CollegeBoard

Answer Explanations
SAT® Practice Test #7

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Section 1: Reading Test

QUESTION 1.

Choice D is the best answer. The final sentence of the first paragraph makes clear that before adopting his daughter, the weaver Silas was greedy for gold and chained to his work, "deafened and blinded more and more to all things except the monotony of his loom." But after adopting Eppie, Silas became more interested in life outside his job: "Eppie called him away from his weaving, and made him think all its pauses a holiday, reawakening his senses with her fresh life." A major theme of the passage can be seen in this transformation, as it represents how loving a child can improve or change a parent's life.

Choice A is incorrect because even if the passage implies that Silas was too materialistic before his daughter's arrival in his life, his greediness was a personal characteristic only, not a societal one; whether the society Silas lives in is overly materialistic is never addressed. Choice B is incorrect because even if the passage represents the "moral purity" of children, it does so only indirectly and not as a major theme. Choice C is incorrect because the passage addresses childhood enthusiasm and curiosity more than "naïveté" and never discusses the length or "brevity" of that naïveté.

QUESTION 2.

Choice A is the best answer. The first sentence of the first paragraph notes that "Unlike the gold . . . Eppie was a creature of endless claims and ever-growing desires, seeking and loving sunshine, and living sounds, and living movements; making trial of everything, with trust in new joy, and stirring the human kindness in all eyes that looked on her." These lines make clear that in contrast to Silas's gold, his new daughter is vibrant and alive.

Choices B, C, and D are incorrect because the lines from the first paragraph cited above reveal Eppie's interest in "living sounds" and "living movements" and thus characterize her vitality in comparison to the gold, rather than her durability, protection, or self-sufficiency.

QUESTION 3.

Choice A is the best answer. In the first paragraph, the narrator describes Silas as having been so obsessed as to have felt required to worship the gold "in close-locked solitude," with "his thoughts in an ever-repeated circle" centered on his hoard. Moreover, this obsession compelled him to "sit weaving longer and longer, deafened and blinded more and more to all things except the monotony of his loom and the repetition of his web." These lines convey the extent to which Silas's behaviors were determined by his obsession.

Choice B is incorrect because the narrator does not make it seem as if Silas's gold could reproduce on its own, with the first paragraph suggesting that his hoard was a consequence of hard work, his being "deafened and blinded more and more to all things except the monotony of his loom and the repetition of his web." Choice C is incorrect because even if the first paragraph mentions that, after Eppie's arrival, Silas thinks about "the ties and charities that bound together the families of his neighbors," the passage never addresses how Silas interacted with those neighbors previously. Choice D is incorrect because the third paragraph makes clear that Silas is not only able to recall life before Eppie, but that with her in his life, "his mind was growing into memory."

QUESTION 4.

Choice B is the best answer. The first paragraph of the passage describes Eppie as "a creature of endless claims and ever-growing desires," one who is "making trial of everything." In this context, her "making trial of everything" can be read as her acting on her curiosity by striving to experience the world around her.

Choices A, C, and D are incorrect because in the context of her "making trial of everything," Eppie can be seen as curious, not friendly (choice A), disobedient (choice C), or judgmental (choice D).

QUESTION 5.

Choice D is the best answer. In the first paragraph, the narrator indicates that with the arrival of Eppie, Silas's thoughts turn from his work and his gold toward Eppie's future and his life with her: "Eppie was an object compacted of changes and hopes that forced his thoughts onward, and carried them far away from their old eager pacing towards the same blank limit — carried them away to the new things that would come with the coming years." By influencing Silas to think "onward" and of "the coming years," Eppie prompts Silas to envision a far different future than he would experience otherwise.

Choice A is incorrect because although the passage implies that Silas is less obsessed with money than before, there is no indication that he has actually renounced his desire for it. Choice B is incorrect because although the passage explains that Silas spends time outdoors after the arrival of Eppie, there is no indication that her presence has

necessarily changed his understanding of his place in nature. Choice C is incorrect because at no point in the passage is Silas shown accepting help from anyone.

QUESTION 6.

Choice B is the best answer. The previous question asks what consequence Silas has experienced as a result of adopting Eppie. The answer, that he begins to imagine a new future for himself and her, is supported in the first paragraph: "but Eppie was an object compacted of changes and hopes that forced his thoughts onward, and carried them far away from their old eager pacing towards the same blank limit — carried them away to the new things that would come with the coming years."

Choices A, C, and D are incorrect because the lines cited do not support the answer to the previous question about the consequence of Silas's adoption of Eppie, instead describing Silas's life before Eppie entered it (choice A), how he occasionally acts in her presence (choice C), and the changes in Eppie's perception of the world as she ages (choice D).

QUESTION 7.

Choice C is the best answer. In the second paragraph, the description of Silas and Eppie's interaction outdoors conveys the extent to which he has changed since her arrival: where he once worked all day at his loom to earn more and more money, he now "might be seen in the sunny mid-day" strolling with her, accepting the flowers she brings him, or listening to birdcalls with her. With these experiences also come "crowding remembrances" of his early life — the life he led before amassing his hoard of gold. In its entirety, the paragraph can therefore be seen as illustrating the profound change into a more sociable being that Silas has undergone as a result of parenting Eppie.

Choice A is incorrect because the second paragraph does not present a particular moment when Silas realizes that Eppie has changed him but instead describes a pattern of behavior indicative of that change. Choice B is incorrect because the second paragraph shows the benefits Silas derives from Eppie's presence, rather than any sacrifices he has made for her. Choice D is incorrect because the second paragraph dramatizes a change in Silas's life overall, rather than showing a change in the dynamic that has arisen between Silas and Eppie.

QUESTION 8.

Choice B is the best answer. The third paragraph of the passage shows that as Eppie learns more and more, Silas reengages with life: "As the child's mind was growing into knowledge, his mind was growing into memory: as her life unfolded, his soul, long stupefied in a cold narrow prison, was unfolding too, and trembling gradually into full consciousness." As Eppie grows into a world that is new to her, Silas recovers a world he'd largely forgotten.

Choice A is incorrect because the narrator portrays Eppie as being curious and eager, not physically vulnerable, and also implies that Silas is becoming ever more emotionally robust, not psychologically fragile. Choice C is incorrect because the only connection the narrator makes regarding Silas's former greed and Eppie's presence in his life is that she has brought an end to his obsessive pursuit of wealth. Choice D is incorrect because the narrator does not address Silas's mortality in any way but rather shows him becoming more and more alive through Eppie's love.

QUESTION 9.

Choice D is the best answer. The previous question asks what connection the narrator draws between Eppie and Silas. The answer, that as she learns more about the world, he becomes more involved in it, is supported in the third paragraph: "As the child's mind was growing into knowledge, his mind was growing into memory: as her life unfolded, his soul, long stupefied in a cold narrow prison, was unfolding too, and trembling gradually into full consciousness."

Choices A, B, and C are incorrect because the lines cited do not support the answer to the previous question about the connection between Eppie and Silas, instead contrasting Silas's fixation on his gold with Eppie's curiosity (choice A) and describing Silas's habitual behavior when accompanying Eppie outdoors (choices B and C).

QUESTION 10.

Choice D is the best answer. In the last paragraph, the narrator states, "Also, by the time Eppie was three years old, she developed a fine capacity for mischief, and for devising ingenious ways of being troublesome." In this context, the word "fine" most nearly means keen, or acute.

Choices A, B, and C are incorrect because in the context of a description in which Eppie was said to have a "fine capacity for mischief," the word "fine" most nearly means keen, or acute, not acceptable (choice A), delicate (choice B), or ornate (choice C).

QUESTION 11.

Choice D is the best answer. The first paragraph of the passage explains the theory of two MIT business scholars who believe that technological advances in the workplace could lead to fewer jobs for human workers, explaining that they "foresee dismal prospects for many types of jobs as these powerful new technologies are increasingly adopted not only in manufacturing, clerical, and retail work but in professions such as law, financial services, education, and medicine." The fifth paragraph of the passage, however, offers a contrasting view, citing a Harvard economist who "says that no historical pattern shows these shifts leading to a net decrease in

jobs over an extended period." Combined, these different opinions indicate the main purpose of the passage, which is to assess how new technologies in the workplace might affect job growth as a whole.

Choice A is incorrect because the passage does not examine how workers' lives have been affected by technology during the last century. Choices B and C are incorrect because the passage does not advocate or argue for a course of action; instead, the passage considers both sides of an issue, taking no position of its own.

QUESTION 12.

Choice A is the best answer. In the first paragraph of the passage, Brynjolfsson and McAfee clearly state that technological advances since the year 2000 have led to low job growth in the United States: "MIT business scholars Erik Brynjolfsson and Andrew McAfee have argued that impressive advances in computer technology — from improved industrial robotics to automated translation services — are largely behind the sluggish employment growth of the last 10 to 15 years."

Choice B is incorrect because although Brynjolfsson and McAfee assert that certain "changes" have occurred in the workplace as a result of technological advancement, they offer only tentative speculation that those changes may be reflected globally. Choice C is incorrect because the passage notes a decrease, rather than an increase, in skilled laborers. Choice D is incorrect because the passage makes no mention of the global creation of new jobs, even speculating that jobs may have been negatively impacted in technologically advanced nations.

QUESTION 13.

Choice A is the best answer. The previous question asks what Brynjolfsson and McAfee say has resulted in the workplace from advances in technology since the year 2000. The answer, that low job growth has resulted from these advances, is supported in the first sentence of the first paragraph: "MIT business scholars Erik Brynjolfsson and Andrew McAfee have argued that impressive advances in computer technology — from improved industrial robotics to automated translation services — are largely behind the sluggish employment growth of the last 10 to 15 years."

Choices B, C, and D are incorrect because the lines cited do not support the answer to the previous question about what Brynjolfsson and McAfee say has resulted in the workplace from advances in technology since the year 2000; instead they point to industries not under specific consideration by Brynjolfsson and McAfee (choice B), speculate as to whether changes might also be happening in other countries (choice C), and explain the importance of productivity in the marketplace in the decades following World War II. (choice D).

QUESTION 14.

Choice D is the best answer. The second sentence of the third paragraph reads, "In economics, productivity — the amount of economic value created for a given unit of input, such as an hour of labor — is a crucial indicator of growth and wealth creation." In this context, the primary purpose of the appositive ("the amount of economic value . . . such as an hour of labor") is to define "productivity."

Choices A, B, and C are incorrect because in the context of the third paragraph, the appositive ("the amount of economic value . . . such as an hour of labor") is clearly provided to help explain the term "productivity," not to describe a process (choice A), highlight a dilemma (choice B), or clarify a claim (choice C).

QUESTION 15.

Choice D is the best answer. The third paragraph states that "the pattern is clear: as businesses generated more value from their workers, the country as a whole became richer." In this context, the word "clear" most nearly means obvious, or unmistakable.

Choices A, B, and C are incorrect because in the context of the third paragraph, the word "clear" can be seen to mean obvious, or unmistakable, not pure (choice A), keen (choice B), or untroubled (choice C).

QUESTION 16.

Choice C is the best answer. Katz doesn't necessarily agree with Brynjolfsson and McAfee that new technologies will lead to sluggish job growth, saying in the fifth paragraph that "no historical pattern shows these shifts leading to a net decrease in jobs over an extended period." However, he's not sure that will remain true, explaining in the sixth paragraph that no one can be certain what is going to happen to the workplace as a result of these new technologies: "If technology disrupts enough, who knows what will happen?"

Choices A, B, and D are incorrect because it would not be accurate to characterize Katz as being alarmed (choice A), unconcerned (choice B), or optimistic (choice D) about today's digital technologies. Rather, it's clear from the conclusion of the sixth paragraph that Katz isn't sure how technological advancement will affect the workplace: "If technology disrupts enough, who knows what will happen?"

QUESTION 17.

Choice D is the best answer. The previous question asks how Katz's attitude toward "today's digital technologies" can best be characterized. The answer, that he is uncertain about their possible effects, is supported in the final sentence of the sixth paragraph: "If technology disrupts enough, who knows what will happen?"

Choices A, B, and C are incorrect because the lines cited do not support the answer to the previous question Katz's attitude toward "today's digital technologies"; instead, they describe some of his earlier research (choice A) and provide insight only into his initial thoughts but not his final conclusion on the matter (choices B and C).

QUESTION 18.

Choice B is the best answer. The sixth paragraph of the passage states that "Katz doesn't dismiss the notion that there is something different about today's digital technologies — something that could affect an even broader range of work." In the context of this sentence, the "range" of work being discussed means the scope of work or all the various kinds of work.

Choices A, C, and D are incorrect because in the context of the sentence, the "range" of work being discussed means the array or scope of work, not a physical delineation like a region (choice A) or distance (choice C), or the professional position of those who perform particular jobs (choice D).

QUESTION 19.

Choice D is the best answer. Figure 1 shows the highest gap between the percentages of productivity and employment in relation to 1947 levels occurring in 2013, when there was a difference of approximately 150 percentage points between 2013 employment (under 400%) and 2013 productivity (well over 500%).

Choices A, B, and C are incorrect because Figure 1 shows a gap of well over 100 percentage points between 2013 employment and 2013 productivity in relation to 1947 levels, while 1987 (choice A) and 1997 (choice B) show a difference of about 30 percentage points or less between employment and productivity, and 2007 (choice C) indicates a difference of approximately 100 percentage points.

QUESTION 20.

Choice C is the best answer. Figure 2 clearly shows an increase of worker output in all three countries between 1960 and 2011, with workers in each country producing on average less than 50 units of output in 1960 but more than 100 units by 2011.

Choice A is incorrect because figure 2 shows that Japan saw greater growth in output between 1960 and 1990 than Germany saw. Choice B is incorrect because figure 2 shows that Japan experienced its greatest increase in output from 2000 to 2011, not its smallest. Choice D is incorrect because figure 2 shows that the United States had the greatest output of all three countries only in 2011, not in each of the years shown.

QUESTION 21.

Choice B is the best answer. In the fourth paragraph, Brynjolfsson asserts, "Productivity is at record levels, innovation has never been faster, and yet at the same time, we have a falling median income and we have fewer jobs." In order to evaluate his statement that today "we have fewer jobs," figure 2 would need to include accurate information about the number of jobs held by people employed in factories from 1960 to 2011. Without knowing those numbers, it's not possible to determine whether Brynjolfsson's statement is correct.

Choice A is incorrect because a comparison of the median income of all three nations' factory workers within a single year would not aid in the evaluation of Brynjolfsson's statement regarding changes in worker productivity over a span of 10 to 15 years. Choices C and D are incorrect because knowing either the types of organizations where those outputs were measured or which specific manufacturing jobs might have been lost to new technologies would not be helpful in evaluating Brynjolfsson's statement about how median incomes have fallen and job growth has reduced over time.

QUESTION 22.

Choice C is the best answer. The main purpose of the passage is conveyed by the first sentence: "Anyone watching the autumn sky knows that migrating birds fly in a V formation, but scientists have long debated why." The first paragraph continues by focusing on new research that might answer the question of why birds fly in that formation ("presumably to catch the preceding bird's updraft — and save energy during flight"). As a whole, the passage can therefore be seen as a discussion of the biological motivation behind migrating birds' reliance on the V formation.

Choice A is incorrect because the squadrons of planes mentioned in the second paragraph are used as an example to discuss migrating birds but are not themselves the main subject of this passage. Choice B is incorrect because although the fourth paragraph does discuss the role of downdrafts in V-formation flight, this discussion is brief and does not constitute a main purpose. Choice D is incorrect because the passage does not illustrate how birds sense air currents through their feathers; instead, the seventh paragraph suggests in passing that such sensation may play a role in maintaining the V formation: "Scientists do not know how the birds find that aerodynamic sweet spot, but they suspect that the animals align themselves either by sight or by sensing air currents through their feathers."

QUESTION 23.

Choice A is the best answer. In the second paragraph of the passage, the quotation "Air gets pretty unpredictable behind a flapping wing" immediately follows the statement that "currents created by airplanes are far more stable than the oscillating eddies coming off of a bird."

The inclusion of the above quotation can therefore be seen as a way to explain that the current created by a bird's flapping wings is different from the current coming off the fixed wing of an airplane.

Choice B is incorrect because the quotation's explanation that air is "unpredictable" behind a bird's wing stresses the bird's lack of control over the air current. Choice C is incorrect because the quotation attributes the unpredictability of the current "behind a flapping wind" to the action of the wing rather than to wind, and in fact the passage makes no mention of wind. Choice D is incorrect because the quotation characterizes the flapping of the bird's wings in terms of the unpredictability of its effects, not of its comparative strength.

QUESTION 24.

Choice D is the best answer. The reason Usherwood used northern bald ibises as the subjects of his study is clearly stated at the beginning of the third paragraph: "The study, published in *Nature*, took advantage of an existing project to reintroduce endangered northern bald ibises (*Geronticus eremita*) to Europe." Because the project reintroducing those birds was already underway, it was therefore easy for Usherwood and his team to join it.

Choice A is incorrect because it would not be accurate to say that ibises were well acquainted with their migration route, as the third paragraph explains that scientists needed to "show hand-raised birds their ancestral migration route." Choice B is incorrect because the third paragraph states that the ibises wore "data loggers specially built by Usherwood and his lab" but never indicates that they had worn any such device before or undertaken migration previously. Choice C is incorrect because the passage never claims that ibises' body shape is similar to the design of a modern airplane, instead comparing only a V formation of birds to an airplane in the fourth paragraph.

QUESTION 25.

Choice C is the best answer. The previous question asks why Usherwood used northern bald ibises as the subject of his study. The answer, that he had easy access to them because they were being used in another scientific study, is supported at the beginning of the passage's third paragraph: "The study, published in *Nature*, took advantage of an existing project to reintroduce endangered northern bald ibises (*Geronticus eremita*) to Europe."

Choices A, B, and D are incorrect because the lines cited do not support the answer to the previous question as to why Usherwood chose northern bald ibises as the subject of his study; instead, they describe the results of the study (choice A), compare birds and planes in flight (choice B), and describe one element of the actual study (choice D) but not the reason ibises were chosen.

QUESTION 26.

Choice A is the best answer. At the end of the third paragraph the author notes that the GPS tracking devices attached to the birds "determined each bird's flight position to within 30 cm." This detail, along with the author's mention in the same sentence of another device that measured the timing of the wing flaps, provides evidence for the inference that the author likely specified 30 cm to underscore Usherwood's use of precise data-collection methods.

Choice B is incorrect because the passage does not state that the distance an ibis flies between wing flaps was something that could be ascertained by Usherwood's study. Choice C is incorrect because the passage does not discuss the wingspan length of juvenile ibises or suggest that this length could be determined from Usherwood's tracking data. Choice D is incorrect because the passage does not discuss the distance maintained between the plane and the ibises in flight.

QUESTION 27.

Choice C is the best answer. At the beginning of the fifth paragraph the passage states that "the findings likely apply to other long-winged birds, such as pelicans, storks, and geese, Usherwood says. Smaller birds create more complex wakes that would make drafting too difficult." In these lines the author therefore implies that unlike smaller birds, pelicans, storks, and geese flying in a V formation likely create a similar wake to that of ibises.

Choice A is incorrect because the passage focuses entirely on bird flight, not bird communication. Choices B and D are incorrect because the passage discusses pelicans, storks, and geese only with respect to their drafting behavior, not in terms of their migration routes or how much energy they might expend when flying.

QUESTION 28.

Choice B is the best answer. The previous question asks what the author implies about pelicans, storks, and geese flying in a V formation. The answer, that they produce a similar wake to ibises, is supported at the beginning of the fifth paragraph: "Smaller birds create more complex wakes that would make drafting too difficult." This sentence, in conjunction with the preceding sentence's assertion of the probable applicability of Usherwood's findings to pelicans, storks, and geese, underscores that the point of probable similarity between ibises and those other species is in their wake and the drafting it makes possible.

Choices A, C, and D are incorrect because the lines cited do not support the answer to the previous question regarding what the author implies about pelicans, storks, and geese flying in a V formation. Instead, they explain one finding in the ibis study, with no reference to other long-winged species (choice A); highlight the findings of a previous study of energy use in bird flight, with no reference to the relationship between ibises and other species (choice C); and offer a theory about ibises in flight, again with no reference to other species (choice D).

QUESTION 29.

Choice C is the best answer. The seventh paragraph speculates that further research may provide insight into how and why birds fly in formation: "In future studies, the researchers will switch to more common birds, such as pigeons or geese. They plan to investigate how the animals decide who sets the course and the pace." In sum, the seventh paragraph can therefore be seen as recognizing that more research is needed to explain the phenomenon of flight formation more completely.

Choice A is incorrect because neither the seventh paragraph nor the passage as a whole is concerned with bird hierarchies; the decision as to which bird sets the "course" or "pace" is mentioned only as another aspect of bird flight that scientists have yet to explain fully. Choice B is incorrect because the seventh paragraph only briefly mentions mistakes in V-formation flight, and this subject is not a central focus of the paragraph. Choice D is incorrect because although the seventh paragraph mentions the sighting of a lead bird or "leader" as a possible factor in the V formation, this factor is mentioned briefly and in conjunction with other factors, so that to describe it as a main idea would misrepresent the paragraph as a whole.

QUESTION 30.

Choice D is the best answer. In describing the way that long-winged birds like ibises fly in a V formation by drafting off each other, the seventh paragraph begins by stating, "scientists do not know how the birds find that aerodynamic sweet spot." In context, the phrase "aerodynamic sweet spot" characterizes the particular spatial relationship among birds in the formation that affords the least amount of wind resistance and is thus beneficial for flock members to maintain.

Choice A is incorrect because the author uses the phrase "aerodynamic sweet spot" in relation to bird flight, not plane flight. Choice B is incorrect because the phrase is not meant to imply the joy of flight so much as the optimum efficiency that can be found by flying in a certain position. Choice C is incorrect because the phrase is not used to discuss synchronized wing movement among birds, nor is synchronization addressed anywhere in the seventh paragraph.

QUESTION 31.

Choice B is the best answer. In the seventh paragraph, the passage explains that one aspect of bird flight that awaits further study by scientists is the question of whether "a mistake made by the leader can ripple through the rest of the flock to cause traffic jams." In this context, to say that a mistake might "ripple" through the flock most nearly means that it might progressively spread through the flock.

Choices A, C, and D are incorrect because in the context of the seventh paragraph, to "ripple" through the flock means to spread through it progressively, not to fluctuate (choice A), to wave, or move in the pattern of the ebb and flow of waves (choice C), or to undulate, or move in a manner that creates a textured, undulating appearance (choice D).

QUESTION 32.

Choice D is the best answer. In the first paragraph of Passage 1, Tocqueville predicts that "the social changes which bring nearer to the same level the father and son, the master and servant, and superiors and inferiors generally speaking, will raise woman and make her more and more the equal of man." In this context, to "raise" women to a higher social position most nearly means to elevate, or lift, them.

Choices A, B, and C are incorrect because in the context of Tocqueville's prediction that women will attain a higher social position, the word "raise" most nearly means elevate, not increase (choice A), cultivate, or support (choice B), or nurture (choice C).

QUESTION 33.

Choice B is the best answer. In Passage 1, Tocqueville expresses concern that treating men and women as identical would likely harm both genders, rather than benefit them. This sentiment can be seen most clearly in the second paragraph, when he writes that "it may readily be conceived, that by thus attempting to make one sex equal to the other, both are degraded."

Choice A is incorrect because Tocqueville says treating men and women as identical in nature would result in the degradation of both genders, a condition closer to oppression than to freedom from oppression. Choice C is incorrect because Tocqueville does not address the issue of whether men might ultimately try to reclaim any authority they lost as a result of the treatment of both genders as identical. Choice D is incorrect because in the passage, Tocqueville never claims that treating men and women the same would result in superfluous privileges for either.

QUESTION 34.

Choice C is the best answer. The previous question asks what Tocqueville implies would result from treating men and women as identical in nature. The answer, that he believes such treatment would harm both men and women, is supported in the second paragraph of Passage 1: "It may readily be conceived, that by thus attempting to make one sex equal to the other, both are degraded."

Choices A, B, and D are incorrect because the lines cited do not support the answer to the previous question about what Tocqueville implies would result from treating men and women as identical; instead, they discuss European approaches to such treatment, with no reference to the actual effects of it on men and women (choices A and B), and what Tocqueville considers Americans' proper conception of equality as it relates to gender roles (choice D).

QUESTION 35.

Choice B is the best answer. In the first paragraph of Passage 2, when discussing changing social relations, Mill writes that in her time there had come to exist "a just equality, instead of the dominion of the strongest." In this context of a society where some had once wielded much greater power than others, the word "dominion" most nearly means supremacy, or greater power.

Choices A, C, and D are incorrect because in the context of a paragraph discussing differences in the amount of power possessed by members of a society, "dominion" means supremacy, or greater power, not omnipotence, or the state of being all-powerful (choice A), ownership (choice C), or territory (choice D).

QUESTION 36.

Choice B is the best answer. In the first paragraph of Passage 2, Mill suggests that social roles are resistant to change in part because of their being entrenched in the cultural tradition: "for, in proportion to the strength of a feeling is the tenacity with which it clings to the forms and circumstances with which it has even accidentally become associated." In the context of a discussion of equality between men and women, Mill's statement serves to imply that gender roles change so slowly precisely because they are so deeply ingrained in society and culture.

Choice A is incorrect because although Mill suggests in Passage 2 that gender roles are deeply entrenched, she does not imply that they serve as the foundation of society. Choice C is incorrect because Passage 2 does not address the issue of legislative reforms, only societal ones. Choice D is incorrect because although Mill addresses the difficulty of reforming traditional gender roles, she does not attribute it to the benefits that certain groups or institutions derive from those roles.

QUESTION 37.

Choice C is the best answer. The previous question asks about what Mill implies is the reason it is hard to change gender roles. The answer, that they are deeply entrenched in tradition, is supported in the first paragraph of Passage 2: "In proportion to the strength of a feeling is the tenacity with which it clings to the forms and circumstances with which it has even accidentally become associated."

Choices A, B, and D are incorrect because the lines cited do not support the answer to the previous question about what Mill implies is the reason it is hard to change gender roles, instead describing the condition of general inequality in prior eras (choices A and B) and optimistically considering a future society that she imagines will be less unequal (choice D).

QUESTION 38.

Choice A is the best answer. Although the authors generally disagree about the roles men and women should occupy, both Tocqueville and Mill share the idea that gender equality is one small part of a societal shift toward equality in general. This can be seen in the first paragraph of Passage 1, where Tocqueville explains that raising woman to be "more and more the equal of man" is part of the overall "social changes which bring nearer to the same level the father and son, the master and servant," and in the first paragraph of Passage 2, where Mill writes that "mankind have outgrown" the state of inequality and "now tend to substitute, as the general principle of human relations, a just equality," with gender roles being the last of these relations to undergo such a shift.

Choice B is incorrect because although in Passage 1 Tocqueville argues that there are costs to treating men and women the same, in Passage 2 Mill characterizes gender equality as a source of benefits only. Choice C is incorrect because neither author considers changing gender roles in terms of economic ramifications, focusing instead on questions of fairness and justice and the fulfillment of people's potential. Choice D is incorrect because Mill does not discuss the issue in terms of American democracy, though Tocqueville does.

QUESTION 39.

Choice C is the best answer. In the second paragraph of Passage 2, Mill writes that she believes job opportunities in her society should be open to all: "Let every occupation be open to all, without favor or discouragement to any, and employments will fall into the hands of those men or women who are found by experience to be most capable of worthily exercising them." In the second paragraph of Passage 1, Tocqueville argues that equality between men and women would leave both degraded; nonetheless, he recognizes that the belief in such equality is widespread: "There are people in Europe who . . . would give to both the same functions, impose on both the same duties, and

grant to both the same rights; they would mix them in all things — their occupations." It can be inferred, then, that although Tocqueville would consider Mill's position ill-advised, he does recognize this position as one that is held by a number of reformers.

Choice A is incorrect because Tocqueville in Passage 1 never characterizes advocacy on behalf of gender equality (such as Mill engages in, in Passage 2) as less radical than it initially seems. Choice B is incorrect because Mill's stated belief that all jobs should be open to both men and women would clearly be refuted by Tocqueville as harmful to men and women alike. Choice D is incorrect because what Tocqueville praises the United States for is not gender equality as a component of economic progress, but rather the United States' division of activity into masculine and feminine spheres, which he likens to the division of labor in industrial production.

QUESTION 40.

Choice A is the best answer. In Passage 1, Tocqueville argues that equality is generally beneficial for society, but he moderates that claim in the third paragraph by further stating that even if men and women should be considered equal, they should not work in the same jobs: "As nature has appointed such wide differences between the physical and moral constitution of man and woman, her manifest design was to give a distinct employment to their various faculties." In contrast, Mill argues in the second paragraph of Passage 2 that men and women should be awarded work based on individual ability: "Let every occupation be open to all, without favor or discouragement to any, and employments will fall into the hands of those men or women who are found by experience to be most capable of worthily exercising them." It can therefore be said that Tocqueville believes one's gender should play a determining factor in one's position in society, whereas Mill believes it should not.

Choice B is incorrect because both Tocqueville in Passage 1 and Mill in Passage 2 would likely argue against limiting an individual to the social class he or she was born to. Choice C is incorrect because it is Mill, not Tocqueville, who argues that individual temperament is the proper determining factor for social position. Choice D is incorrect because although it accurately represents Tocqueville's implicit stance that an individual's social position should contribute to society as a whole, it misrepresents Mill's argument, which conceives of social position in relation to individual aptitude, not individual satisfaction.

QUESTION 41.

Choice A is the best answer. In the third paragraph of Passage 1, Tocqueville credits the Americans of his time for applying "to the sexes the great principle of political economy . . . by carefully dividing the duties of man from those of woman." In contrast, in the second paragraph of Passage 2, Mill argues that rigid social roles function to

"declare that whatever be the genius, talent, energy, or force of mind, of an individual of a certain sex or class, those faculties shall not be exerted." It can be inferred, then, that Mill would argue that the principle praised by Tocqueville tends to limit both men and women from developing their full potential.

Choice B is incorrect because in Passage 2, Mill focuses her argument on gender roles and equality between sexes but never addresses the idea of sympathy between them. Choice C is incorrect because Mill considers the division of professions by gender as a perpetuation of a long tradition of gender inequality. Choice D is incorrect because although Mill suggests that gender equality would involve rethinking the professional options available to men and women, she dismisses the notion that one gender is better suited to certain professions or would displace the other gender in certain professions.

QUESTION 42.

Choice C is the best answer. The passage's first two paragraphs describe how "Peter Higgs and a handful of other physicists were trying to understand the origin of a basic physical feature: mass," and the third paragraph discusses the idea put forth ("now called the Higgs field") to explain the environment where mathematical equations are most helpful in understanding mass. The passage shifts its focus, however: the fourth and fifth paragraphs describe how the idea of the Higgs field was not initially well-received in the scientific community, and the last paragraph illustrates that in modern times, the idea ultimately became an accepted fact to most scientists. Over the course of the passage, then, it can be seen that the main focus of the passage changes from an explanation of what the Higgs field is to an explanation of how the theory of it was received.

Choice A is incorrect because the passage makes no shift from a more to a less technical mode of description, and indeed the entire passage is aimed at readers with no specialized knowledge of physics. Choice B is incorrect because the passage never provides any contextualization of Higgs's work within other lines of inquiry in physics contemporary to Higgs. Choice D is incorrect because the passage offers no speculation regarding future discoveries that may result from the confirmation of the Higgs field's existence.

QUESTION 43.

Choice D is the best answer. The third paragraph of the passage provides the following analogy: "For a mental toehold, think of a ping-pong ball submerged in water." Since this analogy occurs in a discussion of how mass operates within the Higgs field, it functions to explain an abstract concept in terms more readily grasped by readers with no background in physics.

Choices A, B, and C are incorrect because the analogy of the ping-pong ball is used in the passage to help laypeople understand the difficult concept of the Higgs field, rather than to make a little-known fact more widely known (choice A), draw a contrast between oppositional scientific theories (choice B), or refute any established explanation (choice C).

QUESTION 44.

Choice D is the best answer. The fourth paragraph of the passage explains why Higgs's idea of the Higgs field was initially rebuffed by the scientific community: "The paper was rejected. Not because it contained a technical error, but because the premise of an invisible something permeating space, interacting with particles to provide their mass, well, it all just seemed like heaps of overwrought speculation." In other words, the scientific community was skeptical of Higgs's idea because it appeared to be mere theoretical speculation, with no empirical evidence to support it.

Choice A is incorrect because the passage makes clear that Higgs's idea addressed a theoretical problem already recognized by scientists, rather than a problem yet to be noticed by them. Choice B is incorrect because the fourth paragraph implies that Higgs's paper was rigorous (free from "technical error"), rather than problematic at the level of its equations. Choice C is incorrect because the passage never indicates that the acceptance of the Higgs field had the effect of rendering other, earlier theories in physics obsolete.

QUESTION 45.

Choice C is the best answer. The previous question asks why the scientific community initially rejected the idea of the Higgs field. The answer, that Higgs offered only theoretical speculation for the existence of the field, not actual evidence, is supported in the fourth paragraph: "The paper was rejected. Not because it contained a technical error, but because the premise of an invisible something permeating space, interacting with particles to provide their mass, well, it all just seemed like heaps of overwrought speculation."

Choices A, B, and D are incorrect because the lines cited do not support the answer to the previous question about why the scientific community initially rejected the idea of the Higgs field, instead discussing how Higgs dealt with established equations in physics when he theorized the field (choice A), describing the circumstances in which Higgs revealed his theory to the scientific community (choice B), and illustrating the fact that the Higgs field eventually came to be an accepted fact to most scientists (choice D).

QUESTION 46.

Choice A is the best answer. The fifth paragraph of the passage explains how the idea of the Higgs field eventually came to be accepted in the scientific community: "But Higgs persevered (and his revised paper appeared later that year in another journal), and physicists who took the time to study the proposal gradually realized that his idea was a stroke of genius, one that allowed them to have their cake and eat it too. In Higgs's scheme, the fundamental equations can retain their pristine form because the dirty work of providing the particles' masses is relegated to the environment." In saying that the Higgs field came to be accepted because it allowed scientists to "have their cake and eat it too," the author suggests that Higgs's theory was ultimately accepted as fact in part because it allowed physicists to reconcile what had seemed to be contradictory conditions: the harmony of the mathematical equations and the particles' apparent mass.

Choice B is incorrect because the passage does not suggest that the Higgs field was necessarily a concept that could be applied to other problems in physics than those immediately under Higgs's consideration. Choice C is incorrect because the passage does not suggest that Higgs's theory was accepted because it provided an answer to a question that earlier scientists had failed to anticipate. Choice D is incorrect because the passage never addresses any two phenomena being misinterpreted as a single phenomenon.

QUESTION 47.

Choice C is the best answer. The previous question asks for one reason Higgs's theory eventually gained acceptance in the scientific community. The answer, that it reconciled two seemingly irreconcilable conditions, is supported in the passage's fifth paragraph: "But Higgs persevered (and his revised paper appeared later that year in another journal), and physicists who took the time to study the proposal gradually realized that his idea was a stroke of genius, one that allowed them to have their cake and eat it too. In Higgs's scheme, the fundamental equations can retain their pristine form because the dirty work of providing the particles' masses is relegated to the environment." These lines make clear that Higgs's theory allowed for the particles' mass, while at the same time accepting the fundamental equations as valid.

Choices A, B, and D are incorrect because the lines cited do not support the answer to the previous question about why the Higgs field eventually gained acceptance in the scientific community, instead explaining certain aspects of the Higgs field (choices A and B) and discussing how certain scientific theories become accepted as fact even before they are proven (choice D).

QUESTION 48.

Choice A is the best answer. The main point of the last paragraph can be seen in its final sentence, which states that "mathematical equations can sometimes tell such a convincing tale, they can seemingly radiate reality so strongly, that they become entrenched in the vernacular of working physicists, even before there's data to confirm them." This point is borne out by the preceding lines of the paragraph, which recount the author's own experience of studying the still unproven Higgs field as it if were already a settled fact.

Choice B is incorrect because the anecdote the author shares about his own education does not demonstrate that physics, as a discipline, has come to operate differently over the course of his career. Choice C is incorrect because the details of the author's experience do not point to the process by which the existence of the Higgs field was confirmed, and indeed the passage does not describe that process at all. Choice D is incorrect because the passage broadly discusses the status of Higgs's theory at two different times (its initial rejection and later acceptance by physicists) and never considers how the details of the theory may have evolved.

QUESTION 49.

Choice A is the best answer. In the last paragraph, the author states that "the professor presented the Higgs field with such certainty that for a long while I had no idea it had yet to be established experimentally." In this context, for a scientific theory to be established most nearly means that it is validated, or proven.

Choices B, C, and D are incorrect because in the context of the last paragraph describing a scientific theory as being "established experimentally," the word "established" means validated, or proven, not founded (choice B), introduced (choice C), or enacted (choice D).

QUESTION 50.

Choice B is the best answer. The graph shows the periods of time that transpired between the moment when certain scientific concepts were introduced and the moment when those concepts were scientifically proven. Given the passage's discussion of the Higgs field, which was initially rejected by the scientific community before ultimately being accepted by it, the graph can therefore be seen as a means to put Higgs's work on mass into a greater context with other radical concepts that were ultimately accepted by the scientific community.

Choice A is incorrect because the graph illustrates that the Higgs boson required significantly more time to be confirmed than did any of the other theorized particles. Choice C is incorrect because the graph displays information only on the length of time necessary for any of the particles to be confirmed experimentally and does not indicate how any

of them were regarded by scientists. Choice D is incorrect because the graph does not clarify anything about the Higgs boson other than the time that transpired between its being introduced and being confirmed.

QUESTION 51.

Choice A is the best answer. Both the W boson and Z boson were introduced in the late 1960s and experimentally confirmed in the early 1980s. It is therefore accurate to say that they were both proposed and proven at about the same time.

Choice B is incorrect because the graph shows that it took more than forty years for the Higgs boson to be experimentally confirmed, while all the other particles were confirmed in a significantly shorter period of time than that. Choice C is incorrect because the graph shows that the tau neutrino was experimentally confirmed in 2000, while tau itself was experimentally confirmed in approximately 1975. Choice D is incorrect because the muon neutrino took approximately fifteen years to be confirmed, while the electron neutrino took well over twenty years.

QUESTION 52.

Choice D is the best answer. In the last paragraph of the passage, the author explains that by the mid-1980s, "the physics community had, for the most part, fully bought into the idea that there was a Higgs field permeating space." That was fifteen years after the concept was introduced but decades before it would be confirmed, which would be analogous to most physicists believing in the existence of the electron neutrino in 1940, well after it had been introduced but many years before it was confirmed via experiment.

Choices A, B, and C are incorrect because the author depicts the Higgs field in the mid-1980s as being virtually an accepted fact, even though it had not yet been proven experimentally. This situation is not analogous to a proposed particle that is widely disputed until it is confirmed experimentally (choice A), a particle that has already been confirmed and consequently elicits widespread acceptance (choice B), or particles that are not considered as possibilities before the date on which they are formally proposed (choice C).

Section 2: Writing Test

QUESTION 1.

Choice D is the best answer. Since "frequently" and "many times" repeat the same idea, "many times" can be deleted without changing the meaning of the sentence.

Choices A, B, and C are incorrect. They all provide options that repeat the idea of "frequently" and are unnecessary in the sentence.

QUESTION 2.

Choice A is the best answer. The noun "effect" is needed in the sentence to provide a direct object for the verb "has." Furthermore, the article "a" indicates that a noun will follow. In this sentence the noun "effect" is used to suggest a positive influence. The preposition "on" is idiomatic when used with "effect."

Choice B is incorrect because "affect" is a verb and the noun "effect" is needed in the sentence. (There is also the noun "affect," but it means a "display of emotion" and is not appropriate in this context.) Choice C is incorrect because the preposition "to" is not idiomatic in this context. Choice D is incorrect because a noun is needed, not the verb "affects."

QUESTION 3.

Choice B is the best answer. The participle "creating" is consistent with "serving" and "showing," the other participles in the sentence, and provides parallel structure in the sentence.

Choices A, C, and D are incorrect and do not provide options that create parallel structure in the sentence.

QUESTION 4.

Choice A is the best answer. The comma between "Telescope" and the conjunction "and" correctly separates the series of projects listed in the sentence.

Choices B and C are incorrect because there is no reason to use a semicolon in the sentence. Choices C and D are incorrect because when listing a series of items in a sentence, punctuation should be placed before the conjunction.

QUESTION 5.

Choice C is the best answer. It most effectively sets up the list of examples of new technology that are listed in the sentence that follows: "communications satellites, invisible braces, and cordless tools."

Choices A, B, and D are incorrect because they mention "international cooperation," "national publicity," and "money for the agency," respectively; however, the sentence that follows lists examples of technology.

QUESTION 6.

Choice C is the best answer because this option makes the most sense within the context of the paragraph. The inventions listed in the sentence were created or "developed" by NASA.

Choices A, B, and D are incorrect because they don't clearly convey the idea that NASA created the inventions.

QUESTION 7.

Choice B is the best answer. The past tense verb "spawned" is consistent with the other past tense verbs in the paragraph.

Choice A is incorrect because the present tense verb "spawns" is inconsistent with the past tense verbs in the paragraph. Choice C is incorrect because the helping verb "has" is not needed since the action took place in the past. Choice D is incorrect because the sentence needs a simple verb to create a complete sentence, and the participle "spawning" doesn't provide that.

QUESTION 8.

Choice D is the best answer. The contribution of money occurred in 2005, so the simple past tense verb "came" makes the most sense in the sentence. It also acts as a main verb, which creates a complete sentence.

Choices A, B, and C are incorrect because the participle "coming," the relative clause that begins "which came," and the infinitive phrase "to come" would each result in a sentence fragment and not a complete sentence in this context.

QUESTION 9.

Choice A is the best answer. Leaving the sentence where it is now makes the paragraph logical. Sentence 1 serves as a topic sentence for the paragraph by introducing the idea that NASA contributed a significant amount of money to the economy in 2005. The supporting sentences that follow develop the topic sentence by explaining why the benefits of the NASA funding are significant.

Choices B, C, and D are incorrect because if sentence 1 were to be placed after any other sentence, the paragraph would not be logical and would therefore be confusing.

QUESTION 10.

Choice D is the best answer. The sentence should not be added because the information it contains — the locations of various NASA facilities — is not relevant to the claim about the importance of NASA's work.

Choices A and B are incorrect because the sentence should not be added. Choice C is incorrect because the information it contains is not true. A statement about the locations of various NASA facilities does not undermine the claim about the economic benefits of NASA's work.

QUESTION 11.

Choice A is the best answer. "Therefore" conveys the true relationship between the previous sentence and the statement that follows by indicating that, in addition to the practical benefits it contributes to the economy and society, NASA needs to be supported for global reasons as well.

Choices B, C, and D are incorrect because the transitional words "instead," "for example," and "however" would change the meaning of the sentence and do not convey the idea that a result or reason will follow.

QUESTION 12.

Choice D is the best answer because it is clear and concise and provides parallel structure in the sentence. This choice eliminates unnecessary words and creates a list in which the topics "theories," "practices," and "technologies" are equally important.

Choices A, B, and C are incorrect because they contain words that are unnecessary and interrupt the flow of the sentence.

QUESTION 13.

Choice C is the best answer. A pair of commas is needed to set off the phrase "from social services to manufacturing" to indicate that this information is explanatory but not crucial for understanding the sentence.

Choices A and D are incorrect because they both provide an incorrect punctuation mark. Choice B is incorrect because it doesn't provide a comma.

QUESTION 14.

Choice A is the best answer. The adverb "accordingly" indicates correctly that because professional development provides a joint benefit to employers and employees, both parties share a joint responsibility to take advantage of the opportunities offered.

Choices B, C, and D are incorrect because they provide transitions that don't indicate the true relationship of shared responsibility between employees and employers.

QUESTION 15.

Choice C is the best answer. Employees "must be in charge of their own careers." This claim provides an argument for what follows — "it is the duty of . . . employees to identify . . . resources" should they find themselves "falling behind in the workplace" — and supports the previous statement about shared responsibility, as well.

Choices A, B, and D are incorrect because they do not provide an argument for what must happen if employees find themselves "falling behind in the workplace."

QUESTION 16.

Choice D is the best answer. A comma is needed between the dependent and independent clauses in order to create one sentence. The introductory conditional dependent clause beginning with "if" cannot stand alone and needs to be separated from the independent clause by a comma.

Choice A is incorrect because the dependent clause needs to be attached to an independent clause. Choice B is incorrect because a semicolon would be correct in this context only if it were connecting two independent clauses. Choice C is incorrect because there is no comma between the dependent and independent clauses.

QUESTION 17.

Choice B is the best answer. It provides a clear and concise sentence that doesn't repeat ideas and specifically focuses on workers' "deficiencies."

Choices A and D are incorrect because they are wordy and repeat previously stated ideas. Choice C uses the casual expression "deal with," which is not the appropriate tone for the passage, and "flaws and shortcomings" mean the same thing.

QUESTION 18.

Choice C is the best answer. "Obsolete" clearly and concisely conveys the idea that skills can become outdated.

Choices A, B, and D are incorrect either because they are not clear or they convey a tone that is inappropriate for the passage.

QUESTION 19.

Choice B is the best answer. "Include" is a plural, present tense verb that agrees in number with the plural noun "forms" and the other present tense verbs in the paragraph.

Choice A is incorrect because the singular verb "includes" does not agree in number with the plural noun "forms." Choice C is incorrect because a simple present tense verb is needed to provide a predicate

for the sentence. The participle "including" doesn't provide a predicate. Choice D is incorrect because the present perfect verb form is inconsistent with the present tense verbs in the paragraph.

QUESTION 20.

Choice D is the best answer. No transitional link is needed between the two sentences.

In addition to the fact that no transition is needed, choice A is incorrect because "around the same time" indicates that time has been discussed earlier in the passage, but it hasn't. Choice B incorrectly indicates that additional information will be added to the previous statement. Choice C wrongly indicates that regardless of what has been said already, what follows is true.

QUESTION 21.

Choice C is the best answer. Since "professional networks" is the largest circle in the illustration, it is therefore the overarching framework "within which staff receive coaching and consultation as well as the opportunity to attend foundation and skill-building workshops."

Choices A, B, and D are incorrect because as shown in the illustration, "coaching and consultation" and "foundation and skill-building workshops" occupy smaller circles within the professional-development framework, and thus cannot be the overarching framework.

QUESTION 22.

Choice C is the best answer. No punctuation is needed between the main verb "can identify" and the clause that begins with "which" and functions as the object of the verb.

Choices A, B, and D are incorrect because they all contain punctuation marks.

QUESTION 23.

Choice C is the best answer. The transition "however" indicates that a contrast or difference will follow. In this sentence two types of diners are being contrasted: "on-the-go eaters" and those who value "regional foods" and "culture built on cooking and long meals."

Choices A, B, and D are incorrect because these transitions do not indicate the contrast that sets up the resistance to the Slow Food movement discussed in the passage.

QUESTION 24.

Choice A is the best answer. A comma is needed to separate the introductory infinitive phrase beginning with "to counter" from the independent main clause of the sentence beginning with "a cohort."

Choice B is incorrect because a semicolon is used in this context between two independent clauses. Choice C is incorrect because a colon is used before a list or to set off an important idea. Choice D is incorrect because the infinitive phrase beginning with "to counter" is not a complete sentence.

QUESTION 25.

Choice C is the best answer. The sentence should not be added because the fact that the Slow Food movement's philosophy "was connected to the tale of the hare and the tortoise" blurs the focus of the paragraph, which is the contrast between two attitudes toward eating. The idea is also not clearly explained.

Choices A and B are incorrect because the sentence is irrelevant without further explanation. Choice D is incorrect because the paragraph doesn't emphasize the "Slow Food movement's origins and beliefs."

QUESTION 26.

Choice D is the best answer. The auxiliary verb "has" correctly indicates that the Slow Food movement's opposition to fast food's standardization of taste is ongoing.

Choices A, B, and C provide verb tenses that do not indicate an opposition that began in the past and is ongoing: choice A provides a past perfect tense verb; choice B, a present tense verb; and choice C, a future tense verb.

QUESTION 27.

Choice B is the best answer. The comma, which is necessary to set off information that may be informative but is not necessary for understanding the sentence, is placed correctly after the noun "factors" and after the noun "weather."

Choice A is incorrect because commas are needed to set off the nonrestrictive phrase. Choice C is incorrect because the first comma is misplaced. Choice D is incorrect because there should be a comma after "weather."

QUESTION 28.

Choice D is the best answer. This choice most effectively supports the central point of the paragraph — the factors that influence the diversity of food flavors.

Choices A, B, and C are incorrect because they contain ideas that are not consistent with those in the paragraph. Choice A is subjective and mentions flavor quality instead of diversity, choice B addresses learning about traditional food, and choice C addresses how food is made.

QUESTION 29.

Choice C is the best answer. The singular possessive pronoun "its" refers correctly to the singular noun "movement."

Choice A is incorrect because "their" is a plural possessive pronoun, which cannot be used with a singular noun. Choice B is incorrect because the pronoun "there" refers to a place or is used to introduce a clause, and it is not possessive. Choice D is incorrect because "it's" is a contraction for "it is," not a possessive pronoun, and does not make sense in the sentence.

QUESTION 30.

Choice B is the best answer. "Leisurely meals with friends and family" is clear and concise and eliminates unnecessary repetition.

Choices A and C are wordy and contain unnecessary repetition: In choice A, "lots of time" and "long meals" are the same. In choice C, "loved ones such as friends and family" is redundant. In choice D, "time-consuming meals" has a negative connotation, which is not consistent with the Slow Food movement's belief that long, leisurely meals are beneficial.

QUESTION 31.

Choice C is the best answer. "Drew criticism" is an idiomatic phrase meaning "caused criticism to flow forth," which fits in the context of the sentence.

Choices A, B, and D are incorrect. All contain synonyms for "drew," but they refer to drawing as an artistic exercise. None of these choices works, within the context of the sentence, since drawing here means enticing or attracting.

QUESTION 32.

Choice C is the best answer. The sentence contains an indirect question, which does not take a question mark.

Choices A and B are incorrect because they contain question marks. Choice D is incorrect because the word order is confusing.

QUESTION 33.

Choice C is the best answer. The prepositional phrase "to these ends" is used correctly as a transition to show that the three beliefs identified in the previous sentence cause the action (supporting small-scale producers) in the sentence that the prepositional phrase introduces.

Choices A, B, and D are incorrect. None of these options shows the true relationship between the sentences. "In short" (choice A) means that a summary will follow; "nonetheless" (choice B) means that in spite of the fact that something has been stated as being a certain way, an exception or contrasting statement will follow; and "by the same token" (choice D) indicates that a similar idea will follow.

QUESTION 34.

Choice A is the best answer. The comma is placed correctly after "declared" to set off the headline that follows.

Choices B, C, and D are incorrect because they contain misplaced commas. Additionally, the inclusion of a second comma in choices C and D suggests incorrectly that the information between the commas could be eliminated without changing the meaning of the sentence.

QUESTION 35.

Choice B is the best answer. This choice clearly says that "other newspapers also ran stories claiming that the broadcast had incited mass hysteria," which suggests that the story was widely reported.

Choice A is incorrect because it identifies only one news source. Choices C and D are incorrect because they are not relevant to the paragraph.

QUESTION 36.

Choice C is the best answer. The participle "fearing" clearly describes the people who thought that Martians had invaded Earth and places the focus on "fear."

Choice A is incorrect because it changes the meaning of the sentence. A broadcast can't "have" people. Choice A would also require a comma before "who feared" to make it grammatically correct. Choice B is incorrect because the relative pronoun "that" isn't used to begin clauses describing people. Choice D is incorrect because the infinitive "to fear" doesn't make sense in the sentence.

QUESTION 37.

Choice D is the best answer. "Go so far as to" is an idiomatic expression meaning "proceed to the point of doing something."

Choices A, B, and C are incorrect because they are not idiomatic.

QUESTION 38.

Choice C is the best answer. The prepositional phrase "in the article" is used correctly to link the article mentioned in the previous sentence to a statement that was made in the article.

Choices A, B, and D are incorrect because they don't show the true relationship between the sentences. The previous sentence makes a statement that the following sentence expands upon.

QUESTION 39.

Choice D is the best answer. The prepositional phrase "by portraying the new medium as irresponsible" clearly and concisely tells how the newspaper industry "sought to discredit the newly emerging technology of radio."

Choices A and B are incorrect because they include unnecessary words that do not add meaning to the sentence. Choice C is incorrect because the conjunction "and" is unnecessary and confusing.

QUESTION 40.

Choice B is the best answer. It best establishes the main idea of the paragraph by focusing on the overblown reports of panic. The paragraph lists various pieces of evidence to support the claim that reports were exaggerated; for instance, "a mere 2 percent of households had tuned in to the broadcast" and the validity of "an oft-cited report" is called into question.

Choices A, C, and D are incorrect. Choice A is too specific since the paragraph doesn't evaluate the strength of Pooley and Socolow's argument. Choice C is too specific since the paragraph doesn't focus on Pooley and Socolow's insistence on newspapers' distortions. Choice D is too general and doesn't focus on a topic.

QUESTION 41.

Choice A is the best answer. "Fewer" is an adjective that is used with things that can be counted and therefore is used correctly in this sentence to describe "people." "Far" is an adverb that describes the adjective "fewer" and is used to indicate the extent to which the number of people listening to the broadcast differed from a million.

Choices B and C are incorrect because the adjective "less" is used when describing things that cannot be counted. Choices C and D are incorrect because they use "then" and not the appropriate comparison preposition "than."

QUESTION 42.

Choice D is the best answer. Sentence 4 is most logically placed after sentence 7 because sentence 7 implies that the words used in the survey were used synonymously, even though the words convey different levels of reaction. Sentence 4 supports this idea with further explanation.

Choices A, B, and C are incorrect because it would be illogical and confusing to place sentence 4 after sentence 2, 3, or 5.

QUESTION 43.

Choice C is the best answer. The pronoun "some" is used correctly as the subject of the independent clause. The comma after "some" is needed to set off the nonrestrictive clause ("influenced by the sensationalized news coverage afterward") that follows it.

Choice A is incorrect because without a comma, the resulting restrictive clause changes the meaning of the sentence. Choice B is incorrect because the pronoun "they" introduces an independent clause and provides another, unnecessary subject for the sentence. Choice D is incorrect because a comma is needed to set off the nonrestrictive clause.

QUESTION 44.

Choice A is the best answer. "Not unlike," which means the same as "like," most effectively signals the similarity between the two groups mentioned by the researchers.

Choices B, C, and D are incorrect because they all indicate difference instead of similarity.

Section 3: Math Test — No Calculator

QUESTION 1.

Choice C is correct. Maria spends x minutes running each day and y minutes biking each day. Therefore, $x + y$ represents the total number of minutes Maria spent running and biking each day. Because $x + y = 75$, it follows that 75 is the total number of minutes that Maria spent running and biking each day.

Choices A and B are incorrect. The problem states that Maria spends time in both activities each day, therefore x and y must be positive. If 75 represents the number of minutes Maria spent running each day, then Maria spent no minutes biking each day. Similarly, if 75 represents the number of minutes Maria spent biking each day, then Maria spent no minutes running each day. The number of minutes Maria spends running each day and biking each day may vary; however, the total number of minutes she spends each day on these activities is constant and equal to 75. Choice D is incorrect. The number of minutes Maria spent biking for each minute spent running cannot be determined from the information provided.

QUESTION 2.

Choice C is correct. Using the distributive property to multiply 3 and $(x + 5)$ gives $3x + 15 - 6$, which can be rewritten as $3x + 9$.

Choice A is incorrect and may result from rewriting the given expression as $3(x + 5 - 6)$. Choice B is incorrect and may result from incorrectly rewriting the expression as $(3x + 5) - 6$. Choice D is incorrect and may result from incorrectly rewriting the expression as $3(5x) - 6$.

Alternatively, evaluating the given expression and each answer choice for the same value of x, for example $x = 0$, will reveal which of the expressions is equivalent to the given expression.

QUESTION 3.

Choice B is correct. The first equation can be rewritten as $y - x = 3$ and the second as $\frac{x}{4} + y = 3$, which implies that $-x = \frac{x}{4}$, and so $x = 0$. The ordered pair (0, 3) satisfies the first equation and also the second, since $0 + 2(3) = 6$ is a true equality.

Alternatively, the first equation can be rewritten as $y = x + 3$. Substituting $x + 3$ for y in the second equation gives $\frac{x}{2} + 2(x + 3) = 6$. This can be rewritten using the distributive property as $\frac{x}{2} + 2x + 6 = 6$. It follows that $2x + \frac{x}{2}$ must be 0. Thus, $x = 0$. Substituting 0 for x in the equation $y = x + 3$ gives $y = 3$. Therefore, the ordered pair (0, 3) is the solution to the system of equations shown.

Choice A is incorrect; it satisfies the first equation but not the second. Choices C and D are incorrect because neither satisfies the first equation, $x = y - 3$.

QUESTION 4.

Choice D is correct. Applying the distributive property, the original expression is equivalent to $5 + 12i - 9i^2 + 6i$. Since $i = \sqrt{-1}$, it follows that $i^2 = -1$. Substituting -1 for i^2 into the expression and simplifying yields $5 + 12i + 9 + 6i$, which is equal to $14 + 18i$.

Choices A, B, and C are incorrect and may result from substituting 1 for i^2 or errors made when rewriting the given expression.

QUESTION 5.

Choice A is correct. Substituting -1 for x in the equation that defines f gives $f(-1) = \frac{(-1)^2 - 6(-1) + 3}{(-1) - 1}$. Simplifying the expressions in the numerator and denominator yields $\frac{1 + 6 + 3}{-2}$, which is equal to $\frac{10}{-2}$ or -5.

Choices B, C, and D are incorrect and may result from misapplying the order of operations when substituting -1 for x.

QUESTION 6.

Choice C is correct. The value of the camera equipment depreciates from its original purchase value at a constant rate for 12 years. So if x is the amount, in dollars, by which the value of the equipment depreciates each year, the value of the camera equipment, in dollars, t years after it is purchased would be $32{,}400 - xt$. Since the value of the camera equipment after 12 years is \$0, it follows that $32{,}400 - 12x = 0$. To solve for x, rewrite the equation as $32{,}400 = 12x$. Dividing both sides of the equation by 12 gives $x = 2{,}700$. It follows that the value of the camera equipment depreciates by \$2,700 each year. Therefore, the value of the equipment after 4 years, represented by the expression $32{,}400 - 2{,}700(4)$, is \$21,600.

Choice A is incorrect. The value given in choice A is equivalent to $\$2{,}700 \times 4$. This is the amount, in dollars, by which the value of the camera equipment depreciates 4 years after it is purchased, not the dollar value of the camera equipment 4 years after it is purchased. Choice B is incorrect. The value given in choice B is equal to $\$2{,}700 \times 6$, which is the amount, in dollars, by which the value of the camera equipment depreciates 6 years after it is purchased, not the dollar value of the camera equipment 4 years after it is purchased. Choice D is incorrect. The value given in choice D is equal to $\$32{,}400 - \$2{,}700$. This is the dollar value of the camera equipment 1 year after it is purchased.

QUESTION 7.

Choice B is correct. Each of the options is a quadratic expression in vertex form. To rewrite the given expression in this form, the number 9 needs to be added to the first two terms, because $x^2 + 6x + 9$ is equivalent to $(x + 3)^2$. Rewriting the number 4 as $9 - 5$ in the given expression yields $x^2 + 6x + 9 - 5$, which is equivalent to $(x + 3)^2 - 5$.

Choice A is incorrect. Squaring the binomial and simplifying the expression in option A gives $x^2 + 6x + 9 + 5$. Combining like terms gives $x^2 + 6x + 14$, not $x^2 + 6x + 4$. Choice C is incorrect. Squaring the binomial and simplifying the expression in choice C gives $x^2 - 6x + 9 + 5$. Combining like terms gives $x^2 - 6x + 14$, not $x^2 + 6x + 4$. Choice D is incorrect. Squaring the binomial and simplifying, the expression in choice D gives $x^2 - 6x + 9 - 5$. Combining like terms gives $x^2 - 6x + 4$, not $x^2 + 6x + 4$.

QUESTION 8.

Choice C is correct. Ken earned \$8 per hour for the first 10 hours he worked, so he earned a total of \$80 for the first 10 hours he worked. For the rest of the week, Ken was paid at the rate of \$10 per hour. Let x be the number of hours he will work for the rest of the week. The total of Ken's earnings, in dollars, for the week will be $10x + 80$. He saves

90% of his earnings each week, so this week he will save $0.9(10x + 80)$ dollars. The inequality $0.9(10x + 80) \geq 270$ represents the condition that he will save at least $270 for the week. Factoring 10 out of the expression $10x + 80$ gives $10(x + 8)$. The product of 10 and 0.9 is 9, so the inequality can be rewritten as $9(x + 8) \geq 270$. Dividing both sides of this inequality by 9 yields $x + 8 \geq 30$, so $x \geq 22$. Therefore, the least number of hours Ken must work the rest of the week to save at least $270 for the week is 22.

Choices A and B are incorrect because Ken can save $270 by working fewer hours than 38 or 33 for the rest of the week. Choice D is incorrect. If Ken worked 16 hours for the rest of the week, his total earnings for the week will be $80 + $160 = $240, which is less than $270. Since he saves only 90% of his earnings each week, he would save even less than $240 for the week.

QUESTION 9.

Choice B is correct. Marisa will hire x junior directors and y senior directors. Since she needs to hire at least 10 staff members, $x + y \geq 10$. Each junior director will be paid $640 per week, and each senior director will be paid $880 per week. Marisa's budget for paying the new staff is no more than $9,700 per week; in terms of x and y, this condition is $640x + 880y \leq 9{,}700$. Since Marisa must hire at least 3 junior directors and at least 1 senior director, it follows that $x \geq 3$ and $y \geq 1$. All four of these conditions are represented correctly in choice B.

Choices A and C are incorrect. For example, the first condition, $640x + 880y \geq 9{,}700$, in each of these options implies that Marisa can pay the new staff members more than her budget of $9,700. Choice D is incorrect because Marisa needs to hire at least 10 staff members, not at most 10 staff members, as the inequality $x + y \leq 10$ implies.

QUESTION 10.

Choice B is correct. In general, a binomial of the form $x + f$, where f is a constant, is a factor of a polynomial when the remainder of dividing the polynomial by $x + f$ is 0. Let R be the remainder resulting from the division of the polynomial $P(x) = ax^3 + bx^2 + cx + d$ by $x + 1$. So the polynomial $P(x)$ can be rewritten as $P(x) = (x + 1)q(x) + R$, where $q(x)$ is a polynomial of second degree and R is a constant. Since -1 is a root of the equation $P(x) = 0$, it follows that $P(-1) = 0$.

Since $P(-1) = 0$ and $P(-1) = R$, it follows that $R = 0$. This means that $x + 1$ is a factor of $P(x)$.

Choices A, C, and D are incorrect because none of these choices can be a factor of the polynomial $P(x) = ax^3 + bx^2 + cx + d$. For example, if $x - 1$ were a factor (choice A), then $P(x) = (x - 1)h(x)$, for some polynomial function h. It follows that $P(1) = (1 - 1)h(1) = 0$, so 1 would be another root of the given equation, and thus the given equation would have at least 4 roots. However, a third-degree equation cannot have more than three roots. Therefore, $x - 1$ cannot be a factor of $P(x)$.

QUESTION 11.

Choice D is correct. For $x > 1$ and $y > 1$, $x^{\frac{1}{3}}$ and $y^{\frac{1}{2}}$ are equivalent to $\sqrt[3]{x}$ and $\sqrt{y}$, respectively. Also, x^{-2} and y^{-1} are equivalent to $\frac{1}{x^2}$ and $\frac{1}{y}$, respectively. Using these equivalences, the given expression can be rewritten as $\frac{y\sqrt{y}}{x^2\sqrt[3]{x}}$.

Choices A, B, and C are incorrect because these choices are not equivalent to the given expression for $x > 1$ and $y > 1$.

For example, for $x = 2$ and $y = 2$, the value of the given expression is $2^{-\frac{5}{6}}$; the values of the choices, however, are $2^{-\frac{1}{3}}$, $2^{\frac{5}{6}}$, and 1, respectively.

QUESTION 12.

Choice B is correct. The graph of a quadratic function in the xy-plane is a parabola. The axis of symmetry of the parabola passes through the vertex of the parabola. Therefore, the vertex of the parabola and the midpoint of the segment between the two x-intercepts of the graph have the same x-coordinate. Since $f(-3) = f(-1) = 0$, the x-coordinate of the vertex is $\frac{(-3) + (-1)}{2} = -2$. Of the shown intervals, only the interval in choice B contains -2.

Choices A, C, and D are incorrect and may result from either calculation errors or misidentification of the graph's x-intercepts.

QUESTION 13.

Choice D is correct. The numerator of the given expression can be rewritten in terms of the denominator, $x - 3$, as follows: $x^2 - 2x - 5 = x^2 - 3x + x - 3 - 2$, which is equivalent to $x(x - 3) + (x - 3) - 2$. So the given expression is equivalent to $\frac{x(x - 3) + (x - 3) - 2}{x - 3} = \frac{x(x - 3)}{x - 3} + \frac{x - 3}{x - 3} - \frac{2}{x - 3}$. Since the given expression is defined for $x \neq 3$, the expression can be rewritten as $x + 1 - \frac{2}{x - 3}$.

Long division can also be used as an alternate approach.

Choices A, B, and C are incorrect and may result from errors made when dividing the two polynomials or making use of structure.

QUESTION 14.

Choice A is correct. If x is the width, in inches, of the box, then the length of the box is $2.5x$ inches. It follows that the perimeter of the base is $2(2.5x + x)$, or $7x$ inches. The height of the box is given to be 60 inches. According to the restriction, the sum of the perimeter of the base and the height of the box should not exceed 130 inches. Algebraically, that is $7x + 60 \leq 130$, or $7x \leq 70$. Dividing both sides of the inequality by 7 gives $x \leq 10$. Since x represents the width of the box, x must also be a positive number. Therefore, the inequality $0 < x \leq 10$ represents all the allowable values of x that satisfy the given conditions.

Choices B, C, and D are incorrect and may result from calculation errors or misreading the given information.

QUESTION 15.

Choice D is correct. Factoring out the coefficient $\frac{1}{3}$, the given expression can be rewritten as $\frac{1}{3}(x^2 - 6)$. The expression $x^2 - 6$ can be approached as a difference of squares and rewritten as $(x - \sqrt{6})(x + \sqrt{6})$. Therefore, k must be $\sqrt{6}$.

Choice A is incorrect. If k were 2, then the expression given would be rewritten as $\frac{1}{3}(x - 2)(x + 2)$, which is equivalent to $\frac{1}{3}x^2 - \frac{4}{3}$, not $\frac{1}{3}x^2 - 2$. Choice B is incorrect. This may result from incorrectly factoring the expression and finding $(x - 6)(x + 6)$ as the factored form of the expression. Choice C is incorrect. This may result from incorrectly distributing the $\frac{1}{3}$ and rewriting the expression as $\frac{1}{3}(x^2 - 2)$.

QUESTION 16.

The correct answer is 8. The expression $2x + 8$ contains a factor of $x + 4$. It follows that the original equation can be rewritten as $2(x + 4) = 16$. Dividing both sides of the equation by 2 gives $x + 4 = 8$.

QUESTION 17.

The correct answer is 30. It is given that the measure of $\angle QPR$ is 60°. Angle MPR and $\angle QPR$ are collinear and therefore are supplementary angles. This means that the sum of the two angle measures is 180°, and so the measure of $\angle MPR$ is 120°. The sum of the angles in a triangle is 180°. Subtracting the measure of $\angle MPR$ from 180° yields the sum of the other angles in the triangle MPR. Since $180 - 120 = 60$, the sum of the measures of $\angle QMR$ and $\angle NRM$ is 60°. It is given that $MP = PR$, so it follows that triangle MPR is isosceles. Therefore $\angle QMR$ and $\angle NRM$ must be congruent. Since the sum of the measure of these two angles is 60°, it follows that the measure of each angle is 30°.

An alternate approach would be to use the exterior angle theorem, noting that the measure of $\angle QPR$ is equal to the sum of the measures of $\angle QMR$ and $\angle NRM$. Since both angles are equal, each of them has a measure of 30°.

QUESTION 18.

The correct answer is 4. There are π radians in a 180° angle. A 720° angle is 4 times greater than a 180° angle. Therefore, the number of radians in a 720° angle is 4π.

QUESTION 19.

The correct answer is 8. Since the line passes through the point (2, 0), its equation is of the form $y = m(x - 2)$. The coordinates of the point (1, 4) must also satisfy this equation. So $4 = m(1 - 2)$, or $m = -4$. Substituting -4 for m in the equation of the line gives $y = -4(x - 2)$, or equivalently $y = -4x + 8$. Therefore, $b = 8$.

Alternate approach: Given the coordinates of two points through which the line passes, the slope of the line is $\frac{4 - 0}{1 - 2} = -4$. So, the equation of the line is of the form $y = -4x + b$. Since (2, 0) satisfies this equation, $0 = -4(2) + b$ must be true. Solving this equation for b gives $b = 8$.

QUESTION 20.

The correct answer is 6632. Applying the distributive property to the expression yields $7532 + 100y^2 + 100y^2 - 1100$. Then adding together $7532 + 100y^2$ and $100y^2 - 1100$ and collecting like terms results in $200y^2 + 6432$. This is written in the form $ay^2 + b$, where $a = 200$ and $b = 6432$. Therefore $a + b = 200 + 6432 = 6632$.

Section 4: Math Test - Calculator

QUESTION 1.

Choice B is correct. There are 2 dogs that are fed only dry food and a total of 25 dogs. Therefore, the fraction of dogs fed only dry food is $\frac{2}{25}$.

Choice A is incorrect. This fraction is the number of dogs fed only dry food divided by the total number of pets instead of the total number of dogs. Choice C is incorrect because it is the fraction of all pets fed only dry food. Choice D is incorrect. This fraction is the number of dogs fed only dry food divided by the total number of pets fed only dry food.

QUESTION 2.

Choice A is correct. Applying the distributive property, the given expression can be rewritten as $x^2 - 3 + 3x^2 - 5$. Combining like terms yields $4x^2 - 8$.

Choice B is incorrect and is the result of disregarding the negative sign in front of the first 3 before combining like terms. Choice C is incorrect and is the result of not multiplying $-3x^2$ by -1 before combining like terms. Choice D is incorrect and is the result of disregarding the negative sign in front of the first 3 and not multiplying $-3x^2$ by -1 before combining like terms.

QUESTION 3.

Choice C is correct. Multiplying each side of 1 meter = 100 cm by 6 gives 6 meters = 600 cm. Each package requires 3 centimeters of tape. The number of packages that can be secured with 600 cm of tape is $\frac{600}{3}$, or 200 packages.

Choices A, B, and D are incorrect and may be the result of incorrect interpretations of the given information or of computation errors.

QUESTION 4.

Choice D is correct. The survey was given to a group of people who liked the book, and therefore, the survey results can be applied only to the population of people who liked the book. Choice D is the most appropriate inference from the survey results because it describes a conclusion about people who liked the book, and the results of the survey indicate that most people who like the book disliked the movie.

Choices A, B, and C are incorrect because none of these inferences can be drawn from the survey results. Choices A and B need not be true. The people surveyed all liked the book on which the movie was based, which is not true of all people who go see movies or all people who read books. Thus, the people surveyed are not representative of all people who go see movies or all people who read books. Therefore, the results of this survey cannot appropriately be extended to at least 95% of people who go see movies or to at least 95% of people who read books. Choice C need not be true because the sample includes only people who liked the book, and so the results do not extend to people who dislike the book.

QUESTION 5.

Choice C is correct. Substituting (1, 1) into the inequality gives $5(1) - 3(1) < 4$, or $2 < 4$, which is a true statement. Substituting (2, 5) into the inequality gives $5(2) - 3(5) < 4$, or $-5 < 4$, which is a true statement. Substituting (3, 2) into the inequality gives $5(3) - 3(2) < 4$, or $9 < 4$, which is not a true statement. Therefore, (1, 1) and (2, 5) are the only ordered pairs that satisfy the given inequality.

Choice A is incorrect because the ordered pair (2, 5) also satisfies the inequality. Choice B is incorrect because the ordered pair (1, 1) also satisfies the inequality. Choice D is incorrect because the ordered pair (3, 2) does not satisfy the inequality.

QUESTION 6.

Choice C is correct. Since $x = -3$ is a solution to the equation, substituting -3 for x gives $(-3a + 3)^2 = 36$. Taking the square root of each side of this equation gives the two equations $-3a + 3 = 6$ and $-3a + 3 = -6$. Solving each of these for a yields $a = -1$ and $a = 3$. Therefore, -1 is a possible value of a.

Choice A is incorrect and may be the result of ignoring the squared expression and solving $-3a + 3 = 36$ for a. Choice B is incorrect and may be the result of dividing 36 by 2 instead of taking the square root of 36 when solving for a. Choice D is incorrect and may be the result of taking the sum of the value of x, -3, and the constant, 3.

QUESTION 7.

Choice A is correct. The slope of the line of best fit is negative, meaning as the distance of planetoids from the Sun increases, the density of the planetoids decreases. Therefore, planetoids that are more distant from the Sun tend to have lesser densities.

Choice B is incorrect because as the distance of planetoids from the sun increases, the density of the planetoids decreases. Choice C is incorrect. For example, according to the line of best fit, a planetoid that is 0.8 AU from the Sun has a density of 5 g/cm^3, but a planetoid that is twice as far from the Sun with a distance of 1.6 AU has a density of 4.25 g/cm^3. However, the density of 4.25 g/cm^3 is not half the density of 5 g/cm^3. Choice D is incorrect because there is a relationship between the distance from a planetoid to the Sun and density, as shown by the line of best fit.

QUESTION 8.

Choice C is correct. According to the line of best fit, a planetoid with a distance from the Sun of 1.2 AU has a density between 4.5 g/cm^3 and 4.75 g/cm^3. The only choice in this range is 4.6.

Choices A, B, and D are incorrect and may result from misreading the information in the scatterplot.

QUESTION 9.

Choice A is correct. To isolate the terms that contain ax and b, 6 can be added to both sides of the equation, which gives $9ax + 9b = 27$. Then, both sides of this equation can be divided by 9, which gives $ax + b = 3$.

Choices B, C, and D are incorrect and may result from computation errors.

QUESTION 10.

Choice D is correct. There are 60 minutes in one hour, so an 8-hour workday has (60)(8) = 480 minutes. To calculate 15% of 480, multiply 0.15 by 480: (0.15)(480) = 72. Therefore, Lani spent 72 minutes of her workday in meetings.

Choice A is incorrect because 1.2 is 15% of 8, which gives the time Lani spent of her workday in meetings in hours, not minutes. Choices B and C are incorrect and may be the result of computation errors.

QUESTION 11.

Choice A is correct. The total number of copies of the game the company will ship is 75, so one equation in the system is $s + c = 75$, which can be written as $75 - s = c$. Because each standard edition of the game has a volume of 20 cubic inches and s represents the number of standard edition games, the expression $20s$ represents the volume of the shipment that comes from standard edition copies of the game. Similarly, the expression $30c$ represents the volume of the shipment that comes from collector's edition copies of the games. Because these volumes combined are 1,870 cubic inches, the equation $20s + 30c = 1{,}870$ represents this situation. Therefore, the correct answer is choice A.

Choice B is incorrect. This equation gives the volume of each standard edition game as 30 cubic inches and the volume of each collector's edition game as 20 cubic inches. Choice C is incorrect. This is the result of finding the average volume of the two types of games, using that average volume (25) for both types of games, and assuming that there are 75 more standard editions of the game than there are collector's editions of the game. Choice D is incorrect. This is the result of assuming that the volume of each standard edition game is 30 cubic inches, that the volume of each collector's edition game is 20 cubic inches, and that there are 75 more standard editions than there are collector's editions.

QUESTION 12.

Choice B is correct. Let x be the price, in dollars, of the jacket before sales tax. The price of the jacket after the 6% sales tax is added was $53. This can be expressed by the equation $x + 0.06x = 53$, or $1.06x = 53$. Dividing each side of this equation by 1.06 gives $x = 50$. Therefore, the price of the jacket before sales tax was $50.

Choices A, C, and D are incorrect and may be the result of computation errors.

QUESTION 13.

Choice B is correct. Theresa's speed was increasing from 0 to 5 minutes and from 20 to 25 minutes, which is a total of 10 minutes. Theresa's speed was decreasing from 10 minutes to 20 minutes and from 25 to 30 minutes, which is a total of 15 minutes. Therefore, Theresa's speed was NOT increasing for a longer period of time than it was decreasing.

Choice A is incorrect. Theresa ran at a constant speed for the 5-minute period from 5 to 10 minutes. Choice C is incorrect. Theresa's speed decreased at a constant rate during the last 5 minutes. Choice D is incorrect. Theresa's speed reached its maximum at 25 minutes, which is within the last 10 minutes.

QUESTION 14.

Choice D is correct. The figure is a quadrilateral, so the sum of the measures of its interior angles is 360°. The value of x can be found by using the equation $45 + 3x = 360$. Subtracting 45 from both sides of the equation results in $3x = 315$, and dividing both sides of the resulting equation by 3 yields $x = 105$. Therefore, the value of x in the figure is 105.

Choice A is incorrect. If the value of x were 45, the sum of the measures of the angles in the figure would be $45 + 3(45)$, or 180°, but the sum of the measures of the angles in a quadrilateral is 360°. Choice B is incorrect. If the value of x were 90, the sum of the measures of the angles in the figure would be $45 + 3(90)$, or 315°, but the sum of the measures of the angles in a quadrilateral is 360°. Choice C is incorrect. If the value of x were 100, the sum of the measures of the angles in the figure would be $45 + 3(100)$, or 345°, but the sum of the measures of the angles in a quadrilateral is 360°.

QUESTION 15.

Choice B is correct. A column of 50 stacked one-cent coins is about $3\frac{7}{8}$ inches tall, which is slightly less than 4 inches tall. Therefore a column of stacked one-cent coins that is 4 inches tall would contain slightly more than 50 one-cent coins. It can then be reasoned that because 8 inches is twice 4 inches, a column of stacked one-cent coins that is 8 inches tall would contain slightly more than twice as many coins; that is, slightly more than 100 one-cent coins. An alternate approach is to set up a proportion comparing the column height to the number of one-cent coins, or $\frac{3\frac{7}{8} \text{ inches}}{50 \text{ coins}} = \frac{8 \text{ inches}}{x \text{ coins}}$, where x is the number of coins in an 8-inch-tall column. Multiplying each side of the proportion by $50x$ gives $3\frac{7}{8}x = 400$. Solving for x gives $x = \frac{400 \times 8}{31}$, which is approximately 103. Therefore, of the given choices, 100 is closest to the number of one-cent coins it would take to build an 8-inch-tall column.

Choice A is incorrect. A column of 75 stacked one-cent coins would be slightly less than 6 inches tall. Choice C is incorrect. A column of 200 stacked one-cent coins would be more than 15 inches tall. Choice D is incorrect. A column of 390 stacked one-cent coins would be over 30 inches tall.

QUESTION 16.

Choice D is correct. If $\frac{b}{2} = 10$, then multiplying each side of this equation by 2 gives $b = 20$. Substituting 20 for b in the equation $a - b = 12$ gives $a - 20 = 12$. Adding 20 to each side of this equation gives $a = 32$. Since $a = 32$ and $b = 20$, it follows that the value of $a + b$ is $32 + 20$, or 52.

Choice A is incorrect. If the value of $a + b$ were less than the value of $a - b$, it would follow that b is negative. But if $\frac{b}{2} = 10$, then b must be positive. This contradiction shows that the value of $a + b$ cannot be 2. Choice B is incorrect. If the value of $a + b$ were equal to the value of $a - b$, then it would follow that $b = 0$. However, b cannot equal zero because it is given that $\frac{b}{2} = 10$. Choice C is incorrect. This is the value of a, but the question asks for the value of $a + b$.

QUESTION 17.

Choice A is correct. The y-intercept of the graph of $y = 19.99 + 1.50x$ in the xy-plane is the point on the graph with an x-coordinate equal to 0. In the model represented by the equation, the x-coordinate represents the number of miles a rental truck is driven during a one-day rental, and so the y-intercept represents the charge, in dollars, for the rental when the truck is driven 0 miles; that is, the y-intercept represents the cost, in dollars, of the flat fee. Since the y-intercept of the graph of $y = 19.99 + 1.50x$ is (0, 19.99), the y-intercept represents a flat fee of $19.99 in terms of the model.

Choice B is incorrect. The slope of the graph of $y = 19.99 + 1.50x$ in the xy-plane, not the y-intercept, represents a driving charge per mile of $1.50 in terms of the model. Choice C is incorrect. Since the coefficient of x in the equation is 1.50, the charge per mile for driving the rental truck is $1.50, not $19.99. Choice D is incorrect. The sum of 19.99 and 1.50, which is 21.49, represents the cost, in dollars, for renting the truck for one day and driving the truck 1 mile; however, the total daily charges for renting the truck does not need to be $21.49.

QUESTION 18.

Choice B is correct. The charity with the greatest percent of total expenses spent on programs is represented by the highest point on the scatterplot; this is the point that has a vertical coordinate slightly less than halfway between 90 and 95 and a horizontal coordinate slightly less than halfway between 3,000 and 4,000. Thus, the charity represented by this point has a total income of about $3,400 million and spends about 92% of its total expenses on programs. The percent predicted by the line of best fit is the vertical coordinate of the point on the line of best fit with horizontal coordinate $3,400 million; this vertical coordinate is very slightly more than 85. Thus, the line of best fit predicts that the charity with the greatest percent of total expenses spent on programs will spend slightly more than 85% on programs. Therefore, the difference between the actual percent (92%) and the prediction (slightly more than 85%) is slightly less than 7%.

Choice A is incorrect. There is no charity represented in the scatterplot for which the difference between the actual percent of total expenses spent on programs and the percent predicted by the line of best fit is as much as 10%. Choices C and D are incorrect. These choices may result

from misidentifying in the scatterplot the point that represents the charity with the greatest percent of total expenses spent on programs.

QUESTION 19.

Choice A is correct. Current's formula is $A = \frac{4 + w}{30}$. Multiplying each side of the equation by 30 gives $30A = 4 + w$. Subtracting 4 from each side of $30A = 4 + w$ gives $w = 30A - 4$.

Choices B, C, and D are incorrect and may result from errors in choosing and applying operations to isolate w as one side of the equation in Current's formula.

QUESTION 20.

Choice C is correct. If Mosteller's and Current's formulas give the same estimate for A, then the right-hand sides of these two equations are equal; that is, $\frac{\sqrt{hw}}{60} = \frac{4 + w}{30}$. Multiplying each side of this equation by 60 to isolate the expression $\sqrt{hw}$ gives $\sqrt{hw} = 60\left(\frac{4 + w}{30}\right)$ or $\sqrt{hw} = 2(4 + w)$. Therefore, if Mosteller's and Current's formulas give the same estimate for A, then $\sqrt{hw}$ is equivalent to $2(4 + w)$.

An alternate approach is to multiply the numerator and denominator of Current's formula by 2, which gives $\frac{2(4 + w)}{60}$. Since it is given that Mosteller's and Current's formulas give the same estimate for A, $\frac{2(4 + w)}{60} = \frac{\sqrt{hw}}{60}$. Therefore, $\sqrt{hw} = 2(4 + w)$.

Choices A, B, and D are incorrect and may result from errors in the algebraic manipulation of the equations.

QUESTION 21.

Option C is correct. The predicted increase in total fat, in grams, for every increase of 1 gram in total protein is represented by the slope of the line of best fit. Any two points on the line can be used to calculate the slope of the line as the change in total fat over the change in total protein. For instance, it can be estimated that the points (20, 34) and (30, 48) are on the line of best fit, and the slope of the line that passes through them is $\frac{48 - 34}{30 - 20} = \frac{14}{10}$, or 1.4. Of the choices given, 1.5 is the closest to the slope of the line of best fit.

Choices A, B, and D are incorrect and may be the result of incorrectly finding ordered pairs that lie on the line of best fit or of incorrectly calculating the slope.

QUESTION 22.

Choice B is correct. The median of a set of numbers is the middle value of the set values when ordered from least to greatest. If the percents in the table are ordered from least to greatest, the middle value is 27.9%. The difference between 27.9% and 26.95% is 0.95%.

Choice A is incorrect and may be the result of calculation errors or not finding the median of the data in the table correctly. Choice C is incorrect and may be the result of finding the mean instead of the median. Choice D is incorrect and may be the result of using the middle value of the unordered list.

QUESTION 23.

Choice C is correct. The total volume of the cylindrical can is found by multiplying the area of the base of the can, 75 cm^2, by the height of the can, 10 cm, which yields 750 cm^3. If the syrup needed to fill the can has a volume of 110 cm^3, then the remaining volume for the pieces of fruit is 750 – 110 = 640 cm^3.

Choice A is incorrect because if the fruit had a volume of 7.5 cm^3, there would be 750 – 7.5 = 742.5 cm^3 of syrup needed to fill the can to the top. Choice B is incorrect because if the fruit had a volume of 185 cm^3, there would be 750 – 185 = 565 cm^3 of syrup needed to fill the can to the top. Choice D is incorrect because it is the total volume of the can, not just of the pieces of fruit.

QUESTION 24.

Choice A is correct. The variable t represents the seconds after the object is launched. Since $h(0) = 72$, this, means that the height, in feet, at 0 seconds, or the initial height, is 72 feet.

Choices B, C, and D are incorrect and may be the result of misinterpreting the function in context.

QUESTION 25.

Choice B is correct. The relationship between x food calories and k kilojoules can be modeled as a proportional relationship. Let (x_1, k_1) and (x_2, k_2) represent the values in the first two rows in the table: (4.0, 16.7) and (9.0, 37.7). The rate of change, or $\frac{(k_2 - k_1)}{(x_2 - x_1)}$, is $\frac{21}{5} = 4.2$; therefore, the equation that best represents the relationship between x and k is $k = 4.2x$.

Choice A is incorrect and may be the result of calculating the rate of change using $\frac{(x_2 - x_1)}{(k_2 - k_1)}$. Choice C is incorrect and may be the result of confusing the independent and dependent variables. Choice D is incorrect and may be the result of an error when setting up the equation.

QUESTION 26.

Choice B is correct. It is given that there are 4.0 food calories per gram of protein, 9.0 food calories per gram of fat, and 4.0 food calories per gram of carbohydrate. If 180 food calories in a granola bar came from p grams of protein, f grams of fat, and c grams of carbohydrate, then the situation can be represented by the equation $180 = 4p + 9f + 4c$. The equation can then be rewritten in terms of f by subtracting $4p$ and $4c$ from both sides of the equation and then dividing both sides of the equation by 9. The result is the equation $f = 20 - \frac{4}{9}(p + c)$.

Choices A, C, and D are incorrect and may be the result of not representing the situation with the correct equation or incorrectly rewriting the equation in terms of f.

QUESTION 27.

Choice A is correct. Because the world's population has grown at an average rate of 1.9% per year since 1945, it follows that the world's population has been growing by a constant factor of 1.019 since 1945. If the world's population in 1975 was about 4 billion, in 1976 the world's population would have been about $4(1.019)$; in 1977 the world's population would have been about $4(1.019)(1.019)$, or $4(1.019)^2$; and so forth. Therefore, the world's population, $P(t)$, t years since 1975 could be represented by the function $P(t) = 4(1.019)^t$.

Choice B is incorrect because it represents a 90% increase in population each year. Choices C and D are incorrect because they are linear models, which represent situations that have a constant growth.

QUESTION 28.

Choice C is correct. The line shown has a slope of $\frac{6 - 0}{3 - 0} = 2$ and a y-intercept of (0, 0); therefore, the equation of the line is $y = 2x$. This means that for each point on the line, the value of the y-coordinate is twice the value of the x-coordinate. Therefore, for the point (s, t), the ratio of t to s is 2 to 1.

Choice A is incorrect and would be the ratio of t to s if the slope of the line were $\frac{1}{3}$. Choice B is incorrect and would be the ratio of t to s if the slope of the line were $\frac{1}{2}$. Choice D is incorrect and would be the ratio of t to s if the slope of the line were 3.

QUESTION 29.

Choice D is correct. The circle with equation $(x + 3)^2 + (y - 1)^2 = 25$ has center (–3, 1) and radius 5. For a point to be inside of the circle, the distance from that point to the center must be less than the radius, 5. The distance between (3, 2) and (–3, 1) is $\sqrt{(-3 - 3)^2 + (1 - 2)^2} = \sqrt{(-6)^2 + (-1)^2} = \sqrt{37}$, which is greater than 5. Therefore, (3, 2) does NOT lie in the interior of the circle.

Choice A is incorrect. The distance between (–7, 3) and (–3, 1) is $\sqrt{(-7 + 3)^2 + (3 - 1)^2} = \sqrt{(-4)^2 + (2)^2} = \sqrt{20}$, which is less than 5, and therefore (–7, 3) lies in the interior of the circle. Choice B is incorrect because it is the center of the circle. Choice C is incorrect because the distance between (0, 0) and (–3, 1) is $\sqrt{(0 + 3)^2 + (0 - 1)^2} = \sqrt{(3)^2 + (1)^2} = \sqrt{8}$, which is less than 5, and therefore (0, 0) lies in the interior of the circle.

QUESTION 30.

Choice B is correct. The percent increase from 2012 to 2013 was $\frac{5{,}880 - 5{,}600}{5{,}600} = 0.05$, or 5%. Since the percent increase from 2012 to 2013 was estimated to be double the percent increase from 2013 to 2014, the percent increase from 2013 to 2014 was expected to be 2.5%. Therefore, the number of subscriptions sold in 2014 is expected to be the number of subscriptions sold in 2013 multiplied by (1 + 0.025), or 5,880(1.025) = 6,027.

Choices A and C are incorrect and may be the result of a conceptual or calculation error. Choice D is incorrect and is the result of interpreting the percent increase from 2013 to 2014 as double the percent increase from 2012 to 2013.

QUESTION 31.

The correct answer is 195. Since the mass of gold was worth $62,400 and each ounce of gold was worth $20, the mass of the gold was $\frac{62{,}400}{20} = 3120$ ounces. Since 1 pound = 16 ounces, 3120 ounces is equivalent to $\frac{3120}{16} = 195$ pounds.

QUESTION 32.

The correct answer is $\frac{2}{5}$. The slope of the line can be found by selecting any two points (x_1, y_1) and (x_2, y_2) on the line and then dividing the difference of the y-coordinates $(y_2 - y_1)$ by the difference of the x-coordinates $(x_2 - x_1)$. Using the points $(-6, -\frac{27}{5})$ and $(9, \frac{3}{5})$, the slope is $\frac{\frac{3}{5} - \left(-\frac{27}{5}\right)}{9 - (-6)} = \frac{\frac{30}{5}}{15}$. This can be rewritten as $\frac{6}{15}$, which reduces to $\frac{2}{5}$. Any of the following equivalent expressions can be gridded as the correct answer: 2/5, .4, .40, .400, 4/10, 8/20.

QUESTION 33.

The correct answer is 30. Let x represent the number of correct answers from the player and y represent the number of incorrect answers from the player. Since the player answered 40 questions in total, the equation $x + y = 40$ represents this situation. Also, since the score is found by subtracting the number of incorrect answers from twice the number of correct answers and the player received a score of 50, the equation $2x - y = 50$ represents this situation. Adding the system of

two equations together yields $(x + y) + (2x - y) = 40 + 50$. This can be rewritten as $3x = 90$. Finally, solving for x by dividing both sides of the equation by 3 yields $x = 30$.

QUESTION 34.

The correct answer is $\frac{5}{18}$. There are 360° in a circle, and it is shown that the central angle of the shaded region is 100°. Therefore, the area of the shaded region can be represented as a fraction of the area of the entire circle, $\frac{100}{360}$, which can be reduced to $\frac{5}{18}$. Either 5/18, .277, or .288 can be gridded as the correct answer.

QUESTION 35.

The correct answer is 0 or 3. For an ordered pair to satisfy a system of equations, both the x- and y-values of the ordered pair must satisfy each equation in the system. Both expressions on the right-hand side of the given equations are equal to y, therefore it follows that both expressions on the right-hand side of the equations are equal to each other: $x^2 - 4x + 4 = 4 - x$. This equation can be rewritten as $x^2 - 3x = 0$, and then through factoring, the equation becomes $x(x - 3) = 0$. Because the product of the two factors is equal to 0, it can be concluded that either $x = 0$ or $x - 3 = 0$, or rather, $x = 0$ or $x = 3$.

QUESTION 36.

The correct answer is 6. Since $\tan B = \frac{3}{4}$, ΔABC and ΔDBE are both 3-4-5 triangles. This means that they are both similar to the right triangle with sides of lengths 3, 4, and 5. Since $BC = 15$, which is 3 times as long as the hypotenuse of the 3-4-5 triangle, the similarity ratio of ΔABC to the 3-4-5 triangle is 3:1. Therefore, the length of $\overline{AC}$ (the side opposite to B) is $3 \times 3 = 9$, and the length of $\overline{AB}$ (the side adjacent to angle B) is $4 \times 3 = 12$. It is also given that $DA = 4$. Since $AB = DA + DB$ and $AB = 12$, it follows that $DB = 8$, which means that the similarity ratio of ΔDBE to the 3-4-5 triangle is 2:1 ($\overline{DB}$ is the side adjacent to angle B). Therefore, the length of $\overline{DE}$, which is the side opposite to angle B, is $3 \times 2 = 6$.

QUESTION 37.

The correct answer is 2.4. The mean score of the 20 contestants on Day 1 is found by dividing the sum of the total scores of the contestants by the number of contestants. It is given that each contestant received 1 point for each correct answer. The table shows that on Day 1, 2 contestants each answered 5 questions correctly, so those 2 contestants scored 10 points in total ($2 \times 5 = 10$). Similarly, the table shows 3 contestants each answered 4 questions correctly, so those 3 contestants scored 12 points in total ($3 \times 4 = 12$). Continuing these calculations reveals that the 4 contestants who answered 3 questions correctly scored 12 points in total ($4 \times 3 = 12$);

the 6 contestants who answered 2 questions correctly scored 12 points in total (6 × 2 = 12); the 2 contestants who answered 1 question correctly scored 2 points in total (2 × 1 = 2); and the 3 contestants who answered 0 questions correctly scored 0 points in total (3 × 0 = 0). Adding up the total of points scored by these 20 contestants gives 10 + 12 + 12 + 12 + 2 + 0 = 48. Therefore, the mean score of the contestants is $\frac{48}{20}$ = 2.4. Either 12/5, 2.4, or 2.40 can be gridded as the correct answer.

QUESTION 38.

The correct answer is $\frac{5}{7}$. It is given that no contestant received the same score on two different days, so each of the contestants who received a score of 5 is represented in the "5 out of 5" column of the table exactly once. Therefore, the probability of selecting a contestant who received a score of 5 on Day 2 or Day 3, given that the contestant received a score of 5 on one of the three days, is found by dividing the total number of contestants who received a score of 5 on Day 2 or Day 3 (2 + 3 = 5) by the total number of contestants who received a score of 5, which is given in the table as 7. So the probability is $\frac{5}{7}$. Either 5/7 or .714 can be gridded as the correct answer.