



Chapter 16
Practice Test 7:
Answers and
Explanations

PRACTICE TEST 7 ANSWER KEY

Section 1: Reading		Section 2: Writing & Language		Section 3: Math (No Calculator)		Section 4: Math (Calculator)	
1. C	27. C	1. A	23. D	1. A	11. B	1. D	20. D
2. B	28. C	2. D	24. D	2. D	12. C	2. B	21. D
3. B	29. A	3. B	25. B	3. C	13. B	3. A	22. B
4. D	30. D	4. B	26. A	4. B	14. C	4. D	23. C
5. C	31. C	5. A	27. D	5. B	15. C	5. C	24. A
6. B	32. D	6. D	28. D	6. A	16. 4	6. B	25. B
7. D	33. C	7. A	29. B	7. D	17. $\frac{5}{13}$	7. D	26. B
8. B	34. A	8. C	30. A	8. D	18. 280	8. A	27. A
9. C	35. A	9. C	31. D	9. A	19. 3 or 4	9. B	28. C
10. D	36. B	10. C	32. C	10. D	20. 115	10. A	29. A
11. B	37. B	11. A	33. D			11. B	30. D
12. C	38. D	12. A	34. D			12. C	31. 53.8
13. D	39. B	13. D	35. B			13. B	32. 6 or 7
14. D	40. A	14. D	36. A			14. D	33. 25
15. B	41. B	15. B	37. B			15. A	34. 18
16. A	42. A	16. A	38. C			16. C	35. 96
17. C	43. B	17. D	39. A			17. D	36. $\frac{3}{4}$
18. C	44. C	18. A	40. B			18. C	or
19. B	45. A	19. C	41. C			19. C	.75
20. C	46. C	20. D	42. A				37. 20
21. A	47. B	21. B	43. C				38. 3,150
22. C	48. B	22. C	44. C				
23. D	49. D						
24. B	50. A						
25. A	51. C						
26. B	52. C						

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PRACTICE TEST 7 EXPLANATIONS

Section 1: Reading

1. **C** The question asks *for a summary of the passage*. Because it is a general question, it should be done after all of the specific questions. Whether it is referred to as worth *six hundred francs due, 430 francs to offer*, or simply *the burden he bore on his back*, the passage is mainly concerned with Deplis' tattoo and how he would pay for it, so an accurate summary would address this debt and the troubles he faced because of it. Choice (A) says that he is *unable to display a work of art*. Although it does describe his troubles, it is a specific detail and does not mention the debt, which was the prediction. Eliminate (A). Choice (B) mentions *whether or not to obey the law*, which does not match the prediction, so eliminate it. Choice (C) mentions the *unpaid debt* and that he *finds his choices restricted*. Both of these ideas match the prediction, so keep (C). Choice (D) states that he *tries to steal art to please a deceased relative*, which never happened and doesn't match the prediction, so eliminate it. The correct answer is (C).
2. **B** The question asks for *Henri Deplis' financial status before receiving the legacy*. Notice that the question that follows is a best evidence question, so this question and Q3 can be answered in tandem. Look at the answers for Q3 first. The lines in (3A) mention his place of birth, so look to see if those lines support any answers in Q2. His place of birth is not mentioned in any of the answers to Q2. Eliminate (3A). Next, consider the lines for (3B), which mention that his financial situation was *modest*. Choice (2B) is a close match, so draw a line connecting (3B) and (2B). Choice (3C) mentions *impoverished circumstances*, but the lines given refer to Signor Pincini rather than Deplis, so eliminate (3C). Choice (3D) refers to the *legacy dwindling to insignificant proportions*. While (2D) might be tempting, *destitute* is too strong and not supported by the line reference, so eliminate (3D). Deplis' financial status before receiving the legacy was *modest*. The correct answers are (2B) and (3B).
3. **B** (See explanation above.)
4. **D** The question asks what the word *exercise* means in line 38. Go back to the text, find the word *exercise*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. According to the text, the tattoo on Deplis' back was *Pincini's masterpiece* and *his greatest effort*, and the text states that the *little scope* of the tombstone cherubs would not be a good place to *exercise his favorite art*—tattooing. A good replacement word in this case would be something like “perform” or “do.” Choices (A) and (B) have no relation to performance and can be eliminated. Choice (C) is close, but a *masterpiece* is original and would not be done *repeatedly*; eliminate (C). *Ability to perform* matches the prediction. The correct answer is (D).
5. **C** The question asks about a detail regarding *the cherubs on Pincini's tombstone*. Use the lead words *cherubs* and *tombstone* to find the window to read. Lines 36–37 include the phrase *under an ornate tombstone, whose winged cherubs*. Pincini is a tattoo artist, so *the exercise of his favorite art* refers to tattooing. The passage describes Deplis' tattoo as covering his back, *from the collar-bone down to the waist-line*, which is a big tattoo. The *winged cherubs would have afforded singularly little scope*, offering a surface area much smaller than that of a human back, so the correct answer will have something to do with the small size of the cherubs. Choice (A) might initially look attractive, but the cherubs are not the artistic subjects of the tombstone. Eliminate (A). There is nothing in the text about religion or *religious icons*, so eliminate (B). Choice (C) matches the

- prediction, so keep it. Choice (D) is deceptive: while the cherubs are on the tombstone, the passage and the prediction state that they are small. Eliminate it. The correct answer is (C).
6. **B** The question asks why *Deplis reduced his offer to 405 francs*. Look for the lead words *405 francs* in the text and carefully read the window. Earlier in the paragraph, *Deplis' legacy had dwindled* and *there remained little more than 430 francs to offer to the widow*. In this context, *obliged* means he “had to,” so Deplis reduced the offer because his funds continued to dwindle. The paragraph indicates that Deplis was running out of money, not that he had an inclination to *trick Pincini's widow*; eliminate (A). Choice (B) states that he couldn't *afford the 430 francs*, which matches the prediction, so keep it. Choice (C) could be true, but the text does not state that Deplis wanted to annoy the widow. Eliminate it. While it is true that Deplis wanted Pincini's widow to *accept a lower offer*, there is no indication he *thought she would*, so eliminate (D). The correct answer is (B).
7. **D** The question asks why the author used the phrase *cancelled the sale of the work of art*. The widow *was properly indignant* and *Deplis' offer of 405 francs fanned the widow's indignation into a fury*. However, after the matter-of-fact phrase *she cancelled the sale of the work of art*, there is no further reference to the widow in the entire passage, beyond that *she had presented [the work of art] to the municipality of Bergamo, which had gratefully accepted it*. The tattoo has already been done, so her decision to cancel the sale and give the artwork to Bergamo is unrealistic. The correct answer should reflect this idea of the widow's unrealistic decision. Choices (A) and (B) refer to Deplis, not the widow, and can be eliminated. *The unpleasant temper of the widow* may be mentioned in the passage, but does not match the prediction, so eliminate (C). Choice (D) mentions an *unexpected shift in perspective*, which matches the unexpected idea that the widow has canceled the sale of the completed tattoo and offered the art to Bergamo. The correct answer is (D).
8. **B** The question asks what the word *celebrated* means in line 67. Go back to the text, find the word *celebrated*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The vapour bath proprietor had already been aware of *the celebrated Fall of Icarus*, so the correct answer must mean something like “well known.” Choices (A) and (C) might look like possible definitions of *celebrated*, but they do not match the prediction. Eliminate them. Choice (D) does not match the prediction at all and can be eliminated. *Famous* matches the predicted answer of “known.” The correct answer is (B).
9. **C** The question asks for a description of the trouble Henri Deplis encountered due to his tattoo. Notice that the question that follows is a best evidence question, so this question and Q10 can be answered in tandem. Look at the answers for Q10 first. Choice (10A) describes how he snuck out *as unobtrusively as possible* and *hoped his identity and that of the famous picture might be lost*, implying that the tattoo was trouble that he hoped to hide. Look to see whether those lines support any answers in Q9. In (9C), the phrase *persistently troublesome* is a good match, but (10A) does not support *obviously absurd*, so it's not a good connection. Choice (10A) does not support any of the other answers for Q9, so it can be eliminated. Choice (10B) mentions that the tattoo is a *burden*, which could support *socially awkward* in (9A) or *persistently troublesome* in (9C), but neither *well-intended* nor *obviously absurd* is supported by (10B), so eliminate it. Choice (10C) says that he was fervently thankful to go to *the neighbourhood of Bordeaux*. Like (10A), this shows that he hoped to get away and hide, so eliminate it for the same reason: it supports *persistently troublesome* but not *obviously absurd*. Choice (10D) states that *an array of official force barred his departure* because of a *stringent law which forbids the exportation of Italian works of art*, which means he couldn't leave the country because the tattoo on his back technically belonged to Italy. These lines support (9C) because *absurd* is a match for *unusual*, and the situation is clearly troublesome. Draw a line to connect (10D) and (9C). Without any support from Q10, (9A), (9B), and (9D) can be eliminated. The correct answers are (9C) and (10D).

10. **D** (See explanation above.)
11. **B** The question asks about the *function* of the *first paragraph* in the context of *the passage as a whole*. Since this is a general question, it should be done after the specific questions. The first paragraph gives some information about *natural gas* and the challenges of *[r]educing emissions from the natural gas system*. Then, it describes *an emerging argument that maybe there could be a direct substitute for fossil natural gas in the form of renewable natural gas (RNG)*. In the passage as a whole, the author rejects RNG as a solution, stating, *My recent research suggests that for a system large enough to displace a lot of fossil natural gas, RNG is probably not as good for the climate as is publicly claimed* (lines 58–61) and *zero greenhouse gas emissions is the target, and my research suggests that large deployments of RNG likely won't meet that goal* (lines 78–80). Therefore, the function of the first paragraph is to introduce a potential solution that the author argues against. Eliminate answers that don't match this prediction. Choice (A) is a Mostly Right/Slightly Wrong trap answer: the first paragraph does not *argue definitively* for renewable natural gas: the words *could be* and *maybe* are not definitive. Eliminate (A). Keep (B) because it matches the prediction. Eliminate (C) because the last two paragraphs discuss problems with renewable natural gas, and the first paragraph doesn't provide any examples of those problems. Eliminate (D) because, although the first paragraph does mention a *challenge*, (D) does not include the solution that is discussed in the first paragraph. Additionally, there is no evidence that *consumers* have not *understood* the challenge. The correct answer is (B).
12. **C** The question asks for the *central idea of the second paragraph*. This is the first question in a paired set, but it is easy to find, so it can be done on its own. Read the second paragraph as the window. The second paragraph states that the *climate benefits* of renewable natural gas *might not be as large as advocates claim* and that *decisions about whether to invest in it are being made now*. In lines 27–31, the author reasons that because *energy infrastructure...lasts a long time, it's important to consider the climate change emissions that society is committing to with new investments in these systems*. The author concludes, *this a great time to ask: What would investing in RNG mean for climate change?* Therefore, the second paragraph's central idea is that it is important to think about renewable natural gas's impact on climate change. Eliminate answers that don't match this prediction. Choice (A) is a Deceptive Language trap answer: the idea in (A) is included in the paragraph, but it is a supporting point rather than the paragraph's central idea. Eliminate (A). The same is true of (B), so eliminate (B). Keep (C) because it matches the prediction. Eliminate (D) because the second paragraph doesn't claim that renewable natural gas *will contribute significantly* to climate change; it argues only for studying how it will contribute. The correct answer is (C).
13. **D** The question is the best evidence question in a paired set. Because the previous question was a specific question, simply look at the lines used to answer Q12. Lines 27–34 provided the prediction for Q12. Of these lines, only lines 27–31 are included in the answers for Q13, and they are in (D). Keep (D). Eliminate (A), (B), and (C). The correct answer is (D).
14. **D** The question asks what the author *explicitly* mentions *as a disadvantage of using renewable natural gas as an energy source*. This is the first question in a paired set, so it can be done in tandem with Q15. Look at the answer choices for Q15 first. The lines for (15A) state, *At the moment, renewable natural gas is more a proposal than reality, which makes this a great time to ask: What would investing in RNG mean for climate change?* There is no mention of a *disadvantage of using renewable natural gas*, so these lines do not answer Q14. Eliminate (15A). The lines for (15B) state, *And releases will happen, from newly built production systems and existing, leaky transportation and user infrastructure*. In the context of the passage, these lines refer to the fact that greenhouse gases would be released if renewable natural gas were used—a disadvantage of using renewable natural gas. Look to see whether this information supports any of the answers to Q14. It supports (14D),

so draw a line connecting (15B) with (14D). The lines for (15C) state, *To be clear, RNG is almost certainly better for the climate than fossil natural gas because byproducts of burning RNG won't contribute to climate change.* These lines describe an advantage, rather than a disadvantage, of using renewable natural gas, so eliminate (15C). The lines for (15D) state that *renewable sources such as wind and solar energy do not emit climate pollution directly.* These lines give an advantage of *wind and solar energy*, rather than *a disadvantage of using renewable natural gas.* Note that, although these lines imply that using renewable natural gas emits climate pollution, the question asks for something that the author *explicitly* states. Eliminate (15D). Without any support in the answers for Q15, (14A), (14B), and (14C) can be eliminated. The correct answers are (14D) and (15B).

15. **B** (See explanation above.)
16. **A** The question asks what the word *primary* most nearly means in line 55. Go back to the text, find the word *primary*, and cross it out. Then read the window carefully, using context clues to determine another word that would fit in the text. The text says, *doing somewhat better than existing systems is no longer enough to respond to the urgency of climate change. The world's primary international body on climate change suggests we need to decarbonize by 2030 to mitigate the worst effects of climate change.* Therefore, *primary* could be replaced by a word such as “main.” Eliminate answers that don't match this prediction. *Principal* matches “main,” so keep (A). *Unmediated* means “done without anyone intervening,” which does not match “main,” so eliminate (B). *Simple* does not match “main,” so eliminate (C). *First* does not match “main,” so eliminate (D). Note that (B), (C), and (D) are all Could Be True trap answers based on other meanings of *primary* that are not supported by the text. The correct answer is (A).
17. **C** The question asks what the word *aggressive* most nearly means in line 77. Go back to the text, find the word *aggressive*, and cross it out. Then read the window carefully, using context clues to determine another word that would fit in the text. The text says, *When climate change first broke into the political conversation in the late 1980s, investing in long-lived systems with low but non-zero greenhouse gas emissions was still compatible with aggressive climate goals. Now, zero greenhouse gas emissions is the target.* Therefore, having *aggressive* goals could be described as “aiming to achieve large results quickly.” Eliminate answers that don't match this prediction. *Brash* means “tactless” or “rash;” it has a negative connotation and doesn't match the author's use of *aggressive* to describe the quick pursuit of large climate change goals, so eliminate (A). *Dominating* means “overbearing;” it doesn't match the prediction, so eliminate (B). *Ambitious* is a good descriptor for aiming to achieve large results quickly, so keep (C). *Combative* means “eager to fight;” it doesn't match the prediction, so eliminate (D). Note that (A), (B), and (D) are all Could Be True trap answers based on other meanings of *aggressive* that are not supported by the text. The correct answer is (C).
18. **C** The question asks for evidence that supports *the conclusion that preparations for using renewable natural gas could disrupt the development of other energy sources.* Look at the line references given in the answer choices, and eliminate the statements that don't support this claim. The lines for (A) state, *creating a large RNG system would require building mostly new production infrastructure, since RNG comes from different sources than fossil natural gas.* RNG refers to renewable natural gas, but these lines don't discuss disrupting *the development of other energy sources*, so eliminate (A). The lines for (B) state, *Such investments are both long-term commitments and opportunity costs.* These lines don't reference *other energy sources*, so eliminate (B). The lines for (C) state, *They would devote money, political will and infrastructure investments to RNG instead of alternatives that could achieve a zero greenhouse gas emission goal.* These lines indicate that the resources devoted to RNG would be taken away from *alternatives* (other energy sources) that emit *zero greenhouse gas*, so keep (C). The lines for (D) state, *When climate change first broke into the political conversation*

in the late 1980s, investing in long-lived systems with low but non-zero greenhouse gas emissions was still compatible with aggressive climate goals. These lines don't mention *renewable natural gas* or how it might *disrupt development of other energy sources*, so eliminate (D). The correct answer is (C).

19. **B** The question asks for a statement that is *supported by the data in the first figure*. Work through each answer choice using the figure. The percentages shown for *renewable energy* (11.1%) and *crude oil* (15.5%) are not the same, so eliminate (A). The percentage shown for *nuclear electric* (11.3%) is larger than that for *natural gas plant liquid* (3.6%), so keep (B). The percentage shown for *renewable energy* is smaller than that for *coal* (29.4%) so eliminate (C). The first figure shows the percentage of the United States' energy production that comes from various sources; it doesn't show how *efficiently* the energy is produced, so eliminate (D). The correct answer is (B).
20. **C** The question asks what *the two figures* suggest about *renewable energy sources*. First, locate the information about *renewable energy* in each figure. Figure 1 shows that renewable energy makes up 11.1% of primary energy production in the U.S. Figure 2 shows that renewable energy makes up 8.7% of primary energy consumption in the U.S. Eliminate answers that don't match the data in the figure. Eliminate (A) because the figures don't compare energy use in *urban* versus *rural areas*. Eliminate (B) because the figures don't give information about energy use in *areas where consumers protest the use of fossil fuels*. Keep (C) because 11.1% is *less than half* of total *energy production*, and 8.7% is *less than half* of total *energy consumption*. Eliminate (D) because 8.7% is not *more than half* of total *energy consumption*. The correct answer is (C).
21. **A** The question asks about the *overall sequence of events in the passage*. Because this is a general question, it should be done after the specific questions. The passage begins by discussing the discovery of crocodile relatives' footprints in South Korea. It then discusses other similar footprints, once attributed to pterosaurs, that are now attributed to the crocodile relatives. Then the passage explains that, based on the new identification of these footprints, scientists now believe that *pterosaurs* walked *on four legs while on the ground* rather than *walking on two legs*, as researchers previously thought. Eliminate answers that don't match the prediction. Keep (A) because it matches the prediction. Choice (B) is a Mostly Right, Slightly Wrong trap answer: though *a group of scientists collaborate*, there is no mention in the text of *results being verified and published*. Eliminate (B). Choice (C) is also a Mostly Right, Slightly Wrong trap answer: though *an expert is consulted* and *previous research is revisited*, the scientists changed *their original line of thinking*; they didn't *retain* it. Eliminate (C). Choice (D) states that *further research is proposed*, but there is no mention of *further research* in the passage. Eliminate (D). The correct answer is (A).
22. **C** The question asks what makes South Korea an *ideal site for studying ancient species*. Since there is no line reference, use lead words and the order of the questions to find the window. Q23 asks about line 23. Scan the first, second, and third paragraphs, looking for the lead words *South Korea* and information about what makes South Korea a good place to study ancient species. Lines 23–26 state that *Lockley* calls South Korea a "*tracker's heaven*" for *paleontologists* because of *the sheer number of fossil footprints found in the country*. Eliminate answers that don't match this prediction. Choice (A) does not match the prediction: in fact, there are scientists working in South Korea because it is a good place to study ancient species, not the other way around. Eliminate (A). Choice (B) is a Deceptive Language trap answer: though a university in South Korea is mentioned in the text, it is never stated that this university makes South Korea an *ideal site for studying ancient species*. Eliminate (B). Keep (C) because it matches the prediction. Eliminate (D) because the text never mentions how easy or difficult it is to excavate fossils in South Korea. The correct answer is (C).

23. **D** The question asks what Kyung Soo Kim did after *uncovering the “puzzling fossil tracks.”* Use the given line reference to find the window. Lines 26–28 state that *Kim had asked for [Lockley’s] opinion on large Cretaceous tracks uncovered at the site.* Therefore, after discovering the puzzling tracks, Kim asked another scientist for help with the tracks. Eliminate answers that don’t match this prediction. Choice (A) is a Deceptive Language trap answer: while *flying reptiles*, specifically *pterosaurs*, are mentioned in the window, Kim did not try to show that the tracks were made by the pterosaurs. Eliminate (A). Choice (B) is also a Deceptive Language trap answer: though the *Batrachopus* is mentioned in the window, the passage never states that Kim was studying their *movements*, only their *footprints*. Eliminate (B). Eliminate (C) because the passage doesn’t indicate that Kim *compared the footprints to modern dinosaur relatives*. Keep (D) because it matches the prediction. The correct answer is (D).
24. **B** The question asks what the word *recognized* most nearly means in line 31. Go back to the text, find the word *recognized*, and cross it out. Then read the window carefully, using context clues to determine another word or phrase that would fit in the text. The text says, *Lockley recognized them as something else. “I immediately saw that they were of the type known as Batrachopus.”* Therefore, *recognized them* could be replaced by a phrase such as “knew what they were.” Eliminate answers that don’t match this prediction. *Reinvented* means “remade” or “redid;” it does not match “knew what they were,” so eliminate (A). *Identified* matches “knew what they were,” so keep (B). *Showed appreciation for* doesn’t match “knew what they were,” so eliminate (C). *Gave credit to* doesn’t match “knew what they were,” so eliminate (D). Note that (C) and (D) are Could Be True trap answers based on other definitions of *recognized* that are not supported by the text. The correct answer is (B).
25. **A** The question asks for the purpose of *the description of the pterosaurs’ behavior* mentioned in the fourth paragraph. Read the fourth paragraph as the window, and a few lines before and after as needed. The fourth paragraph indicates that fossils found at the Jinju Formation *help address another fossil mystery... At a different South Korean location known as Gain-ri, there are tracks that were also previously believed to be left by large pterosaurs. Tracks found elsewhere in the world indicate that the flying reptiles folded their wings to waddle on all fours while on the ground. But researchers had thought the prints at Gain-ri were made by pterosaurs that moved on two legs to avoid dragging their wings through the muck.* The phrases *previously believed* and *researchers had thought* indicate that the author is explaining a theory that has been disproved or weakened by the new findings. The next sentence confirms this: *The new fossils have changed the analysis of these tracks—and have undercut interpretations of pterosaurs walking on two legs at other sites.* In other words, the author describes pterosaur behavior to explain a theory that changed based on the Jinju Formation fossils. Eliminate answers that don’t match this prediction. Keep (A) because it matches the prediction. Choice (B) is a Mostly Right, Slightly Wrong trap answer: while Kim’s findings weaken the theory discussed in paragraph four, it is never stated that *Kim intended to do so*. Eliminate (B). Eliminate (C) because the passage does not indicate that researchers no longer believe that pterosaurs *existed*; it indicates only that researchers changed their view of how pterosaurs walked, and which footprints were made by pterosaurs. Eliminate (D) because no *methods* used by researchers are mentioned in this paragraph. The correct answer is (A).
26. **B** The question asks for *an assumption researchers made in changing their theory that pterosaurs walked on two legs*. This is the first question in a paired set, so it can be done in tandem with Q27. The lines for (27A) state, *The presence of bipedal crocs at the fossil site was unexpected.* This information does not support any of the answer choices for Q26, so eliminate (27A). The lines for (27B) may seem to support (26C), as both refer to *flying reptiles*, but the lines for (27B) state that the pterosaurs *waddle on all fours while on the ground* while (26C) states that the pterosaurs were *more likely ... to walk on two legs*. Eliminate (27B). The lines for (27C) state that the *tracks*

at Jinju look much more like the prints made by crocodile relatives than those left by pterosaurs. This information supports (26B) because the researchers changed their theory about supposed pterosaur tracks at several locations based on the discovery of similar-looking fossils at the Jinju site. Draw a line connecting (27C) and (26B). The lines for (27D) mention *crocs*, but the question is about *pterosaurs*. Therefore, (27D) does not address Q26. Eliminate (27D). Without any support in the answers from Q27, (26A), (26C), and (26D) can be eliminated. The correct answers are (26B) and (27C).

27. **C** (See explanation above.)
28. **C** The question asks what *cast* most nearly means in line 72. Go back to the text, find the word *cast*, and cross it out. Then read the window carefully, using context clues to determine another word that would fit in the text. The text says *crocodiles are often cast as “living fossils” that have changed little since their origin in the Triassic*. Therefore, *cast* could be replaced with a word such as “portrayed.” Eliminate answers that don’t match this prediction. *Studied* does not match “portrayed,” so eliminate (A). *Served* does not match “portrayed,” so eliminate (B). *Described* matches “portrayed,” so keep (C). *Molded* does not match “portrayed;” this is a Could Be True trap answer based on another definition of *cast* that is not supported by the text. Eliminate (D). The correct answer is (C).
29. **A** The question asks what can be inferred about *modern crocodiles* based on the passage. This is the first question in a paired set, but it is easy to find, so it can be done on its own. Since there is no line reference, use lead words and the order of the questions to find the window. Q28 asks about line 72, so scan the final paragraph, looking for the lead word *crocodiles*. Lines 72–78 state that *skeletal and track evidence has shown that crocs in the Age of Dinosaurs were varied, active animals that often looked very different from the swimming ambush predators that we are familiar with today*. In other words, modern crocodiles look different from their ancestors. Eliminate answers that don’t match this prediction. Keep (A) because it matches the prediction. Eliminate (B) because the passage doesn’t discuss the amount of *time* modern crocodiles spend in the water, nor does it discuss what would make modern crocodiles a *dominant species*. Eliminate (C) because it is contradicted by the passage: the crocodylian ancestors discussed in the passage *strode around on two legs*, whereas modern crocodiles are described as *swimming*. Eliminate (D) because the size of modern crocodile *footprints* is not discussed. The correct answer is (A).
30. **D** The question is the best evidence question in a paired set. Because the previous question was easy to find, simply look at the lines used to answer Q29. Lines 72–78 provided the prediction for Q29: *skeletal and track evidence has shown that crocs in the Age of Dinosaurs were varied, active animals that often looked very different from the swimming ambush predators that we are familiar with today*. Eliminate (A), (B), and (C). The correct answer is (D).
31. **C** The question asks what the word *free* means in line 20. Go back to the text, find the word *free*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. According to the sentence after line 20, Jefferson believes *In general, [the citizens] will elect the really good and wise*. It is the *free election* that will create this situation, so the correct answer should mean something like “open” or “unhindered.” *Complimentary* means without cost, so eliminate (A). While the election would indeed be *available*, the key distinction is that it is available to all, “unrestricted,” so eliminate (B). Choice (C), *unrestricted*, matches the prediction, so keep it. The election is not extra, or *gratuitous*, so eliminate (D). The correct answer is (C).
32. **D** The question asks for the *best way to prevent the rise of the artificial aristocracy*. Notice that the question that follows is a best evidence question, so this question and Q33 can be answered in

tandem. Look at the answers for Q33 first. Choice (33A) only defines the term *artificial aristocracy* but provides no *way to prevent the rise*. This doesn't connect to any answer choices in Q32, so eliminate (33A). Similarly, (33B) only says *provision should be made to prevent its ascendancy* without prescribing a *best way*. The answers for Q32 all offer specific plans, so (33B) does not support any of the answers for Q32. Eliminate (33B). Choice (33C) refers to *the best remedy*, which is *to leave to the citizens the free election*. Look to see whether those lines support any answers in Q32. Choice (32D) says to *allow voters to choose their own leaders*, which is a close match. Connect (33C) and (32D). Choice (33D) says *a change has sensibly taken place in the mind of Man*. Look to see whether those lines support any answers in Q32. None of the choices in Q32 mention this idea, so eliminate (33D). Without any support from Q33, (32A), (32B), and (32C) can be eliminated. The correct answers are (32D) and (33C).

33. C (See explanation above.)
34. A The question asks what the word *fashion* means in line 45. Go back to the text, find the word *fashion*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The author claims that *Fashion has introduced an indeterminate use of the word "talents."* The use of quotes indicates that he doesn't believe them to be talents at all. The next sentence lists the so-called talents, *beauty, stature... graceful attitudes and motions, gait, air, complexion*, which are all more trendy attributes. The correct answer should mean something like "trend." *Convention* matches the prediction, so keep (A). *Demeanor, model, and construction* don't mean anything like "trend;" eliminate (B), (C), and (D). The correct answer is (A).
35. A The question asks when *an artificial aristocracy begins*. Since there is no given line reference, search for the lead words *artificial aristocracy* in Passage 2. That phrase is mentioned several times in paragraph 7, so read the necessary window around lines 57–68 to predict the correct answer. In the fourth sentence of the paragraph, Adams says that when *aristocracies are established by human laws, and honor, wealth, and power are made hereditary by municipal laws and political institutions, then [he] acknowledge[s] artificial aristocracy to commence*. Therefore, the correct answer will reference this list of conditions. *Laws [that] give one group power over another* matches the prediction, so keep (A). *All people are given the right to vote* does not match the prediction, so eliminate (B). *A democracy turns into a monarchy* does not match the prediction, so eliminate (C). *The virtuous and talented control the government* does not match the prediction, so eliminate (D). The correct answer is (A).
36. B The question asks where *political advantages come mainly from*. Notice that the question that follows is a best evidence question, so this question and Q37 can be answered in tandem. Look at the answers for Q37 first. Choice (37A) discusses the *natural aristocracy among men* but not *political advantages*. These lines do not support any of the answers for Q36, so (37A) can be eliminated. Choice (37B) mentions *commands or influences true votes in society* and that the influence comes from *any one of these talents*. Look to see whether those lines support any answers in Q36. Choice (36B) mentions *a wide range of characteristics*, which is a close match. Connect (37B) and (36B). Choice (37C) mentions that some are born with *birth and wealth* and some with *genius, strength or beauty*, but does not relate these attributes to *political advantage*. Because these lines do not support any of the answers for Q36, (37C) can be eliminated. Choice (37D) mentions that the *artificial aristocracy* will take power only when *corruption in elections becomes dominant and uncontrollable*. Look to see whether those lines support any answers in Q36. Choice (36D) might be tempting because it mentions *municipal laws and political institutions*, but that's deceptive language. The author states that it is *corruption* that gives rise to *political advantages*. Eliminate (36D).

nate (37D) because it does not have a match. Without any support from Q37, (36A), (36C), and (36D) can be eliminated. The correct answers are (36B) and (37B).

37. **B** (See explanation above.)
38. **D** The question asks why *the author of Passage 2 refers to a statement made in Passage 1*. Return to the passage and read the necessary window around lines 71–80. From the final paragraph, it is clear that Adams would trust neither of the groups defined by Jefferson and believes Jefferson’s *distinction...will not help the matter*. Adams refers to the statement in order to disagree with this particular statement by Jefferson. Choice (A) can be eliminated because there is no mention of Jefferson’s *working vocabulary*. While Adams takes issue with Jefferson’s *distinction between the aristoi and pseudo aristoi*, he is not quarreling with Jefferson’s *central theme*. In fact, the second passage begins with *We are now explicitly agreed*. Eliminate (B). Choice (C) begins with *agree*, which is the opposite of the prediction. Eliminate (C). Choice (D) matches the prediction. The correct answer is (D).
39. **B** The question asks *which best describes the overall relationship between Passage 1 and Passage 2*. Because this is a general question, it should be done after all of the specific questions. Adams responds to Jefferson’s claim in Passage 1 and in the opening two sentences of Passage 2, Adams outlines his position: *We are now explicitly agreed, in one important point...but...it is not yet certain that we are perfectly agreed in sense*. It can therefore be predicted that Passage 2 provides a qualification, but not a complete alternative to Jefferson’s stance in Passage 1. *Further develops and considers the historical context* do not match the prediction of a disagreement, so eliminate (A) and (C). While Adams addresses Jefferson’s *key terms*, he disagrees with them rather than *redefines* them, so eliminate (D). The correct answer is (B).
40. **A** The question asks what statement the authors of both passages would agree with regarding *advantages people may have over each other*, indicating that it is a general question that should be done after all of the specific questions. In each passage’s opening sentence, the authors agree that *there is a natural aristocracy among men*, so it can be predicted that both would agree there are advantages that are innate. Choice (A) mentions *born talented*, which matches the prediction of natural or innate, so keep it. The phrases *Wealth and power* and *beauty and talent* are deceptive language. The authors do not agree that one is *more important* than the other, so eliminate (B). Eliminate (C) because that statement *Advantages one gains later in life are more powerful* is the opposite of the prediction. Eliminate (D) because neither *those who earn their power* nor *those who have it handed to them* matches the prediction of natural or innate advantage. The correct answer is (A).
41. **B** The question asks how *the author of Passage 1 would respond to the points made in lines 60–75*. Since this is a question about both passages, it should be done last. Return to the text and read the necessary window (“Birth and wealth...talents”). Adams’s position is that human laws lead to *artificial aristocracy, which is the origin of all monarchy*. Jefferson would disagree because he believes that if we *leave to the citizens the free election...they will elect the really good and wise*. It can be predicted that the correct answer will discuss free elections. Eliminate (A) because *Passing power down through families* is not the same as a free election, so it does not match the prediction. Keep (B) because *leaving the decisions in the hands of the voters will ultimately keep the system balanced* is a direct description of a free election. Eliminate (C) because *Rank and birth, science and talent*, and the order in which they are admired have nothing to do with the prediction. Eliminate (D) because the *American system could allow for an unfaithful leader* is the opposite of the prediction. The correct answer is (B).

42. **A** The question asks what the word *removal* means in line 22. Go back to the text, find the word *removal*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. According to the end of the paragraph preceding line 22, *the Hudson Bay Company implemented their “scorched earth” or “fur desert” policy to eliminate all fur-bearing animals...As a result, beaver were nearly extirpated*, so the correct answer should mean something like “nearly eliminated.” The language in (A), *significant reduction*, closely matches the prediction, so keep it. The *removal* was not *of an individual beaver*, nor was it a *surgical extraction*; eliminate (B) and (D). The phrase *complete extinction* is too extreme, so eliminate (C). The correct answer is (A).
43. **B** The question asks for a *broader hypothesis* that was tested to obtain results *consistent with “steelhead population responses.”* Notice that the question that follows is a best evidence question, so this question and Q44 can be answered in tandem. Look at the answers for Q44 first. Choice (44A) states that *a decrease...was first perceived*. This is an observation, not a hypothesis, and it does not support any of the answers for Q43, so eliminate (44A). Choice (44B) mentions *the removal of beaver...exacerbated the occurrence of stream channel incision, where a rapid downcutting of the stream bed disconnects the channel from its floodplain*. Look to see whether those lines support any answers in Q43. Choice (43D) may be tempting, but it contains deceptive language. It states that *Stream channel incision...is exacerbated by...large numbers of beaver dams*, which is the opposite of what the passage states. Eliminate (44B) because it has no match in Q43. Choice (44C) mentions what was *hypothesized*, so look to see whether those lines support any answers in Q43. Choice (43B) says *Reconnecting a stream’s channel and floodplain can occur more quickly through the construction of natural or artificial beaver dams*, which matches *beaver dams or simulated beaver dams that we construct...can greatly accelerate the incision recovery process* in (44C) and with “the steelhead population responses” because *BDA and beaver dams led to large changes in both fish and beaver habitat*. Connect (44C) and (43B). Choice (44D) mentions how *BDA were built* but does not discuss a broader hypothesis, so eliminate it. Without any support from Q44, (43A), (43C), and (43D) can be eliminated. The correct answers are (43B) and (44C).
44. **C** (See explanation above.)
45. **A** The question asks for *the primary purpose of the third paragraph* in the context of the entire passage. Return to the passage and carefully read the window. The paragraph begins with *BDA were built*, which describes the experiment that was conducted. It then states that the *addition of BDA into Bridge Creek led to an immediate and rapid increase in the number of natural beaver dams*, which describes the results of the experiment. The purpose of the paragraph is to describe an experiment and its results. Keep (A) because *illustrate methods and results of research* closely matches the prediction. Choice (B) seems tempting because *detail the findings of research* closely matches the prediction. However, the experiment was not *designed to investigate beaver responses* but rather to investigate *fish population response*. If a choice is slightly wrong, it’s all wrong, so eliminate (B). Eliminate (C) because the paragraph does not *describe the plan that will be followed* but an actual experiment with results. For the same reason, eliminate (D). The paragraph does not suggest a *potential experiment could be carried out in the future*. The correct answer is (A).
46. **C** This question asks for an indirect effect of building BDA in Bridge Creek. Notice that the question that follows is a best evidence question, so this question and Q47 can be answered in tandem. Look at the answers for Q47 first. Choice (47A) mentions that *beaver were nearly extirpated*, so look to see whether those lines support any answers in Q46. None of the choices are supported by the lines, so eliminate (47A). Choice (47B) mentions a *rapid increase in the number of natural beaver dams*, so look to see whether those lines support any answers in Q46. Choice (46C) is a close match, so connect (47B) and (46C). Choice (47C) mentions that the BDA *caused the fish*

population response, so look to see whether those lines support any answers in Q46. Since none of the answers for Q46 are supported by those lines, eliminate (47C). Choice (47D) mentions that BDAs provide *fish a greater selection of locations...while reducing migration distances*, so look to see whether those lines support any answers in Q46. Since none of the choices matches that idea, eliminate (47D). Without any support from Q47, (46A), (46B), and (46D) can be eliminated. The correct answers are (46C) and (47B).

47. **B** (See explanation above.)
48. **B** The question asks what effect the words “*partially*,” “*suspect*,” and “*partly*” have on the *tone of the paragraph*. Return to the passage and read the window. In the previous paragraph, the experiment provided *compelling evidence that beavers increased the quantity of juvenile habitat*. *Compelling* is directly in contrast to the words “*partially*,” “*suspect*,” and “*partly*” in the fifth paragraph, so these words were used to show the conclusions in this paragraph were less compelling. There is no indication of *the authors’ nervousness* or of them being *afraid*, so eliminate (A) and (D). There is also no indication that these are *unwelcome results*, so eliminate (C). *That other factors may be important* matches the prediction stating these conclusions were less compelling. The correct answer is (B).
49. **D** This question asks for an unstated assumption about *habitat complexity*. Even though the question asks for an *unstated assumption*, the correct answer will still be supported by the text. The passage states that an *increase in habitat complexity* is partly responsible for the increases in the steelhead population. Therefore, the correct answer should somehow connect to the idea that increasing complexity positively affects the populations. The complexity increased with the construction of the BDAs, which happened well after 1900, so (A) can be eliminated. Choice (B) might initially look attractive because it mentions *the addition of dams*, but notice the *always* in the answer choice. That is a strong word that is not supported by equally strong wording in the text, so (B) can be eliminated. The prediction has nothing to do with negative effects of habitat complexity on predators, so (C) can be eliminated. Choice (D) is not specifically mentioned, but if increasing habitat complexity increases steelhead population, and the steelhead population increased after the construction of the BDAs, the complexity was not maximized prior to that construction. The correct answer is (D).
50. **A** The question asks for *the greatest number of dams on Bridge Creek during the twenty years prior to the installation of BDAs, according to the figure*. Look at the figure to see the highest point for the Bridge Creek line *before* the black vertical line. The high point is about 100 dams in 1992. Choice (A) at 105 is close, while anything 125 and above is too high, so eliminate (B), (C), and (D). The correct answer is (A).
51. **C** The question asks for *the last year a control reach had a greater number of dams than a treatment reach*, so look at the figure to see the last time the dashed line was above the solid line. The answer will be somewhere between 2005 and 2010. The correct answer is (C).
52. **C** The question asks whether *the graphic [supports] the author’s claim that increasing the number of real or simulated beaver dams leads to an increase in steelhead populations*, so look at the figure to see if there are any connections that can be drawn. While the correlation is drawn in the passage, there is no reference at all to steelhead population numbers in the figure, so the correct answer will be “no.” Eliminate (A) and (B). Whether or not the graphic mentions *floodplain access* has no relation to the *steelhead populations*, so eliminate (D). That *the data does not provide a link between the number of dams and the quality of steelhead habitats* matches the prediction. The correct answer is (C).

Section 2: Writing and Language

- A** Note the question! The question asks what the most appropriate introduction to the passage is, so it is testing consistency. If the content of the underlined portion is consistent with the topics presented in the passage, then it is correct. The passage discusses paternity leave and the need to provide both men and women time off with newborn children. The *personal needs of workers* are discussed in (A), so keep it. Choice (B) is vague and does not address what workers need, so eliminate (B). Choice (C) is focused on profit as opposed to worker needs; eliminate (C). Although (D) addresses worker needs, it is too broad and references *all employees*. Since the passage is focused primarily on paternity leave for male employees, (D) can be eliminated. The correct answer is (A).
- D** The phrase after *contemporary workers* is changing in the answer choices, so the question is testing precision and concision. There is also the option to DELETE; consider this choice carefully as it is often the correct answer. First, determine whether the phrase is necessary. The sentence already begins with the words *contemporary employers*, which means the employers of today. There is no need to repeat that idea. Eliminate any choices that are redundant. Choices (A), (B), and (C) each repeat the idea of *contemporary*, so eliminate them. The correct answer is (D).
- B** Prepositions change in the answer choices, so this question tests idioms. There is also the option to DELETE; consider this choice carefully as it is often the correct answer. A preposition is necessary to complete the sentence, so eliminate (D). The correct idiom is *conducted by*; eliminate (A) and (C). The correct answer is (B).
- B** Pronouns are changing in the answer choices, so the question is testing consistency of pronouns. A pronoun must be consistent in number and case with the noun it is replacing. The pronoun refers to the noun *paternity leave*, which is singular. To be consistent, the underlined pronoun should also be singular. *They* and *those* are plural, so eliminate (A), (C), and (D). The correct answer is (B).
- A** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject and with the other verbs in the paragraph. The subject of the verb is the *deficit*, which is singular (ignore the prepositional phrase *in leave* between the subject and the verb). To be consistent, the verb in the answer choices must also be singular. Eliminate (B) since *are* is a plural verb. The verb form must also be consistent with the tense of other verbs in the sentence. The sentence immediately following this sentence uses the present verb *is*. Eliminate (D) because *had been* is a past tense verb. Choice (C) is not as concise as (A), so it can be eliminated as well. The correct answer is (A).
- D** Note the question! The question asks for the choice that best supports the statement in the previous sentence, so it's testing consistency. If the content of the underlined portion is consistent with the previous sentence in the passage, then it is correct. The previous sentence discusses the results of a study and states that *nine out of ten men considered paternity leave to be a factor of at least marginal importance*, so the best answer should be consistent with that information. Choice (B) discusses mothers having time off and that is not relevant to whether paternity leave is an important factor, so eliminate (B). Choice (C) goes against the claim that paternity leave is important; eliminate (C). Although (A) is consistent with the point being made, (D) offers a more precise supporting statement. Choice (D) is the correct answer.
- A** Note the question! The question asks whether the sentence should be added, so it's testing consistency. If the content of the new sentence is consistent with the ideas surrounding it, then it should be added; otherwise, it should not be added. The paragraph discusses the results of a

study conducted by the U.S. Department of Labor. The new sentence indicates that *The younger a male individual respondent was, the more likely he was to rate the issue of paternity leave as important when considering employment*, so it is consistent with the ideas in the paragraph. The sentence should be added. Eliminate (C) and (D). Eliminate (B) because there is no challenge presented to this information in the last sentence of the paragraph. The correct answer is (A).

8. **C** Note the question! The question asks about combining sentences, so it's testing precision and concision. Choice (A) inaccurately combines the *larger societal issue* with *what employees want*. Additionally, *they*, which is plural, refers incorrectly to the singular noun *paternity leave*; eliminate (A). Choice (B) also inaccurately combines *what potential employees want* and *paternity leave having an impact*, so eliminate (B). Choice (D) never mentions that these are reasons paternity leave is important and is therefore not precise; eliminate (D). Choice (C) correctly orders the reasons, so it is the most precise. The correct answer is (C).
9. **C** Apostrophes are changing in the answer choices, so the question is testing apostrophe usage. When used with a noun, an apostrophe indicates possession. In this sentence, the parents are not possessing anything, so eliminate (A) and (B). The *child* does possess its own *life*, so the apostrophe in *child's* is necessary; eliminate (D). The correct answer is (C).
10. **C** Commas are changing in the answer choices, so the question is testing comma usage. The sentence contains a list of three things: 1) *bond with their children earlier*, 2) *participate in their household more actively*, and 3) *raise children with a greater sense of gender equality*. There should be commas between the items in the list, so eliminate (D) because this answer does not include a comma after *actively*. There should not be a comma after *and*, so eliminate (A). In (B), the adverb *actively* has been changed to the adjective *active*. *Actively* modifies the verb *participate*, so an adverb is needed. Since adjectives can only modify nouns, eliminate (B). The correct answer is (C).
11. **A** Transitions change in the answer choices, so this question tests consistency of ideas. A transition must be consistent with the relationship between the ideas it connects. The sentence states that *paternity leave not only benefits a lone employee and his or her family—it improves society as a whole*. This sentence summarizes the points made in the paragraph, so the answer should be consistent with that summary. Eliminate (B) and (D) as they change direction and are therefore inconsistent with the summary and paragraph. While the passage is in fact complete, nothing rhetorically has been completed, so *completely* is incorrect; eliminate (C). The correct answer is (A).
12. **A** Note the question! The question asks which choice *provides the most logical introduction to the sentence*, so it tests consistency of ideas. There is also the option to DELETE; consider this choice carefully as it is often the correct answer. Deleting the underlined portion makes the sentence incomplete, so eliminate (D). Determine the subject of the sentence and find the answer that is consistent with that idea. The non-underlined portion gives the example of *whether a state holds a primary or a caucus*. The previous sentence says that *similarities [among states] are hard to come by*. Choice (A), which mentions a *difference*, is consistent with these ideas, so keep (A). Choice (B) discusses a similarity rather than a difference, so it is inconsistent with the paragraph; eliminate (B). Choice (C) mentions *all democratic nations*, which is not consistent with *states*, so eliminate (C). The correct answer is (A).
13. **D** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *One major difference among the states pertaining to elections for federal offices, for example, presidential or congressional candidates*, is not an independent clause. The second part of the sentence, *is whether a state holds a primary or a caucus*, is also not an independent clause. Periods and semicolons can only be used between two independent clauses, so eliminate (A) and (C). A colon can only be used after an independent clause, so

- eliminate (B). Choice (D) appropriately uses a comma to set off the unnecessary phrase *for example, presidential or congressional candidates* from the rest of the sentence. The correct answer is (D).
14. **D** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *These two systems, primaries and caucuses, are meant to accomplish the same goal*, is an independent clause. The second part of the sentence, *nominate major-party candidates for office*, is not an independent clause. A semicolon can only be used between two independent clauses, so eliminate (A). A comma followed by the word *and* can also only be used between two independent clauses, so eliminate (C). Some type of punctuation is needed to separate the two parts of the sentence, so eliminate (B). Choice (D) appropriately uses a colon to separate the independent clause from a related explanation. The correct answer is (D).
15. **B** Note the question! The question asks if an addition should be made, so it is testing consistency and precision. If the content of the new sentence is consistent with the ideas surrounding it, then it should be added. The paragraph describes how caucuses work, and this new addition to the sentence discusses the two ways votes can be counted at caucuses. This content is consistent with the ideas in the text and provides more precise information. The sentence should be added. Therefore, eliminate (C) and (D). Eliminate (A) because it states that *caucuses are more effective than primaries*, which is not consistent with the information in either the sentence or paragraph. The correct answer is (B).
16. **A** Pronouns are changing in the answer choices, so the question is testing consistency. A pronoun must be consistent in number with the noun it is replacing. The plural pronoun *themselves* refers to the noun *voters*, which is plural. To be consistent, the pronoun in the correct answer choice must also be plural. Eliminate (B) and (D) because both answers present singular pronouns. The pronoun *their* is a possessive pronoun that should not be placed together with the word *selves*; eliminate (C). The correct answer is (A).
17. **D** Note the question! The question asks whether the sentence should be deleted, so it's testing consistency. If the content of the current sentence is consistent with the ideas surrounding it, then it should not be deleted. The paragraph discusses the history and reasoning for caucuses. The sentence at the beginning of the paragraph states that *Historically, caucuses made a great deal of practical sense*. Therefore, the sentence is consistent with the ideas in the paragraph, and the sentence should not be deleted. Eliminate (A) and (B). The sentence does not provide any *specific example*, so eliminate (C). The sentence serves as an introduction to the discussion in this paragraph, so keep (D). The correct answer is (D).
18. **A** Commas are changing in the answer choices, so the question is testing comma usage. The phrase *if any* is unnecessary information, so it should be surrounded by commas. Eliminate (B) and (D) because they each contain only one comma. Eliminate (C) because it includes an unnecessary additional comma after *had*. The correct answer is (A).
19. **C** Note the question! The question asks *which of the following logically follows the previous sentence*, so it is testing consistency. The paragraph discusses the historical reasoning behind and manner in which caucuses function, so the correct answer will further explain one of these two concepts. The previous sentence in particular defines how voters *selected representatives*, not the candidates themselves. The votes discussed in the paragraph are for *representatives*, not for the *president*, so eliminate (A). Choice (B) does not make the paragraph more precise, so eliminate (B). Choice (C) is consistent with the idea of voters voting *for their caucus representatives*, so keep (C). The idea that elections *rarely used this system* is not consistent with the paragraph, so eliminate (D). The correct answer is (C).

20. **D** Note the question! The question asks which choice best maintains the tone established in the passage, so it is testing consistency. The tone of the passage is informative and neutral, so the correct answer should be consistent with that tone. Eliminate (A) and (B) because *horrid* and *deplorable* are both negative words that do not match the neutral tone of the passage. Although (C) is neutral, *litigious* is not consistent with the information provided in the passage as there is no discussion of settling legal disputes in the paragraph. Choice (D) is consistent with the passage, as the paragraph discusses what is difficult about caucuses as compared to primaries. According to the following sentence, caucuses are *difficult to keep organized* and *difficult to keep civil*. The correct answer is (D).
21. **B** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject and with the other verbs in the sentence. The subject of the sentence is *caucuses*, which is plural, so the verb must also be plural. Eliminate (A) because of the singular verb *is*. The first part of the sentence states that they *are...difficult*, so the second part of the sentence must use the same structure. Keep (B) because it uses the word *are* and correctly uses the pronoun *they* to refer to the caucuses. Eliminate (C) and (D) because *being* is not consistent with *are...difficult*. The correct answer is (B).
22. **C** Pronouns are changing in the answer choices, so the question is testing consistency of pronouns. A pronoun must be consistent in number with the noun it is replacing. The underlined pronoun *it* refers to the noun *caucuses*, which is plural. To be consistent, the pronoun in the correct answer must also be plural. Eliminate (A) and (B). Verbs change in the answer choices, so this question also tests the consistency of verbs. The rest of the paragraph is in the present tense and there is no reason to change the tense. Choice (D) changes the tense to *have been*, and also incorrectly uses the singular noun *an election*, which is not consistent with *caucuses*, so eliminate (D). The correct answer is (C).
23. **D** Pronouns are changing in the answer choices, so the question is testing consistency of pronouns. The pronouns refer to *European explorers*, so the correct answer must be a plural pronoun that can refer to multiple people in order to be consistent with the non-underlined portion of the sentence. Both (B) and (C) refer to things, not people, so eliminate both. *They* makes the phrase *they noticed the sloth's slow and lackadaisical movements* an independent clause. The commas in this sentence surround unnecessary information, and a phrase providing unnecessary information such as this cannot be an independent clause; eliminate (A). The correct answer is (D).
24. **D** The vocabulary is changing in the answer choices, so this question is testing precision of word choice. Look for a word with a definition that is consistent with the other ideas in the sentence. The sentence describes the sloth's movements as *slow*, and the first sentence describes the sloth as *extremely lazy*. Choice (B), *careless*, can be eliminated because *slow* and *lazy* do not necessarily mean *careless*. *Lackadaisical* means to be carelessly lazy; it can be eliminated for the same reason, so eliminate (A). The sentence is describing *the sloth's slow and _____ movements*; describing *movements* as *inactive* would be contradictory, so eliminate (C). Only (D), *leisurely*, which means lazy, is consistent with *slow*. The correct answer is (D).
25. **B** Note the question! The question asks which option best combines the two sentences, so it's testing precision and concision. Look for the answer that combines the sentences while maintaining the meaning of the originals. The movie *Zootopia* was produced by *Disney*, so these two phrases should be next to each other to make this meaning precise. Eliminate (A) and (C). Choice (D) changes the meaning by stating that *Flash slows down the movie*, not *the main characters*. Eliminate (D). The correct answer is (B).

26. **A** Pronouns are changing in the answer choices, so the question is testing pronoun choice. The pronouns refer to *the sloth*, which is singular, so the underlined pronoun must also be singular. Eliminate (D), *their*, which is plural. Choice (C), *there*, can also be eliminated, as *the sloth* is not a place. With pronouns, apostrophes create contractions. “It is” does not make sense in the sentence, so eliminate (B). The pronoun *Its* is correct because *day* is possessed by *the sloth*, so the possessive form of the pronoun should be used. The correct answer is (A).
27. **D** The length of the phrase changes in the answer choices, so this question tests precision and concision. There is also the option to DELETE; consider this choice carefully as it is often the correct answer. In this case, both (A) and (B) make the phrase after the comma an independent clause. *The sloth is categorized as a folivore because the bulk of its diet consists of the leaves, buds, and tender shoots of Cercropia* is also an independent clause. A comma on its own cannot be used between two independent clauses, so eliminate (A) and (B). Choice (C), *being*, makes the sentence less precise because it confuses whether the subject of the sentence is *the sloth* or *the leaves, buds, and tender shoots of Cercropia*, so eliminate it. Choice (D) is concise and gives the sentence a precise meaning. The correct answer is (D).
28. **D** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *Take the sloth’s stomach*, is an independent clause. The second part of the sentence, *it is very large with multiple compartments*, is also an independent clause. The phrase *for example* is unnecessary information that must be set off from the rest of the sentence, so eliminate (A) because there is no punctuation before *for example*. Eliminate (B) because two independent clauses must be separated by some type of punctuation other than commas alone. The *example* given in the sentence is *the sloth’s stomach*, which is introduced in the first part of the sentence; the second part of the sentence gives more detail about the stomach. Eliminate (C) because it incorrectly makes *for example* part of the second part of the sentence. Choice (D) correctly places *for example* in the first part of the sentence and appropriately uses a colon to separate the two parts of the sentence. The correct answer is (D).
29. **B** Note the question! The question asks for the best placement of sentence 5, so it tests consistency of ideas. The sentence must be consistent with the ideas that come before and after it. The first part of sentence 5 refers to *leaves being nutritionally poor*, so this sentence should come after the reference to eating leaves in sentence 1. The second part refers to *various adaptations*, so sentence 5 should come before any talk about adaptations. Sentence 1 discusses the idea of the sloth eating leaves, and sentence 2 introduces the adaptations of the sloth’s stomach. To make the ideas in the paragraph consistent, sentence 5 should go between sentences 1 and 2. The correct answer is (B).
30. **A** Note the question! The question asks for the choice that accurately interprets the graph, so this question is testing consistency. Read the labels on the graph carefully, and look for an answer that is consistent with the information given in the graph. The sentence compares the sloth’s body temperature to the other mammals in the graph. In the graph, the other mammals have body temperatures between 36.5 and 39.7 degrees Celsius, whereas the sloth’s body temperature is only 32 degrees Celsius. The sloth’s body temperature is clearly lower than those of the other mammals in the graph; (B) and (C) are inconsistent with this, so eliminate them. The sloth’s temperature is between 4.5 and 7.7 degrees below the temperature of the other mammals, which is consistent with *approximately five degrees Celsius lower*. Keep (A). The sloth’s temperature is not *half* that of the other temperatures, so eliminate (D). The correct answer is (A).
31. **D** Verb tense is changing in the answer choices, so the question is testing the consistency of verbs. Select the choice that is consistent with the other verbs in the sentence. The first part of the sentence states *the sloth does not keep its temperature in as limited a range*. Match the tense and mean-

- ing closest to *does not*, which is the present tense. Choice (B), *will*, is future tense and (C), *did*, is past tense; eliminate them. *Has* is not consistent with *does not*, so eliminate (A). Choice (D), *does*, is consistent with *does not*. The correct answer is (D).
32. **C** Note the question! The question asks for the choice that is most consistent with the graph, so it tests consistency. Read the labels on the graph carefully, and look for an answer that is consistent with the information given in the graph. Choice (A) says that *a healthy sloth's active body temperature can be greater than that of a healthy dog*. However, according to the graph, the average body temperature of an active sloth is 32 degrees Celsius, whereas the average body temperature of a healthy dog is 38.9 degrees Celsius. The sentence does say that a sloth's temperature can vary by 2 degrees and a dog's by 0.4 degree, which gives a possible high temperature of 34 degrees Celsius for the sloth and a possible low temperature of 38.5 degrees Celsius for the dog. The dog's temperature is still higher; eliminate (A) because it is inconsistent with the data. Eliminate (D) for the same reason. Choice (B) says that *a healthy dog's body temperature is greater than that of any mammal shown in the graph*, but both the cat's and the goat's body temperatures are higher; eliminate (B). Choice (C) is consistent with the data for a dog's body temperature in comparison to that of the sloth, so keep (C). The correct answer is (C).
33. **D** Note the question! The question asks for the choice that *conveys how the sloth's inactivity is the result of adaptations to its diet*, so it tests consistency. Eliminate answers that are not consistent with the purpose stated in the question. Choices (A), (B), and (C) do not refer to the sloth's *diet*, so eliminate (A), (B), and (C). Choice (D) discusses the sloth's *food source*, which is consistent with *its diet*, and claims that its diet *is not a rich source of nutrients*, which is the cause of *the sloth's inactivity*. The correct answer is (D).
34. **D** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. Note that there is a dash in the non-underlined portion of the sentence before the phrase *Oscar Wilde's "The Queen is not a subject," for example*. This phrase is not necessary to the main meaning of the sentence, so it should be set off by some type of punctuation. Because there is a dash at the beginning of the phrase, there should also be a dash at the end of the phrase. Eliminate (A), (B), and (C) because none of them uses a dash. The correct answer is (D).
35. **B** The form of the verb *relies* is changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject, which in this case is *puns*. The verb should be plural in order to be consistent with this subject. Eliminate (A), *relies*, and (C), *has relied*, because both are singular. Choice (D), *relying*, makes the sentence incomplete because *relying* cannot be the main verb. Only (B), *rely*, is consistent with the subject and makes the sentence complete. The correct answer is (B).
36. **A** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *From Shakespeare's plays to Abbott and Costello's Who's on First? to even the Bible*, is not an independent clause. The second part of the sentence, *wordsmiths have used puns for humorous and rhetorical effect*, is an independent clause. Periods and semicolons can only be used between two independent clauses, so eliminate (B), (C), and (D). Choice (A) appropriately uses a comma to connect the two parts of the sentence. The correct answer is (A).
37. **B** Commas are changing in the answer choices, so the question is testing comma usage. When commas surround a phrase, check to see if that phrase is necessary or unnecessary to the sentence. *American composer Milton Babbitt* is unnecessary information; if it is removed from the sentence, the sentence is still grammatically correct and the meaning does not change. Therefore, commas must surround this phrase. Eliminate (C) and (D) because neither of these answers in-

- cludes commas both before and after this phrase. There is no reason to place a comma between *composer* and *Milton*; eliminate (A). The correct answer is (B).
38. **C** Note the question! The question asks for the choice that *most effectively sets up the examples that follow*, so it tests consistency. Eliminate any answers that are inconsistent with the purpose stated in the question. The example of *Homily* is used to show how Babbitt *change[s] how similar musical phrases are audibly perceived* and how Babbitt writes the piece so *different interpretations of the phrase are possible, much in the same way that verbal puns rely on concurrent interpretations of a word*. *Beaten Paths* also *create[s] different musical meanings*. Choice (A) focuses on the instruments, not the different interpretations or meanings; eliminate it. Choice (B) discusses *fun* with the music. Puns may be fun, but fun isn't the point in these examples; eliminate (B). Choice (C) mentions how Babbitt *creates puns...by using the same musical idea in multiple ways*. This is consistent with the examples, so keep (C). The paragraph does not imply that musical puns are *absurd*, so eliminate (D). The correct answer is (C).
39. **A** Vocabulary changes in the answer choices, so this question tests precision of word choice. Look for a word that is consistent with the other ideas in the passage. The previous sentence discusses how Babbitt *change[s] how similar musical phrases are audibly perceived*, so the correct choice will be consistent with *change*. *Modified* means "to change somewhat in form." This is consistent with the context of the sentence, so keep (A). Choice (B), *twisted*, means "to force out of its natural shape; distort." The changes in the music discussed in the paragraph are positive, not negative, so eliminate (B). Choice (C), *doctored*, means "to change in order to deceive." While different simultaneous interpretations are intended, there is no deception in the music; eliminate (C). Choice (D), *refined*, means "to improve." While the music is being changed, there is no indication that it is being improved. Eliminate (D). The correct answer is (A).
40. **B** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with other verbs in the sentence. The sentence contains a list: *not only create repeated musical motifs, but also _____*. The blank should be consistent with the other verb in the list, *create*, which is present tense. Eliminate (A) and (C) because they are both past tense. Keep (B) because *reshape* is consistent with *create*. Eliminate (D) because *reshaping* is not consistent with *create*. The correct answer is (B).
41. **C** Note the question! The question is asking whether to add the proposed sentence to the passage, so it is testing consistency. If the content of the new sentence is consistent with the ideas surrounding it, then it should be added; otherwise, it should not be added, as leaving the sentence out will be the most concise option. The paragraph is about how Babbitt creates puns in his music, whereas the proposed sentence introduces a new composition without discussing puns. Since it does not relate to the rest of the paragraph, the new sentence should not be added. Eliminate (A) and (B). Choice (D) discusses *other instruments*, which is not the reason that the sentence was inconsistent with the paragraph. Eliminate (D). Choice (C) accurately describes how the proposed sentence provides irrelevant information. The correct answer is (C).
42. **A** Note the question! The question is asking for the option that links the second paragraph to the ideas in the following paragraph, so it is testing consistency. The second paragraph is about Babbitt's puns in music, and the following paragraph is about puns in the titles of Babbitt's music. Keep (A), because it discusses the *titles* of Babbitt's compositions. Eliminate (B) because *how listeners understand his musical ideas* is not consistent with the following paragraph. Eliminate (C) because, although puns are often *funny*, neither paragraph mentions anything about whether the music is *persuasive*. Choice (D) defines what a pun does, but is not specific to Babbitt's music, so eliminate (D). The correct answer is (A).

43. **C** The subject of the phrase is changing in the answer choices, so the question is testing consistency. The passage is about how Milton Babbitt uses puns both within his music and in the titles of his works. Choice (A) discusses novel uses of *percussion instruments*. Babbitt used percussion in *Homily* and *Beaten Path*, but the passage doesn't indicate whether it was *novel*, nor is this phrase consistent with the passage overall. Eliminate (A). Choice (B) talks about *playing around with the meanings of words*, but doesn't mention music. This is inconsistent with the passage's point about Babbitt, so eliminate (B). Choice (C) includes puns in both the music and titles, so keep (C). Choice (D), like (A), includes information about *unusual* performance practices, which is not the point of the passage. Eliminate (D). The correct answer is (C).
44. **C** Note the question! The question is asking for the best placement of sentence 4, so it is testing consistency. The sentence must be consistent with the ideas that come both before and after it. Sentence 4 gives information about the word *homily* and a quote contained in the score. This sentence should therefore be near the discussion of *Homily* in sentence 2. Eliminate (A) and (D). Sentence 2 introduces the puns in the meaning of the title *Homily*. Because sentence 4 explains those puns, sentence 4 should be after sentence 2. The correct answer is (C).

Section 3: Math (No Calculator)

1. **A** The question asks for the value of $m^{\frac{5}{2}}$. For fractional exponents, the denominator indicates the root, and the numerator indicates the exponent power. In other words, fractional exponents are Power over Root. Therefore, the 2 in the denominator indicates a square root. Eliminate (C) and (D). The 5 in the numerator indicates that m should be raised to the 5th power. Eliminate (B). The correct answer is (A).
2. **D** The question asks for the factor that would change if a less expensive type of sealant were used. Use Process of Elimination. The length of the driveway, l , the number of driveways, d , and the width of each driveway, w , are values that will remain the same irrespective of what price of sealant is used. Eliminate (A), (B), and (C). The correct answer is (D).
3. **C** The question asks for the value of $12x - 4$ when $4x = 20$. Multiply both sides of this equation by 3 to get $12x = 60$. Subtract 4 from both sides to get $12x - 4 = 56$. The correct answer is (C).
4. **B** The question asks for the value of $\frac{z}{2}$. Cross-multiply to get $2(z + 42) = 8z$. Distribute the 2 to get $2z + 84 = 8z$. Solve for z to get $6z = 84$ and $z = 14$. The question is asking for the value of $\frac{z}{2}$, which is $\frac{14}{2} = 7$. Therefore, the correct answer is (B).
5. **B** The question asks for the value of $r - s$ in the system of equations. Stack and add the equations first to see if that gets closer to the goal. Set the equations on top of each other and add them together to get:

$$\begin{array}{r} 3r - 5s = -17 \\ + \quad 5r - 3s = -7 \\ \hline 8r - 8s = -24 \end{array}$$

Divide the resulting equation by 8 to get $r - s = -3$. The correct answer is (B).

6. **A** The question asks for a true equation for s , which is the number of shows produced between 2009 and 2010. From 2012 to 2013, 24 scripted shows were produced. This is three times the number of scripted shows produced between 2009 and 2010, so $24 \div 3 = 8$ shows were produced between 2009 and 2010. Therefore, $s = 8$. Plug 8 in for s in the answers and eliminate any answer that isn't true. Choice (A) becomes $3(8) = 24$. The equation works, so keep (A). Choice (B) becomes $24(8) = 3$ or $192 = 3$. This is false; eliminate (B). Choice (C) becomes $\frac{8}{3} = 24$, which is false; eliminate (C). Choice (D) becomes $8 + 24 = 3$, or $32 = 3$. This is also false; eliminate (D). The correct answer is (A).
7. **D** The question asks for the slope of the line that contains point (m, n) . The slope-intercept form of the line equation is $y = mx + b$, where m stands for the slope, b stands for the y -intercept, and x and y are points on the line. Therefore, in the equation $y = cx - 2$, the slope is c . Substitute the point (m, n) into the equation given to get $n = cm - 2$. Solve for c to get $n + 2 = cm$ and $c = \frac{n + 2}{m}$. The correct answer is (D).
8. **D** The question asks for the value of c that will give no solutions for the system of equations. A system of linear equations will have no solution when the lines are parallel, meaning that they have equal slopes. In the equation $Ax + By = C$, the slope is equal to $-\frac{A}{B}$. Therefore, the slope of the first equation given is $-\left(\frac{3}{-2}\right) = \frac{3}{2}$, and the slope of the second equation is $-\left(\frac{c}{-7}\right) = \frac{c}{7}$. Set the slopes of the two equations equal to each other to get $\frac{c}{7} = \frac{3}{2}$. Cross-multiply to get $2c = 21$. Solve for c to get $c = \frac{21}{2}$. Therefore, the correct answer is (D).
9. **A** The question asks for the binomial that must be a factor of function p . Factors are used to find the roots of a function, which are the places where the function crosses the x -axis. At these places, $y = 0$. For example, if the equation was $y = x^2 - 2x - 3$, factoring it to $(x - 3)$ and $(x + 1)$ and setting those factors equal to 0 would give roots of 3 and -1 . On the table, y or $p(x)$ is 0 when $x = 1$. Therefore, $x = 1$ is a solution of $p(x)$, and $(x - 1)$ is a factor of $p(x)$. The correct answer is (A).
10. **D** The question asks for the value of t , the y -coordinate of the vertex of the parabola. For a quadratic in standard form, it is possible to complete the square to get the vertex. This is trickier with the a in the equation, so try out a value of a . Usually, it is not a good idea to pick 1 to try out. However, the math will be much more straightforward on this particular question if $a = 1$, so try that first. The equation becomes $y = (x - 3)(x + 5)$. Expand the quadratic to get $y = x^2 + 2x - 15$. To answer the question, it is necessary to get this equation into vertex form, $y = (x - h)^2 + k$, in which the vertex is (h, k) . To do this, set the equation equal to 0, move the constant over to the left, and complete the square. The equation becomes first $0 = x^2 + 2x - 15$, then $15 = x^2 + 2x$. To complete the square, take half the coefficient on the x -term, square it, and add it to both sides to get $15 + 1 = x^2 + 2x + 1$. Add the numbers on the left side, and convert the right side into the square term, so the equation becomes $16 = (x + 1)^2$. Finally, subtract 16 from both sides and replace the y to get $y = (x + 1)^2 - 16$. The vertex is $(1, -16)$, and the value of t is -16 . Plug $a = 1$ into the answer choices to find the one that equals -16 . The correct answer is (D).
11. **B** The question asks for the length of line segment \overline{FG} , which connects two points on the parabola. The parabola intersects the line $y = 36$ when the two are equal to one another, so $(x - 9)^2 = 36$. Both sides are squares, so take the square root of both sides to get $(x - 9) = \pm 6$. Now solve the

two equations: if $x - 9 = 6$, then $x = 15$, and if $x - 9 = -6$, $x = 3$. Therefore, the parabola crosses the line $y = 36$ when $x = 15$ and when $x = 3$. In other words, the parabola intersects the line $y = 36$ at the points $(3, 36)$ and $(15, 36)$. The distance between these points will be the difference in the x -values: $15 - 3 = 12$. If taking the square root of both sides of the equation is not an immediately obvious approach, it is also possible to get the values of x using FOIL (First, Outer, Inner, Last). Expand the left side of the equation to get $x^2 - 18x + 81 = 36$. Set the equation equal to 0: $x^2 - 18x + 45 = 0$. Factor the equation to get $(x - 15)(x - 3) = 0$. Either way, the correct answer is (B).

12. **C** The question asks for the statements that must be true given the figure, and the options include pairs of congruent angles. Angles l and o are vertical angles, or opposite angles made by two intersecting lines. Therefore, $l = o$. Since $l + m = n + o$, subtracting l from the left side and o from the right side (which is possible because $l = o$) shows that $m = n$. Since vertical angles are equal to each other, it is also true that $m = p$ and $n = q$. This means that $m = n = p = q$. Therefore, both statements II and III must be true. The correct answer is (C).

13. **B** The question asks for the solutions to the given quadratic. Start by dividing the entire equation by 2 to get $x^2 + 6x + 4 = 0$. This doesn't factor nicely, and the answer choices are simplified ver-

sions of the quadratic formula. Therefore, use the quadratic formula, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, to

solve for x . In this case, $a = 1$, $b = 6$, and $c = 4$. The resulting equation is $x = \frac{-6 \pm \sqrt{6^2 - 4(1)(4)}}{2(1)}$.

Simplify the right side of the equation to get $x = \frac{-6 \pm \sqrt{36 - 16}}{2} = \frac{-6 \pm \sqrt{20}}{2} = \frac{-6 \pm 2\sqrt{5}}{2} =$

$-3 \pm \sqrt{5}$. The correct answer is (B).

14. **C** The question asks for true statements based on the equation, and the options include changes in temperature measurement. No exact values are given for either variable, so try out numbers to see what happens. To test statement I, plug $F = 2$ into the equation to get

$D = \frac{5}{6}(212 - 2) = \frac{5}{6}(210) = 175$. Plug in again using $F = 2 + \frac{5}{6} = \frac{17}{6}$. Using this new value,

$D = \frac{5}{6}(212 - \frac{17}{6}) \approx 174.3$. Since the value of D did not decrease by 1 when F increased by $\frac{5}{6}$,

statement I is not true. Eliminate (D). Go to statement II. Plug $D = 5$ into the equation to

get $5 = \frac{5}{6}(212 - F)$. Solve for F to get $6 = 212 - F$, and $F = 206$. Next, plug $D = 6$ into the

equation to get $6 = \frac{5}{6}(212 - F)$. Solve for F to get $7.2 = 212 - F$, and $F = 204.8$. Subtract the

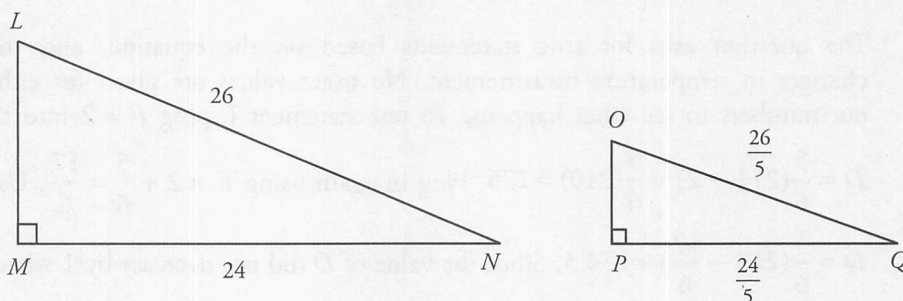
two values of F to get $206 - 204.8 = 1.2$. Statement II is true. Therefore, eliminate (B). Finally,

test statement III. Plug $F = 2$ into the equation to get $D = \frac{5}{6}(212 - 2) = \frac{5}{6}(210) = 175$. Next,

plug in $F = 3$ to get $D = \frac{5}{6}(212 - 3) = \frac{5}{6}(209) = 174\frac{1}{6}$. Subtract the two values of D to get

$175 - 174\frac{1}{6} = \frac{5}{6}$. Since statement III is true, eliminate (A). The correct answer is (C).

15. **C** The question asks for the value of k in the equation. Rather than do complex algebraic manipulation, select a value for y to use in the equation, as any value but $y = \frac{3}{k}$ will make the equation true. Since use of a calculator is not allowed on this section, it is especially important to pick an easy number. Try $y = 1$. If $y = 1$, then $\frac{36(1)^2 + 43(1) - 25}{k(1) - 3} = -9(1) - 4 - \frac{37}{k(1) - 3}$. Simplify to get $\frac{36 + 43 - 25}{k - 3} = -9 - 4 - \frac{37}{k - 3}$ and then $\frac{54}{k - 3} = -13 - \frac{37}{k - 3}$. Add $\frac{37}{k - 3}$ to both sides to get $\frac{54}{k - 3} + \frac{37}{k - 3} = -13$. Since the fractions on the left have the same denominator, add both the numerators to get $\frac{91}{k - 3} = -13$. Multiply both sides by $(k - 3)$ to get $91 = -13(k - 3)$. Distribute on the right side to get $91 = -13k + 39$. Subtract 39 from both sides to get $52 = -13k$. Divide both sides by -13 to get $k = -4$. The correct answer is (C).
16. **4** The question asks for the value of z in the equation. First, clear out the fractions by multiplying the entire equation by 30, the least common multiple of the denominators. The resulting equation is $27z - 21z = 10 + 14$. Combine like terms to get $6z = 24$. Divide both sides by 6 to get $z = 4$. This is the correct answer.
17. **$\frac{5}{13}$** The question asks for the value of cosine O on a triangle, but no figure is given. Draw the two triangles and label the sides. Given the information in the question, $PQ = \frac{24}{5}$ and $OQ = \frac{26}{5}$.



The values for triangle OPQ aren't easy numbers to work with. However, since the triangles are similar, the corresponding angles have the same measurements. Therefore, $\cos O = \cos L$. Just work with the larger triangle to find the cosine of L . $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$, so find the length of side LM , which is adjacent to angle L . The Pythagorean Theorem is a way to find the third side of a right triangle, but this is a Pythagorean triple: It's the 5:12:13 triangle with each side doubled. Therefore, $LM = 10$, and $\cos L = \frac{10}{26} = \frac{5}{13}$. Since $\cos L = \cos O$, the correct answer is $\frac{5}{13}$.

18. **280** The question asks for the number of milligrams of sodium in a pecan braid. Translate the information in the question into equations that can be solved. Let p represent the amount of sodium

in a pecan braid and c represent the amount of sodium in a chocolate pastry. Then, according to the question, $p = c + 30$. Solve for c to get $c = p - 30$. The question also states that $3p + 4c = 1,840$. Substitute $p - 30$ for c to get $3p + 4(p - 30) = 1,840$. Distribute the 4 to get $3p + 4p - 120 = 1,840$. Solve for p to get $7p - 120 = 1,840$, $7p = 1,960$, and $p = 280$. This is the correct answer.

19. **3 or 4** The question asks for a possible solution to the equation, so isolate a . Divide both sides of the equation by a to get $a^2(a^2 - 25) = -144$. Distribute the a^2 to get $a^4 - 25a^2 = -144$. Set the equation equal to 0 to get $a^4 - 25a^2 + 144 = 0$. Factor the equation to get $(a^2 - 9)(a^2 - 16) = 0$. Factor further to get $(a - 3)(a + 3)(a - 4)(a + 4) = 0$. The question specifies that $a > 0$, so the factors with subtraction will give the possible values of a . Therefore, one of the possible solutions for the equation is $a - 3 = 0$ or $a = 3$. The other possible solution is $a - 4 = 0$ or $a = 4$. The correct answers are 3 and 4.
20. **115** The question asks for the value of h , a labeled angle on the diagram. Substitute 65 in for g in the equation to get $180 - f = 2(65)$. Solve for f to get $180 - f = 130$ and $f = 50$. The three angles in a triangle add up to 180° . Therefore, the other two interior angles of the top triangle will add up to $180 - 50 = 130^\circ$. Because the top triangle is isosceles and the unknown angles are opposite equal sides, the other two angles in the top triangle will be equal to each other. Therefore, each of the other angles in the top triangle is equal to $130 \div 2 = 65^\circ$. Given that a straight line is equal to 180° , $h = 180 - 65 = 115^\circ$. The correct answer is 115.

Section 4: Math (Calculator)

1. **D** The question asks for the probability that the selected marble will be a small red marble or a large blue marble. Probability is defined as $\frac{\text{want}}{\text{total}}$. The “want” outcomes are small red marbles and large blue marbles. From the table, there are 16 small red marbles, 21 large blue marbles, and 50 total marbles. So, the probability of getting either a small red marble or a large blue marble is $\frac{16 + 21}{50} = \frac{37}{50}$. The correct answer is (D).
2. **B** The question asks for the trend in the value of Jerry’s bank account over time. Look at trends in the graph and use Process of Elimination. The graph shows a negative slope until month 6, which means that the amount of money in his bank account was decreasing until July, the 6th month after January. Eliminate (C) and (D). After July, the line shows a positive slope, which means that the amount of money in his bank account was increasing. Eliminate (A). The correct answer is (B).
3. **A** The question asks for the time the passengers in the hot air balloon began viewing the landmark. According to the question, the balloon floated at a constant altitude for 1 hour while getting the best view. Since the y -axis is the altitude, the constant altitude is represented by a straight horizontal line. The only horizontal portion of the graph begins at about 10:30 A.M. Therefore, the correct answer is (A).
4. **D** The question asks for the number of very difficult questions on the standardized test. According to the information given, approximately 6 percent of the math questions are very difficult, so there are approximately $\frac{6}{100} \times 153 \approx 9$ very difficult math questions. Approximately 9 percent

of the science questions are considered very difficult, so there are approximately $\frac{9}{100} \times 267 \approx 24$

very difficult science questions. Therefore, the total number of very difficult questions is $9 + 24 = 33$. The correct answer is (D).

5. **C** The question asks for the sum of two polynomials. Rather than work the addition all the way through, do one step at a time and use Process of Elimination after each step. Start by adding the first terms of the two expressions to get $6y^3 + 5y^3 = 11y^3$. Eliminate (A) and (B), which don't contain this term. Next, add the second terms of the two expressions to get $-3y^2 + (-2y^2) = -5y^2$. Eliminate (D). The correct answer is (C).
6. **B** The question asks for the definition of function g based on a table of values, so use the values in the chart to test the equations in the answers. The chart states that when $x = 2$, $g(x) = -4$. Plug 2 into each of the answer choices to see which answer returns a value of -4 . Choice (A) becomes $g(x) = 2 - 6 = -4$. Keep (A), but always check the other answers. Choice (B) becomes $g(x) = 2(2) - 8 = -4$. Keep (B). Choice (C) becomes $g(x) = 3(2) - 10 = -4$. Keep (C). Choice (D) becomes $g(x) = 4(2) - 12 = -4$. Keep (D). Since all the answers are true when $x = 2$, try a different value of x , such as $x = 4$. The correct answer will then equal 0, according to the chart. Choice (A) becomes $4 - 6 = -2$. Eliminate (A). Choice (B) becomes $2(4) - 8 = 0$. Keep (B). Choice (C) becomes $3(4) - 10 = 2$. Eliminate (C). Choice (D) becomes $4(4) - 12 = 4$. Eliminate (D). The correct answer is (B).
7. **D** The question asks for the distance Paul can run in 16 minutes. His rate is given in meters per second, so convert the units. There are 60 seconds in one minute. Therefore, 16 minutes = $16 \times 60 = 960$ seconds. To find the distance that Paul can run in that amount of time, set up the following proportion: $\frac{x \text{ meters}}{960 \text{ seconds}} = \frac{144 \text{ meters}}{72 \text{ seconds}}$. Cross-multiply to get $72x = 138,240$. Divide both sides by 72 to get $x = 1,920$, which is close to 2,000. The correct answer is (D).
8. **A** The question asks for the value of z in the equation. When given two fractions equal to each other, cross-multiplying will help to solve the equation. In this question, that is tricky with the z multiplied by the first fraction. Rewrite the equation so that the z is in the numerator of the fraction: $\frac{2z}{7} = \frac{5}{2}$. Now cross-multiply to get $4z = 35$. Divide both sides by 4 to get $z = \frac{35}{4}$. Therefore, the correct answer is (A).
9. **B** The question asks for the meaning of the number 1.74 in the equation. Label the parts of the equation and use Process of Elimination. According to the question, y represents the average number of cases per attorney and x represents the years. Eliminate (A) because the average number of cases per attorney is represented by y , not 1.74. Neither the question nor the equation mentions the total number of cases. For this reason, eliminate both (C) and (D). The correct answer is (B).
10. **A** The question asks for the possible graph of function m , which has four distinct zeros. The term *zero* is synonymous with x -intercept, or where the graph intersects the x -axis. Therefore, a function that has 4 distinct zeros will intersect the x -axis at 4 distinct points. Graph (A) intersects the x -axis at 4 distinct points. Graph (B) intersects the x -axis at 2 distinct points. Graphs (C) and (D) intersect the x -axis at 3 distinct points. Therefore, the correct answer is (A).

11. **B** The question asks for the amount of force needed to stretch Spring #2 a distance of 5 meters. According to the information above the question, $F = km$, where F stands for force, k stands for the spring constant, and m stands for the distance the spring is stretched in meters. So, $m = 5$, and for Spring #2, $k = 0.9$. Therefore, $F = (0.9)(5) = 4.5$. The correct answer is (B).
12. **C** The question asks for the spring that will stretch the same amount as Spring #4 when 5 newtons of force are applied. Start by finding the distance that Spring #4 is stretched. According to the question, $F = km$, where F stands for force, k stands for the spring constant, and m stands for the distance the spring is stretched in meters. For Spring #4, $k = 4.7$. To find the distance the spring is stretched, plug $F = 7$ and $k = 4.7$ into the equation $F = km$ to get $7 = 4.7x$. Divide both sides by 4.7 to get $x \approx 1.49$ meters. The question asks for the spring that would stretch the same distance under 5 newtons of force, so plug 5 in for F and 1.49 for m and solve for k . Start with $5 = 1.49k$, then divide both sides by 1.49 to get $k = 3.3$. According to the table, Spring #6 has a spring constant of 3.3. Therefore, the correct answer is (C).
13. **B** The question asks for the equation that represents the total bill. Since no value is given for the number of hours, select a number. Let $t = 3$ hours. Set up the following proportion to convert hours to minutes: $\frac{1 \text{ hour}}{60 \text{ minutes}} = \frac{3 \text{ hours}}{x \text{ minutes}}$. Cross-multiply to get $x = 180$ minutes. Each minute will cost the corporation \$0.30, so multiply 180 by \$0.30 to get a cost of \$54. Plug 3 in for t in the answer choices to see which answer choice equals \$54. Choice (A) becomes $\frac{60(3)}{0.3} = 600$. Eliminate (A). Choice (B) becomes $(0.30)(60)(3) = 54$. Keep (B), but always check the remaining answers. Choice (C) becomes $60(3) + 0.30 = 180.30$. Eliminate (C). Choice (D) becomes $\frac{0.30(3)}{60} = 0.015$. Eliminate (D). The correct answer is (B).
14. **D** The question asks for the value of x that will make $j(x) + k(x) = 0$. Use the values in the answer choices for x . Start with (B). In (B), $x = 2$. On the graph, $j(2) = 3$ and $k(2) = 6$. Because $3 + 6 \neq 0$, eliminate (B). If it is not clear whether x needs to be larger or smaller, just pick a direction. In (C), $x = 3$, $j(3) \approx -2$, and $k(3) \approx 4$. Because $-2 + 4 \neq 0$, eliminate (C). In (D), $x = 4$, $j(4) = -3$, and $k(4) = 3$. The result is $-3 + 3 = 0$. The correct answer is (D).
15. **A** The question asks for the equation that shows the value of h in terms of the other variables, so isolate h . Start by subtracting $0.5mv^2$ from both sides of the equation to get $e - 0.5mv^2 = 10mh$. Divide the entire equation by $10m$ to get $\frac{e}{10m} - \frac{0.5mv^2}{10m} = h$. Simplify the second term to get $\frac{e}{10m} - 0.05v^2 = h$. Therefore, the correct answer is (A).
16. **C** The question asks for the best conclusion based on the study. Questions like this, in which no math is involved, are best handled with Process of Elimination. The word *any* in (A) is problematic. The study does not state whether pesticide P would reduce the number of aphids in a garden that was not infested with aphids. Eliminate (A). The phrase *best pesticide* in (B) is problematic. The study only evaluated pesticide P. It is possible that another pesticide exists that is even better at treating aphid infestation. The phrase *kill substantial numbers of aphids* in (D) is problematic. The study showed that pesticide P led to a reduction in the number of aphids, but this does not necessarily mean that there was a *substantial* decrease in the number of aphids in the gardens that were sprayed with pesticide P.

Furthermore, the answer references *a garden*, not specifically a *rose garden*, which extends the conclusion further than the study would indicate. Therefore, the correct answer is (C).

17. **D** The question asks for the number of units at which the cost will equal the revenue. The information above the question gives equations for cost and revenue in terms of x , the number of units. To solve for x , set the two equations given equal to each other to get $3x + 75 = 8x$. Subtract $3x$ from both sides to get $75 = 5x$. Divide both sides by 5 to get $x = 15$. The correct answer is (D).
18. **C** The question asks for the change in manufacturing cost when 5 additional units are produced. No starting number of units is given, so select values for the number of products. First, plug in $x = 2$ to find that $C(2) = 3(2) + 75 = 6 + 75 = 81$. Since the question asks for 5 additional units, next plug in $x = 7$ to find that $C(7) = 3(7) + 75 = 21 + 75 = 96$. The cost increased by $96 - 81 = 15$. Therefore, the correct answer is (C).
19. **C** The question asks for the difference between the actual number of colonies and the predicted number of colonies at 40°C . Use the graph to look up the number of bacteria colonies at 40° . The actual number of colonies present, as shown by the dot, was 420. The line of best fit predicts 400 colonies at 40° . The difference is $420 - 400 = 20$ colonies. The correct answer is (C).
20. **D** The question asks for the community that would show exponential growth over time. When a population grows exponentially, it is increasing by a constant percent of the current population, not by a constant amount. Use some actual numbers in the given situations to see how the population would change. Say that the original population is 100 people. In (A), the growth every year would be $100 \times 0.05 = 5$ people. Eliminate (A) since the growth rate does not change. Likewise, in (B), the growth rate would be $(100 \times 0.04) + 300 = 304$ people every year. Eliminate (B). In (C), the growth rate is 300 people every year. Eliminate (C). In (D), the growth rate is $100 \times 0.03 = 3$ people the first year. However, in the second year, the growth rate would be 103×0.03 . In subsequent years, the growth rate would continue to increase. The correct answer is (D).
21. **D** The question asks for the number of square centimeters of cells that could be fed by 115 milliliters of glucose. It states that one milliliter of glucose can feed up to 9 Petri dishes of cells. If each Petri dish has an area of $7\frac{1}{4}$ square centimeters, then 9 Petri dishes would have a total area of $9 \times 7\frac{1}{4} = 65\frac{1}{4}$ square centimeters. That is just for 1 milliliter of glucose, but the question asks about 115 milliliters of glucose. Multiply the area 1 milliliter can feed by 115 to get $65\frac{1}{4} \times 115 = 7,503.75$ square centimeters. This is close to 7,500. The correct answer is (D).
22. **B** The question asks for the value of m , a constant that is used to define c and d , two angle measurements. Use the values in the answers for m to get values for c and d , then check the relationship between those two numbers. Start with (B). If $m = 7.5$, then $c = 6(7.5) - 9 = 36$, and $d = 8(7.5) - 6 = 54$. Next, use a calculator to see whether $\sin(c^\circ) = \cos(d^\circ)$. Given that $\sin(36^\circ) = \cos(54^\circ)$, it is true that $m = 7.5$. The correct answer is (B).
23. **C** The question asks for the number of animals in the training group. Instead of writing a system of equations, try the numbers in the answers. Start with (B), and assume the biologist has 8 animals. According to the question, if she gives each animal 4 treats, she will have 6 treats left over. This means she has $(8 \times 4) + 6 = 38$ treats. If she gave each of the animals 5 treats, she would need $8 \times 5 = 40$ treats. This would mean she would be $40 - 38 = 2$ treats short. Given that the question states she would be 8 treats short in this second scenario, eliminate (B). It may not be clear which direction to

go from here, so pick a direction. In (C), the biologist has 14 animals. This means she has $(14 \times 4) + 6 = 62$ treats. If she were to give each animal 5 treats, she would need $14 \times 5 = 70$ treats. This would mean that she would be $70 - 62 = 8$ treats short, which matches the information given in the question. The correct answer is (C).

24. **A** The question asks for the value of k . Rather than messing around with the algebra, try the numbers in the answers. Start with (B). If $k = 267$, the sum of the other two numbers is $738 - 267 = 471$. According to the question, k is 20% less than the sum of the other two numbers. This can be calculated as $471 - (0.2)(471) = 376.8$. In this case, the two values for k are not the same, so eliminate (B). It may not be clear which direction to go next, so just pick a direction. In (A), $k = 328$, making the sum of the other two numbers $738 - 328 = 410$. Next, 20% less than 410 is $410 - (0.2)(410) = 328$. The two values for k are equal. Therefore, the correct answer is (A).

25. **B** The question asks for the value of r , which is a coordinate in two points. When given two points on a line, finding the slope of the line is often the key to answering the question. The equation

to find the slope of a line containing points (x_1, y_1) and (x_2, y_2) is $\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$. Given the point

$(4, r)$ and the origin $(0, 0)$, the slope of the line is $\frac{r - 0}{4 - 0} = \frac{r}{4}$. Given the point $(r, 16)$ and the

origin, the slope is $\frac{16 - 0}{r - 0} = \frac{16}{r}$. Since both points are on the same line, the slopes are equal.

Therefore, $\frac{r}{4} = \frac{16}{r}$. Cross-multiply to get $r^2 = 64$. Take the square root of both sides to find that

$r = \pm 8$. The correct answer is (B).

26. **B** The question asks for the value of h , the percent by which the height of the triangle was changed. No information is given about the dimensions of the triangle, so try out some values. Let the base and

the height of the original triangle equal 10. The formula for the area of a triangle is $A = \frac{1}{2}bh$. The

area of the triangle would be $A = \frac{1}{2}(10)(10) = 50$. The base of the modified triangle is equal to

$10 + (0.2)(10) = 12$. The area of the modified triangle can be calculated as $50 - (0.28)(50) = 50 - 14$

$= 36$. Plug these values into the formula for the area of a triangle to get $36 = \frac{1}{2}(12)(h)$. Solve for h to

get $36 = 6h$, and $h = 6$. The formula to find a percent decrease is $\frac{\text{difference}}{\text{original}} \times 100$. The height of the

original triangle was 10, and the height of the modified triangle is 6. Therefore, the percent decrease

$= \frac{10 - 6}{10} \times 100 = \frac{4}{10} \times 100 = 40$. The correct answer is (B).

27. **A** The question asks for the volume of an unusual shape. To find the volume of the capsule, first find the volume of each part, and then add them together. The formula for the volume of a right rectangular pyramid, found in the reference box at the beginning of each math section, is $V = \frac{1}{3}lwh$.

Therefore, the volume of each of the pyramids at the ends of the capsule is $V = \frac{1}{3}(8)(10)(8) = \frac{1}{3}(640)$

≈ 213 . The volume of a rectangular solid is given by the formula $V = lwh$. Therefore, the volume of the rectangular solid part of the capsule is $V = (12)(10)(8) = 960$. The total approximate volume of the capsule is $213 + 960 + 213 = 1,386$. The correct answer is (A).

28. **C** The question asks for a true statement about the relationship between a and b . Since information is given about the relationship between x and y , start by solving the two equations for x and y , respectively. Subtract $2a$ from both sides of the first equation to get $x = 2a - 8$. Subtract $2b$ from each side of the second equation to get $y = 2b - 8$. The question states that $x = y - \frac{1}{4}$. Substitute in the expressions for x and y to get $(2a - 8) = (2b - 8) - \frac{1}{4}$. All of the choices are in terms of a , so solve for a . Add 8 to both sides to get $2a = 2b - \frac{1}{4}$. Divide both sides by 2 to get $a = b - \frac{1}{8}$. The correct answer is (C).
29. **A** The question asks for the expression that will estimate the value of the mutual fund. The growth rate formula states that $\text{final amount} = \text{initial amount}(1 \pm \text{rate})^n$, where n is the number of times interest will be calculated. In this question, the initial amount is \$20,000, the rate is 15%, or 0.15 when expressed as a decimal, and interest will be calculated every 4 years. Since the question is asking about interest after t years, $n = \frac{t}{4}$. Plugging all of the values into the growth equation results in the portfolio's worth as $20,000(1.15)^{\frac{t}{4}}$. The correct answer is (A).
30. **D** The question asks for the probability that a randomly selected varsity basketball player is a junior. Probability is defined as $\frac{\text{want}}{\text{total}}$. The number of varsity basketball players, the *total* in this case, is given as 32. The question gives very few other actual numbers to work with, so create some variables to stand in for the missing numbers. The number of soccer players is given in relation to the number of basketball players. Let j represent the number of varsity basketball players who are juniors and s represents the number of varsity basketball players who are seniors. Fill in the chart according to the information given in the question. In the junior row, fill in $4j$ under varsity soccer and j under varsity basketball. In the senior row, fill in $3s$ in the varsity soccer column and s in the varsity basketball column. Given the information in the chart, $4j + 3s = 108$, and $j + s = 32$. The question asks about juniors, so try to eliminate the seniors in the equations. Multiply the second equation by -3 to get $-3j - 3s = -96$. Stack the two equations on top of each other and add them together.

$$\begin{array}{r} 4j + 3s = 108 \\ -3j - 3s = -96 \\ \hline j = 12 \end{array}$$

Therefore, there are 12 varsity basketball players who are juniors. Now calculate the probability that a randomly chosen varsity basketball player is a junior: $\frac{\text{varsity basketball players who are juniors}}{\text{total varsity basketball players}} = \frac{12}{32} = 0.375$. The correct answer is (D).

31. **53.8** The question asks for the mean class size of the courses shown on the table. For averages, use the formula $T = AN$, in which T is the total, A is the average, and N is the number of things. Add up all the enrolled students to get a total of 646. There are 12 classes listed, so the formula becomes

$646 = A(12)$, and $A = 53.833$. The question asks for the number rounded to the nearest tenth, which is 53.8. This is the correct answer.

32. **6 or 7** The question asks for one possible value of b , which is the number of pints of blueberries John bought. The question states that John bought 1 pint of strawberries, which costs \$5, and spent a total amount between \$23 and \$27, inclusive. Therefore, he spent between $\$23 - \$5 = \$18$ and $\$27 - \$5 = \$22$ on blueberries. Let b represent a pint of blueberries. Given that a pint of blueberries costs \$3, set up the following equation to solve for the number of pints of blueberries John bought: $18 \leq 3b \leq 22$. Solve for b to get $6 \leq b \leq 7.33$. Since he can only buy whole pints of blueberries, John bought either 6 or 7 pints of blueberries. The correct answer is 6 or 7.
33. **25** The question asks for the lowest score Jasmine can get on the 6th quiz to maintain her desired average. For averages, use the formula $T = AN$, in which T is the total, A is the average, and N is the number of things. Over 20 tests, Jasmine wants an average of 45 points. This means that Jasmine will need to score a total of $T = 20 \times 45 = 900$ points. For the first 5 tests, Jasmine has scored a total of $T = 5 \times 35 = 175$ points. This means she needs to score an additional $900 - 175 = 725$ points on the remaining 15 tests. To find the minimum required score on the 6th test, maximize the number of points that Jasmine can score on the other 14 remaining tests. The maximum score for any one test is 50 points, so Jasmine can score a maximum of $14 \times 50 = 700$ on the 14 remaining tests. Since $725 - 700 = 25$, Jasmine can score 25 on the 6th test and keep her average at 45. The correct answer is 25.
34. **18** The question asks for the value of b , which is the coefficient on the z terms. Rather than taking the time to multiply everything out, just focus on the z terms. This becomes $(3z) - 3(-5z) = 3z + 15z = 18z$. Therefore, $b = 18$. This is the correct answer.
35. **96** The question asks for the minimum value of g , which is the y -coordinate of a point in the solution to the system of inequalities. Use a calculator to graph the inequalities to get a better understanding of the relationship. Each inequality will create a line that is shaded on one side. The solution set is the area where the shaded regions overlap. For these inequalities, the solution set forms a "V," so the minimum y -value will be the vertex of the "V" where the two lines intersect. To find the point of intersection, set the two expressions equal to each other: $4x = -12x + 384$. Add $12x$ to both sides to get $16x = 384$. Then divide both sides by 16 to get $x = 24$. Plug this value for x into the second equation to get $y \geq 4(24)$ and $y \geq 96$. Therefore, the smallest value for y is 96. This is the correct answer.

36. $\frac{3}{4}$ or .75

The question asks about a fraction of the circumference based on the length of the arc. To find the arc, set up the *part to whole* relationship. The total circle has 2π radians, so $\frac{\text{part}}{\text{whole}} = \frac{\text{arc}}{\text{circumference}}$

$$= \frac{\text{angle}}{2\pi}. \text{ The angle forming the arc is } \frac{3\pi}{2} \text{ radians, so } \frac{\text{arc}}{\text{circumference}} = \frac{\text{angle}}{2\pi} = \frac{\frac{3\pi}{2}}{2\pi} = \frac{3}{4}. \text{ There-}$$

fore, the arc is $\frac{3}{4}$, or 0.75, of the circumference. Either value can be entered as the correct answer.

37. **20** The question asks about the size of a message, or the value for b , in a certain region relative to the average global message size. The equation for transmission time is $b = rT$, where r represents the rate of transmission and T represents the time. Both r and T are measured in seconds, but the question gives a rate of 75,000 bytes *per minute*, or per 60 seconds. To convert this rate into seconds, set up a

proportion: $\frac{75,000 \text{ bytes}}{60 \text{ seconds}} = \frac{r \text{ bytes}}{1 \text{ second}}$. Cross-multiply to get $60r = 75,000$. Divide both sides by 60

to get $r = 1,250$. To find the size of the file, plug this value and $T = 1.6$ seconds into the formula to get $b = (1,250)(1.6) = 2,000$ bytes. When asked for a *percent less than* something, use the formula for

percent change: $\frac{\text{difference}}{\text{original}} \times 100$. The average global transmission time is 2,500 bytes. Therefore,

the message size in this region is $\frac{2,500 - 2,000}{2,500} \times 100 = \frac{500}{2,500} \times 100 = 20\%$ less than the average

global message size. The correct answer is 20.

38. **3,150** The question asks for the size of the message, or the value for b , in a particular city. The equation for transmission time is $b = rT$, where r represents the rate of transmission and T represents the time. Both r and T are measured in seconds, but the question gives a rate of 45,000 bytes *per minute*, or per 60 sec-

onds. To convert this rate into seconds, set up a proportion: $\frac{45,000 \text{ bytes}}{60 \text{ seconds}} = \frac{r \text{ bytes}}{1 \text{ second}}$. Cross-multiply

to get $60r = 45,000$. Divide both sides by 60 to get $r = 750$. To find the value of b , plug this value and $T = 4.2$ seconds into the formula to get $b = (750)(4.2) = 3,150$. This is the correct answer.