



# POWER UP! SAMPLE EXAM EXPLANATIONS

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## Section 1: English

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1. **(B) English/Rhetorical Skills/Style/Conciseness.** *CC: ELA-Literacy.L.9–10.3; CCRS: KLA 302.* The original sentence is needlessly repetitious: “to begin” means “to start.” (B) eliminates the unnecessary repetition.
2. **(J) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.9–10.1; CCRS: USG 403.* The original sentence contains an error of diction. The correct word for making the comparison intended by the original is “from,” not “than.” (“Than” is a conjunction, and conjunctions are used to introduce clauses. What follows the underlined part of the sentence is a noun phrase, not a clause.) (G) fails to make the needed correction. (H) makes the needed correction but introduces a new error. In general, a modifier should be placed as close as possible to what it modifies. Here, “fundamentally” must modify “are different,” but the placement of “fundamentally” after “from” suggests that it is intended to modify “weapons.” Thus, (H) would result in an ambiguous sentence.
3. **(D) English/Rhetorical Skills/Style/Conciseness.** *CC: ELA-Literacy.L.9–10.3; CCRS: KLA 302.* The underlined material is needlessly repetitious. A weapon of “mass destruction” is one “that could do a lot of harm.” Eliminate the surplus material.
4. **(G) English/Usage and Mechanics/Sentence Structure/Run-On Sentences.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 301.* The original sentence is a run-on sentence. (G) solves the problem by starting a new sentence at an appropriate point. Neither (H) nor (J) solve the problem of the run-on sentence.
5. **(A) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.8.3; CCRS: KLA 201.* The original sentence is correct. (B) destroys the logic of the sentence. (C) ambiguously implies that injuries are unavailable. (D) is needlessly wordy.
6. **(H) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.11–12.3; CCRS: SST 501.* The original sentence is not idiomatic. (H) is idiomatic with “resulting from.” (G) and (J) are not idiomatic.
7. **(A) English/Usage and Mechanics/No Change.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 302.* The original sentence is correct as written. The use of the subjunctive “would” correctly suggests that a nuclear war might or might not occur. (B) and (C) are both wrong because the indicative mood (“is” and “are”) does not have this meaning. Additionally, (B) must be wrong because the subject of the sentence is the compound subject “number of deaths . . . and economic damage,” and a compound subject requires a plural verb. (C) is also wrong because “as” makes the answer unidiomatic. In (D), although “might” preserves the element of contingency suggested by the subjunctive “would,” the phrasing “more devastating even as” is not idiomatic.
8. **(G) English/Rhetorical Skills/Strategy/Effective Concluding Sentence.** *CC: ELA-Literacy.L.11–12.3; CCRS: TOD 504.* In the second paragraph, the author is arguing that nuclear weapons are fundamentally different from conventional weapons because of their massive destructive power on multiple levels. (G) correctly summarizes this point.

9. **(A) English/Usage and Mechanics/No Change.** CC: ELA-Literacy.L.9–10.1; CCRS: TOD 504. The original sentence is correct. The other choices introduce errors in modification.
10. **(G) English/Usage and Mechanics/Sentence Structure/Run-On Sentences and Grammar and Usage/Pronoun Usage.** CC: ELA-Literacy.L.9–10.1; CCRS: SST 301. The original sentence has two mistakes. First, it is a run-on sentence. Also, “it” is singular but refers to “weapons,” which is plural. (G) makes both the needed corrections.
11. **(C) English/Usage and Mechanics/Grammar and Usage/Diction.** CC: ELA-Literacy.L.9–10.1; CCRS: SST 301. The original sentence is not idiomatic as written. The correct idiom is “neither . . . nor,” not “neither . . . but.”
12. **(J) English/Rhetorical Skills/Organization/Paragraph-Level Structure.** CC: ELA-Literacy.L.11–12.3; CCRS: ORG 701. The original sentence is incorrect because a new paragraph should begin here. In the opening paragraph, the author announces that he or she will make three points. The second paragraph is devoted to the first point—the other two points should be presented in separate paragraphs.
13. **(B) English/Rhetorical Skills/Style/Conciseness.** CC: ELA-Literacy.L.8.3; CCRS: KLA 201. The original sentence is awkward. (B) is more concise and reads better than the original sentence. (C) is incorrect because the subject of the sentence is the singular noun “step,” so the singular verb “has,” not the plural verb “have,” is needed. (D) has the errors of the original sentence and inappropriately includes a plural verb.
14. **(H) English/Usage and Mechanics/Grammar and Usage/Pronoun Usage.** CC: ELA-Literacy.L.11–12.4; CCRS: USG 503. The ubiquitous “they” makes the original sentence ambiguous. Who are they? The other choices eliminate the ambiguous pronoun, but (H) is the most direct and concise.
15. **(A) English/Rhetorical Skills/Organization/Passage-Level Structure.** CC: ELA-Literacy.L.11–12.3; CCRS: TOD 702. In the initial paragraph, the author announces that three considerations should guide our formulation of a defense policy. The author then proceeds to address each consideration.
16. **(H) English/Rhetorical Skills/Strategy/Main Idea.** CC: ELA-Literacy.L.9–10.3; CCRS: . Again, the author argues that three principles should guide our defense policy.
17. **(D) English/Usage and Mechanics/Sentence Structure/Fragments.** CC: ELA-Literacy.L.9–10.1; CCRS: SST 302. The original sentence lacks a main verb. (C) and (D) supply the verb, but (B) does not. (“Having viewed” is a participle form and cannot be a main verb.) In (C), “its” is intended to refer to “founders,” but “founders” is plural, so the plural “their” is needed.
18. **(G) English/Usage and Mechanics/Grammar and Usage/Diction.** CC: ELA-Literacy.L.9–10.1; CCRS: USG 403. The original sentence is not idiomatic. The correct idiom is “rather than,” not “rather as.” Both (H) and (J) are wrong because they too are not idiomatic.
19. **(A) English/Rhetorical Skills/Strategy/Effective Transitional Sentence.** CC: ELA-Literacy.L.11–12.3; CCRS: ORG 501. This question tests understanding of the relationship between ideas in the passage. The idea discussed in the second sentence of the passage is the result or effect of the idea discussed in the first sentence. “Therefore” is then the best choice to show this relationship.
20. **(F) English/Usage and Mechanics/No Change.** CC: ELA-Literacy.L.9–10.1; CCRS: TOD 504. The original sentence is correct as written. (G) is needlessly wordy, so the original sentence is preferable. (H) destroys the logical structure of the sentence. (J) changes the intended meaning of the sentence by implying that the founders could have chosen to view education “as” academic excellence, rather than “as a means to” academic excellence.



21. **(C) English/Usage and Mechanics/Sentence Structure/Fragments.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* The problem with the sentence as originally written is that it lacks a conjugated or main verb. “Talking” is a participle and cannot function as a main verb. Only (C) supplies a conjugated verb form.
22. **(H) English/Usage and Mechanics/Punctuation/Commas.** *CC: ELA-Literacy.L.9–10.2; CCRS: PUN 401.* The original sentence is not punctuated correctly. “Goals” is an appositive that refers to “liberty,” “equality,” etc. The correct punctuation is a comma preceding the appositive. (G) is wrong because the period completely isolates the appositive from the sentence that supports it and turns everything following the comma into a sentence fragment. (J) is also incorrectly punctuated. The semicolon is too powerful—it signals that an independent clause will follow. An appositive, however, is dependent for its existence on the nouns that come before it, so a comma provides enough separation from the main body of the sentence without being too powerful.
23. **(A) English/Usage and Mechanics/No Change.** *CC: ELA-Literacy.L.9–10.1; CCRS: USG 403.* The original sentence is correct as written. To “take precedence over” is an English idiom meaning to be more important than something else. (B) distorts the intended meaning of the original sentence. To “precede” means to come before in time, so the resulting sentence would make no sense. (C) and (D) are simply not idiomatic.
24. **(G) English/Usage and Mechanics/Punctuation/Commas and Grammar and Usage/Subject-Verb Agreement and Pronoun Usage.** *CC: ELA-Literacy.L.9–10.2; CCRS: PUN 401.* The original sentence contains three errors. First, a comma, not a dash, must close the parenthetical expression signaled by the comma following “generation.” (Dashes or commas may be used to set off such remarks, but not a mixture of both.) Second, the subject of the sentence is “generation,” which is singular. So, the plural noun “assert” is wrong. Third, “their” refers to “generation” and so fails to agree in number with its referent. (G) makes all three changes. (H) makes two of the changes, but the semicolon is a mistake. The semicolon would be used to separate two clauses, but what follows the semicolon used in (H) is not a clause. Finally, (J) fails to correct the third error mentioned above and is incorrectly punctuated (a second comma is needed). Additionally, (J) uses the present tense verb “asserts,” which is inconsistent with the other verbs in the selection.
25. **(C) English/Usage and Mechanics/Grammar and Usage/Subject-Verb Agreement.** *CC: ELA-Literacy.L.11–12.1; CCRS: USG 701.* The verb “was” is singular and fails to agree with its plural subject, “ingredients.” (C) corrects this problem. (B) eliminates the problem of agreement. “Being” is a participle and does not show number. Unfortunately, since “being” is a participle, the resulting construction lacks a main verb, and the sentence becomes a sentence fragment. Finally, (D) distorts the intended meaning of the original sentence. The author does not mean to say that the principal ingredients of a civic education were similar to literacy and inculcation of patriotic and moral virtues.
26. **(J) English/Usage and Mechanics/Sentence Structure/Run-On Sentences.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 301.* The original sentence is a run-on, with two clauses that run together without any punctuation or conjunction. (J) is one way of solving the problem: use a semicolon to separate the two clauses. (A comma and a coordinate conjunction such as “and” could also be used.) The dash cannot be used to separate two clauses, so (G) is wrong. As for (H), a comma by itself is just not strong enough to do the job.
27. **(D) English/Usage and Mechanics/Sentence Structure/Problems of Coordination and Subordination.** *CC: ELA-Literacy.L.11–12.3; CCRS: SST 501.* The original sentence contains an error of illogical subordination, compounded by a punctuation mistake. The two ideas joined at the underlined part have equal importance. One should not be subordinated to the other, but “since” always signals a subordinate idea. Additionally, a semicolon cannot be used to join a subordinate clause to an independent or main clause. (B) solves the subordination problem, but “and” signals a continuation of a thought. The second idea here contrasts with the first and should be signaled by a word like “but.” (C) eliminates the punctuation mistake but creates a sentence fragment in the second half of the sentence. “Since” introduces a subordinate clause that must be joined to an independent or main clause.

28. **(G) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* The original sentence is not idiomatic. The correct idiom requires the use of the infinitive “to be” rather than the gerund “being.” (H) and (J) both correct this error, but they also eliminate the only conjugated verb in the clause. The result is a fragment rather than a complete sentence. (G) correctly uses “to be” without introducing another error.
29. **(C) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* The placement of “almost” is not idiomatic. Given its proximity to “agreed,” “almost” seems to modify “agreed” rather than “universally.” The intended meaning of the sentence is that “almost” modifies “universally.” (C) provides the correct and idiomatic placement of “almost.” (B) is also not idiomatic. As for (D), although the words are in the correct order, the comma between “universally,” an adverb, and the word it modifies, “agreed,” disrupts the logical flow of the sentence.
30. **(G) English/Usage and Mechanics/Sentence Structure/Faulty Parallelism.** *CC: ELA-Literacy.L.11–12.2; CCRS: SST 601.* The underlined part is incorrect because it destroys the parallelism of the sentence. The sentence has a series of three elements: “emphasized,” “put,” and “attempt.” However, the third element is a noun rather than a verb. (G) restores the parallelism of the sentence by supplying a verb. (H) fails to provide a verb. Finally, although (J) includes a verb, it also includes a subject. The result is a clause that is not parallel to the verb forms.
31. **(B) English/Rhetorical Skills/Organization/Paragraph-Level Structure.** *CC: ELA-Literacy.L.9–10.3; CCRS: .* The final paragraph contains a new thought that extends the logical development of the essay.
32. **(H) English/Rhetorical Skills/Strategy/Audience.** *CC: ELA-Literacy.L.11–12.3; CCRS: TOD 702.* The passage is a discussion of old textbooks. Surely educators would be most interested in old textbooks.
33. **(A) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.8.3; CCRS: KLA 201.* The original sentence is correct. (B) destroys the logic of the sentence. (C) and (D) are illogical because the sentence intends to refer generally to “the contribution of women” as a whole—not to the contribution of any particular individual.
34. **(J) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* The original sentence is non-idiomatic. (J) provides the correct idiom: “range . . . from . . . to.” (G) and (H) fail to correct the problem, though (H) does change the noun “operation” to the verb “operating,” creating parallelism with “knitting.”
35. **(A) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 302.* The original sentence is correct as written. It is idiomatic, and the past tense verb “marked” is consistent with the other past tense verbs in the selection. (B) is wrong because the present perfect “has marked” implies an action that began in the past but continues into the present. (C) is wordy and awkward. As for (D), the use of the passive voice completely destroys the logic of the sentence.
36. **(F) English/Usage and Mechanics/No Change.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* The original sentence is correct as written: “effort was made . . . to utilize.” (G) and (H) are not idiomatic—“effort was made . . . being able to utilize” and “effort was made . . . utilizing.” Finally, (J) destroys the logical structure of the sentence: “effort was made . . . and utilize.”
37. **(B) English/Usage and Mechanics/Grammar and Usage/Sequence and Verb Tense.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 302.* The original sentence uses an incorrect verb tense. The present tense “falls” conflicts with the other past tense verbs of the selection. (B) and (D) both make the needed correction, but (D) is not idiomatic in this context. The correct idiom is “falls within” a category. (C) is grammatically incorrect because it eliminates the only conjugated verb in the clause introduced by “while.”
38. **(H) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.9–10.1; CCRS: USG 403.* The original sentence is not idiomatic. The correct idiom is “reserved for,” not “reserved by.” “Reserved



by” has a meaning that is not appropriate here. (G) is needlessly wordy and ambiguous because it is not clear what the phrase is intended to modify. It seems to modify “women,” but the intent of the sentence is for the phrase to modify “work.” (J) is also wordy and awkward.

39. **(B) English/Usage and Mechanics/Sentence Structure/Unintended Meanings.** CC: ELA-Literacy.L.11–12.3; CCRS: ORG 501. The original sentence uses an illogical transition word. “However” is used to signal a contrast, but the sentence that is introduced by “however” is actually a continuation of the thought contained in the previous sentence. (B) is correct; since there is no transition word, the reader will naturally assume that the next sentence will continue the train of thought. (C) is wrong because the use of “but” tells the reader to expect a contrasting thought. Finally, (D) is a fragment rather than a complete sentence.
40. **(H) English/Usage and Mechanics/Punctuation/Colons.** CC: ELA-Literacy.L.11–12.2; CCRS: PUN 702. The original sentence is incorrectly punctuated. Since there is no punctuation between “activity” and “knitting,” a reader will not pause after “activity.” Consequently, “knitting” seems to be a participle that somehow modifies “activity.” The author intends for “knitting” to be a gerund in the series including “knitting,” “canning,” and “planting.” The correct punctuation in this series is the colon.
41. **(D) English/Usage and Mechanics/Grammar and Usage/Pronoun Usage.** CC: ELA-Literacy.L.9–10.1; CCRS: TOD 504. The original sentence contains an error of pronoun usage. The pronoun “their” refers to “homemaker”—the singular “her” should be used. (B) eliminates the problem by using no pronoun at all. The resulting structure is a bit awkward (“could be demonstrating patriotism”) but not incorrect. However, the verb in (B) is not acceptable. “Could be demonstrating” is inconsistent with the other verbs in the paragraph. (C) is incorrect—the verb “could have demonstrated” implies that a woman might or might not have demonstrated her patriotism, but this is not the intended meaning. The author means to assert definitely that women did demonstrate their patriotism. (C) is also wrong because it fails to correct the pronoun problem.
42. **(H) English/Usage and Mechanics/Punctuation/Commas.** CC: ELA-Literacy.L.11–12.2; CCRS: PUN 502. The original sentence is incorrectly punctuated. The colon seems to signal a clarification of the idea of hostessing at canteens. Instead, hostessing is one of a group of activities women volunteered to do. The correct punctuation is a comma.
43. **(A) English/Rhetorical Skills/No Change.** CC: ELA-Literacy.L.11–12.2; CCRS: PUN 503. The material between the commas is an adjective phrase: “Army, dressed . . . and armed . . . ‘with the Musket,’ was dispatched.” The other choices destroy this logic.
44. **(F) English/Usage and Mechanics/No Change.** CC: ELA-Literacy.L.9–10.1; CCRS: SST 302. The original sentence is correct as written. The other choices disrupt the parallelism of the sentence. Since the two verbs “performed” and “laid” have a similar function in the sentence, they should both have similar forms. (G) and (H) use the passive voice and are not parallel to the active voice “performed.” (J) is the participle and is not parallel to “performed,” a conjugated verb.
45. **(C) English/Rhetorical Skills/Organization/Passage-Level Structure.** CC: ELA-Literacy.L.11–12.3; CCRS: ORG 604. A way to fix the order of the paragraphs is to recognize that neither [2] nor [3] can be the first paragraph. “This” in the first sentence of [2] clearly refers to something that has come before.

Similarly, the phrase “much of the work” in the first sentence of [3] also refers to something that has come before. [1] appears to be the best choice for the first paragraph because [4] seems to be a summary or conclusion. Only (C) has [4] as the conclusion, so it is the correct answer.

As for [2] and [3], [2] must follow [3] because [2] is intended to contrast with [3]: most of the work was traditional, but some was not. A reader cannot understand the importance of the contrast suggested by [2] without the information provided by [3].



46. **(F) English/Rhetorical Skills/Strategy/Appropriate Supporting Material.** *CC: ELA-Literacy.L.9–10.3; CCRS: TOD 301.* Examples are often helpful, as they enable readers to understand a general point in a more concrete fashion. In this instance, the slogan helps the reader understand the motivation and purpose behind the Women’s Land Army.
47. **(D) English/Usage and Mechanics/Sentence Structure/Fragments.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 302.* “Undertaken” is the past participle of the verb “to undertake.” A past participle is not itself a complete verb. (D) solves this problem by creating a sentence that uses the passive voice: “changes were undertaken.”
48. **(J) English/Usage and Mechanics/Grammar and Usage/Diction.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 302.* The original sentence is not idiomatic. The sentence means to say that some people embraced the new values, and that is the sense of (J). (G) introduces an error in diction, substituting “excepted” for the intended word choice “accepted,” as well as using the wrong preposition for “excepted.” (H) is wrong for the same first reason that (G) is wrong.
49. **(C) English/Usage and Mechanics/Sentence Structure/Problems of Coordination and Subordination.** *CC: ELA-Literacy.L.11–12.3; CCRS: SST 501.* The two ideas joined at the underlined part contrast with each other: these did something; the others did not. To signal this contrast, something other than “and” must be used. “But” is an acceptable choice, so (C) is correct. (B) and (D) are incorrect because “since” and “consequently” signal a relationship in which one idea follows from or is the consequence of another.
50. **(F) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.8.3; CCRS: KLA 201.* The original sentence is correct. By comparison, the other choices are needlessly wordy and awkward.
51. **(B) English/Usage and Mechanics/Sentence Structure/Fragments.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* The comma and the conjunction “and” signal that the last half of the sentence is a clause. Yet, the original contains no main verb. (B) supplies a main verb in the right tense that also agrees in number with its subject, “notions.”
52. **(F) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.11–12.3; CCRS: ORG 701.* The original sentence is correct. This is the proper place at which to begin a new paragraph since the author is shifting from talking about the past to a discussion of the present. Since a new paragraph is needed here, (G) and (J) are wrong. (J) is wrong for two additional reasons: “Today, owing to the fact that . . . political life” is an incomplete sentence; and the use of “owing to the fact that” makes “democratic processes” the new subject, which will no longer agree with the verb “is.” “Triumph” is the necessary subject. Finally, (H) illogically isolates the subject of the sentence from its verb.
53. **(B) English/Rhetorical Skills/Style/Conciseness.** *CC: ELA-Literacy.L.9–10.3; CCRS: KLA 302.* In the original sentence, “clear” is intended to modify “evident.” However, that is a job that can be done only by the adverb “clearly.” In any event, “clear” and “evident” are synonyms, so both are not needed. (B) is the best choice because it eliminates the redundant term “clear.”
54. **(J) English/Rhetorical Skills/Strategy/Effective Transitional Sentence.** *CC: ELA-Literacy.L.11–12.3; CCRS: ORG 501.* The transitional word must signal a contrast between two ideas. The best choice is “yet.”
55. **(D) English/Rhetorical Skills/Style/Conciseness.** *CC: ELA-Literacy.L.11–12.3; CCRS: SST 501.* “Being” is a participle that can function as an adjective. However, there is no noun that can logically be modified by “being.” What the sentence means to assert is that the lack of a stable value system is due to the influence of Western ideas. The word “since” in (D) is sufficient by itself to give the reason for the preceding part of the sentence. Both (B) and (C) are wrong because they are awkward.
56. **(G) English/Usage and Mechanics/Sentence Structure/Unintended Meanings.** *CC: ELA-Literacy.L.9–10.1; CCRS: SST 401.* “And so” distorts the logical structure of the sentence. It seems to introduce another clause,



but what follows lacks a main verb. By eliminating “and so,” (G) allows “emphasizing,” a participle, to function as an adjective modifying “principles.” (H) results in a sentence that is distorted because “and” seems to join another verb to the first verb, “expound.” However, “emphasis” is a noun, so the sentence reads: “textbooks expound . . . and the emphasis.” In (J), “that” seems to introduce a relative clause, but no verb follows.

57. **(D) English/Rhetorical Skills/Style/Conciseness.** CC: ELA-Literacy.L.11–12.6; CCRS: KLA 505. “Often sometimes” is not a possible phrase because the words have contradictory meanings. One of the words must be eliminated. All of the choices make this correction. (B), however, uses a verb tense that is inconsistent with the other tenses in the paragraph. In (C), “misinterpreted” and “distorted” are past participles and cannot stand alone. They require another verb such as “are.”
58. **(H) English/Usage and Mechanics/Grammar and Usage/Sequence and Verb Tense and Pronoun Usage.** CC: ELA-Literacy.L.11–12.4; CCRS: USG 503. The original sentence contains two errors. The past tense “translated” is inconsistent with the present tense verbs in the rest of the paragraph. Also, “who” should replace “that” since the author is referring to people. Only (H) makes both corrections.
59. **(A) English/Rhetorical Skills/Strategy/Appropriate Supporting Material.** CC: ELA-Literacy.L.11–12.3; CCRS: TOD 503. At the end, the author introduces the topic of Japanese youth; it would be appropriate for the discussion to continue along these lines.
60. **(J) English/Usage and Mechanics/Grammar and Usage/Diction.** CC: ELA-Literacy.L.9–10.1; CCRS: SST 401. The original sentence does not contain a grievous error, but it is not as idiomatic as (J). The placement of “always” directly before the main element of the verb, instead of before “has,” is preferable to the original. (G) is wrong because “have” does not agree with the singular “humankind.” (H) is wrong as the present tense is inconsistent with the introductory phrase “from the beginning.”
61. **(C) English/Usage and Mechanics/Grammar and Usage/Faulty or Illogical Comparisons.** CC: ELA-Literacy.L.8.1; CCRS: USG 201. In English, if an adjective has more than one syllable, the comparative is formed by using “more” rather than by adding “-er.”
62. **(H) English/Usage and Mechanics/Punctuation/Commas.** CC: ELA-Literacy.L.9–10.1; CCRS: TOD 504. The comma following “agriculture” has no logical function in the sentence. (H) solves this problem by allowing the comma to mark the close of a parenthetical expression introduced by the first comma in front of “along.” (G) attempts the correction but is wrong because the resulting phrase has no clear logical connection with the rest of the sentence. (H) does not have this problem. In (H), the noun “discovery” is the object of a preposition, and the prepositional phrase is connected to the rest of the sentence as a modifier of “domestication.” (J) destroys the logical structure of the sentence by isolating the subject from the verb. The semicolon is too strong.
63. **(D) English/Rhetorical Skills/Style/Conciseness.** CC: ELA-Literacy.L.9–10.3; CCRS: KLA 302. The underlined material is repetitious and therefore should be omitted.
64. **(G) English/Usage and Mechanics/Sentence Structure/Faulty Parallelism and Grammar and Usage/Pronoun Usage.** CC: ELA-Literacy.L.9–10.1; CCRS: USG 402. The original sentence contains two errors. First, it lacks parallelism. As written, it reads: “between regarding . . . and to consider.” Second, the pronoun “them” does not agree in number with its antecedent, “animal.” Only (G) corrects both of these problems. (H) solves the problem of parallelism but fails to eliminate the wrong pronoun. (J) does not correct either mistake.
65. **(D) English/Usage and Mechanics/Sentence Structure/Misplaced Modifiers and Grammar and Usage/Sequence and Verb Tense.** CC: ELA-Literacy.L.9–10.1; CCRS: SST 302. The original sentence contains two errors. First, the placement of “seemingly” is incorrect. It is intended to modify “every,” which in turn modifies “subject.” However, its placement in front of the verb seems to suggest that Aristotle “seemingly”

wrote. Second, the present tense “writes” is inconsistent with the other verbs in the paragraph (e.g., “seemed” and “took”). (Note: The present tense verbs are used to describe our attitudes today. Although Aristotle wrote in the past, we currently have certain attitudes about those writings.) (B) corrects the second problem but not the first. Simply putting “seemingly” into parentheses does not clarify what the word is supposed to modify. As for (C), while it eliminates the problem of verb tense by reducing the verb to a participle modifying “Aristotle,” there is still the ambiguity created by “seemingly.”

66. **(F) English/Usage and Mechanics/No Change.** *CC: ELA-Literacy.L.9–10.2; CCRS: PUN 302.* The original sentence is correct as written. The comma following “subject” marks the end of the introductory dependent clause. Since punctuation is needed at that point, (H) is wrong. The correct punctuation is a comma. The semicolon and the colon are both too powerful, so (G) and (J) are wrong as well. (H) also uses the possessive apostrophe incorrectly and (G) is missing it altogether.
67. **(A) English/Usage and Mechanics/Sentence Structure/Problems of Coordination and Subordination.** *CC: ELA-Literacy.L.9–10.5; CCRS: KLA 403.* The transition word here must connect the two ideas: Aristotle was interested in all life; he was particularly interested in marine life. “And” correctly coordinates these two ideas. Had the passage gone on to discuss marine life in particular, then the contrast set up by “but” in (C) would make it the better choice.
68. **(F) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.11–12.3; CCRS: SST 501.* The original sentence is correct as written. “Wedding” is a participle that modifies “observer.” (G) distorts the intended meaning by suggesting that Aristotle himself was joined to something. The sentence means to say that Aristotle joined two ideas. (H) is needlessly wordy and awkward. Finally, (J) creates a prepositional phrase that does not clearly modify any other element in the sentence.
69. **(C) English/Usage and Mechanics/Punctuation/Quotation Marks.** *CC: ELA-Literacy.L.9–10.2; CCRS: PUN 302.* The original sentence is incorrectly punctuated. Quotation marks must be used to indicate the start of the quotation. (B) fails to make this correction and makes another error of punctuation. A dash cannot be used instead of a period. (D) is wrong because the adverb “simply” cannot be used as a predicate complement; that is, “simply” cannot modify the subject of the sentence.
70. **(J) English/Rhetorical Skills/Style/Conciseness.** *CC: ELA-Literacy.L.9–10.3; CCRS: KLA 302.* The underlined material is repetitious and therefore should be omitted.
71. **(A) English/Rhetorical Skills/No Change.** *CC: ELA-Literacy.L.9–10.3; CCRS: KLA 302.* The original sentence is correct. By comparison, the other choices are needlessly wordy and awkward.
72. **(G) English/Rhetorical Skills/Strategy/Appropriate Supporting Material.** *CC: ELA-Literacy.L.9–10.3; CCRS: TOD 302.* The author’s use of Aristotle’s own words is particularly forceful. It lets Aristotle make the point for himself.
73. **(B) English/Rhetorical Skills/Strategy/Audience.** *CC: ELA-Literacy.L.11–12.3; CCRS: TOD 702.* The passage is expository but not overly technical, so (A) and (D) are wrong. Since the main topic is Aristotle, (B) is the best choice.
74. **(J) English/Rhetorical Skills/Strategy/Main Idea.** *CC: ELA-Literacy.L.9–10.3; CCRS: .* As stated in the first sentence of the second paragraph of the passage, the essay intends to show how the animal world became a source of serious study because of Aristotle.
75. **(B) English/Rhetorical Skills/Organization/Paragraph-Level Structure.** *CC: ELA-Literacy.L.9–10.3; CCRS: .* The first paragraph doesn’t pose any questions, (A); introduce an argument, (C); or provide an anecdote, (D). Its function is to place Aristotle in a certain context. It gives a kind of history of the link between humans and animals that segues into Aristotle’s interest in the subject.





## Section 2: Mathematics

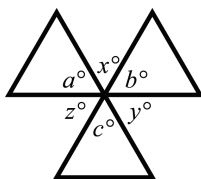
- (A) Mathematics/Algebra/Solving Algebraic Equations or Inequalities with One Variable/Equations Involving Rational Expressions.** CC: 7.EE.B.3; CCRS: A 403. Solve for  $x$ :  $\frac{1}{x} + \frac{1}{x} = 8 \Rightarrow \frac{2}{x} = 8 \Rightarrow x = \frac{1}{4}$ .

Alternatively, one can reason that  $\frac{1}{x}$  and  $\frac{1}{x}$  are equal, and since their sum is 8,  $\frac{1}{x}$  equals 4. Thus,  $x = \frac{1}{4}$ .
- (K) Mathematics/Algebra/Expressing and Evaluating Algebraic Functions/Function Notation.** CC: 6.EE.A.2c; CCRS: A 401. Substitute the given values for  $x$  and  $y$ :  $3x - 4y = 3(2) - 4(-1) = 6 + 4 = 10$ .
- (C) Mathematics/Arithmetic/Common Arithmetic Items/Percents.** CC: 7.RP.A.3; CCRS: AF 401. First, 20% of 600 boys equals  $0.20(600) = 120$  boys on the honor roll. Second, 30% of 400 girls equals  $0.30(400) = 120$  girls on the honor roll. Therefore, there are  $120 \text{ boys} + 120 \text{ girls} = 240$  students on the honor roll.
- (K) Mathematics/Arithmetic/Common Arithmetic Items/Properties of Numbers.** CC: HSA-SSE.A.1a; CCRS: N 602. Since the variable  $t$  is outside the brackets and parentheses, it must be multiplied by everything within the brackets and parentheses. And since an even number times any other whole number yields an even number,  $t$  must be even. None of the other letters being even guarantees an even result.
- (E) Mathematics/Statistics and Probability/Data Representation/Tables.** CC: 5.OA.B.3; CCRS: N 401. The data in the table represents an arithmetic sequence: the number of flies in each successive week is four times the number in the previous week. The final count should be  $4 \cdot 192 = 768$ .
- (H) Mathematics/Arithmetic/Simple Manipulations and Statistics and Probability.** CC: HSS-CP.B.9; CCRS: S 405. Use the formula for finding the number of permutations:  $3! = 3 \cdot 2 \cdot 1 = 6$ .
- (D) Mathematics/Coordinate Geometry/The Coordinate System.** CC: HSG-GPE.B.6; CCRS: G 511. Since the  $x$ -coordinate of both points is 2, the line runs parallel to the  $y$ -axis, and the  $x$ -coordinate of the midpoint will also be 2. As for the  $y$ -coordinate, the midpoint is halfway between 2 and  $-2$ : 0.
- (H) Mathematics/Algebra/Solving Algebraic Equations or Inequalities with One Variable/Equations Involving Absolute Value.** CC: 7.EE.B.3; CCRS: N 603. Since the absolute value of  $xy$  is positive,  $xy$  itself must be positive (since  $|xy| = xy$ ). Therefore, both  $x$  and  $y$  have the same sign: they might both be positive, or they might both be negative, so (F), (G), (J), and (K) can all be true. However, (H) cannot be true because  $x$  and  $y$  cannot have different signs, as a positive times a negative yields a negative result.

Alternatively, substitute some numbers. If  $x > 0 > y$ , then  $x$  could be 1 and  $y$  could be  $-1$ , and  $(1)(-1) = -1$ .
- (D) Mathematics/Geometry/Rectangles and Squares.** CC: 7.G.A.1; CCRS: AF 501. Convert the dimensions shown to real dimensions. Since 1 centimeter is equal to 4 meters, the width of the room is 4 meters and the length is 4.8 meters. Thus, the area of the room is  $4 \cdot 4.8 = 19.2$  square meters.
- (G) Mathematics/Algebra/Manipulating Algebraic Expressions/Basic Algebraic Manipulations.** CC: 8.EE.A.4; CCRS: A 511. First, perform the indicated multiplication:  $30,000 \times 20 = 600,000$ . And convert 600,000 to scientific notation by increasing the power of 10 once for each zero to the right of the leading digit before the decimal place:  $600,000 = 6 \times 10^5$ .
- (B) Mathematics/Arithmetic/Complicated Arithmetic Application Items and Algebra/Solving Simultaneous Equations.** CC: 8.EE.C.8b; CCRS: A 604. Use simultaneous equations to solve this problem. If  $x$  is the quantity of chocolates and  $y$  is the quantity of caramels, then  $x + y = 4$  and  $3x + 2y = 10$ . Substitute  $4 - x$  for  $y$  in the second equation and solve for  $x$ :  $y = 4 - x \Rightarrow 3x + 2(4 - x) = 10 \Rightarrow 3x + 8 - 2x = 10 \Rightarrow x = 10 - 8 = 2$ .

Alternatively, test the answer choices, starting with (C). If Karen bought 2.5 pounds of chocolates, she bought  $4 - 2.5 = 1.5$  pounds of caramels and the total cost is  $(2.5 \cdot 3) + (1.5 \cdot 2) = 7.50 + 3 = \$10.50$ . This is too much money. Since chocolates are more expensive than caramels, Karen bought less than 2.5 pounds of chocolates. Try (B): 2 pounds of chocolates and 2 pounds of caramels cost  $(2 \cdot 3) + (2 \cdot 2) = 6 + 4 = 10$ .

12. **(F) Mathematics/Statistics and Probability/Averages.** *CC: HSS-ID.A.2; CCRS: S 401.* Set up an equation for the average and solve for the missing element. Since the average of two of the tests is 77, they can both be set equal to 77 in the average for all three:  $\frac{77 + 77 + x}{3} = 80 \Rightarrow x = 86$ .
13. **(C) Mathematics/Arithmetic/Common Arithmetic Items/Ratios.** *CC: 6.RP.A.3a; CCRS: AF 401.* Only the ratio in (C), 5:2, is impossible because the number of photographs, 10, would not be evenly divisible by the total number of ratio parts:  $5 + 2 = 7$ .
14. **(G) Mathematics/Algebra/Solving Algebraic Equations or Inequalities with One Variable/Simple Equations.** *CC: 7.RP.A.3; CCRS: AF 401.* Solve for  $x$ :  $\frac{4}{5} = \frac{x}{4} \Rightarrow 4(4) = 5x \Rightarrow x = \frac{16}{5}$ .
15. **(D) Mathematics/Geometry/Lines and Angles and Triangles/Properties of Triangles.** *CC: 7.G.B.5; CCRS: G 501.* Label the unlabeled angles:



Since the measure of the degrees in a circle is 360, the sum of  $x$ ,  $y$ , and  $z$  plus the sum of  $a$ ,  $b$ , and  $c$  is 360. What is the value of the angles inside the triangles? Since they are equilateral triangles, each angle is  $60^\circ$ :  $3(60) + x + y + z = 360 \Rightarrow x + y + z = 180$ .

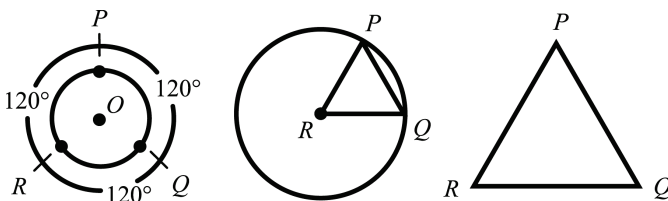
Alternatively, since you can determine from the given figure that the unlabeled angles each measure 60 and therefore total 180, you can use vertical angles to solve this item. After labeling the unlabeled angles, as done above, simply recognize that  $a^\circ = y^\circ$ ,  $b^\circ = z^\circ$ , and  $c^\circ = x^\circ$ . So,  $x + y + z = a + b + c = 180$ .

16. **(H) Mathematics/Arithmetic/Complicated Arithmetic Application Items.** *CC: 6.RP.A.3d; CCRS: AF 501.* If Peter spent  $\frac{1}{4}$  of his allowance on Monday, he had  $\frac{3}{4}$  of his allowance left. Then, he spent  $\frac{1}{3}$  of that  $\frac{3}{4}$  on Tuesday:  $\frac{1}{3} \cdot \frac{3}{4} = \frac{1}{4}$ . After spending the additional  $\frac{1}{4}$ , he was left with  $\frac{3}{4} - \frac{1}{4} = \frac{1}{2}$  of the original allowance. Substitution of numbers would also work, but the arithmetic would be the same.
17. **(B) Mathematics/Arithmetic/Common Arithmetic Items/Proportions and Direct-Inverse Variation.** *CC: 6.RP.A.3d; CCRS: AF 401.* There are three ways to solve the problem. The simplest and most direct is to reason that if 100 bricks weigh  $p$  pounds, 20 bricks, which is  $\frac{1}{5}$  of 100, must weigh  $\frac{1}{5}$  of  $p$ . This same reasoning can be expressed using a direct proportion. The fewer the bricks, the lesser the weight, so:  $\frac{x}{p} = \frac{20}{100} \Rightarrow 100x = 20p \Rightarrow x = \frac{20p}{100} \Rightarrow x = \frac{p}{5}$ .



Alternatively, substitute some numbers. Assume that 100 bricks weigh 100 pounds, which is 1 pound each, so 20 bricks weigh 20 pounds. Only the correct formula will generate the number 20 when 100 is substituted for  $p$  in the answer choices.

18. **(K) Mathematics/Geometry/Circles and Triangles/Properties of Triangles.** CC: HSG-MG.A.1; CCRS: G 601. The following drawings show that (I), (II), and (III) are all possible:



19. **(A) Mathematics/Statistics and Probability/Data Representation/Tables and Arithmetic/Common Arithmetic Items/Percents.** CC: 7.RP.A.3; CCRS: AF 401. This problem can be solved with the “change-over” principle, but that would require five different calculations. It is always easier and faster to find the greatest ratio of the increased value to the original value. Therefore, look at the successive ratios. The price doubles during the first 5-year period. However, it less than doubles during each of the other periods. Thus, the answer is (A).

20. **(F) Mathematics/Algebra/Manipulating Algebraic Expressions/Factoring Expressions.** CC: HSA-REI.B.4b; CCRS: A 508. The easiest approach is to multiply the binomials given in the answer choices to find the one that is equivalent to the given expression:

F.  $(x - 2)(x + 6) = x^2 + 4x - 12$  ✓

G.  $(x - 4)(x + 3) = x^2 - x - 12$  ✗

H.  $(x - 6)(x + 2) = x^2 - 4x - 12$  ✗

J.  $(x + 2)(x + 6) = x^2 + 8x + 12$  ✗

K.  $(x + 3)(x + 4) = x^2 + 7x + 12$  ✗

21. **(D) Mathematics/Algebra/Solving Algebraic Equations or Inequalities with One Variable/Simple Equations.** CC: HSA-CED.A.1; CCRS: A 502. Since the average of  $3x - 2$  and  $2x - 3$  is 10, the sum is 20:  $3x - 2 + 2x - 3 = 20 \Rightarrow 5x - 5 = 20 \Rightarrow 5x = 25 \Rightarrow x = 5$ . One package weighs  $3(5) - 2 = 13$  pounds and the other package weighs  $2(5) - 3 = 7$  pounds. The weight difference is  $13 - 7 = 6$  pounds.

22. **(G) Mathematics/Statistics and Probability/Averages.** CC: HSS-ID.A.2; CCRS: S 401. This question is a variation on the theme of an average with missing elements. Since 10 students have scores of 75 or more, the total of their scores is at minimum  $10 \cdot 75 = 750$ . Then, even assuming the other 5 students each scored zero, the average for the 15 would be at least  $750 \div 15 = 50$ .

23. **(C) Mathematics/Algebra/Manipulating Algebraic Expressions/Manipulating Expressions Involving Exponents.** CC: 8.EE.A.1; CCRS: A 512. Since  $16 = 4^2$ ,  $16^x = (4^2)^x = 4^{2x}$ . This problem is also solvable by assuming a value for  $x$ . If  $x = 1$ ,  $16^x = 16^1 = 16$ . The correct answer choice will yield the value 16 when 1 is substituted for  $x$ :

A.  $1^{16} = 1$  ✗

B.  $2^{3(1)} = 2^3 = 8$  ✗

C.  $4^{2(1)} = 4^2 = 16$  ✓

- D.  $8^{2(1)} = 8^2 = 64$  ✗  
 E.  $8^{4(1)} = 8^4 = 4,096$  ✗

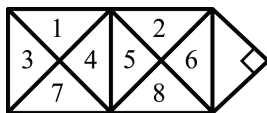
24. **(F) Mathematics/Geometry/Rectangles and Squares.** CC: HSG-MG.A.1; CCRS: G 505. The figure is a square, so the two sides are equal:  $2x + 1 = x + 4 \Rightarrow x = 3$ . One side is  $x + 4 = 3 + 4 = 7$ . Since all four sides are equal, the perimeter is  $4 \cdot 7 = 28$ .

25. **(E) Mathematics/Geometry/Rectangles and Squares and Triangles/45°-45°-90° Triangles and Properties of Triangles.** CC: HSG-MG.A.1; CCRS: G 601. If  $w$  is the width of the rectangle, the length is  $2w$  and the rectangle has an area of  $w \cdot 2w = 2w^2$ . Then,  $w$  is also the length of the hypotenuse of a  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle. Each of the other two sides forming the right angle (which also represent the altitude and base) is  $\frac{1}{2} \cdot w \cdot \sqrt{2} = \frac{\sqrt{2}w}{2}$ . The area of the triangle is  $\frac{1}{2} \cdot \text{altitude} \cdot \text{base} = \frac{1}{2} \cdot \frac{\sqrt{2}w}{2} \cdot \frac{\sqrt{2}w}{2} = \frac{1}{2} \cdot \frac{2w^2}{4} = \frac{w^2}{4}$ . The ratio of the area of the rectangle to that of the triangle is  $\frac{2w^2}{\frac{w^2}{4}} = \frac{2}{\frac{1}{4}} = \frac{8}{1}$ .

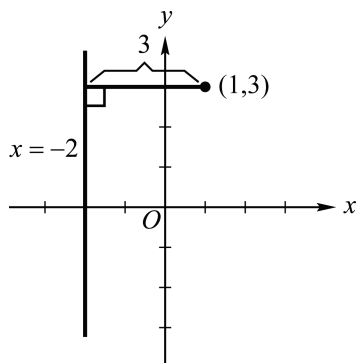
The above explanation is difficult to follow without a diagram, so draw one:



The explanation will not only be easier to follow, but it can be dispensed with altogether. The rectangle is obviously bigger than the triangle, so eliminate (A), (B), and (C). Adding to the figure shows that the area of the triangle is less than  $\frac{1}{4}$  of the area of the rectangle. Approximating all of the triangles shows it is  $\frac{1}{8}$  the area:



26. **(G) Mathematics/Coordinate Geometry/The Coordinate System.** CC: 8.G.B.8; CCRS: G 605. No diagram is provided, so sketch one:





27. **(C) Mathematics/Arithmetic/Common Arithmetic Items/Proportions and Direct-Inverse Variation.** CC:

6.RP.A.3b; CCRS: AF 401. Determine how much coffee costs per pound:  $\frac{\$12}{5 \text{ pounds}} = \$2.40$  per pound.

Therefore, \$30 buys  $\frac{\$30}{\$2.40/\text{pound}} = 12.5$  pounds.

Alternatively, the process can be represented in a single direct proportion:

$$\frac{\text{Cost } X}{\text{Cost } Y} = \frac{\text{Pounds } X}{\text{Pounds } Y} \Rightarrow \frac{\$30}{\$12} = \frac{x}{5} \Rightarrow 12x = 150 \Rightarrow x = \frac{150}{12} = 12.5.$$

28. **(J) Mathematics/Geometry/Triangles/Properties of Triangles.** CC: 6.RP.A.3d; CCRS: G 403. Since the triangles are equilateral, the ratio of their perimeters is the same as the ratio of their sides. Thus, the ratio of their perimeters is also  $\frac{3}{12} = \frac{1}{4}$ .

Alternatively, find the perimeter of each triangle. Since the triangles are equilateral, the smaller one has a perimeter of  $3+3+3=9$ , and the larger one has a perimeter of  $12+12+12=36$ . Therefore, the ratio is

$$\frac{9}{36} = \frac{1}{4}.$$

29. **(E) Mathematics/Algebra/Expressing and Evaluating Algebraic Functions/Function Notation.** CC: HSF-IF.A.2; CCRS: F 501. Substitute  $-2$  for  $x$  in the given function:

$$f(-2) = -3(-2)^3 + 3(-2)^2 - 4(-2) + 8 = -3(-8) + 3(4) - (-8) + 8 = 24 + 12 + 8 + 8 = 52.$$

30. **(H) Mathematics/Arithmetic/Common Arithmetic Items/Percents.** CC: 7.RP.A.3; CCRS: AF 401. Add 40 percent to the \$60 wholesale price:  $\$60 + (0.40 \cdot \$60) = \$60 + \$24 = \$84$ . Then, find the sale price:  $\$84 - (0.30 \cdot \$84) = \$84 - \$25.20 = \$58.80$ .

31. **(A) Mathematics/Algebra/Manipulating Algebraic Expressions/Evaluating Expressions.** CC: 6.EE.B.6;

CCRS: AF 402.  $\frac{1}{3}$  of the number equals  $\frac{1}{5}$  of the number plus 2:  $\frac{1}{3}x = \frac{1}{5}x + 2 \Rightarrow \frac{1}{3}x - \frac{1}{5}x = 2$ .

32. **(H) Mathematics/Geometry/Complex Figures and Triangles/Properties of Triangles and Rectangles and Squares.** CC: HSG-MG.A.1; CCRS: G 505. This is a composite figure. One side of the equilateral triangle is also a side of the square. The triangle has a perimeter of 12, so each side is 4. If the square has a side of 4, then the perimeter is  $4+4+4+4=16$ .

33. **(A) Mathematics/Algebra/Manipulating Algebraic Expressions/Evaluating Expressions.** CC: HSA-REL.B.4b; CCRS: A 508. Substitute  $\frac{2}{3}$  for  $x$  in the expression and solve for  $k$ :

$$12\left(\frac{2}{3}\right)^2 + k\left(\frac{2}{3}\right) = 6 \Rightarrow 12\left(\frac{4}{9}\right) + k\left(\frac{2}{3}\right) = 6 \Rightarrow 4\left(\frac{4}{3}\right) + k\left(\frac{2}{3}\right) = 6 \Rightarrow \frac{16}{3} + k\left(\frac{2}{3}\right) = 6 \Rightarrow k\left(\frac{2}{3}\right) = \frac{18}{3} - \frac{16}{3} = \frac{2}{3} \Rightarrow k = 1.$$

34. **(K) Mathematics/Geometry.** CC: HSA-APR.A.1; CCRS: A 505. The perimeter is equal to the sum of the lengths of the sides:  $2(x-2y) + 4(2x+y) = 2x - 4y + 8x + 4y = 10x$ .

Alternatively, substitute some numbers. Assume that  $x=3$  and  $y=1$ . The two short sides are each  $3-2(1)=1$ , for a total of 2. The four long sides are  $2(3)+1=7$ , for a total of 28. The perimeter is  $28+2=30$ . Thus, if  $x=3$  and  $y=1$ , the correct formula will generate the number 30. Only (K) produces the correct value.



35. **(D) Mathematics/Arithmetic/Complicated Arithmetic Application Items.** CC: 7.EE.B.3; CCRS: AF 501. Let  $x$  be the number of packages in the van before the first delivery:

$$\left(x - \frac{2}{5}x\right) - 3 = \frac{1}{2}x \Rightarrow \frac{3}{5}x - 3 = \frac{1}{2}x \Rightarrow \frac{3}{5}x - \frac{1}{2}x = 3 \Rightarrow \frac{1}{10}x = 3 \Rightarrow x = 30.$$

36. **(J) Mathematics/Algebra/Manipulating Algebraic Expressions/Evaluating Expressions.** CC: HSA-SSE.A.2; CCRS: A 601. Perform the indicated operations in the answer choices to determine which one is equal to the expression in the stem  $(12x^3y^2 - 8x^2y^3)$ :

F.  $2x^2y^2(4x - y) = 8x^3y^2 - 2x^2y^3$  ✗

G.  $4x^2y^2(2xy) = 8x^3y^3$  ✗

H.  $4x^2y^2(3xy) = 12x^3y^3$  ✗

J.  $4x^2y^2(3x - 2y) = 12x^3y^2 - 8x^2y^3$  ✓

K.  $x^3y^3(12xy - 8xy) = 12x^4y^4 - 8x^4y^4$  ✗

37. **(C) Mathematics/Algebra/Manipulating Algebraic Expressions/Basic Algebraic Manipulations.** CC: HSA-SSE.A.2; CCRS: A 601. The fastest way to solve this problem is to simply rewrite the expression:

$$\frac{1}{1 + \frac{1}{x}} = \frac{1}{\frac{x+1}{x}} = 1 \left( \frac{x}{x+1} \right) = \frac{x}{x+1}.$$

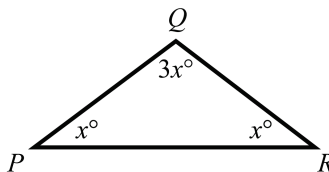
Alternatively, substitute numbers into the expression. If  $x = 1$ , then:  $\frac{1}{1 + \frac{1}{x}} = \frac{1}{1 + \frac{1}{1}} = \frac{1}{1+1} = \frac{1}{2}$ . If  $x = 1$ , both

(B) and (C) generate  $\frac{1}{2}$ . Therefore, try another number. If  $x = 2$ , the correct answer should generate the value  $\frac{2}{3}$ ; (B) is eliminated and (C) must be correct.

38. **(G) Mathematics/Arithmetic/Common Arithmetic Items/Percents.** CC: 7.RP.A.3; CCRS: AF 401. Use  $S$  and  $T$  as unknowns. Since  $S$  is 150 percent of  $T$ ,  $S$  equals  $1.5T$ . Substitute  $1.5T$  for  $S$ :  $\frac{T}{1.5T + T} = \frac{T}{2.5T} = \frac{1}{2.5} = 40$  percent.

Alternatively, substitute real numbers. Let  $S$  be 15 and  $T$  be 10; then,  $\frac{T}{S + T} = \frac{10}{10 + 15} = \frac{10}{25} = 40\%$ .

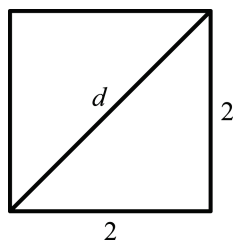
39. **(C) Mathematics/Geometry/Lines and Angles.** CC: HSG-CO.C.10; CCRS: G 503. No figure is provided, so sketch one:



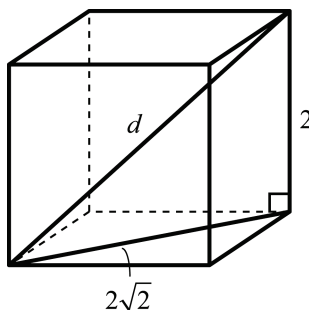
$$x^\circ + x^\circ + 3x^\circ = 180^\circ \Rightarrow 5x^\circ = 180^\circ \Rightarrow x = 36.$$



40. **(G) Mathematics/Arithmetic/Common Arithmetic Items/Proportions and Direct-Inverse Variation.** CC: 6.EE.B.6; CCRS: AF 402. Use a direct proportion:  $\frac{C}{x} = \frac{d}{b} \Rightarrow Cb = dx \Rightarrow C = \frac{dx}{b}$ .
41. **(D) Mathematics/Arithmetic/Common Arithmetic Items/Percents.** CC: 7.RP.A.3; CCRS: AF 401. First, find the reduced price:  $\$64 - (25\% \text{ of } \$64) = \$64 - (0.25 \cdot \$64) = \$64 - \$16 = \$48$ . Next, calculate the sales tax on \$48:  $5\% \text{ of } \$48 = 0.05 \cdot \$48 = \$2.40$ . Now, find the total cost:  $\$48.00 + \$2.40 = \$50.40$ .
42. **(K) Mathematics/Algebra/Solving Simultaneous Equations.** CC: HSA-SSE.A.2; CCRS: A 601. Use the method for solving simultaneous equations:  $\frac{y}{z} = k - 1 \Rightarrow k = \frac{y}{z} + 1$ . Since  $\frac{x}{z} = k$ :
- $$\frac{x}{z} = \frac{y}{z} + 1 \Rightarrow x = z \left( \frac{y}{z} + 1 \right) = y + z.$$
43. **(A) Mathematics/Algebra/Solving Algebraic Equations with Two Variables.** CC: 7.RP.A.3; CCRS: AF 301. If  $x = 0.25y$ , then  $y = \frac{x}{0.25} = 4x$ . Thus,  $y$  is 400 percent of  $x$ .
44. **(G) Mathematics/Arithmetic/Common Arithmetic Items/Properties of Numbers.** CC: 6.NS.B.4; CCRS: N 602. Since 3 is a factor of 9 and 5 is a factor of 5, any multiple of both 9 and 5 will be a multiple of  $3(5) = 15$ ; (II) belongs in the correct choice. (I), however, is not correct.  $x$  could be any multiple of 45, e.g., 90, which also proves that (III) does not belong in the correct choice.
45. **(B) Mathematics/Geometry/Complex Figures and Triangles/Pythagorean Theorem.** CC: HSG-SRT.C.8; CCRS: G 705. The neat thing about a cube is that if given any one feature (e.g., volume, edge, diagonal of a face, diagonal of the cube, surface area), every other feature can be calculated. This is why cubes are often the focus of test problems. The edge has a length of 2, so use the Pythagorean theorem to find the length of the diagonal of a face:



$d^2 = 2^2 + 2^2 = 4 + 4 = 8 \Rightarrow d = 2\sqrt{2}$ . Now, find the length of the diagonal of the cube:





$d^2 = 2^2 + (2\sqrt{2})^2 = 4 + 8 = 12 \Rightarrow d = 2\sqrt{3}$ . That is the length of the entire diagonal of the cube. The point that is the center of the cube is the midpoint of the diagonal of the cube and is  $\sqrt{3}$  units of length from each vertex.

46. **(J) Mathematics/Geometry. CC: 7.RP.A.3; CCRS: AF 401.**  $\text{Volume}_{\text{cylinder}} = \pi r^2 h$ . Redefine the dimensions of the smaller cylinder in terms of  $r$  and  $h$ :  $r = kr'$  so  $r' = \frac{r}{k}$  and  $h = kh'$  so  $h' = \frac{h}{k}$ .

$\text{Volume}_{\text{smaller cylinder}} = \pi \left(\frac{r}{k}\right)^2 \left(\frac{h}{k}\right) = \frac{\pi r^2 h}{k^3}$ . The ratio is  $\frac{\frac{\pi r^2 h}{k^3}}{\pi r^2 h} = \frac{1}{k^3}$ . Therefore, the correct answer is (J),  $1:k^3$ .

Alternatively, assume some numbers. Let the radius and height of the larger cylinder be 4 and 4, and those of the smaller cylinder be 2 and 2. Since  $r = kr'$  and  $h = kh'$ ,  $k$  must be 2.

$\text{Volume}_{\text{larger cylinder}} = \pi(4)^2(4) = 64\pi$ .  $\text{Volume}_{\text{smaller cylinder}} = \pi(2)^2(2) = 8\pi$ . The ratio  $8\pi$  to  $64\pi$  is 1 to 8 or  $\frac{1}{8}$ . Use  $k = 2$  to find the answer that has a value of  $\frac{1}{8}$ :

F.  $1:\pi = \frac{1}{\pi}$  ✗

G.  $\pi:1 = \frac{\pi}{1} = \pi$  ✗

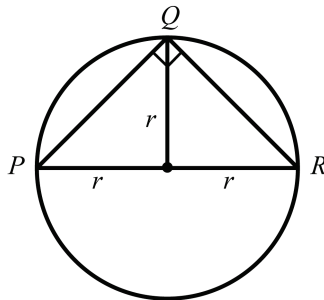
H.  $k\pi:1 = \frac{k\pi}{1} = 2\pi$  ✗

J.  $1:k^3 = \frac{1}{k^3} = \frac{1}{2^3} = \frac{1}{8}$  ✓

K.  $k^3:1 = \frac{k^3}{1} = \frac{2^3}{1} = 8$  ✗

47. **(A) Mathematics/Geometry/Complex Figures and Triangles/Pythagorean Theorem and Circles. CC: 7.G.B.4; CCRS: G 507.** This is a right triangle, so  $\angle PQR$  intercepts an arc of  $180^\circ$ . (The inscribed angle  $\angle PQR$  is equal to half its intercepted arc.) Because the arc is  $180^\circ$ , the hypotenuse of the triangle,  $\overline{PR}$ , is also the diameter of the circle. From any bit of information about a right isosceles triangle (e.g., either side lengths, the hypotenuse, or the area), the other information can be found. Using the two adjacent sides as the altitude and the base, we have:  $\text{area}_{\text{triangle}} = \frac{1}{2}(s)(s) \Rightarrow 1 = \frac{1}{2}s^2 \Rightarrow s^2 = 2$ . Now, use the Pythagorean theorem to solve for  $\overline{PR}$ :  $s^2 + s^2 = \overline{PR}^2 \Rightarrow 2 + 2 = \overline{PR}^2 \Rightarrow 4 = \overline{PR}^2 \Rightarrow \overline{PR} = 2$ . Since  $\overline{PR} = 2$ , the radius of the circle is 1, and  $\text{area}_{\text{circle}} = \pi(1)^2 = \pi$ .

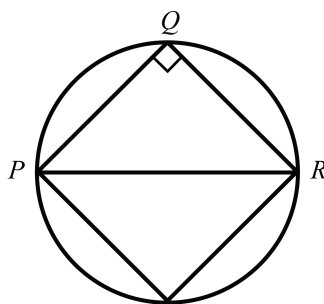
The same conclusion can be arrived at in a slightly different manner:



Based on the figure,  $r$  is the length of the altitude of the triangle and  $2r$  is the length of the base, so

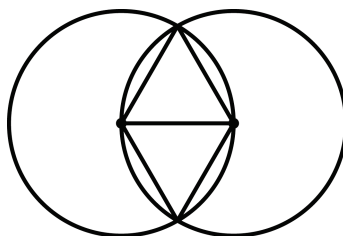
$$\text{area}_{\text{triangle}} = \frac{1}{2}(2r)(r) = r^2 \text{ and } r^2 = 1 \Rightarrow r = 1. \text{ Thus, } \text{area}_{\text{circle}} = \pi r^2 = \pi(1)^2 = \pi.$$

Finally, a little common sense can solve this problem without any math. The triangle, which has an area of 1, takes up slightly less than half the circle:



The correct answer must be a bit larger than 2, and only one choice qualifies: (A) is  $\pi$  and  $\pi$  is slightly larger than 3. Therefore, (A) is reasonable. All of the other choices are more than 6 and so are too large to be reasonable.

48. **(F) Mathematics/Geometry/Complex Figures and Circles.** CC: HSG-G.A.2; CCRS: G 701. This is a good exercise in organized problem-solving. Look at the figure and ask what is known: the radius of the circle and the perimeter of the shaded area consist of two arcs. There must be some way to use the information about the radius to find the length of the arcs. Arcs can be measured in terms of length or in terms of degrees.



Since the sides of the triangles are all radii, the triangles must be equilateral, and the degree measure of each arc is 120. The circles have radii of 1, so they have circumferences of  $2\pi(1) = 2\pi$ . Each arc is a third of that length:  $\frac{2\pi}{3}$ . Since there are two such arcs, the perimeter of the shaded area is  $2 \cdot \frac{2\pi}{3} = \frac{4\pi}{3}$ .

49. **(C) Mathematics/Statistics and Probability/Averages.** CC: HSS-ID.A.2; CCRS: S 401. For the first six tests, the student has a total point count of  $(6)(83) = 498$ . If the student scores a 0 on each of the remaining four



tests, the total point count will remain 498 and the average will be  $\frac{498}{10} = 49.8$ . If the student scores 100 on

each of the four remaining tests, the total point count will be 898 and the average will be  $\frac{898}{10} = 89.8$ .

50. **(K) Mathematics/Arithmetic/Common Arithmetic Items/Complex Numbers.** CC: HSN-CN.A.2; CCRS: N

606. Let  $x$  be the multiplicative inverse of  $2 - i$ :  $x(2 - i) = 1 \Rightarrow x = \frac{1}{2 - i} \Rightarrow x = \frac{1}{2 - i} \cdot \frac{2 + i}{2 + i} = \frac{2 + i}{4 - i^2}$ .  $i = \sqrt{-1}$ , so

$$i^2 = -1. \text{ Thus, } x = \frac{2 + i}{4 - (-1)} = \frac{2 + i}{5}.$$

51. **(C) Mathematics/Arithmetic/Simple Manipulations.** CC: HSF-BF.B.5; CCRS: F 703. From the exponential concept of logarithms, if  $a^x = b$ , then the equation can be written in logarithmic form as  $\log_a b = x$ . Let

$$\log_3 \sqrt{3} = x; \text{ then } 3^x = \sqrt{3} \Rightarrow 3^x = 3^{\left(\frac{1}{2}\right)}. \text{ Thus, } x = \frac{1}{2}.$$

52. **(J) Mathematics/Algebra/Expressing and Evaluating Algebraic Functions/Function Notation.** CC: HSF-

IF.A.2; CCRS: F 501. Study the structure of  $f$ . When will the function be at its minimum value? This is like asking for the minimum value of  $(x - 1)^2$ . Squaring any positive number yields a positive number; squaring any negative number yields a positive number; and squaring zero yields zero. Since zero is less than any positive number, we want  $x - 1$  to equal zero, and this occurs when  $x = 1$ . Now, plug in 1 for  $x$  in the given function and solve to find the minimum value of the function:  $f(1) = (x - 1)^2 + 2 = (1 - 1)^2 + 2 = 2$ .

Alternatively, test the answer choices. Plug each answer choice into the given function; the correct choice will be the lowest value:

F.  $(-3 - 1)^2 + 2 = (-4)^2 + 2 = 16 + 2 = 18$  ✘

G.  $(-2 - 1)^2 + 2 = (-3)^2 + 2 = 9 + 2 = 11$  ✘

H.  $(0 - 1)^2 + 2 = (-1)^2 + 2 = 1 + 2 = 3$  ✘

J.  $(1 - 1)^2 + 2 = (0)^2 + 2 = 0 + 2 = 2$  ✓

K.  $(2 - 1)^2 + 2 = (1)^2 + 2 = 1 + 2 = 3$  ✘

Finally, if you recognized the function  $f(x) = (x - 1)^2 + 2$  as a parabolic equation in the form  $(x - h)^2 + k$  with a vertex of  $(h, k)$ , you could simply plug in the values of  $h$  and  $k$  to determine the vertex:  $(1, 2)$ . Which means  $x = 1$  is the minimum value of  $x$ .

53. **(A) Mathematics/Algebra/Manipulating Algebraic Expressions/Manipulating Expressions Involving Exponents.** CC: 8.EE.A.1; CCRS: N 605. Simply use the rules for working with exponents to solve the given

$$\text{equation for } x: 2^n + 2^n + 2^n + 2^n = x(2^{n+1}) \Rightarrow (4)(2^n) = x(2^{n+1}) \Rightarrow (2)(2^1)(2^n) = x(2^{n+1}) \Rightarrow$$

$$2(2^{n+1}) = x(2^{n+1}) \Rightarrow 2 = x.$$

54. **(F) Mathematics/Algebra/Expressing and Evaluating Algebraic Functions/Function Notation.** CC: HSF-

$$\text{IF.A.2; CCRS: F 501. } f(k) \text{ will equal } f(-k) \text{ when } (k)^2 + 2(k) + 1 = (-k)^2 - 2k + 1 \Rightarrow k^2 + 2k + 1 =$$

$$k^2 - 2k + 1 \Rightarrow 2k = -2k \Rightarrow 4k = 0 \Rightarrow k = 0.$$





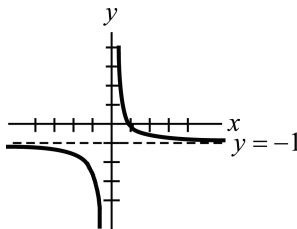
Another approach is to work backward from the answer choices. First, use the value 0:  $(0)^2 + 2(0) + 1 = (-0)^2 - 2(0) + 1 \Rightarrow 1 = 1$ . Thus, 0 is part of the solution set; eliminate (G), (H), and (J). The only question that remains is whether the correct answer is (K). Take another value, say 1. If  $k = 1$ ,  $f(1) = (1)^2 + 2(1) + 1 = 4$  and  $f(-1) = (-1)^2 - 2(1) + 1 = 0$ , so  $f(1) \neq f(-1)$ , and (K) is eliminated. This proves that the answer is (F).

55. **(D) Mathematics/Algebra/Manipulating Algebraic Expressions/Factoring Expressions.** CC: HSN-Q.A.3; CCRS: AF 702. Factor the expression:  $\frac{x^2 - 1}{x - 1} = \frac{(x + 1)(x - 1)}{x - 1} = x + 1$ . Therefore, as  $x$  approaches 1,  $x + 1$  approaches 2.

56. **(H) Mathematics/Trigonometry/Determining Trigonometric Values.** CC: HSF-IF.C.7e; CCRS: FUN 33–36c. Given the restrictions on  $x$  and since  $\cos x = -1$ ,  $x$  must equal  $\pi$  and  $\cos \frac{\pi}{2} = 0$ .

Alternatively, visualize the graph of the cosine function (or graph it on a calculator).

57. **(B) Mathematics/Algebra/Expressing and Evaluating Algebraic Functions/Concepts of Domain and Range.** CC: HSF-IF.A.1; CCRS: F 501. The domain of a function is the set of all possible  $x$  values; the range of a function is the set of all possible  $y$  values. Sketch (or use a calculator to graph) the function:



From the graph, it is obvious that the  $y$ -values both approach, but never actually reach,  $-1$ . Therefore, the range is defined by all real numbers except  $-1$ .

Alternatively, this item can be solved algebraically by solving for  $x$ . Since  $f(x) = \frac{1-x}{x}$ ,  $x[f(x)] = 1 - x \Rightarrow x[f(x)] + x = 1 \Rightarrow x[f(x) + 1] = 1 \Rightarrow x = \frac{1}{f(x) + 1}$ . The range of the function is the set of all possible values for  $f(x)$ . Since division by zero is undefined,  $f(x) + 1 \neq 0 \Rightarrow f(x) \neq -1$ . Thus,  $f(x)$  can be any value except  $-1$ .

58. **(K) Mathematics/Trigonometry/Trigonometric Relationships.** CC: HSF-TF.A.2; CCRS: F 705.  $x = 3(\sin \theta)$  and  $y = 2(\cos \theta)$ ; thus,  $\sin \theta = \frac{x}{3}$  and  $\cos \theta = \frac{y}{2}$ .  $\sin^2 \theta + \cos^2 \theta = 1$ ; thus,  $\left(\frac{x}{3}\right)^2 + \left(\frac{y}{2}\right)^2 = 1 \Rightarrow \frac{x^2}{9} + \frac{y^2}{4} = 1$  is the equation of an ellipse with center  $(0,0)$  that passes through the points  $(3,0)$  and  $(0,2)$ .

Alternatively, plug in values for  $\theta$ . For  $\theta = 0$ ,  $x = 3[\sin(0)] = 3(0) = 0$ . For  $\theta = \frac{\pi}{2}$ ,  $x = 3\left(\sin \frac{\pi}{2}\right) = 3(1) = 3$  and  $y = 2\left(\cos \frac{\pi}{2}\right) = 2(0) = 0$ . Therefore, the graph must include the points  $(3,0)$  and  $(0,2)$ . The only graph given that contains both of these points is (K).

59. **(A) Mathematics/Trigonometry/Definitions of the Six Trigonometric Functions.** CC: HSF-TF.C.8; CCRS: F 706. Sine and cosecant are reciprocal functions, so the product of the sine of any angle and the cosecant of that angle is 1. This fact can quickly be derived from the definitions of sine and cosecant. Given a triangle with sides  $a$  and  $b$  and hypotenuse  $c$ , let  $\theta$  be opposite side  $b$ .  $\sin\theta = \frac{b}{c}$  and  $\csc\theta = \frac{c}{b}$ . Therefore,  $\sin\theta \cdot \csc\theta = 1$ .
60. **(J) Mathematics/Trigonometry/Trigonometry as an Alternative Method of Solution.** CC: HSG-SRT.C.8; CCRS: G 604. There are several different ways of expressing the length of  $\overline{BC}$ : as a number, as a function of  $\angle ACB$ , and as a function of  $\angle CAB$ . “Testing-the-test” is the easiest option, and some exam wisdom will help. First, do not fall for (F) or (G). Test-takers are not expected to know values of trigonometric functions at particular angles. Since  $40^\circ$  and  $50^\circ$  are not easily remembered values, the answer is not going to be 4 or 5. The answer will be expressed using a trigonometric function. (J) is correct:
- $$\tan A = \frac{\overline{BC}}{\overline{AB}} \Rightarrow \overline{BC} = \overline{AB}(\tan A) = 3(\tan 50^\circ).$$

### Section 3: Reading

- (D) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 302. In the final paragraph, the young man, Robin, is trying to explain to himself why the barbers laughed at him. Thus, he is talking to himself.
- (J) Reading/Prose Fiction/Explicit Detail.** CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 301. The five shillings were not enough to satisfy the ferryman for having to make a special trip. The young man was forced to pay an additional three pence, bringing the total fare to five shillings and three pence.
- (B) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 302. Just after the young man gets off the ferryboat, he finds himself in a neighborhood of hovels and old houses that, he concludes, could not belong to his relative. Therefore, the young man must think his relative is well-to-do.
- (J) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 201. The scene is at night: the boat crosses at nine o'clock in the evening, the lights are on in the barber shop, and the stranger in the coat threatens to have the young man put in the stocks by morning.
- (A) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 302. In the first paragraph, the narrator remarks that the young man sets off on foot with a light step—as though he had not already traveled more than thirty miles. Thus, thirty miles is a long way to travel in a day.
- (G) Reading/Prose Fiction/Explicit Detail.** CC: ELA-Literacy.CCRA.R.3; CCRS: REL 403. The young man finally concludes that the barbers laugh at him for approaching the stranger in the coat because it should have been obvious to him that the stranger in the coat would not know the Major.
- (A) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 503. The currency used to pay the ferryman and the length of a day's journey is suggestive. The reference to a “New England colony” clearly places the action some time before the end of the eighteenth century.
- (F) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 503. The young man bows to the stranger and addresses him as “honored sir” in order to show respect.
- (B) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.3; CCRS: REL 403. The passage states that nine o'clock in the evening was an “unusual hour.” Such language implies that nine o'clock was an unusual time for anyone to be using the ferryboat. This is why the young man was its only passenger.



10. **(F) Reading/Prose Fiction/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 503. The phrase “small and mean wooden buildings” characterizes the neighborhood near the ferry landing. The next paragraph also mentions a hovel and an old house.
11. **(B) Reading/Social Science/Explicit Detail.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 602. In the last paragraph, and the last sentence in particular, the author of the first passage states that the interdisciplinary approach used by Turner was a new technique. (B) best captures this idea. As for (A), the same paragraph states specifically that the reliance on political history was characteristic of history prior to Turner. As for (C), although Turner made the original presentation at a conference, the passage does not say that presenting was a technique of study. While Turner used the opportunity to present his new theory, he could equally well have published an article or made an informal presentation to colleagues. As for (D), the first passage doesn’t enter into such a debate, though you will find some mention of this in the second passage. But because the information appears in the second passage, it cannot be an answer to this Explicit Detail item about the first passage.
12. **(G) Reading/Social Science/Implied Idea.** CC: ELA-Literacy.CCRA.R.2; CCRS: WME 504. Passage A notes even some students of Turner demonstrated that some of his points were wrong. There would have been no reason to use “even” unless one would ordinarily expect for students to support the work of a professor. And in the development of the passage, the author is pointing out that even though Turner’s thesis was criticized by some scholars who might otherwise have been supporters, the thesis still remains important. As for (F), the passage implies that the students did scholarly work on the thesis, not that they were ignorant of it. As for (J), there is no support for this conclusion in the text. (H) is wrong because there is nothing to support this conclusion.
13. **(D) Reading/Social Science/Voice.** CC: ELA-Literacy.CCRA.R.2; CCRS: IDT 601. The author of Passage A evidently approves of Turner’s work. The passage says that it had great influence, that it was original, and that it used a novel approach. That’s a pretty good review. As for (A), while the author allows that Turner’s thesis was not immune to debate or even criticism, this does not mean that the author was “suspicious” of the work itself. After all, it could turn out to be that Turner’s conclusions are ultimately false, but the groundbreaking approach and radical theory would still have value. As for (B), the thesis is not treated negatively, so “condescending” can’t be used to express the author’s attitude. Finally, as for (C), the author takes a pretty strong position, so “undecided” is not a good description.
14. **(G) Reading/Social Science/Vocabulary.** CC: ELA-Literacy.CCRA.R.4; CCRS: WME 504. Because “grand” is a word with some common meanings, you can pretty much discount any choices that use these more common synonyms. That would certainly eliminate (H). Instead, the author is using the word “grand” in a derivative sense to mean large or great or overall. Turner’s thesis did try to be comprehensive, accounting for the uniquely American character. As for (F), though the author allows that Turner’s thesis was not perfect, line 14 is not where that discussion occurs. And (J) must be wrong since Turner’s thesis was not tentative.
15. **(C) Reading/Social Science/Development.** CC: ELA-Literacy.CCRA.R.2; CCRS: ARG 601. The author of Passage B discusses the limitations of Turner’s theory, and one of the most important of these is its attempt to explain everything American in terms of the frontier. At the referenced lines, the author lists some other very important historical factors in order to show that the frontier could not have been the entire story. As for (A), this is the topic introduced at the end of that paragraph and developed in the following paragraphs, but it is not an answer to this question. As for (B), even granting that this statement is correct, it is not an answer to this question. For example, the author mentions the Civil War in order to show that Turner’s thesis was too limited, not that traditional histories were too limited. As for (D), this is a point that is raised in the fifth paragraph, so it is not an answer to the question asked about the third paragraph.
16. **(G) Reading/Social Science/Development.** CC: ELA-Literacy.CCRA.R.2; CCRS: ARG 601. At the end of the third paragraph, the author of Passage B states that Turner’s thesis, in addition to failing as a comprehensive theory of American history, does not do an adequate job of explaining the frontier. The next

three paragraphs are the specific points to support this argument: (i) land wasn't free, (ii) frontier is a dubious concept, and (iii) groups as well as individuals were important. The information about wagon trains supports this last point: it was groups, not loners, who moved into the westward regions and stayed. As for (F), (H), and (J), these are ideas that are mentioned, but they do not explain the significance of the wagon trains.

17. **(B) Reading/Social Science/Voice.** *CC: ELA-Literacy.CCRA.R.2; CCRS: IDT 701.* The author of Passage B is critical of the frontier thesis, but you'll notice that the criticisms all deal with Turner's ideas. For example, Turner thought that the frontier offered free land, but the author of Passage B argues that he was wrong because the land was already used by indigenous peoples. So, while the passage criticizes Turner's idea, it doesn't criticize Turner himself. Thus, (C) and (D) are wrong, and (B) is correct. As for (A), the author says that the thesis has "rightfully" been abandoned because of its weaknesses.
18. **(H) Reading/Social Science/Vocabulary.** *CC: ELA-Literacy.CCRA.R.4; CCRS: WME 504.* You get the information you need to answer the question from the discussion about the significance of the Indian Wars. Turner claimed that the land was free, but in reality, it was necessary to pursue a policy of military aggression to secure the land. So, when the author writes that the wars "believe" the free land theory, the author means "prove false." (F) is a distracting choice, but don't be misled by the superficial connection between "lie" and "untruth." In this context, the phrase is "prove to be false," not "lie about." As for (G) and (H), while these are phrases that relate generally to the idea of debating the merits of a theory, they don't focus on the connection between the wars and the free land thesis.
19. **(D) Reading/Social Science/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.3; CCRS: CLR 502.* The key word other than "EXCEPT" in this item is "both;" therefore, the correct answer choice is the only one that is *not* mentioned in *both* passages. Both authors mention (A), (B), and (C). However, "nationalism" is only mentioned in the first passage.
20. **(F) Reading/Social Science/Application.** *CC: ELA-Literacy.CCRA.R.2; CCRS: ARG 601.* To a certain extent, any weakening of Turner's theory would have implications for all aspects of the theory. So, you might argue that the referenced evidence, in some way, tends to show that people from different regions did not mix at the frontier because the frontier was not quite as well-defined as Turner thought. But that's a pretty feeble point, and so (J) is wrong. You can apply similar reasoning to (G) and (H). The best answer here is (F). The "safety valve" point, as explained in Passage A, maintained that people who were dissatisfied with life in the urban areas could simply pack up and move to the country because there was land for the claiming. If the "free land" thesis is false, then the "safety valve" thesis must also be false.
21. **(A) Reading/Humanities/Development.** *CC: ELA-Literacy.CCRA.R.8; CCRS: TST 505.* At the end of the first paragraph, the author raises a question, which he then proceeds to answer. (A) describes this development. (B) is incorrect because the author does not present a theory as such. A theory is a hypothetical explanation of phenomena; the author instead presents his viewpoint about what is important in life. Also, while the author offers many opinions, none "prove" his viewpoint. As for (C), the author does not contrast his own views with other views. As for (D), the author does not define a term.
22. **(J) Reading/Humanities/Vocabulary.** *CC: ELA-Literacy.CCRA.R.4; CCRS: WME 504.* In the final paragraph, the author explains that life is much too short. The author introduces the discussion by stating that experience is the end goal of life—to get the most out of life, one must pack it with "as many pulsations as possible." One can infer that the author means experiences.
23. **(B) Reading/Humanities/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 504.* The discussion of art is found in the closing sentences of the passage. Having said that the best life is one packed with experiences (pulsations), the author goes on to say how one can have these intense experiences. This is one function of art, he says—to do nothing but provoke feelings—not to depict reality, (A); not to encourage reform, (C); not as a means of expression, (D).



24. **(H) Reading/Humanities/Application.** *CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 504.* Experience is everything according to the author, so he would probably agree with (H). It is the feeling of the moment that is important, not the memory of the feeling. Once the feeling is past, you should be looking for new feelings, not thinking about past ones.
25. **(A) Reading/Humanities/Voice.** *CC: ELA-Literacy.CCRA.R.8; CCRS: TST 505.* The writing is highly impassioned. The intensity of the writing is evident in every sentence. The issues are those of life and death. The author uses phrases such as “passionate attitude,” “tragic dividing,” “awful brevity,” and “splendor of our experience.”
26. **(H) Reading/Humanities/Implied Idea.** *CC: ELA-Literacy.CCRA.R.4; CCRS: .* In the second paragraph, the author argues that the best life is one filled with experiences of every sort. Not to seek after a variety of experiences is, in the author’s words, “on this short day of the frost and sun, to sleep before evening.” The phrase “to sleep before evening” must mean to stop living even before death. Thus, the “short day of the frost and sun” refers to a person’s life.
27. **(C) Reading/Humanities/Implied Idea.** *CC: ELA-Literacy.CCRA.R.4; CCRS: WME 504.* The author emphasizes the importance of living life to the fullest. In line 26, “awful brevity” refers to the shortness of life.
28. **(J) Reading/Humanities/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 502.* In the final paragraph, the author contrasts those who are listless with those who are the children of the world. The children of the world are high in passion, wise, and in love with art and song.
29. **(A) Reading/Humanities/Implied Idea.** *CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 504.* Lines 36–42 say that the desire for beauty has the most power to quicken our sense of life.
30. **(H) Reading/Humanities/Implied Idea.** *CC: ELA-Literacy.CCRA.R.4; CCRS: WME 504.* The author says that we are all under a sentence of death with an indefinite reprieve, meaning that we are all mortal. We have an “interval,” meaning our life; and then “our place knows us no more,” meaning we are gone from the earth; that is, we are dead.
31. **(B) Reading/Natural Science/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 502.* Line 3 reads, in part: “energy, which is the capacity for doing work.”
32. **(H) Reading/Natural Science/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 601.* The second paragraph states that the result of the process is a mix of sugar and oxygen.  $O_2$  names oxygen, and  $H_2O$  names water, so  $C_6H_{12}O_6$  names a sugar.
33. **(A) Reading/Natural Science/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 502.* Lines 17–21 define both terms. Reduction is the addition of electrons, and oxidation is the removal of electrons.
34. **(J) Reading/Natural Science/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.2; CCRS: .* Lines 17–19 state that photosynthesis involves the addition of electrons, making (I) correct. Lines 23–26 state that photosynthesis involves action on hydrogen, meaning that (II) is also correct. Lines 20–21 state that “Reduction stores energy, while oxidation releases it,” and line 17 states that “Photosynthesis is a reduction reaction.” So, (III) cannot be correct. Since (I) and (II) are correct, the answer is (J).
35. **(C) Reading/Natural Science/Main Idea.** *CC: ELA-Literacy.CCRA.R.2; CCRS: IDT 501.* The fifth paragraph gives a systematic analysis of the process defined in preceding paragraphs, which is photosynthesis.
36. **(F) Reading/Natural Science/Explicit Detail.** *CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 502.* (G) is supported by lines 51–52, (H) is supported by lines 64–67, and (J) is stated in lines 50–51. (F) states the reverse of the truth; it is ADP that is mixed with phosphate to form ATP (see lines 51–52).



37. **(A) Reading/Natural Science/Implied Idea.** CC: ELA-Literacy.CCRA.R.2; CCRS: CLR 601. A careful reading of lines 64–71 can lead to no other conclusion. A five-carbon sugar (RuDP) is combined with carbon dioxide ( $\text{CO}_2$ ), ultimately resulting in the formation of a three-carbon sugar (PGAL).
38. **(G) Reading/Natural Science/Implied Idea.** CC: ELA-Literacy.CCRA.R.1; CCRS: CLR 504. Growing periods, (J), are never discussed. Higher temperatures, (H), as indicated in the final paragraph, can lead to disagreeable conditions. Lines 72–78 state that the photorespiration, with its seemingly wasteful result, occurs when  $\text{CO}_2$  levels are low, suggesting that a higher level of  $\text{CO}_2$  would be a more agreeable condition. Also, more agreeable conditions facilitate carboxylation. This process involves combining  $\text{CO}_2$ . Therefore, more  $\text{CO}_2$  means an increase in carboxylation.
39. **(B) Reading/Natural Science/Explicit Detail.** CC: ELA-Literacy.CCRA.R.3; CCRS: . As stated in line 17, photosynthesis is a reduction reaction, which makes (III) an incorrect choice. Lines 67–69 and lines 72–75 indicate that RuDP is used in carboxylation and photorespiration, making (I) correct. Another difference, as stated in lines 75–76, is that no ATP is created via photorespiration, (II).
40. **(H) Reading/Natural Science/Main Idea.** CC: ELA-Literacy.CCRA.R.2; CCRS: IDT 602. The angiosperm plants discussed in the final paragraph *do* photosynthesize, so (F) is incorrect. They do it in an unusual way, using their specialized leaf structure (H). According to the paragraph, Kranz plants have a method of maintaining carbon dioxide levels; they do not transform carbon dioxide into carbohydrate.

## Section 4: Science

1. **(B) Science/Data Representation/Comprehension.** CCRS: IOD 304. As the table shows, with each additional carbon atom, the boiling point of the compound increases. For example, from methane (1 carbon atom) to ethane (2 carbon atoms), the boiling point increases from  $-162^\circ\text{C}$  to  $-89^\circ\text{C}$ , and from ethane to propane (3 carbon atoms), from  $-89^\circ\text{C}$  to  $-42^\circ\text{C}$ .
2. **(H) Science/Data Representation/Analysis.** CCRS: SIN 303. Butane has four carbon atoms. This means it has ten hydrogen atoms. Both (G) and (H) have chains with ten hydrogen, but only (H) is similar to the propane example, with  $\text{CH}_3$  on the end and  $\text{CH}_2$  in the middle.
3. **(C) Science/Data Representation/Application.** CCRS: IOD 404. This item is answered by looking at the values in the table. Boiling points for the compounds shown increase as the number of carbon atoms increase.
4. **(H) Science/Data Representation/Application.** CCRS: IOD 504. This item tests information provided in the passage. The passage states that alkanes that differ by one carbon atom differ in molecular mass by 14u:  $142 + 14 = 156$ .
5. **(C) Science/Data Representation/Application.** CCRS: IOD 402. According to the passage, the number of hydrogen atoms can be found using the formula  $2n + 2$ , where  $n$  is the number of carbon molecules:  $2(12) + 2 = 26$ .
6. **(J) Science/Data Representation/Application.** CCRS: IOD 201. The graph shows that the boiling points of the first four alkanes are below room temperature (about  $20^\circ\text{C}$ ). So methane, ethane, propane, and butane are all gases at that temperature. Hexane, however, is still a liquid. It boils and becomes a gas between  $50^\circ\text{C}$  and  $100^\circ\text{C}$ .
7. **(A) Science/Data Representation/Analysis.** CCRS: IOD 403. The graph in (A) shows the correct values for density; as the number of atoms in the carbon backbone increases, the density of the alkane increases. The relationship is most closely approximated by a straight line since the increment each time is not always constant.



8. **(F) Science/Research Summary/Comprehension. CCRS: SIN 303.** According to the explanation provided in paragraph one, the flag leaves penetrate the top of the coleoptile once it has reached the surface and continue to grow. The feature corresponding to that description is the plumule.
9. **(B) Science/Research Summary/Comprehension. CCRS: SIN 301.** The paragraph following Table 1 states that the greater growth rate for the coleoptiles with tips exposed to the air is explained by the production of additional growth substance. Those coleoptiles completely immersed in water had available only the growth substance left over from before the clipping.
10. **(F) Science/Research Summary/Comprehension. CCRS: SIN 301.** The first experiment immersed the coleoptiles in water, though in the second test the tops were allowed to extend into the air. But in neither test was anything but water used. Experiments 2 and 3 used growth solution.
11. **(B) Science/Research Summary/Analysis. CCRS: IOD 403.** The numbers in the table represent increments of growth. The cumulative growth is the result of adding the increments. Each increment shows some growth, so the line which continues to increase at every time point represents the correct cumulative growth, (B).
12. **(H) Science/Research Summary/Comprehension. CCRS: IOD 201.** The greatest cumulative growth after 24 hours was 31.0 percent, associated with a concentration of 10 units per  $\text{cm}^3$ .
13. **(C) Science/Research Summary/Analysis. CCRS: IOD 201.** Table 2 shows that the solution of 40 units grew 8.0% longer than the original length after 4 hours, but after 24 hours it had only grown 7.2% longer than the original length. Therefore, it showed shrinkage.
14. **(J) Science/Research Summary/Application. CCRS: SIN 503.** The introductory material for Table 3 explains that cyanide would interfere with a metabolic process. The data in the table clearly shows that the greater the concentration of KCN, the lower the growth rate.
15. **(B) Science/Research Summary/Comprehension. CCRS: SIN 303.** According to the introductory paragraph, osmosis occurs when solvent molecules pass through a semi-permeable membrane to dilute the solute concentration on the other side of the membrane. In Experiment 1, the water (solvent) passes through the membrane from the side with lower sugar concentration to the side with higher sugar concentration—no sugar (solute) molecules pass through the membrane. This is also explained in the second paragraph, which introduces the figure illustrating the process of osmosis with sugar solutions.
16. **(H) Science/Research Summary/Comprehension. CCRS: SIN 501.** The purpose of Experiment 1 is to determine how many cells in a representative sample undergo plasmolysis—an effect of osmosis—after being submerged in sugar solutions of varying solute concentrations, (H). The solute concentrations of the solutions, (F), is a controlled variable. The quantity of water lost due to osmosis, (G), is beyond the scope of the experiment. Finally, although the data do show the threshold at which osmosis is first observed, (J), locating that point is not the purpose of the experiment.
17. **(B) Science/Research Summary/Comprehension. CCRS: SIN 301.** The description of Experiment 1 states that “[f]orty to sixty-five cells from each onion strip are analyzed and scored.” The statement is part of the experimental setup and not tied with any experimental outcome. The best approach to an item like this is to eliminate the wrong choices. Nothing is known about the number of cells, plasmolyzed (A) or average total (C), in an onion strip—what is known is the number of plasmolyzed cells in a sample consisting of 40 to 65 cells. As for (D), nothing can be known about the unanalyzed cells of the onion strips simply because they are unanalyzed. Therefore, by the process of elimination, the correct choice must be (B). Indeed, the purpose of analyzing 40 to 65 cells from each strip is to provide a representative snapshot of the cells in an onion without having to count endlessly.
18. **(F) Science/Research Summary/Analysis. CCRS: SIN 501.** According to the passage, osmosis is the movement of solvent (e.g., water) from an area of lesser solute (e.g., sugar) concentration to one of higher

concentration. In Experiment 1, osmosis results in plasmolyzed cells because the cells lose water (solvent) to regions of higher sugar (solute) concentration. When immersed in the 0.05 mol/kg sugar solution, the cells do not lose water—that is, there is no evidence of plasmolysis—because the sugar concentration inside the cells is greater than that of the surrounding solution.

19. **(B) Science/Research Summary/Analysis.** CCRS: IOD 502. The difference in percentage of plasmolyzed cells is accounted for by the number of cells analyzed in each case. For the onion strip submerged in the 0.55 mol/kg sugar solution, 50 of the 50 analyzed cells are plasmolyzed:  $\frac{50}{50} = 100\%$ . For the onion strip submerged in the 0.45 mol/kg sugar solution, 50 of the 64 analyzed cells are plasmolyzed:  $\frac{50}{64} \approx 78.1\%$ .
20. **(G) Science/Research Summary/Analysis.** CCRS: EMI 601. According to Table 2, the beet disk submerged in the 0.00 mol/kg sugar solution increases in weight. A solution concentration of 0.00 moles of sugar per kilogram of water indicates that there is no sugar in the solution—the beaker contains only water. Therefore, any sugar in the cells of the beet disk triggers osmosis and water molecules moved across the semi-permeable cell walls into the beet cells, adding weight to the disk.
21. **(C) Science/Research Summary/Application.** CCRS: IOD 403. According to Table 2, as the sugar solution concentration increases, the percentage of weight change decreases. Therefore, eliminate (A) and (D). The graphs in (B) and (C) are similar for high and low values but different for values in the middle of the graph, so compare the values in Table 2 for a sugar solution concentration of 0.25 mol/kg. According to the table, the percentage of weight change in the disk submerged in the 0.25 mol/kg sugar solution is +3.65%, so (C) is the correct choice.
22. **(H) Science/Research Summary/Analysis.** CCRS: EM 20–23a. According to Table 2, the beet disk submerged in the 0.35 mol/kg sugar solution increases in weight, while the beet disk submerged in the 0.40 mol/kg sugar solution decreases in weight. Thus, the concentration of sugar in the beet cells must be between 0.35 moles and 0.40 moles per kilogram of water.
23. **(B) Science/Data Representation/Comprehension.** CCRS: IOD 201. Magnesium is a positively charged mineral ( $\text{Mg}^{+2}$ ). The soil that has the worst relative ability to hold such minerals is coarse sand.
24. **(J) Science/Data Representation/Analysis.** CCRS: IOD 304. As particles get larger (from less than 2 micrometers to 200–2,000 micrometers), their relative ability to retain water decreases (from 1 to 4).
25. **(C) Science/Data Representation/Comprehension.** CCRS: IOD 402. Soils that are neither most able nor least able for any ability cannot be ranked 1 or 4. The only soils that are never ranked 1 or 4 are silt (greater than or equal to 2  $\mu\text{m}$  and less than 20  $\mu\text{m}$ ) and sand (greater than or equal to 20  $\mu\text{m}$  and less than 200  $\mu\text{m}$ ). The total size range, therefore, is greater than or equal to 2  $\mu\text{m}$  and less than 200  $\mu\text{m}$ .
26. **(F) Science/Data Representation/Application.** CCRS: SIN 502. Since loam is mostly clay, it primarily has small particles that hold minerals and water well. The larger silt and sand particles in loam are adequate at maintaining air spaces containing oxygen. None of the other predictions fit the data in the chart.
27. **(D) Science/Data Representation/Analysis.** CCRS: EMI 401. (A), (B), and (C) are all true. However, (D) is NOT true: Clay is most able (relative ability: 1) to both hold positively charged minerals and retain water, so there is a soil type that is best for more than one category of relative ability.
28. **(G) Science/Conflicting Viewpoints/Comprehension.** CCRS: EMI 301. Concentrations of reactants, not products, determine rate in both theories.
29. **(C) Science/Conflicting Viewpoints/Comprehension.** CCRS: EMI 301. This question tests critical comprehension of the passage, and it requires an understanding of the relationship between the two



theories. According to the passage, Theory 2 explains that Theory 1 is based upon an incomplete understanding of the details of chemical reactions, assuming that all reactions operate by a single-step mechanism. Therefore, one can conclude that a proponent of Theory 2 believes that Theory 1 can be used for single step reactions, but should not be used for more complex reactions.

30. **(G) Science/Conflicting Viewpoints/Comprehension. CCRS: IOD 504** This question tests understanding of the relation of numbers of reactants in the overall equation to exponents in the rate law. For the reaction  $\text{Mg} + 2\text{HCl} \Rightarrow \text{MgCl}_2 + \text{H}_2$ , Theory 1 states that  $\text{rate} = k[\text{Mg}]^1 [\text{HCl}]^2$ , where  $k$  is the rate constant and the exponents are the coefficients in front of the reactants in the reaction. Using this formula, the rate equation for  $3\text{M} + 2\text{N} \Rightarrow 4\text{P}$  must be  $k[\text{M}]^3 [\text{N}]^2$ .
31. **(D) Science/Conflicting Viewpoints/Analysis. CCRS: IOD 504.** The coefficients of the reactants determine their exponents in the rate law.
32. **(F) Science/Conflicting Viewpoints/Analysis. CCRS: EMI 302.** This question tests understanding of the differences between the theories. Theory 2 disagrees with Theory 1 on the grounds that chemical reactions do not all occur in one stage. Therefore, Theory 2 may be best supported by evidence that proves that some reactions occur in more than one stage.
33. **(A) Science/Conflicting Viewpoints/Comprehension. CCRS: IOD 404.** If the first stage is very slow and the second stage is much quicker, the overall rate is essentially that of the first stage.
34. **(H) Science/Conflicting Viewpoints/Analysis. CCRS: EMI 502.** If the sum of the rates of each stage always equaled the rate of the reaction taken as a whole, there would be no need to analyze each sub-reaction.
35. **(B) Science/Research Summary/Comprehension. CCRS: IOD 501.** Temperature range for a life function is the high temperature minus the low temperature. For both species and both humidity conditions, oviposition always has the narrowest range.
36. **(J) Science/Research Summary/Comprehension. CCRS: IOD 501.** For each life function, Species M achieved 90% success at the same low temperatures in either humidity. At high temperatures, however, 50% humidity was detrimental. (Under 50% humidity, 90% success was not achieved at the same high temperatures as 100% relative humidity.)
37. **(C) Science/Research Summary/Analysis. CCRS: SIN 502.** Since humidity levels had no effect on Species D for mating, oviposition, or pupation, it is likely that 50% relative humidity will have little effect on caterpillar survival in Species D as well. The temperature range would, therefore, be the same as observed at 100% relative humidity: 12°C–36°C.
38. **(G) Science/Research Summary/Analysis. CCRS: SIN 503.** Mating success in the light and in the dark should be compared at the same temperature. It should be a temperature at which both species can successfully mate. Otherwise, additional variables confuse the issue. (30°C is an optimum temperature for both species under all conditions presented.)
39. **(D) Science/Research Summary/Analysis. CCRS: EMI 501.** Species M and Species D are both equally successful at low temperatures for pupation.
40. **(F) Science/Research Summary/Analysis. CCRS: EMI 501.** (G) and (H) are not relevant to the question. (J) only refers to light conditions. (F) is a hypothesis supported by the results.

## Sample Essay Responses and Analyses

### Section 5: Writing

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#### Above Average Response

*If you walk through a suburban parking lot, on a city street, or even along a beach, you are likely to see grocery bags littering the ground. Because of the environmental risks they pose, free plastic and paper bags should be eliminated and be replaced with cloth bags or purchased bags that are designed for reuse. Non-reusable bags have a harmful impact on the environment, and consumers needlessly accumulate them. Although eliminating free grocery bags would be an unwelcome change for some consumers and manufacturers, it is a long-term change that needs to be made for the good of the environment.*

*The production and use of both plastic and paper bags have a negative impact on the environment. As litter, plastic bags are more dangerous than paper because often, they are not biodegradable. They accumulate in landfills and can kill animals that attempt to eat them or that become entangled in them and suffocate. Plastic bags can be especially harmful in coastal cities because they can float into bodies of water, where they are difficult to recover and can kill marine life. Paper bags, however, require more energy to manufacture, which produces more greenhouse gases. Unless paper bags are made from recycled material, trees must be cut down to manufacture them. Paper bags are also harder to reuse because some plastic bags are waterproof and more durable. Because both types of cause environmental problems, it is best to shop with reusable, cloth bags.*

*Grocery bags are also an example of waste because Americans accumulate more bags than necessary. One may argue that some sources of pollution, such as gasoline, cannot be eliminated because there is no widely available substitute. However, paper and plastic bags can easily be replaced with more environmentally-friendly products. It is wasteful to manufacture a product that harms the environment and that is used for about 20 minutes before being thrown out. Because these bags are so rapidly disposed, they accumulate in shoppers' homes, or worse, outside. Some California cities, for example, have banned plastic bags because of the pollution they cause when they accumulate in natural environments. Stores should cut down on the number of non-reusable bags they distribute by charging for paper and plastic bags and also by having cloth bags available for sale.*

*Opponents of banning plastic bags claim that a ban would be inconvenient for consumers and would harm manufacturers. For consumers, however, the ban would cease to be an annoyance once they adjusted to bringing their own bags. Shoppers could keep bags in their cars or backpacks for last-minute trips to the store, and initially, stores could reward customers who bring their own bags. For example, some stores enter shoppers with their own bags in a raffle for free groceries. Some consumers argue that they reuse plastic bags for garbage; however, they would still be able to purchase durable plastic bags at a low cost. The biggest challenge to eliminating plastic bags would be the threat to bag manufacturers. In California, a statewide ban was delayed because it would have eliminated manufacturers' jobs. Before implementing a ban, states should devise plans to minimize job loss; for example, factories could transition into making fewer, more durable bags.*

*Although eliminating free grocery bags would be an adjustment for many Americans, it would be worth the long-term environmental benefits. The large quantities of bags that Americans currently use is wasteful, and their convenience does not justify the threat they pose for the environment.*

**Ideas and Analysis:** The writer clearly states his or her thesis in the introduction: free, non-reusable shopping bags are a threat to the environment and should be banned. The writer's thesis largely agrees with Perspective 2, but the writer adds that paper bags can also harm the environment. The author addresses Perspective 3's argument by arguing that both paper and plastic bags can be harmful, and the quantity of bags overall should be reduced. The essay also counters Perspective 1's claim that the convenience of free bags makes them necessary for consumers.



**Development and Support:**

- The introduction opens with a hook, and the description of litter in different environments illustrates that it is a widespread problem.
- The writer clearly states the thesis in the second sentence of the introduction and previews the three main arguments.
- The body paragraphs begin with topic sentences that state the main point or argument to be made in the paragraph.
- The body paragraphs include concrete examples to support the writer’s opinions.
  - Body paragraph 1: The writer describes specific effects of both paper and plastic bags on the environment.
  - Body paragraph 2: The writer argues that the accumulation of non-reusable bags is harmful and unnecessary and uses the California ban to illustrate this claim.
  - Body paragraph 3: The writer acknowledges the opposing viewpoint. Although the writer does not have specific, proven examples of how to prevent job loss when fewer bags are manufactured, he or she provides practical advice on how to make the transition easier for consumers.

**Organization:**

- The writer introduces each paragraph with a topic sentence.
- The writer uses transitions to connect ideas between and within paragraphs. See, for example, the first sentence of the second body paragraph: “Grocery bags are also an example of waste because Americans accumulate more bags than necessary.”
- The main ideas are arranged in a logical progression:
  - 1) Non-reusable bags are harmful for the environment.
  - 2) These risks are unnecessary because non-reusable bags can be replaced with products that are more environmentally friendly.
  - 3) Consumers and companies can think of solutions to make the elimination of non-reusable bags easier for customers and manufacturers.
- The second body paragraph becomes slightly repetitive because both the first and second body paragraphs mention the accumulation of paper and plastic bags.

**Language Use and Conventions:** The essay contains at least three principal strengths in this area:

- The essay does not have any mechanics/usage errors. As a result, the reader’s attention is not distracted from the substance of the essay.
- The essay does not have any informal language.
- Stylistically, the writer varies sentence structures throughout most of the essay.

**Summary and Conclusions:** This essay demonstrates writing skills that are well developed and provides arguments, as well as practical suggestions for eliminating non-reusable shopping bags. The writer also addresses all three perspectives throughout the essay. This essay would likely receive a score of 10.

### Below Average Response

*Eliminating paper and plastic bags might be good for the environment but its just not doable in America. Shopping bags are really convenient for shoppers and can be used around the house. Also, we do other things also have a bad affect on the environment, so I don't see why people have to care so much about plastic bags.*

*Shopping bags are very convenient, and it would be too much of a burden on customers if they were eliminated. Often, my parents just stop by the store on the way home from work to pick up a few things they need. They would never remember to bring a reusable bag with them to work in case they needed to go shopping afterwards. I think it would be unfair to consumers to have to buy bags every single time they went shopping because the reality is that shoppers aren't used to bringing bags with them, and it would take a long time for them to get used to this.*

*Also, plastic bags can be used around the house. I often use them as trash bags, since they're waterproof, they're very useful for this purpose. Sometimes when it's raining, I also use them to protect my books and my calculator because my backpack isn't completely waterproof.*

*Also, it is impossible not to harm the environment. So many things that we do harm the environment, like driving, taking long showers, and using gas stoves. However, theres never going to be a law banning these activities, so why should shopping bags be banned?*

*Although in an ideal world we'd be able to ban non-reusable shopping bags, this wouldn't work in the US. It would be too hard for Americans to adjust to the change.*

**Ideas and Analysis:** The writer has a clear thesis and three main supporting arguments. However, while the essay defends Perspective 1, it does not take into account the opposing arguments in Perspectives 2 and 3. The writer's analysis of the situation is weak because he or she claims to speak for all "Americans" but only offers arguments and examples from his or her personal life. The essay would be stronger if it analyzed a wider range of viewpoints, instead of relying on generalizations.

### Development and Support:

- The writer states his or her thesis in the first sentence of the introduction, and the introduction also previews the three main supporting arguments.
- In the body paragraphs, the writer uses several personal examples, but he or she generalizes from these examples and claims that banning plastic bags would be difficult for everyone.
- The second body paragraph does not develop the writer's argument well. The writer provides two examples of uses of plastic bags but does not explain that these activities make plastic bags a less wasteful product.
- The third body paragraph, in particular, contains a superficial argument. The writer does not acknowledge that activities like driving and cooking are necessary parts of one's daily life, whereas there is a feasible alternative to using plastic bags.

### Organization:

- The organization of the essay is clear and easy to follow. The writer states his or her thesis in the introduction, and each body paragraph has a topic sentence.



- The writer uses transitions, but the transitions sometimes sound repetitive and awkward. For example, both the second and third body paragraphs begin with the transition “also.” The writer needs to vary transitions to make the essay flow more smoothly.

**Language Use and Conventions:** The essay contains several weaknesses in this area:

- The essay contains some usage and mechanics errors.
  - Introduction: In the first sentence, “its” should be changed to “it’s.” (Explain that “its” is the possessive form, and “it’s” means “it is.”)
  - Introduction: In the last sentence, “affect” should be changed to “effect.” (Explain that usually, “affect” is a verb and “effect” is a noun.)
  - Body paragraph 2: The second sentence has a comma splice. (I often use them as trash bags, since they’re waterproof, they’re very useful for this purpose.) The writer should begin a new sentence after “bags” or replace the comma with a semicolon.
  - Body paragraph 3: In the final sentence, “theres” should be changed to “there’s.”
- The essay contains many examples of informal language. For example, in the conclusion, the writer says, “this wouldn’t work in the US.” Instead, the writer should say, “banning non-reusable bags would not be practical in the US.”
- The essay also uses repetitive language. For example, the introduction states that “Shopping bags are really convenient for shoppers.” The writer should use a synonym for “shoppers,” such as “consumers,” to avoid sounding repetitive.

**Summary and Conclusions:** The essay has a clear thesis and three main arguments. However, the writer does not use developed reasoning or a variety of examples to support these arguments. Furthermore, the writer does not consider the opposing viewpoints. This essay would likely receive a score of 5.