 1x/month) $\longrightarrow$ qualified for interim sweeping

We can't go backwards and say that any street that qualified for interim sweeping has a need for those extra sweepings. But what we do know is that if a qualified street requests interim sweeping, then they will GET those extra sweepings.

Answer (A) is wrong for a more fundamental reason than the word "all." In fact, we know from the stimulus that all neighborhoods that need more frequent sweeping are qualified. The stimulus does not say all neighborhoods with construction need more frequent sweeping, and it does not say that all neighborhoods with construction are qualified. The reference to construction says "major construction," and regardless, it doesn't even say that all neighborhoods with "major construction" are qualified. There may be neighborhoods with construction that nonetheless do not "need more frequent sweeping."

Stimulus Breakdown:

Mayor's Cleanliness plan:
1) Every street swept 1+ per month
2) If more are needed, street qualifies for interim cleanings
3) All interim requests from qualified streets will happen immediately

(A) Major construction is given as an example of something that could lead to a street qualifying for extra sweepings. However, this answer is about all construction, and the stimulus gives *major* construction as an example, so this answer isn't supported. If a street is undergoing minor construction, it

would be undergoing construction (so this answer would apply), but the stimulus doesn't guarantee they qualify.

(B) Tempting, but the street only gets an extra cleaning if they request one. A qualified street that never requests an additional cleaning would only receive one cleaning a month.

(C) Illegal reversal. The stimulus establishes that a qualified street can receive a second sweeping, but it never states that it is the only kind of street that will receive extra cleanings. Maybe, for example, all streets are cleaned after a major storm.

(D) Bingo. Qualified neighborhoods can request a cleaning to happen immediately. Since this answer specifies that it requested an interim cleaning (not a regular one) and that these cleanings happen immediately, that street will receive more than once sweeping that month.

(E) Illegal negation. While the rules established don't guarantee a non-qualified street's request from being honored, they also don't prevent it. If it's a slow week, it's possible the sweepers would honor this request.

The Facts:
Keeping the 'hood clean ---requires---> street-sweeping at least once / month

A 'hood needs more than once/month -> qualifies for interim sweepings

Request for interim sweeping from qualified neighborhood -> prompt sweeping

Can We Synthesize Any of This?

There aren't any direct symbol-to-symbol links, but there's definitely some overlapping ideas.

Basically, if you live in this city, you're gonna get at least one street cleaning per month. But say you just had your cleaning for this month and then you get a bunch of dirt dumped on your street from some construction project -- in that case, rather than wait until NEXT month's street sweeping, your neighborhood qualifies for an "interim" sweeping (i.e. SOONER than next month), and the city will come by and provide that interim sweeping very swiftly.

Let's check out some answers.

(A) *All* 'hoods with construction are qualified neighborhoods? I don't feel good about committing to that. We only heard, as one POSSIBLE example, that MAJOR construction projects MAY create a need for more frequent sweepings.

(B) Hmm, seems like All Qualified would get more than one sweeping per month. If you're already having a minimum of one per month and then you

get an EXTRA sweeping, then that's more than once a month. How would this fail to happen? Well .. the rule that ACTUALLY gets your street the extra sweeping is the last sentence. A "request" for an interim sweeping gets an extra sweeping. Do I really know that ALL Qualified neighborhoods will submit requests for the extra cleaning? Maybe not.

(C) There's no way to prove that something WON'T get swept. The mayor could easily decide to give any neighborhood an extra sweeping whenever she so chooses.
Symbolically,

IF a street gets swept more than once, THEN it's qualified neighborhood.

The closest thing we know is

IF qualified neighborhood, THEN a street COULD get swept more than once

(D) Oh, sweet. This is like (B), only THIS guarantees that a qualified neighborhood *requested* a sweeping. When qualified neighborhoods ask, this mayor delivers an extra sweeping IMMEDIATELY. And "extra" + "one guaranteed sweeping / month" = "more than once a month".
(E) This is like (C). There's no way to prove you WON'T get extra sweepings. The mayor's rules only stipulate what guarantees you WILL get an extra sweeping. She could easily drive around giving unqualified neighborhoods extra sweepings without violating any of her stated rules.

I could say

"All male citizens deserve basic human respect."

That doesn't mean that I suddenly believe "no female citizen deserves basic human respect."

To the last poster, you're basically correct about eliminating (C) and (E) because it's about "unqualified". It's not fair to say we know nothing about them. Given the conditional the author gave us about 'qualified neighborhoods', we get the contrapositive:

"If your neighborhood is UNQUALIFIED for interim sweepings, then your neighborhood doesn't really need more frequent sweepings than the normal once a month minimum."

That's ALL we know about unqualified neighborhoods. So we can't comment on what (C) and (E) say about all unqualified neighborhoods.

In terms of the "due to construction, for example" thought ... you're very correct to sense that whenever they introduce specific examples that aren't the core concepts supporting the conclusion (just an illustration of the more general idea), then they aren't important to go back to in any way. They're just there so that GMAT can fill up some trap answers with familiar sounding words.

12. E

The opening claim sets out what is required for a work to be called "world literature." It has to be interpreted within at least two traditions: that of the author's home country and that of an external nation. The author then presents three possible uses for a work that would allow it to be interpreted within a tradition: 1) to positively develop a tradition, 2) to negatively highlight something that should be avoided, and 3) to show something radical that inspires change.

The opening claim provides some Conditional Logic. If a work is considered world literature, it must be interpreted within at least two traditions (the author's national tradition and an external national one):

If world literature → received/interpreted within writer's own national tradition AND received/ interpreted within external national tradition

By contrapositive, if it cannot be interpreted within those two traditions, then it's not really world literature. By the last sentences, there are numerous ways to achieve such an interpretation. While an exact answer will be difficult to predict, keep in mind two things. First, the two traditions are necessary, but not sufficient. Do not mix up the Conditional Logic. Second, stick to the scope: what allows for traditional interpretation and what classifies a work as world literature.

(E) is supported. If a work affects the development of only *one* tradition, then that allows only one interpretation. By the Conditional Logic provided, that means it doesn't meet the requirement and thus cannot be considered world literature.

(A) is Out of Scope. The author never mentions anything about what makes a work "well received."

(B) is an Irrelevant Comparison. There's nothing to suggest which group of readers a work "offers more" to.
(C) is another Irrelevant Comparison. The requirement is just that the story be interpreted within both traditions. It does not matter whether one interpretation is "more meaningful" than the other.

(D) is Out of Scope. The author makes no mention of being "influenced by" other works.

Stimulus Breakdown:

1) Proper world literature → Received/interpreted in national tradition + Received/intepreted in external traditions

2) Authors from tradition use as positive model to develop OR negative model to avoid OR radical model to refine → Received/interpreted in a tradition

(A) Unsupported. No connection between acceptance by one's own national tradition and acceptance by another's national traditions is supported.

(B) Unsupported comparison. Our argument doesn't rank how much these works offer.

(C) Unsupported comparison in trigger. The stimulus only talks about whether the works are received/interpreted within certain traditions, not whether they are more/less meaningful in the traditions.

(D) Illegal reversal. Based on the argument, works of world literature will influence other traditions; this answer choice flips that around.

(E) Bingo. This is the contrapositive of the first statement (which would read: If a work is not interpreted in the national tradition of the writer OR if it is not interpreted within an external national tradition, then it's not world literature), coupled with the second. If a work affects only one national tradition, then it can't be received/interpreted by both the writers national tradition AND an external one, since that would be two national traditions. And since it's missing one of the two OR triggers, we can guarantee it's not world literature.

World literature $\longrightarrow$ (received and interpreted within) writer's national tradition AND external national tradition

interpreted within a national tradition $\longleftrightarrow$ used as a positive model for the development of their own tradition, OR as a negative case of a decadent tendency that must be consciously avoided, OR as an image of radical otherness that prompts refinement of the home tradition.

So to be world literature, one of the three ways of being interpreted within a national tradition must be the case for both the writer's national tradition and an external national tradition. If it only fulfills a condition for the writer's own national tradition, it has not been received and interpreted within an external national tradition. Therefore, it is not world literature.

The correct answer for question hinges on a careful analysis of the interplay of the sufficient and necessary conditions and then an appreciation of the nuances of the question itself. In fact, the choice of language here is both careful and deliberate. Let's break this question down.

1. World Literature $\longrightarrow$ Interpreted within Writer's National Tradition & Interpreted within Other National Traditions
2. Used in one of Three Ways $\longleftrightarrow$ Interpreted within a National Tradition

Let's consider answer choice (E). What do we know about a work that affects the development of only one national tradition? Note that all three of the ways that a work could be interpreted within a national tradition involve "development" in some sense, whether literal "development of their own tradition," something to be "avoided" (prima facie a "development"), or as a "refinement" (also a "development"). Thus in any sense in which a work could be considered "interpreted within a national tradition," it has in some sense contributed to "development." Further, we know from the premises that for a work to be part of world literature it is necessary that it be interpreted within multiple national traditions. Thus, we can conclude that given that a work has affected the development of but one national tradition it is also interpreted in only one national tradition. Thus it cannot meet the necessary prerequisite of world literature.

Now, one could argue that the syntax of (2) would not lead to the double arrow above but only to a unidirectional conditional with the three development methods as independent sufficient conditions to guarantee that a work be interpreted within a national tradition. The nuance of the sentence ("counts as [...] if [...] at least one of three ways") led me to use a double arrow here. However, one could argue that there could be some other, fourth, sufficient condition, not stated, that does not involve "development," that would be independently sufficient to guarantee that a work be considered "interpreted" within a national tradition. One could thus argue hypothetically that this stimulus does not rule out such a possibility.

However, at this point we should return to the question task itself, which asks us to find which statement is "most strongly supported" by the information in the stimulus. I hope with the benefit of this further analysis we might agree that there is in fact substantial support for answer choice (E) and certainly *more* support for (E) than for any of the alternatives. Thus, (E) satisfies this particular question and is the credited response.

Answer choice (D): "A work of world literature is always *influenced by* works outside of the writer's national tradition."

Nowhere in the stimulus do we see any requirement that in order to be world literature a work must be *influenced by* any other works. Both conditional relationships given speak to the influence that the work has on traditions. Nothing in the stimulus depends on what influences the work. I would say this answer choice has been planted mainly to trap someone who is reading too fast.

Let's look at answer choice (D). The key issue with answer choice (D) is that it discusses how the work was developed, not what impact it had afterwards. From our stimulus, we only know about the influence of the work on future literature. We know absolutely nothing about the influence of prior literature on the potential work of world literature. Because we don't have information about it, it can't be the correct answer for a must be true question.