

If you held onto the idea that reducing hyperglycemia would logically cause people to develop a higher response—i.e., “an improved physiological response”—to exercise, you could probably jump right to (C). The answer is so strong that it is unnecessary to consult any of the other options.

If you did want to play process of elimination, however, all the other answers are off-topic. The passage suggests nothing about lowered hyperglycemia prompting people to exercise regularly or lower their risk of developing diabetes (although the latter may be true in reality). That eliminates (A) and (B). Likewise, it says nothing about reduced hyperglycemia’s influence on blood sugar after eating, eliminating (D). Again, that leaves (C) as the only option.

As a side note, the logical prediction here was actually confirmed by Lessard’s study. The persistent inability of certain patients to respond normally to exercise was a mystery in the medical world for many decades, and Lessard along with her colleagues at Joslin finally solved it.

Let’s look at another example—it’s a bit more challenging language-wise than the previous one. We’re going to use the full question from the start this time, but try to practice avoiding the answers until you’ve done some basic legwork.

Fully one-third of the human brain is devoted to processing visual information; in contrast, only five percent involves smell. As a result, modern neuroscience has focused most intensely on deciphering sight, with olfaction often treated as a bonus sense. That is reflected in the paucity of language to describe it, a situation that poses a problem for scientific investigation. There are countless adjectives to describe what things look—and sound—like, but humans’ vocabulary for olfactory perception is fragmentary and highly inconsistent. Therefore, \_\_\_\_\_

1 Mark for Review

Which choice most logically completes the text?

- (A) olfactory researchers are seeking higher levels of funding to study how people process odors.
- (B) people often cannot explain how things smell to them in a way that is comprehensible to researchers.
- (C) people must be able to process visual and olfactory information simultaneously in their daily lives.
- (D) people should focus on sensations rather than words when they encounter new scents.

To begin, reiterate the key information from the passage and the question. Try to focus on the fundamentals and not get too distracted by challenging language. Even if you don’t know what “olfaction” is, you can figure out that it refers to smelling ability: the first sentence states that only 5% of the brain involves smell, which corresponds to the idea that olfaction is treated as a *bonus sense*.

Basically, the human brain largely focuses on processing visual information and neglects scents (olfactory information). As a result, people don’t have a lot of words to talk about smells. This creates a problem for studying smells scientifically.

When we summarize things this way, the question more or less answers itself. Logically, studying smells scientifically would be hard because people don’t have a consistent vocabulary to discuss them.

If we then consider the answer choices with that information in mind, we can see that (B) is an excellent match for that idea: if people can't accurately or consistently describe what they're smelling, it becomes very difficult for researchers to gather information about how people use that sense.

Playing process of elimination, (A) is completely off-topic—the passage only states that researchers have a “problem” studying scent perception. Assuming that they are asking for more money to study it goes *way* beyond the bounds of the text.

(C) is incorrect because while people obviously do need to process both visual and olfactory (smell) information at the same time in daily life, that fact has nothing to do with the passage. It merely indicates that a much larger portion of the brain is devoted to vision and that people do not think about smell as much. This answer takes two pieces of factual information and puts them together in a way that sounds vaguely intimidating but is actually insignificant.

(D) does not fit because the passage implies no recommendations regarding what people *should* do when they encounter new scents. It only indicates that they have trouble describing smells in general.

Again, that leaves (B) as the answer.

#### To sum up:

Because text completions are an important part of SAT Reading, the ability to break down challenging questions of this type in a logical, step-by-step manner can have a real impact on your score.

Now, can working this carefully be a pain? Absolutely. It's much easier to just crash through questions and hope for the best. However, the bottom line is that this approach *works* (and I say this from personal experience). The SAT is a reasoning test, and these questions are explicitly constructed so that if you think carefully and reason your way through them, you can eventually find your way to the right answer.

Remember that no matter how strong your reading and/or reasoning skills are, the usefulness of taking a pencil and working out each step of the argument **by hand** on your scratch paper should not be underestimated. Again: this is not just about getting questions right but also a matter of ensuring that you do not get them wrong. After all, if you can get the points, why would you pass them up?

## Exercise: Text Completions

Physicists have yet to figure out what exactly happens at the singularity of a black hole: matter is crushed, but what becomes of it then? The event horizon, by hiding the singularity, isolates this gap in our knowledge. All kinds of processes unknown to science may occur at the singularity, yet they have no effect on the outside world. Astronomers plotting the orbits of planets and stars can safely ignore the uncertainties introduced by singularities and \_\_\_\_\_.

1

 Mark for Review

Which choice most logically completes the text?

- A apply the standard laws of physics with confidence.
- B focus on gaining a deeper understanding of black holes.
- C attempt to peer behind the event horizon.
- D uncover phenomena not currently known to science.

Most grocery stores spray produce with water on a regular basis in order to ensure that they maintain a wholesome, fresh-picked appearance. However, according to Martin Lindstrom, author of *Brandwashed: Tricks Companies Use to Manipulate Our Minds and Persuade Us to Buy*, not only does this liquid lack any practical purpose, but it actually has a deleterious effect: \_\_\_\_\_.

2

 Mark for Review

Which choice most logically completes the text?

- A shoppers are unlikely to purchase fruits and vegetables that appear dry and withered.
- B moisture causes picked vegetables to spoil more quickly than they otherwise would.
- C certain vegetables lose some of their nutrients when they are boiled.
- D produce must be watered at predictable intervals in order to appeal to consumers.

Although it is widely assumed that cognitive bias clouds our assessment of the people around us, their research and that of others, a group of researchers at the Santa Fe Institute has found that people's estimations of what their friends and family believe are often largely correct. That's because as highly social creatures, we have become very good at sizing up those around us—what researchers call "social sensing." It is therefore possible \_\_\_\_\_

3

Mark for Review

Which choice most logically completes the text?

- (A) to gather highly accurate information about trends by asking about individuals about their social circles rather than their own beliefs.
- (B) to determine people's views on a variety of topics by analyzing the ways in which they interact with others.
- (C) to discover what people truly believe about an issue by asking them to reflect on their personal biases.
- (D) to develop an algorithm that reliably predicts people's preferences about a wide range of items.

One of the most startling discoveries of the early 21<sup>st</sup> century was that Indo-European languages seem not to have been spread by Anatolian farmers living in what is now Turkey, as was commonly thought, but rather by a people called the Yamnaya, horse-herding nomads who lived on the Eurasian steppes more than 5,000 years ago. A host of linguistic evidence suggesting this possibility was first compiled persuasively by archaeologist David Anthony in 2007; DNA evidence later proved he was on target, showing that \_\_\_\_\_

4

Mark for Review

Which choice most logically completes the text?

- (A) members of tribes from the steppes arrived in Germany sometime between 2500 and 2000 BCE.
- (B) the Yamnaya were a genetic blend of three separate Eurasian populations.
- (C) around 5,000 years ago, the Yamnaya's genes began to appear throughout Europe and Asia.
- (D) the Yamnayans were linguistically unique in comparison to other groups from the same period.

When Isaac Newton published the *Principia* in 1687, his laws of motion solved numerous problems in physics; however, they also introduced a new conundrum, which was not fully grasped until centuries after Newton and which still poses a problem for cosmologists today. Essentially, Newton's laws work about twice as well as they are intended: they describe the everyday world that people move through, but they also account perfectly well for a world in which people walk backwards, clocks tick from evening to morning, and \_\_\_\_\_.

Exactly how Mars was formed approximately 4.5 billion years ago is a mystery, although there are several theories. One idea is that the planet was created via a titanic collision of rocks in space, spawning an all-encompassing magma ocean. When it cooled, a crust with high levels of basalt was formed. Another possibility is that parts of the first crust on Mars had a different origin, one that would primarily show large concentrations of silica. Planetary geochemist Valerie Payré and her partners analyzed data for the planet's southern hemisphere, the planet's oldest region. They discovered nine locations rich in feldspar, a mineral associated with lava flows that are higher in silica than basalt. This finding led them to conclude that \_\_\_\_\_.

5  Mark for Review

Which choice most logically completes the text?

- A objects interact unpredictably with one another.
- B planets that are in motion remain in motion.
- C particles of different weights move at varying speeds.
- D apples rise from the ground to the branches of a tree.

6  Mark for Review

Which choice most logically completes the text?

- A portions of Mars' surface were never covered by a crust.
- B the magma ocean formed from rocks colliding in space was not all-encompassing.
- C the southern hemisphere of Mars contained more silica than was previously believed.
- D the first crust on Mars did not develop until long after the planet was formed.

### Answers: Text Completions

#### 1. A

The second-to-last sentence includes the transition *yet*, which indicates key information: although singularities may involve all sorts of mysterious processes, they have no real-world effect. Thus, scientists can ignore them. The correct answer must restate or be consistent with this idea. (A) is correct because if singularities don't have an effect, then scientists can treat everything as normal and apply the usual laws of physics. (B) is unrelated to the required idea, and (C) and (D) both contradict the idea of ignoring puzzling aspects of black holes and maintaining the existing scientific framework.

#### 2. B

The key phrase occurs right before the blank: *not only does the liquid [used to water fresh produce] lack any practical purpose, but it also has a deleterious (negative) effect*. The information that follows must logically explain that effect. (A) does not explain the negative impact of watering on already-picked fruits and vegetables—the fact that shoppers are unlikely to select produce in poor condition is irrelevant to this section of the passage. (C) is incorrect because the passage focuses only on the effects of water on uncooked vegetables. (D) incorrectly states a positive effect of watering produce. (B) is correct because faster spoilage is a negative effect of spraying fresh fruits and vegetables with water.

#### 3. A

This is a good example of a question in which the answer is very nearly stated in the passage. The text makes clear that people are generally pretty accurate in identifying the beliefs of their friends and family members, so logically it must be possible to gather accurate information about trends by asking individuals what the people close to them think rather than what they themselves think—which is exactly what (A) says. (B) is incorrect because the passage focuses on beliefs, not interactions. (C) says exactly the opposite of what is indicated by the passage—reliable information can be obtained by asking people about others, not themselves. (D) goes way beyond the scope of the passage, which does not discuss the role of technology in determining people's preferences at all.

#### 4. C

The statement immediately before the blank indicates that David Anthony was *on target*, so the blank must refer to evidence supporting his theory. What was Anthony's theory? That Indo-European languages were spread by the Yamnaya, *horse-herding nomads who lived on the Eurasian steppes more than 5,000 years ago*. Note that to identify this information, you must essentially back up to the beginning of the passage—the phrase *this possibility* in the last (second) sentence refers to an idea described in the previous (first) sentence, and there is no way to make sense out of the passage without knowing what that idea is. The correct answer must support it with information indicating that the Yamnaya moved throughout the regions, plural, where Indo-European languages became established. (A) focuses on Germany, which is only one area, so it can be eliminated. (B) is off-topic—the Yamnaya's genetic roots are irrelevant to the argument. (D) does not fit because the correct answer must involve the Yamnaya's migration and its eventual effects. Even though this option mentions the Yamnaya's language, it does not mention how its influence was spread. Only (C) contains that information: if "the Yamnaya's genes appeared throughout Europe and Asia," these people must have been present in many regions, hence the spread of their language.

**5. D**

The first two examples in the list describe situations in which things run backwards, so logically, the final item in the list must describe a normal occurrence that is reversed. Objects interacting unpredictably; planets remaining in motion; and particles of different weights moving at varying speeds are not examples of a phenomenon running backwards. Only apples rising back to a tree, rather than falling from one, illustrates the required idea. (D) is thus correct.

**6. B**

This is a complicated question, so we're going to break it down into parts. Notice that the process outlined here requires you to work backwards through the passage. First, what is the finding? That nine regions of Mars were rich in feldspar, which is *associated with lava flows that are higher in silica than basalt*. What is the significance of this finding? It supports the theory that *parts of the first crust on Mars had a different origin*. A different origin from what? From the *all-encompassing magma ocean* that was created from rocks colliding in space. Logically, if parts of the crust were formed from something other than the magma ocean, then the ocean could not have been *all-encompassing* (covering everything). And that is what (B) says. (A) is incorrect because the passage only discusses the origins of the first crust that did exist on Mars—there is nothing to suggest that there were places without a crust. (C) is incorrect because the passage indicates only that feldspar, which is found in Mars's southern hemisphere, is *higher in silica than basalt*. The passage does not indicate how much silica researchers previously believed was present. (D) does not work either because the passage only mentions that Mars was formed around 4.5 billion years ago and the southern hemisphere is Mars's oldest region—there is no mention of when the crust formed, and the amount of feldspar and silica in that area is not discussed in relation to any particular timeline.

# 8

## Supporting & Undermining

“Support” and “undermine” questions belong to the same inference family as text completions but require you to go a step further. Rather than just ask you to identify a logical conclusion, they ask you to move beyond a stated hypothesis or conclusion and identify a statement that would either support or undermine (weaken) it.

While some simpler questions asking test-takers to support or illustrate an argument may appear at the beginning of a Reading/Writing section, the most challenging of these items are likely to appear among the later Reading questions—that is, just before the first Writing questions.

As is true for text completions, if you approach these questions methodically, they have the potential to become quite straightforward. **But you can't get impatient, and you can't skip steps.** If you're not really certain what a question is asking, OR you don't feel that you can focus properly, you are better off skipping it and returning to it after you have answered the Writing questions.

The process for answering support/undermine questions can be broken into three main steps:

**1) Identify the claim and rephrase it if necessary.**

If the claim or theory is stated simply in the question, take a second and process it so that you're clear on what it is. If it worded more complexly, rephrase it in simpler language and jot it down on your scratch paper. You can't determine whether a set of lines would support or weaken an idea unless you know what that idea is.

**2) Determine what sort of information would support or weaken the claim.**

You should at least attempt to get a basic sense of this on your own. Do not assume you'll be able to recognize the information from the answer choices, which by definition are written to confuse you.

**3) Check the answers.**

If you've done steps one and two carefully, the option closest to what you've said should be correct.

## Illustrating a Claim

We're going to start with the most straightforward type of "support" question, which asks you to identify the statement that best illustrates a main idea.

In comparison to the question types we'll look at later in this chapter, "illustrate" questions are more likely to accompany **prose fiction** or **poetry** passages. As always, you are not expected to have any pre-existing knowledge of the work in question—all the necessary background information will be explicitly provided.

That said, you may still need to navigate challenging, old-fashioned, and possibly metaphorical language in order to understand what an author or poet is literally saying. For example, consider the following question.

"Slow Through the Dark" is an early 1900s poem by Paul Laurence Dunbar. In the poem, the speaker urges the listener not to lose hope, even in difficult circumstances.

1

 Mark for Review

Which quotation from "Slow Through the Dark" most effectively illustrates the claim?

- |   |  |
|---|--|
| Ⓐ | "Slow moves the pageant of a climbing race; / Their footsteps drag far, far below the height,"       |
| Ⓑ | "No strange, swift-sprung exception we; we trace / A devious way thro' dim, uncertain light,— ."     |
| Ⓒ | "Heed not the darkness round you, dull and deep; / The clouds grow thickest when the summit's nigh." |
| Ⓓ | "Who stoppeth here to spend a while in sleep / Or curseth that the storm obscures the sky?"          |

Let's start by reiterating the basics: the question is asking us to identify the lines in which the speaker urges the listener to remain hopeful in a tough situation. As a result, the correct answer must convey the idea of hope.

We can assume upfront that (D) is incorrect because it cites a question, which goes against the idea of urging (encouraging) someone. (A) does not fit either because its focus is on [dragging] footsteps, which has nothing to do with encouraging someone to be hopeful. (B) can likewise be eliminated: the word *we* includes the speaker, and we want an answer in which the speaker addresses someone else.

(C) is the best fit. The phrase *Heed not the darkness round you*—in other words, do not give into despair—is essentially an order not to lose hope when circumstances are difficult.

## Supporting a Claim

"Support" questions are similar to "illustrate" ones, but they are more likely to accompany science or social science passages and involve logical arguments rather than works of literature.

For example, take a look at the question below.

Marketers assume that the more choices they offer, the more likely customers will be able to find just the right thing. They assume, for instance, that offering 50 styles of jeans instead of two increases the chances that shoppers will come across a pair they really like. Nevertheless, research now shows that there can be too much choice; when there is, consumers are less likely to buy anything at all, and if they do buy, they are less satisfied with their selection.



1



Mark for Review

Which finding, if true, would most strongly support the conclusions of the research described in the underlined section?

- |     |  |
|-----|--|
| (A) | People faced with choosing among a large number of options experience physical symptoms associated with feeling overwhelmed.             |
| (B) | Consumers given a choice of 10 jams in a taste test were more likely to make a purchase than consumers who were offered only five.       |
| (C) | Shoppers who purchased food from multiple stores spent more on groceries than shoppers who purchased all their food from a single store. |
| (D) | Some companies have increased the number of products they offer in order to appeal to a wider range of consumer preferences.             |

As always, we're going to start by summarizing the relevant section of the passage, in this case the research described in the underlined section.

What does that research show? That when faced with too many choices, consumers are less likely to make a purchase, and if they do make one, they are less likely to be happy with it. The correct answer must include a finding consistent with that idea.

(B) can easily be eliminated since it directly contradicts the passage—people given more choices would be less likely to buy jam, not more. (C) and (D) go in the wrong direction as well since they imply that more choice leads to a positive outcome.

Only (A) fits. Feeling overwhelmed when confronted with too many options would make people less likely to make a choice or be happy with a choice they've made. (A) is thus correct.

Let's look at another, more challenging question.

As a person sleeps, the motor cortex—the part of the brain that controls movements—replays skills that it learned during the day. In a recent experiment run by the BrainGate consortium, researchers observed that the pattern of firing neurons sped up during sleep, echoing findings from previous animal studies. The scientists were also interested to note that replay took place not during REM sleep, which is when people normally dream, but during deep, slow-wave sleep, which occurs in the first three or four hours of the night. They theorize that replay during this period helps the brain consolidate new information, moving it from short-term to long-term memory.



1

Mark for Review

Which finding, if true, would most strongly support the scientists' theory?

- (A) Athletes who slept for at least seven hours before a game competed at a higher level than ones who slept for less time.
- (B) People whose neuron firings increased in speed during REM sleep retained new information over a longer period of time than people whose neurons fired more quickly early in their sleep cycle.
- (C) Students who slept for only a few hours before an exam showed no difference in performance when compared to students who slept for a full night.
- (D) Dancers who slept for several hours shortly after learning a new routine knew it better two weeks later than a group that stayed awake.

The question indicates that we will need to identify a statement that supports the scientists' theory, so it is necessary to read the passage with that key word in mind. It appears in a different form in the last sentence, telling us scientists *theorize that replay during the period* (i.e., during slow-wave sleep, early in the night) *helps the brain consolidate new information, moving it from short-term to long-term memory*.

Next, we need to think about what type of scenario would support the claim that replaying new skills during slow-wave sleep helps people retain what they have learned in the long term.

- (A) No. This answer only involves an amount of sleep; it says nothing about consolidating new skills.
- (B) No, but be careful. This choice refers to "retaining new information" but incorrectly ties it to REM sleep. The passage, in contrast, discusses a phenomenon that does NOT occur during REM sleep.
- (C) No. The passage discusses an effect that improves learning—if two groups performed identically, that would not be the case.
- (D) Yes, this fits. The passage discusses a phenomenon that happens early in the sleep cycle, which means that it would occur in people who only slept for several hours. If dancers who slept that amount after learning a new routine knew it better after two weeks (i.e., longer-term) than dancers that did not sleep at all, that supports the idea that replay early in sleep consolidates learning.

## Undermining a Claim

“Undermine” or “weaken” questions are based on the same logic and involve the same process as “support” questions—they just go in the opposite direction, asking you to identify the statement most inconsistent with a given theory or conclusion.

For example, consider the passage below.

Dinosaurs, with the exception of the ancestors of birds, disappeared during a mass extinction 65 million years ago when an asteroid struck the Earth. Because a high metabolic rate has generally been suggested as one of the key advantages when it comes to surviving mass extinctions, some genetic paleontologists have proposed that birds survived while non-avian dinosaurs did not because of the birds' increased metabolic capacity.

1

Mark for Review

Which finding, if true, would undermine the genetic paleontologists' proposal?

- A The metabolisms of non-avian dinosaurs may have decreased over time.
- B Because some non-avian dinosaurs moved quickly, they likely had high metabolic rates.
- C Birds have some of the highest metabolism rates of any creatures on Earth.
- D Many dinosaurs with very high metabolic rates went extinct 65 million years ago.

The first step is to identify the genetic paleontologists' proposal—without that information, we cannot know what sort of statement would weaken it. The information appears in the last sentence: *birds survived [the mass extinction 65 million years ago] while non-avian dinosaurs did not because of the birds' increased metabolic capacity.*

In other words, metabolic capacity ↑, chances of surviving a mass extinction ↑.

To weaken that claim, we need to find an answer supporting the opposite:

- Metabolic capacity ↑, chances of surviving a mass extinction ↓.

OR:

- Metabolic capacity ↑, no effect on chances of surviving a mass extinction.

If we hold very tight to that idea and don't allow ourselves to become confused by any of the other options, we can identify (D) as the sole choice consistent with that idea. By definition, the extinction of creatures with high metabolic rates contradicts the claim that having a high metabolic rate prevents animals from going extinct.

Note that not trying too hard to wrap your head around the wrong answers is really key here. If you got caught up in trying to work out the logic behind them, you could really waste a lot of time—which is itself a sign that those options are incorrect.

### Exercise: Supporting and Undermining

“Gerarda” is an 1895 poem by Eloise Bibb. In the poem, Bibb emphasizes the contrast between the way in which objects are depicted in Gerarda’s paintings and their true appearance, writing \_\_\_\_\_

1

 **Mark for Review**

Which quotation from “Gerarda” effectively illustrates the claim?

- A But in her spiritual world she leaves  
Her mind, her thoughts, her soul, her brain,
- B Her paintings hang upon the wall,  
The power of genius stamps them all;
- C Now to-day o'er canvas bent,  
She strives to place these visions sent
- D And thus her pictures plainly show,  
Not nature's self but ideal glow.

“Frederick Douglass” is an 1895 poem by Paul Laurence Dunbar. In the poem, Dunbar praises Douglass for his honesty and refusal to be intimidated, writing \_\_\_\_\_

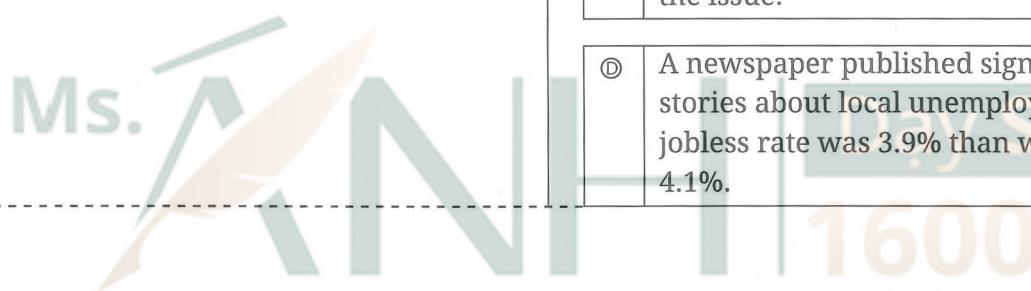
2

 **Mark for Review**

Which quotation from “Frederick Douglass” effectively illustrates the claim?

- A No miser in the good he held was he,—  
His kindness followed his horizon's rim
- B A hush is over all the teeming lists,  
And there is pause, a breath-space in the  
strife;
- C And he was no soft-tongued apologist;  
He spoke straightforward, fearlessly  
uncowed;
- D He was her champion thro' direful years,  
And held her weal all other ends above.

“Left-digit” bias, in which people focus on the first digit of a number and ignore the last, is a well-documented phenomenon that explains why prices tend to end in “9”. According to a recent study by researchers in California and Sweden, it also influences journalists’ coverage of unemployment rates. Even when jobless levels and the amount of change in unemployment rates are similar in two regions, crossing a round number informs reporters’ assessment of the story’s newsworthiness—even when both figures fall within the same margin of error.



One argument that is commonly cited to support the idea that birds lack a sense of smell is that some birds' olfactory bulbs are relatively small. As a result, many scientists concluded that these creatures gave up smell in favor of improved eyesight. This notion became so pervasive that it once was repeated to avian expert Danielle Whittaker as fact by a prominent neurobiologist.

3

Mark for Review

Which finding, if true, would most directly support the researchers’ finding?

- (A) The Bureau of Labor Statistics publishes a report of unemployment rates by state, rounding its statistics to the nearest decimal place.
- (B) The mention of high unemployment figures in a newspaper caused consumer spending to drop by almost 2.5% in one city.
- (C) A city newspaper ran several stories about joblessness when the unemployment rate reached 5% but quickly stopped coverage of the issue.
- (D) A newspaper published significantly fewer stories about local unemployment when the jobless rate was 3.9% than when it rose to 4.1%.

4

Mark for Review

Which finding, if true, would most undermine the neurobiologist’s statement?

- (A) An analysis of avian genomes revealed the presence of proteins that bind to odors and relay a signal to the brain.
- (B) The number of olfactory neurons is much smaller in birds than in most other animals.
- (C) The odors that birds depend on for food and social relationships are quickly dispersed in the wind.
- (D) Birds sometimes overlook strongly scented prey in favor of animals that are more visually striking.

New research suggests that coffee could have a positive effect on cardiovascular health. Although caffeine is coffee's most well-known constituent, the beverage contains more than 100 biologically active compounds. In a study led by Jiyoung Kim, researchers at Seoul National University concluded that non-caffeinated compounds likely play a role in the positive relationship between coffee consumption and health.

5

 Mark for Review

Which finding, if true, would most directly support the researchers' conclusion?

- (A) Whereas regular coffee contains from 70-140 mg of caffeine per cup, decaf contains approximately 0-7mg
- (B) Decaffeinated coffee causes cells to produce NQO1, an enzyme that has neuroprotective benefits.
- (C) Extracts from caffeinated coffee have been shown to aid weight loss more than a placebo.
- (D) People who drink several cups of coffee every day are less vulnerable to certain diseases.

Scientists have long known that self-pollination can inhibit plants' ability to adapt to environmental changes, but until recently they did not know exactly how or how quickly the changes occurred. A group of researchers at Washington State University set up a controlled greenhouse experiment in which a group of monkeyflower plants were isolated from the bumblebees that normally pollinate them. Initially, the plants produced few seeds, but as they adapted to the self-pollination process, their seed production increased dramatically. In addition, their flowers changed shape to facilitate the transfer of pollen. However, scientists expected that the plants would eventually become more vulnerable to shifts in their environment.

6

 Mark for Review

Which finding, if true, would most directly support the scientists' expectation?

- (A) Some flowers also received pollen from nearby flowering plants, a process that is known as geitonogamy.
- (B) The plants' genetic variation decreased by 24 % over nine generations, making them more susceptible to a variety of pathogens.
- (C) None of the plants contained the types of genetic defects that are typically found in the wild.
- (D) By eliminating the transfer of pollen grains, the plants were able to reduce the amount of pollen wasted by 60%.

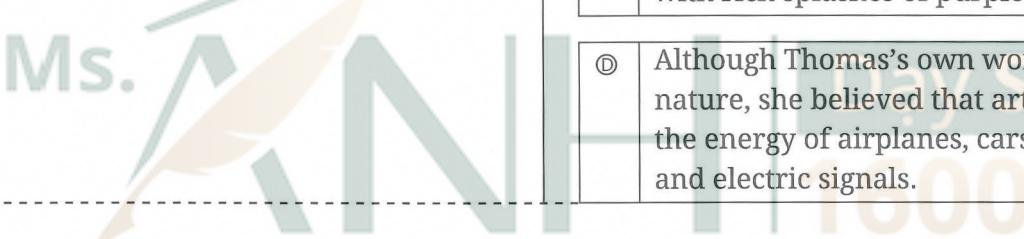
It was only when Alma Thomas turned away from figurative art and toward abstraction that she rose to acclaim as an artist. When the solidity of her line gave way to broken, vibrant colors, the beauty she had long seen emerged.

7

 Mark for Review

Which choice, if true, would most effectively support the writer's claim?

- |   |   |
|---|---|
| Ⓐ | Her painting <i>Starry Night and the Astronauts</i> (1972) includes a small kaleidoscope of red, orange, and yellow that suggests the spaceship Apollo 10.                            |
| Ⓑ | Thomas was fascinated by the natural world, incorporating everything from the flowers in her garden to the stars in the night sky into her paintings.                                 |
| Ⓒ | Her <i>Still Life with Vases and Flowers</i> (1964), which contains realistic images, feels labored, whereas <i>Lunar Surface</i> (1970) glows with rich splashes of purple and blue. |
| Ⓓ | Although Thomas's own works focused on nature, she believed that art could also evoke the energy of airplanes, cars, skyscrapers, and electric signals.                               |



*Middlemarch* is an 1871 novel by George Elliot. In the story, a young woman named Dorothea Brooke becomes engaged to a scholar named Mr. Casaubon. In describing Dorothea's motives for marriage, Elliot emphasizes her belief that she and Mr. Casaubon have a great deal in common.

8

 Mark for Review

Which quotation from *Middlemarch* effectively illustrates the claim?

Ⓐ Dorothea by this time had looked deep into the ungauged reservoir of Mr. Casaubon's mind, seeing reflected there in vague labyrinthine extension every quality she herself brought;

Ⓑ If it had really occurred to Mr. Casaubon to think of Miss Brooke as a suitable wife for him, the reasons that might induce her to accept him were already planted in her mind.

Ⓒ His notes already made a formidable range of volumes, but the crowning task would be to condense these voluminous still-accumulating results and bring them to fit a little shelf.

Ⓓ But in this case Mr. Casaubon's confidence was not likely to be falsified, for Dorothea heard and retained what he said with the eager interest of a fresh young nature to which every variety in experience is an epoch.

## Answers: Supporting and Undermining

### 1. D

The question indicates that the correct answer must support the idea that Bibb “emphasizes the contrast between appearance and reality.” As you read through the answer choices, look for a word such as *but* or *yet* that will indicate a contrast: (A) and (D) both contain *but*, whereas (B) and (C) do not include this type of language and can be assumed to be incorrect. (A) does not fit because it does not mention Gerarda’s paintings, whereas (D) both mentions her “pictures” and refers to “not nature’s self (= reality) but ideal glow (= appearance).” (D) is thus correct.

### 2. C

Start by defining the claim: *Dunbar praises Douglass for his honesty and refusal to be intimidated*. The correct answer must be positive and illustrate these qualities. (A) refers to “kindness,” but that is not quite a match, so this option can be eliminated. (B) is a relatively neutral description that does not involve the necessary criteria. Although (D) is positive, this answer is off-topic as well. (C) is correct because it indicates that Douglass felt no need to apologize, spoke in a “straightforward” manner, and was “fearlessly uncowed” (intimidated).

### 3. D

If you scan the passage, you’ll find the word *researchers* in the second sentence. The rest of the passage is essentially dedicated to describing what they found: “left-digit” bias affects whether journalists cover unemployment rates, and employment figures that cross a round number (a number ending in zero) attract more attention than ones that do not. The correct answer must therefore provide an example of a situation in which coverage of a jobless rate increased when it crossed a round number. The only answer that meets this requirement is (D): the change from 3.9% to 4.1% unemployment was very small, but the jump over a round number correlated with greater coverage of the issue. (A) is completely off-topic, and (B) does not fit because the passage does not even mention consumer spending. (C) describes an increase in unemployment coverage when the jobless rate reached a round number (5%), but the last part of the answer (“quickly stopped coverage”) does not fit. There is also no comparison to the amount of coverage unemployment received when the rate was below 5%, making this a weaker answer than (D).

### 4. A

What did the neurobiologist say? That *these creatures* (i.e., birds) *gave up smell in favor of improved eyesight*. This is an “undermine” question, so the correct answer must contradict that idea. Most logically, it will indicate that birds have both good eyesight and a sense of smell. The relationship between (A) and the claim in question may not be immediately obvious, but consider it carefully: if avian (bird) genomes suggest that birds are physiologically capable of perceiving odors, that would suggest they do in fact have a sense of smell. So keep (A). The presence of an unusually small number of olfactory neurons in birds would support rather than undermine the claim in question, so (B) can be eliminated. (C) and (D) have the same problem. In (C), if birds cannot rely on odors to find food, that would support the idea that they did not evolve a sense of smell. And in (D), ignoring strong scents in favor of visual information suggests a poor sense of smell.

**5. B**

What is the researchers' conclusion? That *non-caffeinated compounds likely play a role in the positive relationship between coffee consumption and health*. The correct answer must therefore be consistent with the idea that something other than caffeine is responsible for coffee's health benefits. (A) has no relationship to this argument; the fact that decaf contains trace amounts of caffeine is irrelevant. (C) is incorrect because it focuses on the health benefits of caffeinated rather than decaffeinated coffee, and (D) does not quite work because it does not indicate what type of coffee is involved. It supports the idea that coffee has health benefits, but not the idea that something other than caffeine is responsible for them. Only (B) works: if decaf causes the production of an enzyme with "neuroprotective benefits" (i.e., that protects the brain), then caffeine is presumably not the cause.

**6. B**

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What is the scientists' expectation? If you're not sure where to look for this information, focus on the end of the passage, where key information in support/undermine questions (and text completions) is most likely to be located. Indeed, the word *expected* appears in the last sentence. Basically, the scientists expected that although the self-pollinating plants appeared to be doing well, they would eventually develop a weakness that would make them *more vulnerable to shifts in their environment*. The correct answer must be consistent with that idea. (A) and (D) are off-topic and can be eliminated. (C) would weaken rather than support the expectation: plants without genetic defects would be *less* likely to become vulnerable to disease. (B) is correct because an almost 25% decrease in genetic diversity that left plants more "susceptible" (i.e., *vulnerable*) to diseases would be directly consistent with the researchers' expectations.

**7. C**

What is the writer's claim? That the beauty of Alma Thomas's work emerged when she moved away from figurative art and began to work abstractly. The correct answer must support or illustrate that idea. (A) mentions Thomas's use of color but does not indicate whether this painting was figurative or abstract. (B) is off-topic, focusing on the subject matter of Thomas's work rather than its style. (D) is incorrect for the same reason. Only (C) offers an explicit contrast between Thomas's "labored" early figurative work and "glow[ing]" abstract later work.

**8. A**

What is the claim? That Dorothea believes she and Mr. Casaubon have many things in common. The correct answer must therefore emphasize Dorothea's belief in their similarity. The main challenge in this question is sorting through the dense, old-fashioned language and understanding what each quotation is literally saying. (A) is correct because it indicates that Dorothea sees "every quality" of her own reflected in Mr. Casaubon. In other words, she perceives him as very similar, if not downright identical, to her. (B) only indicates that Dorothea ("Miss Brooke") is already interested in marrying Mr. Casaubon – it says nothing about their similarities. (C) is off-topic, focusing on Mr. Casaubon and not mentioning Dorothea at all. (D) is incorrect as well because it only conveys the idea that Dorothea is extremely interested in what Mr. Casaubon has to say because of her youth; it does not explicitly mention that she views him as being similar to her.

# 9

## Graphs and Charts

Graph- and chart-based questions come in a variety of shapes, sizes, and layouts, and range from simple and straightforward to seemingly very complex. While they tend to involve scientific topics, you are likely to encounter some social science ones as well. They may also overlap with other question types, for example doubling as text completions or support/undermine questions. If you do well on Reading/Writing Module 1, you should expect to encounter one or two more challenging items in Module 2.

In general, the information most directly relevant to the question will be presented at the end of the passage. As is true for text completions, the first sentence or two will often serve primarily to provide context. In many if not most cases, you can therefore skim through the introductory material and then slow down towards the end, paying very close attention to the last sentence. If you find it helpful to do so, you may even want to highlight the key words so that you know exactly what type of information you are looking for.

In principle, graph questions are designed to make you synthesize multiple sources—a passage, a question plus answer choices, and a graphic. In reality, however, these items are rarely as complicated as they appear.

The first thing to keep in mind is that you are not expected to have any prior knowledge of the topics. No matter how complex the terminology may seem—and you are likely to encounter some very long and technical terms—all of the information you need to answer the questions will be right there in front of you. Provided that you get the gist of the key facts, you do not need to understand every word to get questions right.

The second thing to understand is that while some questions may genuinely require you to use the passage along with information from the graph or chart, many answers can be identified based strictly on the wording of the question and the answer choices—it is unnecessary to look at the graphic at all. This is particularly true for very complex-looking questions, which are essentially constructed to make you think that they are much harder than they actually are.

Even if information from the graph or chart is required to answer the question, you should always begin by carefully reading the passage – usually the last sentence – and the question because these places tell you what theory, claim, or conclusion to focus on. Only a portion of the information in the graph will be relevant, and if you don't know where to direct your attention, you will waste both time and energy looking for... something or other. What has the potential to be a simple matter of “same idea, different words” can morph into something unnecessarily complex and confusing.

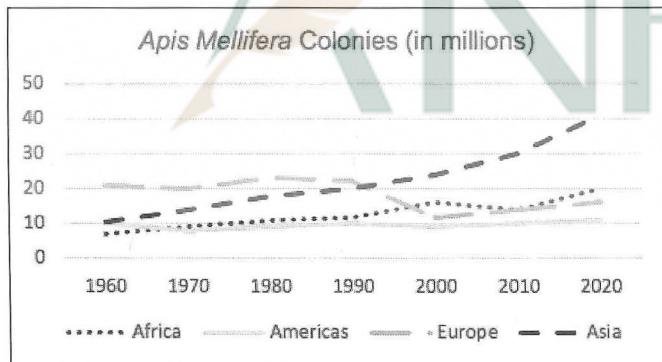
In some instances, multiple answer choices will cite accurate information from the graphic; however, only one option will correspond to the specific focus in the question. Thus, it is entirely possible to interpret a graph or chart perfectly and still end up with the wrong answer. In such cases, ignoring the chart and focusing on the phrasing in the text portion of the question may, paradoxically, give you a much better chance of getting the question right.

While it is not a bad idea to double-check your answer against the graph, just to make sure you haven't overlooked anything, be careful not to start second-guessing yourself. If only one option matches the specific criteria indicated in the question, then it must be the correct answer by default.

Starting below, we're going to look at some examples of how to work through graphic-based questions, both when the graph is necessary and when it isn't.

### Example #1

Let's start with something reasonably straightforward.



As part of a unit on pollination, a biology student is researching Colony Collapse Disorder, the mysterious disappearance of millions of honeybee (*Apis mellifera*) colonies in the early 2000s. Although many wild bee populations have continued to decline, the number of honeybees has actually increased on every continent. The student wants to emphasize that in some regions, honeybee populations had not only rebounded by 2020 but also reached their highest level in 60 years.

1

Mark for Review

Which region included in the graph should the student cite to support this claim?

(A) Africa

(B) Americas

(C) Europe

(D) Asia

As discussed earlier, we're going to start by focusing on the passage, particularly the last sentence. The word *emphasize* tells us that the key information will follow.

What does the "student" want to emphasize about honeybee populations in some regions in 2020? The sentence tells us that there are two conditions that must be met:

- 1) They had rebounded (i.e., increased after a decline).
- 2) They had reached their highest level since 1960 (the beginning of the graph).

For an answer to be correct, **both** of these things must be true.

In this case, the question is constructed so that we have no choice but to look at the graphic—the answer choices themselves provide no clue as to which option might be correct.

The graph itself does not contain any tricks: the four lines correspond to rises and falls in honeybee (*Apis mellifera*) populations on four continents during a 60-year period (1960-2020).

- To meet the "rebound" requirement, the correct line must go down and then up.
- To meet the "highest point" requirement, the line must be higher for the 2020 point than for any other year since 1960.

The only line that fits both those criteria is the line for Africa: there is a dip between 2000 and 2010, and the highest point (20 million) corresponds to 2020. (A) is thus correct.

Although the changes in the correct line are subtle in comparison to the changes for Europe and Asia, notice that the line's attachment to the "20 million" mark at the last data point clearly puts it higher in 2020 than at any other point.

**Example #2**

Next, we're going to look at a non-science example. Notice that the answer choices here contain much more information than the ones in the previous question.

The length of the answer choices suggests that the graph may not be important, so we're going to start by just looking at the passage and the questions. We'll consider the graph later, if we need it.

Despite steady gains in readership and overall popularity, e-books are hardly positioned to replace print books. Rather, the two types of media complement each other, providing the same content in different forms. Print books and e-books each have unique attributes and serve distinct purposes, which vary by demographic and situational factors. Researchers Yin Zhang and Sunali Kudva used data from the National Reading Habits Survey to examine book-format preferences in a variety of situations. Although the pair found that e-books are firmly established as an option due to ease of accessibility, they also concluded that print books offer greater appeal to most readers in certain situations.

1

 Mark for Review

Which choice best describes data from the chart that supports Zhang and Kudva's finding?

(A) A large majority of readers seeking immediate access to a book preferred the electronic option, with less than 25% of readers opting for print.

(B) The percentage of readers who choose a format based on the variety of titles available was about 50% for both print books and e-books.

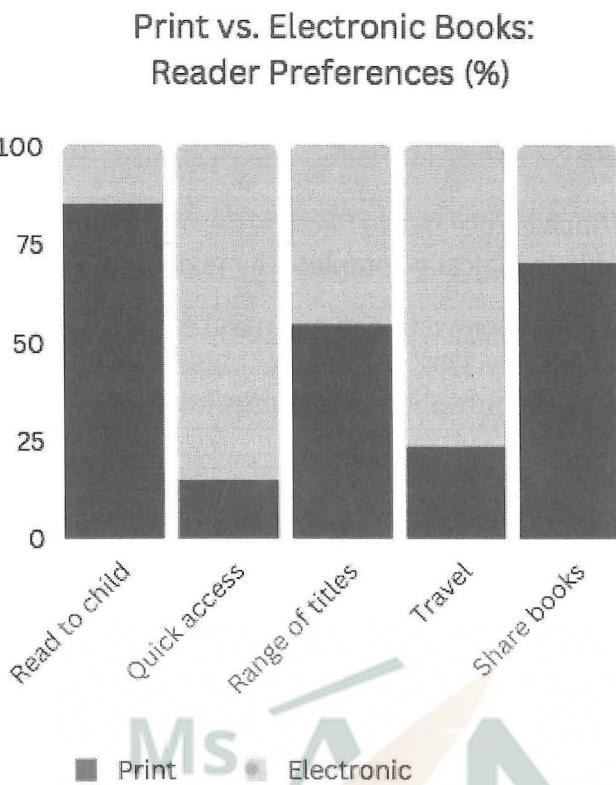
(C) More than 75% of readers preferred print books for reading to a child, and more than 60% preferred print books for sharing with other readers.

(D) When concerned about quick access or reading during travel, most readers preferred books in the same format.

The wording of the last sentence is key because it tells us what the researchers concluded: most readers—that is, **more than 50%**—prefer print books (dark gray bar) sometimes. Any answer that contradicts this idea or that has a different focus can be eliminated.

- (A) can be eliminated because the focus is on a situation in which readers prefer e-books.
- (B) doesn't fit because the focus is on a situation in which the numbers are roughly equal.
- (D) doesn't provide enough information to judge, although it is reasonable to assume that most readers who were traveling or seeking quick access to a book would want the electronic version.

(C) is a match, citing situations in which a clear majority of readers (75% and 60% respectively) prefer print books. It's almost certainly the right answer, but we're going to look at the graph to be safe.



Despite steady gains in readership and overall popularity, e-books are hardly positioned to take over print books. Rather, the two types of media complement each other, providing the same content in different forms. Print books and e-books each have unique attributes and serve distinct purposes, which vary by demographic and situational factors. Researchers Yin Zhang and Sunali Kudva used data from the National Reading Habits Survey to examine book-format preferences in a variety of situations. Although the pair found that e-books are firmly established as an option due to ease of accessibility, they also concluded that **print books offer greater appeal to most readers** in certain situations.

Yes, the print-book bars (dark gray) for “Quick access” and “Travel” are both much smaller than the e-book bars (light gray) on top. That indicates that a much smaller percentage of readers prefer e-books in these situations. (D) can thus be conclusively eliminated, making (C) correct.

1

█ Mark for Review

Which choice best describes data from the chart that supports Zhang and Kudva’s finding?

- (A) A large majority of readers seeking immediate access to a book preferred the electronic option, with less than 25% of readers opting for print.
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- (C) More than 75% of readers preferred print books for reading to a child, and more than 60% preferred print books for sharing with other readers.
- (D) When concerned about quick access or reading during travel, most readers preferred books in the same format.

**Example #3**

Now back to a science passage. Once again, we're going to start by ignoring the graph entirely.

MRSA—*Methicillin-resistant Staphylococcus aureus*—is a type of bacteria that is frequently responsible for hospital-acquired infections and is known for being exceptionally resistant to common antibiotics. When a group of these medications were compared in terms of their ability to cure MRSA infections versus a variety of other infections, researchers found that an antibiotic could demonstrate a high level of general effectiveness but that the same medication could be significantly less effective in combatting MRSA. For example, \_\_\_\_\_

1

Mark for Review

Which choice most effectively uses data from the table to logically complete the text?

- (A) Erithromycin had a general effectiveness of nearly 32%, whereas its MRSA effectiveness was only about five points lower.
- (B) Whereas Mupirocin was around 17% less effective against MRSA than against general infections, the gap for Clindamycin was only about 14%.
- (C) Only Vancomycin was fully effective in combatting both general and MRSA bacteria.
- (D) Rifampicin showed a general effectiveness rate of more than 85%, whereas it was just over 60% effective against MRSA.

The key piece of information occurs in the sentence before the blank, which tells us that the same antibiotic can show very different effectiveness rates in general vs. against MRSA.

As a result, the correct answer must fulfill two conditions:

- 1) It must mention just one antibiotic.
- 2) It must include a statistic indicating a significant difference between general effectiveness and effectiveness against MRSA.

On that basis:

- We can eliminate (A) because 5% indicates a small gap.
- We can eliminate (B) because it compares two different medications.
- We can eliminate (C) because the effectiveness rates of Vancomycin were the same.

That leaves (D), which correctly cites an example of a single drug with a large difference (>25%) in effectiveness.

For the record, this is what the entire question looks like:

Antibiotic	General Effectiveness %	MRSA Effectiveness %
Erythromycin	31.94	26.92
Vancomycin	100	100
Mupirocin	90.28	73.08
Penicillin	5	0
Clindamycin	83.33	69.23
Rifampicin	86.11	61.54

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1  Mark for Review

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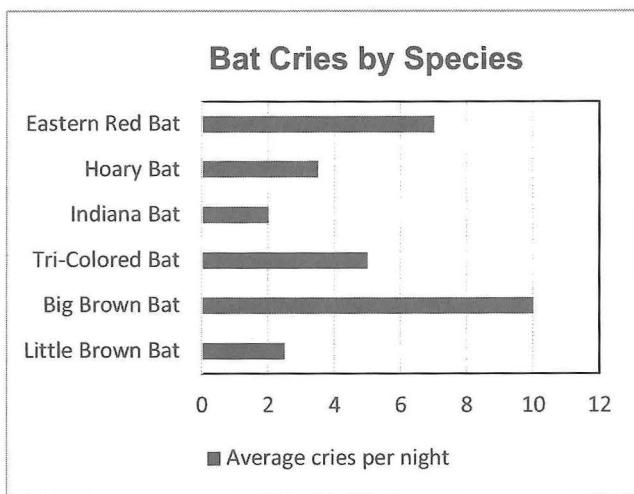
We could, of course, double-check (D) against the table, in which case we would see that the information is indeed cited accurately. But given that this answer is the only option that fulfills the requirements specified in the question, it must be correct regardless.

Note that all of the answer choices provide accurate descriptions of information in the graph, so if you looked only at the answers and the graph, you would have no way of determining the correct option.

Alternately, you might start by checking (A), notice that it was consistent with the graph, and choose that answer without bothering to check the others. **But to reiterate: an answer can accurately summarize information from the chart and still be wrong.**

If, on the other hand, you started with the passage and the question, you would avoid that trap completely and focus only on the relevant information from the start.

## Exercise: Graphs and Charts



A student studying the presence of white-nose syndrome, a disease that has decimated bat populations across North America since 2007, examined data about the number of bats in a protected area. Because bats live in the dark and their cries are inaudible to people, biologists must use acoustic detectors to record their sounds and then analyze them to identify the species present in a given location. Observing that the highest number of cries came from big brown bats (*Eptesicus fuscus*), the student concluded that brown bat species were not affected by the disease.

1

 Mark for Review

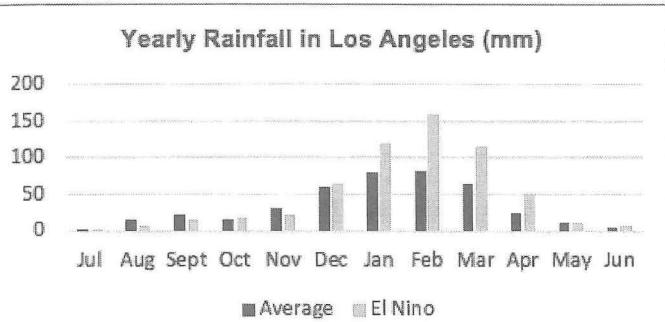
Which statement best describes data from the graph that would undermine the student's conclusion?

- (A) No bat species emitted more than 10 cries on average per night.
- (B) The number of cries from little brown bats was among the lowest of any species.
- (C) More cries were recorded for tri-colored bats than for hoary bats.
- (D) Eastern red bats were more vocally active than big brown bats.

2

 Mark for Review

Which choice uses data from the graph to logically complete the text?



El Niño is a climate pattern in which water in the Pacific Ocean near the equator becomes hotter than usual, affecting the atmosphere and weather around the world. Although El Niño climate conditions are unpredictable, they typically occur every few years and can change the weather in the United States, particularly in the southern states and in California. Climatologists have found that although El Niño years do not bring heavy rains every month, the difference in rainfall during the winter in El Niño years can be much greater than the difference during other seasons. Los Angeles, for example, receives around 15mm of rain on in May on average and during El Niño years, whereas \_\_\_\_\_

- (A) 5mm more rain than average falls in October when El Niño is present.

- (B) over 100 mm of rain falls in January during El Niño years.

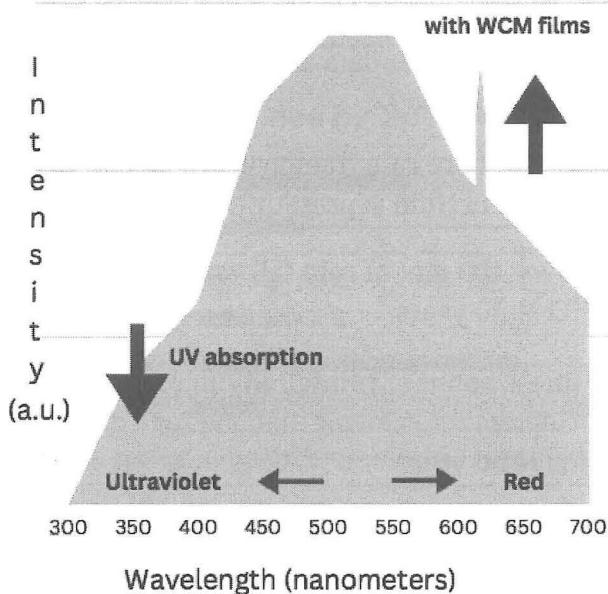
- (C) the amount of rainfall in August and September is lower than average during El Niño years.

- (D) the amount of rainfall in February during El Niño years is 100 mm higher than average.

3

 Mark for Review

Which choice uses data from the graph to support the researchers' conclusion?



Plants use photosynthesis to create energy from visible light from the sun. In addition to visible light, however, sunlight contains ultraviolet (UV) light. Researchers at the University of Hokkaido wondered whether it would be possible to provide plants with additional visible light by employing a wavelength converting material (WCM) capable of transforming UV light into red light. They created a thin-film WCM coating and applied it to clear plastic sheets, which were placed next to Swiss chard plants. A control group used sheets without the coating. In the summer, when sun irradiation was strong, no significant difference was observed between the two groups. In winter, however, the plants with the WCM films were significantly taller and contained more biomass after 63 days as compared to the control group. The researchers concluded that this accelerated growth was caused by the increased supply of red light provided by the WCM films.

- A Light that is less than 400 nanometers long had a much lower level of intensity than light that is more than 450 nanometers long.
- B Light ranging from 500 to 550 nanometers had the highest level of intensity.
- C The intensity of light waves more than 600 nanometers long that passed through the films increased to nearly peak levels.
- D UV absorption declined steeply in light waves that are less than 450 nanometers.

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Study	No. of Participants	Sample
Erickson, 2010	39	Young adults, 18-28
Basek, 2011	20	Older adults, avg. 70.1
Vo, 2011	34	Young adults, 18-22
McGarry, 2013	7	Older adults, avg. 85
Kühn and Gallinat, 2014	62	Young adults, avg. 28.4
Szabo, 2015	56	Adults, avg. 36.8
Zhang, 2015	45	Adolescents, avg. 16.9
Takeushi, 2016	189	Children, 5-16
Takeushi, 2016	240	Children, avg. 11.1

Despite the sensationalist claims about the effects of video games on children's development that regularly appear in the media, a growing body of research purports to demonstrate that game players outperform non-gamers on a range of cognitive measures, and some studies suggest that the skills acquired through gaming can be transferred to real-world situations. However, these studies employ a variety of methodologies, criteria, and types of participants. Marc Palaus and colleagues at Oberta University in Spain conducted a review of 116 studies, aiming to better understand the relationship between gaming and cognitive development. While they concluded that it is possible to establish links between video games and skills involving attention, cognitive control, and visuospatial processing, they also observed that the lack of standardization could contribute to inconsistencies in the findings of similar studies.

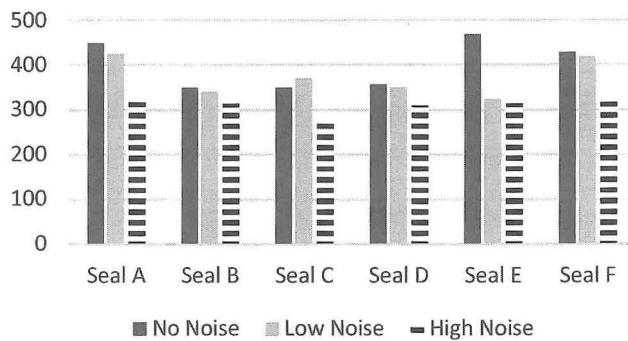
4

 Mark for Review

Which choice most effectively uses data from the graph to support the researchers' observation?

- (A) The studies run by Takeushi relied on larger sample sizes and involved younger participants than any of the other studies.
- (B) Few of the studies included participants under the age of 18.
- (C) Each study focused on participants in a particular age range and did not include members that were much older or younger.
- (D) The participants in the studies conducted by Erickson, Vo, and Kühn and Gallinat were all under the age of 30.

Average Fundamental Frequency of Seal Pup Calls (Hz)



Seals are among the few mammals other than humans that are capable of learning new types of vocalizations. Whereas it is well established that adult harbor seals can acquire new vocal patterns, until recently this phenomenon had never been studied in pups. In 2021, researchers at the Max Planck Institute for Psycholinguistics and a group of colleagues conducted a study in which they played a series of pre-recorded sounds for a group of harbor seal pups ranging from one to three weeks old. They found that the baby seals were able to modify their vocalization patterns: overall, the pups lowered the fundamental frequency (FO) of their calls in response to increased noise. In some cases, the response was highly pronounced, with the same animal emitting vocalizations at much lower frequencies in high noise than in low noise.

5

Mark for Review

Which choice most effectively uses data from the table to support the researchers' finding?

- (A) Seal B emitted vocalizations of 330 Hz in low noise and 300 Hz in high noise.
- (B) The fundamental frequency of Seal A's vocalizations in high noise was 100 Hz lower than in low noise.
- (C) Whereas the fundamental frequency of Seal A's call was 125 Hz lower in high noise than in no noise, the frequency of Seal B's call dropped by less than 50 Hz.
- (D) In both low and high noise, the fundamental frequency of Seal E's call was around 150 Hz than it was without noise.

## Answers: Graphs and Charts

### 1. B

Although it may look complicated, this question is actually quite straightforward. What is the student's conclusion? That *brown bat species were not affected by [white-nose syndrome]* because the highest average number of cries recorded came from big brown bats. If you look at the graph, you can see that there are actually two brown bat species listed, and the number of cries for the other species (little brown bat) is at the very low end—a finding that would imply some brown bats are in fact affected. That is what (B) says, so it is correct. All of the other answers are off-topic.

### 2. D

Although the passage is fairly long, the key information—as usual—appears at the end. You cannot just read the last sentence, however: it includes the transition *for example*, which means that you need to back up and find the idea that the sentence is illustrating. You'll find it in the previous sentence, which states that although El Niño does not result in consistently heavy rains throughout the year, *the difference in rainfall during the winter in El Niño years can be much greater than the difference during other seasons*. Los Angeles is then cited as an example of a city where this is the case. The last sentence indicates that average and El Niño rainfall are the same in May (in a season other than winter), and the word *whereas* before the blank indicates that the remainder of the sentence must describe the opposite—a winter month in which the difference between average and El Niño rainfall is large. The correct answer must therefore include a comparison between *El Niño rainfall* and *average rainfall*.

(B) does not include a comparison, so this answer can be eliminated immediately. Be careful with (A): this answer does mention a month in which El Niño is associated with more rain than average, but 5mm is a very small amount, and the correct answer must involve an amount that is *much greater*. (C) does not fit because the correct answer must involve months in which El Niño rainfall is higher, and there is also no information about the size of the differences. (D) correctly cites an example of a winter month (February) in which El Niño is associated with rainfall that is much higher than the average (150 mm).

### 3. C

Don't be intimidated by the seeming complexity of the graph—this question is much easier than it looks. What is the researchers' conclusion? You'll find it in the last sentence: the accelerated growth of the plants with WCM films *was caused by the increased supply of red light*. The correct answer must support the idea that the films increased the red-light supply.

**Shortcut:** (D) is the only answer that mentions the films, so start by checking it. Indeed, the fact that the light that passed through the films increased to “peak levels” of intensity in the “red” area of the graph directly illustrates the idea that the films caused the plants to receive more red light. (D) is thus correct. The other answers include information about light wavelength, intensity, and absorption but do not explicitly mention the effect of the films.

**4. A**

What is the researchers' observation? That *the lack of standardization [among studies] could contribute to inconsistencies in the findings of similar studies*. The correct answer must therefore mention a factor that varies from study to study and include a comparison of some type. The words *Each study* in (C) and *all* in (D) indicate that these answers are discussing factors that remain the same across studies, so both choices can be eliminated. (B) is off-topic: even though the studies involve video games, the relative lack of children among the participants is not the issue indicated by the passage. Only (A) mentions an inconsistency that illustrates the researchers' observation: the studies run by one of the participants differed noticeably from the other studies in that they involved far more participants. In other words, it shows that the studies were not standardized.

**5. B**

What is the researchers' finding? It appears in the last sentence: the seal pups changed their vocalizations in response to the sounds, and in some cases, the same animal might produce vocalizations with much lower fundamental frequencies in high noise than in low noise. The correct answer must therefore focus on one animal only and indicate a large gap in fundamental frequency between low and high noise. (C) makes a comparison between two seals, so it can be eliminated automatically. Be careful with (A): it does compare the frequencies in low and high noise, but the gap is fairly small (30 Hz). (D) is likewise incorrect because the correct answer must cite a large difference in the responses to the two noise levels, and here it is very similar. Only (B) offers an example of a seal whose vocalizations showed a large gap (100 Hz) between low and high noise.



# 10

## Paired Passages

While the digital SAT will consist primarily of single short passages accompanied by one question, it will also contain a set of short paired passages (“Text 1” and “Text 2”) that present alternate viewpoints or information about the same topic. These passages will be accompanied by a question asking about the relationship between them.

In previous versions of the exam, and mostly likely in this version as well, the most common relationship between the passages was **disagreement**. However, the two authors—or figures mentioned in one or both of the passages—may **also agree** on certain points. As a result, you must be able to distinguish between aspects of the topic on which the two opinions overlap and those where they differ. **Correct answers can involve areas of both agreement and disagreement.**

In addition, answers to paired-passage questions may depend on an easily overlooked detail in one or both passages. Sometimes that detail will be located in a key place (first sentence, last sentence, close to a major transition), but sometimes it will not. Because you may not remember the key information, you should always return to the passages as needed. You should also make sure not to eliminate any answer you’re uncertain about until you have confirmed that it is incorrect.

If you are a strong reader who handles this type of writing well, you can probably approach paired passages much as you approach the other type of passages. However, **if you are not aiming for a very high score and struggle disproportionately with this question type, you should plan to skip it initially and only return after you have answered everything that you can answer easily.**

Even though both passages will be very short, they may still be dense and discuss unfamiliar subjects. In order to avoid confusion, **you should aim to deal with the smallest amount of information possible at any given time.** The more work you do in terms of determining arguments upfront, the less work you’ll need to do later. You can move very quickly through the steps outlined on the following page, but for maximum effectiveness, you should not skip any of them.

### How to answer paired-passage questions:

- 1) Read Text 1: identify main point.
- 2) Read Text 2: identify main point.
- 3) Write the relationship.
- 4) Answer the question in your own words.
- 5) Look at the choices, and pick the one closest to your answer.



MS ANH DAY SAT 1600  
HOTLINE: 0967 104 204

It is important to **determine the relationship** between the passages upfront because the question will always test your understanding of that connection, typically asking you what the author of one passage would “say about” or “respond to” an idea in the other.

Once you have this information, you’ve essentially answered the question before you’ve even looked at it. If the authors of the two passages disagree only, the correct answer will be negative. You can thus eliminate positive and neutral options, which can often be identified from the first few words of the answer. Furthermore, when answers include more detailed information about the passages, you may sometimes be able to use the main points themselves.

You can also use your knowledge of the test’s structure to help you make educated guesses. For example, take a look at the question below. We don’t even need a set of passages here—our only concern is how to use the framework of the test to predict the most probable answer.

1

Mark for Review

How would Chang (Text 2) most likely respond to the researchers’ theory about sustained stress in Text 1?

- |   |   |
|---|---|
| Ⓐ | It is not convincing as an explanation, despite findings that may seem to support it. |
| Ⓑ | It is generally accurate but contains some questionable elements.                     |
| Ⓒ | It can only be applied in certain situations.   |
| Ⓓ | It may seem reasonable, but the researchers’ results do not support it.               |

Since passages generally disagree, we can assume that the correct answer will be negative. (B) is positive (“generally accurate”), so it’s probably wrong. (C) is negative, but it contains the extreme word “only,” so we’ll eliminate it as well. Between (A) and (D), (D) is more negative, so we’re going to give a slight edge to that option. Besides, when there’s a mismatch between theory and practice, it’s usually because the theory sounds good but doesn’t work in practice—not the other way around, as (A) indicates. At this point, we could go back to Text 2 and check for a mention of findings that would support (D). If that didn’t work, we would go to (A), then (C).

Now let's look at a full-length example.

### Text 1

Our food now travels an average of 1,500 miles before ending up on our plates. This globalization of the food supply has serious consequences for the environment, our health, our communities and our tastebuds. Much of the food grown in the breadbasket surrounding us must be shipped across the country to distribution centers before it makes its way back to our supermarket shelves. Because uncounted costs of this long-distance journey (air pollution and global warming, the ecological costs of large-scale monoculture, the loss of family farms and local community dollars) are not paid for at the checkout counter, many of us do not think about them at all.

### Text 2

Just how much carbon dioxide is emitted by transporting food from farm to fork? Pierre Desrochers and Hiroko Shimizu cite a comprehensive study done by the United Kingdom's Department of Environment, Food and Rural Affairs (DEFRA) which reported that 82 percent of food miles were generated within the U.K. Consumer shopping trips accounted for 48 percent and trucking for 31 percent of British food miles. Air freight amounted to less than 1 percent of food miles. In total, food transportation accounted for only 1.8 percent of Britain's carbon dioxide emissions.

1

 Mark for Review

Based on the texts, how would Desrochers and Shimizu (Text 2) most likely describe the view presented in Text 1?

- (A) It is strongly supported by data compiled by DEFRA.
- (B) It overstates the effects of transporting food on the environment.
- (C) It appears justified by preliminary findings but has not yet definitively proven.
- (D) It is highly implausible because most consumers do not consider the source of their food.

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Let's start by breaking things down.

**Topic:**

Transporting food long distances to sell.

**1) Main Point, Text 1:**

Transporting food long distances harms environment.

**2) Main Point, Text 2:**

Transporting food long distances doesn't really harm environment.

**3) Relationship:**

Disagree.

**4) Answers:**

(A) Positive – eliminate it.

(B) Negative – keep it.

(C) Positive – eliminate it.

(D) Negative – keep it.

Now, be careful with (D). You might remember something about people not thinking about where their food comes from, but that's in Text 1. If you go back to Text 2, you'll find it says nothing about that idea.

Text 2 does, however, state that *food transportation accounted for only 1.8 percent of Britain's carbon dioxide emissions*, which stands in contrast to the doom-and-gloom environmental scenario presented in the first passage. Based on that statement, you can assume that Desrochers and Shimizu would consider the claim in Text 1 to be somewhat exaggerated, i.e., "overstated." That makes (B) correct.

### Exercise: Paired Passages

#### Text 1

By investigating interactions between tree species, scientists have found that trees leverage similarities and differences in their microbial “makeup” to recognize other trees of their own species, and that they preferentially share nutrients with them through their mycorrhizal network—the systems of roots and fungi that connect them. For example, Douglas Fir trees growing in the same plot have been shown to share more carbon among them than with trees of other species.

#### Text 2

The notion that trees send out resources to strengthen a community composed of members of their species is unlikely because groups that cooperate would need to win out over groups made up of competing individuals. According to plant ecologist Kathryn Flinn, while trees can sometimes facilitate each other’s growth, a forest does not function like a single organism: it includes a vast array of species with a constantly shifting variety of interactions, both cooperative and competitive.

1

Mark for Review

Based on the texts, what would Kathryn Flinn most likely say about the “Douglas Fir trees” in Text 1?

- Ⓛ Their mycorrhizal network is not fully understood.
- Ⓜ They function as if they were a single organism.
- Ⓝ They are also likely to compete among themselves for some resources.
- Ⓞ The amount of carbon they share will vary according to environmental conditions.

**Text 1**

In recent years, there has been an explosion of scientific research revealing precisely how positive feelings are beneficial. We know that they motivate people to pursue important goals and overcome obstacles, offer protective benefits against the effects of stress, improve our social connectedness, and even ward off illness. The science of happiness has spawned a small industry of motivational speakers and research enterprises. Clearly, happiness is popular.

**Text 2**

Happiness, it turns out, has a cost when experienced too intensely. For instance, we often are told that happiness can open up our minds to foster more creative thinking and help us tackle problems or puzzles. This is the case when we experience moderate levels of happiness. But according to Mark Alan Davis's 2008 analysis of the relationship between mood and creativity, when people experience intense and perhaps overwhelming amounts of happiness, they no longer experience the same creativity boost. What's more, psychologist Barbara Fredrickson has found that too much positive emotion—and too little negative emotion—makes people inflexible in the face of new challenges.

2

**Mark for Review**

Based on the texts, what would Mark Alan Davis most likely respond to what “we know” in Text 1?

- (A) By emphasizing the connection between creativity and negative emotions
- (B) By acknowledging the benefits of positivity in moderation but cautioning against it in excess
- (C) By questioning the motives of the participants in the happiness industry
- (D) By challenging the connection between positive feelings and personal fulfillment

**Text 1**

Until recently, the concrete psychological effects of fiction on individuals and society were largely a matter of speculation. However, research in psychology is beginning to provide answers about how fiction can expand our moral imaginations. For example, a series of studies conducted by Keith Oatley, Maja Djikic, and Raymond Mar found that fiction measurably improves people's ability to guess others' mental states by looking at only their eyes. They interpreted this finding as evidence for the idea that fiction allows people to connect with something larger than themselves.

**Text 2**

An empirical approach to the question of whether fiction improves empathy was taken by David Kidd and Emanuele Castano, who conducted five experiments in which participants read fictional excerpts and then responded to images of facial expressions. The results showed that the participants had improved their theory of mind (ToM), or their ability to infer the thoughts and emotions of others. As Kidd points out, however, highly developed ToM does not always translate into more ethical behavior: the ability to manipulate someone, for instance, also requires a heightened understanding of other people's emotions.

3

 Mark for Review

Based on the texts, how would Kidd and Castano most likely respond to Oatley, Djikic, and Mar in Text 1?

- By acknowledging the importance of connecting with others
- By conceding that fiction can allow people to transcend their everyday lives
- By pointing out that empathy can have negative as well as positive effects
- By emphasizing that individuals with high ToM may sometimes prefer non-fiction

**Text 1**

On May 21, 2019, midsize black holes were detected for the first time when the U.S.-based Laser Interferometer Gravitational-Wave Observatory (LIGO) and its European counterpart Virgo captured a tremor from a pair of black holes merging deep in space. Priyamvada Natarajan, an astrophysicist who has long worked on black-hole growth models, believes that black holes this size are born in nuclear star clusters, dense collections of stars found near galactic centers. These holes sweep through the cluster, adding gas and dust, until they settle at a single location and cease to expand.

4

**Mark for Review**

Based on the texts, what would Imre Bartos most likely say about Priyamvada Natarajan's belief in Text 1?

- A It underestimates midsize black holes' spin.
- B It misstates the time when the merger occurred.
- C It relies too heavily on data from LIGO/VIGO.
- D It overlooks the significance a crucial statistic.

**Text 2**

Imre Bartos and other researchers working on "hierarchical merger" models, in which black holes grow by eating one another, focus on one major data point in the LIGO/Virgo findings. The angular momentum, or "spin," of a black hole ranges from 0 to 1. When two black holes of similar size combine, the resulting black hole usually has a spin of around 0.7. Significantly, the two black holes involved in the merger recorded by LIGO and Virgo had 0.69 and 0.73 respectively, suggesting that they both might have formed in previous mergers.

## Answers: Paired Passages

### 1. C

What does Text 1 say about Douglas Fir trees? *When they grow in the same plot, they share more carbon among them than with trees of other species.*

Next, what is Kathryn Flinn's position (Text 2)? She asserts that while trees *can sometimes help facilitate each other's growth*, relationships among organisms in forest are *constantly shifting* and include both cooperation and competition.

Logically, how would Flinn respond to the observation that Douglas firs seem to "prefer" sharing carbon with members of their own species? Given her perspective that species both cooperate and compete, she would probably respond to an example of cooperation by suggesting that the Douglas firs also compete at times. And that is exactly what (C) says.

(A) and (D) are irrelevant to Flinn's discussion, and (B) is directly contradicted by her assertion that *a forest does not function like a single organism.*

### 2. B

What does Text 1 state that "we know"? If you scan the passage for these words, you'll find them at the beginning of the second sentence, which tells us that positive feelings are associated with a host of happy outcomes (motivation to achieve goals, overcome obstacles, protect against stress, etc.).

Next, what position does Mark Alan Davis (Text 2) hold? That *when people experience intense and perhaps overwhelming amounts of happiness, they no longer experience the same creativity boost*. In other words, too much positivity is not a good thing.

Logically, how would Davis respond to the example from Text 1? Presumably by reiterating his position that while moderate amounts of happiness are helpful, too much of it is not, i.e., "by acknowledging [its] benefits but cautioning against it in excess." (B) is thus correct.

(A) is incorrect because Davis's position on negative emotions is never mentioned. (C) is beyond the scope of what can be inferred from Davis's position.

Be careful with (D): Davis is only mentioned in relation to creativity, not "personal fulfillment," and he does not deny the beneficial effects of happiness—he only indicates that too much of it can have negative effects.

**3. C**

What is the position of Oatley, Djikic, and Mar in Text 1? Fiction *improves people's ability to guess others' mental states* and improves their ability to empathize.

What is the position of Kidd and Castano in Text 2? They agree that fiction improves people's understanding of others' mindsets but point out that these skills can be used in negative ways.

Logically, how would Kidd and Castano respond to the position in Text 1? That position only emphasizes the positive aspect reading fiction, so they would presumably point out the negative one. And that is what (C) says.

(A) is outside the scope of the passages, which focus on the effects of fictions rather than relationships in general. (B) is incorrect because Kidd and Castano only discuss the effects of fiction on theory of mind, not on "transcend[ing] everyday lives." (D) is entirely off-topic; neither passage discusses or implies anything about the effects of reading non-fiction.

**4. D**

What is Priyamvada Natarajan's belief in Text 1? That *black holes this size* (i.e., of medium size) come from nuclear star clusters and sweep through them gathering gas and dust.

What is Imre Bartos's position (Text 2)? *Black holes grow by eating one another*, a view that is based on an analysis of black holes' spin – a specific statistic that falls within a narrow range.

Logically, how would Bartos respond to Natarajan? Because it is not mentioned that Natarajan takes "spin" into account, Bartos would presumably focus on the absence of that figure, i.e., "a crucial statistic." That makes (D) correct.

(A) is incorrect because Natarajan's model does not include spin at all. (B) is incorrect because Bartos does mention when the merger occurred. (C) is incorrect because Bartos's model, not Natarajan's, is mentioned as relying on specific data from LIGO/VIGO.