

# Reading and Writing

## Module 1 (27 questions)

### QUESTION 1

**Choice A** is the best answer because it most logically completes the text's discussion of how biodiversity loss due to invasive species can be avoided. As used in this context, "preventable" means able to be stopped or kept from happening. The text indicates that "people can take simple steps" to avoid bringing possible invasive species into new environments. It presents these steps as an example of how biodiversity loss due to invasive species is preventable.

**Choice B** is incorrect because it wouldn't make sense to say that a simple step like washing your shoes after traveling is an example of biodiversity loss due to invasive species being "undeniable," or something that can't be proved to be wrong. Although the text may suggest that biodiversity loss due to invasive species is something that really happens, the word that completes the text must make the first sentence into an assertion that is illustrated by the second sentence, and the second sentence illustrates the idea that biodiversity loss due to invasive species is preventable, not undeniable. **Choice C** is incorrect because it wouldn't make sense to say that a simple step like washing your shoes after traveling is an example of biodiversity loss due to invasive species being "common," or something that happens regularly. Additionally, the text doesn't provide any information about how frequently invasive species cause biodiversity loss. **Choice D** is incorrect because it wouldn't make sense to say that a simple step like washing your shoes after traveling is an example of biodiversity loss due to invasive species being "concerning," or something that is troubling or causes worry. Although the text implies that the phenomenon of biodiversity loss due to invasive species is itself a concerning phenomenon, the word that completes the text must make the first sentence into an assertion that is illustrated by the second sentence, and the second sentence illustrates the idea that biodiversity loss due to invasive species is preventable, not concerning.

### QUESTION 2

**Choice C** is the best answer because it most logically completes the text's discussion of the influences on Banisadr's work. As used in this context, "unimportant" means trivial or lacking value. "It is by no means" establishes that the word that goes in the blank is contradicted by other information; the material that follows "indeed" later in that sentence provides the contradicting information—namely, that Banisadr himself cites Bosch as an inspiration. In other words, the sentence indicates that Bosch's influence on Banisadr is significant, and thus recognizing that influence is by no means unimportant.

*Choice A* is incorrect because it wouldn't make sense to say that recognizing Bosch's influence on Banisadr isn't "substantial," or meaningful. The text states that Banisadr himself cites Bosch as an influence. *Choice B* is incorrect because it wouldn't make sense to say that it isn't "satisfying," or pleasing, to recognize Bosch's influence on Banisadr. The text states that Banisadr himself cites Bosch as an influence. *Choice D* is incorrect because it wouldn't make sense to say that recognizing Bosch's influence on Banisadr isn't "appropriate," or suitable. The text indicates that Banisadr himself notes that Bosch's work has had an effect on him.

### QUESTION 3

**Choice C** is the best answer because it best describes how the second sentence functions in the text as a whole. The first sentence establishes something astronomers believe with some certainty: that Betelgeuse will explode in a supernova. The second sentence then introduces a problem: astronomers aren't certain *when* Betelgeuse will explode because they don't have enough information about the star's internal characteristics. Finally, the third sentence indicates that researcher Sarafina El-Badry Nance and colleagues investigated a possible method of obtaining the necessary information about Betelgeuse's internal characteristics, though they found that the method wouldn't be sufficient. Thus, the function of the second sentence is to identify the problem that Nance and colleagues attempted to solve but didn't.

*Choice A* is incorrect because the second sentence doesn't indicate how other astronomers or astrophysicists responded to the work done by Nance and colleagues; the text doesn't address this information at all. *Choice B* is incorrect because the second sentence introduces the general problem Nance and colleagues hoped to solve, not the central finding they ultimately reported. It is the third sentence that presents Nance and colleagues' conclusion that a potential method for determining internal stellar states would be insufficient. *Choice D* is incorrect because the second sentence introduces the general problem Nance and colleagues hoped to solve, not a serious limitation of how Nance and colleagues tried to solve it. It is the third sentence that introduces Nance and colleagues, but no serious limitation of their approach to studying a method of determining internal stellar states is described.

### QUESTION 4

**Choice B** is the best answer because it most accurately describes the function of the third sentence within the overall structure of the text. The third sentence makes a generalization, asserting that evolutionary links between predators and prey can persist across great expanses of time and distance. This generalization is exemplified by the text's discussion of the relationship between mimosa trees and *B. terrenus* beetles. When mimosa trees were introduced to North America in 1785, no *B. terrenus* beetles were present, so the relationship between the trees and the beetles that exists in their native East Asia was disrupted. When the beetles were introduced to North America more than 200 years later, however, they quickly attacked mimosa trees, illustrating the generalization that links between predators and prey "can persist across centuries and continents."

*Choice A* is incorrect because the third sentence doesn't indicate that Chang and colleagues were investigating any particular hypothesis. According to the text, Chang and colleagues were simply monitoring mimosa trees when the beetles happened to be introduced to the area. *Choice C* is incorrect because the third sentence offers a generalization about the relationship between predators and prey, not an explanation for the findings of Chang and colleagues.

that differs from an explanation presented elsewhere in the text. *Choice D* is incorrect because the third sentence doesn't discuss any particular species (either the species mentioned elsewhere in the text or any other) and doesn't help explain why species spread to new locations.

## QUESTION 5

**Choice C** is the best answer because, based on the information presented in the texts, it represents how Focarelli and Panetta would most likely respond to Fan's findings. Text 1 indicates that Fan found that a newspaper merger would result in a rise in subscription prices. This rise wouldn't benefit customers, who would have to pay more for news after a merger. Text 2 presents Focarelli and Panetta's argument that merger research tends to focus too much on what happens immediately after the merger. Text 2 goes on to describe their finding that mergers can be economically beneficial for consumers over the long term. This suggests that Focarelli and Panetta would encourage Fan to investigate the long-term effect of the hypothetical newspaper merger on subscription prices.

*Choice A* is incorrect because Text 2 indicates that Focarelli and Panetta found that merged companies experience "efficiency gains" over the long term, meaning that their expenses go down relative to their output, not that their expenses increase. *Choice B* is incorrect because Text 2 doesn't indicate that Focarelli and Panetta connect the effects of mergers to specific locations. Instead, Focarelli and Panetta focus on the length of time over which the effects of mergers should be evaluated. *Choice D* is incorrect because there's no indication in Text 2 that Focarelli and Panetta believe that the newspaper industry is different from any other industry when it comes to the effects of mergers. Although their own research was about consumer banking, Text 2 suggests that they view their conclusions as applicable to mergers in general.

## QUESTION 6

**Choice D** is the best answer because it provides a detail about Elinor that is established in the text. The text indicates that although Elinor is "only nineteen," she gives good advice and exhibits such a high level of understanding and judgment that she serves as "the counsellor of her mother." Thus, Elinor is mature beyond her years.

*Choice A* is incorrect because it isn't supported by the text: although the text says that Elinor advises her mother and often counteracts her mother's impulses, there's no mention of Elinor arguing with her mother or failing to change her mother's mind. *Choice B* is incorrect because it isn't supported by the text: although the text mentions that Elinor has strong feelings, it doesn't indicate that she's excessively sensitive when it comes to family issues. *Choice C* is incorrect because it isn't supported by the text: there's no mention of what Elinor thinks about her mother and no suggestion that she thinks her mother is a bad role model. Because she's described as having "an excellent heart," Elinor likely doesn't think ill of her mother.

## QUESTION 7

**Choice D** is the best answer because it presents a statement about Mrs. Ochiltree's acquaintances that is supported by the text. The text indicates that Mrs. Ochiltree makes comments about her acquaintances that are frank, or direct and blunt, and sometimes startling. It also states that because of this behavior, the acquaintances tend to avoid Mrs. Ochiltree.

Together, these details suggest that the acquaintances choose not to be around Mrs. Ochiltree because they are offended by the things she has said about them.

*Choice A* is incorrect because the text doesn't suggest that Mrs. Ochiltree's acquaintances avoid discussing topics that would upset Mrs. Ochiltree; instead, it states that they avoid being around Mrs. Ochiltree. *Choice B* is incorrect because the text indicates that Mrs. Ochiltree knows her acquaintances often avoid her and is pleased about it (she "rather exulted in it"), not that she wants to spend more time with them. *Choice C* is incorrect because the text doesn't suggest that Mrs. Ochiltree's acquaintances avoid speaking with Mrs. Ochiltree because they are too focused on their own concerns, but rather because they don't like the frank comments she makes.

## QUESTION 8

**Choice D** is the best answer because it most accurately states the main idea of the text. The speaker describes the experience of being "weary" and "tired" and going to bed to seek "dear repose" (that is, sleep), but instead of sleeping, the speaker is kept awake ("keep my drooping eyelids open wide") by thoughts of a friend ("my thoughts...[Begin] a zealous pilgrimage to thee").

*Choice A* is incorrect because the text makes it clear that the speaker isn't asleep; thoughts about the friend are keeping the speaker awake ("keep my drooping eyelids open wide"). *Choice B* is incorrect because the speaker isn't talking about taking a literal trip when referring to "a zealous pilgrimage." Rather, the speaker is referring to the experience of thinking about the friend, of taking "a journey in my head." *Choice C* is incorrect because the text indicates that the speaker and the friend aren't in the same place and having a conversation. Rather, the speaker is at home and thinking of the friend, who is somewhere else ("from far where I abide").

## QUESTION 9

**Choice B** is the best answer because it presents a finding that would best support Granito and Álvarez's claim that fermenting black beans makes them easier to digest and more nutritious. The text indicates that high levels of soluble fiber and raffinose in black beans make the beans hard to digest and that tannins and trypsin inhibitors make it harder for the body to extract nutrients from the beans. If it were found that fermenting the beans significantly reduces their levels of soluble fiber, raffinose, trypsin inhibitors, and tannins when cooked, this would directly support the claim that fermentation improves the digestibility of the beans and makes them more nutritious.

*Choice A* is incorrect because the text indicates that trypsin inhibitors and tannins interfere with the body's ability to extract nutrients from black beans; if fermentation and cooking were found to increase these antinutrients, fermented beans would likely be less nutritious than unfermented ones, not more nutritious (as Granito and Álvarez claim). *Choice C* is incorrect because the text doesn't address the idea that greater nitrogen absorption in the gut has an effect on a food's digestibility or level of nutrition, so the discovery of the presence of microorganisms that may increase nitrogen absorption wouldn't provide relevant support for the claim that fermentation makes black beans easier to digest and more nutritious. *Choice D* is incorrect because Granito and Álvarez's claim focuses on the effect of fermenting black beans, but the finding that nonfermented black beans also have fewer trypsin inhibitors and tannins when cooked at high pressure would suggest that the role of the cooking method could be significant when it comes to nutrition; further, the finding wouldn't address the beans' digestibility.

## QUESTION 10

**Choice C** is the best answer because it most effectively completes the example regarding the ablation rate of iron. The table shows the ablation rates for three elements—iron, potassium, and sodium—found in cosmic dust that comes from one of four sources. The text says that the ablation rate for a given element in slower-moving SPC or AST dust was lower than the ablation rate for that same element in faster-moving HTC or OCC dust. The text then presents the first part of an example of this pattern, describing an ablation rate of 28% for iron in AST dust. The information that iron from HTC dust had an ablation rate of 90% is therefore the most effective way to complete this example—the comparison of a relatively low ablation rate for iron in slower-moving AST dust with a relatively high ablation rate for iron in faster-moving HTC dust illustrates the tendency of ablation rates for a given element to be lower in slower-moving dust than in faster-moving dust.

*Choice A* is incorrect because the text indicates that SPC dust, like AST dust, moves relatively slowly; a comparison of the ablation rates of iron from two slower-moving dust sources could not be an example of the difference between ablation rates in slower-moving dust and faster-moving dust, which is the pattern that the example is supposed to illustrate. *Choice B* is incorrect because the example in the text is supposed to illustrate the difference in the ablation rates of the same element from slower-moving dust and faster-moving dust, and the first part of the example provides data about the ablation rate of iron, which means the second part of the example must also be about the ablation rate of iron, not the ablation rate of sodium. *Choice D* is incorrect because the example in the text is supposed to illustrate the difference in the ablation rates of the same element from slower-moving dust and faster-moving dust, and the first part of the example provides data about the ablation rate of iron, which means the second part of the example must also be about the ablation rate of iron, not the ablation rate of sodium. Additionally, any ablation rate from AST dust would be ineffective in this example since AST dust is referenced in the first part of the example and thus additional data focused on AST dust would not illustrate a variation across dust types.

## QUESTION 11

**Choice D** is the best answer because it uses data from the graph to effectively illustrate the text's claim about general economic policy uncertainty in the United Kingdom. The graph presents values for economic policy uncertainty in tax and public spending policy, trade policy, and general economic policy in the UK from 2005 to 2010. The graph shows that in 2005, the value for general economic policy uncertainty (approximately 90) was substantially lower than the value for uncertainty about trade policy specifically (approximately 160). It also shows that in 2010, the value for general economic policy uncertainty (approximately 120) was substantially higher than the value for uncertainty about trade policy (approximately 70). The substantial differences between these values in 2005 and 2010 support the claim that a general measure may not fully reflect uncertainty about specific areas of policy.

*Choice A* is incorrect because the graph shows that the level of general economic policy uncertainty was similar to the level of uncertainty about tax and public spending policy in both 2005 (with values of approximately 90 and 100, respectively) and 2009 (with values of approximately 80 and 75, respectively). *Choice B* is incorrect because the graph shows that general economic policy uncertainty was higher than uncertainty about tax and public spending policy in 2006, 2007, and 2009, not that it was lower each year from 2005 to 2010. *Choice C* is incorrect because the graph shows that general

economic policy uncertainty reached its highest level in 2010, which was when uncertainty about tax and public spending policy also reached its highest level, not its lowest level.

## QUESTION 12

**Choice C** is the best answer because it describes data from the table that support the researcher's hypothesis. According to the text, the researcher hypothesized that Arctic ground squirrels would exhibit longer torpor bouts and shorter arousal episodes than Alaska marmots do—or, put the other way, that the marmots would show shorter torpor bouts and longer arousal episodes than the ground squirrels do. The table shows data about torpor bouts and arousal episodes for the two species from 2008 to 2011. According to the table, the average duration of torpor bouts was 13.81 days for Alaska marmots, shorter than the average of 16.77 days for Arctic ground squirrels, and the average duration of arousal episodes was 21.2 hours for Alaska marmots, longer than the average of 14.2 hours for Arctic ground squirrels. Thus, the table supports the researcher's hypothesis by showing that Alaska marmots had shorter bouts of torpor and longer arousal episodes than Arctic ground squirrels did.

**Choice A** is incorrect because it inaccurately describes data from the table and doesn't support the researcher's hypothesis. The table shows that the average duration of arousal episodes was less than a day for both Alaska marmots (21.2 hours) and Arctic ground squirrels (14.2 hours). Additionally, information about arousal episodes for Alaska marmots and Arctic ground squirrels isn't sufficient to support a hypothesis involving comparisons of both arousal episodes and torpor bouts for those animals. **Choice B** is incorrect because it doesn't support the researcher's hypothesis, which involves comparisons of arousal episodes as well as torpor bouts for Alaska marmots and Arctic ground squirrels. Noting that both animals had torpor bouts lasting several days, on average, doesn't address arousal episodes at all, nor does it reveal how the animals' torpor bouts compared. **Choice D** is incorrect because it doesn't support the researcher's hypothesis. Although the table does show that Alaska marmots had more torpor bouts (12) than arousal episodes (11) and that their arousal episodes were much shorter than their torpor bouts (21.2 hours and 13.81 days, respectively), comparing data across only Alaska marmot behaviors isn't sufficient to support a hypothesis about torpor and arousal behaviors of both Alaska marmots and Arctic ground squirrels.

## QUESTION 13

**Choice A** is the best answer because it presents data from the table that most effectively complete the statement about the rates at which employment shifted in France and the United States. The text states that over the last two hundred years employment in the agricultural sector has declined while employment in the service sector has risen in both France and the US, and the data from the table reflect these trends. The text asserts, however, that the transition from agriculture to services "happened at very different rates in the two countries." This assertion is best supported by a comparison of data from 1900 and 1950: the table shows that in those years, employment in agriculture went from 43% to 32% in France (a decline of 11 percentage points) and from 41% to 14% in the US (a decline of 27 percentage points), and that employment in services went from 28% to 35% in France (an increase of 7 percentage points) and from 31% to 53% in the US (an increase of 22 percentage points). In other words, the rate of change was greater in the US than in France for both sectors.

Choice B is incorrect because comparing the data for 1800 and 2012 would suggest a similar rate of change in the two countries, not very different rates: employment in agriculture went from 64% in 1800 to 3% in 2012 in France, which is close to the change from 68% in 1800 to 2% in 2012 in the US, while employment in services went from 14% in 1800 to 76% in 2012 in France, which is close to the change from 13% in 1800 to 80% in 2012 in the US. Choice C is incorrect because comparing the data for 1900 and 2012 would suggest a similar rate of change in the two countries rather than very different rates: employment in agriculture went from 43% in 1900 to 3% in 2012 in France, which is close to the change from 41% in 1900 to 2% in 2012 in the US, while employment in services went from 28% in 1900 to 76% in 2012 in France, which is close to the change from 31% in 1900 to 80% in 2012 in the US. Choice D is incorrect because comparing the data for 1800 and 1900 would suggest a similar rate of change in the two countries, not very different rates: employment in agriculture went from 64% in 1800 to 43% in 1900 in France, which is fairly close to the change from 68% in 1800 to 41% in 1900 in the US, while employment in services went from 14% in 1800 to 28% in 1900 in France, which is close to the change from 13% in 1800 to 31% in 1900 in the US.

## QUESTION 14

**Choice D** is the best answer because it presents the conclusion that most logically follows from the text's discussion of leafy spurge and engineered DNA. The text establishes that using chemical herbicides to control leafy spurge in North America can also harm other plants nearby. The text then indicates that it might be possible to use engineered DNA to prevent plants from reproducing, which would be useful for "exclusively targeting" leafy spurge. If it's possible to exclusively target leafy spurge with engineered DNA—meaning that only leafy spurge is affected by the engineered DNA—and prevent the plant from reproducing, then leafy spurge numbers could be reduced "without harming other organisms."

Choice A is incorrect because the text raises the possibility of using engineered DNA to prevent leafy spurge from reproducing, not to make individual leafy spurge plants more vulnerable to chemical herbicides that already exist. Choice B is incorrect because the text doesn't describe any ecological benefits of leafy spurge in North America; instead, the text is focused on using engineered DNA to prevent leafy spurge from reproducing and thereby reduce its numbers. The only ecological effects of leafy spurge in North America that are described in the text are harmful. Choice C is incorrect because the text describes the possibility of using engineered DNA to prevent leafy spurge from reproducing; it doesn't offer a way to enable cattle to eat leafy spurge without becoming sick.

## QUESTION 15

**Choice B** is the best answer. The convention being tested is the use and punctuation of an integrated relative clause. This choice correctly uses the relative pronoun "that" and no punctuation to create an integrated relative clause that provides essential information about the noun phrase ("a book packaging company") that it modifies.

Choice A is incorrect because it doesn't use a relative pronoun to link the verb phrase beginning with "specializes" to the noun phrase that it modifies ("a book packaging company"). Choice C is incorrect because it doesn't use a relative pronoun to link the verb phrase beginning with "specializes" to the noun phrase that it modifies ("a book packaging company"). Choice D is incorrect because no punctuation is needed between the integrated relative clause beginning with "that specializes" and the noun phrase that it modifies ("a book packaging company").

## QUESTION 16

**Choice B** is the best answer. The convention being tested is pronoun-antecedent agreement. The plural pronoun "they" agrees in number with the plural antecedent "woodcuts" and clearly identifies what was exhibited at the Smithsonian American Art Museum.

*Choice A* is incorrect because the singular pronoun "it" doesn't agree in number with the plural antecedent "woodcuts." *Choice C* is incorrect because the singular pronoun "this" doesn't agree in number with the plural antecedent "woodcuts." *Choice D* is incorrect because the plural pronoun "some" is illogical in this context (referring to "some" of only two woodcuts).

## QUESTION 17

**Choice D** is the best answer. The convention being tested is punctuation use between sentences. In this choice, the period after "essays" is used correctly to mark the boundary between one sentence ("American...essays") and another ("Praising...Morrison"). The participial phrase beginning with "praising" modifies the subject of the second sentence, "writer Robert Antoni."

*Choice A* is incorrect because it results in a comma splice. A comma can't be used in this way to mark the boundary between sentences. *Choice B* is incorrect. Without a comma preceding it, the conjunction "and" can't be used in this way to join sentences. *Choice C* is incorrect because it results in a run-on sentence. The sentences ("American...essays" and "Praising...Morrison") are fused without punctuation and/or a conjunction.

## QUESTION 18

**Choice A** is the best answer. The convention being tested is finite and nonfinite verb forms within a sentence. A main clause requires a finite verb to perform the action of the subject (in this case, Ashford's "gestures" and "habit"), and this choice supplies the finite past tense verb "helped" to indicate what Ashford's gestures and habit helped accomplish.

*Choice B* is incorrect because the nonfinite participle "helping" doesn't supply the main clause with a finite verb. *Choice C* is incorrect because the relative clause "that helped" doesn't supply the main clause with a finite verb. *Choice D* is incorrect because the nonfinite to-infinitive "to help" doesn't supply the main clause with a finite verb.

## QUESTION 19

**Choice C** is the best answer. The convention being tested is punctuation between a subject and a verb. When, as in this case, a subject ("her 2019 novel *Gingerbread*") is immediately followed by a verb ("offers"), no punctuation is needed.

*Choice A* is incorrect because no punctuation is needed between the subject and the verb. *Choice B* is incorrect because no punctuation is needed between the subject and the verb. *Choice D* is incorrect because no punctuation is needed between the subject and the verb.

## QUESTION 20

**Choice D** is the best answer. The convention being tested is pronoun-antecedent agreement. The singular pronoun "it" agrees in number with the singular antecedent "violin" and thus indicates that the traditional violin (and not its curves) was made lighter.

*Choice A* is incorrect because the plural pronoun “those” doesn’t agree in number with the singular antecedent “violin.” *Choice B* is incorrect because the singular pronoun “one” is ambiguous in this context; the resulting sentence leaves unclear what Stradivari made lighter. *Choice C* is incorrect because the plural pronoun “them” doesn’t agree in number with the singular antecedent “violin.”

## QUESTION 21

**Choice C** is the best answer. The convention being tested is the punctuation of a supplementary word or phrase between two main clauses. This choice correctly uses a comma to separate the supplementary adverb “however” from the preceding main clause (“They...antiquity”) and a semicolon to join the next main clause (“some...literature”) to the rest of the sentence. Further, placing the semicolon after “however” indicates that the information in the preceding main clause (neoclassical writers were not the first to adopt classical literary modes) is contrary to what might be assumed from the information in the previous sentence (the neoclassical writers were unique in imitating classical epic poetry and satires).

*Choice A* is incorrect because it fails to mark the boundary between the two main clauses with appropriate punctuation. *Choice B* is incorrect because commas can’t be used in this way to punctuate a supplementary word or phrase between two main clauses. *Choice D* is incorrect because placing the semicolon after “antiquity” illogically indicates that the information in the next main clause (prominent Renaissance figures were also influenced by classical literature) is contrary to the information in the previous clause (neoclassical writers were not the first to adopt classical literary modes).

## QUESTION 22

**Choice D** is the best answer. “Nevertheless” logically signals that the claim in this sentence—that the telegenic Kennedy was ultimately considered the winner of the debate—is true despite the previous information about the poll of radio listeners.

*Choice A* is incorrect because “in other words” illogically signals that the claim in this sentence is a paraphrase of the previous information about the poll of radio listeners. Instead, Kennedy was ultimately considered the winner despite what that poll suggested about his performance. *Choice B* is incorrect because “therefore” illogically signals that the claim in this sentence is a result of the previous information about the poll of radio listeners. Instead, Kennedy was ultimately considered the winner despite what that poll suggested about his performance. *Choice C* is incorrect because “likewise” illogically signals that the claim in this sentence is similar to the previous information about the poll of radio listeners. Instead, Kennedy was ultimately considered the winner despite what that poll suggested about his performance.

## QUESTION 23

**Choice A** is the best answer. “Still” logically signals that the information about Sher-Gil in this sentence—that she longed to leave Paris and return to India—contrasts with what one would expect after reading about Sher-Gil’s experiences in Paris in the previous sentences..

*Choice B* is incorrect because “therefore” illogically signals that the information about Sher-Gil in this sentence is a result or consequence of the descriptions in the previous sentences. Instead, this information contrasts with what one would expect after reading about Sher-Gil’s experiences in Paris. *Choice C* is incorrect because “indeed” illogically signals that the information about Sher-Gil in this sentence offers additional emphasis in support of the descriptions in the

previous sentences. Instead, this information contrasts with what one would expect after reading about Sher-Gil's experiences in Paris. *Choice D* is incorrect because "furthermore" illogically signals that the information about Sher-Gil in this sentence offers additional support for or confirmation of the descriptions in the previous sentences. Instead, this information contrasts with what one would expect after reading about Sher-Gil's experiences in Paris.

## QUESTION 24

**Choice D** is the best answer. "Specifically" logically signals that the information in this sentence about Sauer's argument—that, according to Sauer, cultures play a role in their own development, as opposed to being shaped solely by natural surroundings—provides specific, precise details elaborating on the more general information in the previous sentence about Sauer's challenge to prevailing views.

*Choice A* is incorrect because "similarly" illogically signals that the information in this sentence about Sauer's argument is similar to, but separate from, the more general information in the previous sentence. Instead, it provides specific, precise details elaborating on that information. *Choice B* is incorrect because "finally" illogically signals that the information in this sentence about Sauer's argument indicates a last step in a process or a concluding summary. Instead, it provides specific, precise details elaborating on the general information in the previous sentence. *Choice C* is incorrect because "therefore" illogically signals that the information in this sentence about Sauer's argument is a result of the more general information in the previous sentence. Instead, it provides specific, precise details elaborating on that information.

## QUESTION 25

**Choice C** is the best answer. "Consequently" logically signals that the information in this sentence—that many individual gold prospectors gave up their fortune-hunting dreams and became employees of mining companies—is a result or consequence of the previous information about the inaccessibility of the state's gold deposits.

*Choice A* is incorrect because "furthermore" illogically signals that the information in this sentence merely adds to the previous information about the inaccessibility of the state's gold deposits. Instead, it's a result or consequence of that information. *Choice B* is incorrect because "still" illogically signals that the information in this sentence offers a contrast or exception to the previous information about the inaccessibility of the state's gold deposits. Instead, it's a result or consequence of that information. *Choice D* is incorrect because "next" illogically signals that the information in this sentence is the next step in a process. Instead, it's a result or consequence of the previous information about the inaccessibility of the state's gold deposits.

## QUESTION 26

**Choice B** is the best answer. The sentence presents the study, describing it as a 2013 analysis of Quanhucun cat bone fragments, and its conclusions, indicating what the analysis suggests about cat domestication in Quanhucun.

*Choice A* is incorrect because the sentence focuses on the study's methodology; it doesn't present conclusions from the study. *Choice C* is incorrect. While the sentence provides a general overview of the study, it doesn't present conclusions from the study. *Choice D* is incorrect. The sentence describes a finding from the study; it doesn't present conclusions from the study.

## QUESTION 27

**Choice A** is the best answer. Noting that “guerdon” is of Anglo-French origin and “Laodicean” is of ancient Greek origin, the sentence uses “while” to emphasize a difference in the origins of the two words.

**Choice B** is incorrect. While the sentence emphasizes two words used in the Scripps National Spelling Bee, it doesn’t emphasize (or mention) the words’ linguistic origins. **Choice C** is incorrect. While the sentence specifies the linguistic origin of one word used in the Scripps National Spelling Bee, it doesn’t mention the other word or emphasize a difference in the two words’ origins. **Choice D** is incorrect. While the sentence makes a generalization about words used in the Scripps National Spelling Bee, it doesn’t emphasize a difference in the words’ origins.

# Reading and Writing

## Module 2

(27 questions)

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### QUESTION 1

**Choice C** is the best answer because it most logically completes the text's discussion of John Ashbery's poems. As used in this context, "interpret" would mean decipher the meaning of. The text indicates that Ashbery's poems have many unusual features, that it's difficult to tell what exactly the poems' subject matter is, and that scholars strongly disagree about the poems. This context conveys the idea that it's difficult to interpret Ashbery's poems.

**Choice A** is incorrect because "delegate" means to assign someone as a representative of another person or to entrust something to someone else, neither of which would make sense in context. The text is focused only on the difficulty that readers have interpreting Ashbery's poems due to their many unusual features; it doesn't suggest anything about the poems being difficult to delegate. **Choice B** is incorrect because describing Ashbery's poems as difficult to "compose," or put together or produce, would make sense only if the text were about Ashbery's experience of writing the poems. It could be true that it was difficult for Ashbery to compose his poems, but the text doesn't address this; it instead discusses how readers interpret and engage with the poems.

**Choice D** is incorrect because describing Ashbery's poems as being difficult to "renounce," or give up or refuse, wouldn't make sense in context. The text focuses on the idea that features of Ashbery's poems are odd or unclear and have caused heated scholarly debate. This context suggests that the poems are difficult to interpret, not that the poems are difficult to renounce.

### QUESTION 2

**Choice D** is the best answer because it most logically completes the text's discussion of the research that Lopes-Ferreira and her colleagues are conducting on the stingray species *Potamotrygon rex*. As used in this context, "a substantial" effect means an effect that is sizable or noteworthy. The text indicates that the researchers are seeking to determine whether there are "considerable variations" in the potency of stingray venom that are associated with variation in the stingrays' age and sex. This context suggests that the researchers want to find out whether stingray age and sex have a substantial effect on venom toxicity.

*Choice A* is incorrect because there's nothing in the text that suggests that the researchers have been studying whether the stingrays' age and sex have "a disconcerting," or an unsettling and disturbing, effect on the stingrays' venom. The text indicates that the researchers wish to determine if stingray age and sex cause large variations in the toxicity of stingray venom, not if the effect of age and sex is disconcerting. *Choice B* is incorrect because the text indicates that researchers want to find out whether differences in stingray age and sex produce differences in stingray venom, not that the researchers want to find out whether age and sex have "an acceptable," or a satisfactory, effect on venom. The text makes no mention of what would make an effect on venom toxicity acceptable and gives no indication that the researchers are interested in that question. *Choice C* is incorrect because it wouldn't make sense in context for the researchers to be looking for "an imperceptible," or an unnoticeable, effect of age and sex on stingray venom. The text says that the researchers are trying to determine if there are "considerable variations" in venom toxicity linked to age and sex, not that the researchers are trying to find effects that they can't perceive.

### QUESTION 3

**Choice B** is the best answer because it most logically completes the text's discussion of Ochoa's prediction that humans will one day need to live in places other than Earth. As used in this context, "speculates" would mean puts forward an idea without firm evidence. The text states that Ochoa "doesn't have a definite idea" about when humans might need to live in other environments and characterizes Ochoa's prediction as a "conjecture," or a conclusion presented without convincing evidence. This context indicates that Ochoa speculates when she makes this prediction.

*Choice A* is incorrect because saying that Ochoa "demands," or insists or requires, that humans will one day need to live in other environments than Earth's wouldn't make sense in context. The text indicates that she's unsure about the timing but hypothesizes that it will someday happen. *Choice C* is incorrect because saying that Ochoa "doubts," or questions or disbelieves, that humans will one day need to live in other environments than Earth's wouldn't make sense in context. The text indicates that although Ochoa is unsure about the timing, she hypothesizes that humans will need to live in places other than Earth and encourages research into future travel to the moon. *Choice D* is incorrect because saying that Ochoa "establishes," or proves, that humans will one day need to live in other environments than Earth's wouldn't make sense in context. Rather than stating that Ochoa discusses her idea with certainty and supports it with evidence, the text indicates that Ochoa is unsure about when humans might need to live in other environments.

### QUESTION 4

**Choice D** is the best answer because it most logically completes the text's discussion of the collaboration between the Crow Tribe and Montana State University. As used in this context, "exemplifies" means demonstrates. The text conveys how the Crow Tribe–Montana State University collaboration serves to illustrate the model of community-based participatory research introduced earlier in the text and expanded on later in the text.

*Choice A* is incorrect because referring to "circumvents," or avoids, wouldn't make sense in context. The text suggests that the Crow Tribe–Montana State University collaboration serves as an example of the principles of community-based participatory research, not that the collaboration evades this model. *Choice B* is incorrect because referring to "eclipses," or overshadows, wouldn't make sense in context. The text describes the Crow Tribe–Montana

State University collaboration as an equal partnership, which indicates that it's an example of the community-based participatory research model, not that it overshadows the model. *Choice C* is incorrect because saying that the collaboration "fabricates," or creates, the model wouldn't make sense in context. The text indicates that the Crow Tribe–Montana State University collaboration serves as an example of the model, not that it created the model.

## QUESTION 5

**Choice A** is the best answer because it most logically completes the text's discussion of diaphragm contractions and hiccups. In this context, "involuntarily" means done without any control, or by reflex. The text explains that when a person's diaphragm repeatedly contracts and results in hiccups (which may be beneficial for infants), those muscle contractions are "uncontrollable." This context indicates that the diaphragm contractions occur without the person's control.

**Choice B** is incorrect because it wouldn't support the logical relationship established in the text's discussion of diaphragm contractions and hiccups. The text indicates that although specific causes for hiccups haven't been identified, it may be the case that the muscle contractions that occur have an important purpose in infants. It wouldn't make sense to say that even though the contractions occur "beneficially," or with a good or helpful effect, they might play a positive role in infants' breathing regulation. **Choice C** is incorrect because the text indicates that the diaphragm contractions that result in hiccups are "uncontrollable." Because those muscle contractions are described as happening automatically and without the person's control, it wouldn't make sense to describe them as occurring "strenuously," or in a way that requires great effort or energy. **Choice D** is incorrect because the text doesn't describe the quality of the diaphragm contractions that result in hiccups beyond stating that they are "uncontrollable." Nothing in the text indicates that those muscle contractions occur "smoothly," or evenly and continuously.

## QUESTION 6

**Choice A** is the best answer because it most logically completes the text's discussion of a relationship between the dodder plant and its host plant. As used in this context, "synchronization" means the act of things happening at the same time. The text indicates that the dodder and its host plant flower in unison and that this synchronization occurs because the dodder makes use of a protein produced by the host shortly before flowering.

**Choice B** is incorrect because referring to "hibernation," or the state of being dormant or inactive, wouldn't make sense in context. The text focuses on something the dodder plant actively engages in—making use of a protein and producing flowers. **Choice C** is incorrect because stating that the dodder plant and its host engage together in "prediction," or the act of declaring or indicating something in advance, wouldn't make sense in context. Rather than indicating that the dodder plant and its host plant make a prediction about flowering activity, the text suggests that the host produces a protein as part of its regular flowering process and that the dodder then absorbs and uses that protein to flower at the same time. **Choice D** is incorrect because referring to "moderation," or the act of causing something to become less intense or extreme, wouldn't make sense in context. Although the text states that the dodder plant absorbs and uses a protein made by its host plant, it doesn't suggest that the dodder lessens the host plant's flowering activity; the two plants simply flower in unison.

## QUESTION 7

**Choice C** is the best answer because it most logically completes the text's discussion of how Ofelia Zepeda has contributed to the field of linguistics. As used in this context, "extensive" means having a wide or considerable extent. The text indicates that Zepeda's many accomplishments in linguistics are varied, including teaching linguistics, writing poetry in more than one language, creating a grammar book, and cofounding a language institute. This context supports the idea that Zepeda's contributions to the field are extensive.

**Choice A** is incorrect because the sentence presents Zepeda's accomplishments as examples to support the claim made in the first part of the sentence. It wouldn't make sense to say that achievements as a professor, poet and author, and co-founder of a language institute demonstrate that Zepeda's contributions in her field are "pragmatic," or related to practical matters and not involving intellectual or artistic matters. **Choice B** is incorrect because the sentence presents Zepeda's accomplishments as a professor, poet and author, and cofounder of a language institute as examples to support the claim made in the first part of the sentence. There's no reason to believe that the positive achievements listed demonstrate that Zepeda's contributions in her field are "controversial," or have caused disputes and opposing viewpoints. **Choice D** is incorrect because in this context, "universal" would mean including or covering everything in a group. The sentence presents Zepeda's accomplishments as examples to support the claim made in the first part of the sentence, and it wouldn't make sense to say that these specific achievements—particularly as the author of a grammar book specific to the Tohono O'odham language—demonstrate that Zepeda's contributions relate to everything in the field of linguistics.

## QUESTION 8

**Choice D** is the best answer because it most logically completes the text's discussion of the Three Sisters intercropping system. As used in this context, "intricate" would mean made up of complexly related elements. The text indicates that in the Three Sisters system, maize, squash, and beans form a "web of relations" in which the crops interact in various ways. The text's description of these interactions—the bean vines growing on the maize stalks, the squash vines keeping weeds away, and the beans adding nutrients that the maize and squash use—provides context suggesting that this "web of relations" is intricate.

**Choice A** is incorrect because describing the relationship among the crops in the Three Sisters system as "indecipherable," or impossible to comprehend, would not make sense in context. Although the text presents the relationship as complex, the text's description of the role that each crop plays makes it clear that the relationship is well understood, not indecipherable. **Choice B** is incorrect because the text discusses the practical benefits that each plant in the Three Sisters system provides to other members of the system, showing that the relationship among the crops that make up the system is not "ornamental," or mainly serving a decorative purpose. **Choice C** is incorrect because describing the relationship among the crops in the Three Sisters system as "obscure," or unknown or poorly understood, would not make sense in context. Although the text presents the relationship as complex, the text's description of the role that each crop plays makes it clear that the relationship is well understood, not obscure.

## QUESTION 9

**Choice B** is the best answer because it presents a statement about Dorian that is directly supported by the text. The narrator of the text says that when Dorian sees his portrait, "his cheeks flushed for a moment with pleasure" and "a look of joy came into his eyes." The narrator goes on to say that Dorian looked at

the portrait “in wonder” and presents him as being so entranced by the portrait that he doesn’t notice what Hallward is saying to him. These details support the description of Dorian as being delighted by what he sees in the portrait.

*Choice A* is incorrect because Dorian isn’t depicted as interested in Hallward’s opinion of the portrait; rather, he is so enraptured by the painting that he’s hardly even aware of Hallward. *Choice C* is incorrect because the portrait of Dorian is the only painting mentioned in the text. Although Dorian is depicted as being delighted with this particular portrait, there’s no evidence in the text that he likes portraits better than other kinds of paintings. *Choice D* is incorrect because nothing in the text suggests that Dorian is uncertain about Hallward’s talent. Instead, the text is focused on Dorian’s delight with the portrait.

## QUESTION 10

**Choice C** is the best answer because it presents the quotation that best illustrates the claim that the speaker is determined to experience the countryside around her. In the quotation, the speaker makes it clear that she plans to walk somewhere based on her own wishes (“where my own nature would be leading”) rather than follow anything else (“another guide”), and that she’ll walk “in ferny glens” alongside the mountain.

*Choice A* is incorrect because this quotation suggests that the speaker wants to avoid pursuing money and education (“busy chase of wealth and learning”) and instead return to some earlier interests (her “first feelings”); the quotation doesn’t address her determination to experience the countryside. *Choice B* is incorrect because the speaker is describing the circumstances under which she won’t walk, which doesn’t address her determination to experience the countryside. *Choice D* is incorrect because rather than conveying her determination to experience the countryside, the speaker is explaining a particular thing she won’t do (“seek not the shadowy region”).

## QUESTION 11

**Choice C** is the best answer because it presents a quotation that illustrates the claim that Mrs. Spring Fragrance demonstrates concern for what’s happening at home while she’s in California. By giving reminders to “care for the cat, the birds, and the flowers,” “not eat too quickly,” and avoid engaging in strenuous activity in the heat, Mrs. Spring Fragrance shows that she’s thinking about what’s happening at home and wants to ensure everything is taken care of.

*Choice A* is incorrect because the quotation, while it does suggest that Mrs. Spring Fragrance has made fudge at home before, is focused on preparations for an upcoming festival, not on concerns for anything happening at home while Mrs. Spring Fragrance is away. *Choice B* is incorrect because the quotation has to do with an upcoming event during Mrs. Spring Fragrance’s trip—visiting San José and meeting someone new—rather than her concern for what’s happening at home. *Choice D* is incorrect because the quotation is focused on how Mrs. Spring Fragrance feels about her trip and the friends she’s seeing, not on her concern for what’s happening at home.

## QUESTION 12

**Choice B** is the best answer because it most effectively illustrates the claim in the text that Hedda seeks to influence another character’s fate. In the quotation, Hedda says that she wants “to have power to mould a human destiny,” or shape a person’s fate, just as the text indicates. Additionally, the phrase “for once in my life” suggests that Hedda feels that she has never been able to shape anyone’s life, including her own, supporting the text’s assertion that she “is unable to freely determine her own future.”

*Choice A* is incorrect because this quotation shows Hedda being uncertain about what to do with her own life, not wanting to influence another person's fate. *Choice C* is incorrect because while this quotation shows Hedda's interest in finding out whether she has any power over another character, it doesn't clearly show that she wants to influence that person's fate. In this quotation, Hedda seems to have inferred or concluded ("then") that she doesn't have any influence over the person to whom she's speaking, and she's asking that person to confirm her lack of influence. *Choice D* is incorrect because this quotation expresses Hedda's belief that a man should be true to his principles, not her desire to influence another person's fate.

### QUESTION 13

**Choice B** is the best answer because it most logically completes the text's discussion of artifacts and Kuulo Kataa's founding date. If it were true both that Kuulo Kataa was founded in the fourteenth century CE and that artifacts found in excavations of the settlement are from the thirteenth century CE, it would be reasonable to conclude that the artifacts weren't created in the Kuulo Kataa settlement. That would suggest, then, that the artifacts originated somewhere else and eventually reached the settlement through trading or as people migrated.

*Choice A* is incorrect because the existence of thirteenth-century CE artifacts recovered during excavations of a settlement founded in the fourteenth century CE isn't logically connected to artifacts from one century being more commonly recovered than artifacts from another century. Rather than suggesting anything about how frequently artifacts from different times are found, the existence of artifacts confirmed as predating the settlement's founding suggests that those items arrived in Kuulo Kataa during or after its establishment. *Choice C* is incorrect because the text focuses on time periods and says nothing about which region the founders of Kuulo Kataa have been thought to come from; similarly, the text doesn't suggest anything about where the thirteenth-century CE artifacts originated other than not from Kuulo Kataa. Therefore, it isn't logical to conclude that the mere existence of artifacts confirmed as predating the Kuulo Kataa settlement suggests that the founders of the settlement came from a particular region other than one previously assumed. *Choice D* is incorrect because the existence of artifacts from the thirteenth century CE at a site dated to the fourteenth century CE doesn't imply that fourteenth-century objects were damaged during excavations. There's nothing in the text to suggest that any objects were damaged; rather, the existence of artifacts confirmed as predating the settlement's founding suggests that those items were brought to Kuulo Kataa during or after its establishment.

### QUESTION 14

**Choice A** is the best answer because it most logically completes the text's discussion of the evolution of bipedalism in humans. According to the text, one potential explanation for humans walking upright on two legs is that the behavior evolved from an ancestor that mostly stayed on the ground and walked on four limbs, as modern chimpanzees and gorillas do. However, the finding that orangutans, also a relative of humans, sometimes stand on two legs in trees while using their arms to balance and reach for fruits suggests another possible explanation: perhaps a tree-dwelling ancestor of humans began moving on two legs because it offered an advantage, such as access to certain foods.

*Choice B* is incorrect because the finding that modern orangutans (a relative of humans) sometimes stand on two legs in trees doesn't offer any insight into when either bipedalism or tree-climbing behavior emerged in human ancestors.

Additionally, the text indicates that one theory is that bipedalism evolved from a mostly ground-based ancestor that was already practicing knuckle-walking, not that bipedalism and knuckle-walking developed at the same time. *Choice C* is incorrect because the finding that orangutans (a relative of humans) sometimes stand on two legs in trees doesn't offer any insight into how difficult it would've been to move between the ground and the trees without bipedalism; there's no suggestion that climbing or moving in trees depends on the ability to walk on two legs rather than four, even if that ability might be helpful in certain circumstances. *Choice D* is incorrect because the finding that orangutans (a relative of humans) sometimes stand on two legs in trees doesn't suggest that a knuckle-walking human ancestor could've easily moved on two legs in trees. Although the text indicates that bipedalism may have evolved from a human ancestor that mostly stayed on the ground and walked on four limbs, it gives no indication of how easy it would've been for such an ancestor to move bipedally in trees.

## QUESTION 15

**Choice A** is the best answer because it presents the conclusion that most logically follows from the text's discussion of the study of capuchin monkeys' cognitive abilities. The text explains that the study failed to distinguish between outcomes for the tasks performed by the capuchin monkeys, such that simpler tasks requiring less dexterity, or skill, were judged by the same criteria as tasks that demanded more dexterity. Because the study didn't account for this discrepancy, the researchers might have assumed that observed differences in performance were due to the abilities of the monkeys rather than the complexity of the tasks. In other words, the results may suggest cognitive differences among the monkeys even though such differences may not really exist.

*Choice B* is incorrect because the text focuses on the fact that the tasks assigned to the capuchin monkeys in the study varied in difficulty and that the variety wasn't taken into consideration. The text doesn't suggest that the capuchin monkeys couldn't perform certain tasks, just that some tasks were more difficult to do. *Choice C* is incorrect because the text doesn't suggest that the study's results are indicative of the abilities of capuchin monkeys but not of other monkey species; in fact, the text suggests that the results may not even be an accurate reflection of capuchin monkeys' abilities. *Choice D* is incorrect because the text doesn't indicate that the researchers compared results for artificial tasks with those for tasks encountered in the wild, although the tasks described in the text—sliding a panel and putting a straw in a bottle—are presumably artificial.

## QUESTION 16

**Choice D** is the best answer because it presents the conclusion that most logically follows from the text's discussion of how digital technologies affected the process of book creation. The text explains that in the late 20th and early 21st centuries digital technologies lowered book production costs most significantly in manufacturing and distribution. The text goes on to point out that authoring, editing, and book design are distinct steps in the process that occur before manufacturing and distribution. Because the savings connected to digital technologies have been most significant in manufacturing and distribution, it's reasonable to infer that those technologies had less of an effect on writing, editing, and designing books.

*Choice A* is incorrect because the text focuses on lowered book production costs that occur after authoring has taken place; there's no indication in the text whether digital technologies made writing and publishing lengthy books easier.

*Choice B* is incorrect. Although it's logical to conclude that customers would expect the cost of books to decline if production costs have declined, the text doesn't address customer expectations for the cost of books or any other consumer goods. *Choice C* is incorrect because the text focuses broadly on how digital technologies have affected the cost of the publishing process; it doesn't address the kinds of books being published or how many copies are printed.

## QUESTION 17

**Choice A** is the best answer. The convention being tested is pronoun-antecedent agreement. The plural pronoun "they" agrees in number with the plural antecedent "customers."

*Choice B* is incorrect because the singular pronoun "one" doesn't agree in number with the plural antecedent "customers." *Choice C* is incorrect because the second person pronoun "you" isn't conventional as a substitute for "customers." It suggests that the audience ("you") is the customer. *Choice D* is incorrect because the singular pronoun "it" doesn't agree in number with the plural antecedent "customers."

## QUESTION 18

**Choice A** is the best answer. The convention being tested is the use of finite and nonfinite verb forms within a sentence. Relative clauses, such as the one beginning with "which," require a finite verb, a verb that can function as the main verb of a clause. This choice correctly supplies the clause with the finite past tense verb "provided."

*Choice B* is incorrect because the nonfinite participle "having provided" doesn't supply the clause with a finite verb. *Choice C* is incorrect because the nonfinite to-infinitive "to provide" doesn't supply the clause with a finite verb. *Choice D* is incorrect because the nonfinite participle "providing" doesn't supply the clause with a finite verb.

## QUESTION 19

**Choice A** is the best answer. The convention being tested is the coordination of clauses within a sentence. This choice correctly uses a comma and the coordinating conjunction "but" to join a main clause ("Typically...value") and a subordinate clause ("when...Whitman") that precedes a main clause ("such...scholars").

*Choice B* is incorrect because it results in a run-on sentence. A main clause is fused without punctuation and/or a conjunction to a subordinate clause that precedes a main clause. *Choice C* is incorrect because it results in a comma splice. A comma can't be used in this way to mark the boundary between a main clause and a subordinate clause that precedes a main clause. *Choice D* is incorrect. Without a comma preceding it, the conjunction "but" can't be used in this way to join a main clause and a subordinate clause that precedes a main clause.

## QUESTION 20

**Choice C** is the best answer. The convention being tested is the use of possessive determiners. The plural possessive determiner "their" agrees in number with the plural conjoined noun phrase "Watson and Crick" and thus indicates that the findings were those of Watson and Crick.

*Choice A* is incorrect because "they're" is the contraction for "they are," not a possessive determiner. *Choice B* is incorrect because "it's" is the contraction for "it is" or "it has," not a possessive determiner. *Choice D* is incorrect because the singular possessive determiner "its" doesn't agree in number with the plural conjoined noun phrase "Watson and Crick."

## QUESTION 21

**Choice B** is the best answer. The convention being tested is the use of finite and nonfinite verb forms within a sentence. The modal "would," which indicates the future from a perspective in the past, should be accompanied by a nonfinite base form verb. In this choice, the nonfinite base form verb "create" is used correctly in conjunction with the nonfinite base form verb "increase" to describe what the lock would do.

*Choice A* is incorrect because the finite present tense verb "creates" can't be used in this way with the modal "would" to describe what the lock would do.

*Choice C* is incorrect because the present participle "creating" can't be used in this way with the modal "would" to describe what the lock would do. *Choice D* is incorrect because the finite past tense verb "created" can't be used in this way with the modal "would" to describe what the lock would do.

## QUESTION 22

**Choice D** is the best answer. The convention being tested is end-of-sentence punctuation. This choice correctly uses a question mark to punctuate the interrogative clause "could the blueberries thrive," which asks a direct question at the end of the sentence.

*Choice A* is incorrect because a period can't be used in this way to punctuate an interrogative clause, such as "could the blueberries thrive," at the end of a sentence. *Choice B* is incorrect because the context requires an interrogative clause. The declarative clause "the blueberries could thrive" incorrectly indicates that it was known that the blueberries could thrive in alkaline soil, whereas Michel had yet to find this out. *Choice C* is incorrect because a question mark can't be used in this way to punctuate a declarative clause, such as "the blueberries could thrive," at the end of a sentence.

## QUESTION 23

**Choice A** is the best answer. The convention being tested is subject–verb agreement. The singular verb "allows" agrees in number with the singular subject "landing."

*Choice B* is incorrect because the plural verb "are allowing" doesn't agree in number with the singular subject "landing." *Choice C* is incorrect because the plural verb "have allowed" doesn't agree in number with the singular subject "landing." *Choice D* is incorrect because the plural verb "allow" doesn't agree in number with the singular subject "landing."

## QUESTION 24

**Choice C** is the best answer. "Finally" logically signals that the bill passing—following many attempts between 1968 and 1983—is the final, concluding event in the sequence described in the previous sentences.

*Choice A* is incorrect because "instead" illogically signals that the bill passing is an alternative to one of the events described in the previous sentences. It is the final event in the sequence. *Choice B* is incorrect because "likewise" illogically signals that the bill passing is similar to one of the events described in the previous sentences. Instead, it is the final event in the sequence. *Choice D* is incorrect because "additionally" illogically signals that the bill passing is merely another event described along with the events of the previous sentences. Instead, it is the final, concluding event in the sequence.

## QUESTION 25

**Choice A** is the best answer. “For instance” logically signals that the information in this sentence—that larch trees lose their needles every fall—is an example supporting the claim in the previous sentence (that not all conifer species keep their leaves or needles year-round).

*Choice B* is incorrect because “nevertheless” illogically signals that the information in this sentence is true in spite of the claim about conifer species in the previous sentence. Instead, it’s an example supporting that claim. *Choice C* is incorrect because “meanwhile” illogically signals that the information in this sentence is separate from (while occurring simultaneously with) the claim about conifer species in the previous sentence. Instead, it’s an example supporting that claim. *Choice D* is incorrect because “in addition” illogically signals that the information in this sentence is merely an additional fact related to the claim about conifer species in the previous sentence. Instead, it’s an example supporting that claim.

## QUESTION 26

**Choice A** is the best answer. “In addition” logically signals that the detail in this sentence—that Coleridge-Taylor included traditional African music in his classical compositions—adds to the information in the previous sentence. Specifically, the previous sentence indicates one way in which Coleridge-Taylor emphasized his mixed-race ancestry, and the claim that follows indicates a second, additional way.

*Choice B* is incorrect because “actually” illogically signals that the detail in this sentence is surprising in light of the information in the previous sentence. Instead, the detail adds to the information, indicating a second, additional way in which Coleridge-Taylor emphasized his mixed-race ancestry. *Choice C* is incorrect because “however” illogically signals that the detail in this sentence contrasts with the information in the previous sentence. Instead, the detail adds to the information, indicating a second, additional way in which Coleridge-Taylor emphasized his mixed-race ancestry. *Choice D* is incorrect because “regardless” illogically signals that the detail in this sentence is true despite the information in the previous sentence. Instead, the detail adds to the information, indicating a second, additional way in which Coleridge-Taylor emphasized his mixed-race ancestry.

## QUESTION 27

**Choice D** is the best answer. The sentence uses information from the notes to make a generalization about the kind of study Glickman, Brown, and Song conducted. Specifically, the sentence indicates that the study was of a kind that used statistical methods to address questions of authorship within the field of music.

*Choice A* is incorrect because the sentence summarizes the methodology and findings of a particular analysis of a single song; it doesn’t make a generalization about the kind of study conducted. *Choice B* is incorrect because the sentence mentions the data and conclusion of a particular analysis of a single song; it doesn’t make a generalization about the kind of study conducted. *Choice C* is incorrect because the sentence focuses on a specific conclusion from a particular analysis of a single song; it doesn’t make a generalization about the kind of study conducted.

# Math

## Module 1 (22 questions)

### QUESTION 1

**Choice A** is correct. A frequency table is a table that lists the data value and shows the number of times the data value occurs. In the data listed, the number 4 occurs four times, the number 8 occurs three times, and the number 13 occurs two times. This corresponds to the table in choice A.

**Choice B** is incorrect. This table has the values for number and frequency reversed. **Choice C** is incorrect because the frequency values don't represent the data listed. **Choice D** is incorrect. This table represents the listed number values as the frequency values.

### QUESTION 2

**Choice B** is correct. The given expression may be rewritten as  $x^2 + 8x - 5x - 40$ . Since the first two terms of this expression have a common factor of  $x$  and the last two terms of this expression have a common factor of  $-5$ , this expression may be rewritten as  $x(x) + x(8) - 5(x) - 5(8)$ , or  $x(x + 8) - 5(x + 8)$ . Since each term of this expression has a common factor of  $(x + 8)$ , it may be rewritten as  $(x - 5)(x + 8)$ .

Alternate approach: An expression of the form  $x^2 + bx + c$ , where  $b$  and  $c$  are constants, can be factored if there are two values that add to give  $b$  and multiply to give  $c$ . In the given expression,  $b = 3$  and  $c = -40$ . The values of  $-5$  and  $8$  add to give  $3$  and multiply to give  $-40$ , so the expression can be factored as  $(x - 5)(x + 8)$ .

**Choice A** is incorrect. This expression is equivalent to  $x^2 + 6x - 40$ , not  $x^2 + 3x - 40$ .  
**Choice C** is incorrect. This expression is equivalent to  $x^2 - 3x - 40$ , not  $x^2 + 3x - 40$ .  
**Choice D** is incorrect. This expression is equivalent to  $x^2 - 6x - 40$ , not  $x^2 + 3x - 40$ .

### QUESTION 3

**Choice A** is correct. Since Jay walks at a speed of 3 miles per hour for  $w$  hours, Jay walks a total of  $3w$  miles. Since Jay runs at a speed of 5 miles per hour for  $r$  hours, Jay runs a total of  $5r$  miles. Therefore, the total number of miles Jay travels can be represented by  $3w + 5r$ . Since the combined total number of miles is 14, the equation  $3w + 5r = 14$  represents this situation.

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

## QUESTION 4

**Choice D** is correct. The sum of the angle measures of a triangle is  $180^\circ$ . Adding the measures of angles  $B$  and  $C$  gives  $52 + 17 = 69^\circ$ . Therefore, the measure of angle  $A$  is  $180 - 69 = 111^\circ$ .

**Choice A** is incorrect and may result from subtracting the sum of the measures of angles  $B$  and  $C$  from  $90^\circ$ , instead of from  $180^\circ$ . **Choice B** is incorrect and may result from subtracting the measure of angle  $C$  from the measure of angle  $B$ . **Choice C** is incorrect and may result from adding the measures of angles  $B$  and  $C$  but not subtracting the result from  $180^\circ$ .

## QUESTION 5

**Choice A** is correct. It's given that the electrician charges a onetime fee plus an hourly rate. It's also given that the graph represents the total charge, in dollars, for  $x$  hours of work. This graph shows a linear relationship in the  $xy$ -plane. Thus, the total charge  $y$ , in dollars, for  $x$  hours of work can be represented as  $y = mx + b$ , where  $m$  is the slope and  $(0, b)$  is the  $y$ -intercept of the graph of the equation in the  $xy$ -plane. Since the given graph represents the total charge, in dollars, by an electrician for  $x$  hours of work, it follows that its slope is  $m$ , or the electrician's hourly rate.

**Choice B** is incorrect. The electrician's onetime fee is represented by the  $y$ -coordinate of the  $y$ -intercept, not the slope, of the graph. **Choice C** is incorrect and may result from conceptual errors. **Choice D** is incorrect and may result from conceptual errors.

## QUESTION 6

The correct answer is  $\frac{3}{10}$ . It's given that there are a total of 100 tiles of equal area, which is the total number of possible outcomes. According to the table, there are a total of 30 red tiles. The probability of an event occurring is the ratio of the number of favorable outcomes to the total number of possible outcomes.

By definition, the probability of selecting a red tile is given by  $\frac{30}{100}$ , or  $\frac{3}{10}$ . Note that  $3/10$  and  $.3$  are examples of ways to enter a correct answer.

## QUESTION 7

**Choice C** is correct. It's given that an estimated 35% of people in the population support the legislation, with an associated margin of error of 3%. Subtracting and adding the margin of error from the estimate gives an interval of plausible values for the true percentage of people in the population who support the legislation. Therefore, it's plausible that between 32% and 38% of people in this population support the legislation. The corresponding numbers of people represented by these percentages in the population can be calculated by multiplying the total population, 50,000, by 0.32 and by 0.38, which gives  $50,000(0.32) = 16,000$  and  $50,000(0.38) = 19,000$ , respectively. It follows that any value in the interval 16,000 to 19,000 is a plausible value for the total number of people in the population who support the proposed legislation. Of the choices given, only 16,750 is in this interval.

**Choice A** is incorrect. This is the number of people in the sample, rather than in the population, who support the legislation. **Choice B** is incorrect. This is the number of people in the sample who do not support the legislation. **Choice D** is incorrect. This is a plausible value for the total number of people in the population who do not support the proposed legislation.

## QUESTION 8

The correct answer is 5. Multiplying both sides of the given equation by  $x + 6$  results in  $55 = x(x + 6)$ . Applying the distributive property of multiplication to the right-hand side of this equation results in  $55 = x^2 + 6x$ . Subtracting 55 from both sides of this equation results in  $0 = x^2 + 6x - 55$ . The right-hand side of this equation can be rewritten by factoring. The two values that multiply to  $-55$  and add to 6 are 11 and  $-5$ . It follows that the equation  $0 = x^2 + 6x - 55$  can be rewritten as  $0 = (x + 11)(x - 5)$ . Setting each factor equal to 0 yields two equations:  $x + 11 = 0$  and  $x - 5 = 0$ . Subtracting 11 from both sides of the equation  $x + 11 = 0$  results in  $x = -11$ . Adding 5 to both sides of the equation  $x - 5 = 0$  results in  $x = 5$ . Therefore, the positive solution to the given equation is 5.

## QUESTION 9

**Choice B** is correct. It's given that the airplane descends at a constant rate of 400 feet per minute. Since the altitude decreases by a constant amount during each fixed time period, the relationship between the airplane's altitude and time is linear. Since the airplane descends from an altitude of 9,500 feet to 5,000 feet, the airplane's altitude is decreasing with time. Thus, the relationship is best modeled by a decreasing linear function.

*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 10

**Choice A** is correct. The  $x$ -coordinate of any  $y$ -intercept of a graph is 0.

Substituting 0 for  $x$  in the given equation yields  $g(0) = 11\left(\frac{1}{12}\right)^0$ . Since any

nonzero number raised to the 0th power is 1, this gives  $g(0) = 11 \cdot 1$ , or  $g(0) = 11$ .

The  $y$ -intercept of the graph is, therefore, the point  $(0, 11)$ .

*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 11

**Choice B** is correct. Since  $PR$  and  $QS$  are diameters of the circle shown,  $OS$ ,  $OR$ ,  $OP$ , and  $OQ$  are radii of the circle and are therefore congruent. Since  $\angle SOP$  and  $\angle ROQ$  are vertical angles, they are congruent. Therefore, arc  $PS$  and arc  $QR$  are formed by congruent radii and have the same angle measure, so they are congruent arcs. Similarly,  $\angle SOR$  and  $\angle POQ$  are vertical angles, so they are congruent. Therefore, arc  $SR$  and arc  $PQ$  are formed by congruent radii and have the same angle measure, so they are congruent arcs. Let  $x$  represent the length of arc  $SR$ . Since arc  $SR$  and arc  $PQ$  are congruent arcs, the length of arc  $PQ$  can also be represented by  $x$ . It's given that the length of arc  $PS$  is twice the length of arc  $PQ$ . Therefore, the length of arc  $PS$  can be represented by the expression  $2x$ . Since arc  $PS$  and arc  $QR$  are congruent arcs, the length of arc  $QR$  can also be represented by  $2x$ . This gives the expression  $x + x + 2x + 2x$ . Since it's given that the circumference is  $144\pi$ , the expression  $x + x + 2x + 2x$  is equal to  $144\pi$ . Thus  $x + x + 2x + 2x = 144\pi$ , or  $6x = 144\pi$ . Dividing both sides of this equation by 6 yields  $x = 24\pi$ . Therefore, the length of arc  $QR$  is  $2(24\pi)$ , or  $48\pi$ .

*Choice A* is incorrect. This is the length of arc  $PQ$ , not arc  $QR$ . *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 12

**Choice B** is correct. The area of a rectangle is equal to its length multiplied by its width. Multiplying the given length,  $x$  units, by the given width,  $(x - 15)$  units, yields  $x(x - 15)$  square units. If the rectangle has an area of 76 square units, it follows that  $x(x - 15) = 76$ , or  $x^2 - 15x = 76$ . Subtracting 76 from both sides of this equation yields  $x^2 - 15x - 76 = 0$ . Factoring the left-hand side of this equation yields  $(x - 19)(x + 4) = 0$ . Applying the zero product property to this equation yields two solutions:  $x = 19$  and  $x = -4$ . Since  $x$  is the rectangle's length, in units, which must be positive, the value of  $x$  is 19.

*Choice A* is incorrect. This is the width, in units, of the rectangle, not the value of  $x$ . *Choice C* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect. This is the area, in square units, of the rectangle, not the value of  $x$ .

## QUESTION 13

**Choice C** is correct. It's given that the relationship between  $t$  and  $n$  is exponential. The table shows that the value of  $n$  increases as the value of  $t$  increases. Therefore, the relationship between  $t$  and  $n$  can be represented by an increasing exponential equation of the form  $n = a(1 + b)^t$ , where  $a$  and  $b$  are positive constants. The table shows that when  $t = 0$ ,  $n = 604$ . Substituting 0 for  $t$  and 604 for  $n$  in the equation  $n = a(1 + b)^t$  yields  $604 = a(1 + b)^0$ , which is equivalent to  $604 = a(1)$ , or  $604 = a$ . Substituting 604 for  $a$  in the equation  $n = a(1 + b)^t$  yields  $n = 604(1 + b)^t$ . The table also shows that when  $t = 1$ ,  $n = 606.42$ . Substituting 1 for  $t$  and 606.42 for  $n$  in the equation  $n = 604(1 + b)^t$  yields  $606.42 = 604(1 + b)^1$ , or  $606.42 = 604(1 + b)$ . Dividing both sides of this equation by 604 yields approximately  $1.004 = 1 + b$ . Subtracting 1 from both sides of this equation yields that the value of  $b$  is approximately 0.004. Substituting 0.004 for  $b$  in the equation  $n = 604(1 + b)^t$  yields  $n = 604(1 + 0.004)^t$ . Therefore, of the choices, choice C best represents the relationship between  $t$  and  $n$ .

*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 14

**Choice B** is correct. Each given equation is written in slope-intercept form,  $y = mx + b$ , where  $m$  is the slope and  $(0, b)$  is the  $y$ -intercept of the graph of the equation in the  $xy$ -plane. The graphs of two lines that have different slopes will intersect at exactly one point. The graph of the first equation is a line with slope 1. The graph of the second equation is a line with slope 8. Since the graphs are lines with different slopes, they will intersect at exactly one point.

*Choice A* is incorrect because two graphs of linear equations have 0 intersection points only if they are parallel and therefore have the same slope. *Choice C* is incorrect because two graphs of linear equations in the  $xy$ -plane can have only 0, 1, or infinitely many points of intersection. *Choice D* is incorrect because two graphs of linear equations in the  $xy$ -plane can have only 0, 1, or infinitely many points of intersection.

## QUESTION 15

The correct answer is 40. It's given that  $5G + 45R = 380$ , where  $G$  is the number of green tokens and  $R$  is the number of red tokens won by one student and these tokens are worth a total of 380 points. Since the equation represents the situation where the student won points with green tokens and red tokens for a

total of 380 points, each term on the left-hand side of the equation represents the number of points won for one of the colors. Since the coefficient of  $G$  in the given equation is 5, a green token must be worth 5 points. Similarly, since the coefficient of  $R$  in the given equation is 45, a red token must be worth 45 points. Therefore, a red token is worth  $45 - 5$  points, or 40 points, more than a green token.

## QUESTION 16

**Choice D** is correct. Since the number of bacteria doubles every day, the relationship between  $t$  and  $y$  can be represented by an exponential equation of the form  $y = a(b)^t$ , where  $a$  is the number of bacteria at the start of the observation and the number of bacteria increases by a factor of  $b$  every day. It's given that there are 44,000 bacteria at the start of the observation. Therefore,  $a = 44,000$ . It's also given that the number of bacteria doubles, or increases by a factor of 2, every day. Therefore,  $b = 2$ . Substituting 44,000 for  $a$  and 2 for  $b$  in the equation  $y = a(b)^t$  yields  $y = 44,000(2)^t$ .

*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. This equation represents a situation where the number of bacteria is decreasing by half, not doubling, every day.

## QUESTION 17

**Choice C** is correct. The base of a cylinder is a circle with a diameter equal to the diameter of the cylinder. The volume,  $V$ , of a cylinder can be found by multiplying the area of the circular base,  $A$ , by the height of the cylinder,  $h$ , or  $V = Ah$ . The area of a circle can be found using the formula  $A = \pi r^2$ , where  $r$  is the radius of the circle. It's given that the diameter of the cylinder is 8 inches. Thus, the radius of this circle is 4 inches. Therefore, the area of the circular base of the cylinder is  $A = \pi(4)^2$ , or  $16\pi$  square inches. It's given that the height  $h$  of the cylinder is 12 inches. Substituting  $16\pi$  for  $A$  and 12 for  $h$  in the formula  $V = Ah$  gives  $V = 16\pi(12)$ , or  $192\pi$  cubic inches.

*Choice A* is incorrect. This is the area of the circular base of the cylinder.

*Choice B* is incorrect and may result from using 8, instead of 16, as the value of  $r^2$  in the formula for the area of a circle. *Choice D* is incorrect and may result from using 8, instead of 4, for the radius of the circular base.

## QUESTION 18

**Choice A** is correct. The given system of linear equations can be solved by the elimination method. Multiplying each side of the second equation in the given system by 3 yields  $(2x + 2y)(3) = (10)(3)$ , or  $6x + 6y = 30$ . Subtracting this equation from the first equation in the given system yields  $(6x + 7y) - (6x + 6y) = (28) - (30)$ , which is equivalent to  $(6x - 6x) + (7y - 6y) = 28 - 30$ , or  $y = -2$ .

*Choice B* is incorrect. This is the value of  $x$ , not the value of  $y$ . *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 19

The correct answer is  $\frac{15}{17}$ . It's given that angle  $J$  is the right angle in triangle  $JKL$ .

Therefore, the acute angles of triangle  $JKL$  are angle  $K$  and angle  $L$ . The hypotenuse of a right triangle is the side opposite its right angle. Therefore, the hypotenuse of triangle  $JKL$  is side  $KL$ . The cosine of an acute angle in a right

triangle is the ratio of the length of the side adjacent to the angle to the length of the hypotenuse. It's given that  $\cos(K) = \frac{24}{51}$ . This can be written as  $\cos(K) = \frac{8}{17}$ .

Since the cosine of angle  $K$  is a ratio, it follows that the length of the side adjacent to angle  $K$  is  $8n$  and the length of the hypotenuse is  $17n$ , where  $n$  is a constant. Therefore,  $JK = 8n$  and  $KL = 17n$ . The Pythagorean theorem states that in a right triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides. For triangle  $JKL$ , it follows that  $(JK)^2 + (JL)^2 = (KL)^2$ . Substituting  $8n$  for  $JK$  and  $17n$  for  $KL$  yields  $(8n)^2 + (JL)^2 = (17n)^2$ . This is equivalent to  $64n^2 + (JL)^2 = 289n^2$ . Subtracting  $64n^2$

from each side of this equation yields  $(JL)^2 = 225n^2$ . Taking the square root of each side of this equation yields  $JL = 15n$ . Since  $\cos(L) = \frac{JL}{KL}$ , it follows that  $\cos(L) = \frac{15n}{17n}$ , which can be rewritten as  $\cos(L) = \frac{15}{17}$ . Note that  $15/17$ , .8824, .8823, and 0.882 are examples of ways to enter a correct answer.

## QUESTION 20

The correct answer is  $\frac{25}{4}$ . The given equation can be rewritten in the

form  $f(x) = a(x - h)^2 + k$ , where  $a$ ,  $h$ , and  $k$  are constants. When  $a > 0$ ,

$h$  is the value of  $x$  for which  $f(x)$  reaches its minimum. The given

equation can be rewritten as  $f(x) = 4\left(x^2 - \frac{50}{4}x\right) + 126$ , which is equivalent to

$f(x) = 4\left(x^2 - \frac{50}{4}x + \left(\frac{50}{8}\right)^2 - \left(\frac{50}{8}\right)^2\right) + 126$ . This equation can be rewritten as

$f(x) = 4\left(\left(x - \frac{50}{8}\right)^2 - \left(\frac{50}{8}\right)^2\right) + 126$ , or  $f(x) = 4\left(x - \frac{50}{8}\right)^2 - 4\left(\frac{50}{8}\right)^2 + 126$ , which is

equivalent to  $f(x) = 4\left(x - \frac{25}{4}\right)^2 - \frac{121}{4}$ . Therefore,  $h = \frac{25}{4}$ , so the value of  $x$  for

which  $f(x)$  reaches its minimum is  $\frac{25}{4}$ . Note that  $25/4$  and 6.25 are examples of ways to enter a correct answer.

## QUESTION 21

The correct answer is 24. A line in the  $xy$ -plane can be defined by the equation  $y = mx + b$ , where  $m$  is the slope of the line and  $b$  is the  $y$ -coordinate of the  $y$ -intercept of the line. It's given that line  $\ell$  passes through the point  $(0, 0)$ . Therefore, the  $y$ -coordinate of the  $y$ -intercept of line  $\ell$  is 0. It's given that line  $\ell$  is parallel to the line represented by the equation  $y = 8x + 2$ . Since parallel lines have the same slope, it follows that the slope of line  $\ell$  is 8. Therefore, line  $\ell$  can be defined by an equation in the form  $y = mx + b$ , where  $m = 8$  and  $b = 0$ . Substituting 8 for  $m$  and 0 for  $b$  in  $y = mx + b$  yields the equation  $y = 8x + 0$ , or  $y = 8x$ . If line  $\ell$  passes through the point  $(3, d)$ , then when  $x = 3$ ,  $y = d$  for the equation  $y = 8x$ . Substituting 3 for  $x$  and  $d$  for  $y$  in the equation  $y = 8x$  yields  $d = 8(3)$ , or  $d = 24$ .

## QUESTION 22

The correct answer is  $\frac{81}{4}$ . The given linear equation is  $2y = c$ . Dividing both

sides of this equation by 2 yields  $y = \frac{c}{2}$ . Substituting  $\frac{c}{2}$  for  $y$  in the equation

of the parabola yields  $\frac{c}{2} = -2x^2 + 9x$ . Adding  $2x^2$  and  $-9x$  to both sides of this

equation yields  $2x^2 - 9x + \frac{c}{2} = 0$ . Since it's given that the line and the parabola intersect at exactly one point, the equation  $2x^2 - 9x + \frac{c}{2} = 0$  must have exactly one solution. An equation of the form  $Ax^2 + Bx + C = 0$ , where  $A$ ,  $B$ , and  $C$  are constants, has exactly one solution when the discriminant,  $B^2 - 4AC$ , is equal to 0. In the equation  $2x^2 - 9x + \frac{c}{2} = 0$ , where  $A = 2$ ,  $B = -9$ , and  $C = \frac{c}{2}$ , the discriminant is  $(-9)^2 - 4(2)\left(\frac{c}{2}\right)$ . Setting the discriminant equal to 0 yields  $(-9)^2 - 4(2)\left(\frac{c}{2}\right) = 0$ , or  $81 - 4c = 0$ . Adding  $4c$  to both sides of this equation yields  $81 = 4c$ . Dividing both sides of this equation by 4 yields  $c = \frac{81}{4}$ . Note that  $81/4$  and  $20.25$  are examples of ways to enter a correct answer.

# Math

## Module 2 (22 questions)

### QUESTION 1

**Choice B** is correct. The median of a data set with an odd number of data values is defined as the middle value of the ordered list of values. The data set shown has nine values, so the median is the fifth value in the ordered list, which is 77.

*Choice A* is incorrect. This is the minimum value of the data set, not the median.

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

*Choice D* is incorrect. This is the mean of the data set, not the median.

### QUESTION 2

The correct answer is 55. Subtracting 40 from both sides of the given equation yields  $x = 55$ . Therefore, the value of  $x$  is 55.

### QUESTION 3

**Choice C** is correct. The area of a rectangle with length  $\ell$  and width  $w$  can be found using the formula  $A = \ell w$ . It's given that the rectangle has a length of 17 cm and a width of 7 cm. Therefore, the area of this rectangle is  $A = 17(7)$ , or 119 cm<sup>2</sup>.

*Choice A* is incorrect. This is the sum of the length and width of the rectangle, not the area. *Choice B* is incorrect. This is the perimeter of the rectangle, not the area. *Choice D* is incorrect. This is the sum of the length and width of the rectangle squared, not the area.

### QUESTION 4

**Choice B** is correct. Combining like terms inside the parentheses of the given expression,  $20w - (4w + 3w)$ , yields  $20w - (7w)$ . Combining like terms in this resulting expression yields  $13w$ .

*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 5

**Choice D** is correct. It's given that the number  $y$  is 84 less than the number  $x$ . A number that's 84 less than the number  $x$  is equivalent to 84 subtracted from the number  $x$ , or  $x - 84$ . Therefore, the equation  $y = x - 84$  represents the relationship between  $x$  and  $y$ .

*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 6

**Choice A** is correct. Since the given expressions are equivalent and the

numerator of the second expression is  $\frac{1}{6}$  of the numerator of the first expression, the denominator of the second expression must also be  $\frac{1}{6}$  of the denominator of the first expression. By the distributive property,  $\frac{1}{6}(6x + 42)$  is equivalent to  $\frac{1}{6}(6x) + \frac{1}{6}(42)$ , or  $x + 7$ . Therefore, the value of  $b$  is 7.

*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 7

The correct answer is 240. It's given that 80% of the 300 seeds sprouted.

Therefore, the number of seeds that sprouted can be calculated by multiplying

the number of seeds that were planted by  $\frac{80}{100}$ , which gives  $300\left(\frac{80}{100}\right)$ , or 240.

## QUESTION 8

**Choice B** is correct. It's given that Ty plans to walk at an average speed of 4 kilometers per hour. The number of kilometers Ty will walk is determined by the expression  $4s$ , where  $s$  is the number of hours Ty walks. The given goal of at least 24 kilometers means that the inequality  $4s \geq 24$  represents the situation. Dividing both sides of this inequality by 4 gives  $s \geq 6$ , which corresponds to a minimum of 6 hours Ty must walk.

*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 9

The correct answer is 27. Multiplying both sides of the given equation by

3 yields  $3(6 + x) = 3(9)$ , or  $18 + 3x = 27$ . Therefore, the value of  $18 + 3x$  is 27.

## QUESTION 10

**Choice C** is correct. It's given that  $f(x) = x^3 + 9$ . Substituting 2 for  $x$  in this equation yields  $f(2) = (2)^3 + 9$ . This is equivalent to  $f(2) = 8 + 9$ , or  $f(2) = 17$ .

*Choice A* is incorrect. This is the value of  $2 + 3 + 9$ , not  $2^3 + 9$ .

*Choice B* is incorrect. This is the value of  $2(3) + 9$ , not  $2^3 + 9$ .

*Choice D* is incorrect. This is the value of  $3^2 + 9$ , not  $2^3 + 9$ .

**QUESTION 11**

**Choice C** is correct. It's given that  $f(x)$  is the total cost, in dollars, to lease a car from this dealership with a monthly payment of  $x$  dollars. Therefore, the total cost, in dollars, to lease the car when the monthly payment is \$400 is represented by the value of  $f(x)$  when  $x = 400$ . Substituting 400 for  $x$  in the equation  $f(x) = 36x + 1,000$  yields  $f(400) = 36(400) + 1,000$ , or  $f(400) = 15,400$ . Thus, when the monthly payment is \$400, the total cost to lease a car is \$15,400.

*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 12**

**Choice D** is correct. The value of  $g(x)$  when  $x = 8$  can be found by substituting 8 for  $x$  in the given equation  $g(x) = 10x + 8$ . This yields  $g(8) = 10(8) + 8$ , or  $g(8) = 88$ . Therefore, when  $x = 8$ , the value of  $g(x)$  is 88.

*Choice A* is incorrect. This is the value of  $x$  when  $g(x) = 8$ , rather than the value of  $g(x)$  when  $x = 8$ . *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 13**

The correct answer is 47. Based on the figure, the angle with measure  $x^\circ$  and the angle with measure  $133^\circ$  together form a straight line. Therefore, these two angles are supplementary, so the sum of their measures is  $180^\circ$ . It follows that  $x + 133 = 180$ . Subtracting 133 from both sides of this equation yields  $x = 47$ .

**QUESTION 14**

**Choice D** is correct. The  $x$ -coordinate  $a$  of the  $x$ -intercept  $(a, 0)$  can be found by substituting 0 for  $y$  in the given equation, which gives  $7x + 2(0) = -31$ , or  $7x = -31$ .

Dividing both sides of this equation by 7 yields  $x = -\frac{31}{7}$ . Therefore, the value of  $a$  is  $-\frac{31}{7}$ . The  $y$ -coordinate  $b$  of the  $y$ -intercept  $(0, b)$  can be found by substituting 0 for  $x$  in the given equation, which gives  $7(0) + 2y = -31$ , or  $2y = -31$ . Dividing both sides of this equation by 2 yields  $y = -\frac{31}{2}$ . Therefore, the value of  $b$  is  $-\frac{31}{2}$ . It

follows that the value of  $\frac{b}{a}$  is  $\frac{-\frac{31}{2}}{-\frac{31}{7}}$ , which is equivalent to  $\left(\frac{31}{2}\right)\left(\frac{7}{31}\right)$ , or  $\frac{7}{2}$ .

*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 15**

**Choice A** is correct. If the object travels 108 centimeters at a speed of 12 centimeters per second, the time of travel can be determined by dividing

the total distance by the speed. This results in  $\frac{108 \text{ centimeters}}{12 \text{ centimeters/second}}$ , which is 9 seconds.

*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 C** is correct. It's given that John made a \$16 payment each month for  $p$  months. The total amount of these payments can be represented by the expression  $16p$ . The down payment can be added to that amount to find the total amount John paid, yielding the expression  $16p + 37$ . It's given that John paid a total of \$165. Therefore, the expression for the total amount John paid can be set equal to that amount, yielding the equation  $16p + 37 = 165$ .

*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 17

**Choice D** is correct. A linear relationship can be represented by an equation of the form  $y = mx + b$ , where  $m$  and  $b$  are constants. It's given in the table that when  $x = 0$ ,  $y = 18$ . Substituting 0 for  $x$  and 18 for  $y$  in  $y = mx + b$  yields  $18 = m(0) + b$ , or  $18 = b$ . Substituting 18 for  $b$  in the equation  $y = mx + b$  yields  $y = mx + 18$ . It's also given in the table that when  $x = 1$ ,  $y = 13$ . Substituting 1 for  $x$  and 13 for  $y$  in the equation  $y = mx + 18$  yields  $13 = m(1) + 18$ , or  $13 = m + 18$ . Subtracting 18 from both sides of this equation yields  $-5 = m$ . Therefore, the equation  $y = -5x + 18$  represents the relationship between  $x$  and  $y$ .

*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 D** is correct. It's given that the equation  $h = -4.9t^2 + 7t + 9$  represents this situation, where  $h$  is the height, in meters, of the object  $t$  seconds after it is kicked. It follows that the height, in meters, from which the object was kicked is the value of  $h$  when  $t = 0$ . Substituting 0 for  $t$  in the equation  $h = -4.9t^2 + 7t + 9$  yields  $h = -4.9(0)^2 + 7(0) + 9$ , or  $h = 9$ . Therefore, the object was kicked from a height of 9 meters.

*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 19

**Choice B** is correct. It's given that  $h(x) = x^2 - 3$ . Each table gives 1, 2, and 3 as the three given values of  $x$ . Substituting 1 for  $x$  in the equation  $h(x) = x^2 - 3$  yields  $h(1) = (1)^2 - 3$ , or  $h(1) = -2$ . Substituting 2 for  $x$  in the equation  $h(x) = x^2 - 3$  yields  $h(2) = (2)^2 - 3$ , or  $h(2) = 1$ . Finally, substituting 3 for  $x$  in the equation  $h(x) = x^2 - 3$  yields  $h(3) = (3)^2 - 3$ , or  $h(3) = 6$ . Therefore,  $h(x)$  is  $-2$  when  $x$  is 1,  $h(x)$  is 1 when  $x$  is 2, and  $h(x)$  is 6 when  $x$  is 3. Choice B is a table with these values of  $x$  and their corresponding values of  $h(x)$ .

*Choice A* is incorrect. This is a table of values for the function  $h(x) = x + 3$ , not  $h(x) = x^2 - 3$ . *Choice C* is incorrect. This is a table of values for the function  $h(x) = 2x - 3$ , not  $h(x) = x^2 - 3$ . *Choice D* is incorrect and may result from conceptual or calculation errors.

## QUESTION 20

**Choice D** is correct. Since  $f$  is a linear function, it can be defined by an equation of the form  $f(x) = ax + b$ , where  $a$  and  $b$  are constants. It's given that  $f(0) = 8$ . Substituting 0 for  $x$  and 8 for  $f(x)$  in the equation  $f(x) = ax + b$  yields  $8 = a(0) + b$ , or  $8 = b$ . Substituting 8 for  $b$  in the equation  $f(x) = ax + b$  yields  $f(x) = ax + 8$ . It's given that  $f(1) = 12$ . Substituting 1 for  $x$  and 12 for  $f(x)$  in the equation  $f(x) = ax + 8$  yields  $12 = a(1) + 8$ , or  $12 = a + 8$ . Subtracting 8 from both sides of this equation yields  $a = 4$ . Substituting 4 for  $a$  in the equation  $f(x) = ax + 8$  yields  $f(x) = 4x + 8$ . Therefore, an equation that defines  $f$  is  $f(x) = 4x + 8$ .

**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 21

**Choice A** is correct. Subtracting  $14j$  from each side of the given equation results in  $5k = m - 14j$ . Dividing each side of this equation by 5 results in

$$k = \frac{m - 14j}{5}$$

**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 22

**Choice D** is correct. The hypotenuse of triangle  $RST$  is the longest side and is across from the right angle. The longest side length given is 584, which is the length of side  $TR$ . Therefore, the hypotenuse of triangle  $RST$  is side  $TR$ , so the right angle is angle  $S$ . The tangent of an acute angle in a right triangle is the ratio of the length of the opposite side, which is the side across from the angle, to the length of the adjacent side, which is the side closest to the angle that is not the hypotenuse. It follows that the opposite side of angle  $T$  is side  $RS$

and the adjacent side of angle  $T$  is side  $ST$ . Therefore,  $\tan T = \frac{RS}{ST}$ . Substituting 440 for  $RS$  and 384 for  $ST$  in this equation yields  $\tan T = \frac{440}{384}$ . This is equivalent to  $\tan T = \frac{55}{48}$ . It's given that triangle  $RST$  is similar to triangle  $UVW$ , where  $S$

corresponds to  $V$  and  $T$  corresponds to  $W$ . It follows that  $R$  corresponds to  $U$ . Therefore, the hypotenuse of triangle  $UVW$  is side  $WU$ , which means

$\tan W = \frac{UV}{VW}$ . Since the lengths of corresponding sides of similar triangles are

proportional,  $\frac{RS}{ST} = \frac{UV}{VW}$ . Therefore,  $\tan W = \frac{UV}{VW}$  is equivalent to  $\tan W = \frac{RS}{ST}$ , or  $\tan W = \tan T$ . Thus,  $\tan W = \frac{55}{48}$ .

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

value of  $\frac{1}{\tan W}$ , not  $\tan W$ .

# SAT Practice Test Worksheet: Answer Key

Mark each of your correct answers below, then add them up to get your raw score on each module.

## Reading and Writing

Module 1

QUESTION #	CORRECT	MARK YOUR CORRECT ANSWERS
1	A	
2	C	
3	C	
4	B	
5	C	
6	D	
7	D	
8	D	
9	B	
10	C	
11	D	
12	C	
13	A	
14	D	
15	B	
16	B	
17	D	
18	A	
19	C	
20	D	
21	C	
22	D	
23	A	
24	D	
25	C	
26	B	
27	A	

Module 2

QUESTION #	CORRECT	MARK YOUR CORRECT ANSWERS
1	C	
2	D	
3	B	
4	D	
5	A	
6	A	
7	C	
8	D	
9	B	
10	C	
11	C	
12	B	
13	B	
14	A	
15	A	
16	D	
17	A	
18	A	
19	A	
20	C	
21	B	
22	D	
23	A	
24	C	
25	A	
26	A	
27	D	

## Math

Module 1

QUESTION #	CORRECT	MARK YOUR CORRECT ANSWERS
1	A	
2	B	
3	A	
4	D	
5	A	
6	.3, 3/10	
7	C	
8	5	
9	B	
10	A	
11	B	
12	B	
13	C	
14	B	
15	40	
16	D	
17	C	
18	A	
19	.8823, .8824, 15/17	
20	6.25, 25/4	
21	24	
22	20.25, 81/4	

Module 2

QUESTION #	CORRECT	MARK YOUR CORRECT ANSWERS
1	B	
2	55	
3	C	
4	B	
5	D	
6	A	
7	240	
8	B	
9	27	
10	C	
11	C	
12	D	
13	47	
14	D	
15	A	
16	C	
17	D	
18	D	
19	B	
20	D	
21	A	
22	D	

### READING AND WRITING SECTION RAW SCORE

(Total # of Correct Answers,  
Excluding Grayed-Out Rows)

Module 1

Module 2

### MATH SECTION RAW SCORE

(Total # of Correct Answers,  
Excluding Grayed-Out Rows)

Module 1

Module 2