ANSWER EXPLANATIONS

English Test

1. **B.** The underlined part contains a semicolon, so you're likely dealing with proper punctuation. For the semicolon to be proper, the words before it and after it must express a complete thought. The words after the semicolon make up an independent clause; they have a subject *methods* and a verb *are* and don't begin with a subordinating conjunction. But the words before the semicolon begin with the subordinating conjunction *when,* so even though they have the subject and verb *it comes*, they don't form a complete thought. The semicolon is wrong, and so are the colon and dash. The proper way to separate a beginning dependent clause from the rest of the sentence is with a comma. Choice (B) is correct.
2. **F.** Quickly eliminate Choice (H). The form *its*' doesn't exist. Then check the pronoun *it* in the underlined portion. You know the contraction form (it's) is okay because you substitute *it is* for *it's,* and the sentence sounds just fine. Eliminate Choice (G) because it contains the possessive form of *it*. Choice (J) has the proper form of *it*, but it improperly separates the beginning dependent clause from the rest of the sentence with a semicolon instead of a comma. Choice (F) is best.
3. **C.** The underlined word is ambiguous — *one* what? The pronouns offered by Choices (B) and (D) don't provide clarity, so the best answer is the clearly-stated noun in Choice (C).
4. **F.** The predominate question you ask yourself for an addition question is whether the proposed addition's topic is relevant to the substance of the paragraph. The paragraph is about finding a personal trainer, and the new sentence relates to that topic. So you can eliminate Choices (H) and (J). Of the two remaining answers, Choice (F) is best because the sentence offers ways to find a personal trainer rather than the benefits of using one.
5. **B.** To communicate well and communicate clearly mean roughly the same thing, so Choice (A) is redundant. Choice (C) is redundant and improper because it uses the adjective *clear* to describe the verb *communicate*. Both Choices (B) and (D) eliminate the redundancy, but Choice (B) does so more precisely (think fewest words).

6. **J.** The underlined part is a transition. To pick the best transition, check the sentence or sentences before it and the sentence that contains it. The answer that brings the two thoughts together best is the correct transition. The idea before the transition is that you may wish to choose a trainer with a similar physique. Staying on track isn't an example of choosing someone with a similar body shape, so Choice (F) doesn't work. Choice (H) provides the same transition, so it must be wrong. Choice (G) shows contrast, and the ideas aren't opposite. The best solution is to eliminate the transition altogether.

7. **C.** The underlined part creates a comma splice. The words before and after the comma both express complete thoughts. So Choice (A) is out. Choice (B) doesn't correct the punctuation problem. Rule out Choice (D) because a comma after an *and* that joins two complete thoughts is rarely proper. The answer has to be Choice (C). It fixes the comma splice by inserting a conjunction between the two independent clauses and doesn't create another punctuation error.
8. **G.** The answer choices are the same but for the commas. The underlined part is a beginning prepositional phrase, so it should be separated from the rest of the sentence with a comma at the end. Choice (H) is out because it doesn't have a comma at the end of the phrase. Choice (J) sticks a comma between a subject *trainer* and its *verb will be*, so it can't be right. The comma between *decide* and *whether* in Choice (F) serves no purpose. The best answer is Choice (G); it places the comma at the end of the phrase and contains no unnecessary additional punctuation.
9. **D.** When you see an underlined verb, first check for subject/verb agreement. The subject of the sentence is compound: *weight loss and physical fitness*. Compound subjects take plural verbs. Don't be fooled by the ending *s*; the verb *starts* is singular. *Begins* is also singular. Choices (A) and (B) are wrong. Choice (C) tries to replace the verb with an *ing* word that can't work as a verb on its own. The answer is the plural verb *start* in Choice (D).

10. **J.** This big-picture question actually asks you about the passage's main purpose. Focus on the exact language of the question and ask yourself whether the essay highlights some of the best ways to lose weight. It talks about one way to lose weight, but it doesn't go into any others. The correct answer likely begins with *No*. When you check Choices (H) and (J), you see that Choice (J) is the better answer. The essay only highlights one weight loss method, so it wouldn't provide much information about more than one way to lose weight.
11. **A.** Check the underlined possessive pronoun for proper form. *Their* renames *players*, so the plural format is proper and Choice (D) can't be right. The next step is to decide whether you need the possessive form. Because *skills* is a noun, the possessive form is necessary.

12. **J.** Within the context of the sentence, you're looking for an answer that clarifies that the machines simulate actual pitches. Check for obviously incorrect answers. Choice (G) is clearly incorrect. The definition of *fakes* implies that the pitches would be false, which isn't the same as the similarity suggested by the context. *Assimilates* sounds a lot like simulate, but its meaning of adapting to a new environment isn't correct in the sentence. Choice (H) is wrong. *Reenacts* is used specifically to refer to the simulation of an event rather than an object, so Choice (F) is wrong. The best word to indicate the machine simulates real pitches is Choice (J), *replicates*.
13. **D.** *Advanced* and *elevated* have the same meaning, so it's redundant to use both. Eliminate Choices (A), (B), and (C) because they're repetitive and awkward. The solution is to eliminate the clause as suggested by Choice (D).
14. **J.** The lengthy underlined part appears in a sentence with a beginning participle (verb part) phrase. A beginning participle phrase *always* describes the subject of the sentence, so check the subject to see whether it makes sense that it would feature many customizable options. A *hitter*, *adjustments*, and *time* don't feature customizable options. Only *machines* can have customizable options. So Choice (J) is the only logical answer.

15. **A.** If you can't quickly determine whether the proposed addition is relevant, check what comes after *because* in each answer to eliminate choices that aren't true. Choice (C) is a definite *no* because nowhere in the essay does the author stress that young players are more likely to benefit from pitching machines than older ones are. Eliminate Choice (B) because the author never claims that older players are more likely to experience the benefits of a pitching machine. Similarly, Choice (D) isn't true; the prior paragraph doesn't contain a point that the suggested addition would build upon. Choice (A) is the best answer. The addition would contradict the author's statement in the first paragraph that pitching machines are a great resource for players at all levels.
16. **H.** The underlined verb doesn't have a subject/verb agreement problem, so check the tense. The verb is in present perfect tense, which would indicate that Roosevelt's rising may still continue. Later you see that Roosevelt was around in 1900, so it's unlikely that he's still living, let alone rising. The correct tense is the simple past *rose*, Choice (H). Choice (J) is clearly incorrect because *has rose* isn't a proper verb construction, and Choice (G) can't be right because the other past actions in the paragraph are expressed in past tense.
17. **A.** To answer this question correctly, you need to know the meaning of *prominence*. *Prominence* is defined as "the state of being important or famous." While *infamy*, Choice (B), does mean "widely known," its connotation is negative, which doesn't match the tone of the passage or the author's overall impression of Teddy Roosevelt. Choices (C) and (D) are both antonyms of *prominence*, indicating that Teddy Roosevelt was not, in fact, very well-known at all. The

passage implies that Roosevelt was very well known, so stick with Choice (A) and leave the underlined portion as is.

18. **G**. Note that a comma exists before the underlined part, which means that *unit* is followed by a nonessential descriptive phrase. The element that describes *unit* is "the 'Rough Riders.'" So choose the answer that puts commas on both sides of that noun phrase. Choices (G) and (J) complete the task, but Choice (J) adds an incorrect comma after *Hill*. Choice (G) is best.
19. **C.** Inserting information about how and why McKinley was assassinated may be relevant to a passage about McKinley, but the passage is about Roosevelt, and McKinley is not mentioned again. And how Roosevelt came to assume the presidency is not nearly as important as what he did once he had the job, so the proposed addition is irrelevant, and Choices (A) and (B) are out. The passage doesn't mention McKinley elsewhere, so Choice (D) is wrong. Choice (C) is correct.
20. **J.** Note that the underlined part is an element of a series of activities Roosevelt participated in. To keep the series parallel, pick the activity expressed in Choice (J). Were you tempted by Choice (H)? Continuing the series with *engaging* seems to fit with the *–ing* construction of *participating*, but the third element doesn't begin with a gerund, so Choice (H) can't be correct.

21. **B.** The underlined part provides a transition, so read the sentence before it and the sentence it's a part of to see how the ideas in each sentence relate. The preceding sentence states that Roosevelt invited union members and mine owners to work out a solution. The next sentence states that the owners refused to speak with the union. The two ideas suggest contrast: Roosevelt invited them, *but* the owners refused. The best answer is *however* in Choice (B). For Choice (C) to be correct, the idea that the owners refused would have to be the

final step in a series, but the events continue after the sentence with the underlined words. Choices (A) and (C) create a cause-and-effect relationship, but Roosevelt's invitation didn't cause the owners to refuse. Choice (B) is best.

22. **F.** Consider the message in the proposed deletion. The sentence concludes with a detailed example of one of Roosevelt's accomplishments. Choice (F) states this purpose clearly. Choice (J) is wrong because the sentence contains specific information rather than general observations. Choice (H) is also incorrect. The next paragraph is about railroads rather than mines, so you know that the sentence doesn't foreshadow a subsequent point. Without the last sentence, the reader wouldn't know the outcome of the incident, so Choice (G) can't be correct.

23. **B.** The underlined word and answer choices are prepositions. Choose the one that fits the meaning of the sentence. Notice that the main verb *controlled* is in simple past tense. So the event happened at one point in time. Later in the paragraph, you discover that the law designed to deal with railroad control was finalized in 1906. The railroads couldn't have controlled prices after the beginning of the 20th century, so Choice (C) is wrong. Choices (A) and (D) suggest continuation over a long period rather than a specific point in time, so they don't work. The best answer is Choice (B), which properly

conveys that the control existed specifically in the first years of the 20th century.

24. **J.** The underlined part provides a transition between the statement that Roosevelt believed that the system gave companies too much power and hurt consumers with the information that he supported an act that regulated the railroad. Eliminate Choices (G) and (H) because they provide the same transition. They can't both be right. The remaining choices suggest an example or a cause and effect. Supporting the act isn't an example of Roosevelt's belief. Instead, his belief is the *reason* for his support of the act. The best answer is Choice (J) because this shows cause and effect.

25. **C.** The apostrophes in the answer choices should clue you into checking for possessive form. The underlined word is a noun followed by the noun phrase "financial records." A noun followed by another noun or noun phrase almost always indicates possessive form. So your answer will contain an apostrophe and you can eliminate Choice (B). Choice (D) is wrong because the plural of *company* is *companies*. The remaining choices require you to determine whether the noun is plural or singular. It must be plural because if it were singular, it would be preceded by an article such as *the* or *a*. The way to make *companies* possessive is to end the word with an apostrophe. Choice (C) is correct.

26. **J.** Believe it or not, the subject of this sentence is the noun clause "what it has failed to accomplish." The comma after *accomplish* in Choice (F) separates the subject from the verb *is*, and a single comma is never correct when it lies between the subject and the verb. Choices (G) and (H) place a comma in the middle of the noun

clause, so they can't be right. The correct punctuation is Choice (J) with no commas at all.

27. **A.** The underlined part provides a transition between the statement that computers crash and remote repair provides a great resource. The ideas aren't contrasting, so eliminate Choices (B) and (C). Repair isn't an example of a computer crash, so Choice (D) is wrong. The best solution is to leave the sentence as is; computers crash so computer repair is great. Choice (A) is correct.

28. **H.** Eliminate Choices (F) and (G) because *anyone* refers to a person and *who* is the pronoun that refers to people. The difference between the remaining answers is the comma after *anyone*. The comma indicates that the clause that begins with *who* isn't essential to the meaning of the sentence, but without it, the sentence would suggest that remote computer repair is great for *anyone* instead of *anyone who owns a business*. Choice (H) without the comma is better.

29. **A.** Examine the added commas in the answer choices. Those in Choice (B) suggest that "or even weeks without your machine" is nonessential information that you can easily remove without changing the meaning of the sentence. Without the words, though, you don't know what you're waiting for. Choice (D) creates the same confusion by indicating that "without your machine" isn't essential. If you extracted "even weeks" from the sentence as suggested by Choice (C), the last part would read "wait days or without your machine," which makes no sense. It also eliminates the necessary comma after *machine* that separates the beginning phrase from the main idea of the sentence. Because Choices (B), (C), and (D) aren't correct, you know Choice (A) must be right. It suggests that you don't have to wait days or weeks if you seek remote repair.

30. **J.** To answer this question correctly, pick the preposition that goes with result. English speakers say "as a result of" rather than "as a result from," "as a result with," or "as a result as." Choice (J) is best.

31. **B.** "Rather than paying you an actual visit" isn't a complete sentence, so it needs to be part of the sentence that comes before it. Eliminate Choice (A). Choices (C) and (D) present other ways of punctuating two complete thoughts in the same sentence, so they also can't be right. The best answer is Choice (B), which correctly completes the rest of the first sentence of this paragraph with the remainder of the description of remote computer repair. There's no need for any punctuation.
32. **H.** *They're* is the contraction of "they are" and doesn't show possession. You need possessive form because you have a pronoun *they* followed by a noun. Choice (F) is incorrect. Choice (G) is awkward and incorrect because "his or her" is singular and the renamed noun is *people*, which is plural. *There* indicates place not possession, so Choice (J) is wrong. The possessive form of *they* is *their*, so pick Choice (H).
33. **C.** Check the purpose of the underlined part. It provided additional information about the factor that determines whether a repair will take hours or minutes. That function is best described by Choice (C). The phrase isn't a detail about or example of remote repair, so Choices (A) and (B) can't be right. The next paragraph summarizes the passage, so the phrase doesn't provide foreshadowing as indicated by Choice (D).
34. **H.** Eliminate Choices (F), (G), and (J) because they're redundant. The paragraph already makes the points in Choices (F) and (G), and the idea in Choice (J) is indicated in previous paragraph statements. Choice (H) completes the description of the time benefits of remote repair, so it's the best answer.

35. **A.** To answer this question correctly, you first need to determine whether the fourth paragraph appears out of place. Given that it's the concluding paragraph and nicely summarizes the information contained in the previous paragraphs without introducing any new information, it's likely fine where it is. To be sure, check the other options. The first paragraph provides a clear introduction to the passage, so eliminate Choice (B). Choice (C) isn't logical because you wouldn't state the benefits of remote repair before you define it. Choice (A) is correct.
36. **G.** The underlined word is a verb, so check for subject/verb agreement. The subject is the singular *competition* and not the plural *resources*, so the verb must be singular. The only singular option is Choice (G).
37. **B.** The underlined pronoun has no clear reference. The nouns that precede the pronoun are *competition*, *resources*, *evolution*, *characteristics*, and *behaviors*. None of these nouns logically name something that can improve its ability to compete. Because you can't point to the particular noun the pronoun renames, you don't know whether the proper form is *it* or *they*. The only possible answer is Choice (B) because it clarifies exactly what has the ability to compete.

38. **J.** Search the fifth sentence for ideas that need prior reference. The sentence refers to "this" (meaning "this statement"), so it needs to follow the sentence that contains that particular statement. The sentence in the paragraph that's most like saying that each species establishes its own niche is the third. Moving the fifth sentence after Sentence 3 also defines *niche* before it's further described in the fourth sentence. Choice (J) is best.

39. **B.** The original sentence sets up the two components of a niche using a colon. You know that a dash may replace a colon, so Choice (D) works and should be eliminated. Choice (C) properly uses a comma to designate the two types, so cross out that option. Choice (A) is okay; it creates two independent clauses and punctuates them properly with a comma and conjunction. The problem answer is Choice (B). It implies that niches have two components that are both abiotic and biotic. Because it distorts the message, Choice (B) is the least appropriate substitute and therefore, the most appropriate answer.

40. **H.** The pronoun *whom* refers only to people, so Choices (F) and (G) are wrong. Choice (J) omits the preposition that goes with *interact* and states that a species interacts predators, prey, and so on rather than interacts *with* them. The best answer is Choice (H) because it contains the proper pronoun and includes the necessary preposition.

41. **A.** Evaluating this sentence may be easier if you simplify it: Species compete whenever their niches overlap. It sounds right the way it is, but check the other possibilities to be sure. Choice (B) is incorrect; the species don't compete *although* their niches overlap. It doesn't make sense that species compete *whether* their niches overlap, so Choice (C) is wrong. Choice (D) changes the beginning dependent clause to an independent clause, so it can't be right. The best answer is Choice (A).

42. **G.** The underlined verb doesn't agree with the number of its subject. The subject *niche* is singular, so it needs the singular verb *overlaps*. All of the other options suggest plural verbs. Pick Choice (G).

43. **A.** The underlined transition joins together a sentence that presents the ways a species can win a competition with a sentence that lists the three possible results of a competition. The second sentence isn't an example of winning, nor does it present an opposite position. So Choices (B) and (C) can't be right. At first, Choices (A) and (D) may seem to provide the same transition, but *finally* suggests the final element or step in a chronological list. Choice (A) provides the more

precise transition by suggesting a conclusion rather than a chronological end.

44. **H.** Even if you don't remember that Darwin was a firm believer in "survival of the fittest," you can probably still see why Choice (H) is the best option. Choices (F) and (J) contradict the earlier statements that competition only occasionally involves direct combat and that species may occupy the same niche, so they can't be right. Choice (G) repeats an earlier point, so it isn't the best choice. Stick with Choice (H).

45. **D.** The easiest answers to eliminate are Choices (B) and (C). The words that follow *qualities* don't create a complete thought, so the semicolon in Choice (C) is wrong. The words that precede the colon in Choice (B) don't form a complete thought, so that option is punctuated improperly. The first comma in Choice (A) may be okay, but the comma following "such as" is never proper. By process of elimination, Choice (D) is best.

46. **J.** Check for relevance. The paragraph is primarily about fifth-century Greek drama. It gives a little of its history, specifies three of its major dramatists, describes the way that the actors dressed, and mentions the chorus. The dramatists of the time make up just one element of the paragraph. Therefore, inserting a sentence that's about Greek dramatists from other times is inappropriate. Choice (J) is the best answer.

    The paragraph isn't primarily about Greek dramatists, the influence of Greek drama, or dramatists in general, so Choices (F), (G), and (H) have to be wrong.

47. **C**. When looking at the answer choices, check for the most obvious mistakes first. A good place to start is *their* versus *there*. Choices (B) and (A) are wrong because *there* refers to a place, not possession. That leaves Choices (C) and (D).

    Now, check *then* versus *than*. A good trick is to remember that *then* rhymes with *when*, so it refers to time, while *than* is used for comparisons. Because the sentence is comparing dialogue to action,

than is the right word. Choice (D) is incorrect, which leaves Choice (C) as the best answer.

48. **F.** The easiest answer to rule out is Choice (H) because talking about how popular these plays were doesn't connect well to the next paragraph about *Oedipus Tyrannus*. Choice (J) is also wrong because it focuses on Sophocles' importance today instead of smoothly leading into a discussion of his play. Choice (G) is a little better because it mentions fate and struggle, but it's too general and doesn't set up the idea that trying to fight fate only makes things worse. That's why Choice (F) is the best option — it clearly connects Greek tragedy's big theme to the example of *Oedipus Tyrannus*.

49. **B.** Eliminate Choice (C) because "epic fail" is slang, making it too informal for an academic essay. Choice (D) is also too casual — "he's stuck with the prophecy" sounds like everyday speech rather than formal writing. Choice (A) is incorrect because "he just can't get away from" is too conversational and doesn't match the serious, analytical tone of the passage. Choice (B) is the best choice because it maintains a formal and academic tone while clearly conveying the idea that Oedipus is unable to avoid his fate.

50. **H.** Check the semicolon in Choice (J) first because semicolons are easy to evaluate. Semicolons separate two independent clauses (complete sentences). Choice (J) is incorrect because it places a semicolon before a phrase that isn't a complete sentence.

    Next, check the commas. Choice (G) is incorrect because it's missing a comma after *contrast*, which is needed to separate the introductory phrase from the rest of the sentence. Choice (F) is also wrong because it doesn't include a comma after "Euripides" to properly set off the descriptive appositive "a contemporary of Sophocles."

    That leaves Choice (H) as the best choice. The dashes correctly set off "a contemporary of Sophocles."

Mathematics Test

1. **B.** According to the order of operations, exponential parts of the equation must always be solved before multiplication parts of the equation. Because $x = 3$, $2^x = 8$ because $2 \times 2 \times 2 = 8$. Next, that value must be multiplied by the value of *y*, which is 2, giving you the final answer of 16, which is Choice (B).

   Beware of Choice (D), which mixes up the order of operations by multiplying 2 and *y* and then raising the resulting value of 4 to the power of *x*.

2. **F.** A geometric series is a series of numbers in which each number is multiplied by a common value to determine the number that comes after it. In this particular geometric series, the first number is multiplied by 2 to find the second number, which is then multiplied by 2 to find the third number, and so on, because $0.75 \times 2 = 1.5$ and $1.5 \times 2 = 3$. Find the 5th term, then, by multiplying the 4th term (6) by 2 to get Choice (F), 12.

3. **A.** To find the measure of $\angle ABD$, you can set up an equation calling the measure of $\angle ABD = 3x$ and $\angle DBC = x$. $\angle ABD$ and $\angle DBC$ combine to measure $180°$ because *A*, *B*, and *C* are collinear. In this case, $3x + x = 180$. Simplify this equation to $4x = 180$. When you divide both sides by 4, you get $x = 45$. Don't stop there and pick Choice (E), though. That's the measure of $\angle DBC$. Multiply 45 by 3 to get $135°$, which is the measure of $\angle ABD$.

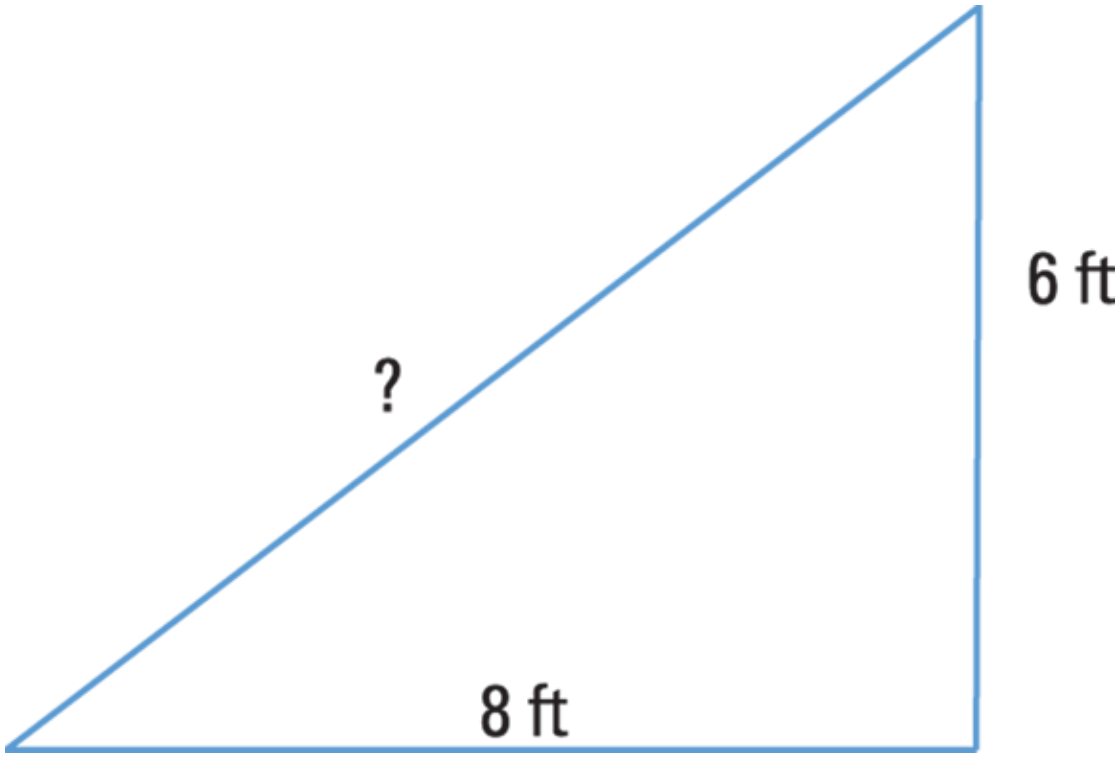
   If you picked Choice (C), you incorrectly presumed that *A*, *B*, and *C* form a right angle.

4. **G.** Divide by multiplying 3 by $\frac{8}{3}$. The 3s cancel, so the answer is 8.

   Don't get caught picking Choice (J), which simplifies the 3 in the numerator and the 3 in the numerator of the denominator to equal 1. That's not the way to divide a fraction.

5. **D.** Angle *a* and the $37°$ are supplementary, which means their sum measures $180°$. So the measure of angle *a* is $180 - 37$ or $143°$. Because lines *C* and *D* are parallel and crossed by a transversal, angle *a* corresponds with angle *b*, which means they have the same degree measure. So angle *b* also measures $143°$.

6. **F.** Before you find the chance that Ross will pick two black socks, you first have to find the chance that the first sock he picks will be black. That chance is $\frac{2}{4}$ or $\frac{1}{2}$ because 2 out of 4 socks are black. Then, you have to multiply that fraction by the probability that the second sock will be black. Be careful, because the second probability isn't also $\frac{1}{2}$ because Ross has already picked a black sock from the drawer. After the first sock, only 3 socks remain in the drawer and only 1 is black. So the chance that the second sock he picks will be black is actually $\frac{1}{3}$. The chance that both socks Ross picks will be black can then be found by multiplying $\frac{1}{2}$ by $\frac{1}{3}$, which is $\frac{1}{6}$. Pick Choice (F).
7. **D.** This question concerns a simple right triangle. The following figure shows the values of the leg lengths.



The ramp length is the hypotenuse. Memorize the 3-4-5 Pythagorean triple; ACT math questions incorporate it frequently. The lengths of the sides of this triangle are just those of the traditional 3-4-5 triangle times 2, so the missing side is 10 feet.

8. **J.** Make answering this question quick and simple by noticing first that the point on the *x*-axis that also lies on the *y*-axis has an *x*-coordinate of 0. The *x*-coordinate is the first number in the ordered pair. Eliminate Choices (F), (G), and (K) because they don't have *x*-coordinates of 0. You know the answer is either Choice (H) or (J). Substitute 0 for x in the equation and solve for y. That gives you $0+4y=28$ so $y=7$. The point that $7x+4y=28$ intersects the *y*-axis is (0, 7), Choice (J).

You can also approach this problem by solving the original equation for y to put it in the format of the equation of a line: $y = mx + b$, where b is the y-intercept. When you solve for y, you get $y = -\frac{7}{4}x + 7$. So you know the y-intercept is 7. The only answer with a y-coordinate of 7 is Choice (J).

9. **A.** When simplifying expressions that involve only multiplication, you can simply combine like variables. First, multiply the numerators to get $3x^4y^2$. Then multiply the denominators to get $6y$. Divide the y terms: $\frac{y^2}{y} = y$. The coefficients reduce to $\frac{1}{2}$ to make the final answer $\frac{x^4y}{2}$.

10. **J.** To solve a series of equations, you must cancel out one of the variables. Because the question asks that you find y, it makes sense to cancel out x in order to isolate y. To do this, multiply the bottom equation by –2 and stack the two equations like this:

When you add the equations, the x terms cancel, the y terms add to $5y$, and the sum of the right side of the equation is –10: $5y = -10$. When you solve for y, you get –2.

$$\begin{aligned} 2x + 3y &= 6 \\ -6x + 2y &= -16 \end{aligned}$$

11. **B.** To find the number of adult tickets sold, create a system of equations that models the given information. The equation for the total of 40 tickets sold could be $a + c = 40$, where *a* is the number of adult tickets sold, and *c* is the number of children's tickets sold. The other equation is $\$8a + \$5c = \$251$ because the price of adult tickets times the number of adult tickets sold plus the price of children's tickets times the number of children's tickets sold equals the total cost of tickets sold. Because you want to find the number of adult tickets sold, it makes sense to cancel out the *c* variable and solve for *a*. First, multiply the first equation by –5 to get $-5a - 5c = -200$. Add that equation to $8a + 5c = 251$:

    $8a + 5c = 251$
    $-2a - 5c = -200$

    Adding up these two equations, you find that $3a = 51$. When you divide both sides by 3, you find that $a = 17$.

12. **J.** First of all, you can tell from the graph that the parabola faces downward, so the x^2 term has to be negative. Right away, you can eliminate Choice (H). You can also tell that the graph has a vertical displacement of 3. Vertical displacement is indicated by the term that is added to or subtracted from the x^2 term. This means that you can get rid of Choice (F). You're down to Choices (G) and (J). The difference is that Choice (G) adds the 1 in parentheses and Choice (J) subtracts the 1. When the parabola moves in a positive direction horizontally, the number is subtracted from, not added to, *x* inside the parentheses. This means that the final answer is Choice (J).

    You can check your answer by testing the vertex point in your equation to make sure it is valid. In this case, that point is (1, 3). When you plug the point into the equation in the answers, you get $3 = -(1-1)^2 + 3$ or $3 = 3$, which is true.

13. **D.** When you add logs with the same base, you multiply the number being logged. So rewrite the question as $\log_6(9x) = 2$. Plug in your answer options for *x*. Choice (D) is correct because the product of 9 and 4 is 36, which is the value you get when you multiply 6 by itself two times.

The easiest way to solve logs is to know that the log base raised to the power of the answer equals the number being logged. In this problem, $6^2 = 9x$, so $x = 4$. Be careful not to get caught picking Choice (C), which adds rather than multiplies the numbers being logged.

14. **H.** Plug the values you know into the equation for volume of a circular cylinder: $V_c = \pi r^2 h$. To solve for *V*, you need the radius of the base and the height of the cylinder. The diameter is 10 cm, so the radius is half that, 5 cm. The height is 15 cm. The resulting solution is this:

$$V_c = (5\,cm)^2(15\,cm)\pi$$
$$V_c = (25\,cm)(15\,cm)\pi$$
$$V_c = 375\pi$$

15. **A.** The original point *A* lies at (–2, 4). Because the whole quadrilateral is reflected over the horizontal line $y = 2$, to find the reflected point *A*, you only need to reflect point *A* over the line $y = 2$. The *x*-coordinate of the point does not change because $y = 2$ is a horizontal line. You can eliminate Choices (B) and (C) because they don't contain *x*-coordinates of –2.

    The original *y* value of point *A* is 4, which is 2 units above the line $y = 2$, so reflected point *A* is 2 units below the line $y = 2$. This makes the *y* value of reflected point *A* equal to 0 and the point (–2, 0), which is Choice (A).

    If you picked Choice (D), you reflected point *A* over the *x*-axis instead of the line $y = 2$.

16. **H.** First, eliminate Choices (F) and (G). If Klaus gave money away, he started out with more than $280. Then set up an equation. If Klaus gave 20% of his money and ended up with $280, that $280 is 80% of what he originally received. You can write 80% as 0.8 and *of* means multiply, so the equation is $0.8x = \$280$. To solve, divide each side by 0.8: $x = 350$. Choice (H) is correct.

    Be sure not to just take 20% of the $280. Remember, the $280 already has been reduced by 20%, so 20% of that value is actually less than the amount that Klaus put in the bank.

17. **D.** The equation you use to find cosine is $\cos = \frac{\text{adjacent}}{\text{hypotenuse}}$. When you look at the figure, the side adjacent to angle *C* is *a* and the hypotenuse of triangle *ABC* is side *b*. So $\cos C = \frac{a}{b}$.

18. **J.** To solve the equation for *y*, you must get *y* on its own side of the equation. First, subtract each side by 8 to get $x - 8 = 3y$. Then just divide both sides of the equation by 3 to get $\frac{x-8}{3} = y$, which is Choice (J).

    If you forgot to also divide 8 by 3, you would have mistakenly selected Choice (A).

19. **A.** Label the whole line (from *A* to *D*) with a distance of 28, from *A* to *C* with 15, and from *B* to *D* with 18. It's easy to see that the distance from *B* to *C* is the overlapping portion of what you just labeled. Add the distance from *A* to *C* and the distance from *B* to *D* to get 33. Subtract 28 from 33 to get the distance of the overlap; the length between *B* and *C* is 5. Choice (A) is the answer.

Another way to solve this problem is to set up an equation. Call the distance between *B* and *C* *x* because that's the unknown. So the distance between *A* and *B* *i*s 15 – *x* and the distance between *C* and *D* is 18 – *x*. Set the sum of the three shorter segments equal to the longer length between *A* and *D:* $(15-x)+x+(18-x)=28$. Simplify to get $33-x=28$ and you can see that *x* (the distance between *B* and *C*) equals 5.

20. **J.** The fastest way to approach this problem is to notice that the measure of the perimeter is the same as the perimeter of a 23-by-18 rectangle. The length is $19+4$ or 23, and the width is $13+5$ or 18. So the perimeter is $(2)(23)+(2)(18)$, which is $46+36$ or 82. The answer is Choice (J).

21. **A.** To find the circumference of a circle, you need to know its radius. The question doesn't give you the radius of the circle, but you do know its area. Can you find the radius from the area? Sure! Apply the area formula: $16\pi=\pi r^2$. Divide both sides by π to get $16=r^2$. Find the square root of both sides to determine that the radius is 4. Then you can plug the value of the radius in the formula for circumference:

    $C=2\pi 4$

    $C=8\pi$

    The answer is Choice (A).

Memorize the equations for area and circumference of a circle; you'll use them a bunch on the ACT. To refresh your memory, here they are: $A=\pi r^2$ and $C=2\pi r$.

22. **G.** The median value of Cydney's math test scores is the middle score. First, put the scores in ascending order. Then determine the total number of test scores; there are 19. Because the total number of test scores is odd, the median is the one value in the middle. If the

total number were even, the median would be the average of the two middle values. You can then find the median by crossing off the smallest and biggest numbers on either end of the set, one by one, until you get to the middle. Or you can divide 19 by 2 to get 9.5. That tells you that there are 9 values to the left of the median and 9 to the right. Either way, the middle value is 87.

23. **C.** The first expression gives you the equation for the output, and the second tells you what value (the input) to substitute for *x* in the first. To find $f(2x+2)$, you plug in $2x+2$ for *x* in $x-3$. So the output when the input is $2x+1$ is $(2x+2)-3$, which simplifies to $2x-1$. The answer is Choice (C).

When you see a function question on the ACT, get excited. These are simple substitution problems, so they're really easy!

24. **J.** The ACT Math test will likely have at least one question that gives you an equation in a word problem and asks you to solve for one of the variables. All you have to do is plug in the proper values for the other variables and solve.

You are given the equation $v = at + v_0$ and are asked to find the acceleration (*a*). Reformat the equation so you're solving for *a*. Subtract v_0 from both sides and then divide both sides by *t*. The equation to solve for acceleration is $a = \frac{v - v_0}{t}$. Now find the values for the other variables. You know that initially the car travels 10 meters per second, so plug in 10 for v_0 to get $a = \frac{v - 10}{t}$. Next, note that the time that the car accelerates is 10 seconds, so plug in 10 for *t*: $a = \frac{v - 10}{10}$. You're told that the final velocity is 30 meters per second, so substitute 30 for *v* and solve:

$$a = \frac{30 - 10}{10}$$

$$a = \frac{20}{10}$$

$$a = 2$$

The answer is Choice (J).

25. **B.** Digits can be repeated, and there are 10 different digits from 0 to 9. Letters cannot be repeated, and there are 26 possibilities in the alphabet. Apply the multiplication principle by multiplying the total possibilities for each element of the license plate. There are 10 for the first position, 10 for the second, 26 for the third, and 25 for the fourth because you can't repeat the letter in the third position. The product of 10, 10, 26, and 25 is 65,000.

    If you picked Choice (A), you calculated the problem as though the digits could not be repeated, but letters could be. Choice (C) presumes that both digits and letters can be repeated.

26. **F.** Set up the average equation and plug in what you know. The average of the 5 scores is a 91. The sum of the scores is $99+97+92+88+x$ where x represents Courtney's score. The number of scores is 5. The equation is as follows:

$$91=\frac{99+97+92+88+x}{5}$$

    If you multiply both sides of the equation by 5, you end up with $455=376+x$. When you solve the equation, x is 79, which is Courtney's score. The answer is Choice (F).

The ACT Math section will likely have a few average questions. Make sure you know the formula like the back of your hand (but don't write it there!). By definition, an *average* equals the sum of all the scores divided by the number of scores:

$$\text{Average}=\frac{\text{Sum of scores}}{\text{Number of scores}}$$

You'll often have to find one of the numbers that makes up the sum in the numerator, so be prepared.

27. **D.** The diagonal is the length that extends from one vertex across the rectangle to the opposite vertex. It cuts the rectangle into two right triangles. When you know the side lengths of the rectangle, you can

use what you know about right triangles to find the hypotenuse, which is also the diagonal of the rectangle.

The question gives you the rectangle's area as 672 square feet and its width as 14 feet. To find the value of the length, apply the area formula: $A = lw$. So $672 = 14l$ and $48 = l$. The sides of the right triangle with a hypotenuse that is the diagonal of the rectangle are 48 and 14. You could apply the Pythagorean theorem, but first check for a Pythagorean triple. A common factor of 48 and 14 is 2. The triangle is a 7-24-25 right triangle times 2. Multiply 25 by 2 to discover that the hypotenuse and therefore, the diagonal of the room is 50 feet, which is Choice (D).

28. **J.** Factor the quadratic. Find the square root of the first term. Then consider the last term, 4, and ask yourself what the factors of +4 are that have a sum of –5. Those two factors are –4 and –1, so the binomial factors of the quadratic are $\left(x^2 - 4\right)\left(x^2 - 1\right)$. If you want, you can apply FOIL to your factors to make sure you factored correctly. At this point, you may be tempted to pick Choice (F), but you aren't through; the terms can be factored further. Notice that the binomial factors are the differences of perfect squares. Finding their factors is easy. The two factors are the sum and difference of the square roots of each perfect square in the expression. So when you factor $\left(x^2 - 4\right)$, you get $(x + 2)(x - 2)$. When you factor $\left(x^2 - 1\right)$, you get $(x + 1)(x - 1)$. The fully factored quadratic is $(x + 1)(x - 1)(x + 2)(x - 2) = 0$. The expression in its entirety equals 0 when any one of these factors equals 0. Set each equal to 0, and you see that the full set of values for *x* that solve the equation are 1, 2, –1, and –2, which is Choice (J).

29. **B**. First, find the area that requires peanut butter. If one piece of bread measures 10 centimeters by 10 centimeters, the area of each

piece is 100 square centimeters. So 9 pieces of bread will have a total area of 900 square centimeters because 100 square centimeters 9 times is 900 square centimeters. Because Sam has a total of 360 cubic centimeters of peanut butter and the total area of the sandwiches that she'll spread peanut butter on is 900 square centimeters, she needs to spread peanut butter reaching a height of 0.4 centimeters on each sandwich because 360 divided by 900 is 0.4. The correct answer is Choice (B).

30. **J.** To find the slope of any line perpendicular to a given line, first find the slope of the given line. The graph shows that the given line travels through the points (–4, 2) and (5, 4). The slope is the rise over the run or $m = \frac{y_2 - y_1}{x_2 - x_1}$. Plug values into the slope equation to solve:

$$m = \frac{4-2}{5-(-4)}$$

$$m = \frac{2}{9}$$

The slope of a perpendicular line is the opposite reciprocal of the slope of the line it intersects. So switch the sign to negative and flip the numerator and denominator to find the slope of any perpendicular line: $-\frac{9}{2}$. Choice (K) is right.

If you picked Choice (F), you forgot to switch the sign. Choice (G) results if you switched the sign and forgot to find the reciprocal.

31. **C.** A trapezoid has parallel bases, so line *BD* is a transversal that crosses parallel lines. So angle *BDC* and angle *DBA* are corresponding angles. Both equal 33 degrees. All you have to do to determine the measure of angle *DBC* is to add 33 and 77 and subtract the sum from 180 because the angles of a triangle total 180 degrees: $180 - (33 + 77) = 70$. Angle *DBC* measures 70 degrees and the answer is Choice (C).

32. **J.** On this question, units are the most important and tricky aspect to manage. To solve this question, set up an equation that allows you to cancel the units. Divide Jackson's distance travelled by his speed and Emily's distance travelled by her speed so that hours = hours. Assign

the distance Emily travels to be *x* because that signifies the distance from Denver. The distance Jackson travels is $65 - x$ because the total distance is 65 miles. Your equation looks like this: $\frac{x}{60} = \frac{65 - x}{40}$.

Cross-multiply and solve:

$$40x = 60(65 - x)$$
$$40x = 3{,}900 - 60x$$
$$100x = 3{,}900$$
$$x = 39$$

Because *x* is the distance measured from Denver, the answer is 39 miles, which is Choice (D).

If you simply multiplied Jackson's distance times his speed and Emily's distance times her speed and solved the equation, you would have gotten Choice (B). Not only is this wrong mathematically, but it also doesn't make sense. If Emily is driving from Denver and drives faster than Jackson, they will pass each other more than halfway between Boulder and Denver, and the point 26 miles from Denver is closer to Denver than Boulder.

33. **B.** To find the blue cars on Madi's lot, take $\frac{2}{3}$ of the 337 total. *Of* means multiply and $\frac{2}{3} \times 337$ is 225 blue cars. If $\frac{3}{4}$ of those are navy blue, multiply $\frac{3}{4} \times 225$ to find that 169 cars are navy blue. You can also solve this problem in one step by multiplying $\frac{2}{3} \times \frac{3}{4} \times 337$ to get 169.

    Either way, the answer is Choice (B).

34. **G.** This is just a simplification question. Answer it by canceling terms. Because the whole numerator is squared, you need to square every component of the numerator before you do anything else. First, determine that 3 squared is 9. Next, find the value of $\left(x^3\right)^2$ and $\left(y^2\right)^2$ by multiplying the exponents: $\left(x^3\right)^2 = x^6$ and $\left(y^2\right)^2 = y^4$. The new expression is $\frac{9x^6y^4}{3xy^{-3}}$. Divide the coefficients to

get 3 and eliminate any answer that doesn't have a coefficient of 3. Then divide the variables by subtracting the exponents: $\frac{x^6}{x} = x^5$ and $\frac{y^4}{y^{-3}} = y^7$. Combine all of these components to get your final answer of $3x^5y^7$. The answer is Choice (G).

Remember to subtract the negative exponent by adding 4 and 3; otherwise, you'll mistakenly pick Choice (H). If you just add rather than multiply the exponents in the first step, you'll incorrectly pick Choice (J).

35. **C.** Approach this problem by trying answer choices. The question asks for the largest sum, so start with the greatest answer. Consider Choice (D). Possible integers that add up to 8 are 9 and –1, but their product is –9, which doesn't fit within the given range. Try 6. The integers –7 and –1 have a sum of 6, and their product, –7, fits within the range. Once you know 6 works, pick Choice (C) and move on. Even if the other answers work, they aren't the largest options.

36. **H.** To determine whether Austin will make a profit, you need to find Austin's costs in the first month and subtract that amount from the total he will earn in the first month: Income – Expenses = Profit. Calculate his costs. The question states that Austin's rent and supplies will cost a flat $800 per month. Add to that the amount of money he will pay the barbers. If he pays each barber $12 per hour and they each work 120 hours per month, he will pay each barber $1,440 per month. Because there are 10 barbers, he will pay all barbers a total of $14,400 in the first month. His total monthly cost will be $14,400 + 800$ or $15,200 in the first month. Now, to find Austin's profits, multiply the number of haircuts he will sell by the price of each haircut. The problem tells you that he will sell 1,200 haircuts for $15 apiece, so his total revenue will be $18,000. The revenue will be more than the costs, so you can eliminate the *No* answers, Choices (F) and (G). When you subtract his costs from his revenue, you see his overall profit in the first month will be $2,800: $\$18,000 - \$15,200 = \$2,800$. The answer is Choice (H).

37. **B.** The equation to find slope is $m = \frac{y_1 - y_2}{x_1 - x_2}$. Simply plug in values to answer this question. The library is at point (2, 5) and the diner is at point (10, 4). When you plug those values into the slope equation and solve, you get this:

$$m = \frac{5-4}{2-10}$$
$$m = -\frac{1}{8}$$

The answer is Choice (B).

38. **H.** For this problem, apply the general equation for a circle: $(x-h)^2 + (y-k)^2 = r^2$, where *h* and *k* are the *x*- and *y*-coordinates of the center of the circle and *r* is its radius. The radius of the circle is 2, so the correct answer has to be an equation that is equal to 2 squared or 4. Eliminate Choices (F) and (J), and you're done. Choice (H) is obviously correct because Choice (G) adds rather than subtracts within the parentheses. If you picked Choice (J), you forgot to square the radius.

There is an "equation of a circle" question on almost every ACT, so you must know the general equation.

39. **C.** Apply the distance formula or create a right triangle with Becca's walk as the hypotenuse:

$$d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$$
$$d = \sqrt{(6-2)^2 + (7-1)^2}$$
$$d = \sqrt{(4)^2 + (6)^2}$$
$$d = \sqrt{16+36}$$
$$d = \sqrt{52}$$

Multiply the distance in units by 2 to get the approximate number of miles Becca walks:

$$2\sqrt{52} = \text{miles}$$
$$2\sqrt{4 \times 13} = \text{miles}$$
$$4\sqrt{13} = \text{miles}$$

The square root of 13 is between the square root of 9 and the square root of 16, or somewhere between 3 and 4. The product of 4 and 3 is 12; the product of 4 and 4 is 16. The only answer that falls between 12 and 16 is Choice (C). If you use the square root key on your calculator, you find that the distance is approximately 14.42 miles.

40. **G.** For this question, set up an equation that models the word problem. Use x to represent the number you're trying to find. In English/math translation, *of* means multiply, *is* means equals, and "more than" means add, so your equation is $\frac{2}{5}x = \frac{1}{4}(x+21)$. Be careful to notice that you multiply the second fraction by the sum of x and 21; otherwise, you may incorrectly pick Choice (J).

    To solve the equation, get rid of the fractions by multiplying the whole equation by 4 to come up with $(4)\frac{2}{5}x = (x+21)$ and then again by 5. Your new equation is $8x = 5(x+21)$. Expand the right side of the equation to get $8x = 5x + 105$. Subtract $5x$ from both sides to get $3x = 105$. When you divide both sides by 3, you know the number is 35, Choice (G).

    You can also approach your answer by backsolving. Plug in the answers until you find the one that fits. $\frac{2}{5}$ of 35 is 14 and $\frac{1}{4}$ of 56 is also 14, so Choice (G) works.

41. **D.** To eliminate h, rearrange and stack the equations:

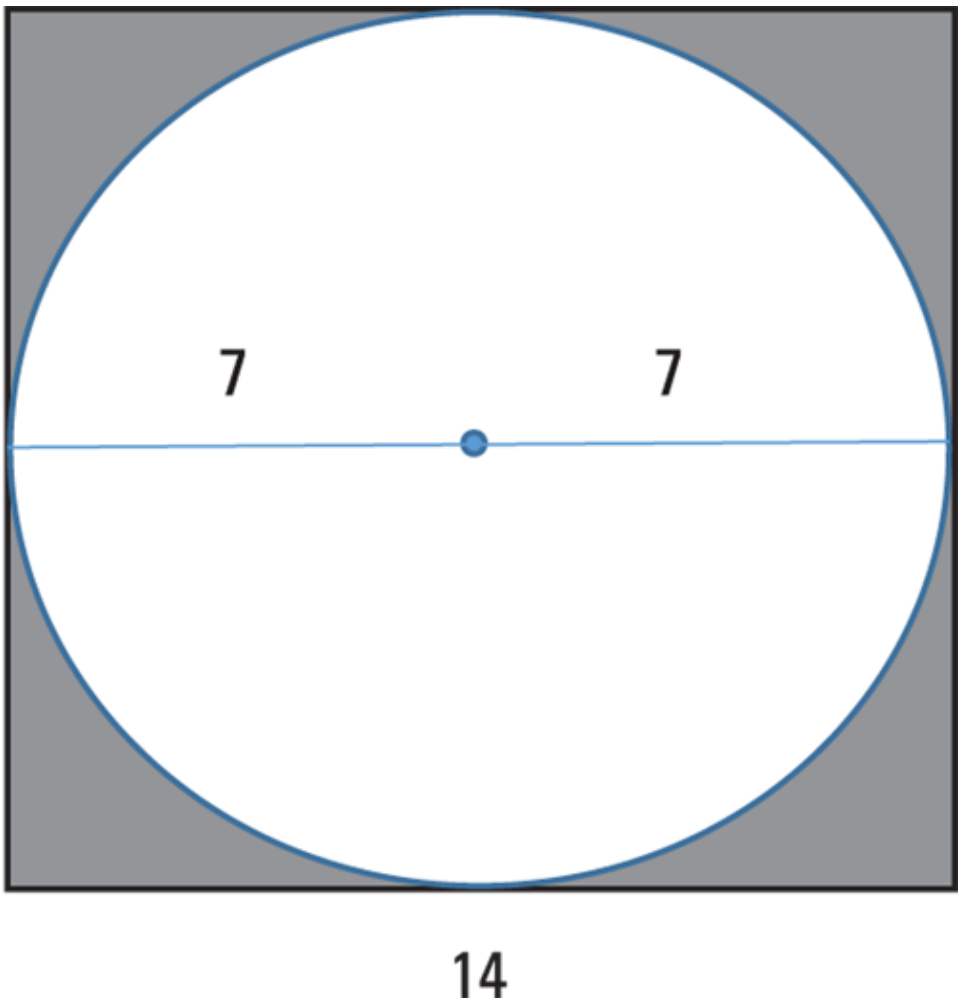
$$\begin{aligned} y &= 7x - h \\ -7 &= -x + h \\ y - 7 &= 6x \end{aligned}$$

    Add 7 to both sides and you see the answer is Choice (D).

    The key to this question is to know that "y expressed in terms of x" means that the only two variables in your answer should

be x and y, and y should be alone on one side of the equation.

42. **J.** Approach this question like you would a shaded area question. It may help to draw a picture. Draw a square with a circle that touches all sides in the center. Draw a radius of the circle and label it 7 cm. It's easy to see that the diameter of the circle is 14 cm and that the sides of the square are equal to the diameter of the circle. Label the sides of the square as 14 cm, like this:



Eliminate Choice (H) because its value is negative, and the shaded area can't be negative. Find the area of the square by squaring the side length: $14^2 = 196$, so you can automatically narrow your options to Choice (H) or (J).

Apply the formula for area of a circle ($A = \pi r^2$) by substituting 7 for *r*. The circle's area is 49π. The answer that presents the difference between the two areas is Choice (J).

If you picked Choice (H), you applied the circumference formula rather than the area formula.

The best way to solve a shaded area problem is by finding the total area and the unshaded area and then calculating the difference between those two areas.

43. **C.** Use the distance formula to find the side lengths of the rectangle. Plug in the values of one of the longer lines in the rectangle and solve:

$$d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$$
$$d = \sqrt{(0-3)^2 + (6-0)^2}$$
$$d = \sqrt{(-3)^2 + 6^2}$$
$$d = \sqrt{9+36}$$
$$d = \sqrt{45}$$

When you apply the formula to the shorter side of the rectangle, you get this:

$$d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$$
$$d = \sqrt{(7-3)^2 + (2-0)^2}$$
$$d = \sqrt{4^2 + 2^2}$$
$$d = \sqrt{16+4}$$
$$d = \sqrt{20}$$

To find the area of the rectangle, multiply the length of the shorter side by the length of the longer side, $\sqrt{45} \times \sqrt{20} = \sqrt{900}$, which is 30. Choice (C) is correct.

44. **G.** Consider the equation in the question: $\sin x + 2$ is the regular sin *x* graph moved up 2. You can eliminate all answer choices except Choices (G) and () because all of the other choices have no vertical translation (they don't show a vertical movement of the $\sin x + 2$ graph). Plug in values to $\sin x + 2$ to determine which of the

remaining answers is true. Try 0: $\sin 0 - 0$. So on the correct graph, when $x = 0$, the y value will be 2. This is only true for Choice (G).

45. **C.** Jordyn starts with $600, and every six months, she makes 5% on her existing money. So after 6 months, Jordyn has 1.05 times the $600 she started with, which is $630. But you don't just add $30 every month because Jordyn makes 5% on what she already has in the bank account. So after one year, she makes 5% of $630, not $600. Take 1.05 times $630 to find her balance of $661.50 after one year. At a year and a half, Jordyn has 1.05 times $661.50, or $694.58. At this point, she moves $210 to a checking account, so she has a balance of $484.58.

    This isn't your final answer, though! You have to compound this value one more time because the question asks how much money she has after two full years. After two years, Jordyn has 1.05 times what she had after a year and a half, which is $484.58, so she has a final balance of $508.80. Choice (C) is correct.

Reading Test

1. **C.** First, go to the last paragraph to find Mrs. Kronborg's analogy. It appears in the last sentence right after the statement that Mrs. Kronborg knew talent meant practicing. She compares the need for a talented child to practice in the way that a child with measles needs to sleep. So a talented child *should* practice, and a child with measles *should* sleep. The answer that provides a similar *should* statement is Choice (C). A person with outdoor allergies *should* stay indoors.

   Choice (A) is unlike the analogy because it mentions two separate skills — math and writing. For Choice (B), while it's obvious why a child with measles must be kept under blankets, it is decidedly less obvious why a beautiful child should be kept under close watch. So, that's probably not the best choice, either. Choice (D) uses *may* instead of *must*. *Must,* like *should,* is an absolution, while *may* is hypothetical. You can feel confident in selecting Choice (C).

2. **F.** The second paragraph begins, "It was in the summer that one really lived," so check there first. The author mentions fence painting in the third sentence, cottonwood trees in the fourth sentence, and the shedding of warm clothes for cotton at the end. So eliminate Choices (G), (H) and (J). By process of elimination, check Choice (F). The paragraph suggests that people see their neighbors, but it doesn't specifically say the neighbors are *new*. Choice (F) is correct.

3. **B.** This vocabulary-in-context question is best answered by substituting each answer for *crony* in the fifth paragraph. Not only does it not make sense to say that Fritz had never had an elder, but the paragraph also doesn't say whether the music teacher was older than Fritz. Eliminate Choice (A). Choice (D) doesn't seem right. The author later says Fritz hasn't had a crony since "the harness-maker and Spanish Johnny." There is nothing in the passage that suggests that either of these individuals ever taught him anything. Because the passage directly states that the Kohlers took this person in to live with them, you can reasonably assume that they don't view him as an enemy — so eliminate Choice (C). If you replace *crony* with *friend*, the paragraph makes sense. Choice (B) is best.

4. **H.** Eliminate Choice (F), because the statement compares the way Mrs. Kohler treated Professor Wunsch to the way she treated her garden, and nothing in the passage suggests that there was anything undesirable about her garden. Eliminate Choice (G) because the paragraph goes on to discuss how Mrs. Kohler was successful in making the professor particularly clean and respectable — so she certainly wasn't trying in vain. Now, you're left with either Choice (H) or (J). Of the two, Choice (H) is better. The paragraph indicates that Mrs. Kohler helped get the professor in tip-top shape, but it doesn't provide clues to what would make up her idea of perfection. Stick with Choice (H).
5. **A.** Answering this question correctly requires careful attention to detail. A close reading of the fourth paragraph and its description of Mrs. Kohler's typical attire reveals the answer. The black bonnet in summer appears in the third sentence, the handmade dresses in the fourth, and the men's shoes in the fifth. Choices (B), (C), and (D) are mentioned and therefore, wrong. If you read the paragraph carefully, you notice that the hood Mrs. Kohler wore in the winter was red, not black, so Choice (A) is the correct answer.
6. **H.** The fact that Professor Wunsch says that his greatest desire was to spend the rest of his days with Mrs. Kohler and then be buried in her garden lets you know that his feelings toward her must be positive, so you can confidently eliminate Choices (F) and (J), since they are negative. Now, you're down to either Choice (G) or Choice (H). Nothing in the passage suggests he felt amorous or romantic toward her, so examine Choice (H) more closely. Does it make sense that the professor would be particularly grateful to the woman that took him in, cleaned him up, and helped him find work? Indeed it does. Choice (H) is your answer.

7. **A.** Eliminate answers that contain elements that don't fit. Although the passage describes the garden as verdant, it doesn't suggest that it's the frequent rainfall that makes it green. Notice that the third paragraph describes the Kohler property as an open, sandy plain; it's unlikely that Moonstone receives frequent rainfall, so eliminate Choice (D). You can also easily get rid of Choice (C). The garden is a jungle of verdure, so it isn't best described as a barren sand gulch. Examine the remaining two choices for clues that would help you eliminate one. Choice (B) is true all the way up to the last word. Mrs. Kohler hasn't cultivated sage-brush in her garden, so the best answer must be Choice (A). The passage states that she hid and planned in her garden, and it's reasonable to assume that she found purpose in creating shade there.
8. **J.** The passage doesn't devote a lot of attention to Mr. Kohler; he's only mentioned in the third and fifth paragraphs. You can get rid of Choice (A). Professor Wunsch is the musician, not Fritz Kohler. The fifth paragraph states that Mr. Kohler was friends with the harness-maker and Spanish Johnny but doesn't mention a third crony, so Choice (G) is wrong. Examine Choice (H) carefully. The passage says that one of Mr. Kohler's sons had gone to work for the Santa Fe in New Mexico, but it means the railroad. You know that the son lived in New Mexico, but you don't know that he specifically lived in Santa Fe. Thus, Choice (H) is also wrong, and so the best answer is Choice (J). Because the passage states that Mr. Kohler was one of the first settlers in Moonstone, you can logically conclude that he was one of the first to live there. Pick Choice (J).

9. **D.** The final paragraph of the passage discusses Thea's musical talent, and since *gifted* is a synonym for *talented*, Choice (D) is likely your answer. To be sure, though, take a look at the other possibilities. While the passage suggests Mrs. Kohler doesn't get out much, it doesn't indicate the same about Thea. You can't justify Choice (A). The first paragraph states that Thea has a favorite fairy tale, but it doesn't say she was particularly fond of fairy tales in general. Choice (C) is too much of a stretch. Choice (B) is true. Thea did study music with Professor Wunsch, but so did other children. Although Choice (B) is true, it doesn't show a way that Thea differed from other children. Stick with Choice (D).

10. **F.** The last sentence of the first paragraph refers to those opposed to the inclusion of PTSD in the manual and claims that the diagnosis is already covered. Choice (G) is a reason and not an exception, so eliminate it. You can find information about the broadened concept of stressors, so Choice (H) is a reason and therefore, wrong. The last sentence of the second paragraph contains the reason in Choice (J). The only answer that doesn't appear in the passage is Choice (F).

11. **C.** The opinions in Passage A are those of early 21st-century scholars and not necessarily the author. The author presents others' viewpoints without comment, so the primary tone is objective and explanatory. The best answer is Choice (C).

12. **J**. The "state of affairs" referred to in the author's mention of the 1970s and 80s is to the broadening scope of what constitutes trauma and not medicine or the increasing number of PTSD sufferers since those decades. You can eliminate Choices (F) and (H). Although the paragraph talks about the catastrophic events of the time, it does so to highlight that those events were extraordinary rather than numerous. Choice (G) is wrong. The main reason the author mentions the 70s and 80s is to point out that the definition of traumatic events then was different than it is currently. Choice (J) is the best answer.

13. **A.** You can easily eliminate Choices (C) and (D) because they contain points made in Passage A and not Passage B. At first glance, Choice (B) looks promising: the author of Passage B does seem to clarify that PTSD is legitimate and debilitating. But the rest of the answer doesn't work. The passage makes no mention of further research or funding for PTSD. The whole answer has to work for it to be correct. Choice (A) is better: the first paragraph indicates that the diagnosis is controversial but that its acceptance has helped practitioners, and the second paragraph focuses on how PTSD impacts its sufferers. The best answer is Choice (A).
14. **G.** Read through the answer choices to find out where the passage may discuss each one. You can find choices (F) and (J) in the first paragraph. Choice (F) paraphrases the second sentence of that paragraph, and Choice (J) states the information in the last sentence. The fourth sentence of the second paragraph provides nearly the same wording as Choice (H). Because these three answer choices express information directly stated by the passage, they must not be the exception and must be wrong. The passage refers to an "altered baseline state" in the second paragraph, but the reference is designed to show what PTSD is not rather than what it is. Choice (G) is the exception and, thus, the right answer.

15. **A.** To help you focus, analyze each answer one passage at a time. The psychiatrists mentioned in Passage A don't recognize a PTSD diagnosis and therefore, wouldn't consider it to be a debilitating condition. Eliminate Choice (B). The rest of the answers seem to work for Passage A, so consider the author of Passage B. The author doesn't feel that PTSD is a disorder of an altered baseline state, nor does the author mention politics, so Choices (C) and (D) don't work. The answer that fits both passages is Choice (A).
16. **J.** Consider one passage at a time. Passage B doesn't talk about the politics of a PTSD diagnosis and wouldn't agree with Choice (G). Passage A doesn't refer to PTSD as a disorder of reactivity, nor does it state that sufferers are overly concerned with their safety. Choices (F) and (H) are wrong. Both passages state that PTSD is a controversial diagnosis. The best answer is Choice (J).

17. **D.** The author of Passage A claims that psychiatrists initially objected to the PTSD diagnosis in the third edition of the manual, so neither Choice (B) nor (C) is the exception. Passage B claims that few diagnoses in the manual listed causation, so Choice (A) is present and not an exception. Neither passage states that the manual is insufficient; the best answer is Choice (D).

18. **J.** Neither passage recommends additional research into PTSD, so Choice (G) is unlikely. Passage B isn't concerned with the speed of some professionals' PTSD diagnoses, so Choice (F) is wrong. Although both passages indicate that PTSD diagnosis is controversial, Passage B isn't concerned with its inclusion in the *DSM-III*; Choice (H) is out. Passage B states that "the presumed causal relationship between the stressor and PTSD … is complicated." Passage A suggests in the last paragraph that the types of stressors that could cause PTSD have broadened to a point where some medical professionals question the validity of the diagnosis. Therefore, both passages consider the exact relationship between stressors and PTSD to be controversial. Choose Choice (J).

19. **A.** To answer this big idea question, apply the process of elimination. Rule out choices with information that is too specific. The passage discusses the idea in Choice (D) only in the fourth paragraph, so it's wrong. You should also get rid of answers that contain ideas that are too broad. Choice (B) focuses on the concept of positive change in general rather than what makes for a good screenplay. Rule out Choice (C) because it's not true. The passage contains no warnings. The best answer has to be Choice (A). It ties the initial theme of what makes for a good film adaptation to the explanation of the life-changing mythological journey included throughout the rest of the passage.

20. **J.** This question asks for the author's suggestion, which tells you that the correct answer is implied rather than directly stated. In the second paragraph, the author makes a primary observation about inner growth and change — that it means letting go of the familiar and risking the unknown. The answer that paraphrases this idea best is Choice (J). The author states that inner growth is healthy, so you can eliminate Choice (F) based on its first two words. Even though the rest of this first answer choice seems pretty good, don't ignore its implication that inner growth is unhealthy. Read Choice (H) carefully; it actually contradicts the notion that inner growth requires change. The second paragraph says that inner growth requires courage but not the courage to stay the same. The last line of the paragraph conveys that remaining static isn't a requirement for inner growth but instead an obstacle to achieving it. Choice (G) may seem correct at first, but the passage only says that experiencing myth in film may assist with the dilemma of whether to risk change. It doesn't say inner growth requires viewing films. The answer must be Choice (J). The second paragraph states that inner growth requires sacrificing the old and familiar and risking the unknown and uncertain. The last paragraph quotes Campbell's claim that human fantasies tend to tie back to the human spirit, so you can reasonably conclude that comfortable fantasies are included in the "old and familiar," and uncharted territory is another way of alluding to the unknown.

21. **C.** The referenced list provides examples of situations where outer physical change is readily apparent. Choose the answer that provides another instance of outer physical change. Choices (B) and (D) don't express physical changes. Choice (A) is physical, but it isn't outwardly apparent. The only answer choice that expresses an outer physical change you can see is Choice (C).

22. **J**. The statement points out that even though making a change involves sacrifice or risk, the risk of not taking that risk is missing out on a chance at a new life. The rest of the passage clarifies the author's view that embracing this new life is better than missing it by holding on to old ways. Therefore, the best synopsis of the quote is Choice (J). Choice (F) may seem tempting, but the statement suggests the inevitability of sacrifice only as it relates to the transformation journey and not to the inevitability of sacrifice in general. The quote specifically addresses the change that comes with risk rather than change in general, so Choice (G) is wrong. Choice (H) can't be right because nowhere does the passage suggest that the journey is more fulfilling than the resulting change. Stick with Choice (J).

23. **B.** Answer this question by asking yourself why the author included the second paragraph in the essay. The paragraph focuses on what it means to undergo a life-altering journey, which is one of the elements of a good story mentioned in the first paragraph. Choice (B) offers a neat paraphrase of this objective. The essay is more explanatory than encouraging, so it's unlikely that the author specifically includes the second paragraph to persuade readers to change their lives. Cross out Choice (C). Although the paragraph does offer up some examples of physical change, this inclusion merely serves to contrast inner change and outer change and isn't the main reason for the paragraph. Choice (D) isn't correct. Because the paragraph discusses only one real way to achieve inner growth
instead of several, Choice (A) isn't a better option than Choice (B). Stick with Choice (B).

24. **H.** Focus on the fourth paragraph and eliminate answers that appear in the passage. The second sentence states that the hero experiences a liberation from past limitations, so eliminate Choice (F). The idea of great personal risk and quest for treasure are suggested by the reference at the end of the first sentence to a treasure quest that results in personal cost. Choices (G) and (J) are out. By process of elimination, the answer is Choice (H).

25. **A.** The passage references Joseph Campbell in the third paragraph, so start there. It states that the purpose of ritual is to provide transformation that demands changes in conscious and unconscious patterns. That sounds most like Choice (A). Choice (B) references difficult thresholds in general, but the reference is specifically to thresholds of transformation. The paragraph doesn't suggest that ritual forces anything, nor does it mention fantasy. So Choices (C) and (D) are wrong, and the best answer is Choice (A).

26. **H.** The sentence refers to *this* universal dilemma, so look in the prior paragraph for clues. The last sentence mentions two sacrifices: one that results from changing and one that results from not changing. Find the answer that states this dilemma best. Choice (J) is out because the growth is inner, not physical. Choice (F) is wrong because the dilemma isn't relevant to just the film experience. Of the remaining answers, Choice (H) defines the dilemma better. It's about choosing to change rather than choosing between types of thoughts. Pick Choice (H).

27. **B**. From the first paragraph, you know that Seger is an author of a book about adaptation and that the adaptation is likely from literature to film. Therefore, she's most likely a film script consultant. Pick Choice (B).

28. **J.** While the roles of bacteria, or Choice (H), are indeed discussed, this discussion appears in only a small part of the passage and not until about halfway through. If bacteria were the main purpose of the passage, one could expect that they would be mentioned in the very first paragraph — so eliminate Choice (H). Similarly, while some attention is given to the earth's changing temperatures, or Choice (F), there isn't nearly enough to have temperature change be the passage's central or primary focus. So, you're down to either Choice (G) or (J). Of the two, Choice (J) is broader and more all-encompassing and better summarizes the passage in its entirety. While the author notes that "If there is anything that has been overlooked more than another it is our atmosphere," he really only devotes the first couple paragraphs to discussing why the atmosphere is overlooked. When you examine the passage in its entirety, Choice (B) is the strongest choice.

29. **B.** The correct answer is Choice (B). The passage claims that rain is "accounted for only by the dust," which means that the rain exists because the dust exists. You can't conclude, however, that this statement means that rain is the only element dust accounts for. Choices (C), and (D) are all mentioned by the author in Paragraph 7, and Choice (A) is mentioned in Paragraph 8.
30. **H.** The author begins the fifth paragraph with a discussion of the wind, where he plainly states that it is "mostly nitrogen, oxygen, moisture, and dust." So you can eliminate Choices (F) and (G). He also mentions five other gases. At the end of the paragraph, you learn that hydrogen is one of these gases, so get rid of Choice (J). He doesn't specifically say that bacteria are part of wind, so the answer is Choice (H).

31. **A.** While both Choice (B) and Choice (C) are ways in which dust affects the earth, neither is discussed in such a way that would suggest the author considers them dust's greatest role. So, your answer is either Choice (A) or (D). Choice (D) sounds like something the author might say about atmosphere rather than dust, and furthermore, the author essentially paraphrases Choice A) at the start of Paragraph 8. Choice (A) is correct.
32. **J.** While Choice (A) is an assertion made by the author, he doesn't appear to consider this fact an absurdity, so go ahead and knock that one out of contention. Eliminate Choice (B) for the same reason. Take a closer look at the remaining choices. Choice (C) is indeed noted by the author in the passage's final paragraph, but it is done in a matter-of-fact manner, suggesting that the author doesn't consider it an absurdity. Only in his discussion of rain and dust does he use the word *absurdities*, so you may confidently select Choice (D).

33. **A.** Not only are Choices (B) and (C) incorrect — land surfaces absorb most of the heat received, and water surfaces reflect most of it — but even if they were written correctly, these responses would be supporting points made in the final paragraph, not the *main* point. So the answer is either Choice (A) or (D). Choice (D) is actually an assertion made in the second-to-last paragraph, so give Choice (A) a closer look. Does it adequately summarize the information in the final paragraph? It does, so you may feel confident that Choice (A) is correct.

34. **H.** The author asserts in the second paragraph that it is the atmosphere that protects us from "that fraction of sunheat which, however trifling when compared with the whole, would otherwise be sufficient to fry us all in a second." Choice (F) makes no sense. The fraction of sunheat wouldn't protect humans from the sun's heat. Choice (G) isn't discussed until the end of the paragraph, long after the discussion of humans' protection from the sun's heat — so it can't be right. As for Choice (J), the author mentions that the atmosphere keeps us in a sort of thermos globe; however, the gas layer is thin rather than thick. So Choice (H) is the strongest option.

35. **B.** To answer this question correctly, look for clues in the context. The line in question states, "It is thanks to this thin layer of gases that we are protected from that fraction of sunheat which, however trifling when compared with the whole, would otherwise be sufficient to fry us all in a second." So you're likely looking for a word that means something close to "a small part." Thus, *insignificant* is the strongest answer. To be sure, though, take a look at the others. Choice (A), *shallow*, certainly doesn't mean a small part, so knock that one out of contention. Eliminate Choice (D) because *novel* means new, not small. As for Choice (C), *trifling* could mean silly, but try substituting the word *trifling* in the paragraph with *silly*. Does it make sense to say the earth receives a silly fraction of sunheat? No, so Choice (B) is correct.

36. **J.** Read the answers to see which one best paraphrases the quoted material. The *rest* refers to the other components of wind, so Choice (J) seems most logical. The passage doesn't say that dust and water are heavier or appear in greater quantities than the others. If you chose Choice (G) or (H), you made assumptions not justified by the passage. Choice (F) is about gases rather than dust and wind, so it isn't correct. Choice (J) is best.

Science Test

1. **D.** The question points you to the data for Site 1 on the table. It asks you to determine the relationship, if any, between temperature and conductivity. Don't assume that the temperatures increase as you move down the chart. Note that the first two temperatures are both 23 but the conductivity for both entries is very different. So there isn't an obvious relationship between the two and Choice (D) is the best answer.

2. **F.** The table doesn't have a category for number of impurities, so you need to read a bit of the text to determine which column gives you the information you need to assess purity. The first sentences indicate that removing ions is a way to purify water and that conductivity and ion content are directly related — the more ions a solution has, the higher its conductivity. So use the conductivity column on the table to assess the sites' relative purity. The site with the lowest conductivity is Site 1. Its average conductivity is around 200 as compared to 870 at Site 2 and 620 at Site 3. Pick Choice (F).

3. **A.** This question provides new information — that drinking water's conductivity usually ranges between 50 and 500. Use it to evaluate the table. The only site with conductivity levels between 50 and 500 is Site 1. The answer has to be Choice (A).

4. **H.** To extrapolate for this question, use the table to find the average conductivity that's closest to 500. Site 2's average at about 620 is higher than 500, and Site 1's average at about 200 is much lower. The average species richness for Site 1 is 10.7 and for Site 2 is 4.9. The answer has to lie between those two values. So pick Choice (H).
5. **C.** The passage indicates that species richness was collected from freshwater sites. It then explains that based on the collection, invertebrate specimens were counted and identified. The logical means of collecting invertebrates is nets, Choice (C). The passage doesn't associate temperature, pH, or weight with species richness, so the other answers must be wrong.

6. **J.** The passage doesn't test the behaviors of saltwater fish, so Choice (F) is incorrect. The setup for Experiment 1 lists the types of aggressive behaviors the scientists viewed as a fact rather than a question to answer through experimentation; eliminate Choice (G). The two experiments include gender and size considerations in their setup, but the main difference between them is the relative size of the intruder fish and the focal fish. Experiment 1 established the number of aggressive behaviors presented when one intruder and focal fish are of similar size. The second experiment provides information the scientists can use to determine whether the number of aggressive behaviors changes when they vary the comparative size of intruders and focal fish for a larger number of fish. The scientists do not mix the sexes of the intruders and focal fish, so Choice (H) isn't correct. The scientists must be primarily concerned with how the relative size of the intruder affects the number of aggressive behaviors in the focal fish. Choice (J) is best.
7. **C.** The question directs you to Experiment 1, so focus on the data in Table 1. Before you do, however, take a look at the answer choices. All but the first begin with large male as the one with the highest aggression. Notice that in the column for large fish, the males have more aggressive behaviors than the females, so eliminate Choice (A). The second entry in the remaining choices is either large female or medium male. Check Table 1 to see which has more aggressive behaviors. The large female has 11 and the medium male has 18, so the male is more aggressive and Choice (B) is wrong. Choice (C) and (D) differ in the order of the last two fish. The large female has one more aggressive behavior than the small male, so based on the table, the answer has to be Choice (C).
8. **G.** Use information from both tables to answer this question. You know from answering Question 6 about Experiment 1 that male fish are generally more aggressive than female fish, so eliminate Choices (F) and (H). Check Table 2 to see whether the findings change in the second experiment. The males are generally more aggressive in the second experiment, too, so the answer has to be Choice (G).

9. **B.** To answer this question, you determine how the experiments differed based on what's true for Experiment 2. First, run through the answer choices to eliminate options that aren't true about the independent variables in Experiment 2. The number of days didn't vary in Experiment 2, so eliminate Choice (D). The researchers were testing for aggression, so Choice (C) wasn't an independent variable and must be wrong. The gender and relative size of the intruders varied in Experiment 2. The difference between the two experiments, though, was that Experiment 2 varied the comparable sizes of intruders to focal fish. This variation didn't occur in Experiment 1, so the best answer is Choice (B).
10. **F.** Read the introductory text to discover that aggression allows the fish to protect their young. In both experiments, bigger fish meant more aggression for both genders. So the best answer is one that pairs the fish with the most aggressive behaviors. From Table 1, you learn that the medium male and large female would have about 32 aggressive behaviors between them. The large male and small female would have about 29 aggressive behaviors. So get rid of Choice (G). The other answers contain smaller males than Choice (G), so you can eliminate them as well. The answer is Choice (F).

11. **C.** Translate the data in the table for Experiment 2 to a bar graph. Table 1 shows the number of minutes spent in aggression. Bigger focal fish (smaller intruder fish) spent about the same amount of time as smaller focal fish (larger intruder fish) and less time than that for equal-sized focal fish and intruders, so pick the graph that best reflects this trend. The bottom labels on Choice (A) and (B) correspond with Table 1 instead of Table 2, so they have to be wrong.

    Choice (D) is wrong because it shows lower bars for equal-sized intruders, which contradicts Table 2. The answer has to be Choice (C).

12. **F.** The question directs you to Researcher 1, so start there. Researcher 1's overall opinion on GMOs is positive, so Choice (J) is unlikely. Choice (G) doesn't describe benefits, so eliminate it. Choices (F) and (H) are benefits, but the researcher never says that GMOs increase nutritional values. The statement is that they haven't been shown to have fewer nutrients than organics, but that's not the same as having more nutritional value. Choice (F) is the best answer.

13. **B.** The first researcher is generally positive about GMOs and the second is generally negative, so they are unlikely to agree on much. Eliminate Choice (A) because both researchers say the opposite — decreasing pesticides is good for the environment. Researcher 2 states that the taste and quality of GMOs are inferior to organics, so Choice (C) is out. Researcher 1 mentions allergies, but Researcher 2 doesn't, so Choice (D) is wrong. Both researchers state that no correlation exists between health problems and GMOs, so the best answer is Choice (B).
14. **F.** Researcher 2 states directly that no correlation exists between health problems and GMOs, so Choice (J) is out. The first sentence of Researcher 2's paragraph states that pests become resistant to GMOs, but that doesn't necessarily mean that their use decreases naturally occurring pest reducers or increases the use of harmful pesticides. So Choices (G) and (H) are out, and by process of elimination, Choice (F) is correct. The last disadvantage mentioned by Researcher 2 is that plant pollen travels large distances, which means organic foods are contaminated by GMOs.
15. **D.** Choice (A) is mentioned by Researcher 2 but not Researcher 1. Choice (B) is mentioned by neither. And Researcher 1 specifically states that GMOs do not have reduced nutritional value. Eliminate Choices (A), (B), and (C). The first researcher mentions the possibility of increased allergies in the last sentence of the opinion. So the answer has to be Choice (D).

16. **F.** The second researcher mentions planting a variety of species, using natural repellants such as ladybugs, and increasing community farms as ways of reducing pesticides. Eliminate all answers but Choice (F). This researcher warns that GMOs can pollinate organic crops, so it's unlikely that he would advocate for growing some GMOs.

17. **C.** A link suggests a cause-and-effect relationship. Researcher 2 discusses the rise of community gardens as a possible way to reduce pesticide use and put less strain on food-producing corporations. Neither is necessarily linked to GMO use. Although the researcher states that pests become resistant to GMOs more quickly, he doesn't state that pesticide use increases as a result. The researcher isn't impressed with the food quality of GMOs, so the best answer is Choice (C).
18. **G.** Scan the options. The graphs show several relationships concerning GMOs and pesticide use, and you're supposed to choose the one that represents what Researcher 1 thinks. The first few sentences of Researcher 1's opinion indicate an inverse relationship between GMOs and pesticide use. As GMOs increase, pesticides decrease. So you can eliminate Choice (F). Choice (H) is out because Researcher 1 states that increased use of GMOs increases crop yields. Researcher 1 agrees that increased pesticide use creates increased harm to the environment, but so does Researcher 2, so Choice (J) is consistent with the opinions of both researchers. The best answer is Choice (G). Researcher 2 isn't convinced that GMOs directly cause a decrease in pesticide use because pests become resistant to GMO plants, which suggests that pesticides would eventually be necessary with GMOs as well.

19. **C.** An independent variable is an element that the experimenters change in the setup and execution of the experiment. The researchers tested both sandy and potting soil, so the type of soil is an independent variable. Eliminate Choice (B) because it doesn't contain I. Table 1 reveals that the researchers varied the number of hours of daily sunlight the plants received, so hours of sunlight is also an independent variable, so Choice (A) must be wrong. Plant height varied based on the design of the experiment, so it was a dependent variable. Choice (D) can't be right. The answer is Choice (C).

20. **J.** More daylight creates greater plant height, and potting soil or sandy soil with compost produces taller plants than sandy soil alone. The answer with potting soil and the most sunlight is Choice (J).

21. **C.** Look at the table and figure. The table records results from Experiment 2. The column headings are hours of sunlight, so you know that the light varied in that experiment. Eliminate Choices (A), (B), and (D). Choice (C) is the only answer that states the light was varied in Experiment 2.

22. **H.** The second experiment used sandy soil with compost. Experiment 1 indicates that potting soil and sandy soil with compost have similar results, so what's true for Experiment 2 will likely also be true for Experiment 3. The answer that says this best is Choice (H).

23. **A.** Read the information that follows the Yes and No in each answer. It's true that the ratio of pant height to daily number of hours decreased as researchers increased the number of hours, so keep Choice (A) in the running. But eliminate Choice (B) because the ratio decreased as the number of hours increased. For the same reason, keep Choice (C) and eliminate Choice (D). Now go back and read the question to determine whether the answer is *yes* or *no*. The conclusion is reasonable because the plant height would likely be close to 65 cm. The ratio of plant height to number of hours is decreasing as the number of hours increases. Pick Choice (A).

24. **J.** No experiment tested the relative effects of sunlight, soil type, or water on plant height, so you don't know which had a more significant effect. Therefore, Choices (G) and (H) are wrong. Choice (F) may appear correct, but the experiments didn't test water, so you don't know what amounts of water result in the greatest plant growth. Choice (J) is best because it is justified by the information in Figure 1 — plants grown in potting soil and sandy soil with compost grew to similar heights.

25. **D.** Focus on Figures 1 and 2 because they record results for Experiment 1. Figure 1 shows that the pH of the two types of ponds was similar, so Choices (A) and (C) are wrong. Figure 2 shows that healthy ponds had slightly higher temperatures, so Choice (B) is out. The answer is Choice (D).

26. **J.** The pH levels in the ponds were very similar, but the oxygen level in the healthy ponds was significantly higher. So there's no relationship between pH levels and oxygen levels. Pick Choice (J).

27. **A.** The introduction to Experiment 2 states that algae blooms may be caused by high levels of nitrogen. Based on Figure 3, the contaminated ponds had higher nitrogen levels, so they likely had more algae blooms. Choice (A) is best. Algae blooms aren't associated with water temperature, so Choices (B) and (D) can't be right, and Choice (C) isn't true. The healthy ponds had lower levels of nitrogen.

28. **G.** The pH of both types of ponds is the same, so the types of rocks are likely the same for both of them. Therefore, you can eliminate Choices (F) and (J). If the runoff has a pH lower than 7 but Figure 1 shows the pond water to have a pH around 7, the rocks in the pond may be neutralizing the acidity of the runoff. The question tells you that limestone contains bases and bases can neutralize acids, so the ponds are more likely to contain limestone-based rock. The granite wouldn't affect the pH. Choice (G) is a better answer than Choice (H).

29. **A.** The question doesn't concern water depth, so eliminate Choice (D). The contaminated ponds have less dissolved oxygen than the healthy ponds, so it's more likely their water is moving more slowly and the healthy pond water is moving more quickly. Choice (A) says it best.
30. **J.** The set-up information for Experiment 2 clearly states that the ponds tested in Experiment 2 were the same as those in Experiment 1 and that the measures were averages as in Experiment 1, so Choices (F) and (G) must be wrong. Only Experiment 2 tested for the amount of oxygen in the ponds, and oxygen is a gas, so the correct answer is Choice (J).

31. **C.** Eliminate Choices (B) and (D) because their explanations are wrong. The average velocities of waves in the two oceans are the same, and the wavelengths of waves in the two oceans are different. Choice (A)'s explanation is correct: the Atlantic and Pacific Oceans have waves with similar average velocities and different average wavelengths, but similar velocities and different wavelengths wouldn't produce similar periods. The passage expresses the relationship between velocity (c) and period (T) as $c = \lambda / T$ so for the T to be the same for waves in both oceans, their wavelengths would also have to be the same. The correct answer is Choice (C).
32. **H.** Table 1 provides information on the tables, but no column provides the data for wave period. Above the table is an equation that solves for T: $T = 1/v$ and v is frequency. The greatest wave period is the one with the lowest value in the denominator, so the answer is Choice (H). According to the table, the Gulf of Mexico has the shortest frequency and therefore, the greatest average wave period.
33. **A.** The table indicates an inverse relationship between wavelength values and frequency values: as wavelength increases, frequency decreases. A frequency of 0.0075 m/s is greater than the other frequencies, so the wavelength for this body of water must be less than 425 m. Pick Choice (A).

34. **J.** You know that amplitude is the distance from the centerline to the crest, but you don't know how to calculate amplitude from the data in the passage. Don't be afraid to pick Choice (J) and move on.
35. **A.** Because the relationship between wavelength and frequency is inverse, as wavelength increased, frequency decreased. Pick Choice (A).
36. **J.** Individual I's genotype is CS. Though the figure doesn't show the genotype CS for any individual, you can figure out that Individual II must also be CS. Their only option is to receive the C allele from one parent and the S allele from the other. Therefore, under incomplete dominance, they must have the same hair texture as Individual II. Individual II has wavy hair, so Individual I must also have wavy hair. Choose (J).
37. **C.** Because their parents have the genotypes CS and SS, Individual IV can be either CS or SS. Individual II is CS. Therefore, there's a 50% chance that Individual IV will have the same hair texture as Individual II. Choice (C) is correct.
38. **F.** You can eliminate Choices (H) and (J) because they're phenotypes rather than genotypes. All of the offspring of a curly haired individual (CC) and an individual with straight hair such as Individual III (SS) would have the genotype CS. Every child would get a C from the curly haired parent and an S from the parent with straight hair. Choose (F).
39. **A.** Individual III has the genotype of SS and therefore, doesn't carry the gene for curly hair. If Individual III has children with another individual who doesn't carry the gene for curly hair, there is a 0% chance their offspring will have curly hair, which is Choice (A).
40. **J.** Individual III has straight hair and therefore, has a genotype of SS. All offspring of individuals with the genotypes SS and CC have the genotype CS. Therefore, all six will have hair texture that is different than their parents'. Pick Choice (J)

Writing Test

If you wrote the optional essay for this test, check it over and make sure your essay contains these necessary features:

- **A clear position:** Did you take a stand and stick to it? Remember that which side you take isn't a big deal. How well you support your position makes or breaks your essay. You should take only a few seconds to choose which side to argue before you start writing.
- **A clear understanding of the complexity of the issue:** Top essays include a careful analysis of possible positions to weigh the pros and cons of all and arrive at the best possible solution.
- **A strong thesis:** Did you create a thesis that answers the question posed by the prompt and sets up your essay? Try to slip in some of the wording from the prompt. Make sure your thesis introduces the two or three main points you use to back up your stand on the issue.
- **A steady focus:** Every element of your essay should be about your thesis. Make sure you didn't stray off topic.
- **Good organization:** We know it sounds boring, but your essay must have an introduction, body, and conclusion. Make sure you devote each paragraph in the body to a discussion of one of your two or three main supporting points.
- **Excellent examples:** Professional essay readers really love to see creative, descriptive examples that strengthen your points. Vivid details draw readers in and endear them to your writing prowess.
- **Clear and interesting writing:** Check your essay for sentence structure variety, precise word choice, and impeccable spelling,

grammar, and punctuation.

Sample response

The issue of whether elderly drivers should be forced to retake driver's tests once they reach a certain age is indeed polarizing. Studies show that a driver's ability to drive safely diminishes once they reach a particular age, but some believe that forcing drivers to reapply is offensive and a form of age discrimination. Despite the potential for offense, requiring that drivers test after a certain age is necessary to maintain public safety.

Diminished vision and decreased reaction time are common effects of the aging process, and they are also common consequences of drinking and driving. No one argues that drinking and driving are dangerous, so why would we accept the same dangerous behaviors in our elderly population? Laws are enacted to ensure public safety. People shouldn't be able to drive while impaired, whether that impairment is from taking substances or advanced age.

Given the increased safety that mandatory testing would ensure, issues of age discrimination don't hold up. Simply put, some things require more attention as we age. Take a mammogram, for example. Most young women don't have them performed regularly because they aren't as likely to develop breast cancer as older women, but the procedure is a necessary step to ensure safety as women age. Discrimination is justified when the circumstances result in benefits. If forcing older populations to retest once they reach a certain age is age discrimination against the elderly, then allowing those over age 62 to receive social security benefits is discriminatory against those under 62. Allowing those over 21 to consume alcohol is not discriminatory to those who have yet to reach the age of 21. Some age discrimination is necessary when taking into consideration the different circumstances for different age groups.

People change as a result of the aging process. Creating laws that are appropriate for these changes to maintain safety is logical and justifies issues of age discrimination. Having elderly drivers reapply for driver's

licenses is necessary to maximize safety and allow the greatest number of people to enjoy full, long, and healthy lives.