

# Chapter 8

## Practice Test 3: Answers and Explanations

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## PRACTICE TEST 3 ANSWER KEY

Section 1: Reading		Section 2: Writing & Language		Section 3: Math (No Calculator)		Section 4: Math (Calculator)	
1. B	27. C	1. D	23. D	1. C	11. D	1. C	20. B
2. A	28. C	2. A	24. C	2. A	12. C	2. D	21. A
3. B	29. A	3. C	25. C	3. B	13. B	3. B	22. B
4. D	30. B	4. A	26. D	4. B	14. A	4. C	23. D
5. B	31. A	5. A	27. D	5. C	15. D	5. B	24. B
6. C	32. B	6. A	28. B	6. B	16. 4	6. D	25. D
7. D	33. D	7. D	29. D	7. B	17. 1 or 3	7. D	26. C
8. B	34. D	8. B	30. B	8. D	18. 50	8. C	27. A
9. D	35. A	9. D	31. D	9. D	19. $\frac{5}{13}$	9. B	28. D
10. D	36. C	10. C	32. B	10. A	20. 110	10. B	29. B
11. D	37. A	11. C	33. A			11. A	30. C
12. B	38. C	12. C	34. D			12. A	31. 3
13. D	39. D	13. A	35. A			13. D	32. 5 or 6
14. A	40. B	14. B	36. A			14. C	33. 25.2
15. A	41. C	15. B	37. B			15. B	34. 40
16. C	42. B	16. D	38. B			16. A	35. 1,000
17. B	43. B	17. A	39. C			17. C	36. $\frac{7}{12}$
18. C	44. B	18. D	40. C			18. C	or .583
19. D	45. C	19. A	41. D			19. B	37. 20
20. D	46. C	20. B	42. B				38. 9
21. A	47. A	21. B	43. D				
22. D	48. A	22. D	44. B				
23. D	49. D						
24. D	50. A						
25. B	51. C						
26. B	52. C						

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## PRACTICE TEST 3 EXPLANATIONS

### Section 1: Reading

1. **B** The question asks for the best summary of the passage. Do this question after answering the specific questions. Look for an answer choice that matches the passage as a whole; eliminate answer choices that are true but too specific. The first paragraph describes the party, the second paragraph gives the back story of the woman Lady Windermere is talking to, and the rest of the text relates their conversation. Choice (A) is true, but only refers to the last part of the text. Eliminate (A). Choice (B) could be true, as it reflects all three parts of the text. Keep (B) for now. Choice (C) is true, but only refers to the first part of the text. Eliminate (C). Choice (D) uses the right words but has the wrong meaning: this is her last reception before Easter, not her last reception ever, and she only jokingly refers to the need to flee danger. Eliminate (D). The correct answer is (B).
2. **A** The question asks what the word *smartest* means in line 5. Go back to the text, find the word *smartest*, 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. Here, *smartest* has to do with a “nice appearance.” Choice (A), *most fashionable*, is possible; keep it for now. Choice (B), *most clever*, is another meaning of *smartest*. Eliminate (B). Choice (C), *most painful*, recalls another meaning of the verb “to smart.” Eliminate (C). Choice (D), *brightest*, is another potential meaning for *smartest* but does not relate to appearance. Eliminate (D). The correct answer is (A).
3. **B** The question asks about the purpose of the description of *gorgeous peeresses...violent Radicals, popular preachers...eminent sceptics* and *a perfect bevy of bishops*. Look for that description in context. It is located in paragraph 1, following this sentence: *It was certainly a wonderful medley of people. Medley* means *blend*, and so the description seems to support the claim that it was a wonderful mix of people. Choice (A) could be true, since political and artistic types are indeed two different groups. Choice (B) is even better, since the phrase *variety of people* can refer to *peeresses, Radicals, preachers, sceptics, and bishops*. Eliminate (A) for being too narrow in scope. Choice (C) is also narrow in scope, reducing the list to women and men, which is not the point of the description. Eliminate (C). Choice (D) can be eliminated because there is no explicit difference set up between any classes in the text. The correct answer is (B).
4. **D** The question asks what the narrator implies about Lady Windermere’s reception. Use lead words and the order of the questions to find the window. Q3 asks about lines 11–14, so scan the first paragraph looking for information about *Lady Windermere’s reception*. The first paragraph indicates that it was Lady Windermere’s last reception before Easter and that the house was *even more crowded than usual*. Several of the guests are described, and lines 18–19 state, *it was one of Lady Windermere’s best nights*. Eliminate answer choices that don’t match the prediction. Eliminate (A) because *sparsely attended* means that “few people came,” and this is contradicted by the passage. Eliminate (B) because there is no evidence that the reception was *dignified*; in fact, one guest is described as *talking bad French at the top of her voice, and laughing immoderately*. Choice (C) is a Right Answer, Wrong Question trap: the passage later mentions *a series of reckless escapades*, but those were things Lady Windermere did when she was young. This phrase doesn’t describe the *reception*, so eliminate (C). Keep (D) because the reception is described as *was one of Lady Windermere’s best nights*; therefore, it was *a success*. The correct answer is (D).



5. **B** The question asks what *Lady Windermere* is best described as having. Use lead words and the order of the questions to find the window. The answer to question 4 came from lines 18–19, so scan the second paragraph looking for information describing *Lady Windermere*. Lines 26–34 describe Lady Windermere as *beautiful*, with blue eyes and *heavy coils of golden hair* that *gave to her face something of the frame of a saint, with not a little of the fascination of a sinner*. Lines 35–39 say, *Early in life she had discovered the important truth that nothing looks so like innocence as an indiscretion; and by a series of reckless escapades, half of them quite harmless, she had acquired all the privileges of a personality*. Eliminate answer choices that don't match the passage. Eliminate (A) because nothing in the passage suggests that Lady Windermere was *tactless*. Keep (B) because it matches the passage. Eliminate (C) because there is no evidence that Lady Windermere is *frugal*, which means "careful about spending money." Eliminate (D) because nothing in the passage suggests that she is *shy*. The correct answer is (B).
6. **C** The question asks what the word *start* means in line 50. Go back to the text, find the word *start*, 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 Duchess is showing that she is surprised by something. *Start* must mean something like "surprise." Choices (A), *opening*, and (B), *commencement*, refer to another meaning of "start." Eliminate (A) and (B). Choice (C), *twitch*, refers to a movement that one might make when surprised, so keep it for now. Choice (D), *procedure*, is irrelevant, so eliminate (D). The correct answer is (C).
7. **D** The question asks what the *narrator indicates about the chiromantist*. This is the first question in a paired set, but it is easy to find, so it can be done on its own. Use lead words and the order of the questions to find the window. Question 6 asks about line 50, so start with line 51 and scan the passage for the lead word *chiromantist*. In lines 51–59, Gladys (who is Lady Windermere) says of the chiromantist, "*I can't live without him*" and "*He comes to see my hand twice a week regularly*." Eliminate answers that don't match the passage. Eliminate (A) because there is no evidence that the chiromantist is *foreign*. Eliminate (B) because there is no evidence that the chiromantist is *preying on the partygoers*. Eliminate (C) because there is no evidence that the chiromantist is *well-known*. Keep (D) because Lady Windermere says that the chiromantist comes to see her *twice a week regularly*, which suggests that he is a *frequent visitor* at her home. The correct answer is (D).
8. **B** 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 Q7. Line 57 provided the evidence for the previous question: "*He comes to see my hand twice a week regularly*." Eliminate (A), (C), and (D). The correct answer is (B).
9. **D** The question asks about Lady Windermere. Notice that the following question is a best evidence question, so this question and Q10 can be answered in tandem. Look at the answers for Q10 first. The lines for (10A) reference Lady Windermere's *last reception before Easter*, which could connect to *the end of her hostessing* in (9A). Draw a line between them. In the lines for (10B), Lady Windermere asks a question. The text does not support any of the answers for Q9, so eliminate it. The lines in (10C) support the idea that Lady Windermere is serious about the fortune-teller, which is not an idea presented in Q9, so eliminate (10C). The lines in (10D) show Lady Windermere's off-hand response to the Duchess's question about the chiromantist's fortunes. Her response is not serious, so (10D) could connect with (9D). Read the two remaining pairs closely, looking for the one that best answers the question. Notice that (9A) says Lady Windermere is *nearing the end of her hostessing days*, while the text simply says it's the *last reception before Easter*. These two answers don't accurately support each other, so eliminate (9A) and (10A). The correct answers are (9D) and (10D).



10. **D** (See explanation above.)
11. **D** The question asks how the first paragraph fits in with the rest of the passage. This requires understanding of the whole passage, so do it last. The opening paragraph gives an overview of the growing disparity between individuals of high and low socioeconomic status. Eliminate (A) and (B), since neither mentions a disparity or discrepancy. Choice (C) does acknowledge a discrepancy, but there are no solutions offered throughout the course of the passage, making this choice incorrect. Choice (D) highlights the discrepancy and mentions the research that permeates the rest of the passage, so keep it. The correct answer is (D).
12. **B** The question asks for an *advantage of individuals with higher socioeconomic status* that is *explicitly* stated. This is the first question in a paired set, but it is a specific question, so it can be done on its own. Use the order of the questions to find the window. Q11 asks about the first paragraph, and Q13 asks about the third paragraph, so scan the second paragraph, looking for information about advantages of people with high socioeconomic status. Lines 31–35 state that *individuals belonging to higher status positions in society benefit from greater access to material and social resources, increased workplace opportunities, and reduced discrimination based on their social status*. Eliminate answers that don't match this prediction. Choice (A) is a Deceptive Language trap answer: the passage states that *stereotype threat* is experienced by *lower status individuals*, rather than by higher status individuals. Eliminate (A). Keep (B) because it matches the prediction. Choice (C) is a Deceptive Language trap answer: the passage states that higher status individuals are more likely to *hold public office*, not to engage in *political activism*. Eliminate (C). Choice (D) is a Deceptive Language trap answer: the passage states that higher status individuals *benefit from...reduced discrimination*; it doesn't state that *discrimination* is an advantage. Eliminate (D). The correct answer is (B).
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 31–35 provided the prediction for Q12: *individuals belonging to higher status positions in society benefit from...increased workplace opportunities...based on their social status*. Eliminate (A), (B), and (C). The correct answer is (D).
14. **A** The question asks for evidence that *supports the conclusion that members of Congress are likely to be of high social status*. Use the line references given in the answer choices to find a statement that supports this claim. The lines for (A) state, *High status individuals also tend to hold public office more than their low status counterparts*. A seat in Congress is a *public office*, so this statement supports the conclusion; keep (A). The lines for (B) discuss the *beliefs* of high-status individuals, but they don't indicate that *members of Congress are likely to be of high status*. Eliminate (B). The lines for (C) discuss high-status individuals' beliefs and what they are likely to *advocate* for, but they don't indicate that *members of Congress are likely to be of high status*. Eliminate (C). The lines for (D) indicate that *social status is a reliable predictor of support for economic inequality*, but they don't indicate that *members of Congress are likely to be of high status*. Eliminate (D). The correct answer is (A).
15. **A** The question asks for the function of the third paragraph. Look for clues in that window. The text discusses high socioeconomic status and explains *why they hold a potentially unfair advantage* from their viewpoint. These individuals have *meritocratic beliefs*, attributing their successes to *a fair application of effort, talent, and skill*. This fits (A), which states that these individuals cite reasons other than socioeconomic status for their success. Choice (B) states that there is equal opportunity for both high and low socioeconomic status, which contradicts the passage. Choice

- (C) is extreme and offensive, implying that the high socioeconomic status individuals purposely repress those less fortunate, and (D) is too strong and over encompassing as well. Eliminate (B), (C), and (D). The correct answer is (A).
16. **C** Lines 42–45 were used to answer the previous question. The correct answer is (C).
17. **B** The question asks what the word *bestow* means in line 47. Go back to the text, find the word *bestow*, 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. This part of the text talks about the *benefits of elevated social positions*. The correct answer should mean something like “give.” Eliminate (A) because it’s the opposite of *give*. Choice (B) might work, so hang on to it. Choice (C) might initially look attractive, but a closer reading of the window shows that these individuals try to explain their benefits as something earned, but they actually aren’t. Eliminate (C). Choice (D) does not match the prediction. The correct answer is (B).
18. **C** The question asks what the word *aligns* means in line 65. Go back to the text, find the word *aligns*, 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 text talks about the *present research* doing something with *mounting evidence* about *reliable predictors*. The missing word must mean something like “agree.” Now use the prediction to go through the answer choices and eliminate anything that doesn’t match the prediction. Choice (A) can be eliminated because *arranges* has nothing to do with *agrees*. Choice (B) does not match the prediction and can be eliminated. Choice (C) matches the prediction. Keep it. Choice (D) can be eliminated. The correct answer is (C).
19. **D** The question asks about data in the figure. Go straight to the figure and use the data points to POE. Find precise data points on the figure to support keeping or eliminating answer choices. Choice (A) can be eliminated because Panel B shows clearly that Democratic males are more likely to support the legislation than their female counterparts. Choices (B) and (C) are both incorrect because no information is given about the number of individuals who answered the polls to obtain this data. Choice (D) is supported by both Panel A and Panel B. The correct answer is (D).
20. **D** The question asks what the figures suggest about people *likely to sponsor legislation supporting economic inequality*. The figures show an elected official’s tendency to support or not support legislation supporting economic inequality, so a positive number would be more likely to support such legislation, while a negative number would be less likely to support it. Consistently, Republicans are in the positive range, while the Democrats are in the negative range, supporting (D). Choice (A) is incorrect because, while it may be true based on the passage, it is not supported by the figures. Several socioeconomic and social categories are mentioned in these figures, but they are not equally supporting or opposing such legislation. Choice (C) is also incorrect because Democratic females and individuals with low wealth are the most likely to *oppose* such legislation, not support it. The correct answer is (D).
21. **A** The question asks about the sequence of events in the passage. This is a general question, so save it until after the specific questions are answered. The passage begins with the songbirds’ migration and then discusses experiments about the migration that provided some information but left other questions unanswered. Choice (A) works because the observed phenomenon is the birds’ nocturnal migration and decreased sleep need during migratory states. There is more research to be done, as the lab is a controlled environment and migration happens in the wild. Choice (B) is partially true, but the portion about inconclusive results makes it incorrect, since the study did reveal strong findings. Choice (C) is incorrect because nothing is revolutionized

- or disproved. Similarly, (D) is incorrect because there is never a second study mentioned in the passage. The correct answer is (A).
22. **D** The question asks what the word *reconcile* means in line 21. Go back to the text, find the word *reconcile*, 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. This part of the text talks about researchers trying to bring together conflicting observations that *sleep-deprived fliers appear no worse for wear* and that there's *evidence linking sleep deprivation to impaired neurobehavioral and physiological function*. The missing word must mean something like "bring together." Choices (A) and (B) are both definitions of *reconcile*, but neither works in this context. Eliminate both of those answers. Choice (C) might initially sound good, because *clarify* might help researchers figure out the disparity between the observations, but it doesn't fit the context of needing to *bring together* the theories. Choice (D), *integrate*, does mean *bring together*. The correct answer is (D).
23. **D** The question asks which statement *best captures an assumption Ruth Benca made in setting up her research*. This is the first question in a paired set, so it can be done in tandem with Q24. Look at the answer choices for Q24 first. The lines for (24A) indicate that when migrating, most birds *fly under cover of night*. This statement is not an assumption of Ruth Benca's research, and it doesn't support any of the answers to Q23. Eliminate (24A). The lines for (24B) discuss the results of a *study*, but it is not Ruth Benca's study. Therefore, (24B) does not provide evidence for Q23. Eliminate (24B). The lines for (24C) indicate that the sparrows studied by Ruth Benca *fly nearly 2,700 miles twice a year between their Alaska and southern California homes*. This statement is given as an established fact; it is not an *assumption* made by Benca, nor does it support any of the answers for Q23, so eliminate (24C). The lines for (24D) state, *These results suggest that wild songbirds drastically reduce sleep time during migration, though Benca and colleagues concede it's impossible to know for sure without recording the birds in action*. This statement indicates that Benca made an assumption that the birds she studied in the laboratory were exhibiting behavior similar to that of birds in the wild. These lines support (23D). Draw a line connecting (23D) and (24D). Without any support in the answers from Q24, (23A), (23B), and (23C) can be eliminated. The correct answers are (23D) and (24D).
24. **D** (See explanation above.)
25. **B** The question asks about Neils Rattenborg's findings and what they serve to do. Carefully read the fourth paragraph to see what Rattenborg found. His tests found that birds in the *nonmigrating state suffered cognitive deficits when sleep-deprived* but were able to *maintain cognitive function* when faced with *ongoing sleep loss in the migratory state*. These findings dovetail nicely with what Benca observed in the field. Eliminate any answers that have nothing to do with this prediction. Choice (A) can be eliminated because the results support the hypothesis rather than upset it. Choice (B) is almost exactly what the prediction is, so keep it. Choice (C) can be eliminated, because no previous research was introduced. Choice (D) can be eliminated because there are no differences that are underscored. The correct answer is (B).
26. **B** The question asks about the researchers' reaction to the birds' *unprecedented ability to maintain cognitive function*. Use the line reference to find the window for this question. The passage says that *Benca and colleagues concede it's impossible to know for sure without recording the birds in action*. The answer must have something to do with conceding a lack of information. Choice (A) might initially look good because it contains the word *impossible*, but that answer choice is too extreme. It's not impossible to know, just impossible to know without additional information. Eliminate (A). Choice (B) mentions still having *other questions*, which is a good paraphrase of the prediction, so keep it. Choice (C) can be eliminated because that observation of *cognitive*



- deficits* happened before, not after as a reaction. Choice (D), *consulted other researchers*, is not mentioned anywhere in the text. The correct answer is (B).
27. **C** The question asks about a factor that would necessitate further research. Using chronology, the answer to this question must come after the noted results from the research, so look around lines 50–56. The text says that the additional answers to the cognition question would be *impossible to know for sure without recording the birds in action*. The study tested the birds in a lab setting, so further research must require birds actually flying and migrating. Choice (C) is the only answer that addresses this. The correct answer is (C).
28. **C** The question asks what the word *improbable* means in line 68. Go back to the text, find the word *improbable*, 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. This part of the text talks about *the longstanding mysteries of the sleepless flight* of the migrating birds, indicating that their migration is something of notable interest because of its unusual nature. The correct answer must mean something like “unlikely” or “impressive.” Choices (A), (B), and (D) could be possible meanings for *improbable* in other contexts, but the other meanings imply the journey isn’t real. Only (C), *remarkable*, fits the context of the passage. The correct answer is (C).
29. **A** The question asks what can *be inferred about songbirds*. Notice that the following question is a best evidence question, so this question and Q30 can be answered in tandem. Look at the answers for Q30 first. The line for (30A) asks about *sleep walking*. This makes (29B) look good, but there is no mention of actual sleepwalkers in the passage. Eliminate (30A). Next, consider the lines for (30B). The text refers to *increased restlessness at night during the migratory season*. This matches the idea about *activity levels* in (29A). Connect answers (29A) and (30B). The lines in (30C) mention songbirds’ *imperviousness to sleep deprivation* (which means that they are not affected strongly by sleep deprivation). This doesn’t support any answers in Q29, so eliminate it. The lines in (30D) talk about the *role of sleep*, not songbirds, so eliminate it too. The correct answers are (29A) and (30B).
30. **B** (See explanation above.)
31. **A** The question asks what the word *feature* means in line 10. Go back to the text, find the word *feature*, 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 text mentions *report cards with numbers or phrases* on them. The correct answer must mean something like “show.” Notice that the word is used as a verb. Choice (A), *present*, might look like the noun, but as a verb, it matches the prediction, so keep it. Choice (B), *attribute*, does not fit the prediction, so eliminate it. Choice (C), *report*, matches the prediction, so keep it. Choice (D), *promote*, does not fit the prediction, so eliminate it. Consider the remaining answer choices, (A) and (C). *Report* means to tell, to convey information; *present* more generally means to give or to show. Although these might initially seem very close, the report cards are not reporting the phrases. They are using the phrases to communicate performance expectations. Eliminate (C). The correct answer is (A).
32. **B** The question asks for a reasonable inference about what the authors of Passage 1 believe about a standards-based report card. Notice that the following question is a best evidence question, so this question and Q33 can be answered in tandem. Look at the answers for Q33 first. The lines in (33A) mention report card *changes*, but not details, so eliminate it. The lines in (33B) refer to *performance expectations* on standards-based report cards. This describes the report cards but doesn’t express a belief about them, so eliminate it. The lines in (33C) mention *third-grade mathematics*, which makes (32D) look good, but it doesn’t mention *high school* in comparison. Eliminate (33C). Now consider the lines for (33D). They state: *Such a report card actually pro-*

*vides more detailed, specific information than a traditional grade.* This corresponds to the *specific way for teachers to evaluate students* as in (32B), so connect these answers. The correct answers are (32B) and (33D).

33. D (See explanation above.)
34. D The question asks what Passage 2 states about the new approach to grading. Notice that the following question is a best evidence question, so this question and Q35 can be answered in tandem. Look at the answers for Q35 first. The lines in (35A) refer to a contrast between the new approach's criterion-based grading versus grading on a curve. This supports (34D), so draw a line connecting them. The lines in (35B) are deceptive: they refer to a dilemma, which would seem to support (34A), but the dilemma refers to the old, curve system, not the new one. Eliminate (35B). The lines in (35C) again refer to the inferiority of the old, curve system. Eliminate (35C). The lines in (35D) refer to plans to bring back teacher comments, and to recognize student effort and attitude. This does not support anything in Q34, so eliminate it. Only one pair of connected answers is remaining. The correct answers are (34D) and (35A).
35. A (See explanation above.)
36. C The question asks what the word *scrap* means in line 53. Go back to the text, find the word *scrap*, 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 text refers to *letter grades* as something people are *far from ready* to change to *standards-based report cards*. The correct answer must mean something like "get rid of." Choices (A), *save*, (B), *fragment*, and (D), *detach*, do not fit this prediction, although they do recall the noun form meanings of the word *scrap*. Only (C), *discard*, fits the prediction. The correct answer is (C).
37. A The question asks what the author of Passage 2 says about the use of standards-based report cards in elementary schools. Since it is not clear from what part of the passage the answer will come, this question can be answered later. Look for discussion of elementary schools in particular. There is no mention of elementary schools until paragraph 3, and elementary schools are not mentioned again in paragraph 4, so the correct answer has to be a restatement of something said in paragraph 3. Choice (A) matches paragraph 3's mention of *plans to expand standards-based report cards to its four middle schools from its elementary schools, where they have been used since 2006*, even though the paragraph is about the delay of such plans. Keep it for now. Choice (B) is the right answer to the wrong question, because it matches the resistance encountered to instituting the report cards in the middle school, rather than the elementary school. Eliminate (B). Choice (C) is too strong: there is no comparison between the standards-based report cards and other systems in Passage 2. Eliminate (C). Choice (D) goes too far. They have been implemented, but the text does not specify whether they have been successfully implemented in grade schools. Eliminate (D). The correct answer is (A).
38. C The question asks which concern not mentioned in Passage 1 is addressed by the given quote used by the author of Passage 2. First, locate the quote in context and predict an answer based on the text. The quote describes a weakness of the older system of grading on a curve, namely how it's hard to know *whether anybody has learned anything*. Because they are just compared to each other, *they could all have done miserably, just some less miserably than others*. Eliminate any answer choices that don't address this issue. Choice (A) is about report cards rather than grading on a curve, so eliminate (A). Choice (B) is about letter grades versus number grades, so eliminate that answer. Choice (C) mentions students *graded on a curve*, so keep (C). Choice (D) contrasts *traditional report cards* with *standards-based report cards*. Eliminate (D). The concern about grading on a curve is not mentioned in Passage 1. The correct answer is (C).



39. **D** The question asks about the general relationship between Passage 1 and Passage 2. Answer it after answering the specific questions about Passage 1 only and Passage 2 only. First, consider the tone and opinions of both passages. Both of them report on new report cards and have a neutral-to-positive tone. Eliminate answer choices that misrepresent these facts. Choice (A) indicates a match in tone, but Passage 1 does not contain an argument, and Passage 2 does not contain responses to that argument. Eliminate (A). Choice (B) is completely wrong in tone, so eliminate (B). Choice (C) could match in tone, but there are no alternative conclusions drawn in one passage versus the other. Eliminate (C). Choice (D) matches in tone, and Passage 2 does contain further information about the new report cards, so select (D). The correct answer is (D).
40. **B** The question asks what the authors of both passages would likely agree on regarding standards-based report cards. To answer it, consider what the authors of both passages actually say about these report cards, and base the prediction on that evidence. Choice (A) references *parental insistence*, which sounds something like the parental complaints mentioned in Passage 2. But the only thing Passage 1 says about parents is that they *may find the change disconcerting*. Because Passage 1 provides no evidence about possible agreement with Passage 2 on this point, (A) can be eliminated. Choice (B) references *some resistance*, which both Passages 1 and 2 also do, and (B) states that the new report cards may provide more information than previous systems; both Passages 1 and 2 also do this. Since both passages state these things explicitly, it is reasonable to assume that both authors would agree on this point. Keep (B), but also keep checking, in case something better comes along. Choice (C) references *grading on a curve*, which is not mentioned in Passage 1, so eliminate (C) on that basis. Also, it is not known whether the new report cards *remove* the other system, so (C) is wrong on that count as well. Choice (D) sounds reasonable up to the comma, but the claim that the new report cards are *superior* to alternatives is not supported by statements in either passage. Eliminate (D). The correct answer is (B).
41. **C** The question asks how the author of Passage 1 would most likely respond to points made in the final paragraph of Passage 2. To answer this question, first review the final paragraph of Passage 2, which talks about responding to parental complaints by introducing benchmarks for each marking period, bringing back teacher comments, and looking for ways to recognize student effort and attitude. Then consider what the author of Passage 1 actually says that is relevant to these points. In the second paragraph of Passage 1, the author states that a standards-based report card provides more information than does a traditional report card, which shows clear support for the new system. But in the third paragraph of Passage 1, the author also shows support for report cards *that combine traditional grades and information about progress toward standards* and cites a researcher who supports including *teacher judgments about students' academic progress, growth, intellectual character, and work habits*. Based on this evidence, it seems the author of Passage 1 would support the changes mentioned in the fourth paragraph of Passage 2. Choice (A) could be true, but there isn't strong textual support for such sympathy. Keep (A) for now, just in case. Choice (B) can be eliminated: the author of Passage 1 would likely support the use of benchmarks, not oppose it. Choice (C) looks good, as it fits the evidence-based prediction made above, so keep it, and eliminate (A), as (C) is better. Choice (D) is too strong: the author of Passage 1 cites an author who supports including intellectual character. This is not the same thing as the author of Passage 1 *insist[ing]* that this factor be included. Eliminate (D). The correct answer is (C).
42. **B** The question asks about the impact of the words *must*, *exhibited*, and *reproduced* on the tone of the paragraph. Look for specific evidence in the text indicating the authors' goal of the paragraph. The paragraph is informational—the authors give straightforward information about a hypothesis and the observed results of the experiments. Choice (A) can be eliminated because the authors aren't *hopeful* or trying to convince readers of *uncertain results*. Choice (B) goes



along with the prediction based on the text, so don't eliminate it. Choice (C) can be eliminated because the authors are straightforward but not argumentative. Choice (D) does not work because there is no indication that the authors want to *instruct others in the reproduction of simulated bat trajectories*. The correct answer is (B).

43. **B** The question asks about the theory *experiments were performed in order to verify*. Notice that the following question is a best evidence question, so this question and Q44 can be answered in tandem. Look at the answers for Q44 first. The lines in (44A) mention one *integrator* that outperformed others. Although (43C) also mentions *integrators*, the text is giving information, not outlining a theory. Eliminate (44A). Next, consider the lines in (44B). They state: *An important prediction of our model is that sensory noise determines motor performance*, describing the predicted theory in full. This idea is paraphrased in (43B), where *sensory errors affect movements*. Connect these two answers. The lines in (44C) describe the *new experiments* without mentioning the theory again. Eliminate (44C). The lines in (44D) talk about *gain parameters in light versus dark*. This sounds like the *light conditions* and *gain parameters* in (43D). However, (43D) refers to *optimal gain parameters*, whereas the text is referring to *a light level that is considered optimal*. Since (44D) doesn't fully support any answer from Q43, eliminate it. The correct answers are (43B) and (44B).
44. **B** (See explanation above.)
45. **C** The question asks about the inaccuracy addressed by the *single exponential integrator*. Find this phrase in the text, and read the window to determine what the integrator does. According to the text, the exponential integrator models bats' *noise suppression* strategy better than others. The answer should have something to do with an error of *noise suppression*. Choice (A) can be eliminated because information is not lost. Choice (B) can be eliminated because it's too specific. The integrator deals with all sensory noise, not just *sub-optimal light*. Choice (C) can be kept because it's a solid rewording of the prediction. Choice (D) can be eliminated because it's the opposite of the prediction. The correct answer is (C).
46. **C** Lines 33–36 were used to answer the previous question. The correct answer is (C).
47. **A** The question asks what the word *fidelity* means in line 36. Go back to the text, find the word *fidelity*, 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 text states the *integrator* was *successful* at showing the *bat's flight trajectories*. The correct answer must mean something like “closely imitating the original.” Choice (A) could work, so keep it. Choice (B) can be eliminated because the results were not *lower quality*. Choice (C) can be eliminated because there is no evidence of *complete perfection*. Choice (D) might look okay on its own, but (A) is better, because the correct answer should be as close to *really accurate* as possible. The *reproduction of details* matches the text's description that the integrator *reproduced...trajectories with high fidelity*. The correct answer is (A).
48. **A** The question asks about the *main purpose* of the fourth paragraph. Read the paragraph to determine what the main idea is. The researchers hypothesized that the bats were using a *noise-suppression strategy...to overcome the noise*. Then they determined this strategy was the *simple exponential integrator*. Choice (A) completely describes this, so keep it. Choice (B) is deceptive, using several words and phrases from the text without actually matching the prediction. Eliminate it. No *pitfalls of a theory* are mentioned, so eliminate (C). Choice (D) does not match the text since the authors found the simple exponential integrator outperformed the uniform integrator. The correct answer is (A).
49. **D** The question asks about the assumption made about *highly curved flight trajectories*. In the final sentence of the passage, the authors summarize their findings as a *surprising conclusion* that the

- curved trajectories *are due to sensory limitations—not motor limitations*. Therefore, the flight patterns are a result of a limitation the bat deals with. Choice (A) can be eliminated, because the trajectories were normal for bats with the introduction of sensory noise. Choice (B) can be eliminated because it's too extreme and not supported by the text. Choice (C) doesn't make sense. The researchers compared flight trajectories of bats in light and dark, but no flight trajectory replaced another one. Choice (D) matches the prediction because the authors were surprised that sensory limitations rather than motor limitations caused the curved trajectory, so they must have previously thought the curved trajectories were caused by the physicality of the bat. The correct answer is (D).
50. **A** The question asks about the effect of adding a *noise-suppression strategy to trials simulated with noise*, based on both the passage and the figures. The figures do not include the phrase *noise-suppression strategy*, so look for that phrase in the text. Lines 27–30 state, *We therefore hypothesized that the bat must use a noise-suppression strategy and integrate (average) over several sensory measurements to overcome the noise*. Based on these lines, the trials with the *noise-suppression strategy* must be in the figure labeled *Integration*, so look at the second figure. According to the key, the light grey dotted lines represent tests *simulated with noise*, so focus on those lines. There are many of the light grey dotted lines, and they all *converge* (come together at a point) with the original trajectory. Therefore, the figures support (A). The passage also supports (A): lines 33–36 state, *This simple exponential integrator exhibited successful noise suppression and reproduced the bat's flight trajectories with high fidelity*. Keep (A) and eliminate (B), (C), and (D). The correct answer is (A).
51. **C** The question asks about the trajectory that most nearly *matches the original trajectory*. The *original trajectory* line is the dotted black line. Find the line that most closely follows that one. The *Integration* lines are all much closer to the original trajectory than any of the *No Integration* lines, so eliminate (A) and (D). Look to see which line most closely lines up with the *original trajectory* line in the *Integration* graphic. It's one of the gray lines, which are *simulated with noise*. The correct answer is (C).
52. **C** The question asks if the graph supports the authors' claim that bat flights in *optimal light conditions are more direct*. There is no evidence in the figure to show *optimal light conditions*. Eliminate (A) and (B). Choice (C) addresses the lack of information about optimal light conditions in the figure. Keep it. Choice (D) does not address optimal light specifically. Eliminate (D). The correct answer is (C).

## Section 2: Writing and Language

1. **D** Note the question! The question asks which choice *provides the most appropriate introduction*, so it tests consistency of ideas. Determine the subject of the passage and find the answer that is consistent with that idea. The passage asks why people *trust the chicken...from the grocery store* and states that it is because of the FDA. Eliminate (A), (B), and (C) because they are not consistent with the passage's focus on *trust* and the FDA. Keep (D) because *safe* is consistent with the idea of *trust* that the passage says the FDA provides. The correct answer is (D).
2. **A** Apostrophes change in the answer choices, so this question tests apostrophe usage. When used with a noun, an apostrophe indicates possession. In this sentence, the *beginnings* belong to the agency, so there should be an apostrophe on *agency*. Eliminate (C). Nothing belongs to *beginnings* in this sentence, so no apostrophe is needed on that word; eliminate (B) and (D). The correct answer is (A).

3. **C** 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). Look at the phrase after the preposition to determine the correct idiom. Use POE and guess if there is more than one answer left. The correct idiom is *as we know it*. Eliminate (A) and (B). The correct answer is (C).
4. **A** Note the question! The question asks how to best combine the underlined sentences, so it tests precision and concision. The order of phrases changes in the answer choices, so look for the one with the most precise meaning. Choice (A) combines the ideas effectively, so keep it. Choice (B) uses the word *regulates* twice. There is no reason to repeat that verb, so eliminate (B). Choice (C) expresses the same idea as (A), but is less concise, so eliminate (C). Choice (D) uses the word *goods* twice, so eliminate (D). The correct answer is (A).
5. **A** Transitions and pronouns change in the answer choices, so this question could test consistency of pronouns or consistency of ideas. A transition must be consistent with the relationship between the ideas it connects. There is no conclusion in the second part of the sentence, so the word *thus* is not consistent with the sentence; eliminate (B). The pronouns in (A), (C), and (D) are all consistent with *fees*, the noun the underlined pronoun refers to. The first part of the sentence, *The FDA operates on a budget of nearly \$5 billion a year, much of which is generated by user fees*, is an independent clause. As written, the second part of the sentence, *which come primarily from pharmaceutical companies, whose drugs require FDA approval*, is not an independent clause. Choice (A) correctly links these two ideas with a comma. Changing the pronoun from *which* to either *those* or *they* makes the second part of the sentence an independent clause. A comma alone cannot be used between two independent clauses, so eliminate (C) and (D). The correct answer is (A).
6. **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 paragraph before the transition explains the scope of the FDA and its budget. This paragraph talks about the people who *work* at the FDA. These ideas contrast with each other because the author indicates that people *are familiar with the FDA's warning labels* but that they don't know *who actually works there*. Choice (A) can indicate a contrast, so keep it. Eliminate (B), (C), and (D) because they are not contrasting transitions. The correct answer is (A).
7. **D** Note the question! The question asks which choice *best supports the statement made in the first part of the sentence*, so it tests consistency. Eliminate answers that are inconsistent with the purpose stated in the question. The first part of the sentence says *The FDA is certainly large*. Eliminate (C) because it is inconsistent with the idea that the FDA is *large*. Choices (A), (B), and (D) are all consistent with the idea of *large*, but neither the FDA's *approvals* nor its *role in reducing tobacco use* is consistent with the focus of the paragraph, which is about the people who work at the FDA. Eliminate (A) and (B). Choice (D) is consistent with both the first part of the sentence and the paragraph. The correct answer is (D).
8. **B** Note the question! The question asks whether a sentence should be added, so it tests consistency. If the new sentence is consistent with the ideas surrounding it, then it should be added. The paragraph discusses the *employees* of the FDA and *scientists* specifically. The new sentence lists types of scientists, so it is consistent with the main idea of the paragraph. Eliminate (C) and (D). Eliminate (A) because it does not accurately describe the new sentence. Choice (B) accurately states that the new sentence *gives some data that will be elaborated upon later in the paragraph*. The correct answer is (B).



9. **D** Vocabulary changes in the answer choices, so this question tests precision of word choice. There is also the option to DELETE; consider this choice carefully as it is often the correct answer. The sentence already contains the word *confident*, so there is no reason to repeat that word or idea. Eliminate (A). *Certainly* and *sureness* mean the same thing as *confident*, so eliminate (B) and (C). Choice (D) is concise and gives the sentence a precise meaning, so the underlined portion should be deleted. The correct answer is (D).
10. **C** The number of words changes in the answer choices, so this question tests concision. The sentence contains a list of three things: 1) *chemistry*, 2) *biology*, and 3) *physics*. The sentence says *a matter of* before the list, so there is no reason to repeat that phrase; eliminate (A). Eliminate (B) because the word *and* is needed to join the last item in the list. Keep (C) because it is concise, and it correctly lists the three items. Eliminate (D) because it uses the phrase *biological sciences*, which is inconsistent with the words *chemistry* and *physics*. The correct answer is (C).
11. **C** Verbs change in the answer choices, so this question tests consistency of verbs. A verb must be consistent with its subject and with the other verbs in the sentence. The subject of the verb is *thing* in the phrase *the truly remarkable thing about the FDA*, which is singular. To be consistent, the underlined verb must also be singular. Eliminate (A), (B), and (D) because they are all plural. The correct answer is (C).
12. **C** Pronouns change in the answer choices, so this question tests consistency of pronouns. A pronoun must be consistent in number with the noun it refers to. The underlined pronoun refers to the noun *professional hockey*, which is singular. To be consistent, the underlined pronoun must also be singular. Eliminate (B) because *themselves* is plural. *Professional hockey* is not a person, so it should be referred to as *it*, not *him* or *her*, so eliminate (D). Eliminate (A) because *its self* is incorrect; the correct way to write this idea is *itself*. The correct answer is (C).
13. **A** Note the question! The question asks which choice *provides the most logical conclusion 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. Determine the subject of the first part of the sentence and find the answer that is consistent with that idea. The first part of the sentence states that *the name* of the hockey cup was changed to *commemorate the contributions of Lord Stanley*. Keep (A) because it explains why Lord Stanley was important to the sport of hockey. Eliminate (B) and (C) because they are not consistent with the paragraph's focus on hockey. Eliminate (D) because deleting the underlined portion makes the sentence less precise. The correct answer is (A).
14. **B** The number of words changes in the answer choices, so this question could test concision. Check the shortest answer first: (A) makes the sentence incomplete: *Just as the NHA had before, also competing annually for the Stanley Cup*. Eliminate (A). Choices (C) and (D) similarly make the sentence incomplete, so eliminate (C) and (D) as well. Choice (B) makes the sentence complete by adding a subject: *Just as the NHA had before, so too did the NHL compete annually for the Stanley Cup*. The correct answer is (B).
15. **B** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *The Boston Bruins, established in 1924*, is not an independent clause. Eliminate (A) and (C) because semicolons and periods can only be used between two independent clauses. Eliminate (D) because a colon can only come after an independent clause. Choice (B) appropriately places a comma after the descriptive phrase *established in 1924* to separate it from the rest of the sentence. The correct answer is (B).
16. **D** Note the question! The question asks whether a sentence should be deleted, so it tests consistency. If the content of the sentence is consistent with the ideas surrounding it, then it should not be

deleted. The sentence explains that the NHL was *the only remaining league*, which is consistent with the idea later in the paragraph that the NHL had *dominion* over the hockey cup. The sentence should not be deleted, so eliminate (A) and (B). Eliminate (C) because this sentence does not *contain the central argument of the passage as a whole*. Choice (D) accurately states that the sentence is *relevant* to the ideas in this paragraph. The correct answer is (D).

17. **A** Note the question! The question asks which choice *best maintains the tone established in the passage*, so it tests consistency. Eliminate answers that are inconsistent with the purpose stated in the question. The first paragraph of the passage describes the NHL as *the pinnacle of hockey greatness*, and *the NHL's sole dominion* is described just before this sentence. The passage is also written with a formal tone. Choice (A), *supremacy*, is a good match with these ideas and tone, so keep it. Eliminate (B) and (D) because *awesomeness* and *swagger* are too informal for the tone of the passage. Eliminate (C) because *tyranny* is a very negative word suggesting that the author does not support the NHL, which is not consistent with the passage's tone.
18. **D** The length of the phrase around *Canadian teams* changes in the answer choices, so this question tests concision. The words *ascendant* and *dominant* have very similar meanings in this context, so there is no need to use both terms. Eliminate (A), (B), and (C). Choice (D) is concise and gives a precise meaning to the sentence. The correct answer is (D).
19. **A** Note the question! The question asks which choice *logically follows the previous sentence*, so it tests consistency. Eliminate answers that are inconsistent with the purpose stated in the question. The previous sentence states that *the league has 30 teams* today. Choice (A) is consistent with the idea of the number of teams in the league. Keep (A). Eliminate (B) because the author's *favorite team* is not consistent with the idea of how many teams are in the league. Eliminate (C) because information about which teams *have won the Stanley Cup in recent years* does not relate to the number of teams in the league. Eliminate (D) because *places with no natural ice* is inconsistent with the number of teams. The correct answer is (A).
20. **B** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *Since the early days of professional hockey*, is not an independent clause. The second part of the sentence, *other leagues have come and gone*, is an independent clause. Eliminate (A) because a comma followed by the word *but* can only link two independent clauses. Keep (B) because a comma alone can link these two types of clauses. Eliminate (C) because a semicolon can also only be used between two independent clauses. Eliminate (D) because a colon can only come after an independent clause, and the first part of the sentence is not an independent clause. The correct answer is (B).
21. **B** Note the question! The question asks whether a phrase should be added, so it tests consistency. If the content of the phrase is consistent with the ideas surrounding it, then it should be added. The phrase gives examples of *other leagues*, which is consistent with the sentence and the rest of the paragraph. Adding the examples makes the sentence more precise, so the phrase should be added; eliminate (C) and (D). Eliminate (A) because the paragraph does not *shift its focus*. Keep (B) because the phrase does provide *examples of some current leagues*. The correct answer is (B).
22. **D** Verbs and pronouns change in the answer choices, so this question tests consistency of verbs and pronouns. A verb must be consistent in number with its subject. The subject of the underlined verb is *the NHL*, which is singular. To be consistent, the underlined verb must also be singular. Eliminate (A) and (C) because they use the plural verb *hold*. In (B) and (D), the pronouns differ. A pronoun must be consistent in number with the noun it refers to. The underlined pronoun refers to the noun *the NHL*, which is singular. To be consistent, the underlined pronoun must also be singular. Eliminate (B) because *they* is a plural pronoun. The correct answer is (D).



23. **D** Vocabulary changes in the answer choices, so this question tests precision of word choice. Look for a word with a definition that is consistent with the other ideas in the sentence. The sentence states that *many Americans have accepted the health risks of smoking*, and it contrasts the fact that people may be smoking less but have another health risk that has *replaced smoking*. The answer should suggest that Americans have “changed” *from that deadly pastime*. *Puffed* means “breathe,” so eliminate (A). *Run* means “hurry,” so eliminate (B). *Fired* means “stimulated” or “dismissed,” so eliminate (C). *Veered* means “changed direction,” so keep (D). The correct answer is (D).
24. **C** Note the question! The question asks where sentence 4 should be placed, so it tests consistency of ideas. The sentence must be consistent with the ideas that come both before and after it. Sentence 4 says *this may sound odd* and *everyone has to sit*. The word *this* refers to an idea in the sentence before that *may sound odd*. Eliminate (A) because there is nothing *odd* about what is stated in sentence 3. Eliminate (B) because the sentence cannot begin the paragraph since it needs to come after something that is *odd*. Keep (C) because the quote in sentence 1 could seem *odd* before the author explains more. The word *however* at the beginning of sentence 2 also logically follows sentence 4 because there is a contrast between it sounding *odd* and having *terrible consequences*. Eliminate (D) because sentence 3 says *indeed*, which means it must build on the previous point, and it is more of a contrast with what is stated in sentence 4. The correct answer is (C).
25. **C** Note the question! This question asks how to effectively combine the underlined sentences, so it tests precision and concision. Check the shortest answer first. Choice (D) is the shortest option, but the meaning is not precise: the people should not be described as being *safe*; rather, the original sentence states that this sample size is *safely representative*. The people are also not described as being *in their 20s*; eliminate (D). Choice (B) is the next shortest option, but the word *safe* is used to describe *sample* instead of the *sample* being described as *safely representative* as in the original. Eliminate (B) because the meaning is not precise. Choice (A) does not indicate that time frame over which the studies took place, so eliminate (A). Choice (C) gives a precise meaning to the sentence. The correct answer is (C).
26. **D** The length of the phrase changes in the answer choices, so this question tests concision. There is also the option to DELETE; consider this choice carefully as it is often the correct answer. Deleting the underlined portion makes it clear that there is a comparison in the sentence between people *who sat for more than four hours a day* and those *who sat for only two*, so keep (D). Choices (A), (B), and (C) do not add any information that makes the meaning of the sentence more precise, so eliminate them. The correct answer is (D).
27. **D** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. Choice (B) splits the sentence after *ancestors*. In this case, the first part of the sentence, *Consider our primate ancestors*, is an independent clause. The second part of the sentence, *for example, if they were not incredibly active at all times, they would not have survived*, is also an independent clause. A period can be used between two independent clauses, but the phrase *for example* is not necessary to the main meaning of the sentence and should have a comma after it. Eliminate (B). Choice (D) puts a colon after *example*. In this case, the first part of the sentence, *Consider our primate ancestors, for example*, is an independent clause. The second part of the sentence is *if they were not incredibly active at all times, they would not have survived*, which is also an independent clause. A colon can connect two independent clauses, so keep (D). Eliminate (A) and (C) because the sentence contains two independent clauses, which must be linked with some type of punctuation other than a comma alone. The correct answer is (D).
28. **B** Note the question! The question asks which choice *offers an accurate interpretation of the data in 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. The first part of the sentence is describing when Americans are *upright and active*. Look for that on the graph. According to the graph, people are *active/standing* for 3 hours each day. This supports (B). Eliminate (A), (C), and (D) because they don't match with this information. The correct answer is (B).
29. **D** Note the question! The question asks which choice *offers an accurate interpretation of the data in 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) is not consistent with the figure because the figure never mentions *standing desks*. Eliminate (A). According to the graph, *sitting at work* is 7.5 hours, and out of the whole day 21 hours are sedentary. That means that work time is not *more than half of all sedentary time on an average day*, so eliminate (B). The graph does not give any information about how much *the average American...eats*, so eliminate (C). Choice (D) is consistent with the graph. The correct answer is (D).
30. **B** Pronouns change in the answer choices, so this question tests consistency of pronouns. A pronoun must be consistent with other pronouns in the sentence. The underlined pronoun refers to *those*, which represents people, since it is the subject of the verb *fidget*. The words *that* and *which* cannot refer to people, so eliminate (A) and (D). The word *who* can refer to people, so keep (B). The pronoun *we* does refer to people, but the phrase *those we...fidget* makes the meaning of the sentence unclear, so eliminate (C). The correct answer is (B).
31. **D** Verbs change in the answer choices, so this question tests consistency of verbs. A verb must be consistent in tense with other verbs in the sentence. The sentence contains the past-tense verbs *found*, *fidgeted*, and *were*. To be consistent, the underlined verb should also be in the past tense. Eliminate (A) and (C) because they are both present tense. Eliminate (B) because to say that people *went...still* is not precise. Choice (D), *sat...still* is more precise since the sentence is talking about *sitting*. The correct answer is (D).
32. **B** Pronouns change in the answer choices, so this question tests consistency of pronouns. A pronoun must be consistent in number with the noun it refers to. The underlined pronoun refers to *sitting* since the passage describes the *detrimental* (negative) *effects* of sitting. *Sitting* is singular, so the underlined pronoun must be singular. Eliminate (A) and (D) because *their* and *they're* are plural pronouns. Apostrophes also change in the answer choices, so this question also tests apostrophe usage. Eliminate (C) because *it's* means "it is," and *it is detrimental effects* does not make sense in the context of the sentence. Choice (B) appropriately uses the possessive pronoun *its*. The correct answer is (B).
33. **A** Note the question! The question asks which choice is *a conclusion that acknowledges the problem of sitting but also encourages the reader to use this research in a proactive way*, so it tests consistency. Eliminate answers that are inconsistent with the purpose stated in the question. Choice (A) is consistent with the purpose stated in the question because it suggests that the reader could do something about the *threat*. Keep (A). Choice (B) *encourages the reader* to be healthy, but it does not *acknowledge the problem*, so eliminate (B) because it is not fully consistent with the purpose stated in the question. Choice (C) also does not *acknowledge the problem*, so eliminate it. Choice (D) does not *encourage the reader* to be *proactive*, as it suggests that the reader can't do anything, so eliminate it because it is not consistent with the purpose stated in the question. The correct answer is (A).
34. **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, *For many people, "fashion"—the latest lines of shoes, suits, dresses, or furniture*, is not an independent clause. The second part of the sentence, *refers to new things*, is also not an independent clause. Eliminate (A) because a semicolon

- can only be used between two independent clauses. Note that the non-underlined portion of the sentence has a dash after “fashion.” The phrase *the latest lines of shoes, suits, dresses, or furniture* is not necessary to the main meaning of the sentence, so it must be set off from the rest of the sentence. Since the phrase has a dash before it, it needs another dash after. Eliminate (B) and (C) because they do not include a dash. The correct answer is (D).
35. **A** Verbs change in the answer choices, so this question tests consistency of verbs. A verb must be consistent with its subject and with other verbs in the sentence. The underlined portion is part of a list of two things in the sentence. The first verb in the list is *have sported*, which is in present perfect tense, so the underlined portion needs to be in the same tense. Eliminate (C) and (D) because they are both present tense. Choice (B) appears to match with *have sported*; however, the word *have* before *sported* can refer to both verbs in the list. It is not necessary to repeat the word *have* before *furnished*. Eliminate (B). Choice (A) is concise and gives a precise meaning to the sentence. The correct answer is (A).
36. **A** Verbs change in the answer choices, so this question tests consistency of verbs. A verb must be consistent with its subject and with other verbs in the sentence. The subject of the sentence is *this new style*, which is singular. To be consistent, the underlined portion must also be singular. Eliminate (C) because *seek* is a plural verb. The previous sentence also describes *the newest style* and uses the present tense verb *is*, so this sentence should be in present tense. Eliminate (B) because *has sought* is past tense. Choice (A) is present tense and singular, so keep it. Eliminate (D) because it makes the sentence incomplete. The correct answer is (A).
37. **B** Commas change in the answer choices, so this question tests comma usage. The phrase *IFC’s Portlandia* is not necessary to the main meaning of the sentence, so it should be set off by commas. Eliminate (A) because it lacks a comma before the phrase. Keep (B) because it correctly places commas before and after the phrase. Eliminate (C) because it lacks a comma after the phrase. Eliminate (D) because it has an extra comma after *IFC’s*. The correct answer is (B).
38. **B** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *Framed by men riding nineteenth-century bicycles, chipping their own ice, curing their own meats, and coiffing their handlebar mustaches*, is not an independent clause. The second part of the sentence, *these parts of the song jokes that the dream of the 1890s is alive in Portland*, is an independent clause. Choice (B) appropriately uses a comma to connect the two parts of the sentence. Both periods and semicolons can only be used between two independent clauses, so eliminate (A), (C), and (D). Choice (B) also appropriately uses the singular noun *the song*, which is consistent with the non-underlined verb *jokes*. The correct answer is (B).
39. **C** Note the question! The question asks which choice *most effectively sets up the examples that follow*, so it tests consistency of ideas. Eliminate answers that are inconsistent with the purpose stated in the question. The examples that follow are *salvaged furniture repainted in such a way that its age shows, handmade goods from artisans and craftspeople, and facial-hair configurations last seen on William Howard Taft*. Eliminate (A) and (B) because while these things may be *surprising* or *peculiar*, these answer choices are not precise about why the examples are unusual. The word *yesteryear* in (C) is consistent with the ideas of *age* and *last seen on William Howard Taft*, so keep (C). Eliminate (D) because the examples in the sentence are not described as being *expensive*. The correct answer is (C).
40. **C** Note the question! The question asks whether a sentence should be added, so it tests consistency. If the content of the new sentence is consistent with the ideas surrounding it, then it should be added. The paragraph discusses *rustic chic* and specifically *the question of economics*, which the

author describes as paying *more* for something that is old. The new sentence mentions *American gross domestic product*, which has to do with economics but not in the sense that economics is used in this paragraph. Since this is not consistent with the ideas in the paragraph, the sentence should not be added. Eliminate (A) and (B). Choice (C) accurately states that the new sentence *is not relevant to the main focus of the passage*. The new sentence does not *contradict information given in the following paragraph*, so eliminate (D). The correct answer is (C).

41. **D** Vocabulary changes in the answer choices, so this question tests precision of word choice. Look for a word with a definition that is consistent with the other ideas in the sentence. The sentence explains why rustic chic is *difficult to understand*. The author goes on to say that *we know* whom *hippies* and *flappers* are *trying to dress like*. This suggests that we do not know whom *rustic chic* is imitating. Thus, the word in the sentence should mean something like “person they’re trying to be like.” *Interest* means “object of attention,” which could work, so keep (A). *Choice* means “decision,” so eliminate (B). *Fashion* means “style,” so eliminate (C). *Source* means “where something comes from,” which gives a precise meaning to the sentence, so keep (D). *Interest* is less precise than *source*, so eliminate (A). The correct answer is (D).
42. **B** Note the question! The question asks which choice could *link this paragraph with the ideas that follow*, so it tests consistency of ideas. Determine the subjects of these paragraphs and find the answer that is consistent with those ideas. This paragraph explains that rustic chic is *difficult to understand* because it does not have a clear referent, meaning people whom fans of rustic chic are trying to be like. The next paragraph says that *these questions may be unanswerable*. Choice (A) does ask a question, but *getting married later* is not consistent with the idea in this paragraph, so eliminate (A). Choice (B) asks a question and “*they*” is consistent with this paragraph, so keep (B). Choice (C) does not ask a question, so it is inconsistent with the statement at the beginning of the next paragraph. Eliminate it. Choice (D) does ask a question, but *beards* and *mustaches* are not consistent with the idea in this paragraph, so eliminate (D). The correct answer is (B).
43. **D** Note the question! The question asks where Sentence 2 should be placed, so it tests consistency of ideas. The sentence must be consistent with the ideas that come both before and after it. Sentence 2 offers a suggestion to wear clothes *that men and women did before the existence of the fashion industry*. Sentence 4 asks a question, and Sentence 5 offers a suggestion in response to that question. Sentence 6 asks another question, but this sentence does not have a parallel suggestion that would respond to it. Thus, Sentence 2 should go after Sentence 6 as the response to that question. The correct answer is (D).
44. **B** The subject of the underlined phrase changes in the answer choices, so this question tests consistency. Choose the answer that is consistent with the rest of the sentence. The first part of the sentence says *rustic chic provides one way to*, so the underlined portion should be something rustic chic provides. The later part of the sentence says that *depending on whose side you’re on, you might just think of it as more clutter*. The *capitalist system* is not consistent with this sentence, so eliminate (A). The word *clutter* in (B) is consistent with that idea at the end of the sentence, so keep (B). Neither *the military-industrial complex* nor *going off the grid* are consistent with the non-underlined portions of the sentence, so eliminate (C) and (D). The correct answer is (B).

### Section 3: Math (No Calculator)

1. **C** The question asks for the value of  $8s + 13$ , so determine the value of  $s$ . Since  $4s = 28$ , divide both sides by 4 to get  $s = 7$ . Therefore,  $8s + 13 = 8(7) + 13 = 56 + 13 = 69$ . Alternatively, since  $4s = 28$ ,  $8s = 2(4s) = 2(28) = 56$ . Therefore,  $8s + 13 = 56 + 13 = 69$ . Using either method, the correct answer is (C).



2. **A** The question asks which choice is equal to  $b^{\frac{3}{4}}$ . By rule, fractional exponents express roots. Let the denominator of the fraction equal the root taken. Since the denominator is 4, take the 4th root. The numerator of the fraction remains as the exponent. Therefore,  $b^{\frac{3}{4}} = \sqrt[4]{b^3}$ . The correct answer is (A).
3. **B** The question asks for the value that will change if a cheaper type of grass is used. The only thing that has changed is that the customer has asked for a cheaper type of grass. A cheaper type of grass does not change the number of plots, the length of a plot, or the width of any plot, so the values  $p$ ,  $l$ , and  $w$  do not change. Eliminate (A), (C), and (D). Only (B) remains. Alternatively, note that it is only the price that changes and the only value whose units involve dollars is  $G$ , so this must be the value that changes. The correct answer is (B).
4. **B** The question asks for the value of  $x + y$  in a system of equations. When there is a system of equations, stack and add or subtract the two equations to solve. The goal is to find an equation in which the coefficients on  $x$  and  $y$  are the same as in the expression the question asks for the value of. In this case, since the question asks for  $x + y$ , the coefficients on  $x$  and  $y$  should be equal. Stack and add the two equations to get  $8x + 8y = -56$ . Divide both sides by 8 to get  $x + y = -7$ . The correct answer is (B).
5. **C** The question asks for an equation related to the number of countries in the European Union and says that the number of countries in the European Union in 2008 was three times the number of countries in 1974. Translate this into an equation. Since the question says that the European Union had 27 members in 2008, translate *the number of countries in the European Union in 2008* to 27. Translate *was* to  $=$ . Translate *three times* to  $3(\quad)$ , leaving room between the parentheses for whatever follows in the sentence. What follows is *the number of countries in the European Union (then called the European Communities) in 1974*, which the question later says is  $m$ . Therefore, the sentence translates to  $27 = 3(m)$ , or  $3m = 27$ . The correct answer is (C).
6. **B** The question asks for the value of  $\frac{y}{7}$ , so solve for  $y$ . Since  $\frac{7}{y} = \frac{17}{y + 30}$ , cross-multiply to get  $7(y + 30) = 17y$ . Distribute the 7 to get  $7y + 210 = 17y$ . Subtract  $7y$  from both sides to get  $210 = 10y$ . Divide both sides by 10 to get  $21 = y$ . Therefore,  $\frac{y}{7} = \frac{21}{7} = 3$ . The correct answer is (B).
7. **B** The question asks for the value of  $c$  that will cause the system of equations to have no solution. Since there are no exponents on  $x$  or  $y$  in either equation, the equations are linear. A system of linear equations has no solution if the two lines represented by the equations are parallel. Two lines are parallel when they have the same slope. To determine the slope of the lines, get each line in slope-intercept form:  $y = mx + b$ . Start with the second equation,  $3x - 7y = 5$ . Subtract  $3x$  from both sides to get  $-7y = -3x + 5$ . Divide both sides by  $-7$  to get  $y = \frac{3}{7}x - \frac{5}{7}$ . In slope-intercept form, the slope is equal to  $m$ , so the slope of this line is  $\frac{3}{7}$ . Now get the slope of the other line,  $cx - 6y = 8$ . Subtract  $cx$  from both sides to get  $-6y = -cx + 8$ . Divide both sides by  $-6$  to get  $y = \frac{c}{6}x - \frac{8}{6}$ , so the slope of this line is  $\frac{c}{6}$ . Since these two slopes have to be equal, set  $\frac{3}{7} = \frac{c}{6}$ . Cross-multiply to get  $7c = 18$ . Divide both sides by 7 to get  $c = \frac{18}{7}$ . The correct answer is (B).

8. **D** The question asks for an expression that must be a factor of polynomial function  $g$ . A factor of a polynomial is used to find a solution, or a value of  $x$  for which the corresponding value of the function is 0. When a function in factored form is set equal to 0, each factor can be set equal to 0 to get each solution. Since, according to the table,  $g(7) = 0$ ,  $x = 7$  is one solution of  $g$ . Therefore, it must also be the solution to an equation made by setting one of the factors equal to 0. To find this factor, get the equation  $x = 7$  into the form of an equation with one side equal to 0. Subtract 7 from both sides to get  $x - 7 = 0$ . Therefore,  $x - 7$  is one of the factors of  $g$ . The correct answer is (D).
9. **D** The question asks for the slope of the line in terms of  $r$  and  $s$ , the coordinates of a point on the line. A line whose equation is in the form  $y = mx + b$  has slope  $m$  and  $y$ -intercept  $b$ . In the equation  $y = cx + 6$ , the slope is  $c$ . Plug the point  $(r, s)$  into the equation to get  $s = cr + 6$ . To find the slope, solve for  $c$ . First, subtract 6 from both sides to get  $s - 6 = cr$ . Now, divide both sides by  $r$  to get  $c = \frac{s - 6}{r}$ . The correct answer is (D).
10. **A** The question asks for true statements based on the figure and gives three pairs of congruent angles. Start with the vertical angles. Vertical angles are non-adjacent angles formed by intersecting lines. The pairs of vertical angles in this figure are  $a^\circ$  and  $d^\circ$ ,  $b^\circ$  and  $e^\circ$ , and  $c^\circ$  and  $f^\circ$ . Since vertical angles are always congruent,  $a = d$ ,  $b = e$ , and  $c = f$ . The question also states that  $a + b = c + d$ . Since  $a = d$ , it must also be the case that  $b = c$ . This shows that statement (I) is true, so (B) can be eliminated. Since  $b = c$ ,  $b = e$ , and  $c = f$ , then  $e$  must also equal  $f$ . Statement (II) is true, so eliminate (C). Statement (III) says that  $a = e$ . It has been determined that  $b = c = e = f$  and that  $a = d$ , but so far nothing has shown that  $a = e$ . To be sure, try out a value for  $e$ . Let  $e = 30$ . If  $e = 30$ , then  $b = c = f = 30$ , so  $b + c + e + f = 30 + 30 + 30 + 30 = 120$ . Since  $a + b + c + d + e + f = 360$ , then  $a + d + 120 = 360$  and  $a + d = 240$ . Since  $a = d$ , then  $a$  and  $d$  are both equal to 120. Therefore,  $a \neq e$ . Cross off (III) and eliminate (D). The correct answer is (A).
11. **D** The graph asks for the  $y$ -coordinate of the vertex, which is the point of the parabola on the axis of symmetry. Therefore, the axis of symmetry is the line  $x = m$ . To determine the value of  $m$ , find a pair of points with the same  $y$ -coordinate, and get the midpoint of the segment between them. To make this easy, let  $y = 0$  to get  $0 = k(x - 4)(x + 12)$ . Set each factor equal to 0 to get  $k = 0$ ,  $x - 4 = 0$ , and  $x + 12 = 0$ . Since the question says  $k \neq 0$ , reject the first equation. Solve the second equation,  $x - 4 = 0$ , by adding 4 to both sides to get  $x = 4$ . Solve the third equation,  $x + 12 = 0$ , by subtracting 12 from both sides to get  $x = -12$ . Therefore, the points  $(4, 0)$  and  $(-12, 0)$  are on the parabola. The midpoint of  $(4, 0)$  and  $(-12, 0)$  is  $\left(\frac{4 + (-12)}{2}, 0\right) = \left(\frac{-8}{2}, 0\right) = (-4, 0)$ . Therefore,  $m = -4$ . Since  $(m, n)$  is a point on the parabola,  $n = k(m - 4)(m + 12)$ . To find  $n$ , plug in  $m = -4$  to get  $n = k(-4 - 4)(-4 + 12) = k(-8)(8) = -64k$ . Another option would be to make up a value for  $k$  to get a quadratic, then complete the square on the  $x$ -terms to get the equation into the vertex form. Either way, the correct answer is (D).
12. **C** The question asks for the length of a line segment between the parabola and the line's points of intersection. Points of intersection are solutions to both equations. Since  $y = (x - 8)^2$  and  $y = 36$ , set  $(x - 8)^2 = 36$ . To solve, take the square root of both sides to get  $x - 8 = \pm 6$ . Always remember to use  $\pm$  when taking the square root of both sides of an equation. Consider both possible equations. If  $x - 8 = 6$ , add 8 to both sides to get  $x = 14$ . If  $x - 8 = -6$ , add 8 to both sides to get  $x = 2$ . Therefore, points  $P$  and  $Q$  are at coordinates  $(2, 36)$  and  $(14, 36)$ . Since the endpoints of  $\overline{PQ}$  share  $y$ -coordinates, the length of the segment is the difference in the  $x$ -coordinates of the endpoints. Therefore,  $PQ = 14 - 2 = 12$ . The correct answer is (C).

13. **B** The question asks for a true statement about the relationship between measurements in Celsius and Fahrenheit. Test each of these statements by putting in actual numbers. Statement (I) refers to a decrease of 1.8 degrees Celsius. Use a simple example of such a decrease. Try  $C = 1.8$  and  $C = 0$ . Since the formula includes fractions, convert 1.8 into a fraction in order to do the arithmetic. Rewrite the fraction as  $\frac{1.8}{1.0} = \frac{18}{10} = \frac{9}{5}$ , so  $1.8 = \frac{9}{5}$ . If  $C = \frac{9}{5}$ , then
- $$F\left(\frac{9}{5}\right) = \frac{9}{5}\left(\frac{9}{5}\right) + 32 = \frac{81}{25} + 32 = 3\frac{6}{25} + 32 = 35\frac{6}{25}$$

Since this is a decrease of more than 1, cross out (I) and eliminate any choice that includes (I):

(A) and (D). Now look at the remaining choices. Since both remaining choices include (II), (II)

must be true, so test (III) only. Statement (III) refers to a decrease of  $\frac{5}{9}$  degree Fahrenheit. Pick

two easy values for  $F$  with a difference of  $\frac{5}{9}$ .  $F = \frac{5}{9}$  and  $F = 0$  might appear easy, but the first step

to solving will be to subtract 32, which is not convenient with  $F = \frac{5}{9}$ . Instead, use  $F = 32\frac{5}{9}$  and

$F = 32$ . If  $F = 32\frac{5}{9}$ , then  $32\frac{5}{9} = \frac{9}{5}C + 32$ . Subtract 32 from both sides to get  $\frac{5}{9} = \frac{9}{5}C$ . Multi-

ply both sides by  $\frac{5}{9}$  to get  $\frac{25}{81} = C$ . If  $F = 32$ , then  $32 = \frac{9}{5}C + 32$ . Subtract 32 from both sides

to get  $0 = \frac{9}{5}C$ . Multiply both sides by  $\frac{5}{9}$  to get  $0 = C$ . Since this a decrease of less than 1, cross

off (III) and eliminate (C). The correct answer is (B).

14. **A** The question asks for the value of constant  $k$  in an equation. This is a complicated algebra question, so look for a way to use an actual number instead. Since no calculator is allowed on this section, it is especially important to pick an easy number. Try  $x = 1$ . If  $x = 1$ , then

$$\frac{80(1)^2 + 84(1) - 13}{k(1) - 4} = -16(1) - 4 - \frac{29}{k(1) - 4}$$

Simplify to get  $\frac{80 + 84 - 13}{k - 4} = -16 - 4 - \frac{29}{k - 4}$

and  $\frac{151}{k - 4} = -20 - \frac{29}{k - 4}$ . Add  $\frac{29}{k - 4}$  to both sides to get  $\frac{151}{k - 4} + \frac{29}{k - 4} = -20$ . Since the

fractions on the right have the same denominator, add both the numerators to get  $\frac{180}{k - 4} = -20$ .

Multiply both sides by  $(k - 4)$  to get  $180 = -20(k - 4)$ . Distribute on the right side to get  $180 = -20k + 80$ . Subtract 80 from both sides to get  $100 = -20k$ . Divide both sides by  $-20$  to get  $k = -5$ . The correct answer is (A).

15. **D** The question asks for the solutions to the given quadratic. To find the solutions to a quadratic equation, the first option is to factor. First, since 5 is a factor of each term, factor 5 to get  $5(x^2 + 6x + 3) = 0$ . Divide both sides by 5 to get  $x^2 + 6x + 3 = 0$ . However, as the answer choices hint,

factoring this equation further will be difficult, so use the quadratic formula:  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ .

The standard form of a quadratic equation is  $ax^2 + bx + c = 0$ , so  $a = 1$ ,  $b = 6$ , and  $c = 3$ .



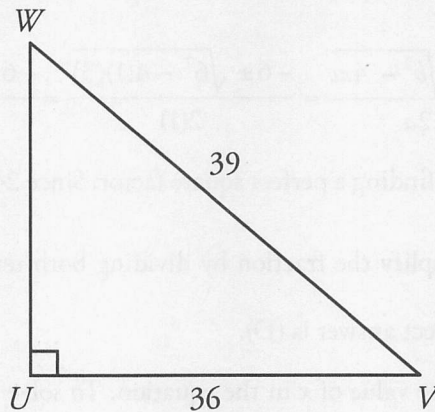
Therefore,  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-6 \pm \sqrt{6^2 - 4(1)(3)}}{2(1)} = \frac{-6 \pm \sqrt{36 - 12}}{2} = \frac{-6 \pm \sqrt{24}}{2}$ . Sim-

plify the square root by finding a perfect square factor. Since  $24 = 4 \times 6$ ,  $\sqrt{24} = \sqrt{4} \times \sqrt{6} = 2\sqrt{6}$ ,

so  $x = \frac{-6 \pm 2\sqrt{6}}{2}$ . Simplify the fraction by dividing both terms in the numerator by 2 to get

$x = -3 \pm \sqrt{6}$ . The correct answer is (D).

16. **4** The question asks for the value of  $x$  in the equation. To solve this equation, start by combining like terms on the left side. Since the denominators are the same, subtract the numerators to get  $\frac{5}{25}z = \frac{1}{2} + \frac{3}{10}$ . Simplify the fraction on the left side of the equation to get  $\frac{1}{5}z = \frac{1}{2} + \frac{3}{10}$ . Now eliminate the fractions by multiplying both sides by a common multiple of all three denominators, such as 10. The result is  $2z = 5 + 3$ . Simplify the right side to get  $2z = 8$ . Divide both sides by 2 to get  $z = 4$ . The correct answer is 4.
17. **1 or 3** The question asks for one possible solution to the equation. To solve a polynomial, get one side of the equation equal to 0. To do that in this case, add  $9y$  to both sides to get  $y^3(y^2 - 10) + 9y = 0$ . Distribute  $y^3$  to get  $y^5 - 10y^3 + 9y = 0$ . Since each term on the left includes  $y$ , factor  $y$  to get  $y(y^4 - 10y^2 + 9) = 0$ . Now factor  $(y^4 - 10y^2 + 9)$ . This resembles a quadratic of the form  $ax^2 + bx + c$  but with the exponents doubled. It can be factored the same way. The quadratic  $(y^2 - 10y + 9)$  factors to  $(y - 9)(y - 1)$ , so  $(y^4 - 10y^2 + 9)$  factors to  $(y^2 - 9)(y^2 - 1)$ . Each of these factors is a difference of squares, so  $(y^2 - 9) = (y - 3)(y + 3)$  and  $(y^2 - 1) = (y - 1)(y + 1)$ . Therefore, the equation  $y(y^4 - 10y^2 + 9) = 0$  factors to  $y(y - 3)(y + 3)(y - 1)(y + 1) = 0$ . Set each of these factors equal to 0 to get  $y = 0$ ,  $y - 3 = 0$ ,  $y + 3 = 0$ ,  $y - 1 = 0$ , and  $y + 1 = 0$ . Solve these equations to get  $y = 0$ ,  $y = 3$ ,  $y = -3$ ,  $y = 1$ , and  $y = -1$ , respectively. Since the question specifies that  $y > 0$ , the only remaining possible solutions are  $y = 3$  and  $y = 1$ . The correct answer is 1 or 3.
18. **50** The question asks for the length of a long session in minutes. To answer this question, translate each statement into an equation. Let  $L$  represent the length of a long session and  $S$  represent the length of a short session. Each long session lasts 20 minutes longer than each short session. *Each long session* translates to  $L$ . The word *lasts* is the main verb of the sentence, so it translates to  $=$ . The phrase *20 minutes longer* translates to  $\_\_\_ + 20$ , leaving room on the left for whatever follows. What follows is *each short session*, which translates to  $S$ . Therefore, the first sentence translates to  $L = S + 20$ . Now translate the second sentence. The term *3 long sessions* translates to  $3L$ . The word *and* translates to  $+$ . The term *4 short sessions* translates to  $4S$ . The term *last a total of* translates to  $=$ . Therefore, the second sentence translates to  $3L + 4S = 270$ . To solve this system of equations, substitute  $L = S + 20$  into the second equation to get  $3(S + 20) + 4S = 270$ . Distribute 3 to get  $3S + 60 + 4S = 270$ . Combine like terms to get  $7S + 60 = 270$ . Subtract 60 from both sides to get  $7S = 210$ . Divide both sides by 7 to get  $S = 30$ . This is not the answer. Don't forget to read the question, which asks for the length of a *long* session. Since  $L = S + 20$ ,  $L = 30 + 20 = 50$ . The correct answer is 50.
19.  **$\frac{5}{13}$**  The question asks for the value of  $\cos Z$ . By definition, corresponding angles in similar triangles are congruent. Since  $\angle Z$  corresponds to  $\angle W$  in a similar triangle,  $\angle Z$  is congruent to  $\angle W$ . Since congruent angles have equal cosines,  $\cos Z = \cos W$ . Therefore, this question can be answered by ignoring triangle  $XYZ$  and working exclusively with triangle  $UVW$  to determine the value of  $\cos W$ , and thus the value of  $\cos Z$ . Draw triangle  $UVW$ , filling in  $WV = 39$  and  $UV = 36$ .



By definition,  $\cos W = \frac{\text{adjacent}}{\text{hypotenuse}}$ . The hypotenuse is 39, but the adjacent side isn't given. The

adjacent side can be solved for using the Pythagorean Theorem, but this is difficult with numbers this large and no calculator. Instead, look for a Pythagorean triple. The ratio 36:39 can be reduced by a factor of 3 to 12:13, so this is a 5:12:13 right triangle. Therefore, the missing

side,  $\overline{UW}$ , must have a length of  $3 \times 5 = 15$ . Thus, the adjacent side is 15, and  $\cos W = \frac{15}{39} = \frac{5}{13}$ .

The correct answer is  $\frac{5}{13}$ .

20. **110** The question asks for the value of  $c$  on the diagram. Start with the equation  $b = 180 - 4a$ . Since  $a = 35$ ,  $b = 180 - 4(35) = 180 - 140 = 40$ . Therefore, the two base angles of the lower triangle have a sum of  $180^\circ - 40^\circ = 140^\circ$ . Since the two base angles are opposite equal sides, they must be equal, so each is  $70^\circ$ . The angle with measure  $c$  combines with the base angle on the right to form a straight angle. Therefore,  $70^\circ + c^\circ = 180^\circ$ , and  $c = 110$ . The correct answer is 110.

## Section 4: Math (Calculator)

- C** The question asks for the probability that a randomly selected canid fits either of two categories. Find the probability of each category. The probability of selecting a grey wolf with yellow eyes is  $\frac{16}{30}$ , and the probability of selecting a coyote with brown eyes is  $\frac{5}{30}$ . Therefore, the probability of selecting one or the other is  $\frac{16}{30} + \frac{5}{30} = \frac{21}{30}$ . The correct answer is (C).
- D** The question asks for the trend in military spending as shown on the graph. Use Process of Elimination. From 1992 to 1996, the graph shows a downward slope, which indicates a decrease in military spending. Therefore, eliminate (B) and (C). In 2001, the graph shows an upward slope, which indicates an increase in military spending. Eliminate (A). The correct answer is (D).
- B** The question asks for the time at which Eddie finished fixing his flat and started riding again. During the 40 minutes that Eddie stops to repair his bike, his distance does not change. On the graph, this time period would be shown as a flat horizontal line. The only flat horizontal portion of the graph occurs from about 11:10 A.M. to just before noon. Therefore, he finished repairing his bike just before noon. The correct answer is (B).

4. **C** The question asks for the total number of employees who received performance bonuses. Work through the information one piece at a time. Translate “4 percent” of the 648 male employees into math and calculate:  $\frac{4}{100}(648) = 25.92$  male employees who received bonuses. Do the same for the female employees:  $\frac{6}{100}(519) = 31.14$  female employees who received bonuses. Add these together to get  $25.92 + 31.14 = 57.06$ , which is close to 57. The correct answer is (C).
5. **B** The question asks for the sum of two polynomials. Rather than do all the work before looking at the answers, do just one piece at a time. Start by adding the  $x^2$  terms:  $4x^2 + 2x^2 = 6x^2$ . Eliminate (C) and (D). Next, since the  $x$  terms are the same in the remaining answers, add the constants:  $-2 + 9 = 7$ . Eliminate (A). Therefore, the correct answer is (B).
6. **D** The question asks for the definition of function  $g$  based on a table of values. Use the given values to test out the equations in the answers. According to the table, when  $k = 1$ ,  $g(k) = -3$ . Plug in 1 for  $k$  in the answers and eliminate any answers that do not return a value of  $-3$ . Choice (A) becomes  $1 - 1 = 0$ . Eliminate (A). Choice (B) becomes  $2(1) - 4 = -2$ . Eliminate (B). Choice (C) becomes  $3(1) - 5 = -2$ . Eliminate (C). Choice (D) becomes  $4(1) - 7 = -3$ . Therefore, the correct answer is (D).
7. **D** The question asks for the meaning of  $-0.14$  in the equation. Use Process of Elimination. Since  $x$  represents the number of years since 2005, the  $-0.14$  must somehow be related to the number of years. Eliminate (A) and (B) since the question states that  $y$  represents the rainfall in any given year. Choice (C) would be represented by the  $y$ -value for 2005 minus the  $y$ -value for 2015, so eliminate (C). The correct answer is (D).
8. **C** The question asks for the approximate number of inches an insect will crawl in 6 hours. There are  $60(6) = 360$  minutes in 6 hours. To calculate the distance the insect crawls, set up the following proportion:  $\frac{30 \text{ inches}}{16.3 \text{ min}} = \frac{x}{360 \text{ min}}$ . Cross-multiply:  $16.3x = 30(360)$ . Do the multiplication on the right side to get  $16.3x = 10,800$ , then divide both sides by 16.3 to get  $x = 662.577$ . The question asks for an *approximate* answer, so choose the closest answer. The correct answer is (C).
9. **B** The question asks for the value of  $v$  in the equation. To isolate  $v$ , multiply both sides of the equation by  $\frac{5}{8}$ , resulting in  $v = \frac{7}{4} \times \frac{5}{8} = \frac{35}{32}$ . The correct answer is (B).
10. **B** The question asks for the graph of function  $g$ , which has four distinct zeros. The term *zero* means an  $x$ -intercept (a point where the curve crosses the  $x$ -axis). The only graph showing a curve that crosses the  $x$ -axis four times is (B). The correct answer is (B).
11. **A** The question asks for the amount of heat energy needed to raise the temperature of copper. According to the information given,  $Q = mC$  where  $C = \frac{J}{g}$ . The chart shows that the heat capacity  $\left(\frac{J}{g}\right)$  for copper is 0.39, and the mass is 75. Therefore,  $Q = 75(0.39) = 29.25$ . The correct answer is (A).



12. **A** The question asks about the substance that makes up a piece of material with the same mass but a different heat capacity as compared to porcelain. According to the information given,  $Q = mC$ . The table indicates that for porcelain,  $C = 1.08$ . Find the mass of the porcelain by plugging in 80 for  $Q$  and 1.08 for  $C$ , resulting in  $80 = m(1.08)$ . Divide both sides of the equation by 1.08 to get  $m \approx 74$ . To find the unknown substance, plug in 67 for  $Q$  and 74 for  $m$ , resulting in  $67 = 74C$ . Divide both sides of the equation by 74 to get  $C \approx 0.9054$ . This approximates the value given for aluminum in the chart. The correct answer is (A).
13. **D** The question asks for the most appropriate conclusion based on the study. Read each answer and use Process of Elimination. The study was done on 200 people with severe hearing loss. Eliminate (A) because the study population doesn't deal with all people; it only deals with people who have severe hearing loss. Because no other hearing-improvement products were mentioned in the question, eliminate (B). In comparing (C) and (D), (C) is too broad, because it applies to people generally, rather than just to the people with severe hearing loss who were studied. Therefore, eliminate (C). The correct answer is (D).
14. **C** The question asks for an equation expressed in terms of  $a$ , so rearrange the formula so that  $a$  is alone on one side. First, subtract  $vt$  from both sides, resulting in  $d - vt = -\frac{1}{2}at^2$ . Next, multiply both sides by  $-2$ , resulting in  $-2(d - vt) = at^2$ , then divide both sides by  $t^2$ , resulting in  $\frac{-2(d - vt)}{t^2} = a$ . To make the equation look like the answer choices, flip it around so the  $a$  is on the left and apply the  $t^2$  in the denominator to each part of the binomial in the parentheses. The equation becomes  $a = -2\left(\frac{d}{t^2} - \frac{vt}{t^2}\right)$ , and the second fraction can be reduced, resulting in  $a = -2\left(\frac{d}{t^2} - \frac{v}{t}\right)$ . Finally, apply the negative sign in front of the 2 to the terms in the parentheses and switch their order:  $a = 2\left(\frac{v}{t} - \frac{d}{t^2}\right)$ . The correct answer is (C).
15. **B** The question asks for the total price for  $y$  yards of ribbon. The price is given in inches, and there are 36 inches in a yard, so the ribbon costs  $0.15(36) = \$5.40$  per yard. Now pick a number of yards of ribbon. If  $y = 2$ , then  $p = 2(5.40) = 10.80$ . Plug 2 in for  $y$  in the answers to see which answer returns a value of 10.80. Choice (A) becomes  $0.15(2) + 36 = 36.30$ . Eliminate (A). Choice (B) becomes  $0.15(36)(2) = 10.8$ . Keep (B), but check (C) and (D) just in case. Choice (C) becomes  $\frac{0.15(2)}{36} \approx 0.008$ . Eliminate (C). Choice (D) becomes  $\frac{36(2)}{0.15} = 480$ . Eliminate (D). The correct answer is (B).
16. **A** The question asks for the change in the total cost of production if 20 fewer units are produced. Try actual numbers in the equation to see what happens to the cost. If  $q = 40$ , then  $C = 60(40) + 300 = 2,700$ . Now decrease  $q$  by 20 units: if  $q = 20$ , then  $C = 60(20) + 300 = 1,500$ . The change in cost is  $2,700 - 1,500 = 1,200$ . The correct answer is (A).
17. **C** The question asks for the quantity for which revenue will equal cost. To find this, set the equations equal to each other:  $60q + 300 = 75q$ . Subtract  $60q$  from each side to get  $300 = 15q$ , and divide both sides by 15 to find that  $q = 20$ . The correct answer is (C).

18. **C** The question asks for the value of  $x$  that will make  $f(x) + g(x) = 1$ . Look up the values for  $f(x)$  and  $g(x)$  for each of the  $x$ -values in the answer choices and see which pair adds up to 1. For (A),  $f(-5) = -1$  and  $g(-5) = -1$ , and the sum of these values is  $-2$ . Eliminate (A). For (B),  $f(-4)$  is a small negative number and  $g(-4) = 0$ , and the sum of these values is negative, so eliminate (B). For (C),  $f(-3) = 0$  and  $g(-3) = 1$ , and the sum of these values is 1. The correct answer is (C).
19. **B** The question asks for the situation that yields exponential decay, which provides increasingly greater or smaller changes in values as time progresses. Try out some numbers to see what would happen in each situation. Let the initial value of the item equal \$100. For (A), the item would lose  $100 \times 0.05 = \$5$  every year. Eliminate (A), because the amount of value the item loses would be the same every year. For (B), the item would lose  $100 \times 0.06 = \$6$  the first year. Therefore, the new item value would be  $100 - 6 = \$94$ . The second year, the item would lose  $94 \times 0.06 = \$5.64$ , and the new item value would be  $94 - 5.64 = \$88.36$ . Each successive year, the loss would be less than the loss the year before. This is an exponential decay. The correct answer is (B).
20. **B** The question asks for the number of U.S. pints of lemonade that can be made using 17 ounces of sugar. First, calculate the number of imperial pints that can be made with 17 ounces of sugar. Set up the following proportion:  $\frac{1 \text{ ounce}}{30 \text{ I. pints}} = \frac{17 \text{ ounces}}{x}$ . Cross-multiply to get  $x = 510$  imperial pints. Next, calculate the number of U.S. pints that are equivalent to 510 imperial pints by setting up the following proportion:  $\frac{1 \text{ I. pint}}{1\frac{1}{4} \text{ U.S. pints}} = \frac{510 \text{ I. pints}}{x}$ . Simplify the left side of the equation to  $\frac{1}{\frac{5}{4}} = \frac{510}{x}$ , or  $\frac{4}{5} = \frac{510}{x}$ . Cross-multiply, resulting in  $4x = 2,550$ . Divide both sides by 4 to get  $x = 637.5$ . The closest approximation for 637.5 is 640. The correct answer is (B).
21. **A** The question asks for the difference between the predicted and actual vertical distances for the jump with a horizontal distance of 230 inches. The actual plotted point at a horizontal distance of 230 inches is a vertical distance of 49 inches. However, the line of best fit at 230 inches equals 47.5 inches. The difference is  $49 - 47.5 = 1.5$ . The correct answer is (A).
22. **B** The question asks for the number of girls in the Girl Scout troop. This is a specific value and the answers are numbers, so try out the answers to see which one works. Start with (B). If there are 23 girls in the troop, then Mrs. Warren currently has  $23(4) + 11 = 103$  boxes. If she were to give 5 boxes to each girl, she would need  $23(5) = 115$ . Therefore, she is  $115 - 103 = 12$  boxes short. This matches the information given in the problem. The correct answer is (B).
23. **D** The question asks for the largest number of three numbers and gives the relationship of the numbers. Translate the information into equations. Let  $l$  represent the largest number and  $s$  represent the sum of the other two numbers. According to the question,  $l = \frac{4}{3}s$ . Divide both sides by  $\frac{4}{3}$  to get  $\frac{3}{4}l = s$ . Now check the answers, starting with (B). If the largest number is 245, the sum of the other two numbers is  $\frac{3}{4}(245) = 183.75$ . The sum of all three numbers would be  $245 + 183.75 = 428.75$ .

Eliminate both (A) and (B) because these values are too small. Try (C). If the largest number is 350, then the sum of the other two numbers is  $\frac{3}{4}(350) = 262.5$ , and the sum of all three numbers is  $350 + 262.5 = 612.5$ . Eliminate (C). The correct answer is (D).

24. **B** The question asks for the value of  $j$ , a constant that is used to express the measurement of two angles in a triangle. Use the values in the answer choices to determine the measurements of  $x$  and  $y$ . Start with (B) and make  $j = 15.5$ . The value of  $x$  would then be  $3(15.5) - 19 = 27.5$ , and the value of  $z$  would be  $5(15.5) - 15 = 62.5$ . Now use a calculator to check if  $\cos(27.5^\circ) = \sin(62.5^\circ)$ . Both equal 0.887. The correct answer is (B).
25. **D** The question asks for the value of  $k$ , a percent by which the width of a rectangle changes. No measurements are given, so make up a length and a width for the rectangle. Let  $l = 12$  and  $w = 10$ . The area of this rectangle can be calculated as  $A = lw = (12)(10) = 120$ . In the new rectangle, the length is reduced by 25% or  $\frac{1}{4}$ , making the new length  $12 - \left(\frac{1}{4}\right)(12) = 9$ . The area of 120 is increased by 5%, so the new area is  $120 + \left(\frac{5}{100}\right)(120) = 120 + 6 = 126$ . Plug these new numbers into the area formula to get  $126 = 9w$ , then divide both sides by 9 to get  $w = 14$ . The width increased from 10 to 14, but the question asks for the percent increase, which is calculated as  $\frac{\text{difference}}{\text{original}} \times 100$ . In this case, that value is  $\frac{14 - 10}{10}(100) = \frac{4}{10}(100) = 40$ , so  $k = 40\%$ . The correct answer is (D).
26. **C** The question asks for the volume of the capsule, which is made of a cylinder and two halves of a sphere. Find the volume of each piece separately, using the formulas in the reference box, then add the volumes together. The formula for the volume of a cylinder is  $V = \pi r^2 h$ . For the figure shown,  $r = 3$  and  $h = 12$ . The volume of the cylinder portion of the capsule is  $V = \pi(3^2)(12) = 108\pi$ . The two ends of the capsule make up one complete sphere. The formula for the volume of a sphere is  $V = \frac{4}{3}\pi r^3$ . Again,  $r = 3$ . Therefore, the volume of the spherical portion of the capsule is  $V = \frac{4}{3}\pi(3)^3 = 36\pi$ . The volume of the entire figure is  $108\pi + 36\pi = 144\pi \approx 452.4$ . The correct answer is (C).
27. **A** The question asks for the value of  $p$ , a coordinate in two points on the line. Any two points on the line can be used to calculate the slope, and all slope calculations must give the same result. Given two points on a line, the slope is calculated as  $\frac{y_2 - y_1}{x_2 - x_1}$ . Use the points  $(0, 0)$  and  $(p, 4)$  to find the slope of the line:  $\frac{4 - 0}{p - 0} = \frac{4}{p}$ . Next, use the points  $(0, 0)$  and  $(9, p)$  to find the slope of the line:  $\frac{p - 0}{9 - 0} = \frac{p}{9}$ . Set the two expressions equal to each other to get  $\frac{4}{p} = \frac{p}{9}$ . Cross-multiply to get  $p^2 = 36$ . Take the square root of both sides of the equation to get  $p = \pm 6$ . Only the  $-6$  value appears in the answers. The correct answer is (A).



28. **D** The question asks for the probability that a randomly selected caffeinated beverage will be coffee, but the table is incomplete. To fill in the table, write a system of equations using the information given. Call the number of decaffeinated teas  $x$ , so the number of caffeinated teas is  $3x$ . Call the number of decaffeinated coffees  $y$ , so the number of caffeinated coffees is  $5y$ . The two equations that can be written from this information and the table are  $x + y = 28$  and  $3x + 5y = 116$ . When dealing with systems of equations, look for a way to stack and add the equations to eliminate one variable and solve for another. To do this, multiply the first equation,  $x + y = 28$ , by  $-3$  to get  $-3x - 3y = -84$ . Now stack and add the equations:

$$\begin{array}{r} 3x + 5y = 116 \\ -3x - 3y = -84 \\ \hline 2y = 32 \end{array}$$

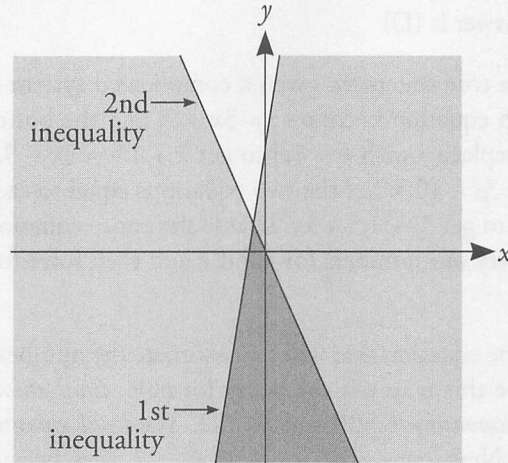
Divide by 2 to get  $y = 16$ . This means that  $x = 28 - y = 28 - 16 = 12$ . Use these values to fill in the chart.

	Decaffeinated	Caffeinated
Tea	$x = 12$	$3x = 36$
Coffee	$y = 16$	$5y = 80$
Total	28	116

Now find the probability that a caffeinated beverage chosen at random is a coffee. Divide the number of caffeinated coffees, 80, by the total number of caffeinated beverages, 116, to get a probability of 0.69. The correct answer is (D).

29. **B** The question asks for a true statement given a complicated system of equations. Start by consolidating like terms. The top equation becomes  $j = 3x - 9$ , and the bottom equation becomes  $k = 3y - 9$ . In the first equation, replace  $j$  with  $k + 1.5$  to get  $k + 1.5 = 3x - 9$ . Subtract 1.5 from both sides of the equation to get  $k = 3x - 10.5$ . Set the two equations equal to each other to get  $3y - 9 = 3x - 10.5$ . Add 10.5 to both sides to get  $3y + 1.5 = 3x$ . Divide the entire equation by 3 to get  $y + 0.5 = x$ . Another approach would be to try out numbers for  $j$  and  $k$  and then solve for  $x$  and  $y$ . Either way, the correct answer is (B).
30. **C** The question asks for the equation that will best estimate the number of baseball cards after  $m$  months. The fastest way to solve this is to use the decay formula: *final amount* = *original amount* $(1 - r)^t$ . In this case, the *original amount* = 6,500 and  $r = 0.2$ . The *final amount* =  $6,500(1 - 0.2)^t = 6,500(0.8)^t$ . Eliminate (A) and (B). Next, try a value for  $m$ . If  $m = 12$ , then because the value of the baseball cards decreases every 6 months,  $t = \frac{12}{6} = 2$ . For  $m = 12$ , the exponent in (C) will equal 2. Of course, this question can also be solved without the formula, though not as quickly. Pick a value for  $m$  that will make the number of baseball cards easy to calculate, such as  $m = 6$ . Banerji starts with 6,500 cards, and he will sell off 20% of them in those 6 months. Calculate 20% of 6,500, which is 1,300, then subtract that from 6,500 to get 5,200 cards. Now put  $m = 6$  in each of the answer choices to see which one equals 5,200. Either way, the correct answer is (C).
31. **3** The question asks for the value of  $a$  when a quadratic is written in the form  $ax^2 + bx + c$ . Start by distributing  $-3$  to get  $6x^2 - 7x + 5 - 3x^2 + 15x - 12$ . Combine like terms to get  $3x^2 + 8x - 7$ . Therefore,  $a = 3$ . The correct answer is 3.

32. **5 or 6** The question asks for the one possible value of  $p$ , the number of potatoes. One onion costs \$0.50. Subtract that from the total amounts that Emeril might spend to find that he can spend between \$1.50 and \$2 on potatoes. If he spends \$1.50 on potatoes that cost \$0.30 each, he can buy 5 potatoes. If he spends closer to \$2.00 on potatoes, he can get 6 for \$1.80. He can't get 7 potatoes, as that would put him over his \$2 potato budget, so Emeril can get 5 or 6 potatoes. The correct answers are 5 or 6.
33. **25.2** The question asks for the mean height of the infants in the daycare program. The mean of a list is the total divided by the number of items in the list. Here, the total of all the heights is 302, and there are 12 infants in the program.  $\frac{302}{12} = 25.\overline{16}$ . The question asks for the mean rounded to the nearest tenth. Therefore, the correct answer is 25.2.
34. **40** The question asks for the lowest score Jacob can receive on the 5th exam while still maintaining an average of 75. For averages, use the formula  $T = AN$ , in which  $T$  is the total,  $A$  is the average, and  $N$  is the number of things. For an average score of 75 on all 8 exams, Jacob needs to score a total of  $T = 75 \times 8 = 600$  points. Over the first 4 exams, he has already scored  $65 \times 4 = 260$  points. To find the minimum score allowable for the 5th exam, maximize the scores on all of the other remaining exams. The most he can score on an exam is 100. If he got 100 on the 6th, 7th, and 8th exams, that would be a total of 300 points. Add this to his current points:  $300 + 260 = 560$  points, which means that on the 5th test, he would need to score a minimum of  $600 - 560 = 40$ . The correct answer is 40.
35. **1,000** The question asks for the greatest value of  $k$ , the  $y$ -coordinate of a point in the solution to a system of inequalities. Draw a rough sketch of the graph of this system of inequalities to figure out what is going on here. It would look something like this:



The area included in both inequalities represents the solution to the system. The question asks for the greatest value of  $k$ , which is the  $y$ -coordinate, so it would happen as close to the top of the graph as possible. For the area of overlap representing the solution, this happens at the point of intersection of the two lines. Find this point of intersection by setting the two equations,  $y = 20x + 3,500$  and  $y = -8x$ , equal to each other to get  $20x + 3,500 = -8x$ . Add  $8x$  to both sides to get  $28x + 3,500 = 0$ , then subtract 3,500 from both sides to get  $28x = -3,500$ . Dividing both sides by 28 results in  $x = -125$ . This is the value for  $j$ , and it can be plugged back into either equation to get the value of  $k$ , the  $y$ -coordinate at that point. Use the easier equation,  $y = -8x$ , to get  $k = -8(-125) = 1,000$ . The correct answer is 1,000.

36.  $\frac{7}{12}$  or .583

The question asks for the fractional part of the circumference that an arc defines. There is a proportional relationship between the arc length, degree measure, and area of a section of a circle formed by two radii. For this question, the important aspects of the circle are the given angle measure of  $\frac{7\pi}{6}$

radians and the arc the question asks about. Set up a proportion:  $\frac{\text{arc}}{\text{circumference}} = \frac{\text{angle measure}}{\text{total radians}}$ .

This fractional part of the circumference in the first part of the proportion is what the question is asking for, so focus on the second part. The angle measure is given, and the total number of radians

in a circle is  $2\pi$ . Fill in the second fraction to get  $\frac{\text{arc}}{\text{circumference}} = \frac{\frac{7\pi}{6}}{2\pi}$ . Dividing by a number is the

same as multiplying by the reciprocal of the number, so the second fraction becomes  $\frac{7\pi}{6} \times \frac{1}{2\pi} = \frac{7}{12}$ .

The correct answer is  $\frac{7}{12}$  or .583.

37. 20 The question asks for a comparison of the number of patients in the two clinics at any given time. Start by calculating the average number of patients in the Kind Care clinic. According to the information provided,  $m = 4$  and  $W = 45$ . Therefore, Kind Care has an average of  $4(45) = 180$  patients in its

clinic. Speedy Care sees 324 patients “per hour,” so set up a proportion:  $\frac{324 \text{ patients}}{60 \text{ minutes}} = \frac{m \text{ patients}}{1 \text{ minute}}$ .

Cross-multiply to get  $60m = 324$ , then divide by 60 to get  $m = 5.4$  patients per minute. Therefore, the average number of patients in the Speedy Care clinic can be calculated as  $L = 5.4(40) = 216$ . To

calculate a “percent greater than,” use the following percent change formula:  $\frac{\text{difference}}{\text{original}} \times 100$ . In

this case, the smaller number is the original, so the percent change is  $\frac{216 - 180}{180} \times 100 = 20\%$ . The correct answer is 20.

38. 9 The question asks for the average number of patients being treated by a doctor at the Kind Care clinic at any given time. According to the question, the rate at which patients enter the clinic is defined as  $m$  patients per minute. This question gives the rate of 36 patients “per hour,” so set up

a proportion:  $\frac{36 \text{ patients}}{60 \text{ minutes}} = \frac{m \text{ patients}}{1 \text{ minute}}$ . Cross-multiply to get  $60m = 36$ , then divide by 60 to get

$m = 0.6$  patients per minute. Each stays with the doctor an average of 15 minutes, so to find the average number of patients being treated,  $L$ , use the formula to get  $L = (0.6)(15) = 9$ . The correct answer is 9.