

Digital SAT Scoring Chart

This will give you an approximation of the score you would earn on the Digital SAT.¹ Tally the number of correct answers from the Reading and Writing section (out of 54) and the Math section (out of 44). Take the total for each of these and find the corresponding section score in the tables below.

Number of Correct Reading and Writing Questions (Out of 54)	Reading and Writing Test Score (Out of 800)
0	200
1	210
2	220
3	230
4	240
5	250
6	260
7	270
8	280
9	290
10	300
11	310
12	330
13	340
14	350
15	360
16	380
17	390
18	400
19	410

Number of Correct Reading and Writing Questions (Out of 54)	Reading and Writing Test Score (Out of 800)
20	430
21	440
22	460
23	470
24	490
25	500
26	510
27	520
28	530
29	540
30	550
31	560
32	570
33	580
34	590
35	600
36	610
37	620
38	630
39	640
40	650
41	660
42	670
43	680
44	690
45	700
46	710
47	720
48	730

Number of Correct Reading and Writing Questions (Out of 54)	Reading and Writing Test Score (Out of 800)
49	740
50	750
51	760
52	770
53	790
54	800

¹ Keep in mind that some of the questions on an actual SAT test will be research questions that will not count towards your actual score. For the sake of simplicity, we are including possible research questions in your calculation.

Number of Correct Math Questions (Out of 44)	Math Section Score (Out of 800)
0	200
1	220
2	230
3	240
4	250
5	280
6	300
7	320
8	340
9	350
10	360
11	380
12	390
13	400
14	410
15	430

Number of Correct Math Questions (Out of 44)	Math Section Score (Out of 800)
16	440
17	450
18	460
19	480
20	490
21	500
22	510
23	520
24	530
25	540
26	550
27	560
28	570
29	580
30	590
31	600
32	610
33	620
34	630
35	650
36	660
37	680
38	690
39	700
40	720
41	750
42	770
43	790
44	800

Add the Reading and Writing section score and the Math section score to find your total SAT test score:

_____ Reading and Writing Section Score +

_____ Math Section Score =

_____ **Total SAT Test Score (between 400 and 1600)**

Approximate your testing percentiles (1st to 99th) using this chart:²

Total Score	Section Score	Total Percentile	Reading and Writing Percentile	Math Percentile
1600	800	99+	99+	99
1500	750	98	98	96
1400	700	94	94	91
1300	650	86	86	84
1200	600	74	73	75
1100	550	59	57	61
1000	500	41	40	42
900	450	25	24	27
800	400	11	11	15
700	350	3	3	5
600	300	1	1	1
500	250	1	1	1
400	200	1	1	1

²Scoring Data based on information at collegeboard.org

Answer Explanations

Section 1, Module 1: Reading and Writing

1. **(A)** The teacher is suggesting what the students can do to no longer fail their assignments—therefore, the teacher is providing them with a “solution.” Although the assignment relates to mixing chemicals, the teacher is not suggesting a different “mixture.” “Choice” and “origin” would not necessarily relate to solving the problem.
2. **(A)** The phrase “off his mark” means that the throw was inaccurate, making choice (A) correct. This can be seen by the fact that the catcher had to run and fetch the wild pitch. It is not choice (B) because there is no question that the pitcher is motivated—he is just not accurate with his throw. It is not (C) because the previous sentence says that he mounted the mound. It is not (D) because the pitcher is nervous, not serene or calm.
3. **(C)** The judge is trying to be patient and understanding with the prosecutor because it was his first case. As such, she will give him “leeway” to make some errors, making choice (C) correct. It is not choice (A) because the judge is being patient with the prosecutor, not giving him consequences. It is not (B) because “carte blanche” means to give someone total freedom—this is too extreme as the judge is only giving the prosecutor leeway on “some mistakes,” not all of them. It is not (D) because the prosecutor does not need freedom from punishment, which is what amnesty is; instead, he simply needs the judge to be more patient with his rookie mistakes.
4. **(A)** “Impacts” best fits the meaning needed in this context, since the author is referring to the negative consequences or effects of the bystander effect. Choices (B) and (C) are overly violent, and (D) is overly positive.
5. **(A)** The text refers to a seller ridding himself of a “bloated instrument” which will certainly devalue. Hence, overvalued is a

precise word choice. While the other choices are synonyms of bloated, they do not capture the author's meaning as related to inflated value.

6. **(C)** The narrator rhetorically asks “who has seen the wind?” then states that no one has. Instead, we have seen its effects indirectly from the trembling of the leaves and the bending of the trees. So, the overall structure of the text is that it presents different ways that the invisible wind may be seen. It is not choice (A) because it does not examine weather formation in general. It is not (B) because the focus is on the wind, not natural growth. It is not (D) because the emotional impact of the wind is not discussed.
7. **(B)** This sentence explains that the men who were rescued from the sinking ship were given a place to stay and enough money to complete their journey. The citizens of the town were hospitable toward the men when they landed, making choice (B) the best option. There is no evidence within the text that they were treated with scorn (looked down upon), envy, or humor, making the other choices incorrect.
8. **(B)** In reference to some thinkers who might believe that the slave songs expressed joy for a carefree and happy life, Du Bois states that he can believe it of “some, of many.” However, Du Bois goes on to state from his viewpoint, the songs of slaves generally express the “music of an unhappy people.” Therefore, he ultimately believes that the songs are largely expressions of the extremely difficult lives that slaves led. So, it is reasonable to infer that Du Bois would have an attitude of qualified skepticism toward these claims, since he acknowledges that there may have been some joy expressed in the songs—this is his “qualification” of the claim. He is primarily skeptical, however, believing that the emotional expressions of the songs are mainly ones of sadness. It will not be choices (A) or (D) since they are overly positive. And it is not (C) because he does not completely dismiss those who may think that the songs were happier.
9. **(C)** From the conversation between Haley and Mr. Shelby, it is clear that Haley is first and foremost a businessman. Moreover, he won't be

persuaded to just accept Tom as payment for the debt, so choice (C) is an accurate depiction of his character. He is neither empathizing nor passive. In fact, he is nearly uncompromising. Finally, choice (B) won't work because we can infer by his negotiation skills that he is not an amateur.

10. **(A)** The office administrator argues that career services are only useful if students actually take advantage of them. Choice (A) best supports this position because it is the service that the students least used, and it is also the one that students thought would be the least helpful. Perhaps if more students actually tried the career testing, more of them would find it to be helpful. Choices (B) and (D) do not compare the helpfulness and usefulness of services, instead focusing on just one aspect. Choice (C) does not show a large gap between those who used a service and those who thought it would be helpful.
11. **(A)** If we examine the first sentence of the text, we see that broken-heart syndrome often looks like a heart attack with one key difference—there is no arterial blockage. That would mean that if we wished to tell the difference between the two, we could simply look for arterial blockage. If it were absent, we could conclude that the patient is suffering from broken-heart syndrome, not a heart attack. This makes choice (A) the best answer. The other choices do not directly relate to the claim as stated in the first sentence of the text.
12. **(D)** Vocational paths have to do with career choices. Choice (D) best deals with the assertion because it mentions “providing the community with efficient workmen in various lines.” Choice (A) asserts that children are not ready to figure out their careers. Choice (B) does not discuss careers at all. Choice (C) is too vague as it would relate to career choices and does not suggest that schools should be in the business of helping guide students in their job options.
13. **(B)** This quotation provides the most direct support to the idea that at the time of the text’s composition, the recognition of civil rights for the citizens of countries around the world was relatively limited. It is not choice (A) because this quotation refers to the connection Burke believes that the colonists and the British people share. It is not (A) or

(D) because these quotations directly question supposed sources of British governmental authority.

14. **(C)** The previous sentence states that plastic-eating microorganisms could help solve the problem of plastic waste in the environment. The final sentence of the text begins by showing a contrast with the previous sentence—it states that “others are skeptical of the claims.” Thus, it makes sense that the insertion should refer to whether bacteria could consume plastic deposits. Choice (A) is too vague. Choice (B) does not make a logical contrast. Choice (D) would make matters worse and so does not make sense.
15. **(A)** The text shows that in 14th- and 15th-century Florence, women were less and less likely to participate in court proceedings. The narrator acknowledges that many upper-class women may not have been affected by this, but that lower-class women were. A way of expressing that lower-class women were negatively affected by not being able to participate in court proceedings would be to state that they were “essentially at the mercy of their accusers,” meaning that they could not advocate for themselves while their accusers could make whatever claims they wished. All of the other options would suggest that these women were more powerful than they in fact were in this historical context.
16. **(C)** This choice separates the introductory phrase, “Within your online profiles,” from the independent clause that follows. Choice (A) has confused word order, (B) lacks a comma after the introductory phrase, and (D) inserts an unnecessary colon, creating a far too abrupt pause.
17. **(A)** “It’s” means “it is,” which is correct given the context—this is the only option that has an implicit verb. “Its” and “their” are used to show possession. “There” typically refers to a place.
18. **(A)** “Homeowners” correctly indicates that there are multiple homeowners who possess returns on assets. Choices (B) and (C) are singular, and (D) does not indicate possession.
19. **(D)** “Felt” is the only option that maintains the past tense verb use in the sentence as seen in the other verbs “depicted” and “used.”

20. **(D)** Choice (D) provides a comma after the introductory dependent clause and an apostrophe with “s” after the person’s name to signify possession, which is logical since the name is singular. Choices (A) and (C) do not have an apostrophe at all, and choice (B) would be used for plural possession.
21. **(B)** “Allow” is parallel to the next part of the sentence that uses the verb “tie.” The other options lack parallel structure. Also, “flexibility” is what it would make sense to permit, not “flexing” as one would do with a muscle.
22. **(D)** This option provides a needed pause between the two independent clauses in the sentence and before the clarification of “rodents.” Choice (A) has no pause before “but,” choice (B) has an unneeded pause after “also,” and choice (C) gives no pause before “rodents.”
23. **(A)** “Also” gives the most logical transition, introducing another description of birds in the sentence. The other options are overly wordy and do not provide a logical transition. Choice (B) incorrectly shows a contrast, and choices (C) and (D) incorrectly show cause and effect.
24. **(D)** “In order to” provides a logical transition between combining an enzyme and forming the organic molecule. The other options do not provide a logical transition. Choices (A) and (B) show cause and effect and (C) shows a contrast.
25. **(D)** The student wants to emphasize the time period when Ibn Battuta travelled. Choice (D) is the only option that explicitly refers to the time when he made his explorations—the 1300s. The other options use information from the text but do not mention the time.
26. **(C)** Focus on the specific claim—the student wants to show that there are two pumpkin varieties that can be eaten. Based on the notes, Casperita pumpkins are “edible” and Porcelain Doll pumpkins are a “good choice for pumpkin pie,” implying that they too are edible. So, choice (C) is the most logical option. The other options refer to pumpkins in the notes that are not consistently referred to as being edible.

27. **(A)** If there are few of the Rice's whales left, it makes sense that there are fewer opportunities to observe them—thus, choice (A) is the most logical answer. Choice (B) does not have to do with the observability of the whale. Choice (C) is not supported by the notes since the whale is found in the Gulf of Mexico. Choice (D) refers to a potential future event, not to something that presents an issue for observation in the present moment.

Section 1, Module 2: Reading and Writing

1. **(B)** The sentence shows where in the body the vestibular system is found, so “located” is most appropriate. The other options would be more appropriate in referring to people and where they live instead of where a bodily system is located.
2. **(C)** “Bolster” means “to solidify or build” in this context, making it the most logical option to refer to improving one's resume. “Cushion” and “rebuild” would suggest protecting one's career against a hardship while the emphasis here is on positive growth. And “maintain” does not suggest growth but keeping things as they are.
3. **(A)** The “while” in this sentence indicates a contrast between the attraction that the hydrophilic heads have towards water and the repulsion that the hydrophobic tails have. Thus, “repelled” makes the most sense. Another way you could think about this is to look at the word roots—“phobic” indicates fear or repulsion, making this a logical option. The other options would not provide a logical contrast with “attracted.”
4. **(C)** “Derive” means “obtain,” making this a logical option to express how aerobic organisms gather their energy. It is not “discover” or “discern,” since these are advanced thought processes that are not integral to obtaining energy. It is not “inhale” because while oxygen may be inhaled, the energy is gathered from the process of cellular respiration.
5. **(D)** “Lucrative” suggests that marine welding would be a career that has a high salary. While the other options could be associated with

money, they would not be logically applicable to this situation, in which the potential earnings from a career are described.

6. **(A)** In the text, the author summarizes his argument that aiding the German Socialists and recognizing the Bolsheviks would be “playing with fire”—i.e., would lead to potentially negative consequences due to an indecisive outcome to the war. It is not choice (B) because this is too literal an interpretation. And it is not (C) or (D) because this phrase does not refer to making peace or reconciling.
7. **(B)** Text 1 provides a detailed description of the painting *A Sunday on La Grande Jatte*, while Text 2 looks at how Claude Monet’s painting *Impression: Sunrise* fits into the overall context of the impressionist movement. This makes choice (B) the most logical option. It is not choice (A) because Text 1 describes the painting technique. It is not (C) because Text 1 describes the setting of the painting. It is not (D) because Text 2 does not provide biographical details about Monet.
8. **(D)** The text describes the genetic changes associated with antigenic shift, stating that via “viral reassortment” the particles will produce completely new proteins “to which the entire human race is vulnerable.” While the antigenic drift can also result in renewed vulnerability, it is to viral strains of which one was previously immune. Therefore, the changes would not be as great as those associated with antigenic shift. Likewise, the author uses the example of a genome split in a bird that is capable of infecting humans making (D), rather than (C), the correct choice.
9. **(A)** The narrator argues that balance is key to achieving the best health results with handwashing. If you wash your hands too frequently, it can cause problems; similarly, if you wash your hands infrequently, it can cause problems. Choice (A) is the most logical option because it suggests that those who wash their hands just eight times a day have less illness than those who wash their hands far more frequently. It is not (B) because these are both situations in which the narrator believes handwashing would be warranted. It is not choice (C) because the narrator does not make any comparisons about geography.

It is not choice (D) because the narrator does not consider the effects of hand sanitizer.

10. **(D)** The idea that needs support is that the characters in the novel find it quite difficult to plan their budget because of how unpredictable expenses are. Choice (D) provides the best support for this since it mentions how there is no end to the things they had to buy and to unforeseen contingencies, i.e., random expenses that come up. Choice (A) does not focus on budgetary matters. Choices (B) and (C) do not refer to unpredictable expenses.
11. **(C)** The graph indicates that women, those in the age group of 18–29, and those who have completed some college are the most likely categorizations to use social networking sites—choice (C) is the only option that fits all these criteria. Choices (A) and (B) both have males, and (D) uses an age group that is outside the range given by the graph.
12. **(D)** The researchers’ hypothesis is that losing body water is not as detrimental if one is losing it while exercising in cold weather. If someone does not sweat as much in a cold environment, there would be less of a need to have water in one’s body to produce sweat. Thus, losing body water would not be as detrimental to someone in this situation. It is not (A) because this does not address the specifics of someone exercising in cold conditions. It is not (B) because cold would not affect whether someone could take supplements. It is not (C) because the factor in question is cold, not body mass index.
13. **(A)** We do not know the precise makeup of the client’s portfolio, so we can consider the potential impacts of each of the possible switches. If we check the answers against the table, we can see the biggest drop in variance, and thus the biggest drop in risk, occurs as stocks owned go from one to two. This change cuts the variance nearly in half. The other choices still decrease the risk, but not by as much as choice (A).
14. **(A)** The text argues that Sweden has done a great job at political compromise over the years, with stakeholders from a variety of backgrounds in society able to successfully find common ground. This point is emphasized in the last sentence, in which the narrator

draws a contrast between the near uniformity of private industry ownership (which would lead one to think that business would have a greater influence than labor on outcomes) and showing how labor disputes can be settled in a way that involves all interested parties. Choice (A) best accomplishes this goal by showing that workers and management both trust in the government managed settlement. It is not choice (B) because this would involve a one-sided deal for business. It is not (C) because that would not necessarily indicate compromise. It is not (D) because such actions would show the failure of compromise.

15. **(C)** This is the only option that correctly uses an apostrophe after “workers” to show that there are plural workers who own passports and visas. Choice (A) incorrectly shows that the visas and passports possess something. Choice (B) does not show possession at all. Choice (D) uses singular possession by putting the apostrophe before the “s.”
16. **(A)** Choice (A) puts the words in the most logical sequence, clearly stating the subject of “scientific method” and following with the description of it. The other options all put the words in an illogical order.
17. **(A)** The adjectives “loveable” and “fluffy” can have their order reversed and the sentence would still be logical, so it is appropriate to separate them with a comma, as in choice (A). Choice (B) lacks a comma, choice (C) is too choppy, and choice (D) provides too large of an interruption at this point.
18. **(C)** Choice (C) correctly uses a colon to come before the clarification of who makes up the two players. Choices (A), (B), and (D) have unnecessary punctuation breaking up the two-part clarification.
19. **(C)** “Struck” correctly provides the past tense conjugation of “strike”—this means that the law was overturned. The other options do not provide a proper past tense conjugation of “strike.”
20. **(D)** This option provides a comma before the dependent clause that starts with “which.” Choices (A) and (B) do not provide this comma,

and choice (C) does not have a complete sentence after the semicolon.

21. **(C)** The subject here is “a struggle,” which is a singular noun. We need a singular verb to match. “Does” is the correct answer—it is the only singular verb out of the choices. “Do” is a plural verb in this context, “doing” leads to gibberish, and “have done” uses the incorrect tense.
22. **(D)** Choice (D) is the only option to correctly place commas around the transitional word “however.” This choice also correctly uses a colon to come before a clarification.
23. **(D)** “Thus” means “therefore,” and is logical at this point since the previous sentence discusses how humans follow their instincts in seeking out a meditative state, and the current sentence elaborates on the poem’s symbolism. Choices (A) and (C) would introduce new ideas most likely in a list, and choice (B) would be used to show a contrast.
24. **(D)** The text starts by highlighting Chancourtois’s important contribution to chemistry. It then goes on to state that because of some minor errors and differences in terminology, his discovery was mainly ignored. Since the author is speaking about Chancourtois’s discovery in a positive light, it would make sense to say that it was “unfortunate” that his discovery was ignored. It is not “simultaneously” since the text goes on to talk about the future, which would not be simultaneous to Chancourtois. It is not “moreover” because this is not a continuation of an idea. It is not “naturally” because with all the unusual circumstances surrounding the way Chancourtois set up his table, it would not be logical to describe it as “natural.”
25. **(C)** The student’s goal is to show why it was difficult to find information about the *Hunley* during the 20th century. Since the ship remained submerged until the beginning of the 21st century, it makes sense that there would be little information about it. It is not choice (A) because the ship was not destroyed. It is not (B) because this would be an accurate assertion about recent discoveries, but not about

ones during the 20th century. It is not choice (D) because this is not directly related to the student's goal.

26. **(D)** Choice (D) is the only option that mentions specialized terminology as it relates to genealogical records—"consanguineous" and "affinal." None of the other options mentions specialized terminology.
27. **(B)** The student's goal is to suggest something that could be done to do a comparative analysis of how effective certain antibiotics are. Choice (B) is the only option that provides a direct comparison between two antibiotics and their effectiveness. Choice (A) provides a comparison but not of antibiotics. Choice (C) is rather vague. Choice (D) focuses on history instead of biological analysis.

Section 2, Module 1: Math

1. **(B)**

$$\begin{aligned}(0.8a + 0.7b) - (1.4a - 0.3b) &\rightarrow \\ 0.8a + 0.7b - 1.4a + 0.3b &\rightarrow \\ (0.8a - 1.4a) + (0.7b + 0.3b) &\rightarrow \\ -0.6a + b\end{aligned}$$

2. **(C)** Take two clearly identifiable points from the line: (0, 1) and (-2, -2). The slope is the change in y divided by the change in x :

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 1}{-2 - 0} = \frac{-3}{-2} = \frac{3}{2}$$

3. **(2)** Make things as easy as possible to solve for this expression: simply take half of the equation to find the value of $-5 + 6x$.

$$\begin{aligned}12x - 10 &= 4 \rightarrow \\ \frac{12x - 10}{2} &= \frac{4}{2} \rightarrow \\ 6x - 5 &= 2 \rightarrow \\ -5 + 6x &= 2\end{aligned}$$

4. **(A)** Manipulate the equation to isolate the height of the cylinder:

$$v = \pi r^2 h \rightarrow$$

Divide both sides by $\pi r^2 \rightarrow$

$$\frac{v}{\pi r^2} = h$$

This corresponds to choice (A).

5. **(C)** The voter turnout in the year 2008 was nearly 62 percent, making it the highest turnout for any of the years presented in the graph.

6. **(C)**

$$\begin{aligned}(2y^2 - y) - (2y^2 + 2y) &\rightarrow \\ 2y^2 - y - 2y^2 - 2y &\rightarrow \\ -y - 2y &= -3y\end{aligned}$$

7. **(D)** All three of the angles will add up to 180, so set up an equation to solve for x :

$$\begin{aligned}2x + 3x + 4x &= 180 \rightarrow \\ 9x &= 180 \rightarrow \\ x &= 20\end{aligned}$$

Since $\angle CED$ is equal to $3x$, multiply 3 by 20 to find the measure of the angle:

$$3 \times 20 = 60 \text{ degrees.}$$

8. **(1)** Take the cube root of both sides of the equation, then solve for x :

$$\begin{aligned}(x + 2)^3 &= 27 \rightarrow \\ \sqrt[3]{(x + 2)^3} &= \sqrt[3]{27} \rightarrow \\ x + 2 &= 3 \rightarrow \\ x &= 1\end{aligned}$$

9. **(B)** The number of diners who ordered a dessert is 50. Out of those 50, there were 15 diners who ordered an appetizer. Solve for the probability that a diner who ordered a dessert also ordered an appetizer by dividing 15 by 50:

$$\frac{15}{50} = \frac{3}{10}$$

10. **(1.5 or $\frac{3}{2}$)** The x -intercept of the equation is found when the y value of the point equals 0. So, plug 0 in for y to solve for the x -coordinate of the x -intercept.

$$\begin{aligned} y &= 2x - 3 \rightarrow \\ 0 &= 2x - 3 \rightarrow \\ 3 &= 2x \rightarrow \\ x &= \frac{3}{2} \end{aligned}$$

11. **(B)** The line is already in slope-intercept form, $y = mx + b$, in which the b represents the y -intercept. So, the y -intercept is -2 .
12. **($\frac{1}{3}$ or .3333)** Use substitution to solve for y . Since $y = \frac{1}{2}x$, $x = 2y$. Plug $2y$ in for x into the first equation:

$$\begin{aligned} 3 &= \frac{3}{2}(4x - 2y) \rightarrow \\ 3 &= \frac{3}{2}(4(2y) - 2y) \rightarrow \\ 3 &= \frac{3}{2}(8y - 2y) \rightarrow \\ 3 &= \frac{3}{2}(6y) \rightarrow \\ 3 &= 9y \rightarrow \\ \frac{3}{9} &= \frac{1}{3} = y \end{aligned}$$

13. **(D)** All of the options have a y value of 0. So, look at what values of x will cause there to be a y value of 0, since a point that intersects the x axis must have a y value of 0. In $y = (x + 4)(x - 5)$, if x is 0, -4 , or

5, the entire right side of the equation would be 0. Therefore, all three options would be points at which the function intersects the x axis.

14. **(C)** The initial number of the bacteria can be found when you plug 0 in for h , since when $h = 0$ no time has passed.

$$1000 \times 2^0 = 1000 \times 1 = 1000.$$

Now, determine the value of h that would be needed to find a number of bacteria that is 8 times the initial value of 1,000: $8 \times 1000 = 8000$.

$$\begin{aligned} B(h) &= 1000 \times 2^h \rightarrow \\ 8000 &= 1000 \times 2^h \rightarrow \\ 8 &= 2^h \rightarrow 8 = 2^3 \end{aligned}$$

Since 8 is equal to 2 cubed, the correct value for h in this situation is 3 hours. If you do not remember that 8 is equal to 2 cubed, you could also plug in the answer choices to solve.

15. **(D)** The spins that had total values of 6 or less are bolded and italicized below:

Total of Combined Spins	Number of Spins with That Total Value
<i>2</i>	<i>1</i>
<i>3</i>	<i>2</i>
<i>4</i>	<i>2</i>
<i>5</i>	<i>4</i>
<i>6</i>	<i>5</i>
7	6
8	7
9	4
10	3
11	4
12	2

Out of the 40 total turns, there is therefore a total of $1 + 2 + 2 + 4 + 5 = 14$ turns in which Pete has a total of 6 or less. Find the fraction of the combined spins as follows:

$$\frac{14}{40} = \frac{7}{20}$$

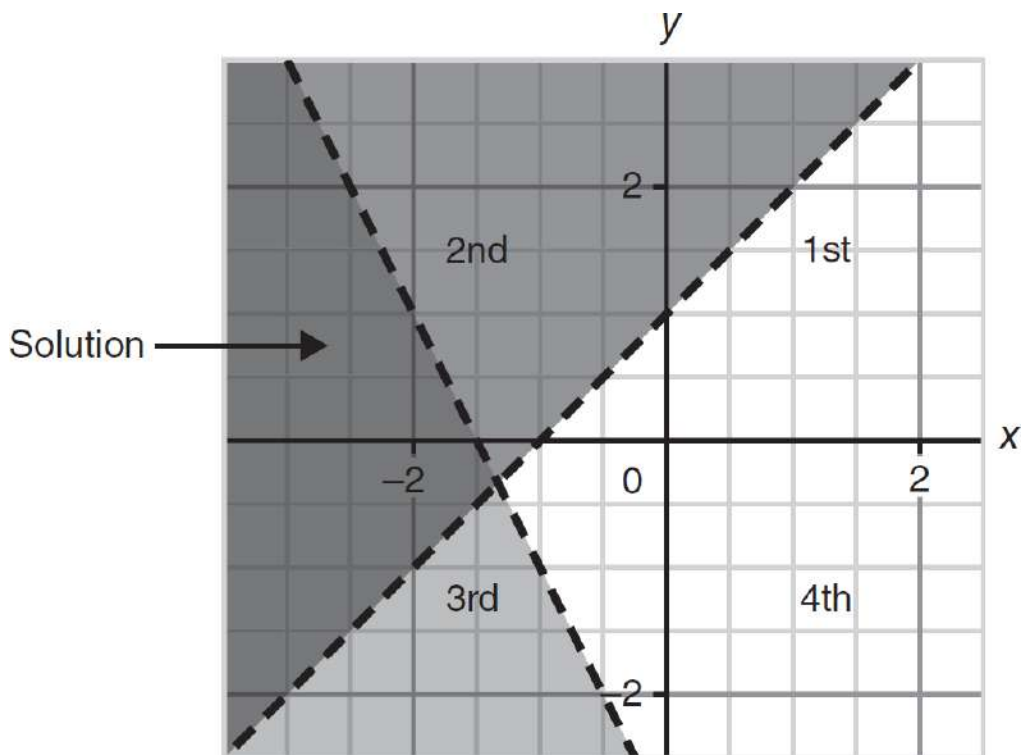
16. **(D)** Since the Mexico City area represented 17% of the total population of Mexico, solve for the total population of Mexico, x , by using this equation:

$$\begin{aligned} 0.17x &= 22,000,000 \rightarrow \\ x &= \frac{22,000,000}{0.17} \approx 129,000,000 \end{aligned}$$

17. **(12)** Plug 5 in for x to solve for $f(5)$:

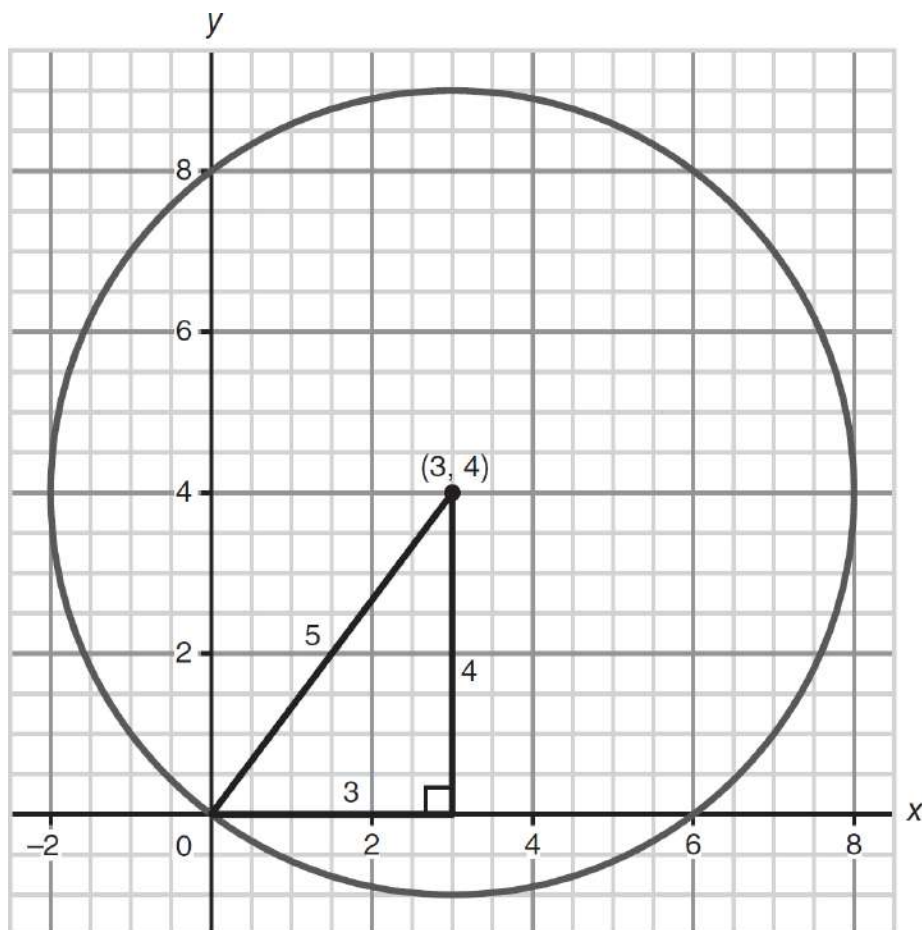
$$\begin{aligned} f(x) &= (x - 3)(x + 1) \rightarrow \\ f(5) &= (5 - 3)(5 + 1) \rightarrow \\ f(5) &= 2 \times 6 = 12 \end{aligned}$$

18. **(D)** The solution set of the two inequalities $y > x + 1$ and $y < -2x - 3$ and the quadrants of the coordinate plane are graphed below:



So, the solution set is in quadrants 2 and 3 only.

19. **(C)** The computer costs \$2,000 and goes down by the same amount each year. After 6 years, the total amount of depreciation is $2000 - 800 = 1200$. So, to find the annual amount of depreciation, take 1200 and divide it by 6: $\frac{1200}{6} = 200$.
20. **(A)** A circle with a center at (3, 4) that intersects at the origin, (0, 0) would look like this:



To find the radius, notice that you can inscribe a special 3-4-5 right triangle as shown above. The radius is therefore 5. The equation of a circle is $(x - h)^2 + (y - k)^2 = r^2$, in which (h, k) represents the center, and r represents the radius. Plug in $(3, 4)$ for the center and 5 for the radius to find the answer:

$$\begin{aligned}(x - h)^2 + (y - k)^2 &= r^2 \rightarrow \\(x - 3)^2 + (y - 4)^2 &= 5^2 \rightarrow \\(x - 3)^2 + (y - 4)^2 &= 25\end{aligned}$$

21. **(D)** Find how many minutes there are in 16 hours:

$$\begin{aligned}16 \text{ hours} \times \frac{60 \text{ minutes}}{1 \text{ hour}} &\rightarrow \\16 \text{ hours} \times \frac{60 \text{ minutes}}{1 \text{ hour}} &= 960 \text{ minutes}\end{aligned}$$

Then, since Susan blinks 20 times per minute while awake, multiply 20 by 960 to find the total number of times she will blink:

$$20 \times 960 = 19,200$$

22. **(D)** Hugo spends \$400 a month on miscellaneous expenses. If he cut this expense by half and allocates all that he has cut to his savings, his savings would increase by \$200 a month. Hugo is trying to allocate more money into savings. Now, calculate how large of an increase this additional \$200 would be relative to the \$250 he is currently saving:

$$\frac{200}{250} \times 100 = 80\%$$

So, he would increase his monthly savings by 80% if he were to make this change.

Section 2, Module 2: Math

1. **(A)** Plug -2 in for x and solve:

$$g(x) = \frac{x^3}{2} \rightarrow$$

$$g(-2) = \frac{(-2)^3}{2} = \frac{-8}{2} = -4$$

2. **(A)** The answers are all written in slope-intercept form, and they all have different slopes. So, calculate the slope of the linear function by using two points. We can use $(6, 0)$ and $(9, 1)$ since there is no negative value in the point, which could more easily lead to a careless error:

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 0}{9 - 6} = \frac{1}{3}$$

The only option with a slope of $\frac{1}{3}$ is choice (A), $f(x) = \frac{1}{3}x - 2$.

3. **(C)** $\sqrt[3]{a} \times a^{\frac{5}{3}} = a^{\frac{1}{3}} \times a^{\frac{5}{3}} = a^{\left(\frac{1}{3} + \frac{5}{3}\right)} = a^{\frac{6}{3}} = a^2$

4. **(B)** First, use the ordered pair (8, 16) to solve for the value of the constant a :

$$\begin{aligned}y &= ax \rightarrow \\16 &= a8 \rightarrow \\\frac{16}{8} &= a \rightarrow a = 2\end{aligned}$$

Now, plug -3 in for y to the function that has the constant a as 2:

$$\begin{aligned}y &= 2x \rightarrow \\-3 &= 2x \rightarrow \\\frac{-3}{2} &= x \rightarrow x = -1.5\end{aligned}$$

So, the answer is choice (B).

5. **(B)** Match the constants with the corresponding numbers on the other side of the equation. a equals 2, b equals 16, and c equals 32. Add these numbers together to find the sum of a , b , and c :

$$2 + 16 + 32 = 50$$

6. **(A)** In the function $S(w) = 500 + 10w$, when zero weeks have gone by, the value of w will be 0. Plugging 0 into the function for w , the amount of money she will have in her savings account will be 500. This represents how much money she has in the account when no weeks have gone by, so it corresponds to choice (A), the money that is in her account at the beginning of the time period. Profit corresponds to revenue minus expenses, and the slope of 10 corresponds to the weekly increase in money in the account.
7. **(54)** The width of 2 inches on the map corresponds to 6 miles in actual distance, and the length of 3 inches on the map corresponds to 9 miles in actual distance. So, multiply 6 by 9 to find the actual area of the rectangular plot of land:

$$6 \times 9 = 54 \text{ square miles.}$$

8. **(C)** The total amount of time that it took Samara to complete the trip is $4 + 6 = 10$ hours. Use the equation $\text{Distance} = \text{Rate} \times \text{Time}$ to work with this problem. The problem asks for the average speed, which corresponds to the rate. Using that equation, the $\text{Rate} = \frac{\text{Distance}}{\text{Time}}$. Use 400 for the distance and 10 for the time to solve for the average rate over the entire trip:

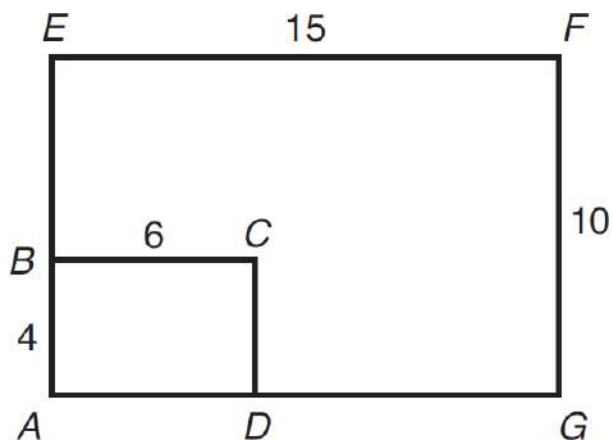
$$\begin{aligned}\text{Rate} &= \frac{\text{Distance}}{\text{Time}} \rightarrow \\ \text{Rate} &= \frac{400 \text{ miles}}{10 \text{ hours}} = 40 \text{ mph}\end{aligned}$$

9. **(B)** Since the triangles are similar to one another, the ratios of the sides will be the same. So, the tangent of angle C will be the same as the tangent of angle F . The tangent of angle F is the opposite side ED divided by the adjacent side DF : $\frac{10}{24} = \frac{5}{12}$. This corresponds to choice (B).
10. **(C)** Based on the best-fit line that could connect the points, the amount that the value of an airplane decreases each year is approximately \$5,000. Since the initial cost of the airplane is approximately \$100,000, divide 100,000 by 5,000 to estimate when the plane value will closely approximate 0 dollars:

$$\frac{100,000}{5,000} = 20$$

So, 20 years after purchase the plane will closely approximate a value of 0 dollars.

11. **(D)** 400% of x is $4x$. This must be added to the original value of x to find the total value when x is increased by 400%: $4x + x = 5x$.
12. **(C)**



Since the rectangles are similar to one another, the sides are proportional. Therefore, the ratio of $\overline{EF}$ to $\overline{FG}$ will be the same as the ratio of $\overline{BC}$ to $\overline{AB}$. Call x the length of side $\overline{EF}$, and set up a proportion to solve:

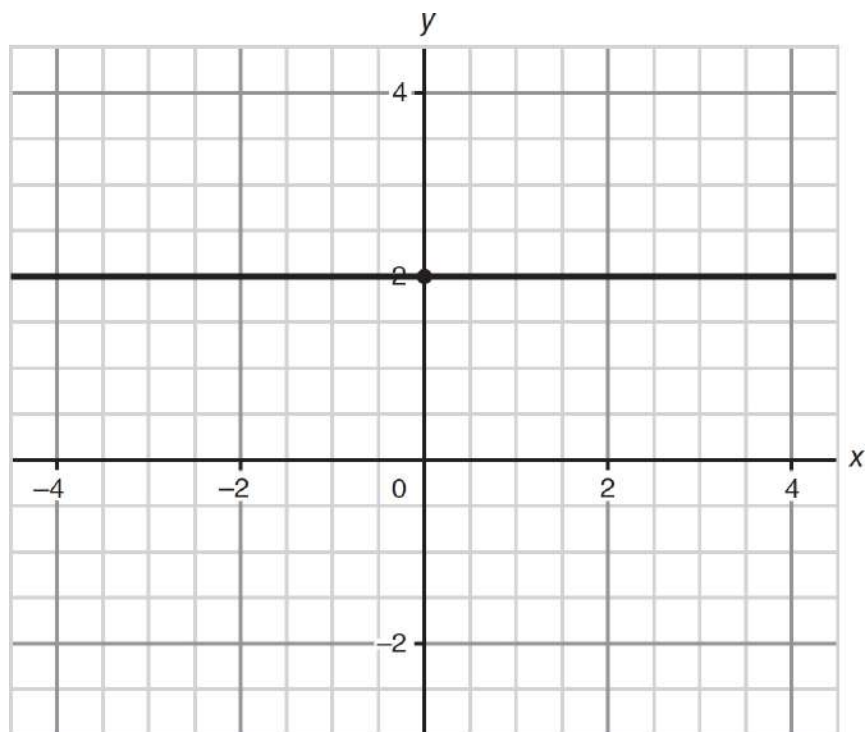
$$\frac{x}{10} = \frac{6}{4} \rightarrow$$

$$x = \frac{10 \times 6}{4} = \frac{60}{4} = 15$$

Since $AEFG$ is a rectangle, there will be two sides of length 15 and two sides of length 10. Find the perimeter of the rectangle by adding the lengths of all these sides together:

$$15 + 15 + 10 + 10 = 50.$$

13. **(A)** A line with the form $y = k$ will simply be a horizontal line. Since the constant k is greater than zero, it will not intersect the x axis at all, and will therefore have no zeros. For example, consider the equation $y = 2$. The graph of this line is given below:



As you can see, the line is horizontal and will never intersect the x -axis.

14. **(3)** The combined set of both classes will have a total of 40 students, since there are 20 students in each class. So, the median of the set of both classes will be between the 20th and 21st terms when the numbers are put in order from least to greatest. There are a total of 18 values that are 2 or less, and then there are 9 values that are 3. So, the 20th and 21st terms will both be 3, making 3 the median of the combined set of scores.
15. **(D)** What would be the value(s) of x that would be a solution or solutions to this equation?

$$\begin{aligned}\frac{x^2 - 4}{x - 2} &= 4 \rightarrow \\ \frac{(x - 2)(x + 2)}{(x - 2)} &= 4 \rightarrow \\ \frac{(x - 2)\cancel{(x + 2)}}{\cancel{(x + 2)}} &= 4 \rightarrow \\ x - 2 &= 4 \rightarrow \\ x &= 2\end{aligned}$$

Now, check to be sure this solution is not extraneous by plugging 2 back into the original equation:

$$\begin{aligned}\frac{x^2 - 4}{x - 2} &= 4 \rightarrow \\ \frac{(2)^2 - 4}{(2) - 2} &= 4 \rightarrow \\ \frac{0}{0}\end{aligned}$$

This is undefined, so there are no solutions to the equation.

16. **(C)** The vertex in a parabola of the form $y = a(x - h)^2 + k$ is (h, k) . In the parabola with the equation $y = (x - 6)^2$, the value of h is 6 and the value of k is 0. So, the vertex of the parabola is $(6, 0)$.
17. **(B)** 14 out of the 44 people to serve as president of the United States prior to 2020 had previously been vice president. So, $\frac{14}{44}$ of the presidents had been vice presidents. Set up an equation expressing this as follows:

$$V = \frac{14}{44}P \rightarrow V = \frac{7}{22}P.$$

Therefore, the answer is choice (B).

18. **(144)** For the equations to have infinitely many solutions, they must be multiples of one another. Rearrange the equations so that the x and y terms match:

$$-\frac{1}{4}x + \frac{1}{6}y = 12$$

$$-3x + 2y = a$$

Notice that -3 is 12 times $-\frac{1}{4}$ and that 2 is 12 times $\frac{1}{6}$. So, multiply the 12 from the first equation by 12 to find the value of a in the second equation:

$$12 \times 12 = 144$$

So, $a = 144$.

19. **(D)** Given that J stands for the number of people from Julian's side of the family and that M stands for the number of people from Maria's side of the family, the first inequality should be $M + J > 200$, since they want to have more than 200 people in attendance. The second inequality represents the costs. The total cost for the reception should be less than \$18,000, and the cost for each invited guest is \$40. So, the second inequality should be $40(M + J) < 18,000$ to model this relationship. These two inequalities correspond to choice (D).
20. **(B)** Use unit analysis to cancel out the necessary terms and convert the value to the required terms:

$$\begin{aligned} 30 \frac{\text{Miles}}{\text{Hour}} \times \frac{5,280 \text{ Feet}}{1 \text{ Mile}} \times \frac{1 \text{ Hour}}{3,600 \text{ Seconds}} &\rightarrow \\ 30 \frac{\cancel{\text{Miles}}}{\cancel{\text{Hour}}} \times \frac{5,280 \text{ Feet}}{1 \cancel{\text{Mile}}} \times \frac{1 \cancel{\text{Hour}}}{3,600 \text{ Seconds}} &\rightarrow \\ \frac{30 \times 5,280}{3,600} = 44 \frac{\text{Feet}}{\text{Second}} \end{aligned}$$

21. **(43)** Since there are 360 degrees in a circle, the sector designated by $\angle ACB$ represents $\frac{100}{360}$ of the total area of the circle. The area for this circle is found using the formula πr^2 , and the radius of the circle is 7. So, multiply the area of the circle by the fraction of the area that the sector represents to find the sector's area:

$$\pi 7^2 \times \frac{100}{360} = 42.74$$

This would be rounded to an area of 43, since that is the nearest whole square unit.

22. **(C)** Use C to represent the number of cups of coffee Shantiel purchased, and T to represent the number of cups of tea purchased. Set up a system of equations to solve for C . First, since the number of cups of coffee is half the number of cups of tea, one equation would be $C = \frac{1}{2}T$. The second equation represents the milligrams of caffeine. Since there are 95 milligrams in each cup of coffee and 26 milligrams in each cup of tea, the equation would be $95C + 26T = 735$. Solve for C by using substitution from the first equation:

$$C = \frac{1}{2}T \rightarrow$$

$$2C = T$$

Now substitute $2C$ in for T into the second equation, then solve for C :

$$95C + 26T = 735 \rightarrow$$

$$95C + 26(2C) = 735 \rightarrow$$

$$95C + 52C = 735 \rightarrow$$

$$147C = 735 \rightarrow$$

$$C = \frac{735}{147} = 5$$

So, she purchased 5 cups of coffee, which corresponds to choice (C).

PART 7

Practice Test 3: Adaptive

Adaptive Test Overview

You are about to take an Adaptive SAT Practice Test. This will simulate the section-adaptive format of the Digital SAT. Depending on your performance on the first module of each section, you will have a more difficult or less difficult second module of each section. (In order to maximize your potential practice material, there are no overlapping questions in any of the modules—i.e., if you do Reading and Writing Module 2B, for example, you can still go back and try Reading and Writing Module 2A for a later practice exercise.) The format of the test is outlined in the table below. You can use a calculator throughout the math section. Good luck!

SAT Module	Format
Reading and Writing Module 1	32 Minutes, 27 Questions, Standard Difficulty Score the module after completion to determine whether you do 2A or 2B.
Reading and Writing Module 2A or 2B	32 Minutes, 27 Questions, Adaptive Difficulty If you get 17 or fewer questions correct on the first module, do the less challenging Module 2A. If you get 18 or more questions correct on the first module, do the

	more challenging Module 2B.
Break—10 Minutes	
Math Module 1	35 Minutes, 22 Questions, Standard Difficulty _____ Score the module after completion to determine whether you do 2A or 2B.
Math Module 2A or 2B	35 Minutes, 22 Questions, Adaptive Difficulty _____ If you get 13 or fewer questions correct on the first module, do the less challenging Module 2A. _____ If you get 14 or more questions correct on the first module, do the more challenging Module 2B

TEST TIP

For helpful features the Digital SAT provides while taking the test, please refer to the Introduction at the beginning of this book and the labeled screenshots provided.

Practice Test 3: Adaptive

Section 1, Module 1: Reading and Writing

32 MINUTES, 27 QUESTIONS

DIRECTIONS ▼

You will be tested on a variety of important reading and writing skills. Each question has one or more passages, possibly including a graph or table. Carefully read each passage and question and choose the best answer to the question based on the passage(s).

Every question in this section is multiple-choice, with four possible answers. Each question has only one best answer.

1

MODULE 1

1

Even if a person does “make it” by creating original content and _____ a viewer base, a career as an influencer is not very stable. Recent changes to an Internet company’s monetization algorithm had thousands of short video creators up in arms as they saw profits plummet with no explanation from the platform.

1

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ manufacturing
- Ⓑ fabricating
- Ⓒ escalating
- Ⓓ building

Born in 1644 during the Tokugawa period (also known as the Edo period), Matsuo Bashō became interested in poetry and literature after going to Ueno Castle and being in the _____ the lord's son.

2

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ company of
- Ⓑ incorporation of
- Ⓒ commerce of
- Ⓓ profession as

Scientists found a way to avoid the negative impact of chemical selectivity by implementing a more controlled reaction process. Scientists _____ the benzene reaction to produce a product like what they originally intended, but one that did not add multiple sidechains to the benzene ring. This technique came to be known as Friedel-Crafts Acylation, a now widely used technique in the production of benzene-containing products.

3

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ modified
- Ⓑ expunged
- Ⓒ ousted
- Ⓓ proposed

In his most recent, *Words Without Music*, Glass discusses his influences, beginning with his Jewish father who ran a record shop in Baltimore. His father's love for Schubert, Shostakovich, and Bartók _____ in Glass a love

for music; by the time he was fifteen years old, he had become the classical-music buyer for the record shop.

4

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ took
- Ⓑ spurred
- Ⓒ used
- Ⓓ inspire

During transcription, nucleotides are polymerized into a strand of mRNA whose sequence is complementary to that of the template DNA. This “pre-mRNA” typically contains several regions of non-coding material, or “introns,” that must be excised prior to translation of the protein-coding regions, which are referred to as “exons.” In a complex process known as splicing, the introns are extracted and degraded, while the adjacent ends of exons are adjoined, and trafficked out of the nucleus to the endoplasmic reticulum, where protein synthesis can at last begin.

5

As used in the text, what does the word “excised” most nearly mean?

- Ⓐ Removed
- Ⓑ Translated
- Ⓒ Coded
- Ⓓ Mutated

A third of all Fortune 500 CEOs possess liberal arts degrees. LEAP, or Liberal Education & America’s Promise, is an initiative launched by the Association of American Colleges & Universities to emphasize the importance of a 21st-century liberal arts education for individuals and a

nation “dependent on economic creativity and democratic vitality.” According to LEAP’s recent national survey, 93% of employers say that “a demonstrated capacity to think critically, communicate clearly, and solve complex problems is more important than undergraduate major.” You’ve guessed it—these three skill sets are the unifying objective of liberal arts programs nationwide.

6

Which choice best describes the overall structure of the text?

- Ⓐ The writer explains the outline of a liberal arts curriculum.
- Ⓑ The writer begins with a historical survey and ends with a financial analysis.
- Ⓒ The writer considers expert opinions, then refutes these opinions with statistical evidence.
- Ⓓ The writer introduces an initiative, then justifies its economic relevance.

Text 1

As online education becomes accredited and archives make it easy for employers to see students’ work and achievements, open online education is in position to overtake its predecessor. Digital credentials, reputable degrees, and professional certificates mean that employers cannot only rest assured that employees have extensive training and knowledge, but will also, for the first time, be able to effortlessly glimpse academic accomplishments, rather than try to decipher the meaningless acronyms on standardized transcripts.

Text 2

The open educational movement really took off in 2008; and, within just a few short years, providers like Coursera, Udacity, and edX emerged among hundreds of other self-paced, virtual education platforms, including the immensely popular Khan Academy, that offer quality learning at a great

price, *free*. Now, students could enjoy learning outside of a formal education environment with asynchronous and unconstrained access to free content.

7

Based on the texts, what would the author of Text 1 most likely say about Text 2's characterization of the open educational movement?

- Ⓐ It underscores a threat to the quality level of online educational offerings, presaging a loss of recognition for online credentials.
- Ⓑ It addresses the major objection to in-person educational programs, given the clear link between free programming and professional certifications.
- Ⓒ It demonstrates that while more people have access to free offerings on the Internet, there are fewer opportunities for businesses to profit from these developments.
- Ⓓ It shows that barriers to online education have been reduced, likely enhancing the popularity of online certifications.

The following text is from is Walt Whitman's 1881 poem "No Labor-Saving Machine."

No labor-saving machine,
Nor discovery have I made;
Nor will I be able to leave behind me any wealthy bequest to found a
hospital or library,
Nor reminiscence of any deed of courage, for America,
Nor literary success, nor intellect—nor book for the book-shelf;
Only a few carols, vibrating through the air, I leave,
For comrades and lovers.

8

What is the main idea of the text?

- Ⓐ Practical achievement is inherently better than transcendental creation.
- Ⓑ The narrator prioritizes human connection over more visible success.
- Ⓒ American success is synonymous with literary accomplishments.
- Ⓓ Technology is inherently necessary to musical advancement.

The following text is adapted from James Joyce’s 1914 story “An Encounter.” A young, unnamed narrator searches for release from the constraints of daily routine.

It was Joe Dillon who introduced the Wild West to us. He had a little library made up of old numbers of *The Union Jack*, *Pluck*, and *The Halfpenny Marvel*. Every evening after school we met in his back garden and arranged [battles]. He and his . . . brother Leo, the idler, held the loft of the stable while we tried to carry it by storm; or we fought a pitched battle on the grass. But, however well we fought, we never won siege or battle and all our bouts ended with Joe Dillon’s . . . dance of victory. His parents went to eight-o’clock mass every morning in Gardiner Street and the peaceful odor of Mrs. Dillon was prevalent in the hall of the house. But he played too fiercely for us who were younger and more timid.

9

Based on the text, Joe Dillon’s personality is mostly

- Ⓐ accommodating.
- Ⓑ forceful.
- Ⓒ compromising.
- Ⓓ dishonest.

“How Like a Winter My Absence Hath Been” is a 1609 poem by William Shakespeare. In the poem, the narrator addresses an unseen person, expressing his longing for them. An English teacher claims that the narrator expresses a deep personal feeling of melancholy: _____

10

Which quotation from the poem most effectively illustrates the claim?

- Ⓐ “What freezings have I felt, what dark days seen! / What old December’s bareness everywhere!”
- Ⓑ “And yet this time removed was summer’s time; / The teeming autumn, big with rich increase,”
- Ⓒ “For summer and his pleasures wait on thee, / And, thou away, the very birds are mute.”
- Ⓓ And thou away, the very birds are mute: / Or, if they sing, ’tis with so dull a cheer,”

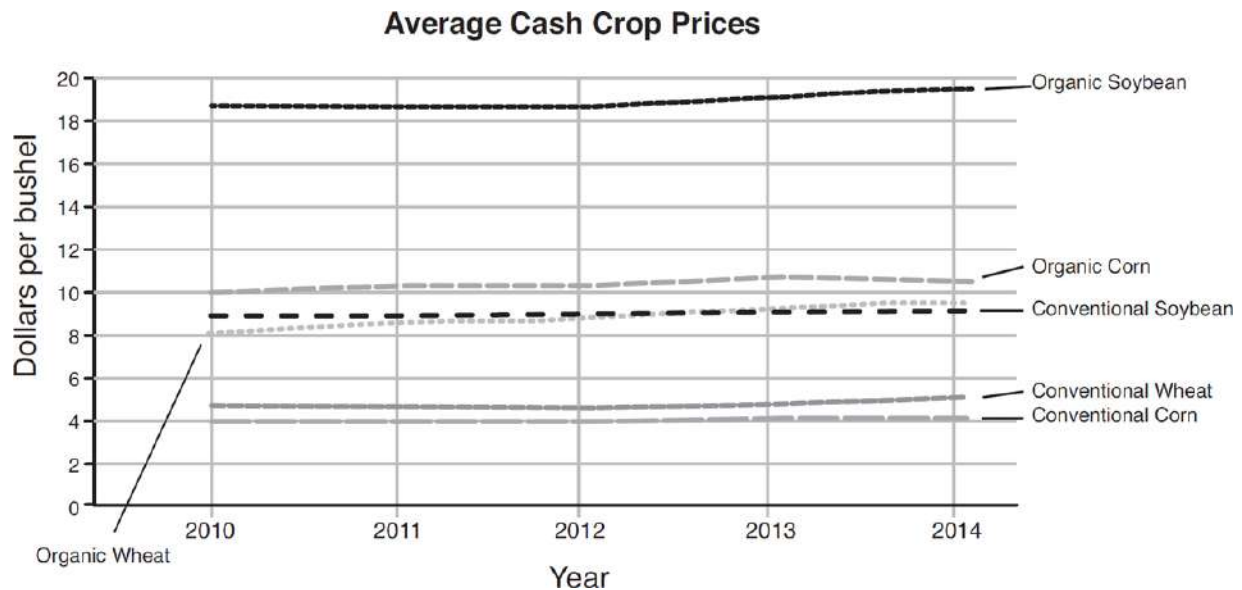
Immobility has many harmful effects on the human body, ranging from bone degradation to cardiac atrophy. This is often seen in astronauts who return from space. Even with workout equipment and hours of exercise completed, astronauts still suffer from cardiac atrophy as a response to immobility. During hibernation, bears do not experience cardiac atrophy—unraveling how bears can combat the harmful effects of long periods of immobilization could provide numerous benefits in human medicine. Therefore, research about bear hibernation will lead to significant applications for human astronauts in the quest to minimize the negative effects of long immobility.

11

Which of the following, if true, would most directly undermine the author’s hypothesis?

- Ⓐ Bears are found to have more success than humans in reducing their muscle atrophy over extended periods of time.

- Ⓑ Humans are unable to enter a state of hibernation like bears can.
- Ⓒ Astronauts who performed no exercise while travelling in a spacecraft experienced greater muscle atrophy than astronauts who did exercise.
- Ⓓ Bears that are placed in orbit in a spacecraft had a similar level of muscle atrophy as did humans in the same spacecraft.



Organic crops have become increasingly popular with consumers who seek out food raised without chemical pesticides. Many consumers, however, are deterred from purchasing organic crops due to the increased costs. A consumer researcher claims that the prices of organic crops can often be substantially higher than those of conventionally raised crops:

12

Which choice most effectively uses data from the graph to complete the example?

- Ⓐ The prices of both conventional wheat and organic corn remained largely constant between 2010 and 2014.

- Ⓐ The price of organic soybeans was approximately twice that of conventional soybeans between 2010 and 2014.
- Ⓑ While organic soybeans may be rather expensive, organic wheat was only around 9 dollars a bushel throughout the years 2010 to 2014.
- Ⓒ Organically grown fruits and vegetables are likely much more expensive than organically grown grains.

Daisy Bates was the president of the Arkansas State Conference of the NAACP in the 1950s. She wrote a letter to NAACP executive secretary Roy Wilkins on December 17, 1957, about the situation in the Little Rock schools, which had recently been required to comply with the recent decision by the federal government to integrate schools. She wanted to convince school officials that schools should integrate in a safe manner.

13

Which selection from the letter from Daisy Bates best indicates that she succeeded in convincing school officials of her point of view?

- Ⓐ “We strongly challenged this statement, which he denied making in that fashion.”
- Ⓑ “We also pointed out that the treatment of the children had been getting steadily worse for the last two weeks in the form of kicking, spitting, and general abuse.”
- Ⓒ “As a result of our visit, stronger measures are being taken against the white students who are guilty of committing these offenses. For instance, a boy who had been suspended for two weeks, . . . on his return to school, the first day he knocked Gloria Rey into her locker. As a result of our visit, he was given an indefinite suspension.”
- Ⓓ “[The president] has stated his willingness to come down and address the student body if invited by student leaders of the school. This information was passed on to the principal of the school, but we have not been assured that leadership would be

given to children in the school who are willing to organize for law and order.”

Presidential Candidates	Political Party	Number of Votes	Popular Vote Percentage	Number of Electoral Votes	Electoral Vote Percentage
Woodrow Wilson	Democratic	6,294,284	41.83%	435	81.9%
Theodore Roosevelt	Progressive	4,120,409	27.39%	88	16.6%
William Taft	Republican	3,487,937	23.18%	0	0.0%
Eugene Debs	Socialist	900,742	5.99%	0	0.0%
Other		33,859	0.23%	0	0.0%
Total		15,045,546		531	

The electoral college system in the United States is used to select electors who then select the winner of the U.S. Presidency. A shortcoming of this system is that it is quite difficult for third parties to have their voices heard since it is a “winner-take-all” system. A political scientist claims that a major plus of the electoral college, on the other hand, is that even if a candidate only secures a plurality of the popular vote, they will end up with a majority of the electoral vote, contributing to the country unifying around a single leader.

14

Which choice best describes data from the table that support the political scientist’s claim?

- Ⓐ In the 1912 presidential election, five major candidates participated, together earning nearly 100% of the total votes cast.
- Ⓑ The Socialist and Prohibition parties had a strong showing in the 1912 presidential election, together earning over 6% of the popular votes cast.
- Ⓒ In the 1912 presidential election, Woodrow Wilson secured only 41.83% of the popular vote but won 81.9% of the electoral vote.
- Ⓓ Teddy Roosevelt came up short in his quest for the 1912 presidency, earning only 16.6% of the electoral votes.

Motivation is something that drives someone to do something. Intrinsic motivators arise from the individual. Extrinsic motivators are outside forces acting upon an individual. Examples of intrinsic motivators are personal enjoyment, self-fulfillment, and having fun. These examples could be observed in real life as dancing because you like it, reading a book about a topic of personal interest, or journaling because it helps organize thoughts. Examples of extrinsic motivators are money, avoiding consequences, and getting something valued in return for doing something. These examples could be observed in real life as promising a child a toy for taking medicine, going to work to earn money, or _____

15

Which choice most logically completes the text?

- Ⓐ contemplating the meaning of a painting for personal enjoyment.
- Ⓑ watching movies on a streaming service.
- Ⓒ following the law to avoid being arrested.
- Ⓓ going on a vacation to a place on your bucket list.

People have different opinions on the key to success. Being successful is not a single-person act. _____ needs others in order to succeed and thrive.

16

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ It may, seem unfair, but everyone
- Ⓑ It may seem unfair but, everyone
- Ⓒ It may seem unfair, but everyone
- Ⓓ It may seem unfair but everyone

Cats have woven _____ way throughout much of human history. The earliest evidence of a cat being kept as a pet comes from a grave in Cyprus dated to about 9,500 years ago in which a cat was buried with its owner, likely out of love and respect for the animal.

17

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ its
- Ⓑ it's
- Ⓒ there
- Ⓓ their

The job search can be very frustrating for people who don't realize a key element in most _____ you know, it's whom you know. This old axiom is true in hiring discussions across the United States.

18

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ hiring processes, its not what
- Ⓑ hiring processes, it's not what
- Ⓒ hiring processes; its not, what
- Ⓓ hiring processes: it's not what

Hugo Ball, a writer from Zürich, Switzerland, founded the Dada movement in 1916 as a means of expressing his view that the war started due to societal collapse. It is believed that Ball's Dada movement _____ after a meeting with his Cabaret Voltaire: a Zürich-based group of artists and individuals against the war.

19

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ taking off
- Ⓑ has taken off
- Ⓒ took off
- Ⓓ taking of

During the process of photorespiration, there is a release of carbon dioxide, a consumption of oxygen, and no chemical energy or food is produced. As a result, photorespiration is considered to be a waste of energy—it does not

20

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ provide the organism; with the food it needs to thrive.
- Ⓑ provide the organism, with the food it needs to thrive.
- Ⓒ provide, the organism with the food, it needs to thrive.
- Ⓓ provide the organism with the food it needs to thrive.

The crassulacean acid metabolism (CAM) photosynthetic process is an unusual plant adaptation that _____ plants to photosynthesize during the day and perform carbon fixation at night.

21

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ enabled
- Ⓑ enabling

- Ⓒ enables
- Ⓓ have enabled

Like with other artistic pursuits, arguably the best training comes from working as an apprentice with a master of the craft. Aspiring chefs may set up _____ a cook to learn new cooking methods from a highly respected professional.

22

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ a “stage” an unpaid internship, with
- Ⓑ a “stage”—an unpaid internship—with
- Ⓒ a “stage” an unpaid internship with
- Ⓓ a “stage”—an unpaid internship: with

While hunting, platypuses store their prey in their cheeks and break down their food using gravel or dirt from the water _____ they have grinding plates in their bills instead of teeth.

23

Which choice completes the text with the most logical transition?

- Ⓐ while
- Ⓑ whenever
- Ⓒ but
- Ⓓ since

Soap does not kill just bacteria that are fatal to humans. _____ it works as an agent to remove all germs. Therefore, humans who over-wash have much less exposure to relatively harmless germs that their immune systems _____ld be able to fend off.

Which choice completes the text with the most logical transition?

- Ⓐ Also,
- Ⓑ Granted,
- Ⓒ Instead,
- Ⓓ Additionally,

While researching a topic, a student has taken the following notes:

- Dayton, a city in southwest Ohio, is the birthplace of many inventions.
- Wilbur and Orville Wright, residents of Dayton, conducted aviation research and experiments and developed the first successful motor-powered airplane.
- The self-starter for cars was also invented in Dayton by Charles F. Kettering, allowing motorists to stop hand cranking their vehicles.
- The ice cube tray with a quick release mechanism is another Dayton invention. Before this innovation, ice cubes couldn't be released from the tray without a soak in hot water.
- The Boolean search method and the pop top for soda cans were also invented in Dayton.

The student wants to present general information about Dayton to an audience unfamiliar with it. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ The quick release mechanism on the ice cube tray is a useful invention, since prior to its creation, ice cubes would have to be removed from a tray using hot water.
- Ⓑ Charles Kettering, a Dayton resident, was a key figure in the development of automotive technology.

- Ⓒ Southwest Ohio city Dayton is the home of many useful inventions in fields ranging from aviation to consumer goods.
- Ⓓ Without the contributions of Wilbur and Orville Wright, the famous inventors of the airplane, Dayton would not have the renown it presently does.

While researching a topic, a student has taken the following notes:

- Many people think piranhas are extremely dangerous animals that regularly eat people.
- There are many different types of piranhas and some are vegetarians. The most common type, the red-bellied piranha, is carnivorous.
- Like sharks, piranhas have an excellent sense of smell and carnivorous piranhas are attracted by blood.
- Piranhas live in groups and in murky water. When one piranha takes a bite of food, it signals to nearby piranhas that there is food.
- Researchers have found that piranhas exhibit shoaling behavior for their own safety against predators and to protect their nests.

26

The student wants to correct a misconception that piranhas exclusively eat animals. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ Despite popular understanding, there are in fact some varieties of piranhas that only eat plants.
- Ⓑ Piranhas are fiercely protective of their habitats, especially their nests.
- Ⓒ While many think that piranhas eat only meat, they also are avid consumers of blood.
- Ⓓ Even though piranhas are primarily carnivorous, this is actually not supported by the latest research.

While conducting research, a student took these notes:

- Some astronomers have long warned of the dangers of a large asteroid strike on Earth.
- It has long been hypothesized that asteroid impact could lead to the extinction of hundreds if not thousands of species of animals.
- Many scientists have studied the idea of predicting and avoiding asteroid impact, but few definitive strategies have emerged.
- Everything from lasers to bombs have been suggested as possible ways to change the trajectory of a near-impact asteroid.
- In 2022, NASA crashed a spacecraft into small asteroid, succeeding in modifying its orbit.

27

The student wants to suggest a constructive strategy to the “astronomers” as mentioned in the notes. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ Since an asteroid will inevitably lead to demise of life on Earth, humans should proceed in earnest to colonize other worlds.
- Ⓑ Given the possible threat from a large asteroid strike, researchers should build upon the success of NASA’s asteroid orbital modification.
- Ⓒ The militarization of space with lasers and bombs is necessary to prevent the extinction of many species of animals.
- Ⓓ Concern about an asteroid impact on Earth is unwarranted given the latest scientific predictions about its likelihood.

ANSWER KEY

Practice Test 3: Adaptive

Section 1, Module 1: Reading and Writing

1. D
2. A
3. A
4. B
5. A
6. D
7. D
8. B
9. B
10. A
11. D
12. B
13. C
14. C
15. C
16. C
17. D
18. D
19. C
20. D

- 21. C
- 22. B
- 23. D
- 24. C
- 25. C
- 26. A
- 27. B

Total Correct Answers: _____ / 27

Did you get 17 or fewer questions correct? If so, move to Reading and Writing Module 2A on [page 759](#).

Did you get 18 or more questions correct? If so, move to Reading and Writing Module 2B on [page 769](#).

Section 1, Module 2A: Reading and Writing

32 MINUTES, 27 QUESTIONS

DIRECTIONS ▼

You will be tested on a variety of important reading and writing skills. Each question has one or more passages, possibly including a graph or table. Carefully read each passage and question and choose the best answer to the question based on the passage(s).

Every question in this section is multiple-choice, with four possible answers. Each question has only one best answer.

1

MODULE 2

1

Juan was surprised by what he heard but _____ the information as lies. He knew many of his peers were jealous of his success, but he doubted they would stoop so low.

1

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ reduced
- Ⓑ forgot
- Ⓒ conceded
- Ⓓ dismissed

Unique markings allow the servals to blend into the waving grasses on the savannahs where they make their homes. Camouflaging into their habitat

allows servals to approach their favorite prey without being _____

2

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ pictured.
- Ⓑ envisioned.
- Ⓒ ignored.
- Ⓓ detected.

When the speaker was done, the crowd rose and clapped vigorously. Yet, at the question-and-answer session, attentive spectators _____ several points—particularly that the speech’s moral lesson came off as condescending and was generally unfounded.

3

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ increased
- Ⓑ elevated
- Ⓒ raised
- Ⓓ nourished

A promising alternative fuel source is biodiesel. Biodiesel is made from animal fats, plant fats, and even used grease from restaurants. The glycerol backbone is removed from the fat, breaking the fat into three different chains, which are then reacted with an alcohol to form the biodiesel. This type of chemical reaction is called a transesterification.

4

As used in the text, what does the word “breaking” most nearly mean?

- Ⓐ Flouting
- Ⓑ Eliminating
- Ⓒ Separating
- Ⓓ Categorizing

After platypuses first appeared in Australia about 100 million years ago, they took over the country's _____ however, when marsupials appeared in Australia 54 to 71 million years ago, they became the country's dominant species everywhere but in the water.

5

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ panorama;
- Ⓑ perspective;
- Ⓒ landscape;
- Ⓓ agriculture;

Great Expectations is an 1861 novel by Charles Dickens. In the story, Pip, a poor orphan who is cared for by his sister and her husband, meets the young girl who will become the lifetime object of his affections while simultaneously becoming aware of his lowly position in the British class system.

For a long time I went once a week to this strange, gloomy house—it was called Satis House—and once Estella told me I might kiss her.

And then Miss Havisham decided I was to be apprenticed to Joe, and gave him £25 for the purpose; and I left off going to see her, and helped Joe in the forge. But I didn't like Joe's trade, and I was afflicted by that most miserable thing—to feel ashamed of home.

6

As used in the text, what does the word “afflicted” most nearly mean?

- Ⓐ Diseased
- Ⓑ Strengthened
- Ⓒ Emboldened
- Ⓓ Troubled

Unlike other viruses for which vaccines are available—several of which, through tenacious public health efforts, have been eradicated worldwide—influenza remains a perennial menace, and due to the unique nature of its genome, is unlikely to ever be completely conquered.

7

Which choice best states the main purpose of the text?

- Ⓐ To express that influenza will continue to be a threat despite scientific advances
- Ⓑ To argue that influenza can be fully eradicated with sufficient research funding
- Ⓒ To highlight how influenza is unique among diseases in the severity of its symptoms
- Ⓓ To celebrate that influenza has been eliminated as a pervasive threat to humanity

The following text is adapted from Elizabeth Cady Stanton’s 1867 address to the Judiciary Committees of the legislature of New York. She argued for the right of Black men and all women to vote in the election of delegates to the Constitutional Convention.

The wheel of progress moves onward, and man must, in the nature of things, throw off old customs, creeds and codes, as the snake sheds its skin in the new growth, and from the dead letters of the past, emerge into higher civilization. History shows that each generation has been

marked by some new idea, alike tending to the greater freedom and equality of man; and those who, in their blindness or folly, have tried to block this onward march, have invariably been ground to powder. We see a signal instance of this in the summary manner in which an indignant people have ridden rough-shod over Andrew Johnson and his satellites—showing that even the head of a nation is nothing, but as he represents the leading ideas of his generation. They only are immortal who link the future to the past and roll on the triumphal car of progress to the brighter and the better day.

8

Which choice best states the main idea of the text?

- Ⓐ Recent events have demonstrated the inability of Andrew Johnson to effectively lead the United States.
- Ⓑ The march toward equality is inevitable and leaders should embrace, rather than fight, the coming changes.
- Ⓒ Those who stand in the way of social progress should instead redouble their efforts to maintain the status quo.
- Ⓓ The examples of harmonious animals in nature should inspire humans to create a more just society.

In the 1954 U.S. Supreme Court case *Brown v. Board of Education*, American schools were legally desegregated. In making this decision, the court observed that minority students at segregated schools were usually educationally disadvantaged relative to students at integrated schools.

9

Which quotation from the court's decision best illustrates the court's observation?

- Ⓐ "In each instance, they had been denied admission to schools attended by white children"

- Ⓑ “[In prior cases it was held that] equality of treatment is accorded when the races are provided substantially equal facilities even though these facilities be separate . . .”
- Ⓒ “Segregation with the sanction of law, therefore, has a tendency to [slow] the educational and mental development of [minority] children and to deprive them of some of the benefits they would receive in a racially integrated school system . . .”
- Ⓓ “This disposition makes unnecessary any discussion whether such segregation also violates the Due Process Clause of the Fourteenth Amendment.”

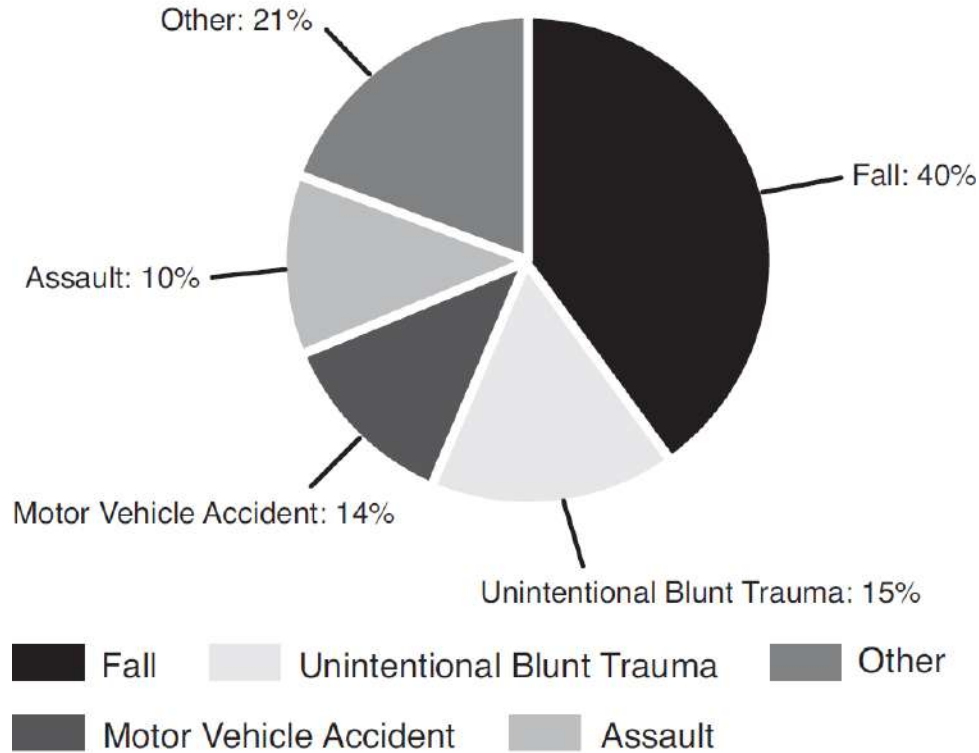
Probiotics are full of millions of bacteria to help create a better digestive system. A popular type of probiotic is one that must be refrigerated. One researcher claimed that the requirement of cold temperatures makes this type of probiotic ill-suited for ingestion in the stomach.

10

Which of the following, if true, would most directly support the researcher’s hypothesis?

- Ⓐ Probiotics that are commonly found in warmer climates are found to have a statistically significant effect on digestive health when used as advised by a doctor.
- Ⓑ The effectiveness of probiotics is negatively affected when consumed in conjunction with a lukewarm beverage.
- Ⓒ Probiotics that naturally thrive in a colder environment are more likely to be hypersensitive to the high temperatures and acidity of the human stomach.
- Ⓓ People who are taking antibiotics for respiratory illnesses typically find that the effectiveness of probiotics is greatly diminished.

Leading Causes of Traumatic Brain Injuries



Source: Centers for Disease Control

A researcher is investigating perceptions about the leading causes of traumatic brain injuries. The researcher finds that most Americans believe that violent physical assaults and car crashes are the most significant source of traumatic brain injuries. The researcher would like to educate the American public on the fact that while car crashes and physical assaults are a significant source of traumatic brain injuries, the larger danger is from less dramatic injuries that could take place closer to home:

11

Which choice most effectively uses data from the graph to complete the example?

- Ⓐ Falls and unintentional blunt trauma cause approximately 55% of traumatic brain injuries.

- Ⓐ Further research is needed on the 21% of “other” causes of traumatic brain injuries.
- Ⓑ The majority of traumatic brain injuries are caused by a source other than falls.
- Ⓒ Motor vehicles are, in fact, more likely to cause traumatic brain injuries than physical assaults.

Because of the antimicrobial properties of soap, a thorough washing will take away almost all bacteria from a surface. Whether a person is washing their hands or wiping down their countertop, soap creates a sterile environment. This is crucial at times when pernicious bacteria are present (like when handling raw food or after using the restroom). However, living in a constantly sterile environment is, for the average person, _____

12

Which choice most logically completes the text?

- Ⓐ not necessary.
- Ⓑ quite advisable.
- Ⓒ a highly personal decision.
- Ⓓ a viable option.

Get-rich-quick schemes have probably existed since humans first used money to buy instead of goods to barter. Most have learned to be wary of people and organizations that claim to be an easy path to riches. However, in the 1950s a new type of scheme emerged disguised as a work or career opportunity but was designed to pad the pockets of a select few. This effective setup targeted young women who found life at home to be boring after returning to domesticity after World War II. It allowed a woman to feel like she was contributing financially to her family’s well-being while still maintaining her role in the household. This sales system, called multi-level marketing (MLM), still pervades our society today, _____

13

Which choice most logically completes the text?

- Ⓐ giving ambitious young professionals the opportunity to advance their careers.
- Ⓑ inspiring women to break through the glass ceiling to achieve financial windfalls.
- Ⓒ with an increased level of interest leading up to military conflicts.
- Ⓓ promising unsuspecting targets the chance at great wealth—for a cost.

Throughout Europe, the Age of Enlightenment ushered in a renewed and unprecedented interest in scientific investigation. A devotee to the zeitgeist, 17th-century scientist Robert Boyle redefined the word “element” to describe a substance that cannot be degraded into simpler forms by chemical reaction. His definition not only liberated the word from its erroneous Aristotelian origins, but it survived for a full 300 years—during which it was used in the invention of the periodic table—until

14

Which choice most logically completes the text?

- Ⓐ the theory of biological evolution became quite popular.
- Ⓑ the discovery of subatomic particles in the 20th century.
- Ⓒ democratic governance attained global prominence.
- Ⓓ space exploration changed from a fantasy to reality.

Since the beginning of roller derby, it _____ included players who are often marginalized in society because of their race, which is something that continues to be the case even today.

15

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ has
- Ⓑ have
- Ⓒ had
- Ⓓ will have

March was abnormally _____ the latter part of the month. April, however, was unusually warm for the springtime.

16

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ cool; especially so during
- Ⓑ cool especially so during
- Ⓒ cool, especially so during
- Ⓓ cool. Especially so during

Prospective employees see the listings, apply, and wait eagerly by the phone only to never hear anything. No response at all for one job after another—

17

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ demoralizing quite it can be.
- Ⓑ quite demoralizing, it can be.
- Ⓒ demoralizing it can be quite.
- Ⓓ it can be quite demoralizing.

Some graffiti decreases the value of an area by making it appear abandoned and unkempt. Other graffiti spruces up a blank wall, adds much needed color, and creates art in an otherwise dismal space. _____

18

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ How are cities supposed to decide what to leave; and what to paint over?
- Ⓑ How are cities supposed to decide, what to leave and what to paint over?
- Ⓒ How are cities supposed to decide: what to leave and what to paint over?
- Ⓓ How are cities supposed to decide what to leave and what to paint over?

For many students approaching the end of their collegiate studies, the prospect of finding a job is daunting. While some will already have leads based on professor recommendations or internship work, others will look at thousands of posts on online job boards and _____

19

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ felt overwhelmed.
- Ⓑ felt overwhelming.
- Ⓒ feel overwhelming.
- Ⓓ feel overwhelmed.

Each discipline has its own focus, but the thought process and science underlying all engineering problems are more similar than different. This

empowers _____

20

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ an engineer; to think in an interdisciplinary way.
- Ⓑ an engineer—to think in an interdisciplinary way.
- Ⓒ an engineer to think in an interdisciplinary way.
- Ⓓ an, engineer, to think in an interdisciplinary way.

Whereas a traditional English teacher might assign canonical texts and then assess a _____ understanding of plot, setting, and character analyses, a critical English teacher assigns literature with a goal in mind of what the class will get from that particular text, and then encourages the class to talk about how the social issues reflect their own lives, whose voices weren't heard, and how the story might be told differently from another perspective.

21

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ classes
- Ⓑ class'es
- Ⓒ class's
- Ⓓ classes'

Both Truman and MacArthur were American leaders in the late 1940s and early 1950s in the aftermath of the Allied victory during World War II. Naturally, only one of them could emerge victorious from the rubble of _____ power struggle.

22

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ there
- Ⓑ their
- Ⓒ his
- Ⓓ one's

After a year and a half, Wilson's term as president ended and Edith became again just his wife. However, her role in running the country during Wilson's illness should be remembered by history. Whoever ends up being the first woman to take the oath of the office of president will

23

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ not be alone she will be standing in Ediths shadow.
- Ⓑ not be alone, she will be standing, in Edith's shadow.
- Ⓒ not be alone; she will be standing in Edith's shadow.
- Ⓓ not be alone, she will be standing in Ediths shadow.

Catering can be a good fit for those who would like to work as a chef on a more part-time basis, _____ they could schedule their catering jobs around their family obligations.

24

Which choice completes the text with the most logical transition?

- Ⓐ but
- Ⓑ which
- Ⓒ while

Ⓓ as

The biggest fundamental issue that impacts the fair treatment of guest workers is ensuring that guest workers have a voice. Laws may be in place; _____ they do nothing if the guest workers cannot speak up when something is wrong for fear of retribution.

25

Which choice completes the text with the most logical transition?

- Ⓐ consequently,
- Ⓑ and
- Ⓒ however,
- Ⓓ because

While conducting research, a student took these notes:

- The Battle of Gettysburg was a turning point in the American Civil War.
- General Meade commanded the Union forces at the Battle of Gettysburg while General Robert E. Lee commanded the Confederate troops.
- The battle lasted three days.
- Abraham Lincoln visited the site soon thereafter and gave the Gettysburg Address.
- The Battle of Gettysburg was the northernmost battle of the American Civil War.

26

The student wants to highlight the leaders of the opposing forces at the Battle of Gettysburg. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ Abraham Lincoln's leadership during the Battle of Gettysburg led to the defeat of Robert E. Lee's troops.
- Ⓑ Over a three-day period, the armies of the Union and the Confederacy met in furious combat on the battlefield of Gettysburg.
- Ⓒ While most of the Civil War was fought in the South, Lee ensured that the Battle of Gettysburg was fought in the North.
- Ⓓ The Union commander Meade and the Confederate commander Lee led their armies into combat at Gettysburg.

While researching a topic, a student has taken the following notes:

- Psoriasis is a common skin condition, affecting one out of 100 Americans.
- Psoriasis is an autoimmune condition, caused by an overactive immune system.
- Psoriasis often presents as itchy, silvery plaques, or patches, on the skin, which can become irritated and bleed.
- People with psoriasis can have just the skin changes, just arthritis, or both, called psoriatic arthritis.
- Psoriasis is not contagious, but if the effects or appearance are bothersome, there are many treatment options.

27

The student wants to share information about psoriasis to a friend who is extremely concerned about having it to help the friend become less worried. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ Psoriasis is caused by an immune system that is not functioning normally.
- Ⓑ Psoriasis can lead to arthritic symptoms.
- Ⓒ Psoriasis can cause skin irritation and bleeding.

Ⓓ There are many treatment options for psoriasis.

Section 1, Module 2B: Reading and Writing

32 MINUTES, 27 QUESTIONS

DIRECTIONS ▼

You will be tested on a variety of important reading and writing skills. Each question has one or more passages, possibly including a graph or table. Carefully read each passage and question and choose the best answer to the question based on the passage(s).

Every question in this section is multiple-choice, with four possible answers. Each question has only one best answer.

1

MODULE 2

1

Even though it is illegal to do so, some farms and companies do not reimburse guest workers for visa fees and other travel expenses related to obtaining the jobs. Some of the recruiters have even threatened the lives of the families of the guest workers if they did not _____ with the fees.

1

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ observe
- Ⓑ comply
- Ⓒ disobey
- Ⓓ ignore

A 1999 article, “The Importance of Music in Early Childhood,” advocated for music education in learning of language, mathematics, and social studies. Music—readily available and easily engaged—is a powerful memory _____ that can be approached via “play,” beginning in delight but ending in knowledge.

2

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ trigger
- Ⓑ souvenir
- Ⓒ dialect
- Ⓓ indoctrination

When he was in high school at a predominantly white institution, Countee Cullen excelled, despite being one of the few African American students who attended. Additionally, he developed his talents and served as the editor of the high school newspaper and literary magazine and even won a local award for his poetry. Later, he was accepted into New York University, where he received several awards; most notably, he won second place for the Witter Bynner Undergraduate Poetry Contest for his 1923 poem “The Ballad of the Brown Girl.” Following his graduation from New York University, Cullen became _____ poet with works like “Copper Sun” and “The Black Christ” and other poems.

3

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ a notorious
- Ⓑ an imminent
- Ⓒ an illustrated

- Ⓓ a renowned

Environmentally and cost-conscious planters use more modern solutions only when absolutely necessary. Modern technology allows farmers to test soil in various parts of a field and apply topical treatments as minimally as possible only in areas where it is needed. This process allows crop rotation and soil treatment to work together. However, the drones, testing machines, and high-end equipment for GPS fertilizer applications are very expensive for the average family farm. Consequently, crop rotation remains the _____ choice for everyday soil management.

4

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ periodic
- Ⓑ staple
- Ⓒ subsistent
- Ⓓ coarse

The first introduction many students have to the world of investment and the stock market is through their American history class when they learn about the devastating stock market crash that led into the Great Depression, or the market crash that much led us into the more recent Great Recession. However, what is rarely _____ students is the success that the majority of people experience in the stock market when they invest intelligently over a long period of time. Indeed, most of those high school students will (hopefully) go on to have a retirement account that invests in the stock market, allowing them to comfortably cease work between the ages of 65 and 70.

5

Which choice completes the text with the most logical and precise word or phrase?

- Ⓐ awarded to
- Ⓑ produced for
- Ⓒ panned out for
- Ⓓ impressed upon

The following text is from the Brothers Grimm 1812 fairy tale “The Mouse, the Bird, and the Sausage.”

They therefore drew lots, and it fell to the sausage to bring in the wood, to the mouse to cook, and to the bird to fetch the water.

And now what happened? The sausage started in search of wood, the bird made the fire, and the mouse put on the pot, and then these two waited till the sausage returned with the fuel for the following day. But the sausage remained so long away, that they became uneasy, and the bird flew out to meet him. He had not flown far, however, when he came across a dog who, having met the sausage, had regarded him as his legitimate booty, and so seized and swallowed him. The bird complained to the dog of this bare-faced robbery, but nothing he said was of any avail, for the dog answered that he found false credentials on the sausage, and that was the reason his life had been forfeited.

6

Which choice best describes the function of the underlined selection in the text as a whole?

- Ⓐ To give a dishonest explanation
- Ⓑ To provide a true excuse for the action
- Ⓒ To demonstrate the dog’s curiosity for the truth
- Ⓓ To display an attempt to find common ground

Though fermentation does not require oxygen consumption, it is not solely limited to anaerobic organisms. Even humans sometimes undergo fermentation when oxygen supplies are low. This often occurs when the

organism rapidly needs more energy than can be produced from cellular respiration alone. Some human cells undergo fermentation more often than others, depending on the cell's specific needs. One such example is during strenuous exercise, when oxygen demand for cellular respiration is unable to be met. This results in muscle cells undergoing lactic acid fermentation, which provides additional energy to prevent muscle fatigue.

7

Which choice best states the main purpose of the text?

- Ⓐ To illustrate that fermentation is the primary process whereby humans obtain energy
- Ⓑ To show that humans can use fermentation when extra energy is needed
- Ⓒ To explain how vigorous exercise is a way to minimize the amount of fermentation that takes place
- Ⓓ To describe how human muscles use fermentation instead of respiration to acquire energy

The following text is adapted from William T. Hamilton, Jr.'s 2020 novel *The Three Stages of Clarinda Thorbald*. In it, young Clarinda is waiting for the day of her wedding to arrive while conversing with her father.

“Listen, Clarinda, you mustn’t weep. Rather you must be filled with joy, for this is a festival. You have come into something new. A great responsibility grasps you in its hand. You are re-born. Nature calls you and you go—it is inexorable—you cannot help. You must not weep; rather you must sing and dance. You must array yourself in gold and in silk and go forth to meet the bridegroom.”

“Is there no way?” she asked with pleading in her voice. With terrible finality, he answered “No!”

8

Based on the text, Clarinda's father's ultimate attitude toward Clarinda's concerns can best be described as

- Ⓐ indulgent and patient.
- Ⓑ exasperated and dismissive.
- Ⓒ confused and questioning.
- Ⓓ friendly and understanding.

The following text is from the 1641 work *Meditations on First Philosophy* by René Descartes in which he muses about the nature of knowledge.

But, to this end, it will not be necessary for me to show that the whole of these are false—a point, perhaps, which I shall never reach; but as even now my reason convinces me that I ought not the less carefully to withhold belief from what is not entirely certain and indubitable, than from what is manifestly false, it will be sufficient to justify the rejection of the whole if I shall find in each some ground for doubt. Nor for this purpose will it be necessary even to deal with each belief individually, which would be truly an endless labor; but, as the removal from below of the foundation necessarily involves the downfall of the whole edifice, I will at once approach the criticism of the principles on which all my former beliefs rested.

9

According to the text, Descartes' minimal threshold for dismissing a knowledge claim is if it is

- Ⓐ completely in error.
- Ⓑ moderately wrong.
- Ⓒ even slightly flawed.
- Ⓓ any claim to knowledge.

Profits Broken Down in a Classic No-Product 8-Ball (1-2-4-8) Pyramid Scheme

Order of participants' entry into the scheme	Revenues to each participant at that level	Number of participants at that level
Initiator	\$140,000	1
2nd participants entering the system	\$120,000	2
3rd participants entering the system	\$112,000	4
4th participants entering the system	\$98,000	8
5th participants entering the system	\$84,000	16
6th participants entering the system	\$70,000	32
7th participants entering the system	\$56,000	64
8th participants entering the system	\$42,000	128
9th participants entering the system	\$28,000	256
10th participants entering the system	\$14,000	512
Total number of participants who would profit		1,023
Number of participants at the lower levels who would lose money		7,168
Total of all participants in the scheme		8,191
Percent who profit (assuming all those who profit reinvest in new cycles of the pyramid)		12.49%
Percent who lose money at the 10th level		87.51%

* This includes all who participated, regardless of how many times.

** This is the number of participants who have cashed in at least once and some multiple times.

*** This assumes every profiting participant keeps investing in new pyramid cycles. The percentage profiting would be slightly higher or lower depending on how many participants dropped out and when.

Source: Corporate Survey from the Federal Trade Commission at ftc.gov

An economist analyzes the likelihood that someone might make money from participating in a “pyramid scheme,” defined as a fraudulent way to make money by recruiting investors into some sort of money-making scheme. Instead of making money from providing a valuable good or service, the people who are the early investors in the pyramid scheme might make money, while the later investors often lose all their investment. The economist claims that over half of those who participate in a typical pyramid scheme are likely to profit, while less than half of participants will lose money.

10

Which choice best describes data from the table that weaken the economist’s claim?

- Ⓐ Over 1,000 participants in a typical pyramid scheme end up profiting.
- Ⓑ The initiator of a pyramid scheme can earn more than six figures in revenue.
- Ⓒ The latecomers to participate in a classic pyramid scheme might only see about \$14,000 in revenue.
- Ⓓ In a classic pyramid scheme, only 12.49% of participants profit.

A student is analyzing Robert Louis Stevenson's 1885 poem "My Shadow." The poem shows the playful mindset that a child experiences when learning about how their shadow works. In one instance, the narrator learns about how shadows do not function in the absence of light: _____

11

Which quotation from the poem most effectively completes the example?

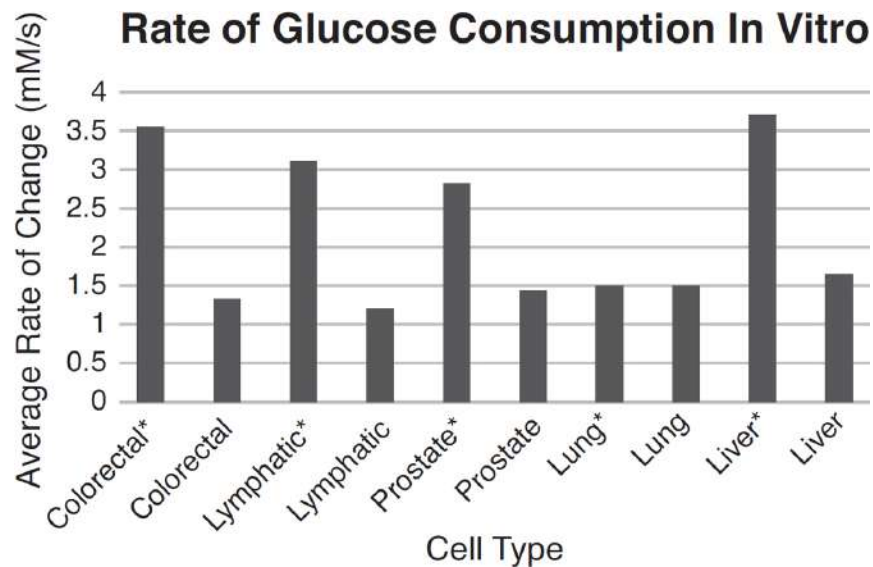
- Ⓐ "I have a little shadow that goes in and out with me, / And what can be the use of him is more than I can see. / He is very, very like me from the heels up to the head; / And I see him jump before me, when I jump into my bed."
- Ⓑ "The funniest thing about him is the way he likes to grow— / Not at all like proper children, which is always very slow; / For he sometimes shoots up taller like an India-rubber ball, / And he sometimes gets so little that there's none of him at all."
- Ⓒ "He hasn't got a notion of how children ought to play, / And can only make a fool of me in every sort of way. / He stays so close beside me, he's a coward you can see; / I'd think shame to stick to nursie as that shadow sticks to me!"
- Ⓓ "One morning, very early, before the sun was up, / I rose and found the shining dew on every buttercup; / But my lazy little shadow, like an arrant sleepy-head, / Had stayed at home behind me and was fast asleep in bed."

The buildings at Chaco Canyon pose a mystery for archeologists who seek to learn their purpose. A vast compound of buildings created by an ancient people, Chaco Canyon does not seem to be a permanent habitation, as there are no significant garbage piles. In addition, it is located in a remote and very harsh environment. It is questionable whether any peoples would have chosen such a place for a settlement. Modern archeologists believe that it could possibly be a spiritual site that is designed to align with astronomical cycles. They have turned to astronomy for answers and have shown how the roads and buildings at Chaco Canyon align not just with the regular cycles of the sun, but, they hypothesize, with the complicated multi-year dance of the moon. Since the moon's rhythm has such a long cycle, however, it will take many more years to confirm this hypothesis.

12

Which of the following, if true, would provide the most direct support for the archeologists' hypothesis?

- Ⓐ Historical artifacts found in Chaco Canyon that have bright coloration resembling both the daytime sun and full moon at night.
- Ⓑ Evidence uncovered of an early road system connecting Chaco Canyon to far-flung territories, confirming the Canyon's important role as a trade hub.
- Ⓒ Archeological evidence finding that there were in fact large garbage piles in the Chaco Canyon region and that earlier studies had not sufficiently considered the role of natural decay.
- Ⓓ A multi-decade study showing that the south and north walls of Chaco Canyon precisely align with the minimum and maximum moons over a regular 18.6-year interval.



In a 2014 study on the Warburg Effect, researchers tested the change in glucose concentration over a period of one hour in various cancer cell lines. The average rate of change of glucose concentration in each cell-type is shown in the figure above. (An asterisk (*) denotes the cell tested is cancerous.)

The researchers will use the results from a study on the Warburg Effect to determine what most distinguishes cancerous cells from noncancerous ones. When compared to the noncancerous cells, the cancerous cells

13

Which choice most effectively uses data from the figure to complete the text?

- Ⓐ have a generally greater average rate of change.
- Ⓑ typically have a lower average rate of change.
- Ⓒ have approximately the same rate of change.
- Ⓓ are more likely to have a rate of change of zero.

“The New York Tenement-House Evil and Its Cure” was written by Ernest Flagg for *Scribner’s Magazine* in 1894. In the piece, Flagg discusses the

deplorable living conditions in the tenement housing developments, how the tenements came to be, and how the issue might be solved. A historian analyzing Flagg's writing claims that Flagg believed that the primary motivation of those who built the tenement housing developments was to make money.

14

Which quotation from "The New York Tenement-House Evil and Its Cure" most effectively illustrates the claim?

- Ⓐ "If this desire to cover too much of the land proved objectionable in houses occupied by one family, its results have been simply disastrous in houses occupied by several families."
- Ⓑ "Acres upon acres have been covered by them, all constructed on the same general plan based upon the shape of the 25 by 100 foot lot."
- Ⓒ "The tenement-house evil is staring us in the face, and the community is daily becoming more and more alive to the imperative necessity for reform."
- Ⓓ "It should be made unprofitable to erect the kind of tenements we now have."

Owing to a redundancy in the human genome, there are four copies of the α globin gene, with two α -coding regions on each copy of chromosome 16. For this reason, the spectrum of severity in α thalassemia is particularly broad. For instance, deletion of a single gene will result in a carrier state and is unlikely to cause clinically acute symptoms. Deletion of all four, meanwhile, leads to a precipitation during the fetal period of nonfunctional γ tetramers, also called Hb Barts, and is universally lethal in utero. Thus, the intensity of thalassemia would be more uniform if there were _____

15

Which choice most logically completes the text?

- Ⓐ fewer copies of the α globin gene in humans.
- Ⓑ the same number of copies of the α globin gene in humans.
- Ⓒ more copies of the α globin gene in humans.
- Ⓓ less research conducted on the human genome.

Undergraduate degrees in petroleum and nuclear engineering exist. However, both fields could be considered subdisciplines of chemical engineering, and jobs or graduate degree programs can be entered in both fields with a bachelor's in chemical engineering. _____ can be entered with a bachelor's in mechanical engineering. Thus, it may be advisable to earn a bachelor's in mechanical engineering, then specialize in aerospace later.

16

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ Similarly aerospace jobs, and graduate degree programs
- Ⓑ Similarly aerospace jobs—and graduate degree programs
- Ⓒ Similarly, aerospace jobs and graduate degree programs;
- Ⓓ Similarly, aerospace jobs and graduate degree programs

After graduating from the program in New Mexico, _____ before enrolling in the United States Army to fight in Vietnam.

17

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ at the San Francisco Arts Institute Cannon briefly studied
- Ⓑ at the San Francisco Arts Institute did Cannon study briefly
- Ⓒ Cannon briefly studied at the San Francisco Arts Institute

- Ⓓ Cannon at the San Francisco Arts Institute studied briefly

Birders pay careful attention to the preferred foods of their favorite birds and make sure to provide the right kinds of snacks for each. This can be done by researching individual birds, reading the packaging on different mixes of birdseed, or consulting an online chart of birds and their _____ foods.

18

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ preferring
- Ⓑ preferred
- Ⓒ prefer
- Ⓓ prefers

Pinckney Benton Stewart (P.B.S.) Pinchback was a successful politician. In 1868, he was elected as a Louisiana state senator. Pinchback was elected president pro tempore, and after the 1871 death of Lieutenant Governor _____ became the lieutenant governor. Then, after an election riddled with accusations of fraud, the governor of Louisiana was impeached. Pinchback became the governor of Louisiana and served the remaining weeks of the term.

19

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ Oscar Dunn, (the first elected African American lieutenant governor), he
- Ⓑ Oscar Dunn (the first, elected, African American lieutenant governor), he

- Ⓒ Oscar Dunn (the first, elected African American lieutenant, governor), he
- Ⓓ Oscar Dunn (the first elected African American lieutenant governor), he

Historians believe that after rye became widely cultivated, the parasitic ergot fungus began to _____ unsuspecting communities. This unfortunate development likely caused strange visions among those affected.

20

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ wreck the havoc of
- Ⓑ wreck havoc with
- Ⓒ wreak havoc on
- Ⓓ wreak havoc toward

In the dry, desert landscape of South America, the CAM (crassulacean acid metabolism) adaptation in pineapples is advantageous. This is _____ pineapple can conserve water despite living in arid conditions.

21

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ because through the CAM adaptation: the
- Ⓑ because, through the CAM adaptation—the
- Ⓒ because; through the CAM adaptation the
- Ⓓ because—through the CAM adaptation—the

Just like in most art forms, traditional Native American art _____ many artists incorporate elements of traditional art into their modern creations.

22

Which choice completes the text so that it conforms to the conventions of Standard English?

- Ⓐ has, despite many people's efforts to shelter it from outside influences, evolved, and now
- Ⓑ has, despite many peoples efforts to shelter it from outside influences evolved and now
- Ⓒ has despite many—people's efforts to shelter it from outside influences—evolved and now
- Ⓓ has despite many peoples efforts to shelter it from outside influences: evolved and now

While fertilizers and herbicides are very effective at providing nutrients to crops and reducing weeds, they are quite expensive not just to purchase, but also to apply. Farmers who wish to apply herbicides and fertilizers must make extra passes through their fields; this costs the farmer's time as well as wear and tear on equipment that can cost upwards of a million dollars.

_____ both fertilizer and herbicides can have negative environmental consequences in the form of runoff. Whereas a good crop rotation will keep weeds down organically and deposit nutrients into the soil, applications of fertilizer and herbicides are merely topical.

23

Which choice completes the text with the most logical transition?

- Ⓐ In contrast,
- Ⓑ In addition,
- Ⓒ Due to this,

Ⓓ Accordingly,

When it comes to the biological and biochemical building blocks of organisms, there's no mistaking that humans are special. From our amazing defense mechanisms to our innate ability to adapt to different environments, the human body is quite phenomenal. However, perfection simply does not exist in nature, and thus the human body comes with a variety of flaws.

_____ most humans can only dream of being able to filter harmful cholesterol from their blood without having to resort to strenuous exercise or, in more extreme cases, prescription medications. Understanding the mechanisms behind removing cholesterol from our bloodstream remains a relatively unknown mystery.

24

Which choice completes the text with the most logical transition?

- Ⓐ For example,
- Ⓑ In contrast,
- Ⓒ Peripherally,
- Ⓓ Nevertheless,

While conducting research, a student took these notes:

- Male trees produce pollen and female trees produce a variety of seeds, including pods, nuts, and helicopters.
- To prevent the need to clean up seeds, many cities and homeowners only plant male trees.
- Some homeowners and cities don't plant trees at all so they can avoid dealing with leaves.
- An excess of pollen can greatly exacerbate allergies and other lung complications. People with allergies should avoid pollen heavy environments.

- Female trees absorb pollen out of the air and can help reduce allergy symptoms. Female trees can also produce food such as nuts and fruit.

25

The student wants to suggest a type of person who would greatly benefit from planting mainly female trees in their neighborhood. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ Someone who suffers from a nut allergy would benefit from being surrounded by female trees.
- Ⓑ A person who suffers from pollen allergies would benefit from female tree plantings.
- Ⓒ Female tree plantings would be especially good for someone who does not enjoy raking leaves.
- Ⓓ If somebody prefers vegetables to fruit, female tree plantings would be particularly helpful.

While researching a topic, a student has taken the following notes:

- Public domain works are no longer subject to copyright restrictions.
- If something is in the public domain, it can be used without having to seek permission.
- Works that are produced by the U.S. federal government are typically in the public domain.
- If it is 70 years after the death of a work's author, the work typically becomes part of the public domain.
- Works that are privately owned usually require permission from the original creator to use—this permission can sometimes be obtained by paying royalties to the creator.

26

The student wants to suggest a work that would most likely not be part of the public domain. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ A federal government collection of U.S. presidential speeches is not in the public domain.
- Ⓑ A newly created book by a private-sector author who is still alive is not in the public domain.
- Ⓒ A novel that was written over 200 years ago is most likely in the public domain.
- Ⓓ When a filmmaker pays royalties to the author of a movie screenplay, the final film would be in the public domain.

While researching a topic, a student has taken the following notes:

- Harry Frankfurt is an American philosopher who wrote “Freedom of the Will and the Concept of a Person.”
- Frankfurt articulates a theory of what it means for someone to have “free will.”
- He breaks human desire into two categories: first-order desires and second-order desires.
- A first-order desire is a want to perform an action; for example, someone could want to eat a meal.
- A second-order desire is a want to have a certain desire; for example, someone could “want” to “want to eat more healthfully.”
- Frankfurt argues that someone is acting according to their free will when their actions align with their second-order desires.

The student wants to present a plausible reason as to why Frankfurt would not consider an animal to possess free will. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- Ⓐ Some animals can consider not just what they “want,” but what they “want to want.”
- Ⓑ An animal can only possess second-order desires since it lacks the ability to have first-order desires.
- Ⓒ Since an animal most likely only has first-order desires, it cannot be considered as having the capacity for free will.
- Ⓓ Only humans can be considered capable of letting their first-order desires govern their actions.

Section 2, Module 1: Math

35 MINUTES, 22 QUESTIONS

DIRECTIONS ▼

- All expressions and variables use real numbers.
- All figures are drawn to scale.
- Every figure lies in a plane.
- The domain of given functions is the set of all real numbers for which the corresponding value of the function is real.

For **multiple-choice questions**, solve the problem and pick the correct answer from the provided choices. Each multiple-choice question has only one correct answer.

For **student-produced response questions**, solve each problem and record your answer following these guidelines:

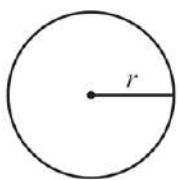
- If you find **more than one correct answer**, enter just one answer.
 - You can enter up to five characters for a **positive** answer and up to six characters (this includes the negative sign) for a **negative** answer.
 - If your answer is a **fraction** that does not fit in the given space, enter the decimal equivalent instead.
 - If your answer is a **decimal** that does not fit in the given space, enter it by stopping at or rounding up at the fourth digit.
 - If your answer is a **mixed number** (like $4\frac{1}{2}$), enter it as an improper fraction ($\frac{9}{2}$) or its decimal equivalent (4.5).
 - Do not enter **symbols** like a comma, dollar sign, or percent sign.
-

Examples

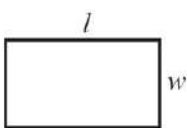
Answer	Acceptable Entries	Unacceptable Entries That Will Receive Zero Credit
4.5	4.5 4.50	$4\frac{1}{2}$

	$\frac{9}{2}$	$4\frac{1}{2}$
$\frac{8}{9}$	$\frac{8}{9}$.8888 .8889 0.888 0.889	0.88 .88 .89 0.89
$-\frac{1}{9}$	$-\frac{1}{9}$ -.1111 -0.111	-.11 -0.11

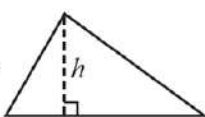
REFERENCE ▾



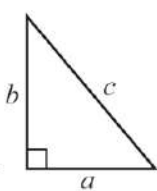
$A = \pi r^2$
 $C = 2\pi r$



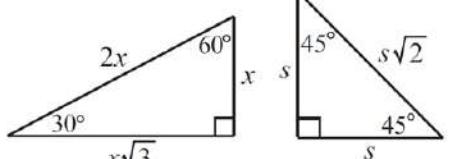
$A = lw$



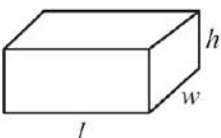
$A = \frac{1}{2}bh$



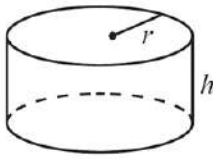
$c^2 = a^2 + b^2$



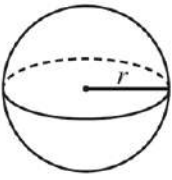
Special Right Triangles



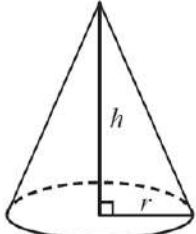
$V = lwh$



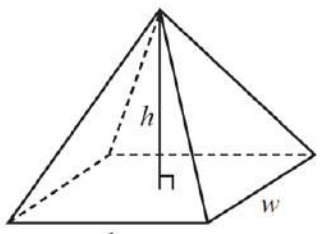
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



$V = \frac{1}{3}\pi r^2 h$



$V = \frac{1}{3}lwh$

The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π .
The sum of the measures in degrees of the angles of a triangle is 180.

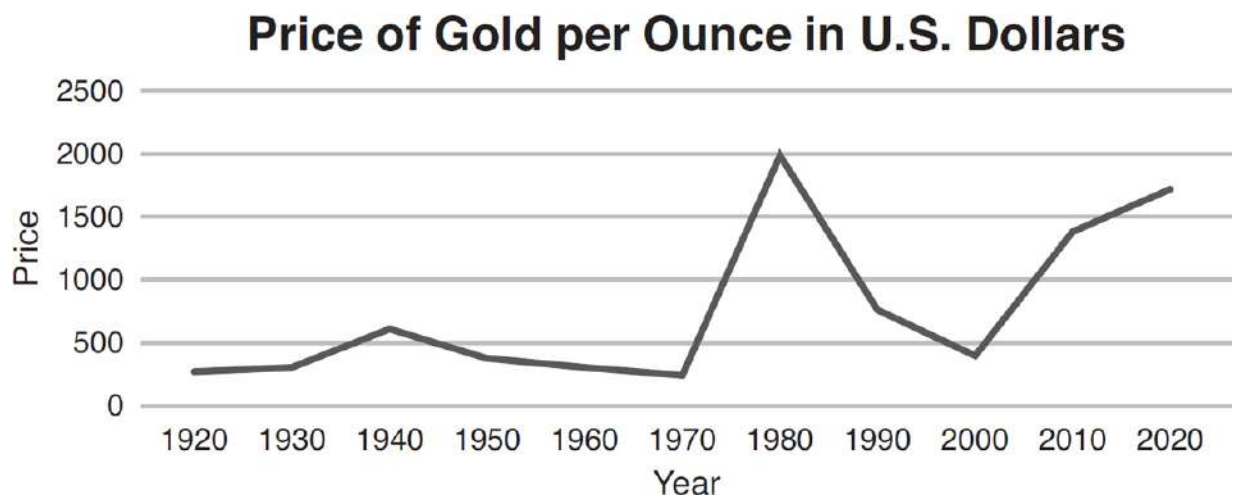
Which of the following expressions is equivalent to $\frac{1}{2}x^3(x^2 - 4)$?

- (A) $\frac{1}{2}x^6 - 2x^2$
- (B) $\frac{1}{2}x^6 - 2$
- (C) $\frac{1}{2}x^5 - 2x^3$
- (D) $\frac{1}{2}x^5 - 4x^2$

2

What number is 5% greater than 200?

3



Which of the following is closest to the price in U.S. dollars of an ounce of gold in the year 1970?

- (A) \$245
- (B) \$520
- (C) \$610

Ⓓ \$1,225

4

$$2x - 5y = 3$$

$$x + 2y = 6$$

If (a, b) is the solution to the system of equations above, what is the value of a ?

Ⓐ 1

Ⓑ 2

Ⓒ 3

Ⓓ 4

5

A museum gift shop provides a 10% discount for museum members. If a customer who is a museum member purchases a book from the store for \$18, what was the original price of the book prior to the discount (ignore sales tax)?

Ⓐ \$12

Ⓑ \$20

Ⓒ \$22

Ⓓ \$26

6

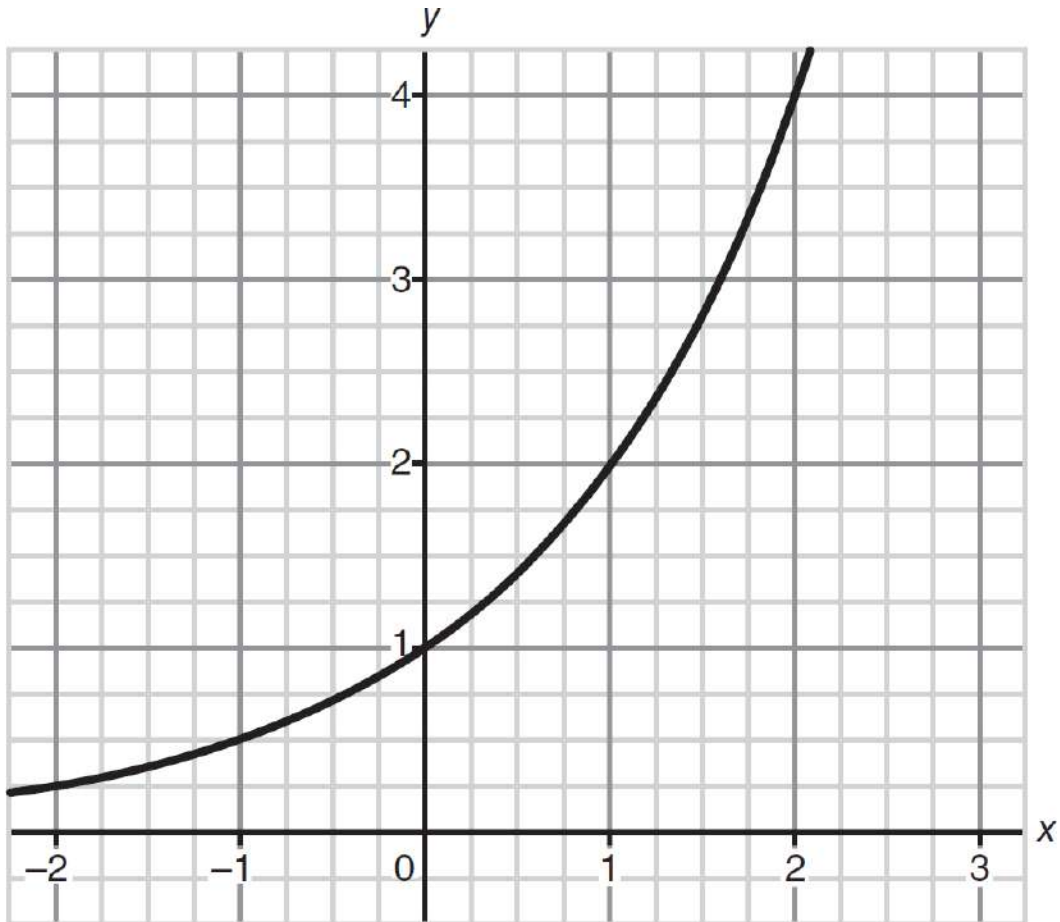
The Statue of Liberty has a height of 93 meters. A model toy version (done to scale) of the Statue of Liberty is $\frac{1}{500}$ th the height of the actual statue. Given that there are 100 centimeters in a meter, what is the height of the model in centimeters, calculated to the nearest whole centimeter?

Ⓐ 19 cm

Ⓑ 86 cm

- Ⓒ 186 cm
- Ⓓ 320 cm

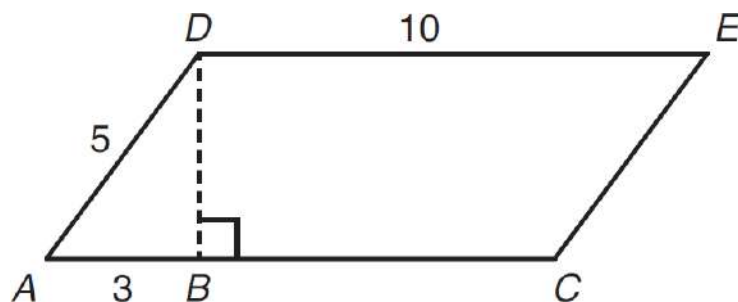
7



Which of the following models the function as presented in the graph above?

- Ⓐ $f(x) = x^2$
- Ⓑ $f(x) = x^2 + 1$
- Ⓒ $f(x) = 2^x$
- Ⓓ $f(x) = 3^x + 1$

8



Parallelogram $ADEC$ has a side of $\overline{DE}$ of length 10 units, and a side of $\overline{DA}$ of length 5 units. The length from A to B is 3 units. What is the area of the parallelogram in square units?

9

$$A = \frac{v^2}{R}$$

The acceleration of an object moving in a circle is determined by the equation above, in which v is the velocity of the object, A is its acceleration, and R is the radius of the circle. What is the value of the radius in terms of the other variables?

- (A) $R = \frac{2v}{A}$
- (B) $R = \frac{v^2}{A}$
- (C) $R = Av^2$
- (D) $R = \frac{1}{Av^2}$

10

If $y = bx^2 + 5$ when $x = 2$ and $y = 17$, what is the value of the constant b ?

- (A) -5

- Ⓐ 3
- Ⓑ 4
- Ⓒ 12

11

An airplane travels 3,000 miles in 10 hours. What is its speed in miles per hour?

12

$$\begin{aligned}2x - 3y &= 5 \\4x + y &= 17\end{aligned}$$

If (x, y) is a solution to the above system of equations, what is the value of y ?

13

Francisco is packing two bags for his trip. The capacity of the small bag is one third that of the larger bag. If the total capacity of the two bags together is 80 liters, what is the capacity of the smaller bag?

- Ⓐ 5 liters
- Ⓑ 8 liters
- Ⓒ 12 liters
- Ⓓ 20 liters

14

x	$f(x)$
1	1^C
2	2^C
3	3^C

In the function with values given above, in which C is a constant, if $f(2) = 8$, what is the value of $f(3)$?

- Ⓐ 16
- Ⓑ 27
- Ⓒ 64
- Ⓓ 81

15

The height of a certain triangle is twice the width of its base. If the area of the triangle is 25 square units, what is the height of the triangle?

16

In the year 1990, approximately 2 million U.S. residents were Internet users. In the year 2000, approximately 115 million U.S. residents were Internet users. Assuming the growth of Internet users was at a steady geometric rate, which function could be used to model the number of Internet users, I , in millions of people, T years after 1990?

- Ⓐ $I(T) = 2 \times (1.5)^T$
- Ⓑ $I(T) = 2 \times (0.5)^T$

- Ⓒ $I(T) = 2 \times (1.5)^{-T}$
- Ⓓ $I(T) = 2 \times (2.5)^{-T}$

17

Material	Kilograms per Cubic Meter
Cement	1,440
Maplewood	755
Steel	7,850
Cedarwood	380
Glass	2,580
Gravel	2,000

Based on the information in the table, what is the mass of a solid steel wall that has a volume of 300 cubic meters?

- Ⓐ 26 kilograms
- Ⓑ 8,150 kilograms
- Ⓒ 432,000 kilograms
- Ⓓ 2,355,000 kilograms

18

The mean height of seven teenage boys is 67 inches. If one of the boys has a height of 74 inches, what is the mean height of the remaining boys to the nearest tenth of an inch?

19

$\angle X$ is measured in degrees. If the cosine of $\angle X$ is $\frac{\sqrt{2}}{2}$, what is the sine of $(90 - \angle X)$?

- (A) $\frac{1}{2}$
- (B) $\frac{\sqrt{2}}{2}$
- (C) $\frac{\sqrt{3}}{2}$
- (D) $\frac{2}{\sqrt{3}}$

20

$$x^3 + x^2 - 20x$$

Which of the following is NOT a factor of the above expression?

- (A) $x - 4$
- (B) $x - 7$
- (C) $x + 5$
- (D) x

21

There are 10 cards, each distinctly numbered from 1 to 10. After a card is selected from the randomly shuffled set, it is returned to the set. If someone first picks a 3 and then picks a 2, what is the probability that on the third selection the person will pick a 9?

- (A) $\frac{1}{20}$
- (B) $\frac{1}{10}$
- (C) $\frac{1}{9}$
- (D) $\frac{1}{6}$

22

In the equation $3x - 6 = 3(x - a)$, the constant a is greater than 2. Which of the following statements must be true?

- Ⓐ The equation has exactly one solution.
- Ⓑ The equation has exactly two solutions.
- Ⓒ The equation has infinitely many solutions.
- Ⓓ The equation has no solution.

ANSWER KEY

Practice Test 3: Adaptive

Section 2, Module 1: Math

1. C
2. 210
3. A
4. D
5. B
6. A
7. C
8. 40
9. B
10. B
11. 300
12. 1
13. D
14. B
15. 10
16. A
17. D
18. 65.8
19. B
20. B

21. B

22. D

Total Correct Answers: _____ / 22

Did you get 13 or fewer questions correct? If so, move to Math Module 2A on [page 795](#).

Did you get 14 or more questions correct? If so, move to Math Module 2B on [page 808](#).

Section 2, Module 2A: Math

35 MINUTES, 22 QUESTIONS

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-

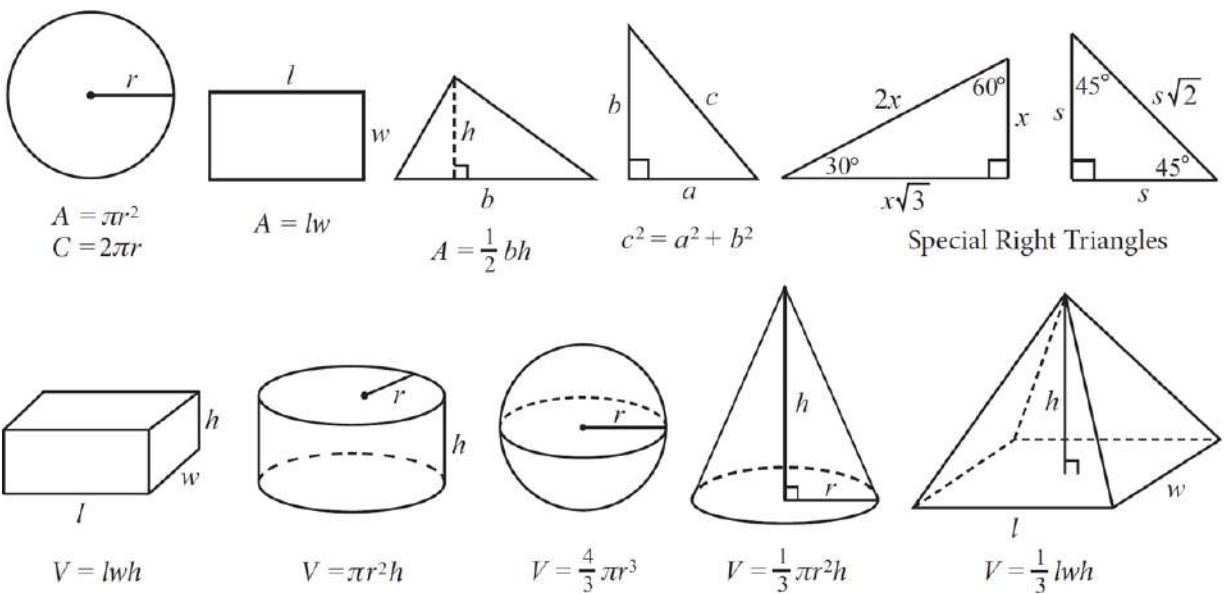
Examples

Answer	Acceptable Entries	Unacceptable Entries That Will Receive Zero Credit
4.5	4.5 4.50	$4\frac{1}{2}$

	$\frac{9}{2}$	$\frac{41}{2}$
$\frac{8}{9}$	$\frac{8}{9}$.8888 .8889 0.888 0.889	0.88 .88 .89 0.89
$-\frac{1}{9}$	$-\frac{1}{9}$ -.1111 -0.111	-.11 -0.11

2 MODULE 2 2

REFERENCE ▼



The number of degrees of arc in a circle is 360.

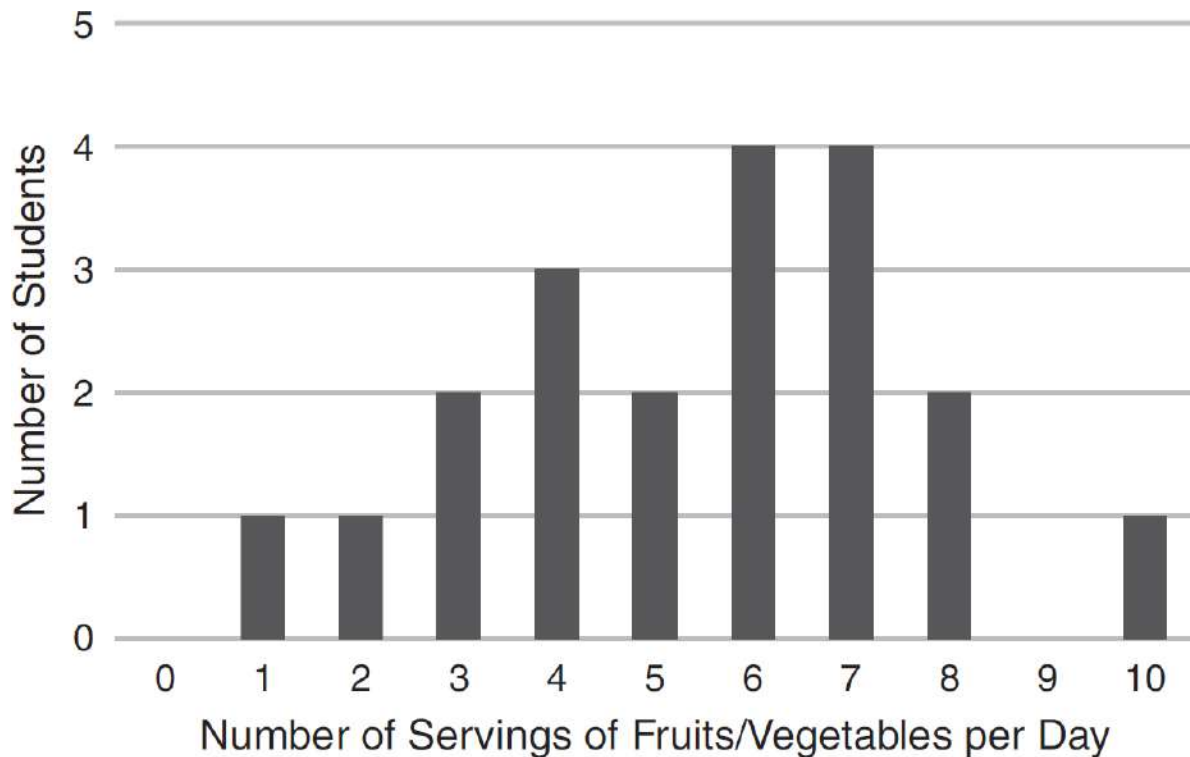
The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

In the line formed by the equation $y + 5 = 7x$, what is the value of the y -intercept?

- (A) -5
- (B) -1
- (C) 5
- (D) 7

2



Twenty students were asked the combined total number of servings of fruits and vegetables they have each day. The results are presented in the histogram above. What is the median number of servings of fruits and vegetables consumed each day?

- (A) 4
- (B) 5

Ⓒ 6

Ⓓ 7

3

Which of the following is equivalent to $\frac{x^2 - 81}{x + 9}$?

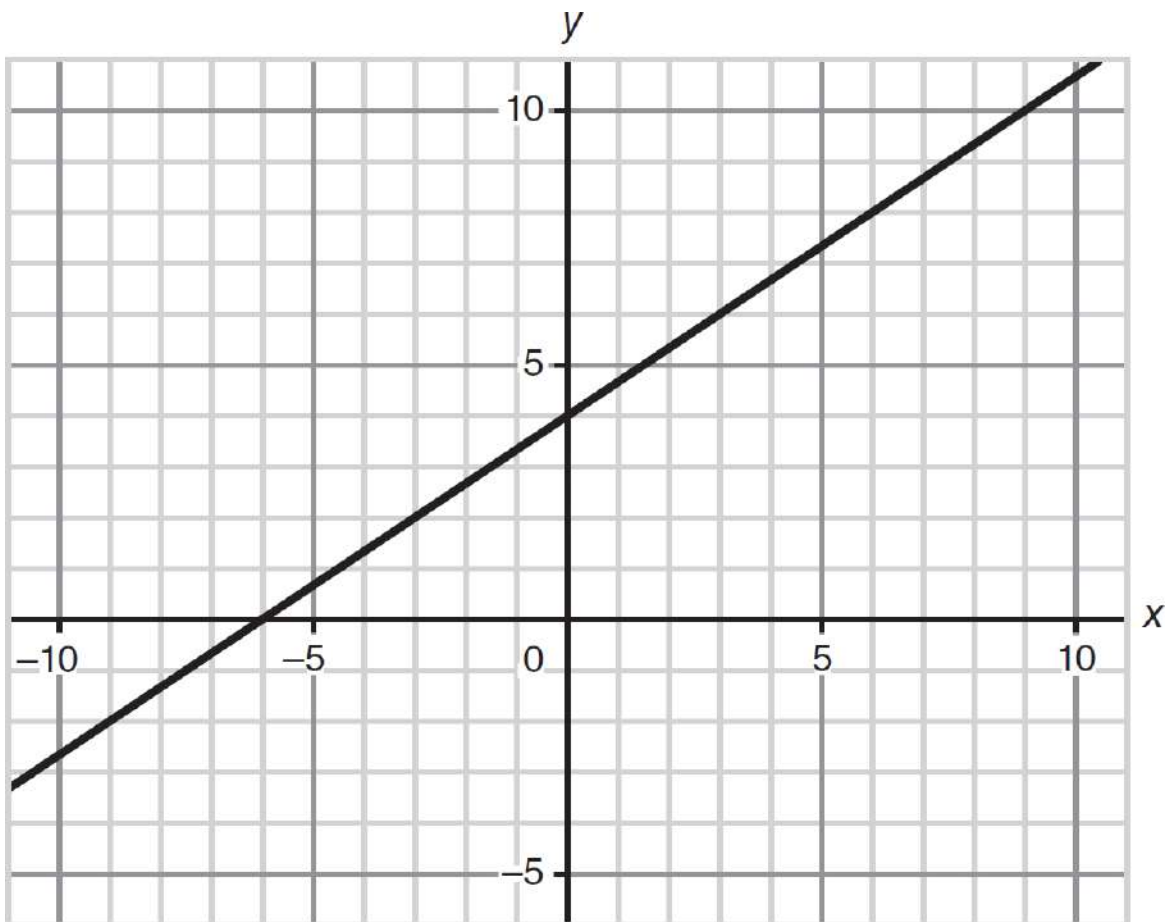
Ⓐ $x + 9$

Ⓑ $x - 9$

Ⓒ $x^2 - 3$

Ⓓ $x^2 + 3$

4



What is the best approximation of the slope of the line graphed above?

- Ⓐ $\frac{1}{2}$
- Ⓑ $\frac{2}{3}$
- Ⓒ $\frac{4}{3}$
- Ⓓ 2

5

Walter is going backpacking on a trail. The total distance of the trail is 300 miles. If he has already traveled 100 miles on the trail, how many miles per day, m , will he need to travel in order to complete his journey in D days?

- Ⓐ $m = \frac{200}{D}$
- Ⓑ $m = 300D$
- Ⓒ $m = \frac{D}{300}$
- Ⓓ $m = 200 + D$

6

Which of the following expressions is equivalent to $2(x - 4) + 4$?

- Ⓐ $2x - 4$
- Ⓑ $2x + 4$
- Ⓒ $4x - 4$
- Ⓓ $4x + 4$

7

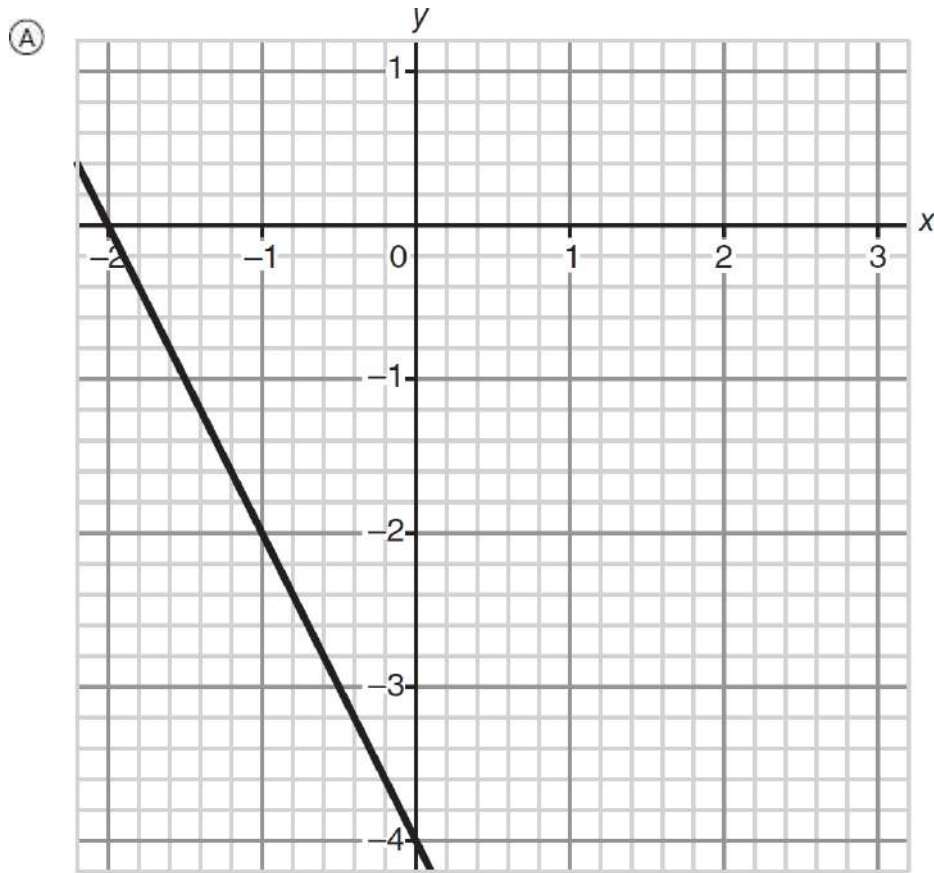
The number of dollars, C , it costs for Halle to run a restaurant is modeled by the function $C(m) = 10m + 10,000$ in which m is the number of meals served. What is the meaning of the 10 in this function?

- Ⓐ The total cost for all the meals sold.

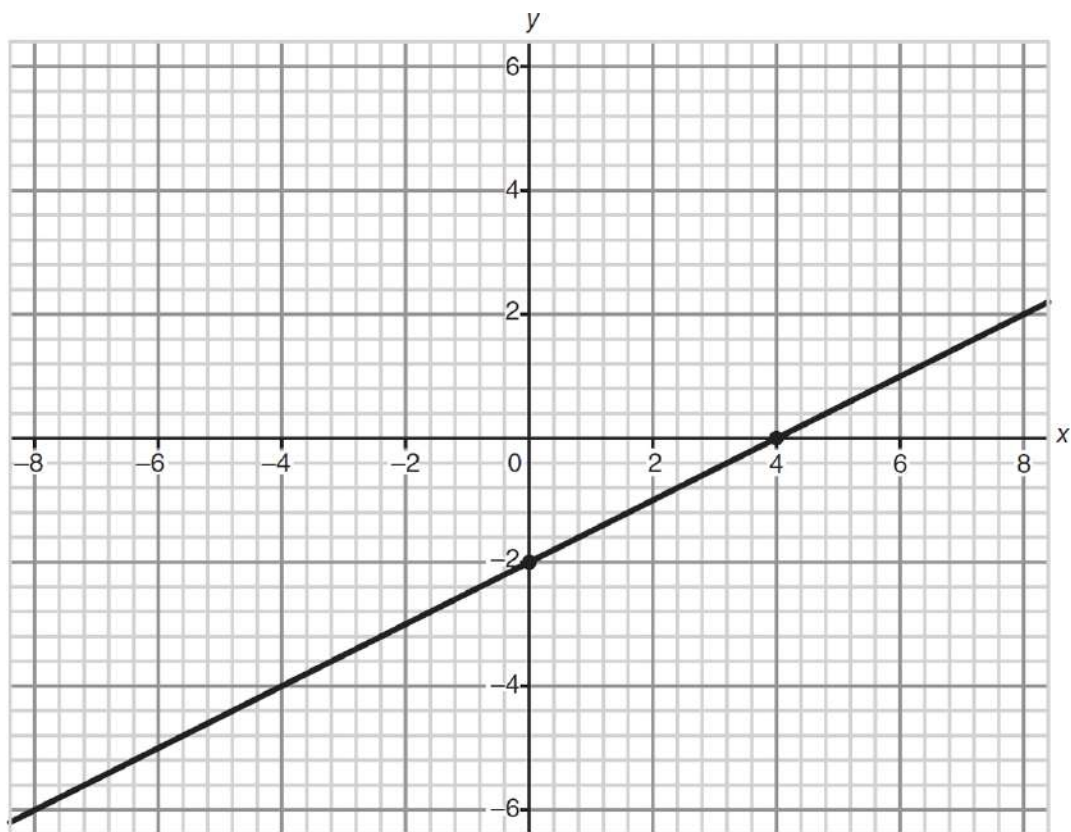
- Ⓑ The fixed costs for the restaurant to operate.
- Ⓒ The profit the restaurant has for each meal sold.
- Ⓓ The additional cost to the restaurant for each additional meal.

8

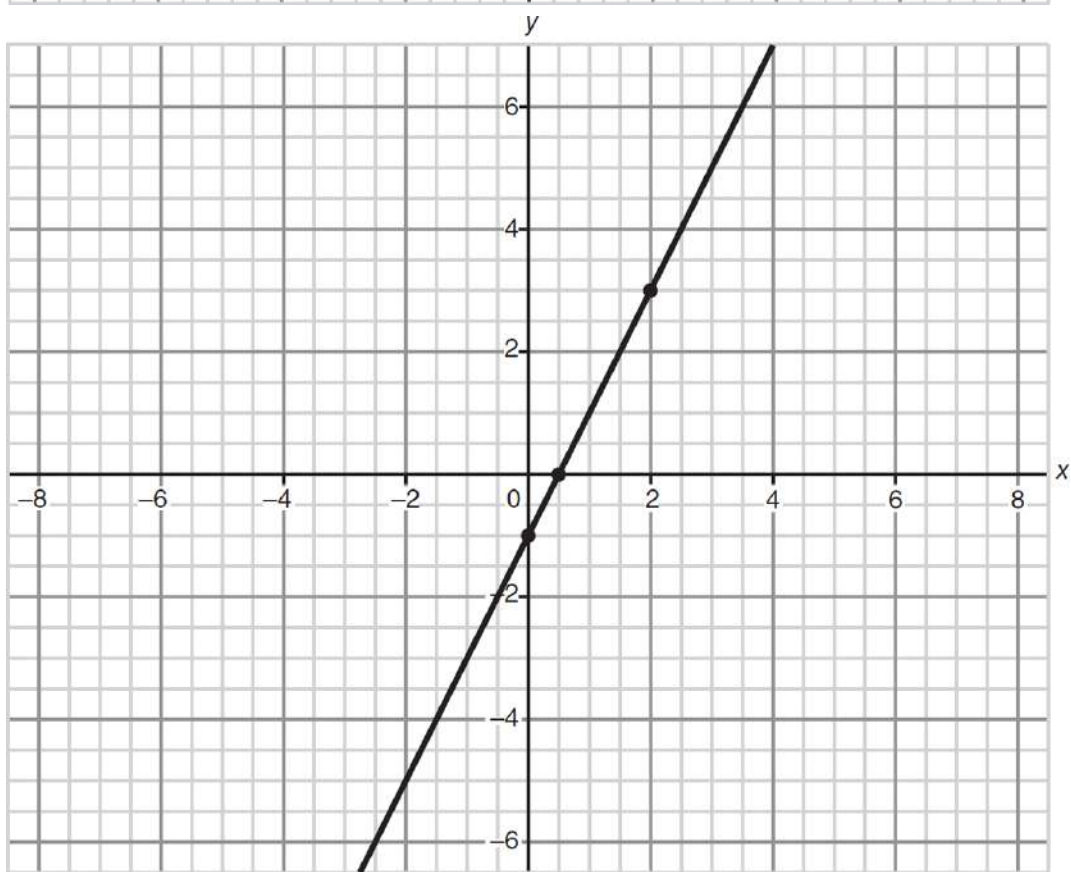
Which of the following represents the graph of $\frac{1}{2}y + 2 = -x$?

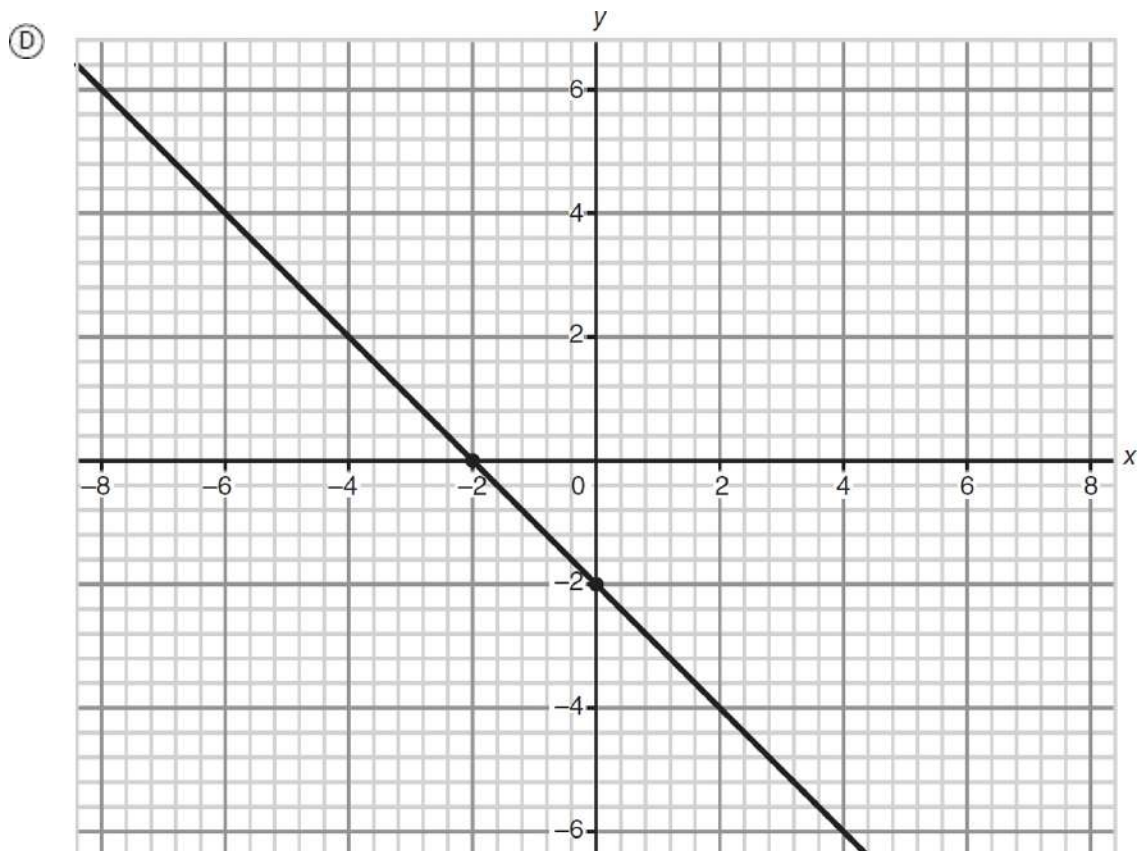


Ⓑ



Ⓒ





9

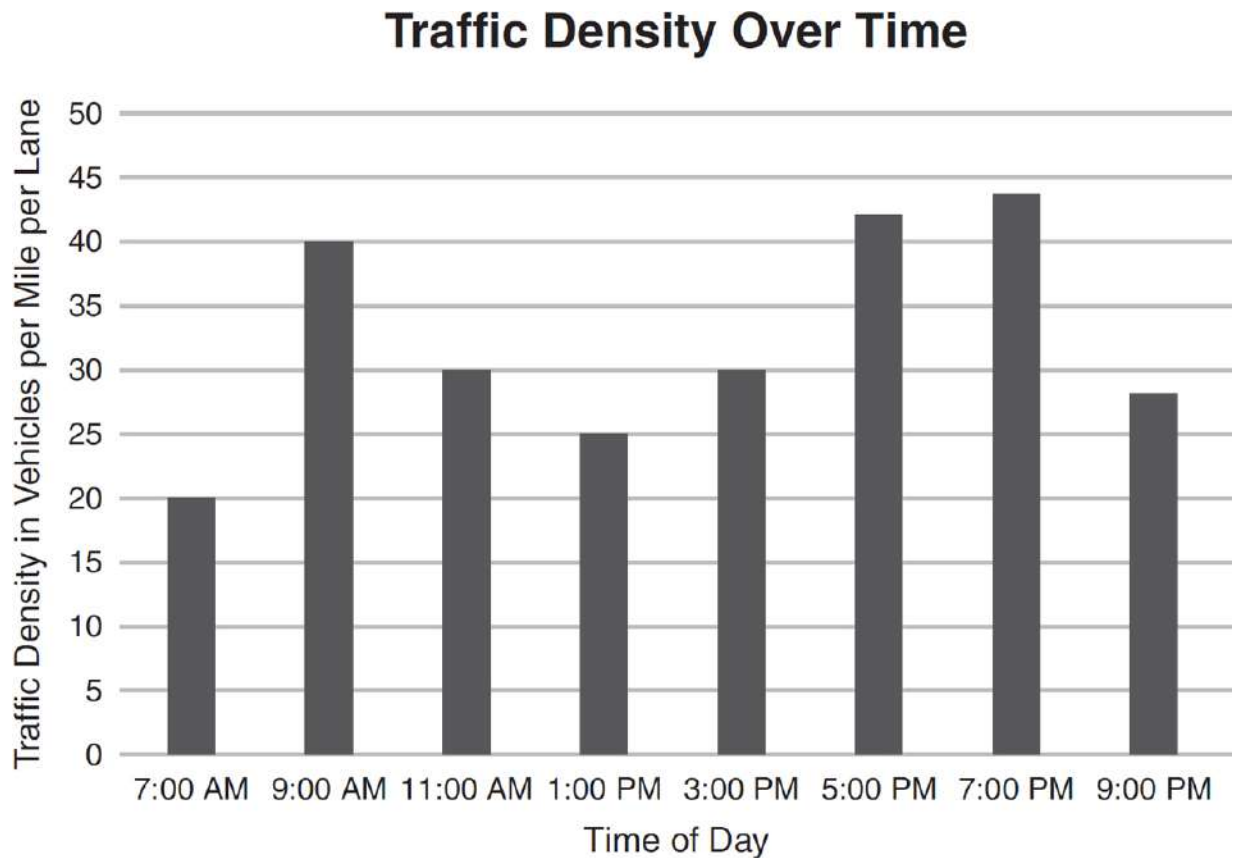
In a survey of 1,000 likely voters, $\frac{1}{2}$ like Candidate A, $\frac{1}{3}$ like Candidate B, and the remainder like neither candidate. If a likely voter is selected at random, what is the probability that they will like neither candidate?

- Ⓐ $\frac{1}{12}$
- Ⓑ $\frac{1}{6}$
- Ⓒ $\frac{1}{4}$
- Ⓓ $\frac{1}{3}$

10

A silverware drawer has a total of 80 forks and spoons. If there are 5 forks for every 3 spoons, how many forks are there in the drawer?

Traffic density is measured in vehicles/mile/lane. The traffic density in a city is portrayed in the graph below



Between what two hours does the traffic density increase the most?

- (A) Between 7 a.m. and 9 a.m.
- (B) Between 9 a.m. and 11 a.m.
- (C) Between 1 p.m. and 3 p.m.
- (D) Between 3 p.m. and 5 p.m.

12

In the system of inequalities $y + 10 \leq 3x$ and $x \leq -y - 2$, what is the maximum value of y ?

- Ⓐ -6
- Ⓑ -4
- Ⓒ 0
- Ⓓ 3

13

A meal costs x dollars. The sales tax on the meal is 7%. If the cashier accidentally subtracted the sales tax from the price of the meal instead of adding it, what would the price be in terms of x ?

- Ⓐ $0.07x$
- Ⓑ $0.7x$
- Ⓒ $0.93x$
- Ⓓ $1.07x$

14

Ken's commute takes 25 more minutes in the evening than it does in the morning. If his total daily commute takes 95 minutes, how long does his morning commute take in minutes?

15

The function f is determined by $f(x) = \frac{x^3}{4} + 3$. What is the value of $f(2)$?

- Ⓐ 1
- Ⓑ 5

Ⓒ 6

Ⓓ 9

16

If the volume of a right rectangular prism is 90 cubic inches, and the product of the length and width of the prism is 30 square inches, what is the height of the prism?

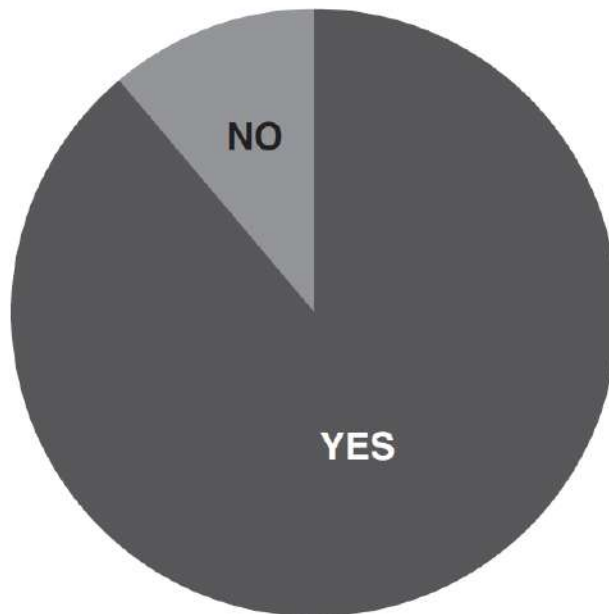
17

$$x^2 - x - 20 = 0$$

What is the sum of the solutions to the equation above?

18

Votes in Favor of Tax Levy



The above circle graph gives the percentages of 800 city residents who voted in favor of a tax levy (“YES”) and those who voted against it (“NO”). If the central angle formed by the portion of the circle allocated to “NO” is 45° , how many of the residents voted “NO”?

- (A) 90
- (B) 100
- (C) 110
- (D) 120

19

Density, mass, and volume are related by this formula:

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

If the mass of an object is 2 kilograms and its volume is 8 liters, what is the object’s density in $\frac{\text{kg}}{\text{L}}$?

- Ⓐ $\frac{1}{8}$
- Ⓑ $\frac{1}{4}$
- Ⓒ $\frac{1}{2}$
- Ⓓ $\frac{3}{4}$

20

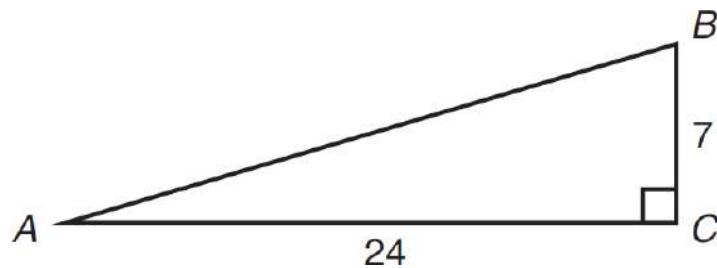
What percentage of 70 is 35?

- Ⓐ 40%
- Ⓑ 50%
- Ⓒ 75%
- Ⓓ 200%

21

A line that is perpendicular to the line with the equation $y = -3x + 5$ has a y -intercept of 4. What is the y value of a point in this perpendicular line when its x value is 3?

22



In triangle ABC above, $\overline{AC}$ is 24 units long and $\overline{BC}$ is 7 units long. What is the cosine of $\angle ABC$?

- (A) $\frac{7}{25}$
- (B) $\frac{7}{24}$
- (C) $\frac{24}{27}$
- (D) $\frac{25}{27}$

Section 2, Module 2B: Math

35 MINUTES, 22 QUESTIONS

DIRECTIONS ▼

All expressions and variables use real numbers.

All figures are drawn to scale.

Every figure lies in a plane.

The domain of given functions is the set of all real numbers for which the corresponding value of the function is real.

For **multiple-choice questions**, solve the problem and pick the correct answer from the provided choices. Each multiple-choice question has only one correct answer.

For **student-produced response questions**, solve each problem and record your answer following these guidelines:

If you find **more than one correct answer**, enter just one answer.

You can enter up to five characters for a **positive** answer and up to six characters (this includes the negative sign) for a **negative** answer.

If your answer is a **fraction** that does not fit in the given space, enter the decimal equivalent instead.

If your answer is a **decimal** that does not fit in the given space, enter it by stopping at or rounding up at the fourth digit.

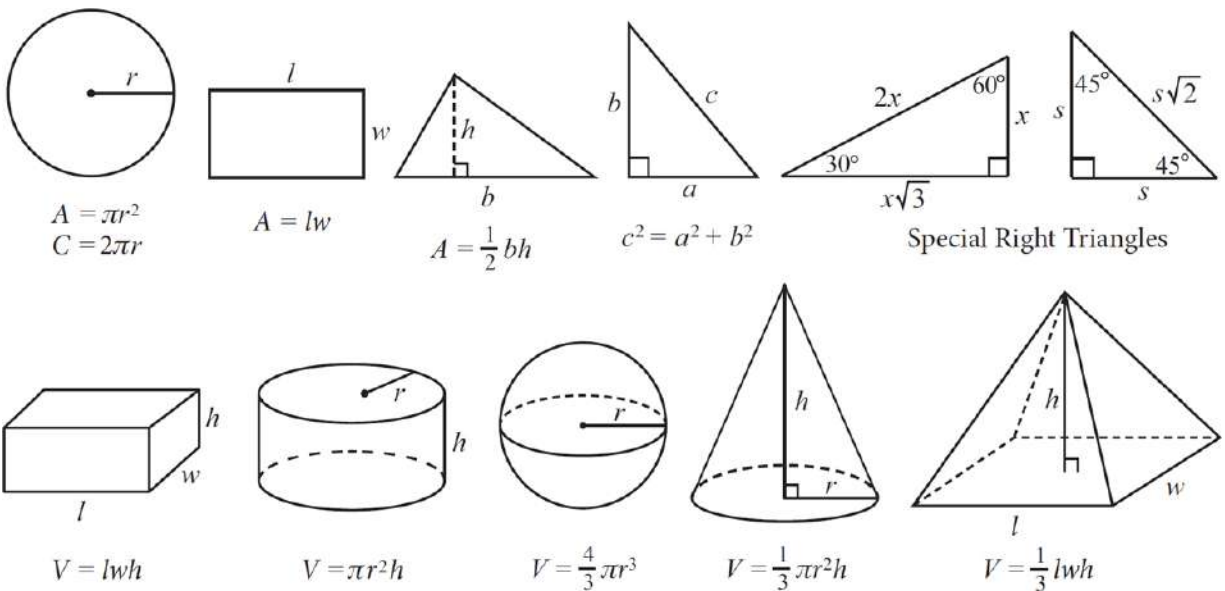
If your answer is a **mixed number** (like $4\frac{1}{2}$), enter it as an improper fraction ($\frac{9}{2}$) or its decimal equivalent (4.5).

Do not enter **symbols** like a comma, dollar sign, or percent sign.

Examples

Answer	Acceptable Entries	Unacceptable Entries That Will Receive Zero Credit
4.5	4.5 4.50 9/2	$4\frac{1}{2}$ 41/2
$\frac{8}{9}$	8/9 .8888 .8889 0.888 0.889	0.88 .88 .89 0.89
$-\frac{1}{9}$	-1/9 -.1111 -0.111	-.11 -0.11

REFERENCE ▼



The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

The sum of the measures in degrees of the angles of a triangle is 180.

1

In normal atmospheric conditions, the speed of sound through dry air can be approximated with the following equation, in which V represents the

velocity in meters per second and T represents the air temperature in degrees Celsius.

$$V = 331.4 + 0.6T$$

What is the speed of sound in air that is 15 degrees Celsius?

- Ⓐ -537.3 meters per second
- Ⓑ 14.8 meters per second
- Ⓒ 340.4 meters per second
- Ⓓ 423.5 meters per second

2

For the line l , $y = ax + n$, where a and n are distinct nonzero constants. Which of these lines must be perpendicular to line l ?

- Ⓐ $y = nx + a$
- Ⓑ $y = ax - n$
- Ⓒ $y = -\frac{1}{a}x - n$
- Ⓓ $y = -ax + n$

3

If $\frac{x^{\frac{2}{3}}}{\frac{1}{x^6}} = \frac{x^a}{\sqrt{x}}$, what is the value of a ?

- Ⓐ 1
- Ⓑ 2
- Ⓒ 3
- Ⓓ 6

4

Nyla is driving X miles per hour. Given that there are 5,280 feet in a mile, what is her speed in feet per second?

- Ⓐ $\left(\frac{60}{5,280}\right)X$
- Ⓑ $\left(\frac{3,600}{5,280}\right)X$
- Ⓒ $\left(\frac{5,280}{60}\right)X$
- Ⓓ $\left(\frac{5,280}{3,600}\right)X$

5

$$\frac{2x - 6}{2} = x + k$$

If the equation above has an infinite number of solutions, what is the value of the constant k ?

- Ⓐ $k = -7$
- Ⓑ $k = -3$
- Ⓒ $k = 0$
- Ⓓ $k = 2$

6

In the equation $3 = |x - 1|$, how many solutions are there?

- Ⓐ Exactly 1
- Ⓑ Exactly 2
- Ⓒ None
- Ⓓ Infinite

7

Heartbeats per Minute	Breaths per Minute
60	12

70	15
80	18

Assuming Baahir's heartbeats per minute and breaths per minute have a linear relationship with one another, what would Baahir's pulse (heartbeats per minute) be if he is breathing at a rate of 24 breaths per minute?

8

At exactly how many points will the function $f(x) = x^2 - 3x - 4$ intersect the x -axis?

- (A) 0
- (B) 1
- (C) 2
- (D) 3

9

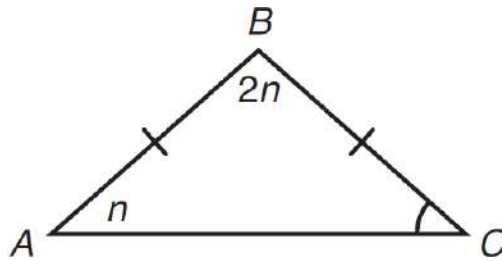
If $f(x) = 3^x - 1$, for what value of x will $f(x)$ intercept the y -axis when graphed in the xy -coordinate plane?

10

A city's population at the beginning of 2010 was 50,000 residents. At the beginning of 2011, its population was 45,000 residents, and at the beginning of 2012, its population was 40,500 residents. If the city's population has continued to change at the same rate each year, which function models the city's population T years after 2010?

- Ⓐ $P(T) = 50,000 \times (0.9)^T$
- Ⓑ $P(T) = 40,500 \times (0.09)^T$
- Ⓒ $P(T) = 50,000 \times (1.1)^T$
- Ⓓ $P(T) = 45,000 \times (1.09)^T$

11



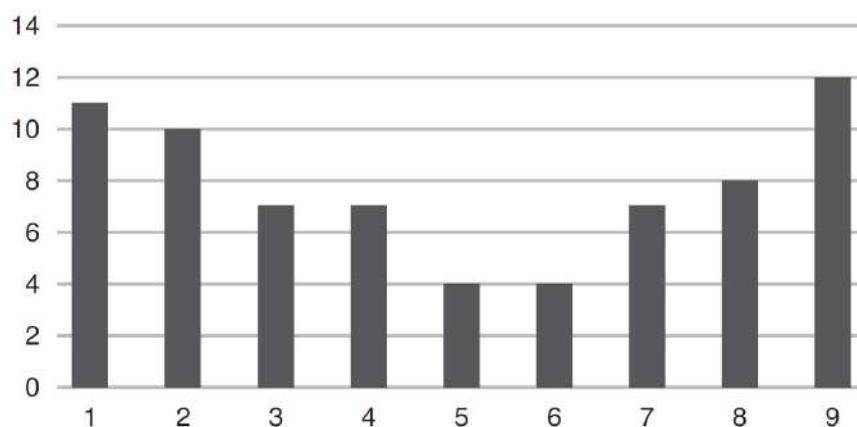
In triangle ABC above, $\overline{AB}$ and $\overline{BC}$ are congruent, and $\angle A$ is n degrees and $\angle B$ is $2n$ degrees. What is the measure of $\angle C$ in degrees?

- Ⓐ 20°
- Ⓑ 35°
- Ⓒ 45°
- Ⓓ 70°

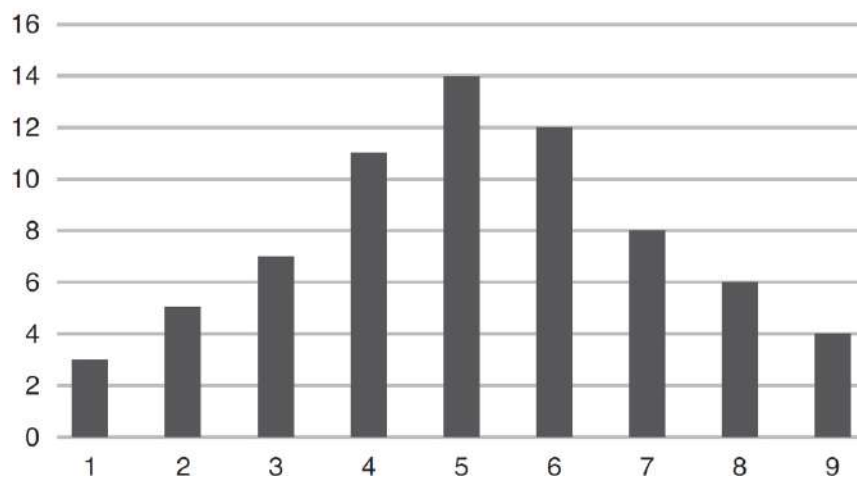
12

Consider these two histograms showing the frequency of 70 integers between 1–9:

Frequency of Numbers in Set A



Frequency of Numbers in Set B



Which of the following quantities would be the largest amount greater for set A than for set B?

- Ⓐ Median
- Ⓑ Standard Deviation
- Ⓒ Range
- Ⓓ Mean

If a square has a diagonal of $7\sqrt{2}$ units long, how many units would the radius be of the largest possible circle that fits within the square (with the circle tangent to the sides of the square)?

14

Diana walks at a pace of 100 steps per minute. On Monday, she walks a total of 6,000 steps. If she maintains her pace and wants to increase the total number of steps on Tuesday to 10,000, how many additional hours will she need to walk on Tuesday compared to Monday?

- Ⓐ $\frac{1}{6}$ of an hour
- Ⓑ $\frac{1}{4}$ of an hour
- Ⓒ $\frac{2}{3}$ of an hour
- Ⓓ 1 hour

15

The linear function g can be written in the form $g(x) = mx + b$, in which m and b are constants. If $g(1) = 7$ and $g(3) = 11$, what is the value of m ?

- Ⓐ -3
- Ⓑ -1
- Ⓒ 2
- Ⓓ 6

16

Two hot air balloons were initially at the same height in the air at 200 feet. After 10 minutes go by, one balloon's height has increased by 30% and the

other balloon's height has decreased by 15%. At that point, how many feet apart in height would the two balloons be?

- Ⓐ 60 feet
- Ⓑ 70 feet
- Ⓒ 80 feet
- Ⓓ 90 feet

17

If $2x^2 + bx + 4 = 0$, for what values of b will there be no real solutions?

- Ⓐ $b > \sqrt{2}$
- Ⓑ $|b| \leq -\sqrt{2}$
- Ⓒ $b \geq 4$
- Ⓓ $|b| < 4\sqrt{2}$

18

The function f has an equation of $f(x) = -(x + 3)(x - 5)$. For what value of x is the value of $f(x)$ at its maximum?

19

A pizza parlor has a goal of making at least \$10,000 a month in revenue from selling pizzas. The parlor sells small pizzas for \$10 each and large pizzas for \$20 each. If the total number of pizzas sold in a month must be less than 800, which system of inequalities would represent the number of small pizzas, S , and the number of large pizzas, L , that would meet the pizza parlor's requirements?

- Ⓐ $S + L < 800$

$$10S + 20L \geq 10,000$$

Ⓐ $S + L \geq 800$

$$10S + 20L < 10,000$$

Ⓑ $10S + 20L < 800$

$$S + L < 10,000$$

Ⓒ $10S + 20L \geq 800$

$$S + L > 10,000$$

20

The reproduction number, called R_O , is used to calculate the spread of disease. If a virus has an R_O of 6, an infected person will likely directly infect six other people. Based on this, if 20 people are infected with a virus that has an R_O of 4.2, how many people will these 20 people most likely directly infect?

Ⓐ 46

Ⓑ 54

Ⓒ 84

Ⓓ 98

21

$$\{2, 3, 6, 6, 7\}$$

Which expression gives the complete set of potential values of a single number x that can be added to the above set of data without changing the median of the set?

Ⓐ $x \geq 7$

Ⓑ $x < 2$

Ⓒ $x < 6$

Ⓓ $x \geq 6$

22

How many more units is the diameter of circle A than that of circle B ?

Circle A : $(x - 2)^2 + (y - 7)^2 = 49$

Circle B : $(x + 5)^2 + (y - 3)^2 = 25$

ANSWER KEY

Practice Test 3: Adaptive

Score whichever module you completed: 2A or 2B.

Section 1, Module 2A: Reading and Writing

1. D
2. D
3. C
4. C
5. C
6. D
7. A
8. B
9. C
10. C
11. A
12. A
13. D
14. B
15. A
16. C
17. D
18. D

19. D
20. C
21. C
22. B
23. C
24. D
25. C
26. D
27. D

Total: ____ / 27

Section 1, Module 2B: Reading and Writing

1. B
2. A
3. D
4. B
5. D
6. A
7. B
8. B
9. C
10. D
11. D
12. D
13. A
14. D
15. A
16. D
17. C

18. B
19. D
20. C
21. D
22. A
23. B
24. A
25. B
26. B
27. C

Total: ____ / 27

Score whichever module you completed: 2A or 2B.

Section 2, Module 2A: Math

1. A
2. C
3. B
4. B
5. A
6. A
7. D
8. A
9. B
10. 50
11. A
12. B
13. C
14. 35

15. B

16. 3

17. 1

18. B

19. B

20. B

21. 5

22. A

Total: ____ / 22

Section 2, Module 2B: Math

1. C

2. C

3. A

4. D

5. B

6. B

7. 100

8. C

9. 0

10. A

11. C

12. B

13. 3.5 or $\frac{7}{2}$

14. C

15. C

16. D

17. D

18. 1

19. A

20. C

21. D

22. 4

Total: ____ / 22

Adaptive Digital SAT Score Estimator

This streamlined guide will give you an approximation of the score you would earn on the Digital SAT. On the actual Digital SAT, there will be some small but important differences in how the test will be scored. First, there will be two experimental questions on each module that will be omitted. You will almost certainly be unable to determine which questions are experimental, so just do your best on every single question. In this guide, we are making every question count to simplify your estimation. Second, the Digital SAT will utilize “Item Response Theory” in its scoring. Certain questions may have more weight on your performance than others. More information about the precise scoring guidelines should be available in the fall of 2023—check on collegeboard.org for the latest information.

* Be sure you look at the correct chart depending on whether you did Module 2A or 2B for each section. *

Reading and Writing Scoring Charts

Use this table if you did Reading and Writing **Modules 1 and 2A**.

Tally the number of correct answers from the entire Reading and Writing section (out of 54) to find your Reading and Writing section score. Since you would have to miss at least ten questions to move to Module 2A, the table ends at a maximum of 44 questions correct.

Number of Correct Reading and Writing Questions (Out of 54)	Reading and Writing Test Score (Out of 800)
0	200
1	210
2	220
3	230
4	240
5	250
6	260
7	270
8	280
9	290
10	300
11	310
12	320
13	330
14	340
15	350
16	360
17	370
18	380
19	390
20	400
21	410
22	420
23	430
24	440
25	450

26	460
27	470
28	480
29	490
30	500
31	510
32	520
33	530
34	540
35	550
36	560
37	570
38	580
39	590
40	610
41	620
42	630
43	640
44	650

Use this table if you did Reading and Writing **Modules 1 and 2B**.

Tally the number of correct answers from the entire Reading and Writing section (out of 54) to find your Reading and Writing section score. Since you would need to answer at least 18 questions on the first module correctly to do Module 2, the table starts at 18 questions correct as the minimum.

Number of Correct Reading and Writing	Reading and Writing Test Score (Out of 800)
--	--

Questions (Out of 54)	
18	450
19	460
20	470
21	480
22	490
23	500
24	510
25	520
26	530
27	540
28	550
29	560
30	570
31	580
32	590
33	600
34	610
35	620
36	630
37	640
38	650
39	660
40	670
41	680
42	690
43	700
44	710
45	720
46	730
47	740

48	750
49	760
50	770
51	780
52	790
53	800
54	800

Math Scoring Charts

Use this table if you did Math **Modules 1 and 2A**.

Tally the number of correct answers from the entire Math section (out of 44) to find your Math section score. Since you would have to miss at least nine questions to move to Module 2A, the table ends at a maximum of 35 questions correct.

Number of Correct Math Questions (Out of 44)	Math Section Score (Out of 800)
0	200
1	220
2	230
3	240
4	250
5	280
6	300
7	320
8	340
9	350
10	360

11	380
12	390
13	400
14	410
15	430
16	440
17	450
18	460
19	480
20	490
21	500
22	510
23	520
24	530
25	540
26	550
27	560
28	570
29	580
30	590
31	600
32	610
33	620
34	630
35	650

Use this table if you did Math **Modules 1 and 2B**.

Tally the number of correct answers from the entire Math section (out of 44) to find your Math section score. Since you would need to answer at least 14 questions on the first module correctly to do Module 2, the table starts at 14 questions correct as the minimum.

Number of Correct Math Questions (Out of 44)	Math Section Score (Out of 800)
14	450
15	460
16	480
17	490
18	510
19	520
20	530
21	550
22	560
23	570
24	580
25	590
26	610
27	620
28	630
29	640
30	650
31	670
32	680
33	690
34	700
35	710
36	720
37	730
38	740
39	750
40	760
41	770

42	780
43	790
44	800

Add the Reading and Writing Section Score and the Math Section Score to find your approximate total SAT test score:

_____ Reading and Writing Section Score +

_____ Math Section Score =

_____ **Total Approximate SAT Test Score (between 400 and 1600)**

Approximate your testing percentiles (1st to 99th) using this chart:

Total Score	Section Score	Total Percentile	Reading and Writing Percentile	Math Percentile
1600	800	99+	99+	99
1500	750	98	98	96
1400	700	94	94	91
1300	650	86	86	84
1200	600	74	73	75
1100	550	59	57	61
1000	500	41	40	42
900	450	25	24	27
800	400	11	11	15
700	350	3	3	5
600	300	1	1	1
500	250	1	1	1
400	200	1	1	1

Answer Explanations

Reading and Writing

Module 1

1. **(D)** “Building” is the most appropriate of these options to describe growing a group of viewers for social media content. “Manufacturing” and “fabricating” are better used when describing building physical, tangible objects. “Escalating” means to increase, not to necessarily build something.
2. **(A)** “In the company of” means to hang out with someone; that is the most logical meaning to have in this context, since Matsuo was hanging out with the lord’s son. The other options all have to do with business practices.
3. **(A)** “Modify” means to “change,” which makes the most sense given that the scientists changed the benzene reaction in a way that maintained the original product but did not add the undesired sidechains. “Expunge” and “oust” would be to “eliminate” the reaction, which is not what is expressed. It is not “proposed” because this was actually implemented, not just considered.
4. **(B)** Based on the context, “spurred” is most logical, since it means “inspired.” Choice (D) is in the incorrect tense, and (A) and (C) do not convey the precise meaning needed.
5. **(A)** The text describes the transcription process, stating that the introns are “extracted and degraded” so choice (A) is the correct answer. The exons are translated, but the word excised is specifically referring to the introns. The exons are not “coded” into some sort of language, nor are they “mutated” or changed into something else.
6. **(D)** The text starts by introducing the initiative of the LEAP program, then proceeds to give national survey results that show the relevance of the LEAP program’s goals to meeting the needs of employers, i.e., demonstrating the economic relevance of the program. It is not (A) because an outline of a liberal arts curriculum would require more details about coursework and timeframes. It is not (B) because a historical survey would look at multiple historical events over a period of time. It is not C because the writer is using statistics to support, not refute, the claim.

7. **(D)** Text 1 focuses on the shift from non-online learning to online learning especially in terms of the growing recognition of online professional certifications, and the information in Text 2 shows how any concerns about costs being a barrier are increasingly negated since there are so many free learning options. Thus, choice (D) makes sense because if the cost barriers to online education are reduced, the popularity of online certifications will likely increase. It is not (A) because having inexpensive learning options would be a plus, not a potential threat. It is not (B) because the focus is on online education, not in-person. It is not (C) because it can reasonably be inferred that if more people have access to free educational opportunities to learn relevant job skills, this would likely help businesses because they would have more access to qualified workers.
8. **(B)** In considering his legacy, the narrator notes that he will not leave a “wealthy bequest” or a “labor-saving machine,” but will instead leave “carols” for “comrades and lovers.” So, the narrator has apparently prioritized making human connections instead of achievements like wealth and inventions that are more tangible. It is not (A) because the narrator is not suggesting that one of these options is better than another; instead, he is noting what he himself has done. It is not (C) because this would not represent a main idea of the text. It is not (D) because the narrator has evidently created “carols” “vibrating through the air” and makes no reference to technology being needed to create these.
9. **(B)** Joe Dillon is the character who introduces the narrator to the Wild West stories. He is described as playing fiercely with the other children and consistently winning their war games, making choice (B) correct. He doesn’t ever allow the enemy side to win, so choices (A) and (C) can be ruled out. No evidence is provided to support choice (D).
10. **(A)** The teacher claims that the narrator expresses a deep personal feeling of melancholy, which the quotation in choice (A) clearly shows. This selection mentions the “freezings” the narrator has felt, the “dark days” seen, and a sense of “bareness everywhere.” The

other options use language that is more positive or at least neutral—they do not approach the negativity found in (A).

11. **(D)** A major issue that astronauts have, as described in the text, is that they “suffer from cardiac atrophy as a response to immobility.” The author explains that bears do not suffer from cardiac atrophy even after months of hibernation. The author therefore thinks that bears may be the key to solving cardiac atrophy in astronauts. If, however, bears have the same response to time in space that humans have, then this line of scientific inquiry would not be helpful. This makes (D) the best answer. Choice (A) is incorrect as this would be a good reason to further study bears and how they might help astronauts. Choice (B) is incorrect as the author is not a proponent of human hibernation. Choice (C) is incorrect as this does not relate to the study of bears to help astronauts.
12. **(B)** The consumer researcher makes the claim that the prices of organic crops can often be substantially higher than those of conventionally raised crops. Choice (B) best supports this claim, since it accurately notes that between 2010 and 2014, organic soybeans are consistently about twice the price of conventional soybeans. It is not (A) because this doesn’t mention a price differential. It is not (C) or (D) because these options only discuss organic crops.
13. **(C)** In choice (C), we learn that because of Daisy’s visit to the school, a young man was suspended indefinitely because of his actions against the minority students. This makes choice (C) the best option as it shows that Daisy convinced the administration to make this suspension. Choices (A) and (B) simply show Daisy’s beliefs and the facts of the situation, not that she persuaded anyone of them. Choice (D) shows that the president is willing to visit, not that Daisy has convinced him of anything.
14. **(C)** The political scientist wants to show that even if a presidential candidate wins more popular votes than any other candidate, but still has less than an outright majority, the candidate can still win a majority of the electoral votes. Choice (C) demonstrates this because it shows how Wilson won a plurality of the popular vote but a large

majority of the electoral vote. Choice (A) does not tell us anything about the election winner. Choice (B) focuses on parties that only won a small percentage of the votes. Choice (D) talks about the second-place candidate instead of the winner.

15. **(C)** The final sentence of the text is elaborating on specific examples of extrinsic motivators. Based on the previous sentence, “avoiding consequences” could be an extrinsic motivator, making “following the law to avoid being arrested” an excellent option. The other options are all examples of intrinsic motivators as described earlier in the text.
16. **(C)** “But” provides a transition between the two independent clauses in the sentence, making a single comma an appropriate way to join these two clauses. Choice (A) is too choppy, choice (B) places the comma after the “but” instead of before, and choice (D) needs a pause partway through the sentence.
17. **(D)** “Their” goes along with “cats” in showing the possession that the cats have for “way.” Choices (A) and (B) are used for singular substitutions, and choice (C) is used to show a location.
18. **(D)** The colon provides the best option to give a pause before the clarification is provided. Also, the apostrophe in “it’s” is used correctly since this stands for “it is.” Choices (A) and (C) incorrectly use the possessive form “its.” Choice (B) gives a comma splice—a comma by itself is not sufficient to join two complete sentences.
19. **(C)** “Took off” is the only option that correctly uses the past tense, which is correct given the past tense of other nearby verbs like “founded,” “started,” and “believed.”
20. **(D)** No commas are needed to break up this phrase, making choice (D) correct. Choice (A) uses a semicolon without a complete sentence after it. Choice (B) inappropriately breaks up the phrase “provide . . . with.” Choice (C) is far too choppy.
21. **(C)** The subject in the sentence is “process,” which is singular. Choice (C) is the only option that provides a singular verb to make this a complete sentence.

22. **(B)** Choice (B) uses dashes to set aside the definition of what a stage is. Choice (A) only punctuates one side of the definition. Choice (C) does not provide any punctuation. Choice (D) inconsistently punctuates the definition.
23. **(D)** “Since” is the only transition that shows a cause-and-effect relationship between the fact that platypuses break down their food using gravel and dirt from the water and the fact that grinding plates in their bills enable this to take place. The other options do not show a cause-and-effect relationship.
24. **(C)** “Instead” is the only option that provides a contrasting transition between the statement that soap does not merely kill lethal bacteria and the statement that it removes all germs. “Also” and “additionally” both transition into continuations of the same idea, while “granted” would transition into an acknowledgement of an objection.
25. **(C)** Since the student wants to present general information about Dayton to an audience that does not know much about Dayton, it makes the most sense for the student to focus on broad facts about the city. Choice (C) accomplishes this goal since it generalizes about how Dayton is home to many useful inventions. The other options are all too specific in focusing on particular Daytonian inventors and inventions instead of on providing a broad introductory overview.
26. **(A)** The student wants to show how a common assumption that people have about piranhas only eating animals is incorrect. Stating that some piranhas do in fact eat only plants would directly address this misconception. Choice (B) does not address the piranha diet. Choice (C) does not make sense because blood would also be an animal product. Choice (D) is inconsistent with the information in the text.
27. **(B)** The astronomers are concerned about the “dangers of a large asteroid strike on Earth.” A constructive strategy dealing with this problem would be to have a plan in place to prevent such a strike from happening. Based on the notes, a constructive strategy would be to build upon the success that NASA had in modifying the orbit of a small asteroid. After all, if a small asteroid could be manipulated, it is

possible that a larger one could also be manipulated. It is not (A) because this is too extreme in its negativity. It is not (C) because this is more alarmist than constructive. It is not (D) because this would dismiss instead of addressing the concerns of the astronomers.

Module 2A

1. **(D)** In this sentence, Juan is “ignoring” the jealous comments of his friends; the word “dismissed” would be an excellent substitute. It is not “reduced” or “forgot,” because he devotes some thought to what they said. It is not “conceded” because that would mean he would admit the truth of the jealous claims of his peers.
2. **(D)** Camouflage would prevent potential prey from spotting the approaching servals since the prey would not be able to “detect” the servals. “Pictured” and “envision” involve more hypothetical visualization, and “ignored” is the opposite of the intended meaning.
3. **(C)** The spectators are bringing up ideas for consideration—thus “raised” would make sense, since the spectators are sharing ideas, not physical objects. It is not “increased” because someone cannot increase a speaking point. It is not “elevated” because while elevate can be used to refer to raising things in other contexts, it cannot properly be used here to refer to bringing up a point. It is not “nourished” because the spectators are not feeding several points—they are stating them.
4. **(C)** The text refers to “breaking the fat into three different chains,” so separating is the closest word meaning. “Flouting” means “defying.” “Elimination” would imply that the fat was removed instead of divided. “Categorizing” is a close synonym but indicates a classifying of parts.
5. **(C)** “Landscape” most appropriately describes the land in which the platypuses were prevalent. A panorama is more of a scenic view. A perspective is more of a point of view. Agriculture would not have been associated with the nonhuman activities so long ago.

6. **(D)** “Troubled” is the best choice since the narrator is thinking about a “most miserable thing.” Choice (A) is too strong of a word since there is no evidence that the narrator has become physically ill. (B) and (C) inaccurately portray the narrator’s shame as a power or strong point.
7. **(A)** The text refers presents that influenza remains a viable threat, and because of its unique disposition, is likely to stay that way. Choices (B) and (D) state the opposite, arguing instead that the virus is likely to be killed off and is essentially harmless. Choice (C) is not correct because influenza’s inability to be conquered, not its severity is what makes it unique.
8. **(B)** The text starts with the phrase “The wheel of progress moves onward.” This part of the topic sentence sets up the rest of the text to talk about what Stanton sees as inevitable progress and the embrace thereof. This makes choice (B) the best option. Andrew Johnson is only an example, not the main message, so choice (A) is incorrect. Choice (C) is the opposite of her message—she believes that people should embrace change and shift the status quo. Choice (D) is incorrect as she is not discussing animal examples.
9. **(C)** The court observed that if students are in segregated schools, they face an inherent disadvantage when compared to students at integrated schools. Choice (C) directly and specifically illustrates this claim by connecting legal segregation to a delay in educational and mental development. It is not (A) because it is too vague. It is not (B) because this refers to earlier thinking that separate facilities could be equal. It is not (D) because the disposition is not clarified.
10. **(C)** The researcher claims that probiotics that must be refrigerated are ill-suited for stomach digestion. Choice (C) would directly support this claim since it gives specific reasons why the bacteria that prefer a cold environment would be harmed by the stomach conditions. It is not (A) because this option does not relate to probiotics that need to be kept cold. It is not (B) because the warmth from a beverage may not be the same as the warmth in a stomach. It is not (D) because antibiotics are not the same as probiotics, so generalizations about antibiotics would not necessarily be applicable to probiotics.

11. **(A)** To support the idea that traumatic brain injuries are more likely to come from less dramatic, home-based injuries, choice (A) is the best option, as it refers to “falls and unintentional blunt trauma” that cause the majority of traumatic brain injuries. It is not (B) because this does not refer to less dramatic injuries. It is not (C) because it does not consider other sources like unintentional blunt trauma. It is not (D) because both of these sources of injuries are rather violent.
12. **(A)** The final sentence contrasts with the previous sentence, which states that there are times when handwashing is quite necessary. Therefore, acknowledging that living in a constantly sterile environment is “not necessary” makes the most sense. Choices (B) and (D) state the opposite of the needed meaning, and choice (C) is ambivalent.
13. **(D)** The text refers to MLM as a “new type of scheme” that was “designed to pad the pockets of a select few.” So, the narrator clearly has a negative opinion of MLM; thus, choice (D) makes sense because it describes MLM quite skeptically. Choices (A) and (B) express a more positive attitude towards MLM, which is not supported by the text. Choice (C) incorrectly connects the present-day MLM to its introduction in the World War II era.
14. **(B)** The text is outlining the evolution of the concept of a chemical element. The final sentence alludes to how Boyle’s long-lasting definition was eventually replaced after dominating scientific thinking for 300 years. Referring to “the discovery of subatomic particles in the 20th century” would make the most sense as an option, since it aligns with the chemistry focus of the text and matches the timeline coming 300 years after the 17th century. The other options do not connect to either chemistry or to the timeline.
15. **(A)** “Has” is both consistent with the singular subject of “it” and with the timeframe of the past leading up to the present day, making the present perfect tense correct. Choices (B) and (D) are plural, and choice (C) would use the past perfect, which would not indicate that this sport continues up to the present day.

16. **(C)** Use a comma to separate the complete sentence from the phrase that follows. It is not choices (A) or (D) because what follows is not a complete sentence. It is not (B) because a brief pause is needed.
17. **(D)** “It can be quite demoralizing” is the only option to put the words in a logical sequence. The other options place the subject, “it,” later in the phrase, making the phrase confusing to the reader.
18. **(D)** Since just two questions are asked, there is no need for any punctuation to break up the sentence. All the other options inappropriately incorporate extra punctuation.
19. **(D)** “Feel” works along with the future tense to say they will feel; “felt” is in the past tense and would be inconsistent with the other verbs in the sentence. Also, the correct phrase is to “feel overwhelmed,” i.e., that one is intimidated by all the work one has to do. “Overwhelming” can be used to describe a situation—my work load is overwhelming—but not to describe how one feels.
20. **(C)** No punctuation is required in this sentence. Choice (A) does not have a complete sentence after the semicolon. Choice (B) uses the dash to provide an unnecessary, awkward pause. And (D) unnecessarily sets aside “engineer” with commas, suggesting a parenthetical that is not needed; without “engineer,” the sentence would not make sense.
21. **(C)** The difficult part here is that the correct answer simply looks odd, despite being flawless. A possessive form of understanding of the class is needed: “class’s” understanding is the proper way to illustrate this. Choice (A) is both plural and lacking an apostrophe. Choice (B) is an improper way to indicate possession. (D) indicates multiple “classes,” whereas there is actually only one class.
22. **(B)** We need a possessive word to serve as a stand-in for Truman and MacArthur. Eliminate choices (C) and (D) for being singular possessives. Eliminate (A) for not being a possessive at all. “Their” is the correct answer.
23. **(C)** The semicolon prevents a run-on sentence or comma splice; there is a complete sentence both before and after the semicolon. In

addition to the key error of not breaking up two complete sentences, the other options have different problems: choice (A) has no breaks whatsoever, (B) has an unnecessary comma after “standing,” and (D) does not have an apostrophe with “Edith” to show possession.

24. **(D)** “As” provides the needed transition to show cause-and-effect in this situation—the chef wants to work on a part-time basis because they could have more flexible scheduling. The other options do not show a cause-and-effect relationship.
25. **(C)** “However” is the only option that provides a contrast between the idea that laws may be in place and the opposite idea that guest workers can’t take action when they experience unfair treatment.
26. **(D)** This option is the only one to specifically mention the leaders of the two armies at Gettysburg: Meade and Lee. Choice (A) is incorrect because Lincoln was not a general in command at the battle—Meade was. Choice (B) does not refer to the leaders. Choice (C) only mentions Lee.
27. **(D)** To calm a friend who is worried about psoriasis, the student would want to give the friend hope that if they had psoriasis, it should not be a cause for concern. Choice (D) correctly incorporates information from the notes, namely that “there are many treatment options.” The other options would all highlight negative aspects of psoriasis, contributing to the friend’s anxiety.

Module 2B

1. **(B)** “Comply with” shows that people follow certain rules, which would be the logical choice given that they are agreeing to pay the fees. “Observe” is too passive, and “disobey” and “ignore” are the opposite of the intended meaning.
2. **(A)** The text is arguing that music can help “prompt” or “trigger” memory, thereby helping in learning in a variety of areas. It is not a physical “souvenir.” It is not a way of speaking, like a “dialect.” It is not trying to brainwash people into a particular way of thinking, like “indoctrination.”

3. **(D)** The text as a whole describes Cullen in a positive light, so it makes sense to use “renowned,” which means “respected.” “Notorious” is too negative. “Imminent” describes something happening quickly. “Illustrated” is not supported by the passage since there is no mention of artwork accompanying his writings.
4. **(B)** The word “staple” takes on one of its less common definitions—it is not the physical staple that holds paper together; instead it signifies that the crop rotation is the “primary” choice for everyday soil management. It is not “periodic” because the text suggests that crop rotation is done consistently instead of occasionally. It is not “subsistent” because while subsistence has to do with food, the text is referring to the importance of crop rotation, not describing basic human nutrition. It is not (D) because this would put crop rotation in a negative light.
5. **(D)** “Impress upon” means to make someone understand something. In this case, the author is stating that students are rarely made to understand that the way to succeed in the stock market is through long-term, thoughtful investing. The students are not being “awarded” anything; nor are they having something “produced” for them. To “pan out” is to “end up” or “conclude,” and the author is not suggesting that students will necessarily end up a certain way—instead, they are emphasizing that students need to be made to understand a concept.
6. **(A)** We see earlier in the text that the dog regarded the sausage as “booty” to which he was entitled, and so consumed it. The justification given in this selection is disingenuous, since the true reason the dog behaved as he did was a desire for food. It is not choice (B) because this is not a true excuse. It is not (C) because the dog does not display curiosity for the truth, but rather attempts to hide the truth. It is not (D) because the dog does not seem to care about finding common ground with the bird.
7. **(B)** Throughout this text, the author presents information to support his claim that fermentation is not solely limited to anaerobic organisms. To do this, he extensively explains the reasons why a

human cell might use anaerobic fermentation. This best fits with choice (B). Choice (A) is incorrect as the text implies that respiration is the primary process whereby humans obtain energy. Choice (C) is incorrect as the author says that vigorous exercise would increase the chance of fermentation taking place. Choice (D) is incorrect as the text makes clear that when human muscles use fermentation: it is in addition to respiration, not instead of it.

8. **(B)** Although Clarinda continues to plead with her father, he states with a “terrible finality” that there is no other way than to proceed with meeting the bridegroom. Given that he no longer indulges her concerns and that he is rather abrupt, it makes sense to describe his attitude as “exasperated and dismissive.” While it is possible that he expressed some of the emotions described in the other options elsewhere in the novel, we do not find evidence of these in the excerpt we see. Ultimately, he does not want to argue with her and simply states what she must do.
9. **(C)** The text states that, at minimum, Descartes can reject a concept if he finds “some ground for doubt.” Hence, (C) is his threshold for dismissal. Choices (A) and (B) suggest that Descartes would have to find a more considerable flaw. Finally, dismissing all knowledge as in (D) is not his goal—he wants to have knowledge so long as it is well-justified.
10. **(D)** The economist claims that most people who participate in a pyramid scheme are likely to make money. The table, however, shows that in a classic pyramid scheme, only about 12.49% of participants profit. 12.49% is far less than 50%, showing that the economist’s claim is incorrect. Choices (A) and (B) select information from the table that would support, not weaken, the economist’s claim. It is not (C) because this gives no information about the proportion of participants who profit.
11. **(D)** The student wants to show that the narrator realizes that light is necessary for shadows to exist. Choice (D) effectively illustrates this because in this selection, there is not sunlight because the sun was not yet up, and the shadow is “fast asleep in bed,” showing that it needs

the light to come into existence. While the other options all mention shadows, they do not describe the light as a necessary accompaniment to shadows.

12. **(D)** The astronomers hypothesize that the roads and buildings at Chaco Canyon align with both the regular cycles of the sun and the complicated multi-year dance of the moon. The author acknowledges that it will take many years to confirm this hypothesis. Choice (D) would provide the best support for this hypothesis since it would show that there is a clear pattern in the way that the moon appears in the canyon walls. While the other options would provide interesting information about the history of Chaco Canyon, they would not provide evidence in support of there being a regular pattern demonstrating the architectural purpose of the buildings in the canyon.
13. **(A)** In the figure, the cells with an asterisk are cancerous. The reader can learn this by reading the paragraph under the figure. Every cancerous cell has a taller bar than the corresponding noncancerous cell. This shows the reader that cancerous cells have a higher average rate of change and makes choice (A) the best option. Choice (B) is the opposite of the relationship shown in the figure. Choice (C) is not supported by the figure except in the lung cells, which would not provide a sufficiently broad conclusion. Choice (D) is incorrect as no cells on the table have a rate of change of zero.
14. **(D)** Choice (D) is the best option because in this quotation the author shares a solution for ending the building of tenements: making them unprofitable. This leads us to the conclusion that they are only built because they are profitable. Choice (A) is incorrect as it discusses the desire to build tenement style houses, but not why the desire exists. Choice (B) is incorrect as it talks about the unchanging style of the tenements, but again, not about why they don't change. Choice (C) is incorrect because it discusses the public perception of tenement houses, but not why they are built.
15. **(A)** The text contends that the range of effects associated with thalassemia is so broad because there is a redundancy, namely, four

copies of the α globin gene. So, we can infer that the disorder would be more uniform, or consistent, if there were fewer copies. The text even suggests that the severity is based on how many copies of the gene are defective—one defective gene produces mild complications, while four defective genes would be lethal. Choice (B) would not change the scope of intensity. Choice (C) would likely increase the variation. Choice (D) does not make sense because the text gives no suggestion that less research on the human genome would relate to a greater uniformity of outcomes.

16. **(D)** A brief pause is needed after the introductory word “similarly.” Choices (A) and (B) do not have this needed pause, and both have an unnecessary pause in the middle of the selection. Choice (C) unnecessarily introduces a semicolon when there is not a complete sentence before it.
17. **(C)** This option puts the words in a logical order: “Cannon” should immediately begin the phrase because he was the one who graduated from the program in New Mexico. Choices (A) and (B) put “Cannon” later in the sentence, and choice (D) puts the phrase “studied briefly” later than it should be to maintain a logical flow.
18. **(B)** “Preferred” is correctly used as an adjective in this context, signifying that it is the type of food that the birds most strongly like. The other forms of “prefer” given in the answer options would typically be used as verbs.
19. **(D)** When using parentheses, treat the surrounding punctuation as though the parenthetical phrase were not even there. Choice (D) correctly does this by having a comma after the parenthetical phrase and before a needed clarification. Choice (A) incorrectly places a comma after “Dunn,” and choices (B) and (C) add an unnecessary comma after “first.”
20. **(C)** “Wreak havoc” means to cause destruction and chaos. The other options use improper phrasing. Choices (A) and (B) use “wreck” instead of “wreak,” and (D) uses the incorrect preposition “toward.”

21. **(D)** The phrase “through the CAM adaptation” could be removed from the sentence and the sentence would still be logical, so dashes on either side of the phrase would be appropriate in offsetting it. Choice (A) has the colon at an inappropriate spot that would cause the pause to be quite abrupt. Choice (B) uses inconsistent punctuation on either side of the parenthetical phrase. Choice (C) does not have a complete sentence after the semicolon.
22. **(A)** This is the only option that correctly surrounds the clarifying phrase with commas. Choices (B) and (D) do not surround the clarifying phrase with punctuation, and choice (C) places the punctuation after “many,” making it come too late to help the flow of the sentence.
23. **(B)** The narrator is arguing that fertilizers and herbicides have negative impacts and thus their use should be minimized. The text first justifies this by stating that herbicide and fertilizer use can be quite expensive. Then the text highlights the negative environmental consequences. Since this is an “additional” shortcoming of using chemicals in farming, “In addition” is the best option. The sentence is not showing a contrast as in choice (A). Choices (C) and (D) would show a cause-and-effect relationship, which is not supported by the context.
24. **(A)** The sentence prior to the needed insertion states that the human body comes with a variety of flaws. The insertion then needs to transition into the example of how humans cannot efficiently filter cholesterol from their blood. Thus, “for example” is the best option. It is not choices (B) or (D) because there is not a contrast. It is not (C) because this is not a “peripheral” or loosely related idea; instead, it provides an example that directly connects to the text.
25. **(B)** The student wants to suggest a type of person who would benefit if female trees were planted in their neighborhood. Based on the notes, female trees “absorb pollen out of the air and can help reduce allergy symptoms.” So, someone who had pollen allergies would very likely benefit from having mostly female tree plantings. It is not choice A because female trees produce nuts. It is not (C) because the text implies that all types of trees—both male and female—produce

leaves. It is not (D) because female trees would produce fruit and so would not be helpful to someone trying to avoid fruit.

26. **(B)** Be sure to pick up on the “not” in the question—we want something that would not likely be part of the public domain. According to the notes, it will take 70 years after the death of a work’s author to be in the public domain. Also, if something is created privately it is not in the public domain. Therefore, a newly created private work would not be in the public domain, as in choice (B). It is not (A) because this is a publicly created work and would be in the public domain. It is not (C) or (D) because these options both suggest things that would be in the public domain. (Choice (C) is correct in terms of such a novel being in the public domain, while choice (D) is incorrect.)
27. **(C)** According to the notes, free will is when someone’s first-order desires and second-order desires align. For example, someone may have a first-order desire to eat junk food, but this would not align with a second-order desire to want to eat healthfully. If what the person wants to do aligns with what the person genuinely desires, then the person is acting freely. So, if someone genuinely wanted to eat more healthfully and actually feels like eating healthier foods, the person would be acting freely according to Frankfurt. A plausible reason why Frankfurt would not consider an animal to possess free will is that an animal may only be able to have straightforward wants without the ability to reflect on whether those wants are what it truly desires. So, choice (C) would make sense. It is not (A) because this would support that the animals have free will given their ability to reflect. It is not (B) because first-order desires would be needed to have second-order desires. It is not (D) because this would place humans and animals in the same category as far as having no capacity to reflect on whether certain wants are genuinely desirable.

Math

Module 1

1. **(C)** Distribute the $\frac{1}{2}x^3$ to simplify:

$$\begin{aligned}\frac{1}{2}x^3(x^2 - 4) &\rightarrow \\ \left(\frac{1}{2}x^3\right)(x^2) + \left(\frac{1}{2}x^3\right)(-4) &\rightarrow \\ \frac{1}{2}x^5 - 2x^3\end{aligned}$$

2. **(210)** 5% of 200 is found as follows:

$$0.05 \times 200 = 10$$

Then, add 10 to 200 to find the number that would be 5% greater than 200:

$$10 + 200 = 210$$

3. **(A)** In 1970, the value of the price is clearly less than \$500. The only option that is less than \$500 is choice (A), \$245.
4. **(D)** Use elimination to solve for a , which is the value of x in this series of equations. First, eliminate the x by multiplying the second equation by -2 and adding it to the first equation.

$$\begin{array}{r}2x - 5y = 3 \\ x + 2y = 6 \rightarrow \\ 2x - 5y = 3 \\ + - 2x - 4y = -12 \\ \hline 0 - 9y = -9\end{array}$$

Then, solve for y :

$$\begin{aligned}-9y &= -9 \rightarrow \\ y &= 1\end{aligned}$$

Now, plug 1 in for y to one of the equations to solve for x . Use the second equation since it is simpler.

$$x + 2y = 6 \rightarrow x + 2(1) = 6 \rightarrow x = 4$$

5. **(B)** Call x the original price of the book prior to the discount. Since there was a 10% discount, the price after the discount is applied is 90% of the original price. So, set up an equation to solve for the original price:

$$0.9x = 18 \rightarrow$$

$$x = \frac{18}{0.9} = 20$$

So, the original price is \$20.

6. **(A)** First, find the height of the actual Statue of Liberty in centimeters by multiplying 93 meters by 100 centimeters per meter:

$$93 \times 100 = 9,300$$

Then, find 1/500th of 9,300 to find the height of the model in centimeters:

$$9,300 \times \frac{1}{500} = 18.6$$

18.6 rounds up to 19 whole centimeters.

7. **(C)** Use easily visible points on the function to plug in values to determine the correct equation. First, try the point (0, 1) into the equations to see what can be eliminated.

(A) $f(x) = x^2 \rightarrow 1 \neq 0^2$ so (A) is incorrect.

(B) $f(x) = x^2 + 1 \rightarrow 1 = 0^2 + 1$ so (B) is a possibility.

(C) $f(x) = 2^x \rightarrow 1 = 2^0$ so (C) is a possibility.

(D) $f(x) = 3^x + 1 \rightarrow 1 = 3^0 + 1 \rightarrow 1 \neq 2$, so (D) is incorrect.

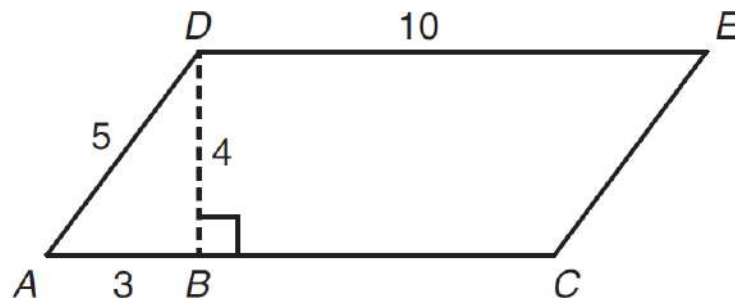
Now, try the point (2, 4) with options (B) and (C):

(B) $f(x) = x^2 + 1 \rightarrow 4 \neq 2^2 + 1$ so (B) is incorrect.

(C) $f(x) = 2^x \rightarrow 4 = 2^2$ so (C) is correct.

Alternatively, you could graph each of the answers using the Desmos calculator embedded in the math test to visualize the different functions.

8. (40)



The area of a parallelogram is the base multiplied by the height. The base of the parallelogram is 10, and the height is 4 since it is part of a 3-4-5 special right triangle. Therefore, the area of the parallelogram is $4 \times 10 = 40$ square units.

9. (B) Manipulate the equation to get R by itself:

$$A = \frac{v^2}{R} \rightarrow A \times R = \frac{v^2 R}{R} \rightarrow A \times R = v^2 \rightarrow R = \frac{v^2}{A}$$

10. (B) Plug in 2 for x and 17 for y , then solve for b :

$$y = bx^2 + 5 \rightarrow$$

$$17 = b(2)^2 + 5 \rightarrow$$

$$17 = 4b + 5 \rightarrow$$

$$12 = 4b \rightarrow$$

$$b = 3$$

11. **(300)** Divide 3,000 miles by 10 hours to solve for the speed in miles per hour:

$$\frac{3000 \text{ miles}}{10 \text{ hours}} = 300 \text{ miles per hour}$$

12. **(1)** Use elimination to solve for y . Multiply the top equation by -2 so you can eliminate the x values when you add the equations together:

$$-2 \times (2x - 3y = 5) \rightarrow -4x + 6y = -10$$

Then, add this equation to the second equation to eliminate the x values:

$$\begin{array}{r} -4x + 6y = -10 \\ + 4x + y = 17 \\ \hline 0 + 7y = 7 \end{array}$$

Then, solve for y :

$$7y = 7 \rightarrow y = 1$$

So, the value of y is equal to 1.

13. **(D)** Use x as the capacity for the smaller bag, and y as the capacity for the larger bag. Set up two equations to solve. First, make an equation that expresses the capacities in terms of each other:

$$x = \frac{1}{3}y$$

Then, make an equation expressing the total capacity of the two bags:

$$x + y = 80$$

Then, simplify and use substitution to solve for the capacity of the smaller bag, x :

$$x = \frac{1}{3}y \rightarrow 3x = y$$

Plug $3x$ into the second equation to solve:

$$x + y = 80 \rightarrow x + 3x = 80 \rightarrow 4x = 80 \rightarrow x = 20$$

So, the capacity of the smaller bag is 20 liters.

14. **(B)** Use the fact that $f(2) = 8$ to find what the constant C is. According to the table, $f(2) = 2^C$. So, solve for C :

$$f(2) = 2^C \rightarrow$$

$$8 = 2^C \rightarrow$$

$$2^3 = 2^C \rightarrow$$

$$C = 3$$

Now that we know that $C = 3$, we can solve for $f(3)$:

$$f(3) = 3^C = 3^3 = 27$$

15. **(10)** Let h represent the height of the triangle and let b represent the width of the base of the triangle. Express the idea that the height of the triangle is twice its width with this equation:

$$h = 2b$$

The formula to calculate the area of a triangle is $A = \frac{1}{2}bh$. Substitute 25 for the area and $\frac{h}{2} = b$ from manipulating the above equation, then solve for the height:

$$A = \frac{1}{2}bh \rightarrow 25 = \frac{1}{2}\left(\frac{h}{2}\right)h \rightarrow 25 = \frac{h^2}{4} \rightarrow 100 = h^2 \rightarrow 10 = h$$

The height is therefore 10 units.

16. **(A)** Look at the differences among the answer choices to save yourself time. We need a function that will show an exponential increase over time. In the function $I(T) = 2 \times (1.5)^T$, as T increases, $I(T)$ would also increase at an exponential rate. With all of the other options, however, as T increases, the value of $I(T)$ would consistently *decrease*. Choice (B) would involve multiplying by an ever-smaller fraction, and choices (C) and (D) would involve dividing by ever-larger numbers. So, the only logical option is choice (A).
17. **(D)** Take the 300 cubic meters and multiply it by the density for steel, 7,850 kilograms per cubic meter, to get the total mass of the wall:

$$300 \times 7,850 = 2,355,000 \text{ kilograms}$$

18. **(65.8)** Calculate the total height of the seven boys by using the mean formula and solving for the sum:

$$\frac{\text{Sum}}{7} = 67 \rightarrow \text{Sum} = 469$$

Now, subtract the height of 74 from the total:

$$469 - 74 = 395$$

Finally, find the mean of the six boys using 395 as the sum:

$$\frac{395}{6} \approx 65.8$$

19. **(B)** $\angle X$ and $(90 - \angle X)$ are complementary angles, since they would add up to 90 degrees. Recall that the sine of one angle is equal to the cosine of the angle that is complementary to it; similarly, the cosine of one angle is equal to the sine of the angle that is complementary to it.

Thus, the sine of $(90 - \angle X)$ will simply be the same as the cosine of $\angle X$: $\frac{\sqrt{2}}{2}$.

20. **(B)** Factor the expression to determine what *would* be factors:

$$\begin{aligned}
 x^3 + x^2 - 20x &\rightarrow \\
 x(x^2 + x - 20) &\rightarrow \\
 x(x - 4)(x + 5)
 \end{aligned}$$

So, choices (A), (C), and (D) would all be factors. Choice (B), $x - 7$, would not be, so choice (B) is correct.

$$x^3 + x^2 - 20x$$

21. **(B)** Since the cards are returned to the set after each selection, the total number of choices will remain at 10. So, the probability that someone would pick a 9 on this selection would simply be $\frac{1}{10}$.
22. **(D)** Simplify the equation to visualize what is happening:

$$\begin{aligned}
 3x - 6 &= 3(x - a) \rightarrow \\
 3x - 6 &= 3x - 3a
 \end{aligned}$$

If the constant a is greater than 2, then $3a$ would be greater than 6. This would result in an absurd situation since the equation would no longer express an equivalence. For example, if a were 3 (a value greater than 2), look at what happens to the equation:

$$\begin{aligned}
 3x - 6 &= 3x - 3a \rightarrow \\
 3x - 6 &= 3x - 9 \rightarrow \\
 -6 &\neq -9
 \end{aligned}$$

Thus, the equation would have no solutions if the constant a is greater than 2.

Module 2A

1. **(A)** Put the equation into slope-intercept form, $y = mx + b$ to solve for the value of the y -intercept, b :

$$y + 5 = 7x \rightarrow$$

$$y = 7x - 5$$

So, the value of the y -intercept is -5 .

2. **(C)** Since there are 20 students, find the number of the servings by the 10th and 11th students to see the median of the set. The values are already in order, so you can see that the 10th and 11th terms are both 6. Therefore, the median of the set is 6.

3. **(B)**

$$\begin{aligned} \frac{x^2 - 81}{x + 9} &\rightarrow \\ \frac{(x + 9)(x - 9)}{x + 9} &\rightarrow \\ \frac{\cancel{(x + 9)}(x - 9)}{\cancel{x + 9}} &\rightarrow \\ x - 9 \end{aligned}$$

4. **(B)** Two points that are easy to identify are $(-6, 0)$ and $(0, 4)$. So, take the slope using these two points.

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 0}{0 - -6} = \frac{4}{6} = \frac{2}{3}$$

4. **(A)** Since the total distance of the trail is 300 and Walter has already traveled 100 miles, he has $300 - 100 = 200$ miles remaining on his journey. Use the equation $\text{Distance} = \frac{\text{Rate}}{\text{Time}}$ to solve.

He has to travel a total of 200 miles in D days, and we are solving for the m miles per day he is travelling. So, the equation will be:

$$\begin{aligned} \text{Distance} &= \frac{\text{Rate}}{\text{Time}} \rightarrow \\ m &= \frac{200}{D} \end{aligned}$$

6. **(A)** Distribute and simplify:

$$2(x - 4) + 4 \rightarrow$$

$$2x - 8 + 4 \rightarrow$$

$$2x - 4$$

7. **(D)** In the function $C(m) = 10m + 10,000$, the 10,000 represents the fixed cost to run the restaurant, and the 10 represents the additional cost to the restaurant for each additional meal. If no meals were served, the total cost would be \$10,000. If one meal were served, the total cost would be \$10,010. If two meals were served, the total cost would be \$10,020. So, the cost is going up by \$10 for each additional meal sold.

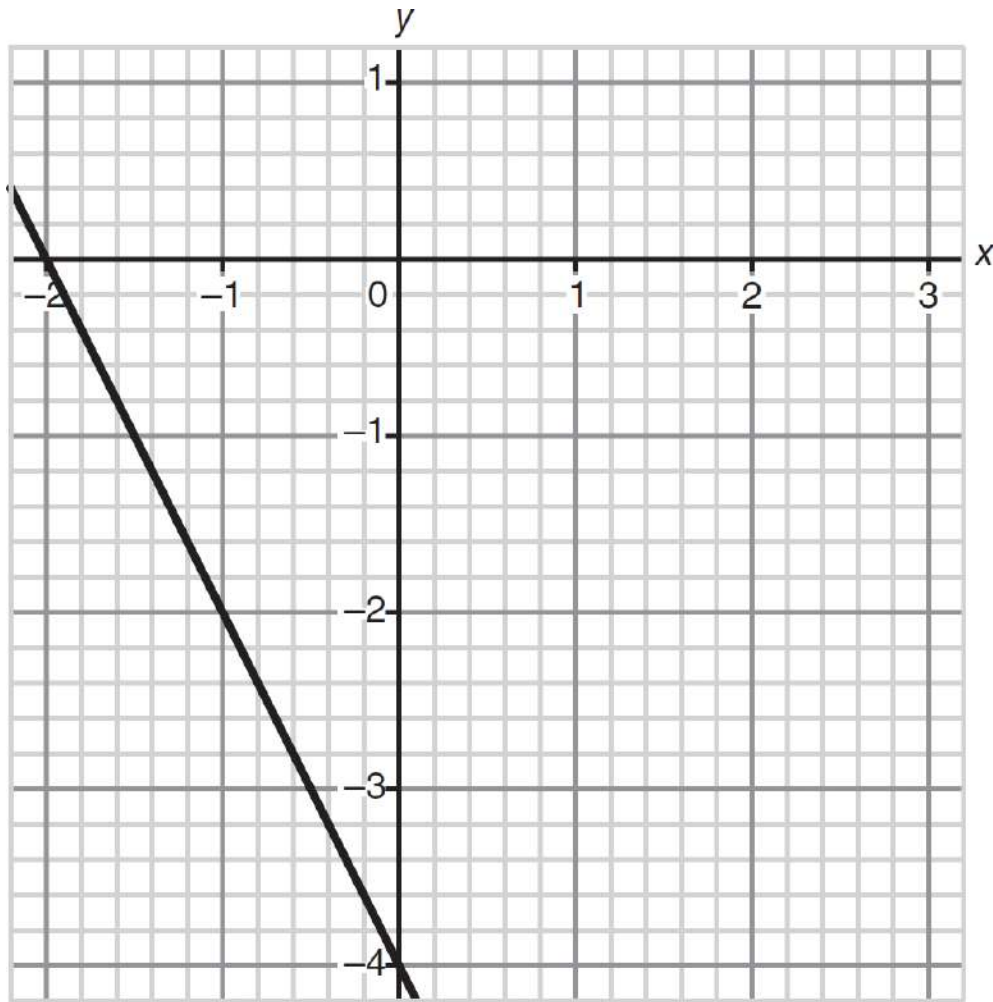
8. **(A)** Put the equation $\frac{1}{2}y + 2 = -x$ in slope-intercept form, $y = mx + b$:

$$\frac{1}{2}y + 2 = -x \rightarrow$$

$$\frac{1}{2}y = -x - 2 \rightarrow$$

$$y = -2x - 4$$

The equation therefore has a slope of -2 and a y -intercept of -4 . This corresponds to choice (A), as graphed below:



9. **(B)** Subtract the fractions from 1 (which represents the total set of voters) to find the fraction of voters who do not like either candidate:

$$1 - \frac{1}{2} - \frac{1}{3} \rightarrow$$

Put everything in terms of the least common denominator, 6:

$$\frac{6}{6} - \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$$

So, the probability that a randomly selected voter will like neither candidate is $\frac{1}{6}$.

10. **(50)** Let x represent the number of forks, and y represent the number of spoons. The first equation could be for the total number of forks and spoons:

$$x + y = 80$$

The second equation would show the ratio of forks to spoons:

$$\frac{x}{y} = \frac{5}{3}$$

Now, simplify the second equation and substitute into the first equation to solve for x .

$$\frac{x}{y} = \frac{5}{3} \rightarrow 3x = 5y \rightarrow y = 0.6x$$

Plug $0.6x$ in for y in the first equation:

$$x + y = 80 \rightarrow x + 0.6x = 80 \rightarrow 1.6x = 80 \rightarrow x = \frac{80}{1.6} = 50$$

So, there are 50 forks in the drawer.

11. **(A)** Between the hours of 7 a.m. and 9 a.m., the traffic density increases from 20 vehicles per mile per lane to 40 vehicles per mile per lane. This is the largest increase in traffic density between any of the intervals.
12. **(B)** Plug the second inequality $x \leq -y - 2$ into $y + 10 \leq 3x$ and simplify:

$$y + 10 \leq 3x \rightarrow$$

$$y + 10 \leq 3(-y - 2) \rightarrow$$

$$y + 10 \leq -3y - 6 \rightarrow$$

$$4y + 10 \leq -6 \rightarrow$$

$$4y \leq -16 \rightarrow$$

$$y \leq -4$$

So, the largest possible value for y is found when $y = -4$.

13. **(C)** Since the cashier accidentally subtracted the sales tax from the price of the meal, the new percentage will be $100\% - 7\% = 93\%$. Therefore, the price of the meal in terms of x will be $0.93x$.
14. **(35)** Call x the number of minutes for Ken's morning commute. The commute in the evening would be $x + 25$. So, add the morning and evening commute times together to equal the 95 total minutes, then solve for x :

$$x + (x + 25) = 95 \rightarrow$$

$$2x + 25 = 95 \rightarrow$$

$$2x = 70 \rightarrow$$

$$x = 35$$

So, the number of minutes for the morning commute is 35.

15. **(B)** Plug 2 in for x to find the value of $f(2)$:

$$f(x) = \frac{x^3}{4} + 3 \rightarrow$$

$$f(2) = \frac{2^3}{4} + 3 = \frac{8}{4} + 3 = 2 + 3 = 5$$

16. **(3)** The volume formula for a right rectangular prism is $L \times W \times H = V$. Since we already know the volume of the prism and the product of the length and width, we can set up a formula like this to solve for the prism's height:

$$L \times W \times H = V \rightarrow$$

$$30 \times H = 90 \rightarrow$$

$$H = \frac{90}{30} = 3$$

So, the height of the prism is 3 inches.

17. **(1)** Factor the equation to solve for the possible values of x :

$$x^2 - x - 20 = 0 \rightarrow$$

$$(x + 4)(x - 5) = 0$$

The possible values of x are therefore -4 and 5 since each of these would make the entire left-hand side of the equation equal to zero. Then, add -4 and 5 to find the sum:

$$-4 + 5 = 1$$

18. **(B)** Set up a proportion to solve for the number of residents, x , who voted no. There are 360 degrees total in a circle, so make the proportion have degrees on one side and residents on the other:

$$\frac{45}{360} = \frac{x}{800} \rightarrow$$

$$x = \frac{45 \times 800}{360} = 100$$

So, there are 100 residents who voted no on the levy.

19. **(B)** Use the density formula $Density = \frac{Mass}{Volume}$, plugging in 2 kilograms for the mass and 8 liters for the volume:

$$Density = \frac{Mass}{Volume} \rightarrow$$

$$Density = \frac{2}{8} = \frac{1}{4}$$

20. **(B)** Take 35, divide it by 70, and multiply the result by 100 to determine what percentage 35 is of 70:

$$\frac{35}{70} \times 100 = 50\%$$

21. **(5)** Find the equation of the new line by calculating its slope—we already know that the y -intercept is 4. Take the negative reciprocal of the slope of the first line, -3 , by flipping it and changing the sign.

$$-3 \rightarrow \frac{1}{3}$$

So, the equation of the new line is $y = \frac{1}{3}x + 4$. Calculate the value of a point on this line when the x value is 3 by plugging 3 in for x :

$$y = \frac{1}{3}x + 4 \rightarrow$$

$$y = \frac{1}{3}(3) + 4 \rightarrow$$

$$y = 1 + 4 = 5$$

The y value will thus be 5 for this point.

22. (A) While you could solve for the length of $\overline{AB}$ by using the Pythagorean triple, it will be easier if you recognize that this triangle represents a Pythagorean triple: 7, 24, and 25. With the hypotenuse at 25, the cosine of $\angle ABC$ will be:

$$\cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}} = \frac{7}{25}$$

Module 2B

1. (C) Plug 15 degrees in for T to solve for the corresponding speed:

$$V = 331.4 + 0.6T \rightarrow$$

$$V = 331.4 + 0.6(15) = 340.4$$

2. (C) Since this line is written in slope-intercept form, $y = mx + b$, recognize that the slope is going to be a . A line that is perpendicular to this one will have a slope that is the negative reciprocal of a : $-\frac{1}{a}$. The only option that has this as its slope is choice (C).
3. (A) When dividing exponential expression that have the same base, subtract the exponents from one another:

$$\frac{x^{\frac{2}{3}}}{x^{\frac{1}{6}}} = \frac{x^a}{\sqrt{x}} \rightarrow \frac{x^{\frac{4}{6}}}{x^{\frac{1}{6}}} = \frac{x^a}{\sqrt{x}} \rightarrow x^{\left(\frac{4}{6}-\frac{1}{6}\right)} = \frac{x^a}{\sqrt{x}} \rightarrow x^{\left(\frac{3}{6}\right)} = \frac{x^a}{\sqrt{x}} \rightarrow x^{\left(\frac{1}{2}\right)} = \frac{x^a}{\sqrt{x}}$$

The square root of x is equivalent to $x^{\frac{1}{2}}$. Substitute this in to the equation and simplify:

$$x^{\left(\frac{1}{2}\right)} = \frac{x^a}{\sqrt{x}} \rightarrow x^{\left(\frac{1}{2}\right)} = \frac{x^a}{x^{\left(\frac{1}{2}\right)}} \rightarrow x^{\left(\frac{1}{2}\right)} x^{\left(\frac{1}{2}\right)} = x^a \rightarrow x^1 = x^a$$

So, $x = 1$.

4. **(D)** Convert the miles per hour to feet per second by cancelling out terms:

$$\begin{aligned} \left(X \frac{\text{miles}}{\text{hour}}\right) &\times \frac{5,280 \text{ feet}}{1 \text{ mile}} \times \frac{1 \text{ hour}}{3,600 \text{ seconds}} \rightarrow \\ \left(X \frac{\cancel{\text{miles}}}{\cancel{\text{hour}}}\right) &\times \frac{5,280 \text{ feet}}{1 \cancel{\text{mile}}} \times \frac{1 \cancel{\text{hour}}}{3,600 \text{ seconds}} \rightarrow \\ &= X \times \frac{5,280}{3,600} \end{aligned}$$

This corresponds to choice (D).

5. **(B)** For the equation to have infinitely many solutions, the two sides of the equation should be equivalent. Simplify the left-hand side by dividing everything on that side by 2:

$$\begin{aligned} \frac{2x-6}{2} &= x+k \rightarrow \\ x-3 &= x+k \end{aligned}$$

So, for the equation to have equivalent sides, the constant k must equal -3 .

6. **(B)** For an absolute value equation $3 = |x - 1|$, set up two separate equations to represent both the possible positive and negative values of what is inside the absolute value symbol:

Equation 1:

$$3 = x - 1 \rightarrow x = 4$$

Equation 2:

$$-3 = x - 1 \rightarrow x = -2$$

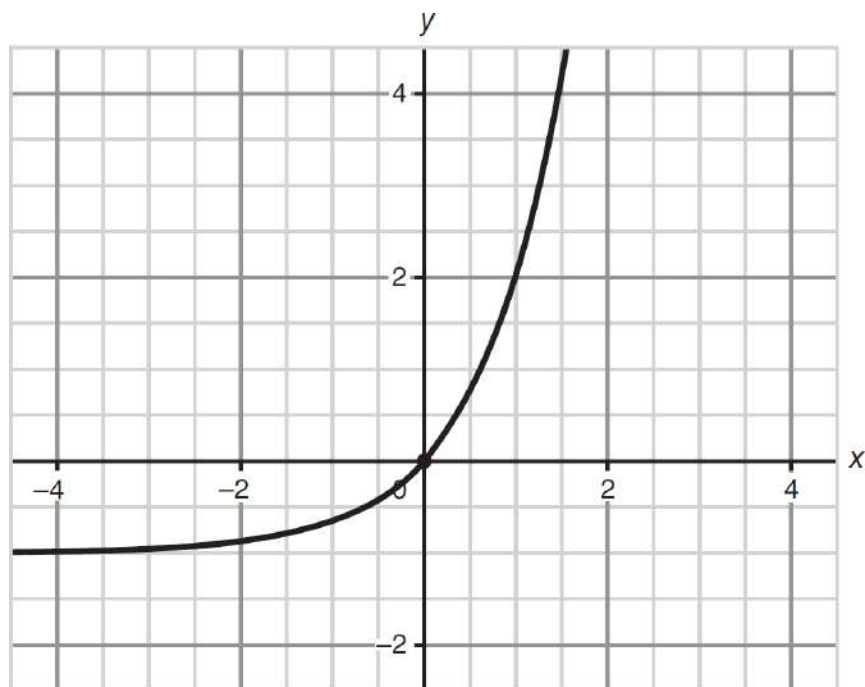
So, there will be two solutions to the equation, 4 and -2 .

7. **(100)** Since the heartbeats and breaths have a linear relationship, you can solve for the number of heartbeats per minute by noticing that the breaths go up by 3 for every increase of 10 heartbeats per minute. So, if Baahir breathes 24 breaths per minute, add $10 + 10$ to 80 to get 100 heartbeats for minute as his pulse.
8. **(C)** Factor the function to identify its zeros:

$$f(x) = x^2 - 3x - 4 \rightarrow (x - 4)(x + 1)$$

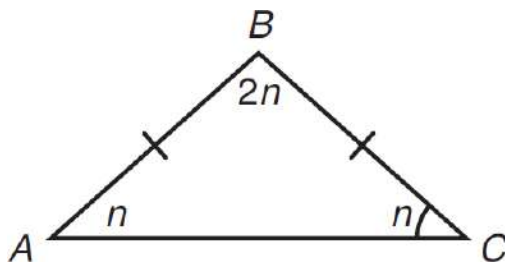
So, the function will intersect the x -axis at x values of 4 and -1 . Therefore, there are two points at which the function will intersect the x -axis.

9. **(0)** For the function $f(x)$ to intercept the y -axis, it must have a value of 0 for x . Here is what the function looks like when graphed:



So, do not overthink this question— x simply needs to be 0 for the function to intercept the y -axis.

10. **(A)** The population of the city is decreasing exponentially, so choices (C) and (D) can be eliminated since they would model exponential increase. Choice (A) portrays the correct initial population of 50,000 and correctly models a 10% decrease by multiplying by 0.9. Choice (B) has an incorrect initial population and far too great an exponential decrease.
11. **(C)** Since this is an isosceles triangle, the angles that are opposite the congruent sides are equivalent. So, angle C has a measure of n .

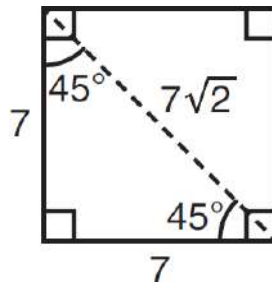


All of the internal angles in a triangle add up to 180 degrees, so solve for n to find the measure of angle C :

$$n + n + 2n = 180 \rightarrow 4n = 180 \rightarrow n = 45$$

Thus, the measure of $\angle C$ is 45° .

12. **(B)** The standard deviation for set A would be greater than that for set B, since in set A, the values are clustered towards greater and lesser numbers, while in set B, the values are clustered around the average. Since the standard deviation corresponds to the typical deviation from the average, it would be much greater in Set A than in Set B. The range would be the same from set to set, and based on estimating from the graph, the mean and median would be relatively identical from set to set.
13. **(3.5 or $\frac{7}{2}$)** In a square with a diagonal of $7\sqrt{2}$ units, the sides are 7 units long since the triangle formed by two sides and the diagonal is a 45-45-90 triangle, which would have sides in a ratio of $x, x, x\sqrt{2}$.



So, the largest possible circle that would fit within the square would have a diameter of 7 units, since it would go from one side to the other. Take half of 7 to find the radius: 3.5.

14. **(C)** Diana will need to walk an additional 4,000 steps since $10,000 - 6,000 = 4,000$. Since she walks 100 steps in a minute, determine the number of additional minutes she will need to walk by dividing 4,000 by 100:

$$\frac{4000}{100} = 40$$

Now, convert 40 minutes to hours:

$$40 \text{ minutes} \times \frac{1 \text{ hour}}{60 \text{ minutes}} = \frac{2}{3} \text{ hour}$$

So, Diana will need to walk an additional $\frac{2}{3}$ of an hour on Tuesday.

15. **(C)** The value of m is equivalent to the slope of the function. Since $g(1) = 7$ and $g(3) = 11$, use the ordered pairs $(1, 7)$ and $(3, 11)$ to calculate the slope of the line:

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{11 - 7}{3 - 1} = \frac{4}{2} = 2$$

So, the value of m is 2.

16. **(D)** The balloons both start at 200 feet in altitude. If one balloon increases its height by 30%, its new height will be $200 \times 1.3 = 260$ feet. If the other balloon decreases its height by 15%, its new height will be $200(1 - 0.15) = 200(.85) = 170$ feet. The different in height between the two balloons will then be $260 - 170 = 90$ feet.
17. **(D)** Use the quadratic formula to approach this problem:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

If the value of $b^2 - 4ac$ is negative, there will be no real solutions to the problem since the equation would require you to take the square root of a negative number. So, see what values of b would make it such that there would be a negative value for $b^2 - 4ac$.

The equation $2x^2 + bx + 4 = 0$ is already in quadratic form, so you can identify that $a = 2$, $b = b$, and $c = 4$ for the purposes of plugging numbers in to the quadratic formula. We can just look at the value of $b^2 - 4ac$ to determine what values of b would cause there to be only a negative value of the expression.

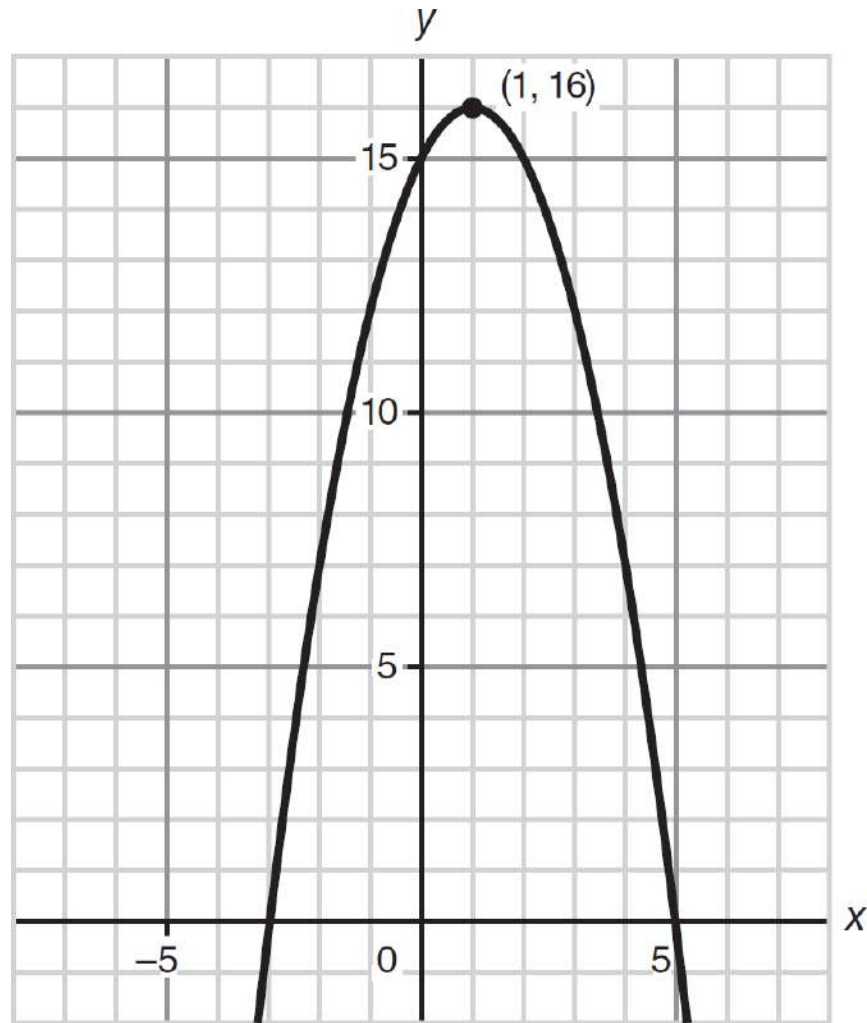
$$\begin{aligned}
 b^2 - 4ac &< 0 \rightarrow \\
 b^2 - 4(2)(4) &< 0 \rightarrow \\
 b^2 - 32 &< 0 \rightarrow \\
 b^2 &< 32
 \end{aligned}$$

Take the square root of both sides, adjusting for the potentially negative value of b :

$$\begin{aligned}
 b &< +\sqrt{32} \text{ and } b > -\sqrt{32} \rightarrow \\
 \sqrt{32} &= \sqrt{16 \times 2} = 4\sqrt{2} \rightarrow \\
 b &< 4\sqrt{2} \text{ and } b > -4\sqrt{2}
 \end{aligned}$$

The option that expresses this range of possible values is $|b| < 4\sqrt{2}$, since the absolute value would account for both possible negative and positive values for b in this range.

18. **(1)** The function has zeros at x values of -3 and 5 based on the equation. Also, the function has a negative coefficient, which means the direction of the function is downwards. So, the maximum of the function will be found at an x value that is halfway between -3 and 5 :
1. You can see this in the graph of the function below:



19. **(A)** Use S as the number of small pizzas and L as the number of large pizzas. The total number of pizzas sold in a month must be less than 800, so one inequality will be $S + L < 800$. The parlor needs to make at least \$10,000, so calculate the total revenue from the small pizzas by multiplying each small pizza by 10 and calculate the total revenue from the large pizzas by multiplying each large pizza by 20. This total needs to be greater than or equal to 10,000. So, the second inequality will be $10S + 20L \geq 10,000$.
20. **(A)** Based on the definition of R_0 as provided in the question, an R_0 of 4.2 means that one infected person will infect 4.2 other people. Thus, to determine the number of people that 20 people who are infected with a virus of R_0 of 4.2, simply multiply 4.2 by 20:

$$4.2 \times 20 = 84$$

21. **(D)** Since the median of the set is currently 6, adding a number that is 6 or greater would not change the median of the set. For example, if we added 6, the new set would be $\{2, 3, 6, 6, 6, 7\}$. This would still have a median of 6. If we add a number greater than 6, that too would be fine. For example, if we added 100 to the set, the set would be $\{2, 3, 6, 6, 7, 100\}$. The median of the new set would still be 6. Therefore, the correct answer is $x \geq 6$. It is not Choice (A) because this is not the “complete” set of potential values.
22. **(4)** The equation for a circle is $(x - h)^2 + (y - k)^2 = r^2$, in which (h, k) is the center and r is the radius. Memorize this equation because the SAT does not give it to you. The diameter of a circle is twice that of its radius. Take the square root of 49 to find the radius of circle A: $\sqrt{49} = 7$. The diameter of circle A will be twice seven: 14. Next, take the square root of 25 to find the radius of circle B: $\sqrt{25} = 5$. The diameter of circle B will be twice five: 10. Finally find the difference between the diameters of the two circles to arrive at the solution:

$$14 - 10 = 4$$

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