Practice Test 6:
Answers and
Explanations
# PRACTICE TEST 6 ANSWER KEY

<table>
<thead>
<tr>
<th>Section 1: Reading</th>
<th>Section 2: Writing &amp; Language</th>
<th>Section 3: Math (No Calculator)</th>
<th>Section 4: Math (Calculator)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. D</td>
<td>2. D</td>
<td>2. A</td>
<td>2. A</td>
</tr>
</tbody>
</table>

### Section 2: Writing & Language

| 1. D | 1. A |
| 2. D | 2. A |
| 3. D | 3. A |
| 4. C | 4. D |
| 5. B | 5. C |
| 6. C | 6. C |
| 8. C | 8. C |
| 10. D| 10. D|
| 11. D| 11. D|
| 12. A| 12. A|
| 15. D| 15. D|
| 17. D| 17. D|
| 18. D| 18. D|
| 21. A| 21. A|
| 22. B| 22. B|

### Section 3: Math (No Calculator)

| 1. B | 11. C |
| 2. A | 12. C |
| 3. A | 13. D |
| 5. C | 15. D |
| 7. A | 17. 90|
| 8. C | 3    |
| 9. B | 18. $\frac{3}{5}$ or $\frac{1}{4}$ |
| 10. D| 0.6  |
| 11. C| 30. C|
| 12. D| 31. 120 |
| 13. A| 32. 5 |
| 14. B| 33. 880 |
| 15. C| 34. 20 |
| 16. A| 35. 950 |
| 17. D| 36. 40 |
| 18. B| 37. 1.03 |
| 19. C| 38. 17.8 |
Section 1: Reading

1. B The question asks what the narrator’s initial shock shifts to during the passage as a whole. By the end of the passage, the narrator has reviewed all of the choices available to him and decided to become part of the plot. Choice (A), disbelief, can be eliminated, as it is very close to shock, and the narrator moves away from that response and toward a commitment to the plot by the end of the passage. The narrator does seem to feel sympathy for Scudder, but that sympathy is not dwelt upon, so (C) can be eliminated. Though he may despair as the passage unfolds, (D) can also be eliminated, as that emotion is not the one that predominates by the end. Choice (B) is the best answer because the narrator ends the passage both mentally and actively engaged in the plot unfolding around him.

2. D The answer to this question should provide evidence of the overall shift in the narrator’s attitude in the passage. Although the thought that my number was up all right might seem to support (D) in question 1, at that point in the passage, the narrator is still deep in thought and his responses continue to evolve as the passage unfolds. Eliminate (A). This is also true for the idea that the police would simply laugh at the narrator and eventually charge him with the murder and hang him, so eliminate (B) and (C). By the end of the passage, he has decided that he was pretty well bound to carry on Scudder’s work. The most likely place to find lines that describe how the narrator feels by the end of the passage would be near the end of the passage, and (D) offers lines that show the narrator feeling pretty well bound to carry on Scudder’s work. Since the remainder of the passage details why he feels he must become involved in the plot, these lines best articulate the overall shift in his attitude and support (B) in question 1. Therefore, (D) is the best answer.

3. B The sentence immediately following this phrase is There was nobody there, nor any trace of anybody, but I shuttered and bolted all the windows and put the chain on the door. This sentence indicates that the narrator was afraid that someone might still be in the apartment, and that the reason he went over the apartment was to ensure that no one was in fact there. The narrator also mentions the possibility that the murderer might return later in the same paragraph. This best supports (B). There is no discussion of trying to determine the identity of the killer(s), so eliminate (A). The narrator has not yet decided he must vanish, which means (C) is incorrect. There is also no indication that he thinks another victim may be there, only the attacker, so eliminate (D). The correct answer is (B).
4. C  When asked for the meaning of a word or phrase in context, be sure to base your answer on the context of the passage rather than your previous knowledge of the word. Earlier in this sentence the narrator states that *It took me about an hour to figure the thing out*, which indicates he is mentally working through the situation. Therefore, *cogitations* must mean something like “thoughts” or “musings.” Choice (C), *meditations*, best reflects that meaning and is the best answer. While (B), *recognitions*, might initially seem appealing, any recognitions would be the product of the narrator’s thinking, rather than the process itself. Neither (A) nor (D) work in context.

5. C  The phrase *I was in the soup* comes at the beginning of the third paragraph. This paragraph goes on to discuss the bad position that the narrator finds himself in, with very limited options. This best matches (C): He finds himself in a predicament. Choice (A) is too literal; the reference to soup doesn’t refer to actual food or a kitchen. Choice (B) might initially seem appealing, as the narrator responds to finding Scudder’s body with shock, but the phrase *in the soup* is used to describe the situation the narrator is in, not how he feels about it. Choice (D) is not supported by the passage, as there is never any indication that the author is intoxicated.

6. A  The end of the third paragraph describes the narrator’s reasoning as to why he cannot tell the police about Scudder’s murder. The narrator states that the police would not believe him and he *would be charged with the murder*. This best supports (A). Although the narrator states that the police would likely *laugh at him*, they would be laughing at his story and not at the fact that someone was murdered, as though it was all a joke, eliminating (B). Since the narrator would be telling the truth if he told the police, he would not be *playing Scudder’s killers’ game*, eliminating (C). There is no reference to the narrator is a *brave man*, or whether his lack of bravery would influence the police’s belief in his story, so eliminate (D). Choice (A) is the answer.

7. B  The end of the third paragraph describes the narrator’s reasoning as to why he cannot tell the police about Scudder’s murder. The author states that the police would not believe him and he *would be charged with the murder*. This best matches (B) as the best evidence for the answer to the previous question. None of the other lines provided in these answer choices relate to the narrator’s discussion of the police, so they cannot be the best supporting evidence for the previous question.

8. A  Prior to the sentence in question, the narrator states that Scudder’s enemies *must have reckoned that he had confided in me* before Scudder was killed. The narrator then says *I would be the next to go*. Since it was Scudder who was the first to go, and he was murdered, it can be inferred that the narrator is afraid he will also be murdered for knowing Scudder’s secret. This best supports (A). Since no one has gone to prison, the narrator cannot be the *next* to go to prison, eliminating (B). The narrator does not reference leaving the house, which eliminates (C). At this point the narrator has not yet discussed the possibility of telling his story, so (D) should be eliminated as well. Choice (A) is the best answer.
9. A  This question (What kind of a story was I to tell about Scudder?) is used rhetorically to indicate that the author is unsure of what he should say and how the story will be taken by those he tells it to. This best supports (A). The passage indicates that the narrator knows important information about Scudder; that is why he might also be killed. Eliminate (B). The narrator has already indicated that he has lied to Paddock, who will be at the apartment in the morning as well, so he is not trying to start a conversation with his roommate, eliminating (C). The question is not a literal question for the reader to answer, so (D) is also incorrect. Choice (A) is the correct answer.

10. D  When asked for the meaning of a word or phrase in context, be sure to base your answer on the context of the passage rather than your previous knowledge of the word. In this sentence confidence refers to what Scudder told the narrator, indicating that Scudder trusted the narrator. Therefore, the closest meaning to confidence in this context is trust, (D). Although the other three choices can be used synonymously for confidence, they do not match the correct meaning in this specific context.

11. C  This question asks for a summary of the first paragraph. There is no evidence that Roosevelt was elected in reaction to the banking crisis, so (A) is incorrect. Additionally, while the paragraph states that millions of people were faced with starvation, it does not go so far as to say that the majority of American citizens could not afford food, so (B) is incorrect. The passage does not indicate when the Great Depression began, and (D) is too specific to be a summary of the paragraph. Choice (C) provides an overview of the first paragraph and is the correct answer.

12. D  The passage states that the American citizens were no longer in a mood to tolerate a do-nothing government. Additionally, the political elite was forced to agree to a more flexible policy and to the promulgation of a number of liberal reforms. While (A) might seem like an attractive choice, the passage focuses on how the attitude of the American public forced the political elite to change their governing stance, not on how well the public withstood the pressures of the Great Depression. The answer choice that best matches this attitude is (D), uncompromising.

13. D  Remember to use the context of the passage when considering the definition of the word, and not your own prior usage of the word special. The passage states on March 9, 1933 [the Roosevelt government] summoned a special session of Congress, which worked for three months to adopt a multitude of laws encompassing nearly all aspects of the country's economic and political life. There is no evidence in the passage to suggest that the meeting was selective, as all of Congress attended, so (C) is incorrect. Additionally, nothing in the passage suggests that the meeting was singular or extraordinary, so you can eliminate (A) and (B). However, it can be assumed that the session was unscheduled, because Roosevelt called for the session as soon as he was inaugurated. Choice (D) is the answer.
14. **D** This question asks what the passage implies about Roosevelt, so the correct answer should be directly supported by evidence from the passage. While Roosevelt's policies did seek the restoration of the economy and salvation of the threatened US ruling class through active government intervention, it is too extreme to say that Roosevelt singlehandedly averted the country's financial ruin. Choice (A) is incorrect. Choice (B) is incorrect because as previously quoted, the New Deal sought to protect the U.S. ruling class. While the passage states that the theory of the New Deal was founded in the thought of the English economist John Maynard Keynes, there is no evidence that Roosevelt was a student of Keynes. Choice (C) is incorrect. The passage states that Roosevelt went down in history as one of the most important, far-seeing, and realistic of American political figures, which supports (D).

15. **B** The question asks for the evidence you used to answer the previous question, so if you can’t find lines to support your answer to question 14 take a moment to reassess. In this case, only (B) supports the idea that Roosevelt was a remarkably forward thinker and a pragmatic leader.

16. **A** Remember to use the context of the passage when considering the definition of the word, and not your own prior usage of the word cardinal. The passage describes how the political mission of the New Deal sought to head off a movement by the working and farming class. The passage states that this explains why the cardinal points of the New Deal included some concessions to the working people. In context, cardinal needs to mean something along the lines of “main” or “important,” because these cardinal points were intended to fulfill the New Deal’s political mission. Choice (A) is the correct answer.

17. **B** The passage states that the New Deal signified a major break from the ideology of reactionary individualism and from the principles of classical liberalism with its doctrine of free trade and governmental non-interference in the economy. These lines support (B) as the correct answer. The passage never mentions the particular percentage breakdown of the classes, so (A) is incorrect. Although the passage does discuss agriculture and farming, there is no evidence that the economy is primarily built around these industries. Choice (C) is incorrect. The New Deal was created to impose regulations on a previously largely unregulated economy, so (D) is incorrect.

18. **C** The question asks for the evidence you used to answer the previous question, so if you can’t find lines to support your answer to question 17 take a moment to reassess. In this case, only (C) supports the idea that the economy functions as a noninterventionist system with limited government restriction.

19. **A** The correct answer needs to be consistent with the information in the passage and in the graphic. The authors argue that the New Deal imposed greater government regulation on the economy, and the pie charts support this idea by assigning an increased percentage of income to the national government after the New Deal. Choice (A) is consistent with this information. While the pie charts do show an increase in the private sector’s percentage of income, the passage does not discuss the private sector. Choice (B) is incorrect. Neither the passage nor the
graphic discuss the dangers of government regulation or suggest that the private sector was likely to decrease regardless. Choices (C) and (D) are incorrect.

20. **B** The correct answer needs to be consistent with the graphic. Immediately following the Supreme Court’s declaration that part of the New Deal was unconstitutional, the unemployment rate actually continued to fall. Choice (A) is incorrect. The graph shows that the unemployment rate was lowest in 1943 and 1944, so (C) is incorrect. Following the implementation of a war economy, the unemployment rate dropped significantly, so (D) is incorrect. The first phase of the New Deal was followed by a drop in the unemployment rate, while the second phase was followed by an increase. This information supports (B), which is the correct answer.

21. **C** Figure 2 shows that the initial implementation of the New Deal was followed by a decrease in the unemployment rate over several years. This information supports (C) as the correct answer. Figure 2 does not show what would have happened to the unemployment rate without the New Deal, so (A) is incorrect. Entering World War II brought the unemployment rate below the normal unemployment rate, a feat not achieved by the New Deal, so (B) is incorrect. While the New Deal did in fact decrease the unemployment rate, it did not bring it down to pre-crash levels. Choice (D) is incorrect.

22. **C** Choice (A) is incorrect because if the author were nostalgic about the word creativity, he would not be inclined to argue that it’s time to stop using it. Choice (B) is also incorrect because he is not talking about the word creativity in a positive way, so his attitude would not be a positive one. Choice (D) is incorrect; while the author feels the word creativity is antiquated, there is no evidence that his attitude is an old or outdated one. Choice (C) is correct because the author’s attitude towards the word creativity is jaded. He lacks enthusiasm for the word and feels it is overused because of its connection to a very popular but not well-supported hypothesis.

23. **A** Jaded means “tired of something, particularly after being overexposed to it.” Choice (A) reflects the author’s attitude by suggesting that the word is no longer needed. Choice (B) does not contain as much sense of the author’s attitude toward the word, so eliminate (B). Choice (C) contains information that is more directly about why the word has been used so much, rather than why the author is tired of it; eliminate (C). Choice (D) introduces an example that reinforces the idea that the hypothesis mentioned earlier is not well supported. It does not directly support (C) in the previous question. Choice (A) is the best answer.

24. **C** While the first part of the paragraph deals with the frequency of the occurrence of the word creativity, it is not the main idea that the paragraph lends to the passage. Therefore, (A) is not correct. This same line of reasoning can be used to eliminate (D). While it is not inherently wrong, it is not the main or primary purpose for the second paragraph. The author is using this paragraph to introduce an example with which he does not agree. Therefore, it’s unlikely that the main purpose would be to show the importance of the word, unless he then refutes that belief. This falls more in line with (C), which is the correct answer and supported by the passage. The author goes on to note that the words attributed to Mozart were not written by
Cracking the New SAT

him: they do not describe how he composed, and we have known this since 1856, when Mozart biographer Otto Jahn showed that they were forged.

25. D In the context of the sentence mixed most nearly means “not consistent.” The author states that psychologists have been trying to prove the creativity hypothesis for nearly a hundred years, and if the results were consistent they would have used the results to either prove or disprove the theory. Misunderstood, stirred, and scientific do not match this prediction and are therefore incorrect. Choice (D), varied, matches the prediction and is the correct answer.

26. A In the first sentence of Passage 2 the author states that a lot of the vocabulary of science concerns the models rather than the reality. He then uses the word discovery as an example. This means that the word discovery is not referring to reality, or, more correctly, showing that the word is not used appropriately; this best matches (A), the correct answer. Choice (B) does not match the prediction. Choices (C) and (D) also do not match the prediction. While the author may draw attention to this particular example and suggest that the word does not mean what it seems to mean, neither of these choices describe why the quotes were used. More specifically, for (D), the use of quotes does not provide an alternate meaning; it just suggests that one exists.

27. B In the context of the passage, the word overturned is used to refer to the work of Copernicus, Kepler, Galileo, and Newton. The author goes on to say that Galileo was persecuted for concurring with Copernicus and that this idea conflicted with the then current theological interpretation, showing that these works were contrary to the entrenched beliefs of the time. Overturn, therefore, must mean “negate” or “reverse the ideas of the time.” This prediction most closely matches (B).

28. B In the passage the author notes that the church did not object to the concept of a moving Earth when it was used for modeling and calculation; what they did object to was Galileo’s claim that the Earth really moves. This means that the church was not in complete objection to the theory, making (A) incorrect. There is no mention of how the church dealt with Galileo and his theory in this passage, so (C) is not correct. There is also no evidence that the church supported the theory, only that they were tolerant of it at certain times; therefore, (D) is incorrect. Choice (B) most closely matches the prediction, so it is the correct answer.

29. D The author of Passage 1, Kevin Ashton, argues that a word is used incorrectly, and Kepler was among scientists who had successfully overturned an archaic notion. Since the author of Passage 1 has not yet succeeded in convincing the general public that creativity is a bad concept, (A) is incorrect. The only thing we know about psychologists from the first passage is that they have been unsuccessful at proving the creativity hypothesis. The author of Passage 2 notes that scientists are discovering new theories, referencing Hawking as an example, so (B) is also incorrect. Mozart is mentioned only in the context of a quote that was not actually his, and Newton is mentioned in regards to his historically controversial ideas. There is not enough information about Mozart to draw a reasonable conclusion, so (C) is wrong. The author of
Passage 1 states that many people keep quoting Mozart even though there is no evidence to support that claim. Analogously, church authorities in Passage 2 refused to accept the actuality of Galileo's claims even though Galileo presented evidence that the church's current views were inaccurate. These views are similar in their denial of the facts presented, so (D) is the best answer.

30. **C**

As noted in the explanation for the previous question, the people who quote Mozart are aware that they are not using a quote attributed to him; therefore, the line reference must note something that shows they know they are using incorrect information. Similarly, when the church authorities note that the concept of a moving Earth is theoretically possible, they also show that they know that in some part their model of the cosmos is flawed. The line references in (C) are the only ones that show falsehood in both areas. Therefore, (C) is the correct answer.

31. **B**

The scientific model only theoretically describes the system that it is trying to model. Because of this, scientific models are generally not proven through physical observation or experience, but rather through mathematics, speculation, and hypothesis. This is most similar to the creativity hypothesis mentioned in Passage 1; it is a theory that is speculative and remains unproven. The universe in its entirety is not mentioned in either passage, and the scientific model would not be the same thing as an entire universe. So too would black holes not be similar to the scientific model. Therefore, (A) and (D) are both incorrect. According to Passage 1, all that one knows about The Mathematician's Mind; Creativity, is that it contains a quote inaccurately attributed to Mozart. There is not enough information to draw a comparison between the book and the scientific model. Therefore, (C) is incorrect, leaving only (B), which matches the prediction and is the correct answer.

32. **C**

The question asks for the primary purpose of the passage, so the correct answer must address the main motivation behind why the author wrote the passage. Although the passage does discuss a way in which technology might aid animal research (specifically, GPS), (A) is too specific to be the primary purpose of the passage; eliminate (A). The passage discusses controlling the feral swine population, but it does not discuss the bio-ethics surrounding this issue, so (B) is incorrect. The passage provides a brief history of the feral swine’s presence in the United States, but (D) is too specific to be the answer, so you can eliminate (D) as well. Choice (C) addresses the author’s main purpose in writing the passage and is the correct answer.

33. **A**

The author describes the basic features of the feral swine and then details a particular problem concerning the species and the steps being taken to mitigate the problem. The author’s tone can be best described as that of academic interest, which is (A). The author has no personal stake in the feral swine situation and does not express either outrage or fondness in relation to the swine. The other choices can be eliminated.

34. **C**

The question asks which of the facts about feral swine is true, so the correct answer should be supported by the passage. Although the passage discusses feral swine populations moving as groups, it does not discuss the particular breakdown of these groups. Choice (A) is incorrect.
The passage states that the feral swine is an invasive species in the United States, so (B) is not supported by the passage. While the passage does discuss the fact that feral swine often carry diseases, it does not specify how people react to eating tainted meat. Choice (D) is incorrect. The passage states that currently, little is known about feral swine populations, their habitat use and movement patterns, and the resulting habitat destruction in Louisiana and Mississippi. These lines support (C), which is the correct answer.

35. The question asks for the evidence you used to answer the previous question, so if you can't find lines to support your answer to question 34, take a moment to reassess. In this case, only (D) supports the idea that we have a limited working knowledge of how feral swine populations navigate the environment.

36. The question asks what the phrase survival of their young can be nearly 100 percent suggests, so the correct answer must be supported by evidence in the passage. There is no evidence that the feral pig population is maintained at a constant rate; in fact, the passage later indicates that the population is increasing. Choice (A) is incorrect. The passage does not give any information about the feral pig population prior to the pig’s arrival in the United States, so (B) is incorrect. The passage describes the work as being done to curb the feral pig population; (D) describes the opposite situation and can therefore be eliminated. A 100-percent survival rate means that the populations can increase easily with each litter. Choice (C) is supported by the text and is the correct answer.

37. Remember to use the context of the passage when considering the definition of the word, not your own prior usage of the word wallows. The passage states that the feral swine root, or dig, for food and create wallows, thereby destroying sensitive vegetation, displacing native wildlife, and ultimately leading to loss of habitat quality and value. Based on the context, wallows must be the result of digging, such as “holes” or “trenches.” Choice (D), depressions, best matches this meaning. Choice (B) might be a tempting choice of the association with the phrase wallowing in misery; however, miseries does not match the needed sense of “holes” or “trenches,” so (B) is also incorrect.

38. The question asks for a way in which feral hog populations negatively affect human communities, so look to the passage for evidence. While the passage states that feral swine activity creates potentially hazardous conditions for the operation of farm equipment, it does not say anything about damage to farm equipment while it is being stored. Choice (A) is incorrect. Neither (B) nor (C) cause harm to human communities. The lines Hurricane protection levees and other water control structures that protect human communities have been severely damaged by rooting support (D), which is the correct answer.

39. The question asks for the evidence you used to answer the previous question, so if you can’t find lines to support your answer to question 38, take a moment to reassess. In this case, only (A) supports the idea that feral hogs can destroy protective structures such as levees.
40. B Remember to use the context of the passage when considering the definition of the word refuges, not your own prior usage or knowledge of the word. The passage states that in Louisiana, several wildlife refuges allow swine trapping by permitted individuals and hunting by licensed individuals. From the context, it can be assumed that wildlife refuges are places where animals are usually protected, because hunters need special permission to hunt the feral swine in these locations. Choice (B) best matches this meaning. Both (A) and (C) offer synonyms for refugees, rather than for refuges, so those choices can be eliminated.

41. A The question asks what the author suggests about GPS collars, so the correct answer must have support from the text. Lines 62–73 never mention ethical concerns surrounding the collars or the age of the pigs collared. Choices (B) and (D) are incorrect. Additionally, the lines never say how hunters interact with collared pigs, which eliminates (C). The paragraph states that the group’s movements and locations can then be tracked through the movement of the collared individual, which supports (A), the correct answer.

42. B The term Judas pig is a reference to the famous Biblical traitor, Judas; the collared Judas pig unwittingly betrays the position and movements of its group. This term functions as an allusion to a well-known source, the Bible, so (B) is the correct answer. It does not function as personification because the pigs are not assigned human attributes, so (A) is incorrect. The author does not use this term while intending the opposite meaning, so (C) is not the correct answer. The term is not used as a representation of something else, so (D) is incorrect.

43. A This question asks for the main purpose of the passage, so pay attention to the overall topic rather than specific information. The passage focuses on many different aspects of a single metal, which best supports (A). Although both the applications of nickel and the Russian mining economy are mentioned, neither is the main focus of the passage; eliminate (B) and (D). The health risks associated with nickel are not discussed, eliminating (C). Choice (A) is the best answer.

44. B This question asks about the shift in focus throughout the course of the passage, so the correct answer will focus on the general topics discussed rather than specific ones. Although the etymology of the name nickel is discussed at the beginning, the passage does not go on to discuss any other metals or elements, so you can eliminate (A). The passage discusses the discovery of nickel in the first paragraph, its formation in the second and third paragraphs, its uses in the fourth paragraph, and its current mining production in the last paragraphs. This supports (B). Although both the individual who discovered nickel and consumption of nickel is mentioned, these points are much too specific (and the greatest consumer of nickel is never mentioned), so (C) cannot be correct. And while the author does state where nickel is found and its common uses, these two points are too limited to account for the overall shift in the passage. The best choice is (B).
45. A The question asks for a statement from the author about where the majority of the Earth’s nickel is located, so find each choice in the passage to determine if it is the correct answer. The first line of the second paragraph states that the majority of nickel is found in the Earth’s core, which supports (A). Later in the second paragraph it’s stated that 40% of the Earth’s nickel is found in magmatic sulfide deposits, which is not a majority, so eliminate (C). At the end of the second paragraph, the author states that the majority of Canada’s nickel, not the Earth’s nickel, is found in the Sudbury Igneous Complex, eliminating (B). Since no mention of the United States indicates that the majority of the Earth’s nickel comes from that country, (D) should be eliminated as well. Choice (A) is the best answer.

46. A The previous question asks for the location of the majority of the Earth’s nickel deposits, which is (A), the Earth’s core. If the previous question is difficult to answer on its own, then these answer choices can be used to check which choice to the previous question is best. The first line of the second paragraph states that the majority of nickel is found in the Earth’s core, which supports (A) for both this and the previous question. The second paragraph states that 40% of the Earth’s nickel is found in magmatic sulfide deposits, which is not a majority, so eliminate (B) in this question and (C) in the previous question. At the end of the second paragraph, the author states that the majority of Canada’s nickel, not the Earth’s nickel, is found in the Sudbury Igneous Complex, eliminating (C) in this question and (B) in the previous question. Since the fourth paragraph discusses the United States’ use of nickel, not its production or amount of nickel, (D) is incorrect for both questions. The best supporting evidence for the previous question is (A).

47. C This question asks what is implied by the phrase likely a comet, so the answer will be based on exactly what is said in the passage. The use of the word likely indicates uncertainty; it has not been proven that it was a comet. This best supports (C). Choice (A) can be eliminated because no other comet strikes are discussed; if they are not discussed, nothing can be known about them. Choice (B) can be eliminated because asteroids are not discussed and, once again, if they are not discussed then nothing can be known about them. Choice (D) can be eliminated as well because no physical evidence is mentioned either. Choice (C) is the only possible answer.

48. D When asked for the meaning of a word or phrase in context, be sure to base your answer on the context of the passage rather than your previous knowledge or usage of the word. In this context the author is discussing the presence of nickel in laterite deposits, so host most nearly means “contains” or “holds.” Only (D) matches this meaning.

49. A The list in question is provided as a series of examples to strengthen the author’s point in the first few lines of the fourth paragraph. This best supports (A). Although this list is a series of examples of harsh environments, they do not indicate how harsh these environments can be, so (B) is incorrect. Green technology is not mentioned in this passage, so eliminate (C). Because no other metals or alloys are discussed in the passage, there is no indication that nickel is the most versatile. This eliminates (D), leaving (A) as the correct answer.
50.  D  The United States is discussed at the end of the passage, and all of the choices to the next question come from that part of the passage as well. The discussion of the use of nickel primarily in stainless steel, and superalloys does not provide a reason why the lack of U.S. nickel production should not be a concern, eliminating (A) in this question and in the next question. The fact that there are no active nickel mines in the United States also does not provide a reason why the lack of U.S. nickel production should not be a concern, eliminating (B) in this question and in the next question. The fact that laterite deposit nickel production is likely to increase also does not provide a reason why the lack of U.S. nickel production should not be a concern, nor does it indicate that there are many laterite deposits in the United States, eliminating (C) from this question and (D) in question 51. The statement that risk of nickel depletion is low due to sufficient global reserves of nickel provides a clear reason why the lack of U.S. nickel production should not be a concern, supporting (D) in this question and (C) in the next question.

51.  C  Refer to the explanation for question 50. The answer to this question must provide support for the claim that the lack of U.S. nickel production should not be a concern. The discussion of the use of nickel primarily in stainless steel and superalloys does not provide a reason why the lack of U.S. nickel production should not be a concern, eliminating (A) in this question and in the previous question. The fact that there are no active nickel mines in the United States also does not provide a reason why the lack of U.S. nickel production should not be a concern, eliminating (B) in this question and in the previous question. The fact that laterite deposit nickel production is likely to increase also does not provide a reason why the lack of U.S. nickel production should not be a concern, nor does it indicate that there are many laterite deposits in the United States, eliminating (D) from this question and (C) in the previous question. The statement that risk of nickel depletion is low due to sufficient global reserves of nickel does provide a clear reason why the lack of U.S. nickel production should not be a concern, supporting (C) in this question and (D) in the previous question.

52.  A  This question asks for one-third of stainless steel and nickel alloy use, so check each choice with the information provided in the figure focused on stainless steel and nickel alloy use. According to the figure, metal goods and transportation each account for 16% of the stainless steel and nickel alloy use, which makes the total for the two 32%. This is very close to one-third, or 33.3%, so keep (A). According to the figure, 16% of transportation and 15% of electronics account for stainless steel and nickel alloy use, which totals 31%. This choice is not as close to 33.3% as (A), so eliminate (B). Engineering accounts for only 24% of stainless steel and nickel alloy use, so eliminate (C). Building and construction and tubular products account for only 21% of stainless steel and nickel alloy use, so (D) can be eliminated as well. The best answer is (A).
Section 2: Writing and Language

I Told You I Was Sick!

1. **D** The information that follows refers to how many particles can invade the body. Choice (A) does not set up the information that follows; rather, it focuses on the information that is mentioned prior to the sentence. The option in (B) uses this to refer to a field of study that has not yet been mentioned, so eliminate (B). Choice (C) does not fit with the flow of the paragraph. Therefore, (D) is the best choice.

2. **D** This question is about the transition word. The transition needed should indicate a contrast of some kind; this eliminates (B) and (C). The transition even though is not one that gets separated out with commas as unnecessary information, which eliminates (A). Choice (D) is the best option.

3. **D** In the answer choices, the pronoun and the verb are changing. The pronouns and verbs in (A), (B), and (C) make them all complete ideas. The underlined portion follows a complete idea and a comma, so these choices can be eliminated because a complete idea is not needed. Choice (D) is correct.

4. **C** The punctuation is varying among forms of STOP, HALF-STOP, and GO; therefore, draw the vertical line between shot and of. The parts both before and after the vertical line are incomplete; therefore, a form of GO is needed; this eliminates (A) and (B). There is no reason to slow down ideas, eliminating (D). The best answer is (C).

5. **B** This question is testing diction. As written, the word needed should indicate proteins that are difficult to separate and individuate. The word that best indicates this is intertwined, making (B) the best fit.

6. **C** Choice (C) is the most concise option. It is also grammatically correct, which makes it the best option here. All other options refer to the paragraph above, which makes them much longer than just saying all of this as (C) does.

7. **B** As written, the word those is ambiguous. Choices (A) and (D) both feature ambiguous pronouns, so eliminate them. The word ones in (C) is also ambiguous, making (B) the best option, as it precisely states what is being referred to.

8. **C** The question is looking for the best connection to the previous paragraph. The end of the previous paragraph mentions complications that face scientists who study old diseases. A good transition phrase will connect those complications to the new insights described in the rest of the paragraph that follows. Choice (A) can be eliminated because it adds nothing new and is redundant. Choices (B) and (D) do not address the shift in focus. Choice (C) is the best answer.
9. **B** The answer choices show that this question is testing verb tense. Since the sentence is discussing Incans who died 500 years ago, (A) and (C) can be eliminated. Because the underlined portion is referring to what happened to the Incans before they died and were mummified, the past perfect tense is needed here to signal something that happened before they died. Eliminate (D) and choose (B).

10. **D** When given the option to DELETE the underlined portion, look for a reason to keep it. In this sentence, there is no need for the extra words. Choices (B) and (C) unnecessarily repeat the word _some_. Therefore, for the sake of being concise, the best option is (D).

11. **D** This sentence should not be added because it does not provide any new information. Choices (A) and (B) can be eliminated because the sentence is not needed, and (C) is incorrect because whether the process is widely accepted or not is not the subject of discussion. Choice (D) is best answer.

The Fall of Elevation and the Rise of the Underground

12. **A** Punctuation is changing among the answer choices. Since the word _by_ is necessary, eliminate (C). There is no reason to slow down ideas, so eliminate (B). The difference between (A) and (D) is the addition of the colon in (D). Choose (A), as there is no need for a colon in this sentence because _by_ works at the start of the list.

13. **B** There is no reason to include words that do not add information. Choice (C) is verbose and incorrect. Choices (A), (B), and (D) all contain the words _to go_, but (A) and (D) are wordier without adding to or changing the meaning. Therefore, to be as concise as possible, the best answer is (B).

14. **A** There is nothing wrong with this sentence as written. The correct word is used. Choices (B) and (C) have similar meanings and thus cancel each other out; both also offer a more extreme sense than _relieve_. Choice (D), _relax_, does not fit in this context. Choice (A) is correct.

15. **D** The paragraph is about an underground line in Boston. Therefore, a reference to underground transit in the United States as a whole and in London is outside the focus of the paragraph. Choice (D) is correct.

16. **C** This question is testing transitions. The point that follows, _the elevated lines had their own problems_, needs to be connected to the previous paragraph, which has a more positive perspective, by a word that indicates contrast. Choice (C) is the only one that does so. Choice (A) would need to have a contrasting point show up after the sentence, but this does not happen. This is not a cause-and-effect relationship, eliminating (B). Since the next sentence is negative, the word _hopefully_ would not make sense. Choice (C) is best.
17. **D**  When the option to *DELETE the underlined portion* shows up, see whether the underlined portion is truly needed. In this case, it is not. Choice (D) is concise and conveys the same intended meaning. The answer is (D).

18. **D**  As written, the sentence is not a sentence as the second verb has no subject. Choice (D) fixes this error by introducing the subject, making (D) the best fit. Though the other options may be shorter, a shorter answer must be grammatically correct in order to be the best answer.

19. **D**  This question is testing apostrophes, so first see whether an apostrophe is needed here. There is no reason to use one, so eliminate the options with *they’re*, (B) and (C). The verb is also changing here; the subject to which the verb refers is *antipathy*, which is singular. Therefore, the verb should be singular, eliminating (A). The answer is (D).

20. **B**  The verb tense is changing in the answer choices, so check the tense. As written, the tense used is past perfect; however, that tense is not needed here, as the verb should match with *chose*. This is standard past tense, making (B) the best choice. Choice (D) is in present tense, and (C) is wordy.

21. **A**  Since the writer wants to *further reinforce the paragraph’s claim about the movement away from elevated trains*, the correct sentence should mention something about underground trains becoming more prevalent or elevated become less so. The answer that does so best is (A). Choice (B) is about the wrong city, as the paragraph focused on Boston. Choice (C) is not about the elevated versus underground trains, nor is (D).

22. **B**  This question is testing transitions. Choices (A) and (D) suggest that this new paragraph marks a change in direction from the previous one. This final paragraph is working to sum up the significance of the changes mentioned throughout the passage, and in the previous paragraph in particular, so there is not a change of direction. Eliminate (A) and (D). Choice (C) is awkward and suggests a causality that isn’t present. Choice (B) is the best answer, since it reinforces the sense that the paragraph is summing up the overall significance of what’s been discussed.
The Ghost in the Machine

23. **A** The author’s goal is to convey admiration and avoid sarcasm. The only choice that does so is (A). Choice (B) would likely be read sarcastically, as would (C). Choice (D) does not convey admiration.

24. **B** The answer choices vary based on forms of punctuation. As written, there is a semicolon between *simple* and *a*, so draw a vertical line there. The first half is complete, but the second part is not. Therefore, (A) can be eliminated. There is no reason for there to be punctuation after *team*, as the team is described as a *team of speechwriters*. The best option is (B), which properly uses a colon.

25. **A** This question is testing an idiom. The correct idiom to go with *just as*, which starts this sentence, is *so too*; this makes (A) the best option.

26. **B** Since the writer wants the passage to reflect the humorous rendering contained in the cartoon, the correct answer will meet that goal. Neither (A) nor (D) builds on the joke within the cartoon, so eliminate them. Choice (B) is the best answer.

27. **C** The question asks which choice continues the contrast in the sentence. The contrast is between speechwriters’ original focus on creative writing and later interest in speechwriting. Choices (A) and (B) can be eliminated, as the passage suggests that speechwriting is not an obvious path to great personal fame but one that requires writing talent. There is no evidence that speechwriting leads to novel writing; in fact, the sentence suggests the opposite, so eliminate (D). Choice (C) reflects a shift in the writers’ motivations and pursuits and is consistent with the information in the passage, so it is the correct answer.

28. **C** The answer choices vary based on singular versus plural, so first find the subject. The subject here is *prose*, which is singular; therefore, plural verb forms such as *have come* and *come* are eliminated. Choice (D) is singular but not the proper tense. Choice (C) is the answer.

29. **D** The answer choices vary based on creative versus created and how versus whether. The word *creative* is describing *writer*, making the form *creative* necessary; this eliminates (B) and (C). Since this is not a choice between two options, the word *whether* is not correct. Choice (D) is the answer.

30. **A** The sentence starts by saying *That’s pretty impressive*, so it needs to follow what specifically is pretty impressive. The salary for speechwriters is what is impressive in that paragraph, so the sentence should go after the salary is mentioned. Additionally, sentence 1 is the only sentence that mentions money. Therefore, this new sentence belongs after sentence 1, making (A) correct.
31. **B** The answer choices vary by punctuation and the exact phrasing used. The best way to connect these two ideas is with the word *which*, as it does so concisely and without being repetitive. Therefore, (B) is correct. Choice (C) uses an incorrect transition to link the ideas, and (A) is repetitive by including the word *fame* both before and after the period. Choice (D) is wordier than necessary, making (B) the correct answer.

32. **D** The answers differ by diction, as forms of *their, there, and they’re* are changing. In both cases, the proper form is the pronoun *their* because they are referring to the speechwriters’ words and bosses’ words. This makes (D) the only option.

33. **C** The question asks which option most effectively concludes the sentence and paragraph. The focus of the paragraph is on the *larger rewards* that a speechwriter might gain in lieu of fame. Eliminate (B) and (D), as these endings are not consistent with the paragraph’s focus. Between (A) and (C), (C) more fully reflects the idea of *making a huge difference in people’s lives* by reaching a broad audience effectively, so it is the best answer.

**A Ray of Light from India**

34. **A** The answer choices vary by both verb tense and agreement. The subject of the sentence is *the film industry*, which is singular, so the verb should also be singular. Eliminate (B) and (D). Choice (C) is past tense, and the verb needs to match the present tense of *churns*, so eliminate (C). Choice (A) is the correct answer.

35. **B** The answer choices differ by exact phrasing. The shortest phrase shown is (B), so test it out. Since (B) works and is the most concise, this choice is the best option.

36. **D** Sentence 4 introduces the highest-grossing film in India for a given year. This is not relevant in this paragraph, so it should be deleted, which is (D). If you are unsure, try placing the sentence in the spot where each answer choice is found; you’ll see that it does not logically follow at any point. Therefore, the most concise answer also best maintains the paragraph’s focus, and the answer is (D).

37. **D** The word *however* signals the transition from the previous paragraph, which ends on the point that most Indian films reach only an Indian market. This new paragraph discusses a director whose works were exceptional in appealing to a much broader audience, so *however* works with the first part of the sentence to emphasize the contrast. Eliminate (A), which places the *however* in relation to the second idea in the sentence. Choice (D) contains STOP punctuation, so you can draw a vertical line and test whether the STOP punctuation is necessary. The ideas on both sides are complete, so both (B) and (C) are incorrect, and (D) is the correct answer.

38. **A** The answer choices vary based on punctuation around the list of influences. The first part of the sentence is not complete, so no form of STOP punctuation can be used after *influences*; this eliminates (B), which improperly uses a semicolon. Likewise, since the beginning part is
not a complete idea, a colon cannot be used, as it requires a complete idea prior to it. A single
dash also would, but this is not such a situation—there is a second dash after the idea, as
the list being mentioned is of the various influences mentioned in the beginning of the sen-
tence. The pair of dashes is working like a pair of commas, separating the necessary idea from
the unnecessary idea. The answer is therefore (A).

39.  C  The answer choices vary based on length of the phrase and the exact phrasing. The shortest
choice, (C), is grammatically correct and works in the sentence; therefore, it’s the best option.

40.  D  The answer choices differ based on exact phrasing and pronoun usage. Choices (A), (B), and
(C) can all be eliminated because they use the plural pronoun their in reference to anyone,
which is singular. Choice (D) removes the pronoun and creates a grammatically sound sen-
tence, making (D) the answer.

41.  A  The sentence would make logical sense as a transition between the first and second sentences of
the paragraph. As written, the first two sentences do not flow; adding this sentence would fix
that error, so eliminate (C) and (D). The sentence does not demonstrate some of the techniques
that made Ray’s films special, so eliminate (B). The best answer is therefore (A).

42.  B  The word choice varies here, so this question is testing diction. The sentence needs a word that
means something like demonstrated. Choices (A), (B), and (C) all have that sense, but demonstrated
and manifested need to be followed by a to in this context. Choice (D) does not make
sense in this context, as Ray was not performing audiences. Choice (B) is the correct answer.

43.  C  The question wants to best support the point developed in the paragraph. The paragraph focuses
on the greatness of Ray’s achievement, and this achievement would be particularly impres-
sive if Western audiences were not inclined to pay attention to Indian filmmakers at the time
he was working. Eliminate (A), (B), and (D), as they all offer options that would make Ray’s
achievements somewhat less remarkable. The best answer is (C).

44.  A  The choices vary based on the transition word, so the question is testing transitions. Since the
paragraph is contrasting the past with the present, the word now is the best one to use. This
makes (A) the correct answer.

Section 3: Math—No Calculator

1.  B  Plug In the Answers! The answer choices aren’t in order, so start with (A). Make \( s = -2 \) and \( t = 0 \) in
the first equation: \( 2(-2) - 3(0) = 10; -4 - 0 = 10; -4 = 10. \) This isn’t true, so eliminate (A). Try (B);
make \( s = 2 \) and \( t = -2: \) \( 2(2) - 3(-2) = 10; 4 + 6 = 10; 10 = 10. \) This is true, so try the second equation:
\( 6(2) - 2(-2) = 16; 12 + 4 = 16; 16 = 16. \) This also works; choose (B).
2.  A  Set the expressions equal to 3 and solve for $k$. Eliminate any choice that does not result in an integer value of $k$. Choice (A) becomes $4k + 3 = 3$. Solve for $k$. Subtract 3 from both sides: $4k = 0$. Divide both sides by 4, and you get $k = 0$. 0 is an integer, so (A) works and is the correct answer.

3.  A  Plug in! Make $x = 2$. The question wants what is equivalent to $g(x + 1)$, so if $x = 2$, then the question really wants $g(2 + 1) = g(3)$. To find $g(3)$, use the function provided: $g(3) = 4(3) + 6 = 12 + 6 = 18$. This is your target; circle it. Make $x = 2$ in each answer choice and eliminate any choice that does not equal 18. Only (A) works.

4.  D  The question wants to know the meaning of the “10,000” in the expression. Label what you know: $d$ is the number of defective balls per hour, and $h$ is the number of hours in a day’s shift. These two are multiplied together and subtracted from 10,000. This means $dh$ must be the total number of defective balls produced in a day. Eliminate (B) because the question asks about the 10,000, not the defective balls. You can also eliminate (A) because the number of non-defective balls must be lower than 10,000 (because you’re subtracting $dh$ balls from 10,000). Choice (C) can also be eliminated because it doesn’t account for subtracting $dh$ from 10,000. This leaves (D), which fits the information: The non-defective balls would be the difference between the total number of balls produced and the number of defective balls produced.

5.  C  Translate English to math using Bite-Sized Pieces. The number of adopted amendments in 1791 is $p$. If the number of amendments from 1791 to 1992 is “three less than three times” $p$, that would be $3p - 3$. The number of amendments from 1791 to 1992 is also equal to 27, which means $3p - 3 = 27$. This is not a choice, but it’s enough to work some POE. Choice (A) has $-3p$, but if you subtract $3p$ from both sides of $3p - 3 = 27$ you get $-3 = 27 - 3p$, which doesn’t match (A); eliminate it. For (B), to isolate $3p$, add 3 to both sides of $3p - 3 = 27$ and you get $3p = 30$; this doesn’t match (B), so eliminate it. However, it does match (C), so choose (C).

6.  C  Work the problem in Bite-Sized Pieces, being especially careful with the negatives. Start with the $m^4n$ terms: $m^4n - (-m^4n) = 2m^4n$. This must be part of your answer; eliminate (A) and (B). Next, work the $m$ terms: $3m - 3m = 0$. There should be no $m$ terms as part of your answer; eliminate (D) and choose (C).

7.  A  Plug in! Choose numbers that fit the equation given and make the math easy; make $y = 2$ and $z = 3$. The only choice that works is (A).

8.  C  If the two lines are parallel, then they must share the same slope. Start by finding the slope of line $n$ by using the formula $\frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-3)}{4 - 0} = \frac{3}{4}$. The slopes of both lines are therefore equal to $\frac{3}{4}$. To find $a$, reuse the slope formula, this time using points $(-8, 0)$ and $(0, a)$:
\[
\frac{3}{4} = \frac{0-a}{-8-0}. \quad \text{Simplify the right side of the equation to get } \frac{3}{4} = \frac{a}{8}. \quad \text{Cross-multiply to find } 4a = 24. \quad \text{Divide both sides by } 4 \text{ and you find that } a = 6, \text{ which is (C)}. 
\]

9. **B** Plug In the Answers! Because the question wants the least number of sides, start with the least value, 4. Because \(s\) is the number of sides in the equation, this means that \(s = 4\). Making \(s = 4\) in the equation gives you \(4E = 360\). Dividing both sides by 4 gives you \(E = 90\). However, the question indicates that the measure of the exterior angle is less than 80°; (A) doesn’t work, so eliminate it and move on to (B). If \(s = 5\), then \(5E = 360\). Dividing both sides by 5 gives you \(E = 72\), which is less than 80. There are no lesser answers remaining, so the answer must be (B).

10. **D** There are variables in the answers, so you can Plug In. You are looking for the choice that makes \(y\) greater than or equal to −3, so you want to test values of \(x\) that may make \(y\) less than −3. All of the choices contain −4 in some way, so make \(x = 0\). If \(x = 0\), (A), (B), and (C) all give you \(y = -4\), which is less than −3, so eliminate all three and go with (D). When \(x = 0\), (D) states that \(y = 16\), which is definitely greater than or equal to −3, so it’s the correct answer.

11. **C** If a system of two linear equations has no solutions, then the two lines never intersect and are thus parallel. Parallel lines have the same slope, so you need to find the value of \(q\) that will make the first equation have the same slope as the second equation. Both equations are in standard form, which is \(Ax + By = C\). In standard form, the slope of a line is \(-\frac{A}{B}\). Therefore, the slope of the first equation is \(-\frac{q}{5} = \frac{q}{5}\), and the slope of the second equation is \(-\frac{6}{7} = \frac{6}{7}\). Because the slopes of these lines must be equal, set the slopes equal to each other: \(\frac{q}{5} = \frac{6}{7}\). Isolate \(q\) by multiplying both sides by 5: \(q = \left(\frac{6}{7}\right)5 = \frac{30}{7}\), which is (C).

12. **C** None of the answers have \(i\) in the denominator, so you need to clear the \(i\) in the denominator in the question. To do so, multiply the fraction by the conjugate of the complex number in the denominator over itself. To find the conjugate of a complex number, simply change the sign on the imaginary portion of the number. In this case, you need to multiply \(\frac{5-3i}{6+4i}\) by \(\frac{6-4i}{6-4i}\) and FOIL both the numerator and denominator: \(\frac{5-3i}{6+4i} \times \frac{6-4i}{6-4i} = \frac{30-20i-18i+12i^2}{36-24i+24i-16i^2}\). Because
\[ i^2 = -1, \text{ you can substitute } -1 \text{ for the } i^2 \text{ terms:} \]
\[
\frac{30 - 20i - 18i + 12(-1)}{36 - 24i + 24i - 16(-1)} = \frac{30 - 20i - 18i - 12}{36 - 24i + 24i + 16}.
\]
Next, combine like terms in both the numerator and denominator: \(\frac{18 - 38i}{52}\). Because the choices are given as two separate fractions, split the numerator into two fractions: \(\frac{18}{52} - \frac{38i}{52}\).

This doesn’t yet match any answer choices (you have to reduce), but you can eliminate (B) and (D) because the second term is subtracted from the first, not added. Take a Bite-Sized Piece; reducing the first fraction, \(\frac{18}{52}\), gives you \(\frac{9}{26}\), which eliminates (A), and you can go with (C) without reducing the second fraction.

13. **D** You can solve this question by factoring the quadratic, finding the individual roots, and then adding the roots together, but there’s a better way. For a quadratic equation in standard form \(y = ax^2 + bx + c\), the sum of the roots can be found with \(-\frac{b}{a}\). Here, \(b = -18\) and \(a = 3\), so the sum of the roots is \(-\frac{-18}{3} = 6\), which is (D).

14. **B** When you have exponents, remember your MADSPM rules. In this case, when you multiply, you must add the exponents. However, to do this, you must have equal bases. Here, \(9 = 3^2\), so you can rewrite the left term to \((3^2)^2\), which is equal to \(3^{2a}\). Now the expression is \((3^2)(3^2) = 3^{2a + b}\). You know that \(2a + b = 6\), so you can substitute 6 for \(2a + b\), which gives you \(3^6\), (B).

It is also possible to plug in here. Plug in for \(a\), then solve for \(b\). If \(a = 4\), then \(b = -2\), giving \((9^4)(3^{-2})\). Change the base of the first term to \(3^2 \times 4\), then simplify the exponents to get \((3^4)(3^{-2}) = 3^6\).

15. **D** When you FOIL the left side of the equation, you get \(6x^2 + 3ax + 2bx + ab = 6x^2 + cx + 12\). Because the \(x^2\) terms go together and the \(x\) terms go together, what’s left also goes together; so \(ab = 12\). If \(a + b = 7\), then you need two numbers which add up to 7 and multiply to 12. Those two numbers are 3 and 4. (If you’re struggling, list out pairs of factors of 12 and look for what pair has a sum of 7.) That means \(a\) and \(b\) are 3 and 4, but you don’t know which is which. So pick something; make \(a = 3\) and \(b = 4\). Be careful not to stop here! Choice (A) is half right, meaning that it’s all wrong! Returning to the original equation, you now have \((2x + 3)(3x + 4) = 6x^2 + cx + 12\). FOILing the left side this time gives you \(6x^2 + 17x + 12 = 6x^2 + cx + 12\), so one possible value of \(c\) is 17. Only (D) includes 17, so it must be your answer (and there’s no reason to find the other value of \(c\)).
16.  
Because the flag is made up of rectangles and is itself a rectangle, and the white stripe transects each rectangle at the same angle, you can use similar triangles to find the height of the blue rectangle. The total length of the white stripe is $x + 4x + 2x + 2x + 9x$. The triangle made by the white stripe and the blue rectangle has a white stripe distance of $4x$. The height of this triangle is proportional to the height of the whole flag: $\frac{4x}{9x} = \frac{y}{36}$, where $y$ is the height of the triangle formed by the white stripe crossing the blue rectangle. Solve for $y$ by first canceling the $x$ terms: $\frac{4}{9} = \frac{y}{36}$. Next, cross-multiply and divide and you get: $9y = (4)(36)$ and then $y = 16$. The height of the blue triangle is 16.

17.  
Translate English to math. Make $c$ the grams of sugar in a cupcake and $f$ the grams of sugar in a frozen yogurt. If each cupcake has 60 more grams of sugar than each frozen yogurt, then $c = 60 + f$. If 3 cupcakes and 4 frozen yogurts have 390 grams of sugar, then $3c + 4f = 390$. You want to find the grams of sugar in each cupcake. To solve for $c$, you have a few options. One is to first solve the first equation in terms of $f$ by subtracting 60 from each side: $c = 60 = f$. Next, substitute $c = 60$ for $f$ in the second equation: $3c + 4(c − 60) = 390$. Next, distribute 4: $3c + 4c = 240 = 390$. Combine like terms: $7c = 630$. Divide both sides by 7, and you get $c = 90$.

18.  
$\frac{3}{5}$ or 0.6

This question is testing your knowledge of the relationship between sine and cosine of complementary angles. This relationship is often expressed as $\sin x^\circ = \cos (90 − x)^\circ$. The important part of the relationship is that if the angles add up to 90°, then the sine and cosine are equal. Here, $a^\circ + (90 − a)^\circ = 90^\circ$, so the two angles are complementary. The cosine of one angle is equal to the sine of the other angle, so if $\cos a^\circ = \frac{3}{5}$, then $\sin (90 − a)^\circ = \frac{3}{5}$.

19.  
$\frac{1}{4}$ or 0.25

If the system of equations has no solutions, then the lines described by the equations never intersect. In other words, the lines are parallel and have the same slope. The equations are in standard form: $Ax + By = C$. Slope in standard form is $-\frac{A}{B}$. The slope of the first equation is therefore $-\frac{12}{3} = -4$. The second equation has the same slope, so $-\frac{a}{b} = -4$. The question wants $\frac{b}{a}$, so you need to do some manipulation. First, multiply both sides by $-1$: $\frac{a}{b} = 4$. Mul-
tiply both sides by $b$: $a = 4b$. Divide both sides by $a$: $1 = \frac{4b}{a}$. Divide both sides by 4 and you get $\frac{1}{4} = \frac{b}{a}$.

20. **64** You have a system of equations and the question wants the value of $y$, so you want to make the $x$ terms go away. One way to approach this is to make the $x$ portions of the two equations equal to one another, then put the other parts of the equations equal to each other. Multiply the first equation by 4 to get $4x = 8\sqrt{5}$. Both equations are now equal to $4x$, so you can put the other parts of the equations equal to each other: $8\sqrt{5} = \sqrt{5}y$. Isolate $y$. Start bysquaring both sides (don’t forget to square the 8 on the left side): $64(5) = 5y$. Divide both sides by 5 and get $64 = y$.

**Section 4: Math—Calculator**

1. **B** Work the problem in Bite-Sized Pieces. First, figure out the charge for the yoga classes. She paid a total of $122.50, $60 of which was for the membership fee, leaving $122.50 - 60 = $62.50 for yoga classes. If each yoga class costs $12.50, then Aubri attended $62.50 + 12.50 = 5$ yoga classes, which is (B).

2. **A** Probability is defined as $\frac{\text{what you want}}{\text{total possibilities}}$. There are 13 Varsity members who prefer Armadillos and 11 Junior Varsity members who prefer Possums, making $11 + 13 = 24$ possibilities that give what you want out of 54 total members, or $\frac{24}{54}$, which is (A).

3. **C** Translate English to math. The question wants the expression for how many signatures Samantha expects to have in $d$ days. She currently has 284 signatures, and she will add 28 signatures each day. Because she adds 28 signatures per day, you need to multiply 28 by $d$ and add that to 284, giving you $284 + 28d$. (C). Plugging in is also an option. Plug in for $d$, and then determine how many signatures she should have. If $d = 2$, then she will get $28 \times 2 = 56$ signatures in addition to the 284 she already has. This means she will have 340 signatures. Since this answers the question, this is the target. Circle it! Plug $d$ into the answer choices. Only (C) gives 340 as a result.

4. **A** The question wants you to solve for the weight of the animal, which is $x$ in the equation. The question tells you that the veterinarian prescribed 110.25 mL, which is represented by $D$ in the equation, so substitute 110.25 for $D$: $110.25 = 60 + 0.67x$. Solve for $x$. Start by subtracting 60 from both sides: $50.25 = 0.67x$. Divide both sides by 0.67 to get $x = 75$, which is (A).
5. **D** Work the problem in Bite-Sized Pieces. Start with the $x^2$ terms. The sum of the polynomials is the result of adding the polynomials, so the $x^2$ term will be $3x^2 + 4x^2 = 7x^2$. This term should be part of your answer; eliminate (B) because it doesn’t have $7x^2$. Next, add the $x$ terms: $4x + (-3x) = x$. This should also be part of your answer; eliminate (A) and (C) and choose (D).

6. **C** Start by translating English to math. “3 times the number $n$” can be written as $3n$. “Add to 5” means to add $3n$ to 5, which gives $3n + 5$. “The result is 14” means “= 14,” so the first sentence translates to $3n + 5 = 14$. Before you start solving for $n$, be sure to Read the Full Question. You want “6 times $n$ added to 11”, or $6n + 11$. If you multiply $3n + 5 = 14$ by 2, you get $6n + 10 = 28$. Adding 1 to both sides gives you $6n + 11 = 29$, (C).

7. **D** Probability is $\frac{\text{what you want}}{\text{total possibilities}}$. In California, there were 7,854,000 votes for Obama, and there were 13,086,200 total votes in California, so the chance of selecting a vote for Obama from the total is $\frac{7,854,000}{13,086,200} = 0.60$, which is (D).

8. **A** Work this problem in Bite-Sized Pieces. If the capacity of the pond is 5,000 fish, then the total number of fish must be less than or equal to 5,000; eliminate (B) and (D) because they do not include “≤ 5,000.” The difference between (A) and (C) is the “+ 2,300” in (A). This represents the initial 2,300 fish in the pond, so this must be part of the answer; choose (A).

9. **B** First ballpark! If the arithmetic mean is $\frac{\text{total}}{\text{number of things}}$ then the answer should be somewhere in the middle of the histogram. Eliminate (A) and (D) because they are extremes and not in the middle. To find the total, multiply the number of flowers by the number of petals per flower for each column, then add: $(2 \times 2) + (3 \times 5) + (5 \times 4) + (6 \times 2) + (8 \times 4) = 83$ total petals on $2 + 5 + 4 + 2 + 4 = 17$ flowers. The average is then $\frac{83}{17} = 4.9$, which is closest to 5, (B).

10. **B** Use Process of Elimination. For (A), mailing surveys is an established method of conducting surveys, and 415 out of 550 randomly chosen patients responded, so this is not a problem; eliminate (A). The survey covered patients who were treated in the previous year; there may be a problem with the time elapsed since care was received (as patients may not remember or misremember the care they received), so keep (B). Choices (C) and (D) consider similar issues. In this case, 415 respondents out of 550 selected patients is both a sufficiently large sample size and a sufficiently large response rate; eliminate (C) and (D) and choose (B).

11. **C** A function with four distinct zeroes will intersect the $x$-axis four times. Only (C) does this.
12. **D** Work Process of Elimination. As time goes on, the amount of $^{252}$Fm decreases; eliminate (A) and (B). To determine whether the decrease is linear or exponential, compare the changes. From day 0 to day 3, the amount decreases by 400 mg. From day 3 to day 6, the amount decreases by 200 mg. A linear decrease would have the same change over the same time periods; eliminate (C) and choose (D).

13. **A** The question wants you to solve the equation for $a$. Start by subtracting $v_0t$ from both sides: 

$$d - v_0t = \frac{1}{2}at^2.$$ 

Next, divide both sides by $t^2$ and simplify: 

$$\frac{d}{t^2} - \frac{v_0t}{t^2} = \frac{1}{2}a; \quad \frac{d}{t^2} - \frac{v_0}{t} = \frac{1}{2}a.$$ 

Finally, multiply both sides by 2 and you get 

$$2 \left( \frac{d}{t^2} - \frac{v_0}{t} \right) = a,$$ 

which is (A).

14. **B** Find the range, mean, and median of the set both with and without the erroneous measurement of 24. Start with the range. Range is greatest value – least value, so with 24 the range is $45 - 24 = 21$, and without 24 the range is $45 - 34 = 11$. The difference is $21 - 11 = 10$. Next, find the mean. Mean is \( \frac{\text{total}}{\text{number of things}} \), so first add up all numbers and divide by 18, the number of children. The numbers add to 700, so the mean is $\frac{700}{18} = 38.9$. To remove the erroneous height, subtract 24 from the total of the heights and 1 from the total number of children: 

$$\frac{700 - 24}{18 - 1} = \frac{676}{17} = 39.8.$$ 

The mean changes by $39.8 - 38.9 = 0.9$. You can eliminate (A) and (C), because the mean changes less than the range. Finally, find the median. With all 18 children included, the median will be the average of the 9th and 10th values: 

$$\frac{39 + 40}{2} = 39.5.$$ 

Without the value of 24, then the median will be the middle of the 17 remaining values: the 9th, which is 40. The median changed $40 - 39.5 = 0.5$, which is less than the amount the mean changed, so eliminate (D) and choose (B).

15. **C** Set up an inequality using the numbers for Club M and Club N. At Club M, $I = 100$, $F = 15$, and $S = 11$, so according to the equation the total cost is $y = 100 + (15 + 11)x$. At Club N, $I = 130$, $F = 12$, and $S = 8$, making the total cost $y = 130 + (12 + 8)x$. The question wants Club M to be greater than or equal to Club N, which means $100 + (15 + 11)x \geq 130 + (12 + 8)x$. Solve for $x$. Start by following PEMDAS and adding within the parenthesis: $100 + 26x \geq 130 + 20x$. Subtract $20x$ from both sides: $100 + 6x \geq 130$. Subtract 100 from both sides: $6x \geq 30$. Divide both sides by 6, and you get $x \geq 5$, which is (C). If this is confusing, try plugging in the answers. For example, plug in for $x = 4, 5, 10$ months, determine how much each club would cost, and then use POE based on Club M being as or more expensive than Club N.
16. **A** The \(y\)-intercept of a line will be where \(x = 0\). Take the information for Club L and make \(x = 0\). Using the information given in the chart, the equation for Club L is \(y = 150 + (10 + 5)x\). If \(x = 0\), then \(y = 150 + (10 + 5)(0) = 150 + 0 = 150\). All that is left is \(y = 150\), which matches the initiation fee. The only choice which represents this is (A).

17. **D** First, you can work Process of Elimination. If the iron content of hematite is 40% greater than low-grade iron ore, and the iron ore already has 30 grams of iron, then the hematite must have more than 30 grams of iron. Eliminate (A) and (B). Next, if the hematite has 40% more iron, then it must have \(100 + 40 = 140\%\) of the iron content. You can find the iron content of the hematite by multiplying the iron content of the iron ore by 140% or 1.4: \(30 \times 1.4 = 42\), which matches (D).

18. **B** Start by plugging in the point provided. \((0, 5)\) means that \(x = 0\) and \(y = 5\), so \(5 < 0 + h\), and \(5 > -0 + k\). Simplifying these equations gives you \(5 < h\) and \(5 > k\). You can flip the second inequality and combine these into one because they share 5: \(k < 5 < h\). If this is true, then \(k < h\), which is the same as \(h > k\), which is (B).

19. **C** Plug In! In 5,730 years, the amount of carbon-14 will be half what it is now. If there are 100 grams of carbon-14, in 5,730 years there will be \(100 \div 2 = 50\) grams. Make \(t = 5,730\) and eliminate any choice which does not equal 50. The only choice that works is (C).

20. **A** Find 7 hours on the horizontal axis. The dot represents the actual student who slept 7 hours; that student’s actual score was 2 lines above 80. Because there are 5 spaces between 80 and 90, each line represents 2 points, so the student’s score was 84. The line of best fit goes through a score of 80 at 7 hours, so the student scored 84 – 80 = 4 points better than the line of best fit, which is (A).

21. **B** Whenever you’re faced with a ton of information and words, be sure to start by focusing on the question first. Here, you want to know the probability that someone is chosen from Group A if you’re picking from the people who used their smartphones for at least one hour. Probability is \(\frac{\text{what you want}}{\text{total possibilities}}\), but here your “total possibilities” are only those people who use their phones for either 1 to 2 hours or 3 or more hours. Add those two groups to get the total possibilities: \(142 + 91 = 233\). This number (or a factor of this number) needs to be the denominator of your answer; only (B) has 233 or a factor of 233 as a denominator, so it must be the answer. To find “what you want,” add the members of Group A who are in either the 1- or 2-hour group or the 3-hour group: \(64 + 54 = 118\), giving the \(\frac{118}{233}\) as the probability.
22. B If \( \cos(x^\circ) = \sin(y^\circ) \), then \( x \) and \( y \) must be complementary angles, so \( x + y = 90 \). To find \( c \), start by stacking the two equations and adding:

\[
x = 5c - 4 \\
y = 3c + 2 \\
x + y = 8c - 2
\]

Substitute 90 for \( x + y \):

\[90 = 8c - 2\]

Add 2 to both sides:

\[92 = 8c\]

Divide both sides by 8:

\[11.5 = c\]

which matches (B).

23. C Data points below the line \( y = x \) will have a \( y \) value which is less than the \( x \) value. Because the time spent by females is the \( x \) value and the time spent by males is the \( y \) value, you want to know how many categories have the time spent by males less than the time spent by females. This is true for cooking, cleaning, care of children, and care of clothes, which is 4 categories: (C).

24. D Percent change is defined by \( \text{change} = \frac{\text{difference}}{\text{original}} \times 100 \). The original value is the smaller value if you want percent greater. Females spend approximately 45 hours on care of children and 25 hours on care of clothes, so change = \( \frac{45 - 25}{25} \times 100 = 80\% \), which is (D).

25. B Arc length is proportional to the circumference as the central angle is to \( 360^\circ \). Therefore, \( \frac{6\pi}{\text{circumference}} = \frac{72}{360} \). Simplify the right side of the equation (use the MATH → FRAC function on your calculator):

\[ \frac{6\pi}{\text{circumference}} = \frac{1}{5} \]

Cross-multiply to get circumference = \( 30\pi \). Because circumference is \( 2\pi r \), that means \( 2\pi r = 30\pi \). Divide both sides by \( 2\pi \) and you get \( r = 15 \), (B).

26. B Plug in! Make \( x = 2 \). If this is the case, \( a(2) = 2^3 + 3(2)^2 + 5(2) = 30 \) and \( b(2) = 5(2)^2 + 17(2) + 16 = 70 \). You are looking for the choice that has a factor of \( 3(2) + 2 = 8 \). In other words, the correct answer must be divisible by 8. For (A), \( l(2) = a(2) + b(2) = 30 + 70 = 100 \). Divide 100 by 8 and you get 12.5; this means 8 is not a factor of 100, so eliminate (A). For (B), \( m(2) = 3a(2) + b(2) = 3(30) + 70 = 160 \), which, when divided by 8, is 20. Keep (B). Choice (C): \( n(2) = a(2) - 3b(2) = 30 - 3(70) = -180 \), which, when divided by 8, equals \(-22.5\); eliminate (C). Choice (D): \( p(2) = 2a(2) + 3b(2) = 2(30) + 3(70) = 270 \), which is equal to 33.75 when divided by 8; eliminate (D) and choose (B).

27. C Plug in! You need to find a set of numbers that satisfies the inequality. For \( \frac{a}{b} > a \), either both \( a \) and \( b \) are negative, making \( \frac{a}{b} \) positive, or \( b \) is less than 1. For example, \( a = 2 \) and \( b = \frac{1}{2} \). Taking each item one at a time, for (I), \( \left( \frac{1}{2} \right)^2 > 2 \) is false; eliminate (A) and (B). Both (C) and (D) include (II), so you don’t need to test (II). Statement (III) is currently true, but try new numbers: Make \( a = -2 \) and \( b = -3 \). This satisfies the initial inequality, but (III) is now false, so eliminate (D) and choose (C).
28. A The form of a quadratic that gives the minimum or maximum value as a constant is vertex form:

\[ y = a(x - h)^2 + k \]

where the vertex is at point \((h, k)\). Choices (C) and (D) are not in this form, so eliminate them. Both (A) and (B) have the term \((x + 2)\), which means the minimum must be \(x = -2\) (watch the negative sign in the vertex form!). Make \(x = -2\) in the original function:

\[ g(-2) = (-2 - 2)(-2 + 6) = (-4)(4) = -16 \]

which means the \(k\) value of the vertex is \(-16\). Choose (A).

29. A Variables and the phrase “in terms of” are good reasons to Plug In on this question. Make \(p = 3\) and \(q = 5\). Average is the total divided by the number of things, so

\[ a = \frac{\frac{3}{3} + \frac{2(5)}{3} + \frac{4}{3}}{3} = \frac{17}{3} \]

\[ b = \frac{2(3) + \frac{4(5)}{3} + \frac{8}{3}}{3} = \frac{34}{3} \]

and \(c = \frac{6(3) + \frac{3(5)}{3} + \frac{6}{3}}{3} = \frac{39}{3} = 13\). The average of \(a\), \(b\), and \(c\) is therefore

\[ \frac{\frac{17}{3} + \frac{34}{3} + \frac{13}{3}}{3} = \frac{30}{3} = 10 \]

This is your target; circle it. Make \(p = 3\) and \(q = 5\) in each answer choice, and eliminate any choice that does not equal 10. The only choice that works is (A).

30. C All of the answer choices are about the relationship of \(x\) and \(y\), so you want to get rid of the \(p\) and \(q\). You know that \(p + q = 12\), so if you can get \(p + q\) somehow, you can substitute. The equations are already stacked, so add the equations together and you get \(4x + 2y + p + q = 3x + 10y + 12\). Substitute 12 for \(p + q\): \(4x + 2y + 12 = 3x + 10y + 12\). Subtract 12 from both sides:

\[ 4x + 2y = 3x + 10y \]

Subtract 3x from both sides:

\[ x = 8y \]

If \(x\) is 8 times \(y\), then \(y\) must be one-eighth of \(x\), which is (C).

31. 120 Set up a proportion: \(\frac{1.2\text{ inches}}{10\text{ years}} = \frac{14.4\text{ inches}}{x\text{ years}}\). Cross-multiply to get \(1.2x = 144\). Divide both sides by 1.2 and you get \(x = 120\).

32. 5 Because the point (2, 10) lies on the graph, you can make \(x = 2\) and \(f(x) = 10\) and solve for \(b\):

\[ 10 = 2(2)^2 + b(2) - 8; \quad 10 = 8 + 2b - 8; \quad 10 = 2b; \quad b = 5. \]

33. 880 Over two days, the radio station airs a total of 220 \(\times\) 2 = 440 minutes of advertisements. If each time slot is 30 seconds long, and each minute has 60 seconds, then there is time for 60 \(\div\) 30 = 2 time slots per minute, giving a total of 440 \(\times\) 2 = 880 time slots over two days.

34. 20 Average is \(\frac{\text{total}}{\text{number of things}}\), which can be rearranged as \(\text{average} \times \text{number of things} = \text{total}\). If the desired average for 16 posts is 75%, then the sum of all the scores must be 75 \(\times\) 16 = 1,200%. For the first 8 posts, there was a total of 60 \(\times\) 8 = 480%, leaving 1,200 – 480 = 720% for the last 8 posts. If you want the least value for the 9th post, then you want to assume that the 10th–16th
posts to be as high as possible, or 100%. This would give \(100 \times 7 = 700\%\) total for the last 7 posts, making the least value possible for the 9th post \(720 - 700 = 20\%\).

35. **950** The initial contribution will be before any yearly contributions, so \(t = 0\). If \(t = 0\), then \(c = 800(0) + 950 = $950\). Swathi’s initial contribution must therefore be $950.

36. **40** Arc is proportionate to the central angle: \(\frac{\text{central angle}}{360^\circ} = \frac{\text{arc}}{\text{circumference}}\). For a major arc, you need to use the central angle measure that’s greater than 180° (the central angle measure that’s less than 180° is the minor arc). Therefore, here you need to find angle \(ADC\) (the angle from the minor arc) and subtract that from 360° to get the angle for the major arc. To get angle \(ADC\), consider quadrilateral \(ABCD\). A quadrilateral has 360°. Because \(AB\) and \(CB\) are tangents to the circle, angles \(DAB\) and \(DCB\) are each 90°, leaving \(360 - 90 - 90 - 45 = 135°\) for angle \(ADC\). The angle you need to use to find the major arc is therefore \(360 - 135 = 225°\). Insert this into the proportion: \(\frac{225^\circ}{360^\circ} = \frac{x}{64}\), where \(x\) is the arc. Cross-multiply to get \(14,840 = 360x\). Divide both sides by 360 to get \(x = 40\).

37. **1.03** The given equation is the equation for exponential growth. The generic form of this equation is \(\text{final amount} = \text{original amount}(1 \pm \text{rate})^{\text{number of changes}}\). The rate of growth is 3 percent, which as a decimal is equal to 0.03. Because the question indicates that the population is growing, you need to add this to 1, so the value in the parenthesis, \(r\), is \(1 + 0.03 = 1.03\).

38. **17.8** From question 37, you determined that \(r = 1.03\). 2022 is 7 years after 2015, so \(y = 7\). Put these into the equation to determine \(P\): \(P = 14.5(1.03)^7 = 17.8\).