The SAT®

Practice Test #11

ANSWER EXPLANATIONS

These answer explanations are for students taking the digital SAT in nondigital format.

Reading and Writing

Module 1
(33 questions)

QUESTION 1

Choice A is the best answer because it most logically completes the text's discussion of Ezra Pound's poetry. In this context, "comprehend" would mean to understand or grasp the meaning of something. The text describes Pound's poetry as "dense" and "experimental," with many references that readers may not understand. The text also states that many readers may not even be able to identify a poem's subject. This context clearly suggests that readers struggle to understand Pound's poetry as a result of its complexity and obscure references.

Choice B is incorrect. To say that Pound's poetry is "hard to dislike" would suggest that people generally like it, but the text doesn't focus on how likeable or enjoyable the poems are; rather, it focuses on how challenging many readers find it to understand them. *Choice C* is incorrect. To say that Pound's poetry is "hard to interrupt" would mean that it is hard to stop or break into it while it's being read or recited, but the text doesn't discuss any such breaks; instead, the text focuses on the challenge of understanding the content of Pound's poems. *Choice D* is incorrect. In this context, "overlook" would mean look past or fail to notice, so to say that Pound's poetry is "hard to overlook" would mean that it is very likely to be noticed. The text focuses on the difficulty people have in understanding Pound's poems when reading them, not how noticeable his poetry is in the first place.

QUESTION 2

Choice C is the best answer because it most logically completes the text's discussion of Bali's *subak* water management system. In this context, "interconnected" would mean joined or linked together. The text describes the various components of the subak system—"terraces, canals, and water temples"—and then states that they are "joined together into a single cohesive unit." This context indicates that these elements are connected with one another in an integrated system.

Choice A is incorrect because "outmoded" would mean outdated or no longer in use. While the text does indicate that the subak system has "rich cultural, philosophical, and historical significance," the text doesn't suggest that the subak system is obsolete or not currently used. *Choice B* is incorrect because "informal" would suggest that the subak system lacks structure or organization. The text contradicts this by describing a complex system with specific components ("terraces, canals, and water temples") that are "joined together into a single cohesive unit," indicating formal organization rather than informality. *Choice D* is incorrect because "optional" would suggest that the various elements of the subak system are not necessary or required. The text indicates the opposite by stating that these elements are "joined together into a single cohesive unit," suggesting that each component plays a necessary role in the functioning of the integrated system.

QUESTION 3

Choice D is the best answer because it most logically completes the text's discussion of Georgi Vladimov's novel *Faithful Ruslan*. In this context, "suppress" means to prevent something, such as a book, from being accessed by the public. The text indicates that the novel was circulated secretly within the Soviet Union, a stratagem that was necessary because of the government's efforts to suppress the book, or prevent it from being circulated and read.

Choice A is incorrect because in this context, "replicate" would mean to copy or reproduce a book, and this meaning wouldn't make sense in the text's discussion of *Faithful Ruslan*. If the Soviet government had attempted to replicate Vladimov's novel, there would be no reason for copies to circulate "in secret," since the government would be actively making more copies available, not restricting access. *Choice B* is incorrect. Although a repressive government might well "critique" a novel, or evaluate it negatively, simply critiquing one wouldn't necessarily lead to copies of it circulating "in secret." Instead, the text suggests that the Soviet government took decisive action against *Faithful Ruslan* that necessitated its underground circulation and did not merely offer criticism of the novel. *Choice C* is incorrect because "import" means to bring a product, such as a book, into a country from elsewhere. However, the text suggests that copies of *Faithful Ruslan* were already present in the Soviet Union and that the government was trying to restrict their circulation rather than increasing access to the novel by importing copies from another country.

QUESTION 4

Choice D is the best answer because it most logically completes the text's discussion of the initial spread of silk beyond China. In this context, "contradicted" means opposed or challenged. The text indicates that new archaeological evidence about silk use in South Asia has done something to a long-held thought about the initial spread of silk. According to the text, the new evidence reveals that people used silk in South Asia 1,000 years before the second century CE, which directly challenges the previous belief that silk first spread beyond China in the second century CE.

Choice A is incorrect because the text indicates that an archaeological finding about silk use has done something to a long-held thought about the initial spread of silk, and it wouldn't make sense to suggest that the finding could have "investigated," or examined, a belief; evidence can't examine anything. *Choice B* is incorrect because the text indicates that an archaeological finding about silk use has done something to a long-held thought about the initial spread of silk, and it wouldn't make sense to suggest that the finding could have "misinterpreted," or incorrectly understood, a belief; evidence can't try to understand anything. *Choice C* is incorrect. In this context, "anticipated" would mean expected or predicted. The text indicates that a new archaeological finding about silk use has done something to a long-held thought about the initial spread of silk, and a new finding can't predict a belief that is already established.

QUESTION 5

Choice A is the best answer because it most logically completes the text's discussion of Scherezade García's mural *Blame It on the Bean: The Power of Coffee*. In this context, "unassuming" means ordinary or unremarkable. The text draws a contrast between a "casual description" of the mural's ordinary location (a coffee shop) and subject matter (three women drinking coffee)—details that would make it seem relatively unambitious—and a characterization of the painting as a "dynamic meditation" on gender and colonialism deserving of "serious attention." This context suggests that the mural has significant depth and complexity, but a superficial description of it might make the mural seem ordinary and unremarkable—that is, unassuming.

Choice B is incorrect because in this context, "shrewd" would mean clever or astute, and there's nothing in the text to suggest that a casual yet misleading description that only mentions the apparent simplicity of the mural's location and subject matter would make the mural seem particularly clever or astute. Though it's possible that the text's assertion that the mural is a "complex, dynamic meditation" demanding "serious attention" might convey the idea that it's a particularly clever or astute—that is, shrewd—artwork, the text wouldn't suggest that a casual description that fails to account for the work's complexity would likewise characterize the work as shrewd. *Choice C* is incorrect because in this context, "incongruous" would mean unsuitable for its surroundings or internally inconsistent. The "casual description" presented in the text indicates that the painting is housed in a coffee shop and depicts women drinking coffee, which would imply that the mural may in fact be well suited to its surroundings, not that it's ill suited to its location. Moreover, none of the details mentioned in this description would suggest that the painting contains internal inconsistencies of any kind. *Choice D* is incorrect because in this context, "pretentious" would mean expressive of exaggerated importance, which wouldn't fit the contrast established in the text between a "casual description" of the painting and the work's deeper themes. Though the text argues that the painting is worthy of "serious attention," which would suggest its importance, the text doesn't suggest that the casual description would by contrast imply that the painting's importance is exaggerated. Rather, by merely mentioning the mural's relatively ordinary location and subject matter without reference to this complexity, the casual description conveys that the painting is more unassuming and understated than it actually is, not that it expresses an exaggerated self-importance.

QUESTION 6

Choice B is the best answer because it most accurately describes how the underlined sentence functions in the text as a whole. The text establishes that Jam hears Bitter's studio door open early in the morning, when it is still dark. Jam then listens to her mother's footsteps, which seem to create a song that runs through the floorboards. The text indicates that the sound of Bitter's footsteps convey to Jam that Bitter is done painting. The underlined sentence then builds on this idea, stating explicitly that Bitter's feet sing the news of her completion of a painting. Thus, the sentence stating that "Bitter's feet were singing the news" further emphasizes that Bitter's footsteps themselves reveal information to Jam.

Choice A is incorrect because the text provides no evidence that Jam prefers music to art. While the underlined sentence uses musical imagery to describe the vibrations Jam feels, this is figurative language that is describing the footsteps' vibrations; it isn't an indication of Jam's personal interests. *Choice C* is incorrect because the text doesn't suggest that Bitter herself sings while working on paintings. The references to singing in the text are figurative descriptions of how Bitter's footsteps sound or feel to Jam, not literal statements about Bitter singing. *Choice D* is incorrect because the underlined sentence only describes Jam's perception of her mother's footsteps. It doesn't provide any details about Aloe or his reaction to the painting; in fact, the text doesn't mention Aloe seeing the painting at all.

QUESTION 7

Choice B is the best answer because it most accurately describes the main purpose of the text, which is to showcase how Adam's flexibility and consideration strengthen his relationship with his great-uncle Richard. The text begins by stating that the meeting between the two characters is proceeding well and then describes Adam's thoughtful behavior: noticing his great-uncle's interest in the ship, Adam suggests staying on board overnight and expresses willingness to accommodate his great-uncle's schedule and destination preferences. The text goes on to describe the positive effect of Adam's thoughtfulness and flexibility, indicating that Adam's "affectionate willingness" to accommodate Richard's preferences "quite won the old man's heart." The text concludes by suggesting that Adam's ability to anticipate his great-uncle's wishes and willingness to accommodate them result in the rapid development of affection and intimacy between them, stating that they soon became "almost like old friends." Therefore, the text's main purpose is to demonstrate how Adam's flexibility and consideration strengthened his and his great-uncle's relationship.

Choice A is incorrect. Although the text explains Adam's reason for suggesting that Richard spend the night on the ship rather than finding lodging on land (which is that Adam perceives Richard's interest in the ship), this isn't the text's main purpose. Rather, Adam's suggestion about where to sleep for the night serves as an example of the consideration Adam shows toward Richard, and the text mentions it mainly to explain how an affectionate relationship developed so quickly between them. Moreover, the text only states that Adam encourages Richard to stay on the ship; it doesn't specify where Adam plans to spend the night. *Choice C* is incorrect because the text doesn't describe why Adam and his

great-uncle Richard are excited about their journey. While the text mentions that Adam is willing to "start at any hour and go anywhere," it provides no details about any planned journey, its destination, or even whether they will be continuing by ship or some other mode of transportation, nor does the text mention anything about either character's feelings of excitement about their plans. We learn only that Adam is accommodating about potential travel plans, not that either character is particularly eager about the journey itself. The text's main focus is on Adam and Richard's developing relationship, not on any anticipated travel experiences. *Choice D* is incorrect because the text doesn't show a contrast between initial wariness and later affection. On the contrary, the text begins by stating that the meeting between Adam and his great-uncle Richard has begun in an "auspicious," or promising, manner and is "proceed[ing] well," suggesting that Richard's impression is positive from the outset. There's no indication of any initial suspicion, caution, or reserve on Richard's part that later changes to affection. Instead, the text describes a consistently positive interaction that deepens from a good first impression into a stronger, more familiar relationship because of Adam's considerate behavior.

QUESTION 8

Choice D is the best answer because it most accurately describes how the underlined portion functions in the text as a whole. The text first establishes that in order to investigate visual perception of objects in dreams, LaBerge and team observed the eye movements of lucid dreamers (people who are aware of their dreaming as it occurs) when these participants signaled that they were in a dream state. The underlined portion then describes a finding that rests on a comparison: the way participants' eyes tracked objects in dream states was very similar to how sighted people track real objects when awake. Finally, the text states that the team concluded from this finding that objects in dreams are perceived as more than just products of imagination—implying that the team thinks the eye movements are an indication that the brain treats dream objects as more real than imaginary. Thus, the function of the underlined portion is to identify a circumstance that is comparable to one in the study and that helps justify LaBerge and team's conclusion, presenting the close similarity of visual tracking in wakeful and dreaming scenarios as support for the implicit idea that the brain perceives dream objects not as imaginary but as somewhat or fully real objects.

Choice A is incorrect because the text never presents LaBerge and team's initial hypothesis, only what question they were interested in studying and what they found. So although the underlined portion does present evidence, that evidence doesn't serve to undermine any hypothesis in the text. *Choice B* is incorrect because the text gives no indication that LaBerge and team changed the focus of their study at any point or that the finding described in the underlined portion (or any other finding) was unexpected or surprising. *Choice C* is incorrect. Rather than illustrating an implication of the main finding by LaBerge and team, the underlined portion only presents the finding itself, stating that the team found that the movements of lucid dreamers' eyes while dreaming were very similar to those of sighted people visually tracking objects while awake. The next part of the text indicates what the finding implied to the team but still doesn't offer a real-world example as illustration.

QUESTION 9

Choice D is the best answer because the critics mentioned in Text 2 would argue that negative reactions to controversial public art are not solely the result of the nature of the art itself. The claim in Text 1 suggests that public artworks tend to provoke backlash when they are not "aesthetically and conceptually bland." This implies that the content of public art alone can cause backlash. However, the critics in Text 2 offer a more nuanced explanation. They argue that norm-defying pieces of public art that are not "effectively integrated within their surroundings" are more likely to be judged harshly by the public. They also imply that a museum provides a context that prepares viewers to expect challenging art, while public environments that serve other purposes often do not. This indicates that the critics in Text 2 would contend that factors beyond the attributes of the art, like environment and presentation, play a significant role in how public art is received.

Choice A is incorrect because the critics in Text 2 do not argue that unconventionality is unrelated to public disagreement about a public artwork's merits. Rather, they acknowledge that norm-defying pieces do face unfavorable reactions, but they attribute such reactions to contextual factors like poor integration with the environment rather than dismissing the role of unconventionality entirely. *Choice B* is incorrect because the critics in Text 2 do not advocate for restricting public art to universally appealing works. Instead, they argue that better integration with the surroundings and situating the work in appropriate contexts could help norm-defying art be better received by passersby. *Choice C* is incorrect because the critics in Text 2 do not address whether civic leaders and community members are easily satisfied by norm-reinforcing art. The critics in Text 2 instead argue that installation and integration with the surrounding environment factor into how norm-defying art is received by the general public, rather than disputing how people respond to conventional art.

QUESTION 10

Choice C is the best answer because it presents a conclusion about increasing entrepreneurship in early adulthood that can be reasonably inferred from the text. The text explains that Andrés Hincapié investigated why young adults are less likely than older adults to start businesses and found that lack of knowledge of practical aspects of starting a business is a barrier. The text then states that Hincapié found that providing relevant informational resources greatly helps address that problem. Offering young adults practical information about how to start a business would be an example of providing relevant informational resources, so Hincapié would most likely say it is a promising way to increase early adult entrepreneurship.

Choice A is incorrect because creating social networks of young adults interested (but presumably inexperienced) in starting a business wouldn't involve a clear source of practical information for those young adults, and the text indicates that Hincapié identified offering relevant informational resources about starting a business as a way to significantly reduce the problem of young adults' low participation in entrepreneurship. *Choice B* is incorrect because encouraging young people to brainstorm business ideas wouldn't involve a clear source of

practical information for those young adults, and the text indicates that Hincapié identified offering relevant informational resources about starting a business as a way to significantly reduce the problem of young adults' low participation in entrepreneurship. *Choice D* is incorrect because providing young adults with training opportunities at existing businesses would give those young people exposure to businesses that already exist but not necessarily information about how to start a business, and the text indicates that Hincapié identified offering relevant informational resources about starting a business as a way to significantly reduce the problem of young adults' low participation in entrepreneurship.

QUESTION 11

Choice B is the best answer because it most accurately states the main topic of the text. The text begins by noting that few animals are known to spit, and then it focuses on Clare Jacobs's January 2022 observation of a gray seal spitting water at a white-tailed eagle. The text explicitly notes that this behavior had never before been observed in seals, highlighting that this was a previously unseen behavior. The text concludes with biologist Sean Twiss's hypotheses about why the seal might have been spitting. Thus, the main topic is the observation of a previously unseen behavior (spitting) of gray seals.

Choice A is incorrect because while the text does mention bird-watcher Clare Jacobs making an observation in southern England, bird-watching itself is not the main topic. The reference to bird-watching is incidental to the central focus of the novel behavior of a gray seal spitting water at an eagle. *Choice C* is incorrect because the text only mentions a white-tailed eagle as the target of a seal's spitting behavior; it doesn't provide any information about how these eagles typically behave when defending territory or interacting with other predators. *Choice D* is incorrect because the text doesn't discuss differences between gray seals and white-tailed eagles. While both animals are mentioned, the text is focused on the seal's unusual spitting behavior rather than comparing the two animals in any way.

QUESTION 12

Choice D is the best answer because it most accurately describes what is notable about Schmidt's behavior. According to the text, when the narrator's first wife admits she doesn't find art particularly compelling, Schmidt responds by wincing, sighing dramatically, and abruptly leaving dinner with an obviously false excuse about a remembered appointment. The narrator makes it clear that there is no actual appointment and that the excuse is merely a pretense. Through these actions—the physical reactions of wincing and sighing, followed by the transparent excuse to leave—Schmidt clearly communicates his disapproval of the wife without directly stating his feelings about her.

Choice A is incorrect because the text provides no evidence that Schmidt's theatrical behavior—wincing, sighing dramatically, and abruptly leaving dinner—is unique to situations involving the narrator and his first wife. The text describes only one interaction involving Schmidt, so there's no basis for determining

whether his dramatic reactions are typical of him in all situations or limited to this particular social context. *Choice B* is incorrect because nothing in the text suggests that Schmidt is typically mindful of his schedule or that forgetting appointments would be uncharacteristic of him. Rather, the text makes it clear that Schmidt hasn't actually forgotten an appointment at all—the narrator indicates that Schmidt's reason for leaving is an obvious fabrication, not a genuine instance of absentmindedness. *Choice C* is incorrect because the text doesn't mention any previous disagreement between Schmidt and the narrator's first wife about a particular painting or any other topic. The text presents what appears to be a spontaneous reaction by Schmidt to the wife's statement about not finding art compelling, not the continuation of an earlier conversation or dispute.

QUESTION 13

Choice A is the best answer because it accurately describes Sir Winston Day as he is portrayed in the text. The text indicates that Sir Winston's "features seemed moulded to adorn a bust, or possibly a stamp," suggesting that he appeared distinguished. But the text also indicates that his "actual achievements" during his long public service constitute an "enigma," or mystery, highlighting the point with a joke about Sir Winston's uninteresting memoirs (any information about his achievements past the first thirty pages "might as well have remained state secrets" since, it's implied, no one bothered to read that far). Thus, the text suggests that Sir Winston appears distinguished even though his known accomplishments, if any, are relatively few.

Choice B is incorrect because nothing in the text indicates that Sir Winston behaved dishonorably. Rather, the text indicates that his "actual achievements" during his long public service constitute an enigma, or mystery, suggesting that he may have done very little, not that what he has done was disreputable. *Choice C* is incorrect. Although the text says that Sir Winston's achievements that appear "after the thirty-page mark" in his memoirs "might as well have remained state secrets," this is a joke about the public's lack of interest in the memoirs, not a sincere claim that secrecy was intended. *Choice D* is incorrect because the text does not associate Sir Winston with modesty, nor does it suggest that he was a capable public servant. Rather, by indicating that Sir Winston's "features seemed moulded to adorn a bust, or possibly a stamp," the text suggests that Sir Winston's appearance communicated importance, not modesty. The text further indicates that his "actual achievements" during his long public service constitute an enigma, or mystery, suggesting that he may have done very little, not that he was particularly capable.

QUESTION 14

Choice D is the best answer because it most accurately states the main idea of the text. The text begins by explaining that most studies of ocean wave breaking have focused on traveling waves (those that move horizontally) but that McAllister et al. studied spike waves, which form when traveling waves moving in opposing directions intersect. The text establishes that while traveling waves break when

their steepness exceeds a critical threshold (limiting their height), McAllister et al. found that spike waves can exceed these constraints because factors like jet stability and cavity shape can mitigate the effects of steepness. Thus, the main idea of the text is that spike waves resulting from traveling waves intersecting in specific ways can reach heights greater than what would be expected based on the general properties of traveling waves.

Choice A is incorrect because it misrepresents the information in the text; the text indicates that McAllister et al. showed that jet stability and cavity shape (along with steepness) influence breaking in spike waves, not in traveling waves. Further, the information about specific influences is not the main focus of the text. *Choice B* is incorrect because it misrepresents the information in the text; the text indicates that McAllister et al. found that spike waves can pass the steepness threshold at which traveling waves break because factors like jet stability and cavity shape affect the breaking of spike waves, not because they've simply reached a critical threshold of steepness. *Choice C* is incorrect. Although the text does explain that spike waves can form when traveling waves intersect, it presents this as a known fact that McAllister et al.'s study was based on, not as something the researchers suggested. Further, the text indicates that spike waves can exceed a threshold that limits traveling wave height but doesn't focus on the idea that spike waves typically are higher than traveling waves.

QUESTION 15

Choice B is the best answer because it most effectively uses data from the graph to complete the sentence about which fuel has the highest energy density. Of the four bars in the graph, the highest (indicating the greatest energy density in MJ/L) is for POP biofuel. According to the graph, the energy densities of the fuels shown are approximately 40 MJ/L for POP biofuel, 36 MJ/L for gasoline, 34 MJ/L for jet fuel, and 23 MJ/L for ethanol.

Choice A is incorrect. The task is to find the fuel in the graph with the highest bar (indicating the greatest energy density in MJ/L), and jet fuel has the third-highest bar in the graph, not the highest. According to the graph, the energy densities of the fuels shown are approximately 40 MJ/L for POP biofuel, 36 MJ/L for gasoline, 34 MJ/L for jet fuel, and 23 MJ/L for ethanol. *Choice C* is incorrect. The task is to find the fuel in the graph with the highest bar (indicating the greatest energy density in MJ/L), and ethanol has the lowest bar in the graph, not the highest. According to the graph, the energy densities of the fuels shown are approximately 40 MJ/L for POP biofuel, 36 MJ/L for gasoline, 34 MJ/L for jet fuel, and 23 MJ/L for ethanol. *Choice D* is incorrect. The task is to find the fuel in the graph with the highest bar (indicating the greatest energy density in MJ/L), and gasoline has the second-highest bar in the graph, not the highest. According to the graph, the energy densities of the fuels shown are approximately 40 MJ/L for POP biofuel, 36 MJ/L for gasoline, 34 MJ/L for jet fuel, and 23 MJ/L for ethanol.

QUESTION 16

Choice A is the best answer because it most effectively illustrates the theater historian's claim that El Teatro Campesino's early performances were influenced stylistically by *carpa* theater, vaudeville-style shows with "audience-mediated slapstick comedy." The quotation indicates that El Teatro presented comedic sketches that often featured exaggerated physical humor and that the performers improvised based on the cheers and boos from the audience; thus, it illustrates that El Teatro's performances were similar to *carpa* theater in the physical, slapstick nature of their comedy and in the way the performances were mediated, or shaped, by the audience's reactions.

Choice B is incorrect. Although the quotation refers to El Teatro's use of comedy and mentions audiences, it focuses on the company's use of comedic aspects of reality as a tool to critique society while providing audiences with entertainment and inspiration; it doesn't give any indication that El Teatro's performances featured slapstick, or very physical, comedy or that they were directly shaped by the audience. *Choice C* is incorrect. Although the quotation refers to El Teatro's aesthetic, or style, and mentions comedy, it indicates only that the company relied on satire and humor and had a style that reflected their limited financial means and sociopolitical message; it doesn't give any indication that El Teatro's performances featured slapstick, or very physical, comedy or that they were directly shaped by the audience. *Choice D* is incorrect. Although the quotation refers to El Teatro's performance of comedy, it mentions only that the company performed brief humorous vignettes, or short humorous scenes, in farm fields; it doesn't give any indication that El Teatro's performances featured slapstick, or very physical, comedy or that they were directly shaped by the audience.

QUESTION 17

Choice D is the best answer because it most logically completes the text's discussion of the relationship between street lighting and people's cycling behavior. According to the text, Eugeni Vidal-Tortosa and Robin Lovelace found that poor street lighting deters new or inexperienced cyclists from riding their bikes in a city but has little effect on experienced cyclists. This finding establishes a causal relationship between street lighting and the willingness of new or inexperienced cyclists to ride a bicycle in the city: if poor lighting discourages new or inexperienced cyclists from riding, then improving lighting conditions by increasing the number of streetlights would logically remove this deterrent, potentially leading to an increase in the number of new or inexperienced cyclists willing to ride in the city.

Choice A is incorrect because it contradicts the logical relationship established in the text. If poor street lighting deters new or inexperienced cyclists from riding in the city, then increasing the number of streetlights (improving lighting conditions) would be expected to encourage more of these cyclists to ride, not decrease their numbers. *Choice B* is incorrect because the text explicitly states that street lighting didn't have an effect on experienced cyclists. If lighting conditions don't significantly influence experienced cyclists' decisions to ride, then increasing the number of streetlights wouldn't necessarily increase the number of experienced

cyclists riding in the city. *Choice C* is incorrect. The text indicates that street lighting didn't affect experienced cyclists, so increasing the number of streetlights wouldn't decrease the participation of these cyclists. Instead, their numbers would be expected to remain about the same.

QUESTION 18

Choice D is the best answer because it most logically completes the text's discussion of wild-bee declines. The text establishes that bumblebees and other wild bees have been experiencing population collapse as a result of habitat destruction, climate variation, and other factors. The text then indicates that because bumblebees are very extensively researched, ecologists rely heavily on findings about them to understand wild-bee declines in general. However, the text then introduces Ghisbain's observation that unlike most other wild-bee genera, bumblebees have certain traits (social behaviors and dietary generalism) linked to increased resilience to certain environmental changes. In other words, bumblebees aren't necessarily representative of wild bees as a whole because they are likely more tolerant of some pressures. Therefore, it logically follows that Ghisbain would urge researchers to exercise caution when using bumblebee data to draw conclusions about other wild-bee population declines, since bumblebees and other wild bees don't always respond comparably to environmental threats.

Choice A is incorrect because the text doesn't indicate that climate variation is more of a threat to bumblebees than habitat destruction is or that it is a bigger threat to bumblebees than it is to other wild bees. The text simply indicates that climate variation and habitat destruction are among the factors that have caused population collapses for bumblebees and other wild-bee genera. *Choice B* is incorrect. As it is presented in the text, Ghisbain notes that bumblebees may respond to environmental changes differently than many other wild-bee genera do; this suggests that bumblebees shouldn't be treated as representative of all wild bees, but there's no reason to think that Ghisbain would go so far as to assert that bumblebee data shouldn't be used to draw conclusions about other wild-bee genera that are similar to bumblebees in their dietary and social traits, even if there are relatively few. The text suggests caution in extrapolation, not a complete rejection of using bumblebee research. *Choice C* is incorrect. Although the text indicates that dietary generalism is linked to increased resilience to specific environmental changes (that is, to some but not all environmental stresses), it doesn't suggest that bumblebees and other bees with this trait are less likely than bees with specialized diets to experience major population changes. In fact, the text makes it clear that like many other wild-bee genera—most of which don't display dietary generalism—bumblebees are already experiencing population collapse.

QUESTION 19

Choice D is the best answer. The convention being tested is end-of-sentence punctuation. This choice correctly uses a period to punctuate a declarative sentence that ends with an indirect question ("which link you should choose.")

Choice A is incorrect. The structure requires a declarative clause that presents an indirect question about what is evaluated in click restraint, not an interrogative clause that presents a direct question, such as "which link should you choose." *Choice B* is incorrect. It's unconventional to use a question mark in this way to punctuate a declarative clause that presents an indirect question, such as "which link you should choose." *Choice C* is incorrect. The structure requires a declarative clause that presents an indirect question about what is evaluated in click restraint, not an interrogative clause that presents a direct question, such as "which link should you choose."

QUESTION 20

Choice D is the best answer. The convention being tested is the use of verbs to express tense in a sentence. The past perfect tense indicates an action that was completed before another past action. In this choice, the past perfect verb "had become," together with the supplemental phrase "by 2023," indicates that Lafourcade earned her status as one of the most celebrated musicians in Latin America before 2023.

Choice A is incorrect because the future tense "will become" doesn't indicate that Lafourcade earned her celebrated status before 2023. *Choice B* is incorrect because the present tense "becomes" doesn't indicate that Lafourcade earned her celebrated status before 2023. *Choice C* is incorrect because the future perfect tense "will have become" doesn't indicate that Lafourcade earned her celebrated status by 2023.

QUESTION 21

Choice A is the best answer. The convention being tested is the use of verbs to express tense in a sentence. In this choice, the present tense verb "includes," used in conjunction with the word "currently," correctly indicates that the frog's current range includes parts of northern New South Wales and southeastern Queensland.

Choice B is incorrect because the past tense verb "included" doesn't indicate that the frog's range currently includes parts of northern New South Wales and southeastern Queensland. *Choice C* is incorrect because the future perfect tense "will have included" doesn't indicate that the frog's range currently includes parts of northern New South Wales and southeastern Queensland. *Choice D* is incorrect because the past perfect tense "had included" doesn't indicate that the frog's range currently includes parts of northern New South Wales and southeastern Queensland.

QUESTION 22

Choice B is the best answer. The convention being tested is the use of punctuation within a sentence. The comma after "1804" pairs with the comma after "amendment" to separate the supplementary element "ratified in 1804" from the rest of the sentence. This supplementary element functions to provide additional information on the term "12th amendment," and the pair of commas indicates that this element could be removed without affecting the grammatical coherence of the sentence.

Choice A is incorrect because a dash can't be paired with a comma in this way to separate the supplementary element from the rest of the sentence. *Choice C* is incorrect because a colon can't be paired with a comma in this way to separate the supplementary element from the rest of the sentence. *Choice D* is incorrect because it fails to use appropriate punctuation to separate the supplemental element from the rest of the sentence.

QUESTION 23

Choice B is the best answer. The convention being tested is subject-modifier placement. This choice makes the noun phrase "the titles" the subject of the sentence and places it immediately after the modifying phrases "laden with emojis and seemingly meaningless words, and driven largely by Sawano's 'personal feeling and mood.'" In doing so, this choice clearly establishes that the titles—and not another noun in the sentence—are being described as laden with emojis and driven by Sawano's personal feeling.

Choice A is incorrect because it results in a dangling modifier. The placement of "the listener" immediately after the modifying phrases illogically suggests that the listener, rather than the titles, is laden with emojis and driven by Sawano's personal feeling. *Choice C* is incorrect because it results in a dangling modifier. The placement of "each piece" (i.e., musical score) immediately after the modifying phrases illogically suggests that the pieces, rather than the titles of the pieces, are laden with emojis and driven by Sawano's personal feeling. *Choice D* is incorrect because it results in a dangling modifier. The placement of "the listener's approach" immediately after the modifying phrases illogically suggests that the listener's approach, rather than the titles, is laden with emojis and driven by Sawano's personal feeling.

QUESTION 24

Choice A is the best answer. The convention being tested is subject-verb agreement. The plural verb "explore" agrees in number with the plural subject "Barrada's pieces."

Choice B is incorrect because the singular verb phrase "has explored" doesn't agree in number with the plural subject "Barrada's pieces." *Choice C* is incorrect because the singular verb "explores" doesn't agree in number with the plural subject "Barrada's pieces." *Choice D* is incorrect because the nonfinite participle "exploring" doesn't supply the main clause with a finite verb.

QUESTION 25

Choice D is the best answer. The convention being tested is the use of punctuation within a sentence. The comma after "swimming" pairs with the dash after "ciliates" to offset the supplementary element ("widely…ciliates") that interrupts the main clause of the sentence.

Choice A is incorrect. Adding the verb "is" here creates an ungrammatical sentence structure with two main verbs ("is" and "bestows") without appropriate punctuation and/or conjunction. *Choice B* is incorrect because it fails to offset the

supplementary element with appropriate punctuation. Furthermore, adding the verb "is" here creates an ungrammatical sentence that has two finite verbs ("is" and "bestows") without appropriate punctuation and/or conjunction. *Choice C* is incorrect because it fails to offset the supplementary element with appropriate punctuation. Furthermore, adding the verb "has been" here creates an ungrammatical sentence that has two finite verbs ("has been" and "bestows") without appropriate punctuation and/or conjunction.

QUESTION 26

Choice D is the best answer. "As a result" logically signals that the information in this sentence—that the widened grooves in balsa wood can accommodate electrical conductors—is a direct consequence of the researchers' method described in the previous sentence (using heat and chemicals to widen the grooves).

Choice A is incorrect because "for example" illogically signals that this sentence provides an example of the researchers' method described in the previous sentence. Instead, the sentence indicates a consequence of that method. *Choice B* is incorrect because "previously" illogically signals that this sentence describes an event that occurred before the researchers' development of the method described in the previous sentence. Instead, the sentence indicates a consequence of that method. *Choice C* is incorrect because "in contrast" illogically signals that the information in this sentence contrasts with the previous sentence's description of the researchers' method. Instead, the sentence indicates a consequence of that method.

QUESTION 27

Choice D is the best answer. "Consequently" logically signals that the information in this sentence—that many Arabic words entered the Spanish language—is a result or consequence of the previous information about Arabic-speaking Muslim states ruling Al-Andalus for centuries.

Choice A is incorrect because "for example" illogically signals that the information about Arabic words entering Spanish exemplifies the Arabic-speaking history of Al-Andalus mentioned in the previous sentence. Instead, Arabic words entering Spanish is a consequence of that history. *Choice B* is incorrect because "instead" illogically signals that the information about Arabic words entering Spanish provides an alternative to the Arabic-speaking history of Al-Andalus mentioned in the previous sentence. The information about Arabic words entering Spanish is a consequence of that history. *Choice C* is incorrect because "specifically" illogically signals that the information about Arabic words entering Spanish provides specific details elaborating on the Arabic-speaking history of Al-Andalus mentioned in the previous sentence. Instead, Arabic words entering Spanish is a consequence of that history.

QUESTION 28

Choice A is the best answer. "By contrast" logically signals that the information in this sentence—that paper scraps left over from printing a magazine are pre-consumer waste—contrasts with the previous information about magazines being post-consumer waste.

Choice B is incorrect because "for example" illogically signals that the information in this sentence exemplifies the previous information about post-consumer waste. Instead, the paper scraps being pre-consumer waste contrasts with the previous information. *Choice C* is incorrect because "as a result" illogically signals that the information in this sentence is a result or consequence of the previous information about post-consumer waste. Instead, the paper scraps being pre-consumer waste contrasts with the previous information. *Choice D* is incorrect because "specifically" illogically signals that the information in this sentence provides specific, precise details elaborating on the previous information about post-consumer waste. Instead, the paper scraps being pre-consumer waste contrasts with the previous information.

QUESTION 29

Choice A is the best answer. "Though" logically signals that the information in this sentence—that Morgado and colleagues detected a dense ring orbiting outside the Roche limit that remained intact—presents an exception to the previous sentence's claim about debris orbiting outside an object's Roche limit. Such debris would be expected to accrete into a satellite, not remain intact as a ring.

Choice B is incorrect because "for example" illogically signals that the information about Morgado's discovery exemplifies the previous sentence's claim about debris orbiting outside an object's Roche limit. Instead, the sentence presents an exception to the claim. *Choice C* is incorrect because "fittingly" illogically signals that the information about Morgado's discovery aligns with the previous sentence's claim about debris orbiting outside an object's Roche limit. Instead, the sentence presents an exception to the claim. *Choice D* is incorrect because "likewise" illogically signals that the information about Morgado's discovery is similar to the previous sentence's claim about debris orbiting outside an object's Roche limit. Instead, the sentence presents an exception to the claim.

QUESTION 30

Choice C is the best answer. The sentence indicates how long John Cage's musical piece will last, noting that it will last 639 years and be the longest continuous musical performance in history.

Choice A is incorrect. The sentence identifies John Cage as the composer and provides the name of the musical piece; it doesn't indicate how long the piece will last. *Choice B* is incorrect. The sentence provides the name of the musical piece and where it is currently being played; it doesn't indicate how long the piece will last. *Choice D* is incorrect. The sentence mentions where the musical piece is being played and identifies John Cage as the composer; it doesn't indicate how long the piece will last.

QUESTION 31

Choice A is the best answer. The sentence provides a historical overview of the Shackleton expedition, noting that the explorers left for Antarctica in 1914, lost their ship in 1915, and were rescued in 1916.

Choice B is incorrect. The sentence misrepresents information from the notes; Shackleton and his crew were themselves rescued in 1916—they weren't rescuing others. *Choice C* is incorrect. The sentence provides examples of works and discoveries inspired by the expedition; it doesn't provide an overview of the expedition itself. *Choice D* is incorrect. The sentence provides examples of works made about the expedition; it doesn't provide an overview of the expedition itself.

QUESTION 32

Choice D is the best answer. Noting that *Meghadūta* uses a pattern of long and short syllables in its lines (quantitative meter) and *Widsith* uses a pattern of repeated sounds in its lines (alliterative meter), and signaling a contrast with "whereas," the sentence emphasizes a difference between the meters of the two poems.

Choice A is incorrect. The sentence indicates that the two poems were written in different languages; it doesn't emphasize a difference between the meters of the two poems. *Choice B* is incorrect. The sentence mentions the meters of the two poems but misrepresents information from the notes; the overall definition of a meter (the rhythmic structure or pattern of accents in a poem's lines) applies to both alliterative and quantitative meters, not just quantitative. *Choice C* is incorrect. While the sentence emphasizes a difference between the meters of the two poems, it misrepresents information from the notes; *Widsith* uses an alliterative meter, which is structured by a pattern of repeated sounds, not a pattern of long and short syllables.

QUESTION 33

Choice B is the best answer. The sentence places the Declaration of Independence in the context of Valle's changing political beliefs, noting that Valle was long an opponent of Central American independence but changed his mind after an 1820 revolt and then wrote the Declaration of Independence in 1821.

Choice A is incorrect. The sentence states that Valle's political beliefs changed after Riego's revolt but doesn't indicate how these changed beliefs provide context for the 1821 Declaration of Independence. *Choice C* is incorrect because it misrepresents information from the notes. Valle's political beliefs changed after Riego's 1820 revolt, not when the Spanish king repealed the 1812 constitution. *Choice D* is incorrect. While the sentence indicates a relationship between Colonel Riego's 1820 revolt and Central America's Declaration of Independence, it doesn't mention Valle's changing political beliefs.

Reading and Writing

Module 2

(33 questions)

QUESTION 1

Choice C is the best answer because it most logically completes the text's discussion of the ancient Inca farming method. In this context, "effective" means successful in producing a desired result. The text describes how the Inca used terraces with built-in irrigation systems to grow crops at different altitudes and then indicates that this farming method produced positive results "as evidenced by the great number and variety of crops grown at that time." The context clearly suggests that the terraced farming approach was highly productive, or effective.

Choice A is incorrect because to describe the Inca farming method as "chaotic" contradicts the text's description of a systematic approach using deliberately constructed terraces with built-in irrigation systems. Moreover, the "great number and variety of crops" yielded by this method seems unlikely to result from a disorganized, or chaotic, approach. *Choice B* is incorrect because "uniform" means consistent or the same throughout. It does not make sense in this context to describe a farming method as highly uniform if it produced a "great number and variety of crops." Moreover, the text indicates that Inca terrace farming was specifically designed to accommodate different crops at different altitudes, highlighting the diversity rather than uniformity of this approach. *Choice D* is incorrect because the success of the method, "as evidenced by the great number and variety of crops grown," does not support the claim that the Inca farming method was "burdensome," or difficult to implement or maintain. In fact, the context clearly emphasizes the advantages, rather than the burdens, of Inca terrace farming.

QUESTION 2

Choice C is the best answer because it most logically completes the text's discussion of repairing the Hubble Space Telescope. In this context, "relying on" means depending on. The text states that astronauts have regularly had to go on missions to repair the Hubble Space Telescope but that robots might soon be able to make the repairs, which would be helpful because involving astronauts in

the process is expensive. It is most reasonable to assume that it is the need to send astronauts on missions that is expensive; thus, the context suggests that employing robots for repairs will be helpful because depending on repeatedly sending humans to space is costly.

Choice A is incorrect. In this context, "straightening" would mean physically aligning or removing curves and bends. It's not clear how astronauts would be physically straightened to maintain the telescope or why that would be expensive. *Choice B* is incorrect because the text suggests that it is the ongoing involvement of astronauts—the need to send them to space regularly—that is expensive. Nothing in the text indicates that astronauts have been forgotten about or that forgetting about them would be expensive. *Choice D* is incorrect. In this context, "reducing" would most likely mean lowering in status, and nothing in the text suggests that astronauts are diminished in any way by repairing the telescope (indeed, they have regularly done repairs for years). Further, it isn't clear how a decrease in status would be expensive.

QUESTION 3

Choice C is the best answer because it most logically completes the text's discussion of election polling. In this context, to "neglect" would mean to disregard or pay insufficient attention to something. The text states that there have been many cases of election pollsters incorrectly predicting presidential elections and then says that neuroscientist and pollster Sam Wang notes that campaigns shouldn't react to these failures in a certain way. The text then adds that polls are valuable for informing strategists' efforts throughout campaigns, not just for predicting the outcome. This context conveys that Wang's advice is not to neglect, or disregard, polling because even though it sometimes fails to predict the winner, it can help improve campaign strategies.

Choice A is incorrect. In this context, to "distort" would mean to give a false or misleading account. Though the text states that many election pollsters have failed in their predictions in presidential elections, it gives no indication that Wang would therefore argue that campaigns shouldn't react to such polling failures by giving inaccurate accounts of election polling. Instead, the text emphasizes that polls have value beyond predicting winners, suggesting that Wang's point is that campaigns shouldn't stop polling entirely. *Choice B* is incorrect because it wouldn't make sense to suggest that Wang encourages campaigns not to "enact," or establish, election polling; the text indicates that election polling is something that already takes place and that has value for campaign strategies even if it sometimes leads to inaccurate predictions of winners, suggesting an argument in favor of continuing to use election polling. *Choice D* is incorrect. Although the text indicates that many election pollsters have failed in their predictions in presidential elections, there's no reason to think Wang would say that these failures should lead campaigns *not* to "supplement," or add to, election polling; it would be reasonable to suggest that campaigns *would* want to consider more than just election polling information if that information may lead to inaccurate predictions. Moreover, the text's main point is that polls provide some utility even if their predictions may be inaccurate, which suggests that Wang's recommendations pertain to whether campaigns should or shouldn't use polling data, not whether polling data should or shouldn't be supplemented with other kinds of information.

QUESTION 4

Choice D is the best answer because it most logically completes the text's discussion of Steiger Butte Drum's contributions to the musical work *Natural History*. In this context, "integral" means essential or necessary to the whole. The text states that Steiger Butte Drum not only took part in the piece's creation, collaborating with composer Michael Gordon on it, but also "must be included in all performances." This context clearly indicates that the ensemble's participation is essential, or integral, to the piece, both in its creation and its performance.

Choice A is incorrect because in this context, "tangential" would mean peripheral or of little relevance to something. The text emphasizes the importance of Steiger Butte Drum's involvement in both the composition and performance of *Natural History*, indicating their role is central, not tangential. *Choice B* is incorrect because in this context, "subsequent" would mean following after or coming later than something else. The text doesn't establish a temporal sequence where the participation of Steiger Butte Drum followed after the creation of *Natural History*; rather, it indicates that the ensemble was involved with the piece from the beginning, having worked with Michael Gordon during the creation process. *Choice C* is incorrect because in this context, "analogous" would mean similar or comparable to something else, and the text doesn't compare Steiger Butte Drum's participation in the creation and performances of *Natural History* to anything else; instead, it describes the nature and importance of the ensemble's involvement.

QUESTION 5

Choice B is the best answer because as used in the text, "manifest" most nearly means perceptible or detectable. The text indicates that the sun was "already down," meaning it was below the horizon and not directly visible. However, the sun's presence was nonetheless perceptible or manifest in the "tongues of fire" (or beams of light) that still flickered in the darkening sky.

Choice A is incorrect. Although in some contexts "manifest" can mean "realized" or "brought into being," that is not the context here. Rather, the text is about how the sun's presence was perceptible or manifest in the "darting" beams of light that could still be seen in the sky. *Choice C* is incorrect. This choice would suggest that the sun is situated, or located, in the light it emits, which is not supported by the surrounding context. Rather, the text is about how the sun's presence was perceptible or manifest in the remaining light that could still be seen in the sky. *Choice D* is incorrect. Although the text is about the decreasing light in the scene at sunset, the text's use of "manifest" is about how the sun's presence was nonetheless perceptible or manifest in the "tongues of fire" still visible in the sky as night approached.

QUESTION 6

Choice B is the best answer because it most accurately describes how the underlined portion functions in the text as a whole. The underlined portion is a parenthetical phrase directly following the word "microfilm," and it describes film containing small ("scaled-down") images; the placement and focus of the portion indicate that it is serving to define the term "microfilm."

Choice A is incorrect. Although the text is about accessing the writings of a famous historical figure (Douglass), the underlined portion doesn't give information about Douglass or any other person. Instead, it explains what microfilms are. *Choice C* is incorrect because the text never describes any kind of debate or disagreement; it simply describes a change in how researchers can access historical documents, with the underlined portion defining an important term. *Choice D* is incorrect because the text never makes any mention of a particular finding, unexpected or otherwise; it simply describes a change in how researchers do some of their work, with the underlined portion defining an important term.

QUESTION 7

Choice B is the best answer because it most accurately describes the overall structure of the text. The text begins by stating that the gray wolf was eradicated from Yellowstone National Park in 1926. It then explains the consequences of this elimination—namely that the elk population grew too large and overgrazing occurred, negatively affecting other animals in the area. The text then states that once scientists realized the importance of the gray wolf to the Yellowstone food chain, they undertook efforts leading to the wolves' reintroduction to the park in 1996. Thus, the structure of the text can be accurately described as mentioning the elimination of the gray wolf from Yellowstone and then explaining why the wolf was later restored to the park.

Choice A is incorrect. While the text does summarize a problem associated with an event in the 1920s (the eradication of gray wolves from Yellowstone in 1926), the problems discussed arose after that event—namely, the subsequent elk overpopulation, resultant overgrazing, and then further impacts to other animals in Yellowstone. Furthermore, the text doesn't present multiple potential solutions. Instead, it describes one solution that was actually implemented: the reintroduction of gray wolves in 1996. *Choice C* is incorrect because the text doesn't make a claim about the health of the gray wolf population apart from pointing out that the wolves had been eradicated from, and then subsequently restored to, Yellowstone. Instead, the text focuses on outcomes associated with the gray wolf's eradication and reintroduction. *Choice D* is incorrect. Though the text does mention that the ecosystem of Yellowstone rebounded after the gray wolf was reintroduced in 1996, the text never explains why the park allowed the wolves to be eradicated in 1926. It simply states that this eradication occurred without elaborating on the decision-making process behind it.

QUESTION 8

Choice A is the best answer because it most accurately describes the overall structure of the text. The text first presents what researchers found from studying Matabele ants: the ants can tell when colony members have infected wounds and can largely successfully treat those infections with their antimicrobial secretions. The text then indicates that the findings about the ants could help with the future development of antibiotics for humans. Thus, the text summarizes research findings and then identifies an area for further research.

Choice B is incorrect. Although the text introduces a study about Matabele ants, it never discusses how the researchers did their work or any methods they used to produce their findings. *Choice C* is incorrect. Although the text does describe properties of Matabele ants—their ability to detect and largely successfully treat infected wounds in colony members—it never addresses evolution or how these properties might have changed. *Choice D* is incorrect because the text doesn't present anything about Matabele ants as an issue or problem to be solved. Instead, it discusses beneficial abilities the ants have (detecting and treating infected wounds) and suggests that understanding those abilities might be useful for human medicine.

QUESTION 9

Choice B is the best answer because it most accurately describes the main purpose of the text, which is to explain the basics of how a specific energy technology works. The text introduces Raccoon Mountain as a pumped-storage hydropower facility built in the 1970s and then explains how it operates: during periods of low demand, excess power pumps water up to a lake at the mountain's summit, and when demand for energy peaks, the water flows back down, spinning turbines along the way to generate electricity. The text provides some additional details, like the name of the water source, but the overall focus is on explaining the basics of how pumped-storage hydropower works.

Choice A is incorrect because the text focuses on one method of energy generation—pumped-water hydropower—and briefly mentions another type of energy generation (nuclear plants) only to identify it as a source of power for the pumping process. The text never makes any comparison between the two methods. *Choice C* is incorrect because the text simply gives a factual description of how Raccoon Mountain, a pumped-storage hydropower facility, operates; it never suggests that more energy storage facilities should be built, whether by regional utilities or by any other entity. *Choice D* is incorrect because the text doesn't present pumped-storage hydropower as a new technology; it indicates that Raccoon Mountain was built in the 1970s, meaning that, rather than being new, this facility is approximately 50 years old.

QUESTION 10

Choice C is the best answer because it most accurately states the main idea of the text. The text begins by establishing Ruth Asawa as an artist who worked in several art forms but emphasizes that she was interested in art for reasons other than her desire to create it. The text mentions two ways in which Asawa brought art to children through public schools: cofounding the Alvarado School Arts Workshop in 1968 and helping found a public arts high school in 1982. Thus, the main idea is that Asawa's interest in art education motivated her to establish arts programs for students in San Francisco.

Choice A is incorrect because the text doesn't mention Asawa inspiring other artists to share their work with students. While the text does note that the Alvarado School Arts Workshop brought works of art and artists into public schools, it doesn't state that Asawa motivated these artists. *Choice B* is incorrect

because the text makes no comparison between local and national appreciation of Asawa's sculptures. While the text does mention that Asawa created unique tied-wire sculptures and was connected to San Francisco, it does not contrast her local and national critical receptions. *Choice D* is incorrect. Although the text emphasizes Asawa's educational initiatives, it doesn't state or imply that she abandoned her career as a sculptor to work as an art teacher. Instead, the text portrays her educational work as a complement to her career as a successful artist.

QUESTION 11

Choice B is the best answer because the graph shows that Montréal had the largest population in 1891 among the four cities represented. According to the data points in the graph for the year 1891, Montréal's population was approximately 220,000, which is greater than the respective populations of Toronto (approximately 180,000), Québec City (approximately 60,000), and Halifax (approximately 40,000).

Choice A is incorrect because Toronto's population in 1891 was approximately 180,000, which is the second largest among the four cities shown but still clearly smaller than Montréal's population of approximately 220,000. *Choice C* is incorrect because Québec City had a population of approximately 60,000 in 1891, making it only the third largest of the four cities shown. *Choice D* is incorrect because Halifax had a population of approximately 40,000 people in 1891. Of the four cities shown in the graph, Halifax has the smallest population, not the largest.

QUESTION 12

Choice D is the best answer because it accurately describes data from the graph that support the researchers' conclusion that children may be more aware of mammals than of other animals. The graph presents the percent of drawings by schoolchildren that contained an example of an animal from a certain group (mammals, birds, or insects). The graph shows that approximately 80% of the drawings contained an example of a mammal, while only approximately 69% contained an example of a bird and only about 55% contained an example of an insect. The fact that mammals were included in more drawings than either birds or insects were supports the idea that children may be particularly aware of mammals in their environments.

Choice A is incorrect because the graph shows that there were not "about as many" drawings with insects as there were drawings with birds (approximately 69% of the drawings included an example of a bird, while only about 55% included an example of an insect). Further, comparing only the numbers for birds and insects wouldn't indicate anything about the schoolchildren's awareness of mammals. *Choice B* is incorrect because the graph shows that insects, not birds, were the group that appeared in the fewest number of drawings (approximately 69% of the drawings included an example of a bird but only about 55% included an example of an insect). Further, stating that examples from one nonmammal group appeared in the fewest number of drawings would provide no evidence about the schoolchildren's awareness of mammals. *Choice C* is incorrect because

the graph shows that more drawings had an example of a mammal than an example of an insect, not the other way around (approximately 80% of the drawings included an example of a mammal, while only about 55% included an example of an insect). Further, examples of a nonmammal group appearing in more drawings than examples of mammals did would actually weaken the claim that schoolchildren may be more aware of mammals than of other animals.

QUESTION 13

Choice C is the best answer because it accurately uses data from the graph to complete the statement regarding the research institute's findings about veteran representation in Congress. The graph shows that the percentage of veterans in both houses of Congress decreased dramatically from 1973 to 2013. In 1973, the House of Representatives consisted of approximately 74% veterans, and the Senate was made up of approximately 79% veterans. By 2013, veteran members of both houses had fallen to approximately 17%–18%. This represents a substantial decrease of more than 50% in each house over this 40-year period.

Choice A is incorrect because from 2003 to 2023, the House of Representatives did not consistently have a higher percentage of veterans than the Senate did. According to the graph, in 2003 the Senate was made up of approximately 35% veterans, while the House consisted of approximately 23% veterans. In 2013, the number of veterans in the Senate was still slightly higher (approximately 18%) than in the House (approximately 17%). Only in 2023 did the House have a marginally higher percentage than the Senate. *Choice B* is incorrect because veterans did not constitute a majority in both houses throughout the entire period shown in the graph from 1953 to 2003. According to the graph, both houses had a majority of veterans in 1953 (approximately 62% in the House and approximately 74% in the Senate) and in 1973 (approximately 74% in the House and approximately 79% in the Senate), but by 1993 the House had fallen below 50% to approximately 40% veterans. By 2003, both houses were well below 50%. *Choice D* is incorrect because the percentage of veterans in Congress did not remain consistent from 1993 to 2023. The graph shows significant changes in the number of members reporting past military service during this period, particularly the continued decline from 1993 to 2003. In 1993, the House had approximately 40% veterans and the Senate had approximately 63% veterans, but by 2003 these percentages had dropped to approximately 23% and 35%, respectively. Furthermore, there was a large gap between the two houses in 1993 that narrowed considerably by 2013, which contradicts the claim that the percentage of veterans across both houses "remained fairly consistent" during this period.

QUESTION 14

Choice B is the best answer because it most effectively illustrates the speaker of the poem's claim that the stories Aunt Sue tells are based on Aunt Sue's personal experiences. In the quotation, the speaker conveys the listening child's point of view that Aunt Sue's stories originate from her personal experiences and are not taken from books or other external sources. The listening child explicitly contrasts two possible sources for Aunt Sue's stories: a book (whose potentially fictitious stories are implied to be written by someone else) or "her own life." By having the

child confidently assert that Aunt Sue "never got her stories out of any book at all," the speaker indicates that Aunt Sue's stories are instead informed by her lived experiences.

Choice A is incorrect because it describes an element or image that recurs within Aunt Sue's stories rather than indicating that these stories have a real-life basis. The reference to dark shadows that "cross and recross" the stories functions as imagery on a literal, visual level and may also evoke figurative darkness, but this detail by itself doesn't suggest that the stories are based on Aunt Sue's personal experiences. *Choice C* is incorrect because it identifies the setting of Aunt Sue's storytelling rather than describing the real-life basis of the stories themselves. The quotation states that Aunt Sue tells her stories on "summer nights on the front porch," which establishes when and where the storytelling occurs; however, no information is provided about the origins of the stories that Aunt Sue tells within this setting. *Choice D* is incorrect because it describes the movement or circulation of characters in the stories as Aunt Sue speaks rather than establishing that these stories have a real-life basis. The quotation primarily evokes the sounds of Aunt Sue's voice and the seemingly easy "flow" of this voice in her storytelling. Although the characters who "mingle…in the flow of old Aunt Sue's voice" are to some extent created or animated by her voice, no information is provided about the characters themselves or their relationship to Aunt Sue's actual experiences.

QUESTION 15

Choice C is the best answer because it presents a finding that, if true, would most strongly support Manenti and team's claim that olms regularly come to the surface to find food. The text explains that scientists previously believed olms remained in their underwater caves throughout their lives, but Manenti's team claims that olms actually surface regularly to perform important activities like finding food. Since earthworms from surface soils would not be present in underwater caves, the finding that such earthworms constitute a major part of olms' diet would provide compelling evidence that olms regularly leave their underwater cave environment to obtain food from the surface, thus supporting the underlined claim.

Choice A is incorrect because information about olms' breeding frequency wouldn't support the claim about their leaving their underwater habitats to obtain food. While breeding patterns might be relevant to understanding olm behavior in general, this finding doesn't address whether olms surface to find food, which is the specific behavior that the underlined claim addresses. *Choice B* is incorrect because learning that olms live in only a few cave systems wouldn't support the claim about their regular visits to the surface. This finding would provide information about the geographic distribution of olm habitats but wouldn't address whether olms leave these caves to find food or perform other activities on the surface. *Choice D* is incorrect because the differences between olms' brains and other salamanders' brains have no clear connection to olms' movement beyond their underwater habitats or to their feeding habits. A finding about the uniqueness of olms' brains wouldn't address whether olms leave their caves to find food or support Manenti and team's claim about olms' motivation for coming to the surface.

QUESTION 16

Choice C is the best answer because it most directly supports the text's claim that Stevens strove to convey the ephemeral and dynamic characteristics of *ikaah* as a cultural practice. The text challenges the characterization of Stevens's preserved sandpaintings as mere "static objects" that cannot "authentically represent" a practice defined in part by the absence of an end product; it claims instead that this "overly object-focused" interpretation overlooks how Stevens preserved the essential characteristics of traditional *ikaah* practice. This quotation supports the claim by explaining that Stevens's sandpaintings should be understood "not as self-contained objects but as reminders of the public creations of the sandpaintings," during which Stevens "conducted appropriate *ikaah* rituals and encouraged viewers to closely track his movements and subtle shifts in the sand throughout the process." The fact that Stevens created the sandpaintings in a public setting and invited viewers to attentively engage with this process supports the claim that he sought to portray *ikaah* as a dynamic practice rather than as a static product. Further, the inherently impermanent nature of such a performance evokes the ephemerality that characterizes *ikaah*.

Choice A is incorrect because it contradicts rather than supports the text's claim that Stevens strove to convey the ephemeral and dynamic characteristics of *ikaah* as a cultural practice. This quotation argues that Stevens's preserved sandpaintings "should not be confused with authentic *ikaah*" and emphasizes that authentic *ikaah* "cannot be extricated from a practice that is intentionally and necessarily transitory." This view aligns with the "overly object-focused" perspective that the text argues against, rather than supporting the claim that Stevens successfully conveyed *ikaah*'s ephemeral and dynamic characteristics. *Choice B* is incorrect because it focuses on reconciling the tension between ephemeral and permanent forms rather than supporting the claim that Stevens actively conveyed *ikaah*'s ephemeral and dynamic characteristics. While this quotation acknowledges an apparent contradiction, it suggests that Stevens was accommodating US preferences for permanent artworks; it doesn't demonstrate how he communicated the ephemeral and dynamic nature of traditional *ikaah* practice. *Choice D* is incorrect. Although the quotation mentions Stevens's "temporary and performative role" as a gift-giver, it doesn't address how Stevens conveyed the ephemeral and dynamic characteristics of *ikaah* itself during his ambassadorial activities. The quotation focuses on Stevens's role in transmitting knowledge and representing cultural dynamism but doesn't specifically support the claim about his efforts to communicate the essential characteristics of *ikaah* practice. Further, the quotation incorrectly implies that Stevens shared his knowledge of preservative additives; the text doesn't establish that he revealed how the sandpaintings were preserved.

QUESTION 17

Choice A is the best answer because it most logically completes the text's discussion of mountain climbers' motivations for exaggerating the difficulty of reaching edelweiss. The text establishes that edelweiss became symbols of strength and courage in Switzerland in the mid-1800s. The text goes on to state that mountain climbing became popular around the same time and that climbers

spread the false idea that the flowers grew only in dangerous, hard-to-reach locations. According to the text, historian Tobias Scheidegger argues that these claims were "self-interested," meaning they served the climbers' own purposes. The text therefore implies that by claiming that edelweiss could be found only in perilous locations, mountain climbers could enhance their own reputations: climbers who encountered edelweiss would appear to have undertaken a dangerous journey, thereby making themselves seem brave and strong.

Choice B is incorrect because making edelweiss seem more dangerous to reach than other mountain flowers are would likely discourage flower enthusiasts from trying to reach edelweiss rather than encourage them to explore the Swiss Alps. The text suggests that climbers' self-interested motivation for exaggerating the difficulty of climbing to areas where edelweiss grew was to enhance their own reputations for being especially brave, not to promote tourism in the Swiss Alps. *Choice C* is incorrect because the text states that according to Scheidegger, mountain climbers exaggerated the difficulty of reaching edelweiss for self-interested reasons, not because they wanted to report genuine scientific observations about the flower's unique characteristics. The text provides no indication that the climbers sincerely believed that their claims about the especially challenging terrain in which edelweiss grew were accurate, much less that they wanted to share this information with scientists. *Choice D* is incorrect because the text doesn't suggest that mountain climbers were trying to prove that edelweiss were more common in Switzerland than elsewhere. The text's focus is on the supposed difficulty and danger of reaching the flowers, not on their relative abundance in the Swiss Alps compared to other regions. In fact, the text implies that mountain climbers exaggerated how difficult edelweiss were to reach; it therefore wouldn't make sense to say that they exaggerated this difficulty to demonstrate that edelweiss were relatively common.

QUESTION 18

Choice A is the best answer because it most logically completes the text's discussion of modeling the atmosphere of Titan. The text establishes that the methane mole fraction (the ratio of methane to other atmospheric components) influences precipitation, humidity, and other meteorological phenomena and that observational data for Titan are too lacking ("too sparse and discrepant") to fully determine the range of this measure across the moon's various atmospheric levels. The text indicates that because of this limitation, researchers developed an atmospheric model (IPSL) that uses a simplified approach: it applies a uniform methane mole fraction for the lowest atmospheric level. Since it is very unlikely that the actual methane distribution across atmospheric levels on Titan is uniform, and since the methane mole fraction directly affects precipitation and humidity, it logically follows that the model's simplified treatment of the methane mole fraction would lead to some disagreements between the model's simulations and Titan's actual precipitation and humidity.

Choice B is incorrect because the text makes it clear that the model *already* uses a single value for Titan's methane mole fraction instead of a range. Further, the text suggests that the single value is a simplification of what is likely a more complex reality, so there's no reason to assume that a single value would be more

desirable than a range. *Choice C* is incorrect. The text strongly suggests that Titan's actual methane mole fraction differs from the uniform value used in the model, even though some of the model's outputs align closely with observations, but nothing in the text indicates how the actual value would differ. There's no reason to assume that the actual methane mole fraction is higher than what the model uses. The "lowest level" mentioned in the text refers to the atmosphere and not Titan's methane mole fraction. *Choice D* is incorrect because the text makes it clear that the model *doesn't* reflect the actual variations in the methane mole fraction across Titan's atmospheric levels, since observational data are too limited. Because the model uniformly applies a set methane mole fraction, no inconsistencies in the simulations would be attributable to actual variations in the moon's methane mole fraction.

QUESTION 19

Choice B is the best answer. The convention being tested is end-of-sentence punctuation. This choice correctly uses a period to punctuate a declarative sentence ending with a relative clause that presents an indirect question ("why ganga has been used as a communication method.")

Choice A is incorrect. It's unconventional to use a question mark to punctuate a declarative sentence that presents an indirect question. *Choice C* is incorrect. The structure requires a declarative clause at the end of the sentence, not an interrogative clause that asks a direct question, such as "has ganga been used as a communication method." *Choice D* is incorrect. The structure requires a declarative clause at the end of the sentence, not an interrogative clause that asks a direct question, such as "has ganga been used as a communication method."

QUESTION 20

Choice B is the best answer. The convention being tested is the use of verb forms within a sentence. The nonfinite to-infinitive verb "to create" is correctly used to form a subordinate clause that expresses how ArcGIS facilitates the creation of maps (by analyzing and arranging certain data).

Choice A is incorrect because it results in an ungrammatical sentence. The finite verb "create" can't be used in this way to form a subordinate clause that expresses how ArcGIS facilitates the creation of maps. *Choice C* is incorrect because it results in an ungrammatical sentence. The nonfinite participle "creating" can't be used in this way to form a subordinate clause that expresses how ArcGIS facilitates the creation of maps. *Choice D* is incorrect because it results in an ungrammatical sentence. The finite verb "created" can't be used in this way to form a subordinate clause that expresses how ArcGIS facilitates the creation of maps.

QUESTION 21

Choice B is the best answer. The convention being tested is punctuation use between a verb and its complement. No punctuation is needed between the verb

"is called" and its complement "the chromophore." The complement helps complete the idea of the verb—in this case, it explains what the part of a compound that determines the compound's color is called—and any punctuation between the two results in an ungrammatical sentence.

Choice A is incorrect because no punctuation is needed between the verb and its complement. *Choice C* is incorrect because no punctuation is needed between the verb and its complement. *Choice D* is incorrect because no punctuation is needed between the verb and its complement.

QUESTION 22

Choice B is the best answer. The convention being tested is the use of punctuation within a sentence. This choice correctly uses a dash after "cooperation" to pair with the dash after "that" to separate the supplementary element "assuming solar panel installers' cooperation" from the rest of the sentence.

Choice A is incorrect because a comma can't be paired with a dash in this way to separate the supplementary element from the rest of the sentence. *Choice C* is incorrect because a colon can't be paired with a dash in this way to separate the supplementary element from the rest of the sentence. *Choice D* is incorrect because it fails to use appropriate punctuation to separate the supplemental element from the rest of the sentence.

QUESTION 23

Choice B is the best answer. The convention being tested is the use of punctuation within a sentence. The comma after "newts" pairs with the comma after "instance" to separate the supplementary element "for instance" from the rest of the sentence. The supplementary element appears between the prepositional phrase ("In…newts") and the main clause of the sentence ("you… *orientalis*") and signals that the sentence is presenting an example of how keys and values function in JSON files.

Choice A is incorrect because it results in a sentence fragment ("In a JSON file storing data about fire belly newts"). *Choice C* is incorrect because a colon can't be paired with a comma in this way to separate the supplementary element "for instance" from the rest of the sentence. *Choice D* is incorrect because a semicolon can't be paired with a comma in this way to separate the supplementary element "for instance" from the rest of the sentence.

QUESTION 24

Choice B is the best answer. The convention being tested is subject-modifier placement. This choice makes the noun phrase "amorphous ice" the subject of the sentence and places it immediately after the modifying phrase "defined… structure." In doing so, this choice clearly establishes that amorphous ice—and not another noun in the sentence—is being described as having a disorganized molecular structure.

Choice A is incorrect because it results in a dangling modifier. The placement of the noun "ice Ih" immediately after the modifying phrase illogically suggests that ice Ih has a disorganized molecular structure, whereas ice Ih is previously described as having molecules that form a hexagonal pattern. *Choice C* is incorrect because it results in a dangling modifier. The placement of the noun phrase "the lack of thermal energy" immediately after the modifying phrase illogically suggests that the lack of thermal energy has a disorganized molecular structure. *Choice D* is incorrect because it results in a dangling modifier. The placement of "ice Ih" immediately after the modifying phrase illogically suggests that ice Ih has a disorganized molecular structure, whereas ice Ih is previously described as having molecules that form a hexagonal pattern.

QUESTION 25

Choice A is the best answer. The convention being tested is subject-modifier placement. This choice makes the noun "electrograms" the subject of the sentence and places it immediately after the modifying phrase "recordings of electrical activity in the brain." In doing so, this choice clearly establishes that electrograms—and not other nouns or noun phrases in the sentence—are recordings of electrical activity in the brain.

Choice B is incorrect because it results in a dangling modifier. The placement of the noun phrase "the most highly skilled soccer players" immediately after the modifying phrase illogically suggests that the players are recordings of electrical activity in the brain. *Choice C* is incorrect because it results in a dangling modifier. The placement of the noun phrase "responses to hypothetical match scenarios" immediately after the modifying phrase illogically suggests that these responses are recordings of electrical activity in the brain. *Choice D* is incorrect because it results in a dangling modifier. The placement of the noun phrase "hypothetical match scenario responses" immediately after the opening phrase illogically suggests that these responses are recordings of electrical activity in the brain.

QUESTION 26

Choice B is the best answer. The convention being tested is the use of verb forms within a sentence. The nonfinite present participle "searching" is correctly used to form a supplementary element that modifies the subject "scientists," indicating that the scientists who adapted the test were looking for evidence of self-awareness in snakes.

Choice A is incorrect because it results in an ungrammatical sentence. The finite past tense verb "searched" can't be used in this way to form a supplementary element that indicates what evidence the scientists who adapted the test were looking for. *Choice C* is incorrect because it results in an ungrammatical sentence. The finite past progressive verb "were searching" can't be used in this way to form a supplementary element that indicates what evidence the scientists who adapted the test were looking for. *Choice D* is incorrect because it results in an ungrammatical sentence. The finite present perfect verb "have searched" can't be used in this way to form a supplementary element that indicates what evidence the scientists who adapted the test were looking for.

QUESTION 27

Choice D is the best answer. "Finally" logically signals that the information in this sentence—that the artisan slips paper in and out of the liquid to transfer the design onto paper—is the final step in the process of Turkish paper marbling, which began with what happens "first" (filling a tray with a solution) and continued with what happens "next" (adding inks or paints to the solution).

Choice A is incorrect because "actually" illogically signals that the information in this sentence about slipping paper in and out of liquid to transfer a design onto paper is unexpected in light of the previously described steps. Instead, the sentence describes the final step in the process of Turkish paper marbling. *Choice B* is incorrect because "therefore" illogically signals that the information in this sentence about slipping paper in and out of liquid to transfer a design onto paper is a consequence of the previously described steps. Instead, the sentence describes the final step in the process of Turkish paper marbling. *Choice C* is incorrect because "nevertheless" illogically signals that the information in this sentence about slipping paper in and out of liquid to transfer a design onto paper contrasts with the previously described steps. Instead, the sentence describes the final step in the process of Turkish paper marbling.

QUESTION 28

Choice B is the best answer. "Instead" logically signals that the information about the researchers' discovery in this sentence—that jorō spiders are gentle giants who "freeze" in place when disturbed—contradicts their initial hypothesis about the spiders' aggressiveness described in the previous sentence.

Choice A is incorrect because "therefore" illogically signals that the discovery about jorō spiders' gentleness is a result of the initial hypothesis about their aggressive behavior. Instead, the sentence presents information that contradicts the initial hypothesis. *Choice C* is incorrect because "for example" illogically signals that the discovery about jorō spiders' gentleness exemplifies the initial hypothesis about their aggressive behavior. Instead, the sentence presents information that contradicts the initial hypothesis. *Choice D* is incorrect because "in other words" illogically signals that the discovery about jorō spiders' gentleness is merely restating or rephrasing the initial hypothesis about their aggressive behavior. Instead, the sentence presents information that contradicts the initial hypothesis.

QUESTION 29

Choice C is the best answer. "Indeed" logically signals that the information that follows—that the majority of jets reach heights of only 20 to 50 km—offers additional emphasis in support of the previous claim that jets reaching the ionosphere (about 80 km above Earth) are outliers.

Choice A is incorrect because "nevertheless" illogically signals that the information about most jets reaching heights of only 20 to 50 km contrasts with the previous claim that jets reaching the ionosphere are outliers. Instead, it provides additional emphasis in support of that claim. *Choice B* is incorrect because "consequently" illogically signals that the information about most jets

reaching heights of only 20 to 50 km is a consequence, or result, of some jets being outliers. Instead, it offers additional emphasis in support of the claim that jets reaching the ionosphere are outliers. *Choice D* is incorrect because "in addition" illogically signals that the information about most jets reaching heights of only 20 to 50 km merely adds to the previous claim that jets reaching the ionosphere are considered outliers. Instead, it provides additional emphasis in support of that claim.

QUESTION 30

Choice B is the best answer. "Ultimately" logically signals that the information in this sentence—that, for Dillard, nature's mesmerizing intricacy and pitiless harshness are inextricably linked—is the final conclusion or realization reached after her struggle to reconcile the juxtapositions of the natural world mentioned in the previous sentence.

Choice A is incorrect because "to that end" illogically signals that linking nature's intricacy and harshness was Dillard's deliberate goal or purpose in struggling to reconcile nature's juxtapositions. Instead, the sentence presents her final realization after that struggle. *Choice C* is incorrect because "moreover" illogically signals that the information in this sentence merely adds to Dillard's struggle to reconcile nature's juxtapositions mentioned in the previous sentence. Instead, the sentence presents her final realization after that struggle. *Choice D* is incorrect because "hence" illogically signals that nature's intricacy and harshness being linked is a direct consequence of Dillard's struggle to reconcile the juxtapositions mentioned in the previous sentence. Instead, the sentence presents her final realization after that struggle.

QUESTION 31

Choice C is the best answer. The sentence presents the methods used in the study, noting that researchers tagged 138 female wood ducks with radio frequency ID trackers and recorded the number of nest boxes each duck visited.

Choice A is incorrect. While the sentence mentions an aspect of the study's design (that the researchers recorded the number of nest boxes the wood ducks visited), it primarily focuses on a finding of the study rather than the methods the researchers used. *Choice B* is incorrect. While the sentence mentions an aspect of the study's design (that the researchers tracked the number of nest boxes the wood ducks visited), it primarily focuses on a finding of the study rather than the methods the researchers used. *Choice D* is incorrect. The sentence misrepresents information from the notes. The researchers used radio frequency ID trackers to record the ducks' visits; they didn't investigate each site to look for evidence that it had been visited.

QUESTION 32

Choice A is the best answer. The sentence emphasizes a similarity between the ages of the two pedestrian malls, noting that both are relatively old—Qianmen Dajie has roots that go back hundreds of years and Rue Mouffetard has existed for centuries.

Choice B is incorrect. The sentence emphasizes that both locations are famous pedestrian malls and notes that they are in different locations; it doesn't emphasize a similarity in their ages. *Choice C* is incorrect. While the sentence emphasizes that both locations are pedestrian malls, it doesn't emphasize a similarity in their ages. *Choice D* is incorrect. The sentence explains that Qianmen Dajie and Rue Mouffetard are examples of pedestrian malls and gives information about pedestrian malls in general; it doesn't emphasize a similarity in the ages of these two malls specifically.

QUESTION 33

Choice A is the best answer. The sentence compares Fodor's hypothesis with Carruthers's, noting that because Fodorian modularity considers some but not all cognitive systems modular, it is not as expansive in its definition of modularity as Carruthers's MMH, which includes all cognitive systems.

Choice B is incorrect. The sentence describes Carruthers's hypothesis—that modularity of mind includes all cognitive systems—but indicates only that this hypothesis followed Fodor's 1983 hypothesis rather than making a comparison between the hypotheses. *Choice C* is incorrect. The sentence misrepresents a difference between Fodor's and Carruthers's hypotheses. According to the information in the notes, both Fodor and Carruthers consider low-level cognitive systems modular, and their difference lies in whether they also consider high-level systems modular. *Choice D* is incorrect. The sentence misrepresents a difference between Fodor's and Carruthers's hypotheses. According to the information in the notes, both Fodor and Carruthers consider the mind to be at least partly composed of innate neural structures (modules). Their difference lies in whether they consider high-level systems modular.

Math

Module 1
(27 questions)

QUESTION 1

Choice D is correct. The sum of the angle measures of a triangle is 180°. It's given that the measure of angle Q is 132°, the measure of angle P is 24°, and the measure of angle R is x°. It follows that $x + 132 + 24 = 180$, or $x + 152 = 180$. Subtracting 152 from both sides of this equation yields $x = 24$.

Alternate approach: It's given that in the triangle shown, $PQ = QR$. Thus, triangle PQR is an isosceles triangle. Since base angles of an isosceles triangle are congruent, the measure of angle P is equal to the measure of angle R. Therefore, the measure of angle R is 24°, and the value of x is 24.

Choice A is incorrect. This is the sum of the measures, in degrees, of angles Q and P, not the measure, in degrees, of angle R. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect. This is the sum of the measures, in degrees, of angles P and R, not the measure, in degrees, of angle R.

QUESTION 2

Choice A is correct. Subtracting 1 from both sides of the given equation, $4x + 1 = 33$, yields $4x = 32$. Therefore, $4x = 32$ has the same solution as the given equation.

Choice B is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.
Choice D is incorrect and may result from conceptual or calculation errors.

QUESTION 3

Choice C is correct. An equation that defines a linear function f can be written in the form $f(x) = mx + b$, where m is the slope of the graph of $y = f(x)$ in the xy-plane and $(0, b)$ is the y-intercept of the graph. It's given that for the linear function f, the graph of $y = f(x)$ in the xy-plane has a slope of 7. Therefore, $m = 7$.

It's also given that the graph of $y = f(x)$ in the *xy*-plane passes through the point $(0, 5)$. Therefore, the *y*-intercept of the graph is $(0, 5)$, and it follows that $b = 5$. Substituting 7 for m and 5 for b in the equation $f(x) = mx + b$ yields $f(x) = 7x + 5$.

Choice A is incorrect. This equation defines a function whose graph has a slope of 5, not 7, and passes through the point $(0, 0)$, not $(0, 5)$. *Choice B* is incorrect. This equation defines a function whose graph has a slope of 35, not 7, and passes through the point $(0, 0)$, not $(0, 5)$. *Choice D* is incorrect. This equation defines a function whose graph has a slope of 12, not 7.

QUESTION 4

Choice A is correct. Adding 40 to both sides of the given equation yields $8x^2 = 72$. Dividing both sides of this equation by 8 yields $x^2 = 9$. Taking the square root of both sides of this equation yields $x = 3$ or $x = -3$. Therefore, the positive solution to the given equation is 3.

Choice B is incorrect. This is the solution to the equation $8x = 32$, not the given equation. *Choice C* is incorrect. This is the solution to the equation $8x - 40 = 32$, not the given equation. *Choice D* is incorrect. This is the solution to the equation $x - 40 = 32$, not the given equation.

QUESTION 5

Choice B is correct. If one of these children is selected at random, the probability of selecting a child who chose a vegetarian sandwich is equal to the number of children who chose a vegetarian sandwich divided by the total number of children. According to the table, there are a total of 50 children, and 9 of these children chose a vegetarian sandwich. Therefore, the probability of selecting a child who chose a vegetarian sandwich is $\frac{9}{50}$.

Choice A is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.
Choice D is incorrect and may result from conceptual or calculation errors.

QUESTION 6

The correct answer is 75. It's given that Amara harvested 750 cherry tomatoes and gave 10% of them to her neighbor. 10% can be written as $\frac{10}{100}$, or 0.1. Therefore, the number of cherry tomatoes that Amara gave to her neighbor can be calculated by multiplying the total number of cherry tomatoes by 0.1, which gives $(0.1)(750)$, or 75.

QUESTION 7

The correct answer is 30. It's given that $x + y = 125$. Substituting 125 for $x + y$ in the second equation of the given system yields $125 + y = 155$. Subtracting 125 from both sides of this equation yields $y = 30$. Therefore, the value of y is 30.

QUESTION 8

Choice A is correct. It's given that each participant earns 1 point for each game the participant plays that ends in a draw and 3 points for each game the participant wins. Since d represents the number of games that a certain participant has played that ended in a draw and w represents the number of games this participant has won, this participant has earned a total of $1d + 3w$, or $d + 3w$, points. Since this participant earned 41 points, the equation $d + 3w = 41$ represents this situation.

Choice B is incorrect. This equation represents the situation where the participant earned 3 points for each game played that ended in a draw and 1 point for each game won and earned 41 points. *Choice C* is incorrect. This equation represents the situation where the participant earned 1 point for each game played that ended in a draw and $\frac{1}{3}$ point for each game won and earned 41 points. *Choice D* is incorrect. This equation represents the situation where the participant earned $\frac{1}{3}$ point for each game played that ended in a draw and 1 point for each game won and earned 41 points.

QUESTION 9

Choice C is correct. It's given that function g is defined by $g(x) = \sqrt{x} + 300$. Substituting 81 for x in function g yields $g(81) = \sqrt{81} + 300$, which is equivalent to $g(81) = 9 + 300$, or $g(81) = 309$. Therefore, the value of $g(x)$ when $x = 81$ is 309.

Choice A is incorrect. This is the value of $\sqrt{81}$, not $\sqrt{81} + 300$. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect. This is the value of $81 + 300$, not $\sqrt{81} + 300$.

QUESTION 10

Choice C is correct. It's given that 8 out of 300 customers in a random sample said they would be interested in the new plan. This means the fraction of sampled customers who said they would be interested is $\frac{8}{300}$. Multiplying this fraction by the total customer population yields $\left(\frac{8}{300}\right)(30{,}000)$, or 800. Therefore, the best estimate of the total number of customers who would be interested in the new service plan is 800.

Choice A is incorrect. This is the number of customers surveyed who said they would be interested in the new plan, not the best estimate of the total number of customers who would be interested in the new plan. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 11

Choice D is correct. For the expression $64t^2s^3 - 56t^3s$, 4 is a common factor of 64 and 56, t^2 is a common factor of t^2 and t^3, and s is a common factor of s^3 and s. It follows that $4t^2s$ is a common factor of each term in the given

expression. Factoring out $4t^2s$ from each term in the expression $64t^2s^3 - 56t^3s$ yields $4t^2s(16s^2 - 14t)$. Therefore, $4t^2s(16s^2 - 14t)$ is equivalent to $64t^2s^3 - 56t^3s$.

Choice A is incorrect. This expression is equivalent to $64ts^3 - 56t^2s^2$, not $64t^2s^3 - 56t^3s$. *Choice B* is incorrect. This expression is equivalent to $64t^3s^3 - 56t^2s$, not $64t^2s^3 - 56t^3s$. *Choice C* is incorrect. This expression is equivalent to $64t^3s^2 - 56t^2s^2$, not $64t^2s^3 - 56t^3s$.

QUESTION 12

Choice B is correct. The point (x, y) at which the graphs of the given equations intersect is the solution to the system of equations. Subtracting 5 from both sides of the equation $x + 5 = 14$ yields $x = 9$. Substituting 9 for x in the equation $y = 4x^2 + 4$ yields $y = 4(9)^2 + 4$, or $y = 328$. Therefore, the graphs of the equations in the given system intersect at the point $(9, 328)$.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 13

The correct answer is 13. It's given that the equation $8x + 11y = 170$ gives the possible combinations of the number of 2009 premium grade Log Cabin Pennies, x, and the number of 1996 select grade Lincoln Pennies, y, in a collection that is worth a total of $170. It's also given that there are 6 1996 select grade Lincoln Pennies in the collection, and thus $y = 6$. Substituting 6 for y in the given equation yields $8x + 11(6) = 170$, or $8x + 66 = 170$. Subtracting 66 from both sides of this equation yields $8x = 104$. Dividing both sides of this equation by 8 yields $x = 13$. Therefore, there are 13 2009 premium grade Log Cabin Pennies in the collection.

QUESTION 14

The correct answer is 15,000. Let y represent the population of Smithville x years after 1659. Since the population doubled every 75 years, the relationship between x and y can be represented by an exponential equation in the form $y = a(b)^{\frac{x}{k}}$, where a is the population of Smithville in 1659 and the population increases by a factor of b every k years. It's given that the population doubled, or increased by a factor of 2, every 75 years. Therefore, $b = 2$ and $k = 75$. Substituting 2 for b and 75 for k in the equation $y = a(b)^{\frac{x}{k}}$ yields $y = a(2)^{\frac{x}{75}}$. It's also given that the population of this town was 240,000 in 1959. The number of years from 1659 to 1959 is $1959 - 1659$, or 300 years. Therefore, when $x = 300$, the value of y is 240,000. Substituting 300 for x and 240,000 for y in the equation $y = a(2)^{\frac{x}{75}}$ yields $240{,}000 = a(2)^{\frac{300}{75}}$, or $240{,}000 = a(2)^4$, which is equivalent to $240{,}000 = a(16)$. Dividing both sides of this equation by 16 yields $15{,}000 = a$. Therefore, the population of this town in 1659 was 15,000.

QUESTION 15

Choice A is correct. A line in the *xy*-plane that passes through the points (x_1, y_1) and (x_2, y_2) has a slope of $\frac{y_2 - y_1}{x_2 - x_1}$. The line of best fit shown passes through the points with approximate coordinates $(0, 3.2)$ and $(2, 4.4)$. It follows that the slope of the line of best fit is approximately $\frac{4.4 - 3.2}{2 - 0}$, which is equivalent to $\frac{1.2}{2}$, or 0.6. Therefore, of the given choices, 0.6 is closest to the slope of the line of best fit shown.

Choice B is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 16

Choice A is correct. Taking the square root of both sides of $(x + 15)^2 = 0$ yields $x + 15 = 0$. Subtracting 15 from both sides of this equation yields $x = -15$. Therefore, this equation has exactly one distinct real solution.

Choice B is incorrect. This equation has no distinct real solutions, not exactly one distinct real solution. *Choice C* is incorrect. This equation has exactly two distinct real solutions, not exactly one distinct real solution. *Choice D* is incorrect. This equation has exactly two distinct real solutions, not exactly one distinct real solution.

QUESTION 17

Choice C is correct. It's given that the cost to rent a bus is $\$950$ for the first 3 hours and an additional $\$50$ per hour for each hour after the first 3 hours. It's also given that t represents the total number of hours and $t > 3$. Therefore, the number of additional hours after the first 3 hours can be represented by the expression $t - 3$. The cost for these additional hours is $\$50$ per hour, so the cost for the additional hours can be represented by the expression $50(t - 3)$. The total cost can be calculated by adding the cost for the first 3 hours to the cost for the additional hours and can be represented by the expression $950 + 50(t - 3)$. It's also given that the total cost to rent the bus from the company for t hours is $\$1{,}150$. Thus, the equation that represents this situation is $950 + 50(t - 3) = 1{,}150$.

Choice A is incorrect and may result from conceptual errors. *Choice B* is incorrect and may result from conceptual errors. *Choice D* is incorrect and may result from conceptual errors.

QUESTION 18

Choice B is correct. The intercepts of the graph of each equation can be found by substituting 0 for one variable at a time. For the equation $x + y = 53$, substituting 0 for y yields $x = 53$, so the x-intercept of the graph of the equation is $(53, 0)$. Substituting 0 for x in this equation yields $y = 53$, so the y-intercept of the graph of the equation is $(0, 53)$. Thus, the graph of the equation $x + y = 53$ has intercepts at $(53, 0)$ and $(0, 53)$. For the equation $11x + 18y = 730$, substituting 0

for y yields $x = \frac{730}{11}$, so the x-intercept of the graph of the equation is approximately $(66, 0)$. Substituting 0 for x in this equation yields $y = \frac{730}{18}$, so the y-intercept of the graph of the equation is approximately $(0, 41)$. Thus, the graph of the equation $11x + 18y = 730$ has intercepts at approximately $(66, 0)$ and $(0, 41)$. Choice B is a graph that shows one line with intercepts at $(0, 53)$ and $(53, 0)$ and another line with intercepts at approximately $(0, 41)$ and $(66, 0)$. Thus, choice B represents this situation.

Choice A is incorrect. This graph represents the equations $y = x$ and $11x + 18y = 730$. *Choice C* is incorrect. This graph represents the equations $x + y = 53$ and $-11x + 18y = 730$. *Choice D* is incorrect. This graph represents the equations $y = 53$ and $-11x + 18y = 730$.

QUESTION 19

Choice D is correct. The figure shows that triangle QRS is a right triangle. Each of the given choices is an expression containing $\sin Q$ or $\cos Q$. For an acute angle in a right triangle, the sine of the angle is the length of the opposite leg divided by the length of the hypotenuse, and the cosine of the angle is the length of the adjacent leg divided by the length of the hypotenuse. It follows that $\sin Q = \frac{RS}{QS}$ and $\cos Q = \frac{QR}{QS}$, where $QR < RS$. It's given in the figure that the length of side RS is 18. Since only the equation $\sin Q = \frac{RS}{QS}$ contains RS, an expression representing QS can be found by substituting 18 for RS in this equation, which yields $\sin Q = \frac{18}{QS}$. Multiplying both sides of this equation by QS yields $QS \cdot \sin Q = 18$. Dividing both sides of this equation by $\sin Q$ yields $QS = \frac{18}{\sin Q}$. Therefore, the expression $\frac{18}{\sin Q}$ represents the length of QS.

Choice A is incorrect and may result from conceptual or calculation errors.
Choice B is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.

QUESTION 20

The correct answer is 100. An equation of a circle in the xy-plane can be written as $(x - t)^2 + (y - u)^2 = r^2$, where the center of the circle is (t, u), the radius of the circle is r, and where t, u, and r are constants. It's given that the equation of circle A is $(x + 5)^2 + (y - 5)^2 = 25$, which is equivalent to $(x + 5)^2 + (y - 5)^2 = 5^2$. Therefore, the center of circle A is $(-5, 5)$ and the radius of circle A is 5. It's given that circle B has the same center as circle A and that the radius of circle B is two times the radius of circle A. Therefore, the center of circle B is $(-5, 5)$ and the radius of circle B is $2(5)$, or 10. Substituting -5 for t, 5 for u, and 10 for r in the equation $(x - t)^2 + (y - u)^2 = r^2$ yields $(x + 5)^2 + (y - 5)^2 = 10^2$, which is equivalent to $(x + 5)^2 + (y - 5)^2 = 100$. It follows that the equation of circle B in the xy-plane is $(x + 5)^2 + (y - 5)^2 = 100$. It's also given that the equation defining circle B in the xy-plane is $(x + 5)^2 + (y - 5)^2 = k$, where k is a constant. Therefore, the value of k is 100.

QUESTION 21

The correct answer is 29. The solutions to a quadratic equation in the form $ax^2 + bx + c = 0$, where a, b, and c are constants, can be calculated using the quadratic formula, which gives two solutions: $x = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$ and $x = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$. The given equation is in the form $ax^2 + bx + c = 0$, where $a = 1$, $b = 7$, and $c = 5$. It follows that one solution to the given quadratic equation is $x = \frac{-7 + \sqrt{7^2 - 4(1)(5)}}{2(1)}$, or $x = \frac{-7 + \sqrt{49 - 20}}{2}$, which is equivalent to $x = \frac{-7 + \sqrt{29}}{2}$. It's given that one solution to the given equation can be written as $x = \frac{-7 + \sqrt{k}}{2}$, where k is a constant. It follows that the value of k is 29.

QUESTION 22

Choice B is correct. The mean of a data set is calculated by dividing the sum of the values in the data set by the number of values in the data set. It's given that the mean length of the 240 gray seals from Muskeget Island was 88 inches. This can be represented by the equation $\frac{x}{240} = 88$, where x represents the sum of the lengths, in inches, of the 240 gray seals from Muskeget Island. Multiplying both sides of this equation by 240 yields $x = (240)(88)$, or $x = 21{,}120$ inches. It's also given that the mean length of the 120 gray seals from Sable Island was 94 inches. This can be represented by the equation $\frac{y}{120} = 94$, where y represents the sum of the lengths, in inches, of the 120 gray seals from Sable Island. Multiplying both sides of this equation by 120 yields $y = (120)(94)$, or $y = 11{,}280$ inches. Therefore, the sum of the lengths, in inches, of all 360 gray seals is $21{,}120 + 11{,}280$, or 32,400. Dividing this sum by 360 yields $\frac{32{,}400}{360}$, or 90 inches. Therefore, the mean length of all 360 gray seals the scientist measured for this study is 90 inches.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect. This is the mean length of 88 inches and 94 inches, not the mean length of all 360 gray seals the scientist measured for this study. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 23

Choice B is correct. The graph of $y = f(x) + 4$ is shown, and the graph passes through the point $(0, 8)$. Substituting 0 for x and 8 for y in this equation yields $8 = f(0) + 4$. Subtracting 4 from both sides of this equation yields $4 = f(0)$. Therefore, when $x = 0$, the value of $f(x)$ is 4. Each of the given choices is in the form $f(x) = -3^x + k$, where k is a constant. Substituting 0 for x and 4 for $f(x)$ in this equation yields $4 = -3^0 + k$, or $4 = -1 + k$. Adding 1 to both sides of this equation yields $5 = k$. Substituting 5 for k in the equation $f(x) = -3^x + k$ yields $f(x) = -3^x + 5$.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 24

Choice A is correct. It's given that two lines intersect at exactly one point, forming two acute angles and two obtuse angles. When two lines intersect, opposite angles are congruent and adjacent angles are supplementary. It's given that the measure of one of the angles is $(9x - 140)°$, so the measure of the opposite angle is $(9x - 140)°$, and the measure of each adjacent angle is $(180 - (9x - 140))°$, or $(-9x + 320)°$. The possible sums of the measures of any two of the angles are $(9x - 140)° + (9x - 140)°$, or $(18x - 280)°$, $(-9x + 320)° + (-9x + 320)°$, or $(-18x + 640)°$, and $(9x - 140)° + (-9x + 320)°$, or $180°$. Of the given choices, only $(-18x + 280)°$ is not equivalent to any of these expressions and could not be the sum of the measures of any two of the angles.

Choice B is incorrect. This is the sum of the measures of two angles that are adjacent to the given angle. *Choice C* is incorrect. This is the sum of the measure of the given angle and the measure of its opposite angle. *Choice D* is incorrect. This is the sum of the measure of the given angle and the measure of an angle adjacent to the given angle.

QUESTION 25

Choice C is correct. A system of two linear equations in two variables has at least one solution if the equations represent the same line or lines that intersect at exactly one point. Statement I gives the equation $3x + 13.5y = 10.5$. Multiplying both sides of the given equation, $2x + 9y = 7$, by $\frac{3}{2}$ yields $3x + 13.5y = 10.5$, so the equation in statement I is equivalent to the given equation. Therefore, the system formed by these two equations represents the same line and has infinitely many solutions. Statement II gives the equation $3x - 13.5y = 10.5$. Adding the right- and left-hand sides of $3x + 13.5y = 10.5$ and $3x - 13.5y = 10.5$ yields $3x + 13.5y + 3x - 13.5y = 10.5 + 10.5$, or $6x = 21$. Dividing both sides of this equation by 6 yields $x = \frac{21}{6}$. Therefore, the lines represented by these equations intersect at exactly one point, where $x = \frac{21}{6}$, and the system formed by the given equation and the equation in statement II has one solution. It follows that both the equation in statement I and the equation in statement II could be the other equation in a system of equations with at least one solution.

Choice A is incorrect. Both the equation in statement I and the equation in statement II could be the other equation in this system of equations with at least one solution. *Choice B* is incorrect. Both the equation in statement I and the equation in statement II could be the other equation in this system of equations with at least one solution. *Choice D* is incorrect. Both the equation in statement I and the equation in statement II could be the other equation in this system of equations with at least one solution.

QUESTION 26

Choice B is correct. It's given that the base area of the right rectangular prism is $24t$ cm^2 and the length of the base is $\frac{8}{3}$ cm. Dividing the base area by the length yields the width: $\frac{24t}{\frac{8}{3}}$, or $(24t)\left(\frac{3}{8}\right)$, or $9t$ cm. It's also given that the height of the prism is 15 cm. A right rectangular prism has two rectangular bases and four rectangular lateral faces. The total area of the two bases is $2(24t)$, or $48t$ cm^2. The four lateral faces include two with dimensions $\frac{8}{3}$ cm by 15 cm and two with dimensions $9t$ cm by 15 cm. The total area of these four lateral faces is $2\left(\frac{8}{3}\right)(15) + 2(9t)(15)$ cm^2, which is equivalent to $80 + 270t$ cm^2. Adding this to the total area of the two bases yields $48t + 270t + 80$, or $318t + 80$ cm^2. Thus, the expression, which represents the surface area, in cm^2, of the right rectangular prism is $318t + 80$.

Choice A is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.
Choice D is incorrect. This is the volume, in cm^3, not the surface area, in cm^2.

QUESTION 27

The correct answer is 3,331. For engine speeds between 1,000 revolutions per minute (rpm) and 6,000 rpm, it's given that the equation $f(x) = \frac{1}{7}(x - a) + 433$ defines the linear function f and gives the predicted power, in brake horsepower (bph), at an engine speed of x rpm, where a is a constant. It's also given that the car's predicted power is 433 bhp at an engine speed of 3,331 rpm. Substituting 3,331 for x and 433 for $f(x)$ in the equation yields $433 = \frac{1}{7}(3{,}331 - a) + 433$. Subtracting 433 from both sides of this equation yields $0 = \frac{1}{7}(3{,}331 - a)$. Multiplying both sides of this equation by 7 yields $0 = 3{,}331 - a$. Adding a to both sides of this equation yields $a = 3{,}331$. Thus, the value of a is 3,331.

Math

Module 2
(27 questions)

QUESTION 1

Choice C is correct. In the given expression, $6x$ and $5x$ are like terms. Combining these like terms yields $11x$. It follows that the expression $6x + 5x + 4y$ is equivalent to $11x + 4y$.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 2

Choice B is correct. The dot plot gives the diameter, to the nearest inch, of each sea star in a group of tide pools. The number of dots above a given diameter represents the number of sea stars with that diameter, to the nearest inch. There are 6 dots above 16 inches. Therefore, 6 sea stars had a diameter, to the nearest inch, of 16 inches.

Choice A is incorrect and may result from calculation or conceptual errors. *Choice C* is incorrect. This is the number of sea stars with a diameter, to the nearest inch, of 17 inches, not 16 inches. *Choice D* is incorrect. This is the number of sea stars with a diameter, to the nearest inch, of 18 inches, not 16 inches.

QUESTION 3

Choice D is correct. The area, A, of a rectangle can be found using the formula $A = \ell w$, where ℓ represents the length and w represents the width of the rectangle. It's given that a rectangle has a length of 56 inches and a width of 28 inches. Substituting 56 for ℓ and 28 for w in the formula $A = \ell w$ yields $A = (56)(28)$, or $A = 1{,}568$. Therefore, the area, in square inches, of the rectangle is 1,568.

Choice A is incorrect. This is the width, in inches, not the area, in square inches, of the rectangle. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect and may result from conceptual or calculation errors.

QUESTION 4

Choice D is correct. Dividing both sides of the equation $10x = 110$ by 10 yields $x = 11$. Substituting 11 for x in the equation $6x - 63 = y$ yields $6(11) - 63 = y$, which is equivalent to $66 - 63 = y$, or $3 = y$. Therefore, the value of y is 3.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice B* is incorrect. This is the value of x, not y. *Choice C* is incorrect and may result from conceptual or calculation errors.

QUESTION 5

Choice A is correct. Substituting 63 for $f(x)$ in the given function yields $63 = 9(2x + 3)$. Dividing both sides of this equation by 9 yields $7 = 2x + 3$. Subtracting 3 from both sides of this equation yields $4 = 2x$. Dividing both sides of this equation by 2 yields $2 = x$. Therefore, $f(x) = 63$ when the value of x is 2.

Choice B is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 6

The correct answer is 8.6. Dividing both sides of the given equation by 10 yields $x = 8.6$. Therefore, 8.6 is the solution to the given equation. Note that 8.6 and 43/5 are examples of ways to enter a correct answer.

QUESTION 7

The correct answer is 3,600. The predicted number of bacteria initially measured in the growth medium is the value of y when $x = 0$. Substituting 0 for x in the given equation yields $y = 3{,}600(a)^0$. Since a is positive, this equation is equivalent to $y = 3{,}600(1)$. Therefore, when $x = 0$, the value of y is 3,600. Thus, the predicted number of bacteria initially measured in the growth medium is 3,600.

QUESTION 8

Choice A is correct. It's given that each container costs $1.87 and c represents the number of containers. It follows that $1.87c$ represents the cost, in dollars, of c containers. It's also given that each roll of tape costs $2.40 and t represents the number of rolls of tape. It follows that $2.40t$ represents the cost, in dollars, of t rolls of tape. Therefore, the total cost, in dollars, for c containers and t rolls of tape is $1.87c + 2.40t$. It's given that Leo has $15. It follows that the total cost, in dollars, must be less than or equal to 15. Therefore, the inequality $1.87c + 2.40t \leq 15$ represents this relationship.

Choice B is incorrect. This inequality represents a relationship where Leo has at least \$15, not at most \$15. *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 9

Choice B is correct. The graph of function f shows that as x increases, $f(x)$ also increases, which means that f is an increasing function. The graph of function f is curved upward and increases at an increasing rate, not a constant rate. This behavior is characteristic of exponential functions, not linear functions. Therefore, of the given choices, function f is best described as increasing exponential.

Choice A is incorrect. For a decreasing function, as x increases, $f(x)$ decreases rather than increases. *Choice C* is incorrect. For a decreasing function, as x increases, $f(x)$ decreases rather than increases, and the graph of a linear function isn't curved. *Choice D* is incorrect. The graph of a linear function isn't curved.

QUESTION 10

Choice D is correct. The equation for the line representing the boundary of the shaded region can be written in the form $y = b$, where $(0, b)$ is the y-intercept of the line in the xy-plane. For the graph shown in the xy-plane, the boundary line passes through the points $(-15, 36)$ and $(0, 36)$. Thus, the equation of the boundary line is $y = 36$. Since the shaded region represents all the points on and above this boundary line, it follows that the graph represents all the solutions to the inequality $y \geq 36$.

Choice A is incorrect and may result from conceptual errors. *Choice B* is incorrect and may result from conceptual errors. *Choice C* is incorrect and may result from conceptual errors.

QUESTION 11

Choice C is correct. It's given that one of the two players in a match is eliminated during each round. Therefore, the number of players decreases by half at the end of each round, and so the number of players eliminated at the end of a round also decreases by half. A decreasing exponential equation can be written in the form $p = a(1 - b)^r$, where b is the value of the decrease each round, r, and a is the value of p, the number of players, when $r = 0$. It's given that there are 240 players in the tennis competition. Therefore, $a = 240$. Since the number of players eliminated at the end of a round decreases by half, it follows that $b = \frac{1}{2}$. Substituting 240 for a and $\frac{1}{2}$ for b in the equation $p = a(1 - b)^r$ yields $p = 240\left(1 - \frac{1}{2}\right)^r$, or $p = 240\left(\frac{1}{2}\right)^r$.

Choice A is incorrect. This equation gives the number of players eliminated at the end of round r for a competition in which there are 15, not 240, players. *Choice B* is incorrect. This equation gives the number of players eliminated at the end of round r for a competition in which there are 15, not 240, players, and for which the number of players doubles, rather than decreases by half, after each

round. *Choice D* is incorrect. This equation gives the number of players eliminated at the end of round r for a competition in which the number of players doubles, rather than decreases by half, after each round.

QUESTION 12

Choice A is correct. An equation that defines a line in the xy-plane can be written as $y = mx + b$, where m is the slope of the line and $(0, b)$ is its y-intercept. It's given that line k is defined by the equation $y = 6x + 4$; therefore, the slope of line k is 6. Since line j is parallel to line k in the xy-plane and parallel lines have equal slopes, it follows that the slope of line j is 6. It's also given that line j passes through the point $(0, 5)$, which is its y-intercept. Substituting 6 for m and 5 for b in the equation $y = mx + b$ yields $y = 6x + 5$. Therefore, the equation $y = 6x + 5$ defines line j.

Choice B is incorrect. This equation defines a line that has a slope of -5, not 6. *Choice C* is incorrect. This equation defines a line that has a slope of -6, not 6. *Choice D* is incorrect. This equation defines a line that has a slope of 5, not 6.

QUESTION 13

The correct answer is 45. An isosceles right triangle has a right angle and two legs of equal length. In the triangle shown, one angle is a right angle and the two legs each have a length of 15. Thus, the given triangle is an isosceles right triangle. In an isosceles right triangle, the measures of the two non-right angles are 45°. It follows that the value of x is 45.

QUESTION 14

The correct answer is 13. The equation of a circle in the xy-plane can be written in the form $(x - h)^2 + (y - k)^2 = r^2$, where (h, k) is the center of the circle and r is the radius of the circle. It's given that the circle in the xy-plane is defined by $(x + 2)^2 + (y + 5)^2 = 169$. Therefore, $r^2 = 169$. Taking the positive square root of both sides of this equation yields $r = 13$. Thus, the radius of the circle is 13.

QUESTION 15

Choice B is correct. It's given that the graph shows the estimated boiling point y, in degrees Celsius, of a normal paraffin with a molecular weight of x grams per mole. It follows that for the point $(149.02, 186.05)$, 149.02 represents the molecular weight, in grams per mole, of a normal paraffin and 186.05 represents its estimated boiling point, in degrees Celsius. Therefore, the best interpretation of the point $(149.02, 186.05)$ is that a normal paraffin with a molecular weight of 149.02 grams per mole has an estimated boiling point of 186.05 degrees Celsius.

Choice A is incorrect. This statement represents a situation where x, not y, represents the boiling point, in degrees Celsius, and y, not x, represents the molecular weight, in grams, per mole. *Choice C* is incorrect and may result from conceptual errors. *Choice D* is incorrect and may result from conceptual errors.

QUESTION 16

Choice C is correct. It's given that f is a polynomial function and the graph of $y = f(x)$ in the xy-plane passes through the points $(-5, 0)$, $(1, 0)$, and $(4, 0)$. A point in the form $(a, 0)$ on the graph of $f(x)$ means that $x - a$ is a factor of $f(x)$. Since the graph of the function f passes through the point $(1, 0)$, $x - 1$ must be a factor of $f(x)$.

Choice A is incorrect. This is a factor if the graph of $y = f(x)$ passed through $(-1, 0)$. *Choice B* is incorrect. This is a factor if the graph of $y = f(x)$ passed through $(-4, 0)$. *Choice D* is incorrect. This is a factor if the graph of $y = f(x)$ passed through $(5, 0)$.

QUESTION 17

Choice D is correct. It's given that for the linear function g, the table shows four values of x and their corresponding values of $g(x)$. It's also given that the function can be written as $g(x) = mx + b$, where m and b are constants. The table shows that when the value of x is 1, the corresponding value of $g(x)$ is 32. Substituting 1 for x and 32 for $g(x)$ in $g(x) = mx + b$ yields $32 = m(1) + b$, or $32 = m + b$. Subtracting b from both sides of this equation yields $32 - b = m$. The table also shows that when the value of x is 2, the corresponding value of $g(x)$ is 28. Substituting 2 for x and 28 for $g(x)$ in $g(x) = mx + b$ yields $28 = m(2) + b$, or $28 = 2m + b$. Substituting $32 - b$ for m in this equation yields $28 = 2(32 - b) + b$. Applying the distributive property to the right-hand side of this equation yields $28 = 64 - 2b + b$, or $28 = 64 - b$. Subtracting 64 from both sides of this equation yields $-36 = -b$. Dividing both sides of this equation by -1 yields $36 = b$.

Choice A is incorrect and may result from conceptual or calculation errors.
Choice B is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.

QUESTION 18

Choice B is correct. According to the table, $f(24) = -8$, $f(30) = -8$, and $f(32) = 8$. Let the quadratic function g be defined by $g(x) = f(x) + 8$. Therefore, $g(24) = f(24) + 8$, $g(30) = f(30) + 8$, and $g(32) = f(32) + 8$. Substituting -8 for $f(24)$ in the equation $g(24) = f(24) + 8$ yields $g(24) = -8 + 8$, or $g(24) = 0$. Substituting -8 for $f(30)$ in the equation $g(30) = f(30) + 8$ yields $g(30) = -8 + 8$, or $g(30) = 0$. Substituting 8 for $f(32)$ in the equation $g(32) = f(32) + 8$ yields $g(32) = 8 + 8$, or $g(32) = 16$. By the factor theorem, if $g(24) = 0$ and $g(30) = 0$, then $g(x) = k(x - 24)(x - 30)$, where k is a constant. Since $g(32) = 16$, substituting 32 for x and 16 for $g(x)$ in the equation $g(x) = k(x - 24)(x - 30)$ yields $16 = k(32 - 24)(32 - 30)$, or $16 = k(8)(2)$, which is equivalent to $16 = 16k$. Dividing both sides of this equation by 16 yields $1 = k$. Substituting 1 for k in the equation $g(x) = k(x - 24)(x - 30)$ yields $g(x) = (x - 24)(x - 30)$. Since $g(x) = f(x) + 8$, it follows that $g(x) - 8 = f(x)$. Subtracting 8 from both sides of the equation $g(x) = (x - 24)(x - 30)$ yields $g(x) - 8 = (x - 24)(x - 30) - 8$. Substituting $f(x)$ for $g(x) - 8$ in this equation yields $f(x) = (x - 24)(x - 30) - 8$.

Choice A is incorrect. If this equation defined f, then when $x = 24$, the value of $f(x)$ would be 4, not -8. *Choice C* is incorrect. If this equation defined f, then when $x = 32$, the value of $f(x)$ would be 32, not 8. *Choice D* is incorrect. If this equation defined f, then when $x = 32$, the value of $f(x)$ would be -32, not 8.

QUESTION 19

Choice A is correct. The x-intercept of the graph shown represents the situation in which the cluster contains only M-type stars. Based on the graph, the x-intercept is approximately $(158, 0)$. Therefore, if there are 0 K-type stars in the cluster, then there are approximately 158 M-type stars in the cluster. It's given that the total mass of the stars in this cluster is 127,882 quettagrams. Therefore, the estimated mass of each M-type star is approximately $\frac{127{,}882}{158}$ quettagrams, or approximately 809.38 quettagrams. Thus, of the given choices, 811 is the closest to the estimated mass, in quettagrams, of each M-type star in this cluster.

Choice B is incorrect. This is the value closest to the estimated mass, in quettagrams, of each K-type star, not each M-type star, in this cluster. *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 20

The correct answer is $\frac{41}{81}$. An expression of the form $\sqrt[n]{a^m}$, where m and n are integers greater than 1 and $a \geq 0$, is equivalent to $a^{\frac{m}{n}}$. Therefore, the expression on the left-hand side of the given equation is equivalent to $p^{\frac{2}{3}}$; thus, $p^{\frac{2}{3}} = t^{\frac{9}{7}}$. If $t = p^{3n-1}$, where n is a constant, then substituting p^{3n-1} for t in the equation yields $p^{\frac{2}{3}} = p^{\frac{9}{7}(3n-1)}$. It's given that $p > 1$; therefore, $\frac{2}{3} = \frac{9}{7}(3n - 1)$. Multiplying each side of this equation by 21 yields $14 = 27(3n - 1)$. Distributing multiplication over subtraction yields $14 = 81n - 27$. Adding 27 to each side of this equation yields $41 = 81n$. Dividing each side of this equation by 81 yields $\frac{41}{81} = n$. Therefore, if $t = p^{3n-1}$, where n is a constant, the value of n is $\frac{41}{81}$. Note that 41/81, .5061, .5062, and 0.506 are examples of ways to enter a correct answer.

QUESTION 21

The correct answer is 302.4. It's given that the number b is 320% greater than 160. It follows that b is equal to 160 plus 320% of 160, which can be written as $b = 160 + 3.2(160)$, or $b = 672$. It's also given that the number a is 55% less than the number b. It follows that a is equal to b minus 55% of b, which can be written as $a = b - 0.55b$, or $a = 0.45b$. Substituting 672 for b in this equation yields $a = 0.45(672)$, or $a = 302.4$.

QUESTION 22

Choice C is correct. The given equation is quadratic. The maximum value of a function defined by a quadratic equation can be displayed as a constant in the vertex form of the equation, $f(x) = a(x - h)^2 + k$, where the maximum value of the function is k, which occurs when $x = h$, and a is a constant. The given equation can be rewritten in this form by completing the square. To complete the square, the given equation can be rewritten as $f(x) = -6(x^2 - 10x) - 126$, which is equivalent to $f(x) = -6(x^2 - 10x + 25) - 126 + 6(25)$, or $f(x) = -6(x - 5)^2 + 24$. This equation is in vertex form, where $a = -6$, $h = 5$, and $k = 24$. Therefore, $f(x) = -6(x - 5)^2 + 24$ displays the maximum value, 24, of the function as a constant.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice B* is incorrect. This form displays one of the zeros, not the maximum value, of the function as a constant. *Choice D* is incorrect. This form displays the zeros, not the maximum value, of the function as constants.

QUESTION 23

Choice A is correct. It's given that $\overline{WZ}$ and $\overline{XY}$ intersect at point Q. It follows that $\angle WQX$ and $\angle YQZ$ are vertical angles, which means they are congruent to each other. The figure shows that $\angle W$ and $\angle Y$ both have a measure of $a°$, so they are congruent to each other. Therefore, $\triangle QWX$ and $\triangle QYZ$ are similar triangles, where $\overline{WQ}$ corresponds to $\overline{YQ}$ and $\overline{WX}$ corresponds to $\overline{YZ}$. Since the lengths of corresponding sides in similar triangles are proportional, it follows that $\frac{YZ}{YQ} = \frac{WX}{WQ}$. It's given that $YQ = 21$, $WQ = 70$, and $WX = 60$. Substituting 21 for YQ, 70 for WQ, and 60 for WX in the equation $\frac{YZ}{YQ} = \frac{WX}{WQ}$ yields $\frac{YZ}{21} = \frac{60}{70}$, or $\frac{YZ}{21} = \frac{6}{7}$. Multiplying each side of this equation by 21 yields $YZ = 18$. Therefore, the length of $\overline{YZ}$ is 18.

Choice B is incorrect. This is the length of $\overline{QZ}$, not $\overline{YZ}$. *Choice C* is incorrect. This is the length of $\overline{XQ}$, not $\overline{YZ}$. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 24

Choice B is correct. The given equation can be rewritten as $52(x + 4)(x^2 - 4x + 16)(x^2 - 9)(x^2 + 9) = 0$, which is equivalent to $52(x + 4)(x^2 - 4x + 16)(x - 3)(x + 3)(x^2 + 9) = 0$. Applying the zero product property in this equation yields $52 = 0$, $x + 4 = 0$, $x^2 - 4x + 16 = 0$, $x - 3 = 0$, $x + 3 = 0$, and $x^2 + 9 = 0$. The equation $52 = 0$ has no solution. Subtracting 4 from both sides of the equation $x + 4 = 0$ yields $x = -4$. Adding 3 to both sides of the equation $x - 3 = 0$ yields $x = 3$. Subtracting 3 from both sides of the equation $x + 3 = 0$ yields $x = -3$. The discriminant of a quadratic equation of the form $ax^2 + bx + c = 0$ is $b^2 - 4ac$. If the discriminant is positive, the equation has two distinct real solutions. If the discriminant is zero, the equation has one distinct real solution. If the discriminant is negative, the equation has no real solutions. In the equation $x^2 - 4x + 16 = 0$, $a = 1$, $b = -4$, and $c = 16$. Substituting these values in the equation for the discriminant, $b^2 - 4ac$, yields $(-4)^2 - 4(1)(16)$, or -48. Since

the discriminant is negative, this equation has no real solutions. In the equation $x^2 + 9 = 0$, $a = 1$, $b = 0$, and $c = 9$. Substituting these values in the equation for the discriminant, $b^2 - 4ac$, yields $0^2 - 4(1)(9)$, or -36. Since the discriminant is negative, this equation has no real solutions. Therefore, the distinct real solutions to the given equation are $x = -4$, $x = 3$, and $x = -3$. Thus, the given equation has exactly three distinct real solutions.

Choice A is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.
Choice D is incorrect and may result from conceptual or calculation errors.

QUESTION 25

Choice B is correct. The mean of a data set is the sum of the values divided by the number of values. It's given that a new player earns 18 points playing the game, and this number of points is added to data set A to create data set B with 51 values. The histogram shows that all the values in data set A are greater than 18. Since the additional number of points, 18, is less than any of the values in the original data set, the mean number of points per player for data set B is less than the mean number of points per player for data set A. The median of a data set with 50 values is between the 25th and 26th values when the values are listed in ascending order. The median of a data set with 51 values is the 26th value when the values are listed in ascending order. Therefore, the median of data set B is the 26th value in data set B, which is the 25th value in data set A. The histogram shows that the 25th and 26th values in data set A are both between 50 and 60 points. Therefore, the 25th and 26th values in data set A could be equal, in which case the median of data set A would be equal to both the 25th and 26th values in data set A. Then, the median number of points per player for data set A would be equal to the median number of points per player for data set B. Therefore, only statement II must be true.

Choice A is incorrect and may result from conceptual or calculation errors.
Choice C is incorrect and may result from conceptual or calculation errors.
Choice D is incorrect and may result from conceptual or calculation errors.

QUESTION 26

Choice D is correct. It's given that in triangle XYZ, the measure of angle X is 90°, so triangle XYZ is a right triangle. It's also given that point W lies on segment YZ, and segment WX is perpendicular to segment YZ. It follows that triangle WYX is a right triangle. Triangle WYX and triangle XYZ are right triangles with the same interior angle measure at point Y. It follows that triangle WYX and triangle XYZ are similar, where angles W, Y, and X in triangle WYX correspond to angles X, Y, and Z, respectively, in triangle XYZ. Since corresponding angles in similar triangles are congruent, their tangents have equal value. Thus, the tangent of angle Z is equal to the tangent of angle X in triangle WYX. The opposite side of angle X in triangle WYX is segment WY, and the adjacent side is segment WX. It's given that the length of segment WY is 572 and the length of segment WX is 429. It follows that the tangent of angle X in triangle WYX is $\frac{572}{429}$, or $\frac{4}{3}$. Therefore, the value of $\tan Z$ is $\frac{4}{3}$.

Choice A is incorrect. This is the value of $\cos Z$, not $\tan Z$. *Choice B* is incorrect. This is the value of $\tan Y$, not $\tan Z$. *Choice C* is incorrect. This is the value of $\sin Z$, not $\tan Z$.

QUESTION 27

The correct answer is 157.8. It's given that an area of 46.00 square nautical miles is equivalent to k square kilometers. Since 1 nautical mile is equal to 1.852 kilometers, it follows that an area of 1 square nautical mile is equivalent to $(1.852)^2$, or 3.429904, square kilometers. Multiplying 46.00 by 3.429904 yields 157.775584 square kilometers. Rounding this value to the nearest tenth yields 157.8. Therefore, the value of k is 157.8.