PSAT™ 8/9

Practice Test #2

ANSWER EXPLANATIONS

These answer explanations are for students taking the digital PSAT 8/9 in nondigital format.

PSAT™ 8/9

Reading and Writing

Module 1

(33 questions)

QUESTION 1

Choice A is the best answer because as used in the text, "soft" most nearly means gentle. The text portrays Alice speaking about the snow falling against the window, describing it as sounding "nice" and similar to someone "kissing the window." These details most strongly suggest that Alice thinks the sound made by the snow falling against the window is gentle.

Choice B is incorrect. Although in some contexts, "gentle" can mean sensitive, or caring about others' feelings, that isn't the meaning in this context; it doesn't make sense to say that Alice thinks the sound of the snow cares about anything. *Choice C* is incorrect because the text doesn't suggest that Alice thinks the sound of the snow is shapeless, or lacks a definite shape; she isn't indicating how anything looks or feels but, rather, is describing how "nice" and gentle the snow sounds. *Choice D* is incorrect because the text doesn't suggest that Alice thinks the sound of the snow is bland, or uninteresting; rather, she notices the sound and comments on how "nice" it is.

QUESTION 2

Choice A is the best answer because as used in the text, "determine" most nearly means choose or decide. The text indicates that Mr. Ryder "had made up his mind" to ask a woman to marry him but had not yet "spoken"—that is, he had not yet asked her. The text also indicates that Mr. Ryder "decided" to throw a party for the woman and ask her during it. This context conveys that after making up his mind to propose, what Mr. Ryder had to do was determine, or choose, the time to do it.

Choice B is incorrect because in this context, "determine" doesn't mean influence, or affect or control. The text isn't indicating that Mr. Ryder is controlling time itself; such a thing isn't possible. Rather, the text conveys that after making up his mind to ask a woman to marry him, Mr. Ryder had to make another decision about his own actions by selecting a time to propose. *Choice C* is incorrect. The text

focuses on Mr. Ryder's plan to ask a woman to marry him and his decision about when to ask her. This context conveys that after making up his mind to propose, Mr. Ryder had to choose the time, not that he had to demonstrate, or show, the time; it's not clear what it would mean to demonstrate a time. *Choice D* is incorrect because in this context, "determine" doesn't mean measure, or control with careful restraint. The text isn't indicating that Mr. Ryder is carefully controlling time itself; such a thing isn't possible. Rather, the text conveys that after making up his mind to ask a woman to marry him, Mr. Ryder had to make another decision about his own actions by selecting a time to propose; it's Mr. Ryder's decision that is measured, not the time he eventually chooses.

QUESTION 3

Choice C is the best answer because it most logically completes the text's discussion of an exhibit at the Brooklyn Public Library. In this context, "overlook" means to ignore or to miss. The text states that artist and curator Joe Baker organized an exhibit that features Lenape beadwork in historical and modern works. The text describes the exhibit as "essential viewing," suggesting that it's an important exhibit that people should make an effort to visit; this context conveys that it would be a mistake to overlook the exhibit.

Choice A is incorrect. In this context, "complicate" would mean to add difficulty, and there's no reason to think the text would need to directly caution against complicating Baker's exhibit; the text focuses on the idea that the exhibit is "essential viewing," not on the idea of a potential difficulty that could be raised. *Choice B* is incorrect. In this context, "amplify" means to increase, and there's no reason to believe the text would indicate that it would be a mistake to increase an exhibit the text describes as "essential viewing." *Choice D* is incorrect because it wouldn't make sense to say that it would be a mistake to "assemble," or put together, Baker's exhibit: the text makes it clear that the exhibit has already been put together and, further, praises the exhibit as "essential viewing."

QUESTION 4

Choice C is the best answer because it most logically completes the text's discussion of the preservation efforts undertaken by Erika Karuzas and the Confederated Salish and Kootenai Tribes of Montana. In this context, "promote" means play a part in the success or growth of something or someone. The text indicates that Karuzas and the Confederated Salish and Kootenai Tribes work to preserve culturally important sites. It goes on to say that their decision to create a national trail connecting the sites was motivated by the fact that such a trail would receive protections from the US government that the sites wouldn't otherwise receive. Thus, such a decision would promote the preservation efforts.

Choice A is incorrect because "inspire" means motivate or influence, which wouldn't make sense in context. The text establishes that Karuzas and the Confederated Salish and Kootenai Tribes of Montana work to preserve culturally significant sites and that their decision to create a new national trail occurred as a result of a desire to add protections to the sites that they wouldn't otherwise receive. Thus, creating the trail wouldn't inspire the efforts to preserve the sites; instead, it would promote the efforts. *Choice B* is incorrect because "ignore" means overlook, which wouldn't make sense in context. The text indicates that

Karuzas and the Confederated Salish and Kootenai Tribes of Montana work to preserve culturally significant sites and that they decided to create a national trail connecting the sites because such a trail would receive protections from the US government that the sites wouldn't otherwise receive. Thus, the creation of the trail would promote, not ignore, the preservation efforts. *Choice D* is incorrect because "reduce" means decrease or restrict, which wouldn't make sense in context. The text indicates that Karuzas and the Confederated Salish and Kootenai Tribes of Montana work to preserve culturally significant sites and that they decided to create a national trail connecting the sites because such a trail would receive protections from the US government that the sites wouldn't otherwise receive. The decision would therefore promote, not reduce, the preservation efforts.

QUESTION 5

Choice D is the best answer because it most logically completes the text's discussion of the dating of Machu Picchu. In this context, "original" means first or initial. The text indicates that Lucy Salazar and her colleagues have determined the age of Machu Picchu and that the age differs from another estimate of the site's age, explaining that the site is about 20 years older than scholars thought in 1911 when they initially encountered Machu Picchu. In other words, Salazar and her team found that the site's age differs from the first estimate.

Choice A is incorrect. The text's structure indicates that the missing word describes the estimate made by scholars when they first encountered Machu Picchu in 1911 in relation to the age determined by Salazar and her colleagues. It wouldn't make sense to suggest that the estimate by earlier scholars was "genuine," or actual and true, while the one by Salazar's team wasn't, since the text treats the finding by Salazar's team as true and as invalidating the earlier estimate ("it is approximately 20 years older than scholars thought"). *Choice B* is incorrect. The text's structure indicates that the missing word describes the estimate made by scholars when they first encountered Machu Picchu in 1911 in relation to the age determined by Salazar and her colleagues. It wouldn't make sense to suggest that the estimate by earlier scholars was "intentional," or done on purpose, while the one by Salazar's team wasn't; the text indicates that Salazar and her colleagues were deliberately using radiocarbon dating to study Machu Picchu. *Choice C* is incorrect. The text's structure indicates that the missing word describes the estimate made by scholars when they first encountered Machu Picchu in 1911 in relation to the age determined by Salazar and her colleagues. There's no reason to suggest that the estimate by earlier scholars was "independent," or not controlled by or affiliated with others, while the one by Salazar's team wasn't; there's no mention of any outside influence on the work by Salazar and her team or by scholars in 1911.

QUESTION 6

Choice B is the best answer because it most accurately describes the main purpose of the text. The text describes how the narrator watches people working out at a gym through a window near a bus stop. The narrator says that "there ain't nothing funnier" than watching people try to work out on the stair climber machine. Thus, the main purpose of the text is to describe an activity that the narrator finds amusing.

Choice A is incorrect because the text isn't about the narrator beginning middle school. The text describes how the narrator finds people working out at a gym amusing and makes no mention of school life. *Choice C* is incorrect because the text doesn't mention any problems that the narrator currently has or has overcome. It just describes how the narrator finds watching people work out amusing. *Choice D* is incorrect because the narrator invents the made-up movie mentioned in the text. The text doesn't indicate that the narrator has seen a movie in a theater. The focus of the text is on the narrator watching people at the gym, not watching a movie.

QUESTION 7

Choice C is the best answer because it best describes the main purpose of the text, which is to explain why a certain rap album is particularly innovative. The text mentions rap artist and professor A.D. Carson, who published "the first peer-reviewed rap album." The text also describes the unusual process of having the work evaluated by both scholars and rap artists before its release, and details how the album combines elements of a mixtape album with elements of scholarly essays. All of these characteristics of the album and the way in which it was developed help to demonstrate the album's novelty.

Choice A is incorrect because though the text mentions an album that combines elements of scholarly essays and mixtapes, it does not compare the relative public impact of scholarly articles and albums. *Choice B* is incorrect because the text does not present the opinion of a scholar regarding the rap album. *Choice D* is incorrect because though the text mentions that the album was peer reviewed, it does not detail the steps of the review.

QUESTION 8

Choice A is the best answer because it most accurately describes how the underlined portion functions in the text as a whole. The first sentence of the text states that the CEP had a positive impact on the Civil Rights Movement in the 1960s. The next sentence explains that the CEP organized workshops for attendees, who later used the knowledge they gained to lead civil rights initiatives. And the underlined portion indicates the number of activists—more than 7,000—who participated in the workshops. Thus, the underlined portion provides a number that underscores the extent of the CEP's impact on the Civil Rights Movement in the 1960s.

Choice B is incorrect. Although the sentence that contains the underlined portion mentions some CEP workshop topics, the underlined portion itself addresses the

number of participants in the CEP workshops, not the number of topics covered. *Choice C* is incorrect. Although the underlined portion refers to attendees of the CEP workshops, nothing in the underlined portion or the text as a whole addresses the Southern Christian Leadership Conference's philosophy or the attendees' opinions thereof. *Choice D* is incorrect because neither the underlined portion nor the text as a whole mentions any criticism of the CEP by members of the Southern Christian Leadership Conference.

QUESTION 9

Choice C is the best answer because it describes how the ecologist in Text 2 would most likely respond to the author's conclusion in Text 1 based on the information provided. The author of Text 1 states that the pink color of flamingo feathers comes from pigments carried by the brine shrimp flamingos consume. The author of Text 1 concludes that this means that a flamingo that is pinker than another flamingo must have eaten more shrimp. However, according to Text 2, ecologist Juan Amat has found that flamingos can also affect how pink they look through grooming, when they move ingested pigments from a gland near the tail to their feathers. This indicates that not all the pigments available from the shrimp a flamingo has eaten automatically end up coloring the flamingo's feathers; some may or may not be applied later. Since grooming is also a factor, the ecologist (Amat) in Text 2 would most likely respond to the conclusion in Text 1 that pinker flamingos have eaten more shrimp by pointing out that the amount of shrimp eaten isn't the only thing that influences flamingos' coloring.

Choice A is incorrect. Although Text 2 states that the ecologist has found that flamingos can move pigments to their feathers from a gland near their tail, there is no indication that their tail feathers are pinker than their other feathers. Moreover, the point that tail feathers are pinker than other feathers wouldn't logically address the idea that the quantity of shrimp eaten is what determines a flamingo's coloring. *Choice B* is incorrect because Text 2 indicates that the ecologist has found that flamingos' feathers do sometimes look pinker and gives no indication that this change in color is particularly subtle. Moreover, the point that most observers wouldn't notice a change wouldn't logically address the idea that the quantity of shrimp eaten is what determines a flamingo's coloring. *Choice D* is incorrect because nothing in Text 2 suggests that the ecologist would argue about flamingos' shrimp consumption. Although Text 2 indicates that the ecologist has found that flamingos may make themselves look pinker during mating season, this is addressed in terms of grooming habits; apart from referring to food as a source of pigments, Text 2 doesn't discuss the diet of flamingos at all.

QUESTION 10

Choice D is the best answer because it presents a description of how Zerviah Holme felt that is directly supported by the text. The text states that Holme "did not like to be interrupted" while reading Gibbon and that he considered interruptions to be "an insult." Furthermore, the text suggests that Gibbon is Holme's favorite author because, as the text states, "he was always reading Gibbon." Thus, Holme would have felt annoyed at having been interrupted when the letter was delivered.

Choice A is incorrect because the text doesn't suggest that Holme is relieved to receive the letter. Instead, the text states that Holme "just glanced indifferently at the letter," suggesting that the letter wasn't important to him. *Choice B* is incorrect because the text doesn't suggest that Holme is excited to receive the letter. Instead, the text states that Holme didn't put down his book to receive the letter and that he looked at the letter "indifferently" and at the postman "impatiently." This suggests that Holme isn't excited. Also, there is no mention that Holme knows who sent the letter. *Choice C* is incorrect because the text doesn't indicate that Holme is sad or that he wants to speak with the postman. Instead, the text describes Holme as looking "impatiently at the postman," which suggests that he wants the postman to leave.

QUESTION 11

Choice B is the best answer because it presents a statement about how historians view *pachuca* style that is supported by the text. The text first describes the distinctive *pachuca* style of dress adopted by some Mexican American women during World War II, saying that some criticized it and asserted that women should dress traditionally. The text then goes on to contrast this position with that of historians, who "see things differently": according to these historians, the *pachuca* style showed a wish for freedom and self-expression, and it acted as a kind of rebellion against what society expected of women at the time. Therefore, according to the text, historians think that the *pachuca* style was a way for Mexican women to express themselves and resist strict social expectations.

Choice A is incorrect because the text explicitly describes the *pachuca* style as a distinctive look adopted during the World War II era. It does not indicate that the *pachuca* style influences fashion in the United States in the present day. *Choice C* is incorrect because the text does not indicate that Mexican American women wore the *pachuca* style to show support for the United States during World War II; rather, the style was a means of self-expression and rebellion against social expectations. *Choice D* is incorrect because the text does not compare the *pachuca* style to other fashion trends: the *pachuca* style is the only style mentioned.

QUESTION 12

Choice B is the best answer because it presents a statement about the two previously unknown penguin species that is supported by the text. According to the text, Alan Tennyson and colleagues studied fossil bones belonging to two previously unknown penguin species that are described as prehistoric, or ancient. The text goes on to say that one of the two species was considerably larger than the emperor penguin, which is currently the largest penguin in existence. Thus, the text indicates that the other species aren't in existence today, or that the two previously unknown penguin species are no longer living species.

Choice A is incorrect. Although the text states that Alan Tennyson is a paleontologist who studied the fossils of two previously unknown penguin species, it doesn't say whether these penguins are frequently studied by paleontologists. *Choice C* is incorrect because the text says that one of the two

previously unknown penguin species was three times larger than the emperor penguin (a penguin alive today), not that they were both smaller than penguin species that exist today. *Choice D* is incorrect because the text doesn't discuss whether the two previously unknown penguin species spent any time in water.

QUESTION 13

Choice D is the best answer because it presents the point about the magnetic field mapping that the text describes as surprising. The text indicates that a team of astronomers mapped the magnetic field of G47, a galactic bone in the Milky Way, and that the mapping "surprisingly" revealed "no clear pattern or direction" in the magnetic field. The text then adds that the researchers had thought the magnetic field would be as uniform as the magnetic fields of other galactic bones in the Milky Way are. In other words, the researchers were surprised that the mapping revealed a magnetic field that wasn't uniform.

Choice A is incorrect because the text doesn't indicate that the mapping surprisingly showed a weaker magnetic field than the researchers had expected. The text makes no mention of the magnetic field's strength, only its lack of a clear pattern or direction. *Choice B* is incorrect because the text doesn't indicate that the magnetic field mapping suggested to researchers that previous mappings were inaccurate. Although the text states that the mapping didn't show what researchers had expected based on their knowledge of other magnetic fields, there's no indication that G47's magnetic field had ever been mapped before. *Choice C* is incorrect because the text indicates that the researchers were surprised that the magnetic field was different from, not similar to, the magnetic fields of other galactic bones; the text states that because other galactic bones in the Milky Way are more uniform, the researchers had expected the magnetic field of G47 to be more uniform than it turned out to be.

QUESTION 14

Choice A is the best answer because it most accurately states the main idea of the text. According to the text, artificial leaves are a renewable energy technology that's in development and generating interest. The text goes on to state that artificial-leaf technology "is not yet commercially viable as a large-scale energy source" and that scientists from several fields are doing additional research to refine the technology. Thus, the main idea is that continued research and development in artificial-leaf technology is needed before the devices can be widely used as an energy source.

Choice B is incorrect. While the text does state that scientists from many fields are researching artificial leaves, they're doing so to address the fact that the leaves are not yet commercially viable, rather than in response to an increase in commercial use. *Choice C* is incorrect. Although the text does explain that artificial leaves help split water molecules into oxygen and hydrogen gas using catalysts, it doesn't argue that this process is more efficient than photosynthesis. This is merely a detail of the text and not the main idea, which is about the additional research needed to improve the cost and efficiency of these artificial leaves. *Choice D* is incorrect. Although the text indicates that artificial leaves

mimic photosynthesis in plants, this is an incidental detail in support of the main idea that additional research is needed to make artificial leaves commercially viable.

QUESTION 15

Choice D is the best answer because it most effectively uses data from the table to complete the statement about the year when both museums had the highest number of visits. The table shows the number of visits (in millions) from 2016 to 2019 to two museums: the National Museum of the American Indian and the National Museum of African American History and Culture. It indicates that the highest number of visits to the National Museum of the American Indian was 1.2 million in 2017 and that the highest number of visits to the National Museum of African American History and Culture was 2.4 million, also in 2017.

Choice A is incorrect because the table shows that in 2016, the National Museum of the American Indian had 1.1 million visits and that the National Museum of African American History and Culture had 0.73 million visits, both of which are lower than the number of visits these museums had in 2017. *Choice B* is incorrect because the table shows that in 2018, the National Museum of the American Indian had 1.1 million visits and that the National Museum of African American History and Culture had 1.9 million visits, both of which are lower than the number of visits these museums had in 2017. *Choice C* is incorrect because the table shows that in 2019, the National Museum of the American Indian had 0.96 million visits and that the National Museum of African American History and Culture had 2.0 million visits, both of which are lower than the number of visits these museums had in 2017.

QUESTION 16

Choice C is the best answer because it presents a response that best supports the underlined claim that experienced riders who mainly bike to work tend to prefer routes that reduce their travel time. The bike rider responds that they bike to work every day and that they use the bike lane because it is faster; thus, it is reasonable to assume that they are an experienced rider who prefers routes that reduce their travel time to work.

Choice A is incorrect because this response does not address the claim. The claim is about experienced riders preferring to take routes that reduce their travel time on the way to work; however, this response is from an inexperienced rider who is discussing biking for personal reasons. *Choice B* is incorrect because this response is not related to the underlined claim. The response from this rider does not establish the level of experience they have with riding, nor does it state that the rider uses a bike to get to work. *Choice D* is incorrect. Although this response is from an experienced rider who mainly bikes to work, the response also mentions that the rider's bike is broken, which is not related to any route preference.

QUESTION 17

Choice C is the best answer because it most effectively uses data from the graph to complete the text's discussion of the percentages of maize exported in the marketing year 2012/2013. The graph presents percentages of maize exported by Argentina, Brazil, and the United States in marketing years 2009/2010 to 2013/2014 and indicates that for the marketing year 2012/2013, the percentage of maize exported by Argentina decreased to about 70 percent from about 80 percent in the previous marketing year. The graph also shows that the percentage of maize exported by Argentina remained highest among the three countries in the marketing year 2012/2013, surpassing the percentage exported by Brazil (about 31 percent) and by the United States (about 8 percent).

Choice A is incorrect because for the marketing year 2012/2013, the graph indicates that the percentage of maize exported by Brazil didn't increase from the previous year; rather, it decreased from about 34 percent to about 31 percent. Moreover, the graph shows that the percentage of maize exported by Brazil remained higher, not lower, than the percentage exported by the United States in the marketing year 2012/2013. *Choice B* is incorrect because the graph indicates that the percentage of maize exported by Brazil never exceeded the percentage exported by Argentina for any of the marketing years represented. *Choice D* is incorrect because the graph indicates that the percentage of maize exported by the United States reached its lowest point, not its highest, during the five marketing years in 2012/2013, with the United States exporting only about 8 percent of its maize in that marketing year.

QUESTION 18

Choice A is the best answer because it most logically completes the text's discussion of the discovered ship. The text states that much of the ship's wooden hull was found in a quarry. The text also states that wood rots quickly unless it is protected by sediment, which shields the wood from exposure to oxygen. It is therefore reasonable to infer that the surviving portion of the ship's hull was covered by an oxygen-shielding layer of sediment.

Choice B is incorrect because nothing in the text suggests other ships have been or are likely to be found in the same quarry. The fact that much of this ship's wood survived for centuries in the quarry does raise the possibility that there might be other preserved ships, but the text provides no support for such a conclusion. *Choice C* is incorrect because the text does not address the type of wood used in sixteenth-century ships or any theories pertaining to wood choice in ships. *Choice D* is incorrect because the text states only that the ship is from the sixteenth century, with no other dates offered for its construction, and thus there is no basis to consider alternative ages for the ship. Additionally, even if the ship was constructed earlier, it is not logically connected to the text's discussion of how it was preserved.

QUESTION 19

Choice C is the best answer. The convention being tested is punctuation use between a noun and a prepositional phrase. No punctuation is needed between the noun "pieces" and the prepositional phrase "of pottery." The prepositional phrase provides essential information about what kind of pieces were found, so it shouldn't be separated from the rest of the noun phrase ("some of the oldest pieces") with punctuation.

Choice A is incorrect because no punctuation is needed between the noun phrase "some of the oldest pieces" and the prepositional phrase "of pottery." *Choice B* is incorrect because no punctuation is needed between the noun phrase "some of the oldest pieces" and the prepositional phrase "of pottery." *Choice D* is incorrect because no punctuation is needed between the noun phrase "some of the oldest pieces" and the prepositional phrase "of pottery."

QUESTION 20

Choice D is the best answer. The convention being tested is the punctuation of items in a simple series. The comma after "libraries" is used conventionally to separate the first and second items ("libraries" and "train stations") in the series.

Choice A is incorrect because it fails to separate the first two items ("libraries" and "train stations") in the series. *Choice B* is incorrect because a colon can't be used in this way to separate items in a simple series. *Choice C* is incorrect because a dash can't be used in this way to separate items in a simple series.

QUESTION 21

Choice C is the best answer. The convention being tested is punctuation use between a preposition and its complement. No punctuation is needed between the preposition "to" and its complement "the largest island of them all." The complement completes the meaning of the preposition in the phrase "home to the largest island of them all," and any punctuation within it results in an ungrammatical sentence.

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

QUESTION 22

Choice D is the best answer. The convention being tested is the use of verb forms within a sentence. A main clause requires a finite (tensed) verb to perform the action of the subject (in this case, "the collection"), and this choice supplies the finite present tense verb "includes" to indicate what is in the collection.

Choice A is incorrect because it results in an ungrammatical sentence. The nonfinite to-infinitive "to be including" doesn't supply the main clause with a finite verb. *Choice B* is incorrect because it results in an ungrammatical sentence. The nonfinite participle "including" doesn't supply the main clause with a finite

verb. *Choice C* is incorrect because it results in an ungrammatical sentence. The nonfinite to-infinitive "to include" doesn't supply the main clause with a finite verb.

QUESTION 23

Choice A is the best answer. The convention being tested is the use of verb forms within a sentence. A main clause requires a finite (tensed) verb to perform the action of the subject (in this case, "multiple newspapers"), and this choice supplies the finite present tense verb "serve" to indicate that there are multiple newspapers serving the Spanish-speaking population of Washington, DC.

Choice B is incorrect because it results in an ungrammatical sentence. The nonfinite participle "having served" doesn't supply the main clause with a finite verb. *Choice C* is incorrect because it results in an ungrammatical sentence. The nonfinite to-infinitive "to serve" doesn't supply the main clause with a finite verb. *Choice D* is incorrect because it results in an ungrammatical sentence. The nonfinite participle "serving" doesn't supply the main clause with a finite verb.

QUESTION 24

Choice D is the best answer. The convention being tested is subject-verb agreement. The plural verb "were" agrees in number with the plural subject "ayllus," which are described as plural "family clans."

Choice A is incorrect because the singular verb "is" doesn't agree in number with the plural subject "ayllus." *Choice B* is incorrect because the singular verb "was" doesn't agree in number with the plural subject "ayllus." *Choice C* is incorrect because the singular verb "has been" doesn't agree in number with the plural subject "ayllus."

QUESTION 25

Choice C is the best answer. The convention being tested is punctuation use between sentences. In this choice, the period is used correctly to mark the boundary between one sentence ("The city…system") and another ("Analyzing… footage"). The participial phrase beginning with "analyzing" modifies the subject of the second sentence, "the AI algorithm."

Choice A is incorrect. Placing a dash before "analyzing" creates a confusing and ambiguous modifying element ("analyzing…areas") and a comma splice between "areas" and "the AI algorithm." (A comma can't be used in this way to mark the boundary between sentences.) *Choice B* 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 D* is incorrect because it results in a run-on sentence. The sentences ("The city…system" and "analyzing… footage") are fused without punctuation and/or a conjunction.

QUESTION 26

Choice B is the best answer. "However" logically signals that the information in this sentence—that nothing in Copeland's career matches her accomplishment of being the first African American woman named principal dancer at the American Ballet Theatre—offers a contrast or exception to the previous information about Copeland's accomplishments.

Choice A is incorrect because "thus" illogically signals that the information that follows is a result of the previous information about Copeland's accomplishments. Instead, the statement that nothing in Copeland's career matches this accomplishment offers a contrast or exception to that information. *Choice C* is incorrect because "for example" illogically signals that Copeland's statement about her greatest accomplishment exemplifies the claim about her accomplishments in the previous sentence. Instead, it offers a contrast or exception to that information. *Choice D* is incorrect because "second of all" illogically signals that the information in this sentence is a second, separate claim from the previous sentence's information about her accomplishments. Instead, the statement that nothing in Copeland's career matches this accomplishment offers a contrast or exception to that information.

QUESTION 27

Choice B is the best answer. "For example" logically signals that this sentence—noting Singletary's work with Jody Naranjo—provides an example supporting the previous point about Singletary's collaborations with other artists.

Choice A is incorrect because "in conclusion" illogically signals that the information in this sentence concludes or summarizes the previous point about Singletary's collaborations with other artists. Instead, it provides an example in support of that point. *Choice C* is incorrect because "however" illogically signals that the information in this sentence contrasts with the previous point about Singletary's collaborations with other artists. Instead, it provides an example in support of that point. *Choice D* is incorrect because "in comparison" illogically signals that the information in this sentence is being compared to the previous point about Singletary's collaborations with other artists. Instead, it provides an example in support of that point.

QUESTION 28

Choice A is the best answer. "As a result" logically signals that the information in the sentence—that, in the US House of Representatives, the entire state of Alaska has just one district—is the result or consequence of Alaska having only about 730,000 people. This is slightly below the average for House districts, which are designed to have roughly equal populations.

Choice B is incorrect because "instead" illogically signals that Alaska having just one state district is an alternative to the information about the state's population in the previous sentence. Rather, the fact that Alaska has just one district is a result or consequence of the entire state having slightly fewer people than an average-sized district. *Choice C* is incorrect because "finally" illogically signals

that the information in this sentence about Alaska having just one district indicates a last step in a process or a concluding summary. Instead, the fact that Alaska has just one district is a result or consequence of the entire state having slightly fewer people than an average-sized district. *Choice D* is incorrect because "for instance" illogically signals that the information in this sentence about Alaska having just one district exemplifies the information about the state's population in the previous sentence. Instead, the fact that Alaska has just one district is a result or consequence of the entire state having slightly fewer people than an average-sized district.

QUESTION 29

Choice D is the best answer. "Specifically" logically signals that the information in this sentence—that the researchers examined the overhead costs and attendance at events of 22,328 nonprofits—provides specific, precise details elaborating on how the researchers investigated the relationship between nonprofits' spending and performance.

Choice A is incorrect. "Thus" illogically signals that the information in this sentence is a result or consequence of the researchers' investigation of nonprofits' spending and performance. Instead, it specifies how they examined that correlation. *Choice B* is incorrect. "In addition" illogically signals that the information in this sentence is merely an additional fact about the researchers' investigation of nonprofits' spending and performance. Instead, it specifies how they examined that correlation. *Choice C* is incorrect. "By comparison" illogically signals that the information in this sentence is being compared to the researchers' investigation of nonprofits' spending and performance. Instead, it specifies how they examined that correlation.

QUESTION 30

Choice A is the best answer. "To that end" logically signals that the activity described in this sentence—Nazareth titling his course "Elvis as Anthology"—is meant to further Nazareth's goal of helping others understand Presley's music as an anthology with a wide range of influences.

Choice B is incorrect. "In sum" illogically signals that the activity described in this sentence summarizes Nazareth's view of Presley's music as an anthology. Instead, titling his course "Elvis as Anthology" is a way for him to promote this view. *Choice C* is incorrect. "That is" illogically signals that the activity described in this sentence is a clarification or interpretation of Nazareth's view of Presley's music as an anthology. Instead, titling his course "Elvis as Anthology" is a way for him to promote this view. *Choice D* is incorrect. "In addition" illogically signals that the activity described in this sentence is merely an additional fact about Nazareth. Instead, titling his course "Elvis as Anthology" is a way for him to promote his view of Presley's music as an anthology.

QUESTION 31

Choice A is the best answer. The sentence emphasizes how far the infantrymen traveled, indicating that they rode their bicycles from Montana to Missouri, a total of 1,900 miles.

Choice B is incorrect because the sentence mentions when the anniversary of the journey occurred; it doesn't emphasize how far the infantrymen traveled. *Choice C* is incorrect because the sentence discusses the goal of the journey; it doesn't emphasize how far the infantrymen traveled. *Choice D* is incorrect because the sentence notes that Cedeño honored the infantrymen by reenacting their journey; it doesn't emphasize how far the infantrymen traveled.

QUESTION 32

Choice A is the best answer. The sentence compares the two proposed causes of crown shyness, noting the theories' differences: Jacobs cites branches brushing against one another as the cause, while Ng cites branches detecting shade from other branches as the cause.

Choice B is incorrect. The sentence merely identifies the existence of two theories for crown shyness; it doesn't compare the causes proposed by each theory. *Choice C* is incorrect. The sentence merely indicates that there are two different theories for crown shyness; it doesn't compare the causes proposed by each theory. *Choice D* is incorrect. The sentence merely explains one theory for crown shyness; it doesn't compare two theories.

QUESTION 33

Choice B is the best answer. The sentence emphasizes a similarity in how people in Bangkok and Chiang Mai celebrate Songkran, indicating that people in both cities gather to celebrate with water fights.

Choice A is incorrect. The sentence notes the different locations of the largest water fight in Bangkok and the largest water fight in Chiang Mai; it doesn't emphasize a similarity in how people in Bangkok and Chiang Mai celebrate Songkran. *Choice C* is incorrect. The sentence indicates that people in Bangkok and Chiang Mai don't celebrate Songkran in exactly the same way; it doesn't emphasize a similarity in how people in the two cities celebrate Songkran. *Choice D* is incorrect. The sentence explains when people in Thailand celebrate Songkran; it doesn't emphasize a similarity in how people in Bangkok and Chiang Mai celebrate Songkran.

Reading and Writing

Module 2

(33 questions)

QUESTION 1

Choice A is the best answer because it most logically completes the text's discussion of oysters and ocean recordings. As used in this context, "responsive" means reacting positively. The text presents a finding and describes it as suggesting that healthy ocean sounds may encourage oyster larvae to establish a reef (a permanent home): groups of oyster larvae that heard recorded sounds of a healthy oyster reef were two times more likely to show signs of forming their own reef than groups that heard different ocean recordings were. This context conveys that the groups that heard healthy reef sounds had a more positive reaction than the other groups did—that is, they were the most responsive.

Choice B is incorrect because the text doesn't indicate that hearing sounds of a healthy oyster reef caused some groups of oyster larvae to become "inactive," or to stop engaging in work or activity. Instead, the text conveys that the groups that heard those sounds were observed engaging in activity: they were two times more likely to create a reef (a permanent home) than groups that heard different ocean sounds were. *Choice C* is incorrect because describing the groups of oyster larvae that heard sounds of a healthy oyster reef as most "liked," or regarded with pleasure, wouldn't make sense in context. The text focuses on the idea that a study found that healthy reef sounds may encourage groups of oyster larvae to form reefs (permanent homes), not on the idea that some of the groups in the study were liked more than others. *Choice D* is incorrect because the text doesn't indicate that hearing sounds of a healthy oyster reef caused some groups of oyster larvae to be "distressed," or to experience difficulty or begin to decline. Instead, the text indicates that the sounds increased the likelihood that groups of larvae would establish a reef (a permanent home), suggesting that the sounds had a positive effect on the larvae.

QUESTION 2

Choice A is the best answer because as used in the text, "featured" most nearly means displayed. The text describes Nina's fascination with a framed photograph. It then goes on to describe what the photograph showed, or displayed, which is a portrait of Nina's great-great-grandmother Rosita as a young woman. Thus, the text indicates that the photograph displayed a portrait of Rosita.

Choice B is incorrect because the text identifies the person shown in the photograph as Nina's great-great-grandmother; it gives no indication that the contents of the photograph were questioned, or asked about. *Choice C* is incorrect because approved means expressed a favorable opinion of, and there's nothing to suggest that the photograph of Nina's great-great-grandmother has received approval or been viewed favorably, only that Nina is unable to stop looking at it. *Choice D* is incorrect because nothing in the text suggests that the photograph Nina is fascinated with ignored, or refused to take notice of, Nina's great-great-grandmother Rosita. Rather, the text indicates that the photograph was a portrait of Rosita.

QUESTION 3

Choice D is the best answer because as used in the text, "specific" most nearly means particular. The text is referring to the particular view of the Port of Oakland as seen from a subway train as it rises from underground. This specific, or particular, view has always been special to Moss, a lifetime resident of West Oakland.

Choice A is incorrect. Although the text itself is a work of fiction, the view is something Moss can point out to his companions on the train, so the view itself is presumably not imaginary. *Choice B* is incorrect. Although this view of the Port of Oakland is significant to Moss, nothing in the text describes the view as particularly energetic as opposed to calming, for example. *Choice C* is incorrect. The point of the text is that the view of the Port of Oakland from the subway train as it rises from underground is significant to Moss, not whether it is described as being correct, which the text does not address.

QUESTION 4

Choice D is the best answer because it most logically completes the text's discussion of manul cats. The text states that manul cats live in "out-of-the-way parts of Asia" (citing the famously remote Mount Everest as an example) and indicates that it is difficult to research the cats because of the location of their habitats. By emphasizing that the habitats are remote in relation to humans, the text conveys that being "distant from," or far from, large groups of humans makes manul cats challenging to study.

Choice A is incorrect because saying that the habitats of manul cats are "full of large populations of humans" would indicate that the cats cohabitate with many humans, which would directly contradict the text's claim that the cats live in "out-of-the-way" areas. *Choice B* is incorrect because the missing words describe an aspect of manul cats' habitats, or the areas where they live, and it wouldn't

make sense to say that areas could be "drawn to," or attracted by, large groups of humans. *Choice C* is incorrect. In this context, "responsible for" would mean either having an obligation to care for something or being the cause of something, and it wouldn't make sense to say that the habitats of manul cats (the areas where the cats live) would need to care for humans or that the habitats somehow created large human populations.

QUESTION 5

Choice A is the best answer because as used in the text, "sheltering" most nearly means protective. In the text, the speaker describes a painting featuring a female figure. The speaker ultimately confesses to falling in love with the woman in the painting, who has "stole[n] away" the speaker's heart, but first the speaker describes elements of the painting's setting. These include sterile soil, barren fields with "no ray / Of hope in a blade of green"—a description that conveys a mood of melancholy and forlornness, possibly reflecting the speaker's own sadness at falling in love with an image that can't return the speaker's love. The text continues by stating that there's no "sheltering roof" in the painting, even though the "skies are heavy and gray," showing signs of an impending storm. Generally, a roof's intended purpose is to provide protection from the elements, and in this context, a roof would offer shelter and protection from the gathering storm.

Choice B is incorrect because nothing in the text suggests that a roof would be restrictive—that is, that it would limit or restrain something in some way. Although a roof would provide some cover from stormy winds and rain, it wouldn't limit the wind and rain, only deflect them. *Choice C* is incorrect because there's nothing in the text to suggest that if a "sheltering roof" were present in the painting, it would be affectionate, or loving and tender. In the text, the immediate context in which the word "sheltering" appears refers to the absence of a roof that would provide protection from the oncoming storm depicted in the painting, not to the idea that such a shelter would be loving and tender if it were present. *Choice D* is incorrect because in this context, suspicious would mean questionable or dubious, and there's nothing in the text to suggest that if any roofs were present in the painting, they would be questionable or cause any suspicion.

QUESTION 6

Choice C is the best answer because it best describes how the underlined sentence functions in the text as a whole. The text begins with a question: have penguins always been unable to fly? The underlined sentence then presents an answer that has been offered by researchers, indicating that Theresa Cole and her team believe that penguins were once able to fly but lost that ability long ago as they began living in the sea. The text then describes the research that led to that answer. Thus, the function of the underlined sentence is to provide an answer to the question in the previous sentence.

Choice A is incorrect because none of the terms used in the sentence that follows are defined in the underlined sentence; no definitions are given at all. Instead, the sentence presents Theresa Cole and her team's answer to the earlier

question about penguins' ability to fly. *Choice B* is incorrect because there is no contradiction between the underlined sentence and the sentence that follows since both convey that at some point penguins underwent adaptations that limited their ability to fly and helped them swim and live in the sea. Instead of contradicting later information, the underlined sentence presents an answer to the earlier question about penguins' ability to fly. *Choice D* is incorrect because the question in the previous sentence is about penguins' ability to fly and the underlined sentence presents Theresa Cole and her team's answer to that question based on their research into penguin flight, which is described in the rest of the text.

QUESTION 7

Choice A is the best answer because it most accurately describes the function of the underlined sentence. The sentence indicates that scientists used time-lapse photography during both day and night to detect pollinators visiting red clover. Therefore, the underlined sentence has the function of describing an approach scientists used in the pollinator study discussed in the text.

Choice B is incorrect because the underlined sentence discusses equipment the scientists used to conduct their study, and the text provides nothing to suggest these elements of their experimental design could, by themselves, question claims resulting from the study. *Choice C* is incorrect because nothing in either the underlined sentence or the rest of the text addresses whether moths have a preference for red clover or any other flowers. *Choice D* is incorrect. Although the sentences that follow the underlined sentence discuss research findings, nothing in the text suggests that these findings were unexpected. Moreover, the underlined sentence describes part of the scientists' experimental design (day and night time-lapse photography), not a finding of the scientists' study.

QUESTION 8

Choice D is the best answer because it most accurately states the text's main purpose. The text indicates that Louis always had his petition with him, asked everyone he encountered to sign it if they hadn't already, and lists several comical circumstances in which he might try to get someone to sign. Thus, the main purpose of the text is to illustrate Louis's dedicated focus on getting people to sign the petition.

Choice A is incorrect. Although the text suggests that Louis was aggressive in seeking signatures for the petition—for example, saying that he "cornered" people—nothing in the text addresses how those people feel toward Louis, let alone that they are refusing his request. *Choice B* is incorrect because, other than portraying Louis's commitment to gathering signatures, the text doesn't discuss community members' attitudes toward Louis or the petition. *Choice C* is incorrect because the text never mentions the attitudes of the people Louis approaches toward the petition, but the text does indicate that he "cornered" prospective signatories, strongly suggesting that their enthusiasm was neither needed nor considered.

QUESTION 9

Choice B is the best answer because it best states the main purpose of the text, which is to make a case for the importance of Scott Joplin's less famous works. The text begins by introducing Joplin's most popular works and then goes on to assert that gaining a full understanding of Joplin's creativity requires a consideration of his lesser-known pieces as well. The text concludes by characterizing the lesser-known works "Pleasant Moments" and *Treemonisha* as masterpieces that deserve to be famous. These details indicate that the text's main purpose is to argue that more attention should be given to Joplin's lesser-known works.

Choice A is incorrect. Although the text discusses some of the ragtime music and an opera that Joplin composed, it does not compare the two types of music in general. Instead, the text argues that Joplin's lesser-known works, including his opera, deserve as much attention as his more famous ragtime pieces receive. *Choice C* is incorrect because the text discusses only Joplin's music and does not ask music lovers to listen to a variety of composers. Instead, the text encourages listeners to pay attention to Joplin's lesser-known works in order to gain a full understanding of his creativity. *Choice D* is incorrect because the text does not discuss how Joplin learned to compose and perform ragtime music. Instead, the text focuses on Joplin's less famous works and makes a case for their importance.

QUESTION 10

Choice B is the best answer because it presents a question that the text is attempting to answer: why has the pronoun "y'all" become more widely used in the US? The text begins by explaining where and how the plural pronoun "y'all" originated and then goes on to state that its use has been rising in popularity, even in areas outside of its place of origin. The text then attributes this rise in popularity to the fact that many varieties of English do not have a pronoun to address more than one person, and thus "you" must function as both a singular and plural pronoun.

Choice A is incorrect because while the text states that "y'all" is used as a plural of "you" in English, it does not discuss other plural forms of the word. *Choice C* is incorrect because while the text discusses the general origins of the pronoun "y'all," it does not state when the use of the pronoun was first recorded in the English language. *Choice D* is incorrect because though the text addresses the use of the pronoun "y'all" within English-speaking communities in the US, it does not address its use outside of that geographic area.

QUESTION 11

Choice A is the best answer because it most effectively uses data from the graph to complete the statement. The graph shows test results for two new battery recycling processes used with two types of lithium-ion batteries, type A and type B. According to the graph, recycling process 2 recovered the highest percentage of lithium in the tests: recovering about 75% from lithium-ion battery type B.

Choice B is incorrect because, according to the graph, the highest percentage of lithium recovered in the tests was 75%, not 10%. In fact, none of the tests recovered exactly 10% of lithium from a recycling process. *Choice C* is incorrect because, according to the graph, the highest percentage of lithium recovered in the tests was 75%, not 45%. In fact, none of the tests recovered exactly 45% of lithium from a recycling process. *Choice D* is incorrect because, according to the graph, the highest percentage of lithium recovered in the tests was 75%, not 20%. In fact, none of the tests recovered exactly 20% of lithium from a recycling process.

QUESTION 12

Choice C is the best answer because it effectively uses data from the table to complete the example of the estimated impact of invasive mongooses on threatened mammals. The table shows the values for the estimated harmful impact of three invasive predator species (mongooses, dogs, and cats) on threatened birds, mammals, and reptiles. The text states that the values are on a scale from 0.25 (less impact) to 1.00 (greater impact). The table shows that the value for the estimated impact of invasive mongooses on threatened mammals is 0.75.

Choice A is incorrect because the table shows that the value for the estimated impact of mongooses on threatened mammals is 0.75, not 0.35. The value 0.35 is not assigned to any of the categories in the table. *Choice B* is incorrect because the table shows that 0.61 is the value for the estimated impact of cats, not mongooses, on threatened mammals. *Choice D* is incorrect because the table shows that 0.52 is the value for the estimated impact of cats on threatened reptiles, not of mongooses on threatened mammals.

QUESTION 13

Choice A is the best answer because it presents a finding that, if true, would support the researchers' claim about the diets of jaguars in the Brazilian Pantanal. The text notes that jaguars generally eat land-based mammals, but researchers claim that jaguars in the Pantanal can survive on a diet that includes more fish and aquatic reptiles than mammals. Finding that the remains of aquatic reptiles and fish appear more often in these jaguars' waste than the remains of mammals do would support the researchers' claim, since it would suggest that fish and aquatic reptiles are a more significant part of the jaguars' diet than mammals are.

Choice B is incorrect because finding that a particular aquatic reptile exists in high numbers in the area would not support the researchers' claim about the jaguars' diet. The mere presence of many aquatic reptiles nearby does not mean that the jaguars eat those reptiles, let alone survive on more aquatic reptiles and fish than mammals. *Choice C* is incorrect. Although finding that aquatic reptiles and fish can provide nutrients that land mammals typically do not provide could help explain why some animals eat those reptiles and fish, it would not indicate whether the jaguars in particular eat those reptiles and fish and thus would not support the researchers' claim. *Choice D* is incorrect because finding that when preying on mammals, jaguars prefer semiaquatic mammals, such as capybaras,

would be irrelevant to the researchers' claim that the jaguars can survive on a diet of more fish and aquatic reptiles than mammals. The type of mammals the jaguars tend to eat does not indicate anything about whether fish and aquatic reptiles are part of the jaguars' diet.

QUESTION 14

Choice B is the best answer because it presents a finding that, if true, would most directly support Pirotta and her team's claim that East Australian humpback whales may not live only on stored energy during migration. The text explains that it has long been thought that East Australian humpback whales store extra energy during the feeding season and then use that energy to survive while traveling to their breeding grounds. If it were true that citizen scientists have often seen the whales feeding as they migrate to the breeding grounds, that would indicate that the whales sometimes feed and take in additional energy during the journey, meaning that they may not rely only on energy they stored before migrating.

Choice A is incorrect because finding that citizen scientists have observed many different types of marine animals feeding alongside the whales would have no bearing on the team's claim; the behavior of other animals is irrelevant, and without indicating the timing of the observed feeding, the finding wouldn't reveal whether the whales rely only on previously stored energy or ever take in additional energy during migration. *Choice C* is incorrect because finding that citizen scientists have more often observed whales on the way to their breeding grounds than returning to their feeding grounds would have no bearing on the team's claim. Since it would provide information about the timing of observations but not about the whales' observed activities, the finding wouldn't reveal whether the whales rely only on previously stored energy or ever take in additional energy during migration. *Choice D* is incorrect because finding that citizen scientists have recently started seeing the whales migrate to their breeding grounds earlier in the year would have no bearing on the team's claim. Since it would provide information about a change in the timing of migration but not about the whales' observed activities while migrating, the finding wouldn't reveal whether the whales rely only on previously stored energy or ever take in additional energy during migration.

QUESTION 15

Choice C is the best answer because it presents a finding that, if true, would most directly support Vikash V. Gayah's claim that eliminating the option to turn left at busy intersections would improve traffic flow and reduce overall travel times. The text begins by describing a problem encountered by drivers in countries with right-hand traffic—namely that drivers wanting to make a left turn must wait for either gaps in oncoming traffic or for designated left-turn signals before proceeding. The resulting backup of vehicles causes increased traffic congestion at busy intersections that slows overall travel times. According to Gayah, eliminating left turns from busy intersections in urban areas would ease the congestion caused by vehicles waiting to turn left. If vehicles spend less time waiting at intersections for left turns, faster overall travel times would result even if some drivers would have to drive slightly longer distances to make the desired

left turn. Drivers for package-delivery companies, who presumably spend most of the day driving to destinations across the city in which they are based, would likely provide a good indication of overall traffic patterns across the city. A finding that after a city had eliminated left turns at busy intersections, package-delivery companies were able to complete more daily deliveries on average—which implies faster travel times between package destinations—would therefore support the claim that overall travel times would decrease if left turns were eliminated at busy intersections.

Choice A is incorrect because a finding that a majority of survey respondents agreed with the statement that implementing left-turn signals at all busy intersections made navigating streets in their communities easier wouldn't support the claim that eliminating the option to turn left altogether at some busy intersections—both with and without dedicated left-turn signals—would improve the flow of traffic and overall traffic times. In fact, the text emphasizes that designated left-turn signals contribute to increased congestion because they require drivers to wait to turn left, which results in a backup of vehicles. Installing such signals at all busy intersections would thus potentially compound the problem of congestion, not improve it. Moreover, although making streets easier for drivers to navigate might indicate that left-turn signals are beneficial to drivers, it doesn't indicate that overall travel times would necessarily be reduced. *Choice B* is incorrect because a study concluding that drivers wait longer to make left turns at intersections without dedicated left-turn signals than at intersections with such signals wouldn't support the claim that eliminating the option to turn left altogether would reduce overall travel times. In fact, the finding would merely support the idea that installing left-turn signals would likely reduce the time drivers spend waiting at busy intersections that didn't previously have left-turn signals, not that overall travel times would be reduced. *Choice D* is incorrect because the finding that after a restriction eliminating left turns at most intersections took effect, school buses took longer to complete their routes than they did before the restriction was implemented would contradict rather than support the researcher's claim that eliminating left turns would reduce overall travel times.

QUESTION 16

Choice B is the best answer because it most logically follows from the text's point about zines today. The text describes zines as a form of expression that goes back to the 1920s and asserts that "this old form persists." The text then indicates that multiple zines exist in the US today and that they are popular enough to support annual festivals, a point that suggests that people continue to view zines as a meaningful form of expression.

Choice A is incorrect because the text's point about current interest in zines in the US doesn't logically suggest that zine creators can reach a larger audience by posting online. The text indicates that zines have long had an audience, and there's no indication that online posts have caused that audience to grow; there's no mention of zine creators' use of the internet at all. *Choice C* is incorrect because the idea that zine creators can explore new art forms—while objectively true—isn't logically connected to the text's discussion of zines as an existing

form of expression (one that often includes art) or the point that zines are still popular enough in the US to support annual festivals. *Choice D* is incorrect because the point that zines are popular enough in the US today to support annual festivals doesn't logically suggest that zines present mainstream culture (or are themselves mainstream); moreover, the text states that zine creators often "challenge mainstream culture."

QUESTION 17

Choice B is the best answer. The text describes a study examining the relationship between a species of parasitic tapeworm, *A. brevis*, and its host insect, the *T. nylanderi* ant. According to the text, researchers were surprised to find that the tapeworm extends the life of its ant host, rather than reducing it. The text goes on to state that the infected ants end up doing less work to sustain the colony and that as a result, the uninfected ants take on the infected ants' share of labor in addition to caring for them in their infected state. The study's researchers also observed that the uninfected ants have shorter lifespans than expected. If the infected ants, who are doing less work in the colony, have longer lifespans, it can be inferred that the less an ant works, the longer it will live. The opposite of this statement can also be inferred: the more an ant works, the shorter its life. So, since the workload within the colony is being redistributed so that the infected ants work less while the uninfected ants work more (as they take on the neglected duties of the infected ants and also care for those ants), then it can be inferred that the lifespans of the uninfected ants are shortened because the need to compensate for reduced contributions within the colony while also caring for infected workers is burdensome to the uninfected workers.

Choice A is incorrect because the text does not indicate how *A. brevis* is transmitted to the ants or assert that uninfected ants are more likely to be directly exposed to *A. brevis* while caring for infected ants. *Choice C* is incorrect because the text makes no mention of the relative abilities of infected and uninfected ants to escape predators: in fact, predators are not mentioned in the text at all. *Choice D* is incorrect because the text does not supply any information about the average lifespans of the ants in colonies without parasitic activity; the text only indicates factors that lengthen and shorten the lifespans of ants in parasitized colonies.

QUESTION 18

Choice B is the best answer because it most logically completes the text's discussion of artificial light at night (ALAN) and the common clownfish (*A. ocellaris*). The text indicates that researchers found that when *A. ocellaris* is exposed to low levels of ALAN, spawning frequency and egg fertilization aren't significantly affected but hatching is completely inhibited—that is, the eggs never hatch. Therefore, if *A. ocellaris* were to settle only in regions where the fish would be regularly exposed to low levels of ALAN, their eggs would stop hatching and their reproductive success would be at risk.

Choice A is incorrect because the text indicates that exposure to low levels of ALAN had no significant effect on egg fertilization for *A. ocellaris*, so there's no

reason to expect there would be any significant difference in rates of successful egg fertilization between areas with low levels of ALAN and areas without ALAN. *Choice C* is incorrect because the text doesn't discuss the particular effects of low levels of ALAN on any species of coral reef fish besides *A. ocellaris*. For this reason, there's no support in the text for the idea that the reproductive success of *A. ocellaris* is more greatly affected by the presence of low levels of ALAN than the reproductive success of other species of coral reef fish is. *Choice D* is incorrect. The text does indicate that *A. ocellaris* incubation was most strongly affected by low levels of ALAN, but it doesn't indicate that there was a greater effect on spawning frequency than on egg fertilization; in fact, the text states that there was no significant effect on either.

QUESTION 19

Choice A is the best answer. The convention being tested is punctuation use between a preposition and its complement. No punctuation is needed between the preposition "of" and its complement "all the elements on the periodic table." The complement completes the meaning of the preposition in the phrase "the highest melting point of all the elements on the periodic table," and using punctuation to separate the complement from the preposition results in an ungrammatical sentence.

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

QUESTION 20

Choice B is the best answer. The convention being tested is the coordination of main clauses within a sentence. This choice correctly uses a comma and the coordinating conjunction "but" to join the first main clause ("Scientists...time") and the second main clause ("the Lund...otherwise").

Choice A is incorrect because when coordinating two longer main clauses such as these, it's conventional to use a comma before the coordinating conjunction. *Choice C* is incorrect because it results in a comma splice. Without a conjunction following it, a comma can't be used in this way to join two main clauses. *Choice D* is incorrect because it results in a run-on sentence. The two main clauses are fused without punctuation and/or a conjunction.

QUESTION 21

Choice A is the best answer. The convention being tested is the use of verb forms within a sentence. A main clause requires a finite (tensed) verb to perform the action of the subject (in this case, "yellow"), and this choice supplies the present tense verb "is considered" to indicate that yellow is considered a complementary color to blue in modern color theory.

Choice B is incorrect because it results in an ungrammatical sentence. The nonfinite participle "having been considered" doesn't supply the main clause

with a finite verb. *Choice C* is incorrect because it results in an ungrammatical sentence. The nonfinite to-infinitive "to be considered" doesn't supply the main clause with a finite verb. *Choice D* is incorrect because it results in an ungrammatical sentence. The nonfinite participle "being considered" doesn't supply the main clause with a finite verb.

QUESTION 22

Choice B is the best answer. The convention being tested is the use of verbs to express tense in a sentence. In this choice, the past tense verb "was," used in conjunction with the prepositional phrase "from outside the United States," correctly indicates that in the 1860s nearly 30% of the population in Los Angeles wasn't from the US.

Choice A is incorrect because the present progressive tense verb "is being" doesn't indicate that the claim about Los Angeles's population refers to the population back in the 1860s. *Choice C* is incorrect because the present tense verb "is" doesn't indicate that the claim about Los Angeles's population refers to the population back in the 1860s. *Choice D* is incorrect because the future tense verb "will be" doesn't indicate that the claim about Los Angeles's population refers to the population back in the 1860s.

QUESTION 23

Choice D is the best answer. The convention being tested is punctuation use between a preposition and its complement. No punctuation is needed between the preposition "by" and its complement "Native Hawaiians." The complement completes the meaning of the preposition in the phrase "proudly embodied by Native Hawaiians," and any punctuation within it results in an ungrammatical sentence.

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

QUESTION 24

Choice C is the best answer. The convention being tested is end-of-sentence punctuation. This choice correctly uses a period to punctuate a declarative sentence ("the reed of a wind instrument is the mouthpiece") that ends with a prepositional phrase ("where sound is made").

Choice A is incorrect. It's unconventional to use a question mark to punctuate a declarative sentence. *Choice B* is incorrect. The structure requires that the sentence continue as a declarative clause, not end with an interrogative clause. *Choice D* is incorrect. The structure requires that the sentence continue as a declarative clause and end with a period, not end with an interrogative clause and a question mark.

QUESTION 25

Choice C is the best answer. The convention being tested is the coordination of main clauses within a sentence. This choice correctly uses a comma before the coordinating conjunction "but" to join the first main clause ("This bat-and-ball game was derived from cricket") and the second main clause ("kilikiti differs from cricket in a few key ways").

Choice A is incorrect. When coordinating two main clauses such as these, it's not conventional to use a colon in this way after the coordinating conjunction. *Choice B* is incorrect. When coordinating two main clauses such as these, it's not conventional to use a comma in this way after the coordinating conjunction. *Choice D* is incorrect. When coordinating two main clauses such as these, it's not conventional to use a comma in this way after the coordinating conjunction.

QUESTION 26

Choice A is the best answer. The convention being tested is the use of verb forms within a sentence. The nonfinite present participle "ensuring" is correctly used to form a supplementary element that modifies the main clause "Okie-Tex takes place in an area with low light pollution," describing the viewing conditions of the star party.

Choice B is incorrect because it results in a comma splice. The pronoun "this" and the finite future tense verb "will ensure" would add an additional main clause to this sentence, and the comma after "pollution" can't be used in this way to join two main clauses. *Choice C* is incorrect because it results in an ungrammatical sentence. The finite present tense verb "ensures" can't be used in this way to form a supplementary element to modify the main clause. *Choice D* is incorrect because it results in a comma splice. The pronoun "it" and the finite present tense verb "ensures" would add an additional main clause to this sentence, and the comma after "pollution" can't be used in this way to join two main clauses.

QUESTION 27

Choice D is the best answer. The convention being tested is the use of punctuation within and between sentences. In this choice, the colon correctly introduces the name of the instrument (the flute) that novel audio technologies allowed to be added to jazz and swing. In addition, the period is used to correctly mark the boundary between one sentence ("In…flute") and another ("A relatively… greats").

Choice A is incorrect because it results in a comma splice. A comma can't be used in this way to join two main clauses ("In…quiet instrument" and "its…greats"). *Choice B* is incorrect. In standard English, it's unconventional to form a sentence in this way with two uncoordinated subjects ("the flute" and "its full range of sound"), and the lack of a clear main subject results in an awkwardly constructed and confusing sentence. *Choice C* is incorrect. In standard English, it's unconventional to form an independent clause in this way with two uncoordinated subjects ("the flute" and "its full range of sound"), and the lack of a clear main subject results in an awkwardly constructed and confusing clause.

QUESTION 28

Choice D is the best answer. "However" logically signals that the information in this sentence about butterfly species—that some have colorless, transparent wings—contrasts with the previous information about butterfly species with bold, colorful wings.

Choice A is incorrect because "similarly" illogically signals that the information in this sentence is similar to the previous information about butterfly species. Instead, it contrasts with the previous information. *Choice B* is incorrect because "previously" illogically signals that this sentence describes an event that occurred before another event. Instead, the sentence provides information about butterfly species that contrasts with the information in the first sentence. *Choice C* is incorrect because "in other words" illogically signals that the information in this sentence is a paraphrase or restatement of the previous information about butterfly species. Instead, it contrasts with the previous information.

QUESTION 29

Choice D is the best answer. "Next" logically signals that the information in this sentence—which explains how Celado builds the pot's walls—is the next step in Celado's pot creation process. The sentences that follow further signal this information by completing the process.

Choice A is incorrect because "for example" illogically signals that the information about Celado building pot walls in this sentence exemplifies the information in the previous sentence about how Celado's pot creation process begins. Instead, it is the next step in this process. *Choice B* is incorrect because "however" illogically signals that the information in this sentence contrasts with the information in the previous sentence about how Celado's pot creation process begins. Instead, it is the next step in this process. *Choice C* is incorrect because "by contrast" illogically signals that the information in this sentence contrasts with the information in the previous sentence about how Celado's pot creation process begins. Instead, it is the next step in this process.

QUESTION 30

Choice D is the best answer. "Finally" logically signals that the information in this sentence—that scientists found evidence that chondrules were formed by shock waves in nearby nebulae—indicates a conclusion to the scientific debate mentioned in the previous sentences.

Choice A is incorrect because "for example" illogically signals that the information about the evidence for chondrule formation in this sentence exemplifies the information about the scientific debate regarding chondrule formation in the previous sentences. Instead, it indicates a conclusion to the debate. *Choice B* is incorrect because "therefore" illogically signals that the information in this sentence is a result of the previous information about the scientific debate regarding chondrule formation. Instead, it indicates a conclusion to the debate. *Choice C* is incorrect because "similarly" illogically signals that the information that follows is similar to the information about the scientific debate regarding chondrule formation in the previous sentences. Instead, it indicates a conclusion to the debate.

QUESTION 31

Choice D is the best answer. The sentence describes Fung's location in Kang's photograph, noting that Fung is seated on the floor. Additionally, because the sentence is intended for an audience already familiar with the artists, it omits the artists' first names and other biographical information about them.

Choice A is incorrect. The sentence indicates that Fung appears in Kang's photograph; it doesn't describe Fung's location in Kang's photograph. *Choice B* is incorrect. The sentence identifies Kang and where she is based; it doesn't describe Fung's location in Kang's photograph. *Choice C* is incorrect. The sentence describes the background of Kang's photograph; it doesn't describe Fung's location in Kang's photograph.

QUESTION 32

Choice A is the best answer. The sentence effectively introduces the Slow Food movement to a new audience, explaining that the movement, which was founded in 1989, promotes universal access to high-quality and healthy food that is produced sustainably by workers who are treated fairly.

Choice B is incorrect. While the sentence indicates when the international Slow Food movement and the Slow Food USA organization were founded, it doesn't effectively introduce the movement to a new audience. *Choice C* is incorrect. While the sentence notes that the Slow Food movement includes advocacy for food production workers, it doesn't effectively introduce the movement to a new audience. *Choice D* is incorrect. While the sentence describes some of the goals of the Slow Food movement, it doesn't effectively introduce the movement to a new audience.

QUESTION 33

Choice D is the best answer. The sentence provides an example of an air mass: the cA, or continental arctic, air mass.

Choice A is incorrect. The sentence provides a general definition of air masses; it doesn't provide an example of a specific air mass. *Choice B* is incorrect. The sentence describes the system used to classify air masses; it doesn't provide an example of a specific air mass. *Choice C* is incorrect. The sentence explains how air masses are classified; it doesn't provide an example of a specific air mass.

Math

Module 1
(27 questions)

QUESTION 1

Choice B is correct. If a point (x, y) lies on both lines in the graph of a system of two linear equations, the ordered pair (x, y) is a solution to the system. The graph shown is the graph of a system of two linear equations, where the two lines in the graph intersect at the point $(3, 4)$. Therefore, the point $(3, 4)$ lies on both lines, so the ordered pair $(3, 4)$ is the solution to the system.

Choice A is incorrect. The point $(2, 3)$ lies on one, not both, of the lines in the graph shown. *Choice C* is incorrect. The point $(4, 5)$ lies on one, not both, of the lines in the graph shown. *Choice D* is incorrect. The point $(5, 6)$ lies on one, not both, of the lines in the graph shown.

QUESTION 2

Choice C is correct. It's given that x represents years after 2010. Therefore, 2010 is represented by $x = 0$. On the model shown, the point with an x-coordinate of 0 has a y-coordinate of 20,000. Thus, the model estimates that in 2010, the city had 20,000 residents.

Choice A is incorrect. This is the value of x that represents the year 2010. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice D* is incorrect. This is approximately the number of residents the model estimates the city had in 2014, not 2010.

QUESTION 3

Choice B is correct. It's given that the bar graph shows the number of each type of monkey in a sanctuary. The bar representing the number of mandrills has a height of 5; therefore, there are 5 mandrills in the sanctuary. The bar representing vervets has a height of 11; therefore, there are 11 vervets in the sanctuary. Therefore, there are $11 - 5$, or 6, more vervets in this sanctuary than mandrills.

Choice A is incorrect. This is the number of vervets in the sanctuary. *Choice C* is incorrect. This is the number of mandrills in the sanctuary. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 4

Choice A is correct. Applying the distributive property on the left-hand side of the given equation yields $3x + 5x + 20 = 76$, or $8x + 20 = 76$. Subtracting 20 from each side of this equation yields $8x = 56$. Dividing each side of this equation by 8 yields $x = 7$.

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. This is the solution to the equation $x + 4 = 76$, not $3x + 5(x + 4) = 76$.

QUESTION 5

Choice A is correct. It's given that $f(x) = \frac{16}{x}$. Substituting 17 for x in this function yields $f(17) = \frac{16}{17}$. Therefore, when $x = 17$, the value of $f(x)$ is $\frac{16}{17}$.

Choice B is incorrect. This is the value of the reciprocal of $f(x)$ when $x = 17$. *Choice C* is incorrect. This is the value of $f(x)$ when $x = 1$. *Choice D* is incorrect. This is the value of x when $x = 17$.

QUESTION 6

The correct answer is 3. It's given that the y-intercept of the graph shown is $(0, y)$. The graph passes through the point $(0, 3)$. Therefore, the value of y is 3.

QUESTION 7

The correct answer is 5. Let p represent the number of packages of dinner rolls that should be bought for the party. It's given that dinner rolls are sold in packages of 12. Therefore, $12p$ represents the number of dinner rolls that should be bought for the party. It's also given that 50 dinner rolls are needed; therefore, $12p \geq 50$. Dividing both sides of this inequality by 12 yields $p \geq \frac{50}{12}$, or approximately $p \geq 4.17$. Since the number of packages of dinner rolls must be a whole number, the minimum number of packages that should be bought for the party is 5.

QUESTION 8

Choice D is correct. Let x represent the number that 21 is 21% of. It follows that $\frac{21}{x} = \frac{21}{100}$. Multiplying each side of this equation by x yields $21 = \frac{21x}{100}$. Multiplying each side of this equation by 100 yields $2{,}100 = 21x$. Dividing each side of this equation by 21 yields $100 = x$. Therefore, 21 is 21% of 100.

Choice A is incorrect. 21% of 0 is 0, not 21. *Choice B* is incorrect. 21% of 1 is 0.21, not 21. *Choice C* is incorrect. 21% of 42 is 8.82, not 21.

QUESTION 9

Choice C is correct. It's given that the technician charges $\$60$ per hour for labor. Therefore, if the job takes x hours, the technician will charge $\left(\frac{\$60}{1\text{ hour}}\right)(x\text{ hours})$, or $\$60x$, for labor. It's also given that the technician charges $\$120$ for parts. Therefore, $f(x)=60x+120$ represents the total amount, in dollars, the technician will charge for this job if it takes x hours.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice B* is incorrect. This function represents the total amount, in dollars, the technician charges for labor only, not the total amount charged for labor and parts. *Choice D* is incorrect. This function represents the total amount, in dollars, the technician would charge if the charge for parts were subtracted from, rather than added to, the charge for labor.

QUESTION 10

Choice B is correct. It's given that function f is defined by $f(x)=80-6x$. The value of $f(7)$ can be found by substituting 7 for x in the given function, which yields $f(7)=80-6(7)$, or $f(7)=80-42$, which is equivalent to $f(7)=38$. Therefore, the value of $f(7)$ is 38.

Choice A is incorrect. This is the value of $80-67$, not $80-6(7)$. *Choice C* is incorrect. This is the value of $80-6(1)$, not $80-6(7)$. *Choice D* is incorrect. This is the value of $80-6+7$, not $80-6(7)$.

QUESTION 11

Choice A is correct. Let x represent the number of rabbit snails that Naomi bought. It's given that each rabbit snail costs $\$8$. Therefore, the total cost, in dollars, of the rabbit snails that Naomi bought can be represented by the expression $8x$. It's also given that each nerite snail costs $\$6$, and that Naomi bought 2 nerite snails. Therefore, the total cost, in dollars, of the nerite snails that Naomi bought is $6(2)$, or 12. Since Naomi bought both the rabbit snails and the nerite snails for a total of $\$52$, the equation $8x+12=52$ can be used to represent the situation. Subtracting 12 from both sides of this equation yields $8x=40$. Dividing both sides of this equation by 8 yields $x=5$. Therefore, Naomi bought 5 rabbit snails.

Choice B is incorrect. This is the total cost, in dollars, of the nerite snails that Naomi bought, not the number of rabbit snails. *Choice C* is incorrect. This is the cost, in dollars, of one rabbit snail and one nerite snail, not the number of rabbit snails that Naomi bought. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 12

Choice A is correct. The x-intercept of a graph is the point where the graph intersects the x-axis. The graph of function f, where $y=f(x)$, intersects the x-axis at $(-12, 0)$. Therefore, the x-intercept of the graph of f is $(-12, 0)$.

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 13

The correct answer is 1,800. The area, A, of a triangle can be found using the formula $A=\frac{1}{2}bh$, where b is the base length of the triangle and h is the height of the triangle. It's given that the triangle has a base length of 40 centimeters and a height of 90 centimeters. Substituting 40 for b and 90 for h in the formula $A=\frac{1}{2}bh$ yields $A=\frac{1}{2}(40)(90)$, or $A=1{,}800$. Therefore, the area, in square centimeters, of the triangle is 1,800.

QUESTION 14

The correct answer is 14.1. It's given that a participant completes the bicycle race with an average speed of 24,816 yards per hour and 1 mile = 1,760 yards. It follows that this average speed is equivalent to $\left(\frac{24{,}816 \text{ yards}}{1 \text{ hour}}\right)\left(\frac{1 \text{ mile}}{1{,}760 \text{ yards}}\right)$, which yields $\frac{14.1 \text{ miles}}{1 \text{ hour}}$, or 14.1 miles per hour.

QUESTION 15

Choice C is correct. For the graph shown, the x-axis represents temperature, in kelvins, and the y-axis represents volume, in liters. Therefore, the estimated volume, in liters, of the hydrogen when its temperature is 500 kelvins is represented by the y-coordinate of the point on the graph that has an x-coordinate of 500. The point on the graph with an x-coordinate of 500 has a y-coordinate of 7. Therefore, the estimated volume, in liters, of the hydrogen when its temperature is 500 kelvins is 7.

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

QUESTION 16

Choice B is correct. Subtracting 34 from each side of the given equation yields $p=q+r-34$. Thus, the equation $p=q+r-34$ correctly expresses p in terms of q and r.

Choice A is incorrect. This equation can be rewritten as $p-34=q+r$. *Choice C* is incorrect. This equation can be rewritten as $p-34=-q-r$. *Choice D* is incorrect. This equation can be rewritten as $p+34=-q-r$.

QUESTION 17

Choice C is correct. The Pythagorean theorem states that for a right triangle, $a^2+b^2=c^2$, where a and b represent the lengths of the legs of the triangle and c represents the length of its hypotenuse. In the triangle shown, the legs have lengths of 3 and 7. Substituting 3 for a and 7 for b in the equation $a^2+b^2=c^2$

yields $3^2 + 7^2 = c^2$, which is equivalent to $9 + 49 = c^2$, or $58 = c^2$. Taking the positive square root of both sides of this equation yields $\sqrt{58} = c$. Thus, the value of c is approximately 7.6. Therefore, of the given choices, 7.6 is the closest to the length of the triangle's hypotenuse.

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 18

Choice D is correct. It's given that the number of coins in the collection increased from 9 to 90. It follows that the number of coins in the collection increased by $90 - 9$, or 81. Let x% represent the percentage that 81 is of 9. The value of x can be found using the proportion $\frac{81}{9} = \frac{x}{100}$, or $9 = \frac{x}{100}$. Multiplying both sides of this equation by 100 yields $900 = x$. Thus, when the number of coins in the collection increased from 9 to 90, the percent increase was 900%.

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 C is correct. It's given that in triangle QRS, sides QR and RS each have a length of x centimeters. Therefore, the expression $2x$ represents the sum of the lengths, in centimeters, of sides QR and RS. It's also given that side SQ has a length of y centimeters. Therefore, the expression $2x + y$ represents the sum of the lengths, in centimeters, of sides QR, RS, and SQ. Since $2x + y$ is the sum of the lengths, in centimeters, of the three sides of the triangle and $2x + y = 37$, it follows that 37 is the sum of the lengths, in centimeters, of the three sides of the triangle.

Choice A is incorrect. The difference, in centimeters, between the lengths of sides QR and SQ is $x - y$, not 37. *Choice B* is incorrect. The difference, in centimeters, between the lengths of sides QR and RS is $x - x$, or 0, not 37. *Choice D* is incorrect. The length, in centimeters, of one of the two sides of equal length is x, not 37.

QUESTION 20

The correct answer is $\frac{5}{13}$. The graph of a line in the xy-plane can be represented by the equation $y = mx + b$, where m is the slope of the line and b is the y-coordinate of the y-intercept. The given equation can be written as $y = \left(\frac{5}{13}\right)x - 23$. Therefore, the slope of the graph of this equation in the xy-plane is $\frac{5}{13}$. Note that 5/13, .3846, 0.385, and 0.384 are examples of ways to enter a correct answer.

QUESTION 21

The correct answer is 6.21. It's given that the samples of pumice were cut in the shape of a cube. It's also given that the length of the edge of one of these cubes is 3.000 centimeters. Therefore, the volume of this cube is $(3.000 \text{ centimeters})^3$, or 27 cubic centimeters. Since the density of this cube is 0.230 grams per cubic centimeter, it follows that the mass of this cube is $\left(\frac{0.230 \text{ grams}}{1 \text{ cubic centimeter}}\right)(27 \text{ cubic centimeters})$, or 6.21 grams.

QUESTION 22

Choice C is correct. A line in the *xy*-plane that passes through points (x_1, y_1) and (x_2, y_2) has a slope of $\frac{y_2 - y_1}{x_2 - x_1}$. The line of best fit shown passes approximately through the points $(0, 0.2)$ and $(5, 9.3)$. It follows that the slope of this line is approximately $\frac{9.3 - 0.2}{5 - 0}$, which is equivalent to $\frac{9.1}{5}$, or 1.82. Therefore, of the given choices, 1.8 is closest to the slope of the line of best fit shown.

Choice A is incorrect. This value is closest to the *y*-coordinate of the *y*-intercept of the line of best fit shown. *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 23

Choice A is correct. The perimeter of a rectangle is equal to the sum of 2 times its length and 2 times its width. It's given that the rectangle's length is 50 inches and the width is x inches. Therefore, the perimeter, in inches, is $2(50) + 2x$, or $100 + 2x$, which is equivalent to $2x + 100$. It's given that the perimeter is at most 210 inches; therefore, $2x + 100 \leq 210$ represents this situation.

Choice B is incorrect. This inequality represents a situation where the perimeter is at least, rather than at most, 210 inches. *Choice C* is incorrect. This inequality represents a situation where 2 times the length, rather than the length, is 50 inches. *Choice D* is incorrect. This inequality represents a situation where 2 times the length, rather than the length, is 50 inches, and the perimeter is at least, rather than at most, 210 inches.

QUESTION 24

Choice D is correct. Since $8x$ is a common factor of each term in the given expression, the expression can be rewritten as $8x(x^9 - x^8 + 11)$.

Choice A is incorrect. This expression is equivalent to $7x^{11} - 7x^{10} + 87x^2$. *Choice B* is incorrect. This expression is equivalent to $8^{10}x - 8^9x + 88x$. *Choice C* is incorrect. This expression is equivalent to $8x^{11} - 8x^{10} + 88x^2$.

QUESTION 25

Choice D is correct. Each of the tables gives the same three values of x: 1, 2, and 4. Substituting 1 for x in the given equation yields $\left(\frac{3}{5}\right)(1) + \frac{3}{4}y = 7$, or $\frac{3}{5} + \frac{3}{4}y = \frac{35}{5}$.

Subtracting $\frac{3}{5}$ from both sides of this equation yields $\frac{3}{4}y=\frac{32}{5}$. Multiplying both sides of this equation by $\frac{4}{3}$ yields $y=\frac{128}{15}$. Therefore, when $x=1$, the corresponding value of y for the given equation is $\frac{128}{15}$. Substituting 2 for x in the given equation yields $\left(\frac{3}{5}\right)(2)+\frac{3}{4}y=7$, or $\frac{6}{5}+\frac{3}{4}y=\frac{35}{5}$. Subtracting $\frac{6}{5}$ from both sides of this equation yields $\frac{3}{4}y=\frac{29}{5}$. Multiplying both sides of this equation by $\frac{4}{3}$ yields $y=\frac{116}{15}$. Therefore, when $x=2$, the corresponding value of y for the given equation is $\frac{116}{15}$. Substituting 4 for x in the given equation yields $\left(\frac{3}{5}\right)(4)+\frac{3}{4}y=7$, or $\frac{12}{5}+\frac{3}{4}y=\frac{35}{5}$. Subtracting $\frac{12}{5}$ from both sides of this equation yields $\frac{3}{4}y=\frac{23}{5}$. Multiplying both sides of this equation by $\frac{4}{3}$ yields $y=\frac{92}{15}$. Therefore, when $x=4$, the corresponding value of y for the given equation is $\frac{92}{15}$. The table in choice D gives x-values of 1, 2, and 4 and corresponding y-values of $\frac{128}{15}$, $\frac{116}{15}$, and $\frac{92}{15}$, respectively. Therefore, the table in choice D gives three values of x and their corresponding values of y for the given equation.

Choice A is incorrect. This table gives three values of x and their corresponding values of y for the equation $\frac{3}{5}x+\frac{3}{4}+y=7$. *Choice B* is incorrect. This table gives three values of x and their corresponding values of y for the equation $\frac{3}{5}x+y=10$. *Choice C* is incorrect. This table gives three values of x and their corresponding values of y for the equation $\frac{3}{5}x+\frac{3}{4}y=8$.

QUESTION 26

Choice B is correct. The length of a segment in the xy-plane can be found using the distance formula, $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$, where (x_1, y_1) and (x_2, y_2) are the endpoints of the segment. The segment shown has endpoints at $(-6, 4)$ and $(3, 10)$. Substituting $(-6, 4)$ and $(3, 10)$ for (x_1, y_1) and (x_2, y_2), respectively, in the distance formula yields $\sqrt{(3-(-6))^2+(10-4)^2}$, or $\sqrt{9^2+6^2}$, which is equivalent to $\sqrt{81+36}$, or $\sqrt{117}$. Let x represent the length, in units, of the other leg of this triangle. The area, A, of a right triangle can be calculated using the formula $A=\frac{1}{2}bh$, where b and h are the lengths of the legs of the triangle. It's given that the area of the triangle is $36\sqrt{13}$ square units. Substituting $36\sqrt{13}$ for A, $\sqrt{117}$ for b, and x for h in the formula $A=\frac{1}{2}bh$ yields $36\sqrt{13}=\frac{1}{2}(\sqrt{117})(x)$. Multiplying both sides of this equation by 2 yields $72\sqrt{13}=x\sqrt{117}$. Dividing both sides of this equation by $\sqrt{117}$ yields $\frac{72\sqrt{13}}{\sqrt{117}}=x$. Multiplying the numerator and denominator on the left-hand side of this equation by $\sqrt{117}$ yields $\frac{72\sqrt{1{,}521}}{117}=x$, or $\frac{72(39)}{117}=x$, which is equivalent to $\frac{2{,}808}{117}=x$, or $24=x$. Therefore, the length, in units, of the other leg of this triangle is 24.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect. $3\sqrt{13}$ is equivalent to $\sqrt{117}$, which is the length, in units, of the line segment shown in the xy-plane, not the length, in units, of the other leg of the triangle. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 27

The correct answer is 31. Subtracting 7 from both sides of the equation $x^2+6x+7=0$ yields $x^2+6x=-7$. To complete the square, adding $\left(\frac{6}{2}\right)^2$, or 3^2, to both sides of this equation yields $x^2+6x+3^2=-7+3^2$, or $(x+3)^2=2$. Taking the square root of both sides of this equation yields $x+3=\pm\sqrt{2}$. Subtracting 3 from both sides of this equation yields $x=-3\pm\sqrt{2}$. Therefore, the solutions r and s to the equation $x^2+6x+7=0$ are $-3-\sqrt{2}$ and $-3+\sqrt{2}$. Since $r<s$, it follows that $r=-3-\sqrt{2}$ and $s=-3+\sqrt{2}$. Subtracting 8 from both sides of the equation $x^2+8x+8=0$ yields $x^2+8x=-8$. To complete the square, adding $\left(\frac{8}{2}\right)^2$, or 4^2, to both sides of this equation yields $x^2+8x+4^2=-8+4^2$, or $(x+4)^2=8$. Taking the square root of both sides of this equation yields $x+4=\pm\sqrt{8}$, or $x+4=\pm2\sqrt{2}$. Subtracting 4 from both sides of this equation yields $x=-4\pm2\sqrt{2}$. Therefore, the solutions t and u to the equation $x^2+8x+8=0$ are $-4-2\sqrt{2}$ and $-4+2\sqrt{2}$. Since $t<u$, it follows that $t=-4-2\sqrt{2}$ and $u=-4+2\sqrt{2}$. It's given that the solutions to $x^2+14x+c=0$, where c is a constant, are $r+t$ and $s+u$. It follows that this equation can be written as $(x-(r+t))(x-(s+u))=0$, which is equivalent to $x^2-(r+t+s+u)x+(r+t)(s+u)=0$. Therefore, the value of c is $(r+t)(s+u)$. Substituting $-3-\sqrt{2}$ for r, $-4-2\sqrt{2}$ for t, $-3+\sqrt{2}$ for s, and $-4+2\sqrt{2}$ for u in this equation yields $((-3-\sqrt{2})+(-4-2\sqrt{2}))((-3+\sqrt{2})+(-4+2\sqrt{2}))$, which is equivalent to $(-7-3\sqrt{2})(-7+3\sqrt{2})$, or $(-7)(-7)-(3\sqrt{2})(3\sqrt{2})$, which is equivalent to $49-18$, or 31. Therefore, the value of c is 31.

Math

Module 2
(27 questions)

QUESTION 1

Choice C is correct. For each point on the scatterplot shown, the *x*-value represents the weight, in pounds, of a female gray wolf and the *y*-value represents the number of offspring that wolf produced. The point on the graph with an *x*-value of 50 has a *y*-value of 6. Therefore, the 50-pound gray wolf produced 6 offspring.

Choice A is incorrect. One of the wolves produced 8 offspring, but its weight was greater than 50 pounds. *Choice B* is incorrect. Three of the wolves produced 7 offspring each, but their weights were each greater than 50 pounds. *Choice D* is incorrect. Two of the wolves produced 5 offspring each, but their weights were each less than 50 pounds.

QUESTION 2

Choice A is correct. According to the first equation in the given system, $y = 4$. Substituting 4 for y in the second equation in the given system yields $x = 4 + 6$, or $x = 10$.

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

QUESTION 3

Choice D is correct. The height of each bar in the graph shown represents the number of volunteers who chose the gift labeled with the letter specified at the bottom of the bar. The bar for gift C has a height of 18. Therefore, 18 volunteers chose gift C.

Choice A is incorrect. This is the number of volunteers who chose gift D, not gift C. *Choice B* is incorrect. This is the number of volunteers who chose gift B, not gift C. *Choice C* is incorrect. This is the number of volunteers who chose gift A, not gift C.

QUESTION 4

Choice B is correct. If a number from the data set is selected at random, the probability of selecting a negative number is the count of negative numbers in the data set divided by the total count of numbers in the data set. It's given that a data set of three numbers is shown. It follows that the total count of numbers in the data set is 3. In the data set shown, -13 is the only negative number. It follows that the count of negative numbers in the data set is 1. Therefore, if a number from the data set is selected at random, the probability of selecting a negative number is $\frac{1}{3}$.

Choice A is incorrect. This is the probability of selecting a negative number from a data set that doesn't contain any negative numbers. *Choice C* is incorrect. This is the probability of selecting a positive number, not a negative number, from the data set. *Choice D* is incorrect. This is the probability of selecting a negative number from a data set that contains only negative numbers.

QUESTION 5

Choice B is correct. A line in the *xy*-plane with a slope of m and a *y*-intercept of $(0, b)$ can be represented by the equation $y = mx + b$. It's given that the line has a slope of $-\frac{1}{2}$. Therefore, $m = -\frac{1}{2}$. It's also given that the line passes through the point $(0, 3)$. Therefore, $b = 3$. Substituting $-\frac{1}{2}$ for m and 3 for b in the equation $y = mx + b$ yields $y = -\frac{1}{2}x + 3$. Therefore, the equation $y = -\frac{1}{2}x + 3$ represents this line.

Choice A is incorrect. This equation represents a line in the *xy*-plane that passes through the point $(0, -3)$, not $(0, 3)$. *Choice C* is incorrect. This equation represents a line in the *xy*-plane that has a slope of $\frac{1}{2}$, not $-\frac{1}{2}$, and passes through the point $(0, -3)$, not $(0, 3)$. *Choice D* is incorrect. This equation represents a line in the *xy*-plane that has a slope of $\frac{1}{2}$, not $-\frac{1}{2}$.

QUESTION 6

The correct answer is 66. It's given that a product costs 11.00 dollars per pound. Therefore, the cost for 6 pounds of the product is $\left(\frac{11.00 \text{ dollars}}{1 \text{ pound}}\right)(6 \text{ pounds})$, which is equivalent to 66.00, or 66, dollars.

QUESTION 7

The correct answer is 15. It's given that the equation $46 = 2x + 2y$ gives the perimeter of a rectangular rug that has length x, in feet, and width y, in feet. It's also given that the width of the rug is 8 feet. Substituting 8 for y in the equation $46 = 2x + 2y$ yields $46 = 2x + 2(8)$, or $46 = 2x + 16$. Subtracting 16 from both sides of this equation yields $30 = 2x$. Dividing both sides of this equation by 2 yields $15 = x$. Since x represents the length, in feet, of the rug, it follows that the length of the rug is 15 feet.

QUESTION 8

Choice C is correct. On the line of best fit, an x-value of 1,200 corresponds to a y-value between 10 and 12. Therefore, of the given choices, 11 is closest to the y-value predicted by the line of best fit at $x = 1{,}200$.

Choice A is incorrect. This is the integer value closest to the y-value predicted by the line of best fit at $x = 1{,}800$. *Choice B* is incorrect. This is the integer value closest to the y-value predicted by the line of best fit at $x = 1{,}500$. *Choice D* is incorrect. This is the integer value closest to the y-value predicted by the line of best fit at $x = 600$.

QUESTION 9

Choice A is correct. The given expression can be rewritten as $(8 \cdot 7)(y \cdot y)(z \cdot z)$, which is equivalent to $(56)(y^2)(z^2)$, or $56y^2z^2$.

Choice B is incorrect. This expression is equivalent to $(8yz)(y)(7)$. *Choice C* is incorrect. This expression is equivalent to $(8z)(y)(7)$. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 10

Choice D is correct. It's given that the food truck buys forks for $\$0.04$ each. Therefore, the cost, in dollars, of x forks can be represented by the expression $0.04x$. It's also given that the food truck buys plates for $\$0.48$ each. Therefore, the cost, in dollars, of y plates can be represented by the expression $0.48y$. Since the total cost of x forks and y plates is $\$661.76$, the equation $0.04x + 0.48y = 661.76$ represents this situation.

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 in which the food truck buys forks for $\$0.48$ each and plates for $\$0.04$ each.

QUESTION 11

Choice B is correct. The triangle shown is a right triangle, where the interior angle shown with a right angle symbol has a measure of 90°. It's shown that the other two interior angles measure 13° and a°. The sum of the measures of the interior angles of a triangle is 180°; therefore, $90 + 13 + a = 180$. Combining like terms on the left-hand side of this equation yields $103 + a = 180$. Subtracting 103 from both sides of this equation yields $a = 77$.

Choice A is incorrect. This is the measure, in degrees, of the other acute interior angle of the right triangle, not the value of a. *Choice C* is incorrect. This is the measure, in degrees, of the right angle of the right triangle, not the value of a. *Choice D* is incorrect. This is the sum of the measures, in degrees, of the other two interior angles of the right triangle, not the value of a.

QUESTION 12

Choice D is correct. It's given that at the beginning of the 1st week of the year there was $\$600$ in a savings account and Gabriella deposits $\$35$ in that savings account at the end of each week. Therefore, the amount of money, in dollars, in the savings account at the end of the 4th week of that year is $600+4(35)$, or 740.

Choice A is incorrect. This is the amount of money, in dollars, that will be in the account at the end of the 4th week if Gabriella withdraws, rather than deposits, $\$35$ at the end of each week. *Choice B* is incorrect. This is the amount of money, in dollars, that will be in the account at the end of the 1st week, not the 4th week. *Choice C* is incorrect and may result from conceptual or calculation errors.

QUESTION 13

The correct answer is 22. The given equation, $x^2=(22)(22)$, is equivalent to $x^2=(22)^2$. Taking the square root of each side of this equation yields $x=\pm 22$. Thus, the positive solution to the given equation is 22.

QUESTION 14

The correct answer is 980. It's given that the ratio 140 to m is equivalent to the ratio 4 to 28. Therefore, the value of m can be found by solving the equation $\frac{140}{m}=\frac{4}{28}$. Multiplying each side of this equation by m yields $140=\frac{4m}{28}$. Multiplying each side of this equation by 28 yields $3{,}920=4m$. Dividing each side of this equation by 4 yields $980=m$. Therefore, the value of m is 980.

QUESTION 15

Choice B is correct. Dividing each side of the given equation by 3 yields $x-9=8$. Therefore, the value of $x-9$ is 8.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect. This is the value of $3x-27$, not $x-9$. *Choice D* is incorrect and may result from conceptual or calculation errors.

QUESTION 16

Choice C is correct. An equation defining the linear function f can be written in the form $f(x)=mx+b$, where m is the slope and $(0, b)$ is the y-intercept of the graph of $y=f(x)$ in the xy-plane. The slope of the graph of $y=f(x)$ can be found using the formula $m=\frac{y_2-y_1}{x_2-x_1}$, where (x_1, y_1) and (x_2, y_2) are any two points that the graph passes through. If $f(0)=17$, it follows that the graph of $y=f(x)$ passes through the point $(0, 17)$. If $f(1)=17$, it follows that the graph of $y=f(x)$ passes through the point $(1, 17)$. Substituting $(0, 17)$ and $(1, 17)$ for (x_1, y_1) and (x_2, y_2), respectively, in the formula $m=\frac{y_2-y_1}{x_2-x_1}$ yields $m=\frac{17-17}{1-0}$, which is equivalent to $m=\frac{0}{1}$, or $m=0$. Since the graph of $y=f(x)$ passes through $(0, 17)$, it follows that $b=17$. Substituting 0 for m and 17 for b in the equation $f(x)=mx+b$ yields $f(x)=0x+17$, or $f(x)=17$. Thus, the equation that defines f is $f(x)=17$.

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 B is correct. It's given that the function $f(x) = 55.20 - 0.16x$ gives the estimated surface water temperature, in degrees Celsius, of a body of water on the xth day of the year. Substituting 326 for x in the given function yields $f(326) = 55.20 - 0.16(326)$, which is equivalent to $f(326) = 55.20 - 52.16$, or $f(326) = 3.04$. Therefore, the estimated surface water temperature, in degrees Celsius, of this body of water on the 326th day of the year is 3.04.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect. This is the rate of change, in degrees Celsius per day, of the estimated surface water temperature. *Choice D* is incorrect. This is the change, in degrees Celsius, in the estimated surface water temperature over 326 days.

QUESTION 18

Choice B is correct. It's given by the first equation in the system that $y = -\frac{1}{5}x$. Substituting $-\frac{1}{5}x$ for y in the second equation in the system, $y = \frac{1}{7}x$, yields $-\frac{1}{5}x = \frac{1}{7}x$. Adding $-\frac{1}{5}x$ to both sides of this equation yields $0 = \frac{1}{7}x + \frac{1}{5}x$, which is equivalent to $0 = \frac{5}{35}x + \frac{7}{35}x$, or $0 = \frac{12}{35}x$. Multiplying both sides of this equation by $\frac{35}{12}$ yields $0 = x$. Therefore, the value of x is 0.

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 19

Choice A is correct. In the given function, $s(t)$ represents the approximate mass, in grams, of the sample that remains t years after the sample starts to decay. It follows that the best interpretation of $s(87) = 23$ is that approximately 23 grams of the sample remains 87 years after the sample starts to decay.

Choice B is incorrect. The mass of the sample has decreased by approximately $184 - 23$, or 161, grams, not 23 grams, 87 years after the sample starts to decay. *Choice C* is incorrect. The mass of the sample has decreased by approximately 78 grams, not 87 grams, 23 years after the sample starts to decay. *Choice D* is incorrect. This would be the best interpretation of $s(23) = 87$, not $s(87) = 23$.

QUESTION 20

The correct answer is 2,432. It's given that 4 cups = 1 quart. It follows that 76 quarts is equivalent to $(76 \text{ quarts})\left(\frac{4 \text{ cups}}{1 \text{ quart}}\right)$, or 304 cups. It's also given that 8 fluid ounces = 1 cup. It follows that 304 cups is equivalent to $(304 \text{ cups})\left(\frac{8 \text{ fluid ounces}}{1 \text{ cup}}\right)$, or 2,432 fluid ounces.

QUESTION 21

The correct answer is 25. It's given that a piece of wire has a length of 32 inches and is cut into two parts. It's also given that one part has a length of x inches and the other part has a length of y inches. It follows that the equation $x+y=32$ represents this situation. It's also given that the value of x is 4 more than 3 times the value of y, or $x=3y+4$. Substituting $3y+4$ for x in the equation $x+y=32$ yields $3y+4+y=32$. Combining like terms on the left-hand side of this equation yields $4y+4=32$. Subtracting 4 from both sides of this equation yields $4y=28$. Dividing both sides of this equation by 4 yields $y=7$. Substituting 7 for y in the equation $x=3y+4$ yields $x=3(7)+4$, or $x=25$. Therefore, the value of x is 25.

QUESTION 22

Choice D is correct. It's given that triangle XYZ is similar to triangle TUV. Therefore, each side of triangle XYZ is k times its corresponding side of triangle TUV, where k is a constant. It follows that the perimeter of triangle XYZ is k times the perimeter of triangle TUV. It's also given that $\overline{TU}$ corresponds to $\overline{XY}$ and the length of $\overline{TU}$ is 18. Let x represent the length of $\overline{XY}$. It follows that $x=18k$. The table shows that the perimeters of triangles TUV and XYZ are 37 and 333, respectively. It follows that $333=37k$, or $9=k$. Substituting 9 for k in the equation $x=18k$ yields $x=(18)(9)$, or $x=162$. Therefore, the length of $\overline{XY}$ is 162.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice B* is incorrect. This is the length of $\overline{TU}$, not the length of $\overline{XY}$. *Choice C* is incorrect and may result from conceptual or calculation errors.

QUESTION 23

Choice D is correct. The volume, V, of a sphere can be found using the formula $V=\frac{4}{3}\pi r^3$, where r is the radius of the sphere. It's given that the sphere has a radius of $\frac{17}{5}$ feet. Substituting $\frac{17}{5}$ for r in the formula $V=\frac{4}{3}\pi r^3$ yields $V=\frac{4}{3}\pi\left(\frac{17}{5}\right)^3$, which is equivalent to $V=\frac{4}{3}\pi\left(\frac{4{,}913}{125}\right)$, or $V=\frac{19{,}652\pi}{375}$. Therefore, the volume, in cubic feet, of the sphere is $\frac{19{,}652\pi}{375}$.

Choice A is incorrect and may result from conceptual or calculation errors. *Choice B* is incorrect. This is the volume, in cubic feet, of a sphere with a radius of $\sqrt[3]{\frac{17}{5}}$ feet. *Choice C* is incorrect and may result from conceptual or calculation errors.

QUESTION 24

Choice C is correct. It's given that the dot plot represents a data set of the number of bursts for 13 eruptions of a steam vent. The median of a data set with an odd number of elements is the middle element when the elements are in numerical order. For 13 elements in numerical order, this is the 7th element. For this data set, the first 4 elements have a value of 1, and the next 5 elements have a value of 2. Thus, the 7th element in the ordered data set is 2 and the median

number of bursts for the original data set is 2. If an additional eruption with 11 bursts is added to this data set to create a new data set of 14 eruptions, the median of the new data set will be between the 7th and 8th elements in the ordered set, which will also be 2. Therefore, the median number of bursts for the new data set will be the same as the median number of bursts for the original data set. The mean number of bursts for the original data set is found by adding the values of all 13 elements and dividing that sum by the number of elements, 13. Since the data is shown in a dot plot, the sum of the values of the elements can be found by multiplying each element's value by its frequency: $1(4)+2(5)+3(2)+4(1)+5(1)$, or 29. Therefore, the mean number of bursts for the original data set is $\frac{29}{13}$. If an additional eruption with 11 bursts is added to this data set to create a new data set of 14 bursts, the mean number of bursts for the new data set is $\frac{29+11}{14}$, or $\frac{40}{14}$. Since $\frac{40}{14}>\frac{29}{13}$, the mean number of bursts for the new data set is greater than the mean number of bursts for the original data set. Therefore, of the median number of bursts and the mean number of bursts, only the mean number of bursts is greater for the new data set than for the original data set.

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 25

Choice D is correct. It's given that during a certain day at a factory, the number of 7-inch concrete screws the factory makes is n and the number of 4-inch concrete screws the factory makes is 22. It's also given that during this day the number of 9-inch concrete screws the factory makes is 5 times the number of 7-inch concrete screws, or $5n$. Therefore, the total number of 7-inch, 9-inch, and 4-inch concrete screws is $n+5n+22$, or $6n+22$. It's given that during this day, the factory makes 100 concrete screws total. Thus, the equation $6n+22=100$ represents this situation.

Choice A is incorrect. This equation represents a situation where the total length, in inches, of all the concrete screws, rather than the total number of concrete screws, is 100. *Choice B* is incorrect and may result from conceptual or calculation errors. *Choice C* is incorrect. This equation represents a situation where the total number of 9-inch concrete screws and 4-inch concrete screws, not including the 7-inch concrete screws, is 100.

QUESTION 26

Choice B is correct. It's given that the number b is 80% less than 24. It follows that b is equal to 24 minus 80% of 24, which can be written as $b=24-\left(\frac{80}{100}\right)24$. This is equivalent to $b=24-0.8(24)$, or $b=4.8$. It's also given that the number a is 190% greater than the number b. It follows that a is equal to b plus 190% of b. Since $b=4.8$, this can be written as $a=4.8+\left(\frac{190}{100}\right)4.8$. This is equivalent to $a=4.8+1.9(4.8)$, or $a=13.92$.

Choice A is incorrect. This would be the value of a if a were 190% of b, not 190% greater than b. *Choice C* is incorrect. This is $(190-80)\%$ of 24. *Choice D* is incorrect. This would be the value of a if b were 80% of 24, not 80% less than 24, and a were 190% of b, not 190% greater than b.

QUESTION 27

The correct answer is 12. The volume, V, of a right square prism can be calculated using the formula $V=s^2h$, where s represents the length of an edge of the base and h represents the height of the prism. It's given that the volume of the prism is 2,016 cubic units and the height is 14 units. Substituting 2,016 for V and 14 for h in the formula $V=s^2h$ yields $2{,}016=(s^2)(14)$. Dividing both sides of this equation by 14 yields $144=s^2$. Taking the square root of both sides of this equation yields two solutions: $-12=s$ and $12=s$. The length can't be negative, so $12=s$. Therefore, the length, in units, of an edge of the base is 12.