

Digital SAT®

Practice Test

2026 Oct INT - B

Section	Module	Questions	Time
Reading and Writing	1	27	32 minutes
Reading and Writing	2	27	32 minutes
Math	1	22	35 minutes
Math	2	22	35 minutes
Total		98	134 minutes

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The Reading and Writing section comes first, followed by a 10-minute break and then the Math section. Answers are provided in a separate Answer Key.

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Section 1, Module 1: Reading and Writing

27 QUESTIONS • 32 MINUTES

DIRECTIONS

The questions in this section address a number of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s).

All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

Section 1, Module 1: Reading and Writing

1

_____ the source of a malfunction in a complex electrical system can be a painstaking, time-consuming process: a repair technician may need to test each individual component one by one until the specific part causing the problematic behavior is identified.

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

- A. Adapting
- B. Isolating
- C. Incorporating
- D. Fabricating

2

Single-celled foraminifera inhabiting coastal waters experience significant environmental salinity changes during tidal cycles. How, then, do they _____ internal salt levels? Some organisms maintain high concentrations of phosphates that allow them to affect the concentration of internal electrolytes—including salt—in response to external changes. It may be that coastal foraminifera do the same.

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

- A. counteract
- B. elude
- C. tolerate
- D. regulate

3

Though most studies of the effect of altitude on blood chemistry usually concentrate on people who live above sea level, researchers Suleiman A. Al-Sweedan and Moath Alhaj have instead chosen the _____ path in their recent work of studying the blood of people who live below sea level, in locations such as the California towns of Westmorland and Thermal.

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

- A. predictable
- B. innovative
- C. idealistic
- D. timeworn

4

While once _____, basic computer security training that only teaches recognition of obvious scams cannot provide enough protection against today's sophisticated fake emails, which employ such subtle deception

techniques that many organizations now require their staff to complete comprehensive cybersecurity education programs.

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

- A. uncommon
 - B. superficial
 - C. sufficient
 - D. affordable
-

5

What is a city? The answer depends on where you live! Many countries define an area as a city based on how many people live there. However, not every country uses the same numbers. Iceland defines a city as an area with a population of at least 200, while the Netherlands defines a city as having a minimum population of 20,000. Some countries even define cities using other factors, like if there is a local government.

Which choice best describes the overall structure of the text?

- A. It lists the number of cities in one country, then compares that number to the number of cities in another country.
 - B. It poses a question, then explains why the question has many answers.
 - C. It offers a recommendation, then provides reasons for that recommendation.
 - D. It describes two locations, then explains why only one of the locations is considered a city.
-

6

The following text is adapted from the 1940 novel *The Hamlet* by William Faulkner. In rural Mississippi, a man is riding a horse toward the residence of someone he intends to meet with about a business matter.

He was breathing hard but not because he had been galloping. On the contrary, since he had approached near enough to his destination to believe he could have seen smoke if there had been smoke, he had ridden slower and slower. Nevertheless he now sat the horse before the gap in the fence, breathing hard enough through his nose and even sweating a little, looking at the sagging broken-backed cabin set in its inevitable treeless and grassless plot and weathered to the color of an old bee-hive, with that expression of tense and rapid speculation of a man approaching a dud howitzer [artillery] shell.

©1967 by Estelle Faulkner and Jill Faulkner Summers

Which choice best states the main purpose of the text?

- A. To contrast the man's desire to attend the meeting with his awareness of the risk involved in attending it
 - B. To compare the upcoming meeting to a far more serious experience from earlier in the man's life
 - C. To depict the man's insistence on meeting despite the inconvenience of traveling on horseback
 - D. To portray the man's anxiety about the meeting as reflected by his physical state and demeanor
-

7

Modern forestry offers diverse career opportunities that integrate scientific knowledge with hands-on environmental work. Arborists assess tree health and perform maintenance such as pruning to promote safety and prevent problems. Forestry technicians collect data on growth patterns and biodiversity in the wild. Forest ecologists conduct field research and analyze ecosystems to understand how forests respond to changes in weather patterns. With this blend of scientific understanding and practical application, forestry professionals address a variety of complex environmental challenges.

Which choice best describes the main purpose of the text?

- A. To explain technological advances in modern forestry and demonstrate how they've transformed traditional practices
 - B. To analyze environmental challenges facing forests and describe how modern professionals address these problems
 - C. To compare career opportunities in modern forestry and explain which positions offer the best job security
 - D. To highlight career opportunities in modern forestry and describe how they integrate scientific knowledge and hands-on work
-

8

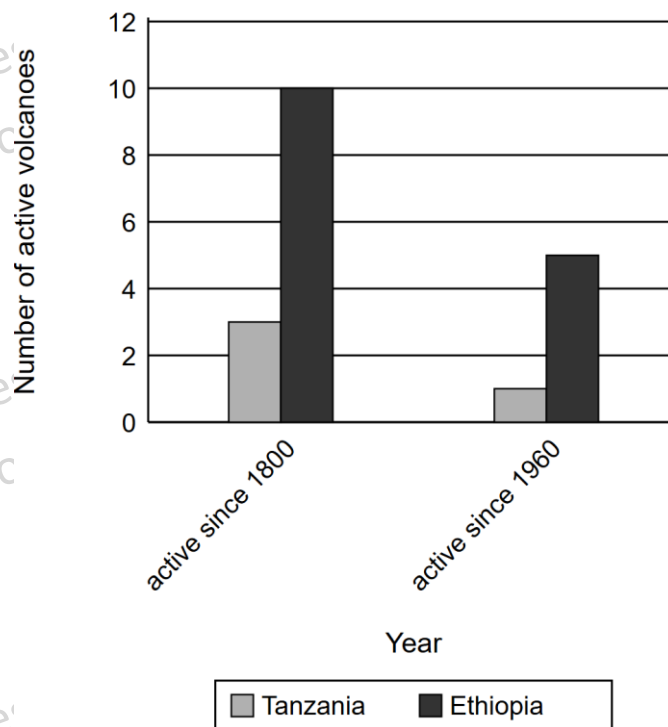
James Fong and his team claim to have discovered a new color, which they named olo. Olo is a very saturated blue-green color that can't be seen with the human eye under natural conditions. In the human eye, long, medium, and short cones in the retina help sense bright light and color. Olo can only be seen by activating the medium cones alone. Fong and team activated these cones by using a targeted laser technology to stimulate just the medium cone cells.

According to the text, how can the color olo be seen?

- A. By activating only the medium cones in the retina
 - B. By activating the long, medium, and short cones in the retina
 - C. By activating both the long and short cones in the retina
 - D. By activating only the long cones in the retina
-

9

Volcanoes Active since 1800 and
since 1960 in Two Countries



A student is collecting data about countries with volcanoes that have been active in the time since 1800 and in the time since 1960. The student records that Ethiopia has _____

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

- A. the same number of volcanoes that have been active since 1800 as Tanzania has.
- B. no volcanoes that have been active since 1800.
- C. more volcanoes that have been active since 1960 than Tanzania has.
- D. fewer volcanoes that have been active since 1960 than Tanzania has.

10

Editor Jared Shurin’s enormous 2023 anthology *The Big Book of Cyberpunk* comprises 108 stories. Shurin’s volume is chronologically expansive, featuring such stories as James Tiptree Jr.’s “The Girl Who Was Plugged In” (1973) and Erica Satifka’s “Act of Providence” (2021). In his introduction, Shurin defines cyberpunk as a subgenre of speculative fiction concerning “the influence of technology on the scale, the pace, or the pattern of human affairs”; however, some critics assert that cyberpunk is a literary movement that is in large part aesthetic rather than idea driven.

Which quotation from a literary critic would be the most effective evidence in support of the underlined claim?

- A. “Not all the stories anthologized in *The Big Book of Cyberpunk* were first published as stand-alone short stories in magazines or journals: for example, qntm’s 2021 story ‘Lena’ was originally self-published on the author’s site qntm.org.”

- B. “The stories in *The Big Book of Cyberpunk* share a number of common themes indicative of cyberpunk as a whole: body modification; resistance to authority; the ways in which technological advancements alter human behavior.”
- C. “Shurin’s characterization of cyberpunk is remarkably generous; it is a categorization that might well serve for the entire field of science fiction in general, rather than cyberpunk in particular.”
- D. “A key component of cyberpunk that differentiates it from other subgenres of science fiction is an affection for the totems of 1980s pop culture, such as the mirrored sunglasses that were then popular.”

11

Employment in Tribal Economies in December 2017 and December 2023 by Sector

Economic sector	Approximate total number of employees, 2017	Percentage of workforce, 2017	Approximate total number of employees, 2023	Percentage of workforce, 2023
Business sector (all tribal businesses)	220,700	66.0%	232,300	65.4%
Leisure and hospitality businesses	185,100	55.3%	192,300	54.2%
Education and healthcare businesses	19,100	5.7%	21,600	6.1%
Other businesses	16,500	5.0%	18,400	5.1%
Public sector (tribal government and public administration)	113,800	34.0%	122,700	34.6%

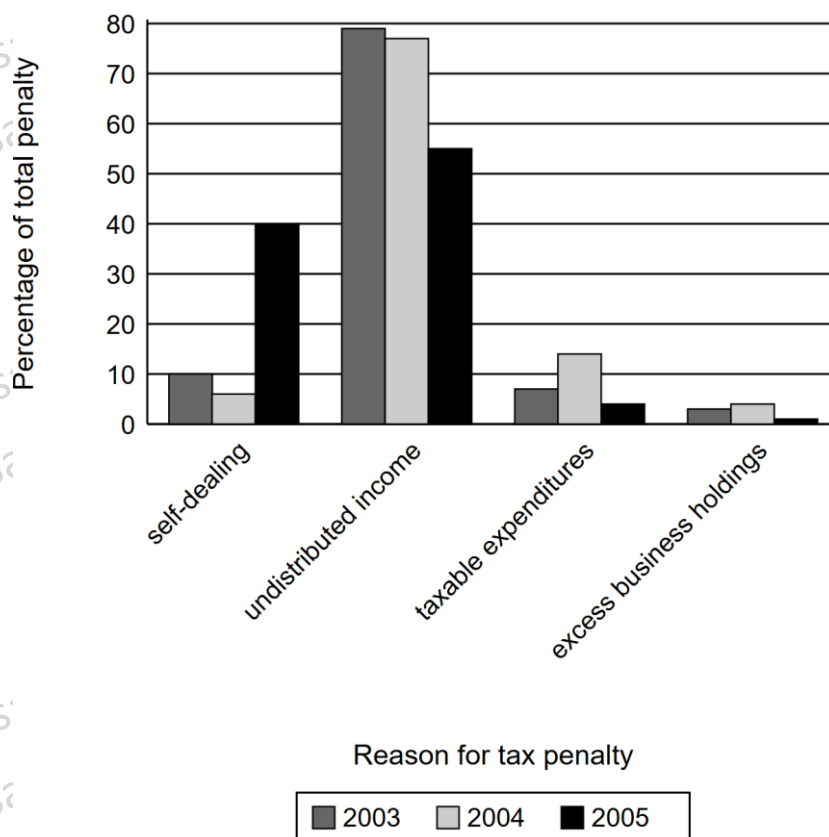
Tribal nations employ a large percentage of their populations in tribally owned businesses as well as in government and public administration. This is especially true in Oklahoma and other states with robust tribal economies and large Native populations. Between end-of-year 2017 and end-of-year 2023, the percentage of tribal employees working in the public sector increased, from 34.0% to 34.6%, while the percentage working in the business sector declined from 66.0% to 65.4%.

Which statement about the decline in the percentage of tribal employees working in the business sector is best supported by information in the table?

- A. It didn’t result from an overall contraction of that sector, since the total number of employees in that sector increased by several thousand during this period.
- B. It was offset by changes in leisure and hospitality businesses, since the percentage of employees working in those businesses increased during this period.
- C. It was driven primarily by changes in businesses classified as “other,” since those businesses had the lowest number of employees by the end of 2023.
- D. It resulted from widespread workforce redistributions, since several thousand employees left that sector to take new jobs in the public sector during this period.

12

Tax Penalties Assessed on Private Foundations That Filed Form 4720, by Reason, 2003–2005



While US public charities, like Commonfund, must file Form 990 yearly with the IRS, private foundations, such as Lilly Endowment Inc., must file a different form, 990-PF. In addition, foundations that engage in certain prohibited activities must also file Form 4720 and pay a penalty tax on the money involved. Private foundations are prohibited from holding excess interests in a business enterprise, “self-dealing” (conducting activities that benefit foundation insiders), making taxable expenditures such as grants to noncharitable entities, and failing to cross a required threshold in making charitable distributions from income. Out of the organizations that filed Form 990-PF in the years 2003–2005, _____

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

- A. those that filed Form 4720 because they had excess holdings in a business enterprise paid, on average, a larger penalty than those that filed Form 4720 because they made taxable expenditures.
- B. those that filed Form 4720 because they engaged in self-dealing paid an increasing percentage of the total penalty each year from 2003 to 2005.
- C. those that filed Form 4720 in 2003 because they failed to meet the minimum charitable distribution requirement collectively paid a larger percentage of the total penalty assessed that year than those that filed Form 4720 in 2005 for the same reason.
- D. those that filed Form 4720 in 2005 because they engaged in self-dealing collectively paid a larger percentage of the total penalty assessed that year than those that filed Form 990 but also filed Form 4720 for the same reason.

13

Philoctetes is a play by Sophocles that was first performed in 409 BCE. In the play, Odysseus and Neoptolemus must retrieve Philoctetes—a master archer who is believed necessary for the Greeks to win the Trojan War—from a cave on a deserted island where Odysseus and others had abandoned him with a debilitating injury earlier in the war. Odysseus suggests that the plan for returning with Philoctetes rests on Neoptolemus not having been part of the group that abandoned him: _____

Which quotation from *Philoctetes* most effectively illustrates the claim?

- A. “Since the prize of victory is so dear, / Endure it [acting deceitfully]—We’ll be just another day / But now, for one brief hour, devote thyself / To serve me without shame.”
- B. “Go near now silently, and make me know / If still he persevere, and hold this spot, / Or have roamed elsewhere, that informed of this / I may proceed with what remains to say, / And we may act in concert.”
- C. “Now let me show, why thine approach to him / Is safe and trustful as mine cannot be / Thou didst sail forth, not to redeem thine oath, / Nor by constraint, nor with the foremost band. / All which reproaches I must bear.”
- D. “No moment for this talk, / Lest he discern my coming, and I lose / The scheme, wherewith I think to catch him soon.”

14

Louis-Ferdinand Céline’s 1932 novel *Journey to the End of the Night* is regularly described as autobiographical. That characterization is apt—there are many parallels between the experiences of the novel’s protagonist, Ferdinand Bardamu, and those of Céline—but it should not be taken to mean that every person or event depicted in *Journey to the End of the Night* has a real-life analogue. Much of the novel is pure invention, and readers who overlook this fact and instead focus excessively on correspondences between the novel and Céline’s life can thus _____

Which choice most logically completes the text?

- A. fail to appreciate how much creativity Céline shows in the book.
- B. overemphasize the extent to which Céline took inspiration from earlier writers.
- C. refuse to acknowledge that Céline drew on real-world material when writing *Journey to the End of the Night*.
- D. misrepresent *Journey to the End of the Night* as being more widely read than it actually is.

15

Last-mile delivery, the final stage in the delivery of products to customers, is subject to increasing pressure as consumers place greater emphasis on convenience and immediacy, increasingly expecting next-day delivery. In response to this challenge and others, such as the increasing volume of parcels to be delivered, delivery companies are continually looking for ways to make last-mile delivery more efficient. One advance in last-mile delivery is the use of self-service lockers (containers where consumers can pick up their parcels

using a unique code). This approach, while promising, also introduces new obstacles (e.g., convenient placement of self-service lockers is challenging). It is therefore likely that _____

Which choice most logically completes the text?

- A. delivery companies will need to keep experimenting with new ideas for last-mile delivery if they hope to keep pace with consumers' expectations.
- B. delivery companies will continue promising next-day delivery out of a desire to meet consumers' expectations.
- C. advances in last-mile technologies will slow as delivery companies focus more on meeting customer expectations for increased convenience.
- D. innovations in the use of self-service lockers for last-mile delivery will stall unless delivery companies shift their focus to methods with fewer complications.

16

With an average summer temperature of 82.5 degrees Fahrenheit, Nicosia is one European _____ many travelers recommend, especially from June to September.

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

- A. city, which
- B. city in which,
- C. city that
- D. city, that

17

Nanoengineers have developed synthesized mesoporous silica nanoparticles that are used to transport genes and medicines to specific cells in the body. As nanotechnology evolves, medical technology _____ to evolve as well.

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

- A. had likely continued
- B. would likely have continued
- C. had likely been continuing
- D. will likely continue

18

To more easily balance the weight of her body on her toes while performing the demanding pointe work that became increasingly common in early 20th-century ballet, internationally known ballerina Anna Pavlova redesigned her pointe shoes. The modifications she made—adding a stiffened leather sole and hardened toe _____ began the modernization of ballet's iconic footwear.

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

- A. box,
 - B. box—
 - C. box
 - D. box:
-

19

Archaeological evidence indicates that board games have existed in human societies for at least five millennia, with examples discovered in the tombs of ancient Egypt and the ruins of Mesopotamia. The purpose of these ancient games was _____ provide entertainment during leisure time, to reflect cultural beliefs, and to develop strategic thinking skills among players.

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

- A. threefold. To
 - B. threefold: to
 - C. threefold; to
 - D. threefold to
-

20

Extensive radiocarbon dating of reed samples from Caral confirmed Ruth Shady Solís’s hypothesis about the Peruvian site’s _____ nearly 5,000 years ago, the ancient city preceded the Olmec civilization to the north by a full millennium, a revelation that fundamentally altered our understanding of urban development in the Western Hemisphere.

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

- A. age, built
 - B. age: built
 - C. age and built
 - D. age built
-

21

Chemists investigating the properties of coal tar in the mid-nineteenth century discovered compounds that led to the creation of vibrant artificial colorants. Commercial applications of this new synthetic dye technology—beginning with the purple dye called mauve, discovered by William Perkin in 1856—_____ responsible for launching what one science historian calls a “manufacturing revolution based on chemistry.”

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

- A. was
- B. is
- C. were

D. has been

22

How does a clear evening become foggy? First, the ground releases heat, which radiates upward. This causes the air near the ground to cool. _____ tiny water droplets begin to form as the cooling air reaches its dew point and can no longer hold its moisture as invisible vapor. Finally, as more droplets accumulate, a visible layer of fog develops close to the ground.

Which choice completes the text with the most logical transition?

- A. Similarly,
- B. Lastly,
- C. Instead,
- D. Next,

23

Scientists studying forest restoration have discovered that trees depend on complex partnerships with microscopic organisms for survival. The researchers found that special fungi called endophytes live inside tree leaves and serve as a defense mechanism. _____ these endophytes help by fighting off diseases and boosting the tree's immune system.

Which choice completes the text with the most logical transition?

- A. In conclusion,
- B. Nevertheless,
- C. Alternatively,
- D. Specifically,

24

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

- Pistol shrimp are small marine crustaceans that hunt using a specialized oversized claw.
- When the claw snaps shut rapidly, it pushes water through a narrow groove at extreme speeds.
- This high-speed water jet creates a bubble that pops forcefully near the shrimp's prey.
- The popping bubble generates shock waves powerful enough to stun small fish.

The student wants to introduce pistol shrimp to an audience unfamiliar with these crustaceans. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A. Some crustaceans use a specialized claw to create high-speed water jets and a bubble that stuns the small fish they prey on.
- B. Pistol shrimp are small marine creatures that use a specialized oversized claw to generate shock waves powerful enough to stun small fish.

- C. Pushing water through a narrow groove at extreme speeds, the snapping shut of the shrimp's claw sets the shock-wave hunting process in motion.
- D. Pistol shrimp are preyed on by small marine crustaceans that create high-speed water jets to stun their prey.

25

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

- Elizabeth Catlett (1915–2012) was a celebrated African American artist.
- She is best known for creating sculptures and prints that explore the Black experience.
- *Standing Mother and Child* is a 1980 sculpture by Catlett.
- *New Generation* is a 1992 print by Catlett.

The student wants to provide an example of one of Catlett's sculptures. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A. The print *New Generation* was created by celebrated artist Elizabeth Catlett in 1992.
- B. The sculpture *Standing Mother and Child* was created by celebrated artist Elizabeth Catlett in 1980.
- C. Artist Elizabeth Catlett is best known for creating sculptures and prints that explore the Black experience.
- D. Elizabeth Catlett, a celebrated artist, was born in 1915.

26

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

- Chapantongo is a municipality in the state of Hidalgo, Mexico.
- Municipalities are governmental regions responsible for providing many public services to their residents.
- One service they provide is traffic control.
- Chapantongo's population was 12,967 in 2020.
- Its population was 12,271 in 2010.
- Hidalgo is divided into 84 municipalities.

The student wants to emphasize the 2020 population of Chapantongo. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A. As of 2020, Chapantongo was one of 84 municipalities in Hidalgo, Mexico.
- B. In 2020, the municipality of Chapantongo had a population of 12,967.
- C. As a municipality in Hidalgo, Chapantongo is responsible for providing public services to its population.
- D. Home to 12,271 people, the governmental region was responsible for providing traffic control to its population in 2010.

27

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

- *The Future of Nostalgia* is a scholarly book by literary theorist Svetlana Boym.
- The book explores the concept of nostalgia from various angles.
- Chapter 8 explores nostalgia and Europe's largest shopping mall.
- Chapter 17 discusses various skeptics' takes on the concept of nostalgia.
- In chapter 17, Boym writes, "The poethics of nostalgia combines estrangement and human solidarity, affect and reflection."

The student wants to explain what Svetlana Boym writes about in chapter 8. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A. Svetlana Boym's *The Future of Nostalgia* explores the concept of nostalgia from various angles.
- B. As Svetlana Boym writes in the seventeenth chapter of her book, "The poethics of nostalgia combines estrangement and human solidarity, affect and reflection."
- C. Literary theorist Svetlana Boym explores nostalgia and Europe's largest shopping mall in chapter 8 of her book.
- D. After exploring nostalgia and Europe's largest shopping mall, Svetlana Boym goes on to discuss various skeptics' takes on the concept of nostalgia.

STOP

If you finish before time is called, you may check your work on this module only. Do not turn to any other module in the test.

Section 1, Module 2: Reading and Writing

27 QUESTIONS • 32 MINUTES

DIRECTIONS

The questions in this section address a number of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s).

All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

Section 1, Module 2: Reading and Writing

1

Weather patterns, market trends, input costs, labor availability, equipment maintenance, and biological cycles are all variables that farmers must consider separately and in terms of how they may affect each other, and it is this _____ of factors in particular that makes successful farm management so challenging.

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

- A. neglect
- B. misinterpretation
- C. resolution
- D. interplay

2

To maximize _____, package distribution centers employ advanced scheduling systems and strategic staging areas that allow for goods received from warehouses to be immediately transferred to trucks for delivery to their final destinations. Some centers are so efficient that even the largest delivery trucks can be filled in a matter of minutes.

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

- A. throughput
- B. staffing
- C. overhead
- D. liability

3

Researchers have developed algorithms that take into account how various _____ influence production schedules, allowing rapid solution generation for manufacturing planning problems. The algorithms help identify efficient production schedules by processing those quantifiable inputs (e.g., demand patterns and capacity constraints) without exhaustively testing all possible scenarios.

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

- A. optimizations
- B. predictions
- C. parameters
- D. anomalies

4

Marvel Girl's ability to lift modest loads with her mind is illustrative of the lamentably lackluster powers bestowed on many female superheroes, but even those with more formidable powers have been subject to

unflattering portrayals that often serve as _____: as the Phoenix, Jean Grey loses control of a cosmic force and destroys an entire planet, showing the corrupting influence of power.

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

- A. veneration
 - B. admonition
 - C. obfuscation
 - D. exoneration
-

5

Research on minor solar eruptions in magnetically quiet regions revealed an interesting pattern. Material expelled during these events follows a narrow arc trajectory back to the Sun's surface. High-resolution images show these eruptions produce thin streams of hot gas moving at speeds between 55 and 200 kilometers per second. Although these are impressive speeds, they are not sufficient to overcome the confining forces of the Sun's gravity and magnetic field, so the material is pulled back down.

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

- A. It describes a natural phenomenon that is explained later in the text.
 - B. It presents a research finding that challenges the view mentioned in the first sentence of the text.
 - C. It acknowledges an exception to the pattern described in the first sentence of the text.
 - D. It discusses a natural occurrence that leads to the consequences explained later in the text.
-

6

With examples ranging from Dean's Blue Hole in the Bahamas to Watling's Blue Hole near San Salvador Island, blue holes are large underwater sinkholes: pits filled with dark blue water that contrasts with lighter blue shallower waters surrounding them. The formation of blue holes typically involves several natural processes, including the dissolution of limestone or other carbonate rocks. Currently, the deepest blue hole on record is the Taam Ja' Blue Hole in Chetumal Bay, Mexico, which is reported by Laura Carrillo and colleagues as extending at least 420 meters below sea level.

Which choice best describes the overall structure of the text?

- A. It describes the appearance of a particular type of sinkhole, compares the formations of two sinkholes of that type, and then names the researchers who discovered the deepest known sinkhole of that type.
 - B. It compares a deep sinkhole to a shallower one, details the processes by which both sinkholes formed, and emphasizes the remarkable depth of the deeper sinkhole.
 - C. It explains how a particular sinkhole formed, evaluates that sinkhole's unusual appearance, and names a research team that is studying the sinkhole.
 - D. It defines a kind of sinkhole, describes its typical appearance and formation, and provides information about the deepest known sinkhole.
-

7

Text 1 is from George Eliot's 1860 novel *The Mill on the Floss*. Text 2 is from Rabindranath Tagore's 1921 nonfiction book *Glimpses of Bengal*.

Text 1

The wood I walk in on this mild May day, with the young yellow-brown foliage of the oaks between me and the blue sky, the white star-flowers and the blue-eyed speedwell and the ground ivy at my feet, what grove of tropic palms, what strange ferns or splendid broad-petalled blossoms, could ever thrill such deep and delicate fibres within me as this home scene?

Text 2

My feelings seem to be those of our ancient earth in the daily ecstasy of its sun-kissed life; my own consciousness seems to stream through each blade of grass, each sucking root, to rise with the sap through the trees, to break out with joyous thrills in the waving fields of corn, in the rustling palm leaves.

Which choice best describes a notable difference in how the references to palm trees function in Text 1 and Text 2?

- A. While the narrator of Text 1 and the author of Text 2 both refer to metaphorical palm trees, only the narrator of Text 1 suggests that the palm trees are representative of home.
- B. While palm trees form part of a series conveying the variety of the natural world in both texts, only the author of Text 2 recognizes how closely interconnected palm trees are with other plants in their environment.
- C. While the narrator of Text 1 and the author of Text 2 both discuss palm trees to suggest the value of experiencing the natural world, only the narrator of Text 1 alludes to the labor that goes into cultivating real palm trees.
- D. While palm trees serve to evoke natural beauty in both texts, only the author of Text 2 expresses a close sense of identification with palm trees.

8

Primarily encountered by modern readers as inert written texts, the vernacular riddles of early medieval England contain “implicit vestiges” of an interactive performance context, scholar Jill Frederick argues. Locative phrases (e.g., “here” and “now”) scattered throughout the riddles indicate the space shared by their speakers and audiences; the common refrain “say what I am called” invites a verbalized response; and the conflation of many of the riddles’ speakers with their solutions (typically animals, objects, or natural phenomena) suggests a form of dramatic impersonation perhaps meant to entertain during public gatherings.

Which choice best states the main idea of the text?

- A. It is reasonable to conclude based on textual evidence from the vernacular riddles of early medieval England that they were mainly performed at large public gatherings, though documentation of the locations in which they were performed is unlikely to exist.
- B. Linguistic evidence found within the vernacular riddles of early medieval England suggests that they may have been intended to be performed in communal settings, though this isn’t how they are generally experienced by readers today.

- C. People of early medieval England likely found that era's vernacular riddles to be more amusing than modern readers do, given that there is substantial evidence to indicate that they are best experienced in the context of an interactive performance rather than exclusively as written texts.
- D. Scholars once assumed that the vernacular riddles of early medieval England were originally intended to be read silently, but newly uncovered historical documents corroborate Jill Frederick's assertion that they may in fact have been intended primarily for oral performance.

9

In the Mexican dialect of Spanish, the consonant *s* is pronounced with greater tension in the tongue than it is in Castilian, the dominant dialect in Spain, resulting in a sharper sound. Margarita Hidalgo, a linguist at San Diego State University, argues that Mexican Spanish acquired this pronunciation from Nahuatl, the language of the Nahuatl people in central Mexico: as the Spanish colonizers of Mexico incorporated Nahuatl words into their speech, and as more and more Nahuas spoke Spanish as a second language, the Nahuatl pronunciation of the *s* consonant replaced the Castilian pronunciation.

Information in the text best supports which statement about the consonant *s*?

- A. The pronunciation of this consonant is the principal difference between the Mexican and Castilian dialects of Spanish.
- B. This consonant appears in a higher percentage of Nahuatl vocabulary than of Castilian vocabulary.
- C. The pronunciation of this consonant in Nahuatl may have been affected by its pronunciation in Mexican Spanish.
- D. The pronunciation of this consonant requires greater tension in the tongue in Nahuatl than in Castilian.

10

Cover crops, such as teff, are planted by many farmers between main growing seasons. While these crops are known for increasing biodiversity, Axel Don and his coauthor argued in a 2015 study that cover crops' role in supporting soil carbon sequestration deserves more attention. Cover crops remove carbon dioxide (CO₂) from the air and convert it to organic compounds; some of these compounds are stored in the soil as soil organic carbon (SOC), which contributes to the buildup of SOC stocks over time. Based on data from numerous farm fields, Don and his coauthor concluded that cover crops contribute meaningfully to soil carbon sequestration and, if widely adopted, could help offset agricultural emissions of atmospheric CO₂ and other greenhouse gases.

Which finding, if true, would be most consistent with Don and his coauthor's conclusion?

- A. Teff captures considerably more CO₂ in fields where it is the sole cover crop compared with fields where it is grown alongside other species of cover crops.
- B. Cover crops generally exhibit reduced carbon sequestration rates in fields exposed to high levels of greenhouse gas emissions compared with fields exposed to low levels of those emissions.
- C. SOC stocks vary more in fields where cover crops have been grown for decades compared with fields where cover crops have only recently been introduced.

- D. SOC stocks tend to be significantly lower in fields without cover crops compared with fields where cover crops have been grown for several years.

11

While the brain regions most strongly associated with language tasks have some modularity in that different language tasks activate these areas to varying degrees, comprehension also invokes other areas of the brain more strongly associated with nonlinguistic functions. For example, understanding a description of a person performing physical actions might call on parts of the listener's brain associated with sensory-motor functions, whereas a highly emotive account will likely activate areas associated with affective processing. Thus, beyond the areas most strongly associated with linguistic functions, _____

Which choice most logically completes the text?

- A. the specific combination of brain regions involved in comprehending speech is likely contingent on the total context in which the speech is embedded.
- B. the brain regions associated with sensory-motor functions are often involved in general comprehension, even in contexts that don't involve descriptions of physical movement.
- C. the brain regions most strongly associated with affective processing activate whenever a listener believes an utterance has emotional connotations, even if the speaker did not intend those connotations.
- D. the areas of the brain that activate when processing speech will typically include areas primarily responsible for nonlinguistic functions, although the exact combination of areas may be impossible to determine.

12

The Clarion-Clipperton Zone (CCZ) is an expanse of abyssal plain and seamounts (underwater mountains) between Hawai'i and Mexico in which mining is permitted, but the area's biodiversity is poorly understood. The vast majority of invertebrate species found in a recent survey of the CCZ were hitherto unknown to scientists, and sampling for animal life has been highly concentrated in the eastern part of the zone. Some species like *Psychropotes dyscrita* were identified both morphologically and molecularly (using DNA analysis), whereas *Discantenna metallica* and other species for which molecular sampling was impracticable were identified solely based on physical morphology. Since molecular analysis does not require distinguishing subtle physiological differences, it is _____

Which choice most logically completes the text?

- A. more frequently used for identifying species with physiological characteristics like those of *Psychropotes dyscrita* than morphological analysis is.
- B. capable of providing greater physiological detail about a species than is the method used for *Discantenna metallica*.
- C. better suited to distinguishing *Discantenna metallica* from morphologically similar species than to distinguishing *Psychropotes dyscrita* from morphologically similar species.
- D. more likely to properly distinguish between morphologically similar but distinct invertebrate species than is the method used to identify *Discantenna metallica*.

13

Rare species advantage (RSA) describes the situation in which there are few conspecifics (other members of the same species) in an organism's immediate surroundings, enabling the organism to avoid competition with conspecifics for the same resources; RSA is widely believed to play a crucial role in maintaining ecological stability. Among tree species in the Barro Colorado Island plot (latitude 9.15° N) and other tropical forest sites, there is little correlation between conspecific aggregation and the abundance of a given species in the wider local area, so RSA is expected, but in the Fenglin Nature Reserve (latitude 48.08° N) and other temperate forest sites, the aggregation-abundance correlation for tree species is strongly negative. Mathematical modeling suggests, however, that ecological niche distinction may mitigate the apparent risk to temperate ecological stability engendered by this pattern: _____

Which choice most logically completes the text?

- A. as a tree species in temperate forests becomes more abundant, individuals of that species are more likely to be found near conspecifics, enabling abundant species to exploit localized resources to a greater extent than rare species can.
- B. even though rare tree species in temperate forests tend to cluster with conspecifics more than rare tree species in tropical forests do, they are sufficiently rare locally that they benefit from RSA more than rare tropical species do.
- C. although rare tree species in temperate forests encounter relatively high local competition from conspecifics, they can thrive by exploiting resources that are underexploited by other local species.
- D. while an increase in abundance in one tree species often leads to a reduction in abundance of nearby species, temperate tree species tend to play different roles in the same ecosystem, reducing the expected effect of abundance on aggregation.

14

A premortem is an exercise in which teams imagine their project has already failed, then brainstorm possible reasons for that failure. Despite its apparent pessimism, _____ prompting teams to proactively develop mitigation strategies during the planning stage. As a result, the project is more likely to succeed.

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

- A. effective uncovering of potential problems by the team in this activity is done early,
- B. this activity effectively uncovers potential problems early,
- C. potential problems are effectively uncovered by this activity early,
- D. teams effectively uncover potential problems early with this activity,

15

As one of aviation's earliest female stunt performers, Gladys Ingle developed a versatile repertoire of acrobatic feats. Her specialized skills included standing on the wing of a flying aircraft and shooting a bow and arrow at a _____ perfect balance during aerial maneuvers, such as vertical loops; and even walking across the wing as an aircraft flew at full speed beneath a bridge.

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

- A. target; maintaining
 - B. target maintaining
 - C. target. Maintaining
 - D. target, maintaining
-

16

During a recent investigation, archaeologists _____ an explanation for the consistent and seemingly deliberate placement of petroglyphs (rock carvings) near water analyzed several sites on Caribbean islands. They discovered that many of the pools near petroglyphs had consistent water levels year-round, creating perfect reflecting surfaces for the carved symbols on the rocks.

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

- A. had sought
 - B. sought
 - C. seeking
 - D. were seeking
-

17

For his mash-up “Smells Like Rockin’ Robin,” DJ Mark Vidler layered Kurt Cobain’s minor-key vocals from “Smells Like Teen Spirit” over the Jackson 5’s major-key blues progression from “Rockin’ _____ by inserting the grunge singer’s vocal melody as pitch-shifted “blue notes” within the pop-soul group’s harmonic framework, creates an intensified “bluesy” sound and subverts the expectations of listeners familiar with either musical source.

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

- A. Robin,” a technique that
 - B. Robin.” A technique that
 - C. Robin”; a technique that,
 - D. Robin”—a technique that,
-

18

During the late nineteenth century, agricultural chemist George Washington Carver revolutionized farming practices in the American _____ promoting systematic crop rotation techniques that replenished essential nitrogen in depleted soils.

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

- A. South, by
- B. South by

- C. South; by
- D. South: by

19

Named for the year in which it was detected by English astronomers, SN 2016aps was a supernova (the explosion of a massive _____ in the constellation Draco, 3.6 billion light-years from Earth, the transient yet powerful blast propelled particles and debris into space at extremely high speeds.

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

- A. star). Occurring
- B. star) occurring
- C. star) and occurring
- D. star), occurring

20

Originating during the Cretaceous period, _____

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

- A. entomologists have extensively examined fossilized resin deposits excavated in northern Myanmar.
- B. the fossilized amber specimens excavated in northern Myanmar preserve unprecedented anatomical details of early arthropods.
- C. paleontological excavation in northern Myanmar has uncovered numerous ancient arthropods.
- D. arthropods were trapped and entombed within sticky conifer secretions.

21

In a 1993 study by Vales and Peek, the researchers used microhistological fecal analysis to determine the ratio of three plant subtypes (grainoids, forbs, and browse) within the diets of North American ungulates. The researchers did not perform this analysis on all such ungulates, _____ they focused exclusively on elk in Wyoming.

Which choice completes the text with the most logical transition?

- A. for instance;
- B. in other words;
- C. regardless;
- D. however;

22

The Hornbostel-Sachs system classifies musical instruments by how they produce sound. For example, an instrument that is popular in India called the saraswati veena produces sound primarily through the vibration of its strings. _____ under the Hornbostel-Sachs system, the saraswati veena is a chordophone.

Which choice completes the text with the most logical transition?

- A. Furthermore,
- B. Thus,
- C. Similarly,
- D. Instead,

23

Generally, sleek vehicles are more aerodynamic than bulkier ones. The streamlined nose of the Airbus A350 XWB jet, _____ helps it glide through wind with relative ease, while a boxy pickup truck encounters more wind resistance, making it less aerodynamic.

Which choice completes the text with the most logical transition?

- A. additionally,
- B. however,
- C. for example,
- D. meanwhile,

24

On June 13, 1927, aviator Charles Lindbergh received a ticker-tape parade in New York City in recognition of his transatlantic flight. Of the 206 ticker-tape parades held between 1886 and 2022, a number were for achievements in aviation. _____ Lindbergh's parade was just one of 16 honoring pilots.

Which choice completes the text with the most logical transition?

- A. Therefore,
- B. Indeed,
- C. In addition,
- D. Nevertheless,

25

Between February 1876 and September 1876, George Eliot's novel *Daniel Deronda* was serialized in eight parts in *Blackwood's Magazine*. Scholars typically regard the serial version of Eliot's novel as less authoritative than the version later published in book form. _____ as scholar Philip Allingham notes, serialized texts were the versions in which the nineteenth-century readership first "saw itself and its world reflected, and to which it responded, often with great emotion."

Which choice completes the text with the most logical transition?

- A. Accordingly, they emphasize the appeal of the serial version for Victorian audiences;
- B. Still, the serial version is important to an understanding of the novel's historical context;
- C. Consequently, the book version of the novel is often favored over the serial version;
- D. However, others regard the serial version as a more faithful representation of Eliot's intentions;

26

- The Highpointers Club is a hiking club.
- One of the main goals among club members is to reach the highest points in all fifty US states.
- Those who achieve this are called 50 Completers.
- In Suk Han became a 50 Completer on November 15, 2013.
- The highest point in Wisconsin is Timms Hill, at 1,951 ft.
- The highest point in Wyoming is Gannett Peak, at 13,809 ft.

Which choice most effectively uses information from the given sentences to explain the 50 Completers hiking challenge to a new audience?

- A. If you are looking for a new hiking challenge, consider joining the Highpointers Club, as did In Suk Han, a hiker who successfully reached the highest point in every US state.
- B. Not until after you have reached the highest points in all fifty US states—including Timms Hill in Wisconsin and Gannett Peak in Wyoming—can you include yourself among the 50 Completers of the Highpointers Club.
- C. On November 15, 2013, In Suk Han finally completed the feat of reaching the highest point in all fifty US states, including Timms Hill in Wisconsin and Gannett Peak in Wyoming.
- D. Hikers aiming to count themselves among the 50 Completers must reach not only Wisconsin's Timms Hill but also the even higher peak of Gannett Peak in Wyoming.

27

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

- Enhanced rock weathering (ERW) is a method of spreading crushed basalt on farmland to capture carbon dioxide (CO₂) and improve soil health.
- ERW increases crop yields and removes harmful CO₂ from the air.
- ERW offers a low-cost, low-tech alternative to expensive, energy-intensive carbon capture methods.
- The CO₂ captured by ERW becomes stable bicarbonate in soil water, which eventually streams into the ocean to remain safely stored for hundreds of years.
- ERW can improve rural economies by reducing farmers' need for fertilizers and increasing their earnings from carbon credits.

The student wants to explain why ERW is a superior method for capturing CO₂. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A. ERW improves soil health and helps farmers increase their income from selling carbon credits.
 - B. ERW removes CO₂ from the air in a way that is both low-cost and low-tech.
 - C. The CO₂ captured by ERW becomes stable bicarbonate, which improves soil health by remaining in the ocean for hundreds of years.
 - D. ERW is a method of spreading crushed basalt on farmland to capture CO₂, improving rural economies.
-

STOP

If you finish before time is called, you may check your work on this module only. Do not turn to any other module in the test.

Section 2, Module 1: Math

22 QUESTIONS • 35 MINUTES

DIRECTIONS

The questions in this section address a number of important math skills.

Use of a calculator is permitted for all questions. A reference sheet and these directions can be accessed throughout the test.

NOTES

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- All figures lie in a plane.
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- If your answer is a decimal that doesn't fit in the provided space, enter it by truncating or rounding at the fourth digit.
- If your answer is a mixed number (such as $3\frac{1}{2}$), enter it as an improper fraction ($7/2$) or its decimal equivalent (3.5).
- Don't enter symbols such as a percent sign, comma, or dollar sign.

REFERENCE

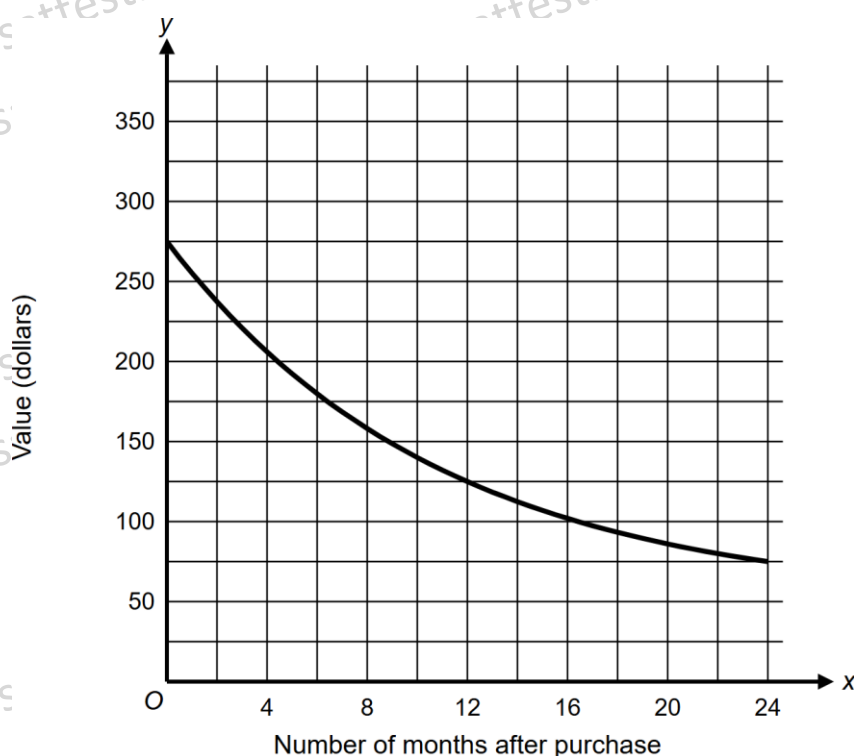
$A = \pi r^2, C = 2\pi r$	Circle
$A = \ell w$	Rectangle
$A = \frac{1}{2}bh$	Triangle
$c^2 = a^2 + b^2$	Pythagorean theorem
Special right triangles: 30° - 60° - 90° with sides $x, x\sqrt{3}, 2x$; 45° - 45° - 90° with sides $s, s, s\sqrt{2}$	
$V = \ell wh$	Rectangular prism
$V = \pi r^2 h$	Cylinder
$V = \frac{4}{3}\pi r^3$	Sphere
$V = \frac{1}{3}\pi r^2 h$	Cone
$V = \frac{1}{3}\ell wh$	Pyramid

- 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.

Section 2, Module 1: Math**1**

The function h is defined by $h(x) = 100x - 50$. What is the value of $h(x)$ when $x = 6$?

- A. 56
- B. 156
- C. 550
- D. 650

2

The graph shown gives the estimated value, in dollars, of a mountain bike as a function of the number of months since it was purchased. What is the best interpretation of the y-intercept of the graph in this context?

- A. The estimated value of the bike was 275 dollars when it was purchased.
- B. The estimated value of the bike 24 months after it was purchased was 275 dollars.
- C. The estimated value of the bike had decreased by 275 dollars in the 24 months after it was purchased.
- D. The estimated value of the bike decreased by approximately 2.75% each year after it was purchased.

3

Out of 200 attempts, 55% were successful. How many of these attempts were successful?

4

Which expression is equivalent to $29x^2 + 29$?

- A. $29(x^2 + 1)$
 - B. $29(x^2 + 29)$
 - C. $29(29x^2 + 1)$
 - D. $29\left(x^2 + \frac{1}{29}\right)$
-

5

If $2(x - 3) = (2)(90)$, what is the value of $x - 3$?

- A. 30
 - B. 60
 - C. 90
 - D. 180
-

6

A commercial water pump drains water from a reservoir at a constant rate of 180 gallons per minute. At this rate, how many hours will it take to drain 32,400 gallons of water?

- A. 2.5
 - B. 3.0
 - C. 3.5
 - D. 4.0
-

7

A store sells two different-sized bottles of a certain shampoo. The store's sales of this shampoo totaled 902.07 dollars last month. The equation $4.57x + 6.08y = 902.07$ represents this situation, where x is the number of smaller bottles sold and y is the number of larger bottles sold. According to the equation, what is the price, in dollars, of each smaller bottle?

8

Triangle ABC is similar to triangle XYZ , where A , B , and C correspond to X , Y , and Z , respectively. In triangle ABC , the length of AB is 180 and the length of BC is 900. In triangle XYZ , the length of YZ is 80. What is the length of XY ?

- A. 288
 - B. 196
 - C. 80
 - D. 16
-

9

$$|x| - 43 = 0$$

Which value is a solution to the given equation?

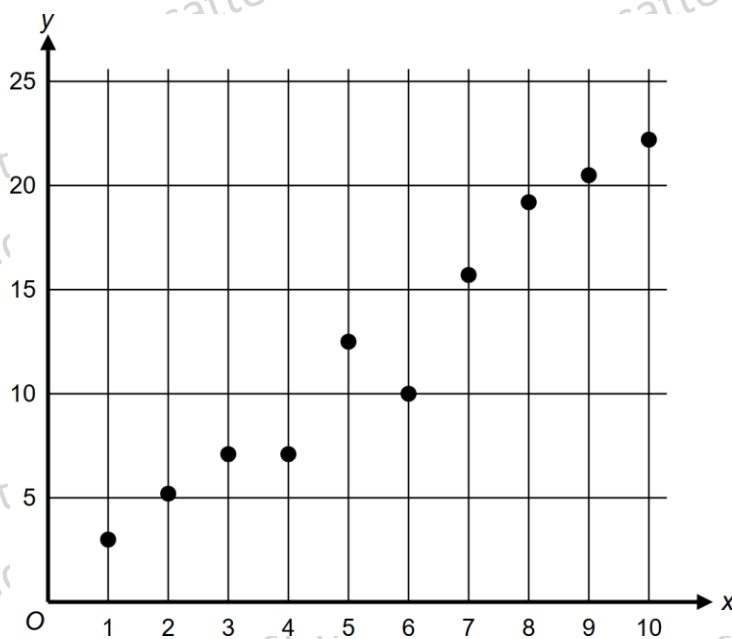
- A. $\frac{1}{43}$
 - B. 0
 - C. $-\frac{1}{43}$
 - D. -43
-

10

In the xy -plane, line k passes through the points $(0, -8)$ and $(1, -5)$. Which equation defines line k ?

- A. $y = \frac{1}{3}x - 8$
 - B. $y = -x + \frac{1}{3}$
 - C. $y = 3x - 8$
 - D. $y = -x + 3$
-

11



Which of the following equations is the most appropriate linear model for the data shown in the scatterplot?

- A. $y = 0.2 + 2.25x$
- B. $y = 0.2 - 2.25x$
- C. $y = 2.25 + 0.2x$
- D. $y = 2.25 - 0.2x$

12

What is the x -intercept of the graph of $y = \frac{21-x}{ax+b}$ in the xy -plane, where a and b are positive constants?

- A. $(21, 0)$
- B. $(0, -21)$
- C. $(0, \frac{21}{b})$
- D. $(-\frac{b}{a}, 0)$

13

A model estimates that a glacier moves between 17 and 24 centimeters per day. Which inequality represents possible values of x , where x is the total distance, in centimeters, the glacier moves in 2 days?

- A. $0 \leq x \leq 2$
- B. $(17)(0.5) \leq x \leq (24)(0.5)$
- C. $17 \leq x \leq 24$
- D. $(17)(2) \leq x \leq (24)(2)$

14

In the ancient Roman measurement system, a leuga was a unit of length that was equal to 7,500 pedes. In this measurement system, how many pedes were equivalent to 4.6 leugas?

15

A rectangle has a width of n yards and a length of $(n+7)$ yards. If the rectangle has an area of 198 square yards, what is the value of n ?

16

$$55 = \frac{2K}{v^2}$$

For an object with a mass of 55 kilograms, the given equation relates the kinetic energy K , in joules, of the object to the object's speed v , in meters per second, where K and v are positive. Which equation correctly expresses this object's speed, in meters per second, in terms of the object's kinetic energy, in joules?

A. $v = \frac{2K}{55^2}$

B. $v = \frac{55^2}{2K}$

C. $v = \sqrt{\frac{55}{2K}}$

D. $v = \sqrt{\frac{2K}{55}}$

17

A certain company measures its solar cell production $C(n)$, in peak kilowatts, generated by all the solar cells manufactured by the company. The company's solar cell production grew by approximately 22% each year for the 5 years following 2013. If solar cell production was 7,138 peak kilowatts in 2013, which of the following functions best models the solar cell production, in peak kilowatts, n years after 2013, where $0 \leq n \leq 5$?

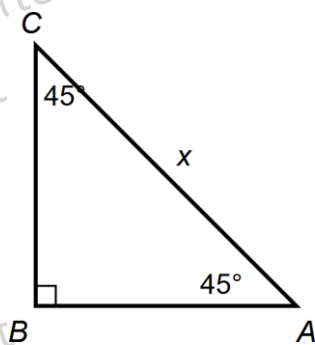
A. $C(n) = 7,138(0.22)^n$

B. $C(n) = 7,138(1.22)^n$

C. $C(n) = 0.22(7,138)^n$

D. $C(n) = 1.22(7,138)^n$

18



In the triangle shown, the value of x is 19. What is the value of $\sin A$?

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

19

A right square prism has a height of 15 units. The volume of the prism is 1,815 cubic units. What is the length, in units, of an edge of the base?

20

$$y = x - 1$$

$$y = 19(x - 1)^2 - 20$$

A solution to the given system of equations is (x, y) . What is one possible value of $x - 1$?

- A. -2
- B. $-\frac{20}{19}$
- C. -1
- D. $-\frac{1}{19}$

21

$$18x + 6y = 8y + 9$$

$$ty = \frac{1}{5} + 9x$$

In the given system of equations, t is a constant. If the system has no solution, what is the value of t ?

22

A circle in the xy -plane has center $(24, 5)$ and y -intercepts $(0, -27)$ and $(0, 37)$. What is the radius of this circle?

- A. 40
- B. 37
- C. 32
- D. 27

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Section 2, Module 2: Math

22 QUESTIONS • 35 MINUTES

DIRECTIONS

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REFERENCE

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$A = \ell w$	Rectangle
$A = \frac{1}{2}bh$	Triangle
$c^2 = a^2 + b^2$	Pythagorean theorem
Special right triangles: 30° - 60° - 90° with sides $x, x\sqrt{3}, 2x$; 45° - 45° - 90° with sides $s, s, s\sqrt{2}$	
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$V = \frac{1}{3}\ell wh$	Pyramid

- 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.

Section 2, Module 2: Math

1

A circle in the xy -plane has equation $(x - 4)^2 + (y + 1)^2 = 49$. What is the radius of the circle?

- A. 7
- B. 14
- C. 24.5
- D. 49

2

Area (square feet)	Water (gallons)
2,400	4,320
3,600	6,480
4,800	8,640

The roofs on the buildings of a public garden are designed to allow water to drain into the garden. The table shows the relationship between the area x , in square feet, of a roof and the amount of water $f(x)$, in gallons, drained from the roof into the garden over a certain period of time. Which equation could define f ?

- A. $f(x) = 0.6x$
- B. $f(x) = 1.8x$
- C. $f(x) = 2,160.0x$
- D. $f(x) = 4,320.0x$

3

$$15x + 435 = a(x + 29)$$

In the given equation, a is a constant. If the equation has infinitely many solutions, what is the value of a ?

4

A plumbing company charges its customers 116 dollars for the first hour of a plumbing service call and 70 dollars for each additional hour, plus the cost of plumbing parts. Which equation represents the total cost y , in dollars, for an x -hour plumbing service call where the cost of parts was z dollars and $x \geq 1$?

- A. $y = 70x + z$
- B. $y = 70x + z + 46$
- C. $y = 116x + z$
- D. $y = 116x + 70z + 46$

5

The function h is defined by $h(x) = |x - 8| - |6 - x| + a$, where a is a constant, and $h(-4) = 1$. What is the value of a ?

6

Line h is defined by $\frac{1}{3}x + \frac{1}{2}y - 30 = 0$. Line j is perpendicular to line h in the xy -plane. What is the slope of line j ?

A. $-\frac{2}{3}$

B. $-\frac{3}{2}$

C. $\frac{2}{3}$

D. $\frac{3}{2}$

7

A laboratory culture of bacteria grows according to the model $P(t) = 250(1.08)^t$, where t represents the elapsed time in hours. By what percentage does the population increase each hour?

A. 0.08%

B. 8%

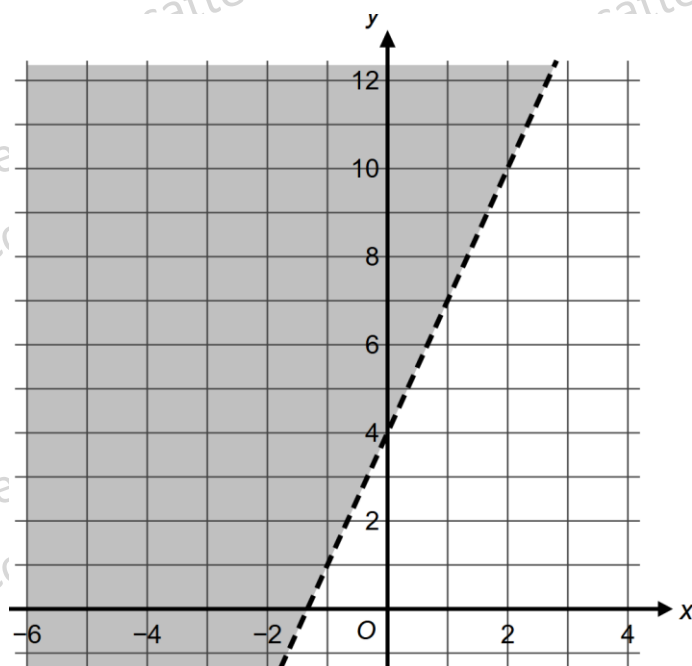
C. 25%

D. 108%

8

A beaker containing a liquid is placed on a table. The function $g(t) = 296 + (362 - 296)(2.72)^{-0.104t}$ gives the approximate temperature, in kelvins, of the liquid t minutes after the beaker was placed on the table. According to this function, what was the approximate temperature, in kelvins, of the liquid when the beaker was placed on the table?

9



The shaded region shown represents the solutions to which inequality?

- A. $y < 3x + 4$
- B. $y < 3x - 4$
- C. $y > 3x + 4$
- D. $y > 3x - 4$

10

$$3(2x) + 8(9y) = 534$$

$$3(2x) - 8(9y) = -618$$

The solution to the given system of equations is (x, y) . What is the value of $2x + 9y$?

- A. -86
- B. -14
- C. 58
- D. 72

11

The function f is defined by $f(x) = -2(x - 3)^2 + 8$. What is the maximum value of $f(x)$?

- A. -2
- B. 3
- C. 6
- D. 8

12

The frequency table summarizes the age, in years, of each of the 50 coins in Vivek's original collection.

Age (years)	Frequency
60	10
65	5
70	4
75	12
80	4
85	5
90	10
Total	50

Vivek will add a 130-year-old coin to his original collection, creating a new collection of 51 coins. Which statement correctly compares the mean ages and median ages of Vivek's original and new collections?

- A. The mean age for the new collection is greater than the mean age for the original collection, and the median age for the new collection is greater than the median age for the original collection.
- B. The mean age for the new collection is greater than the mean age for the original collection, but the median age is the same for the original and new collections.
- C. The mean age for the new collection is less than the mean age for the original collection, and the median age for the new collection is less than the median age for the original collection.
- D. The median age for the new collection is greater than the median age for the original collection, but the mean age is the same for the original and new collections.

13

$$x^2 + y^2 = 64$$

$$y = mx + \frac{b}{2}$$

In the given system of equations, m and b are negative constants. In the xy -plane, the graphs of the equations in the given system intersect at the point $(-7, y)$, where $(y < 0)$. Which expression represents the value of b ?

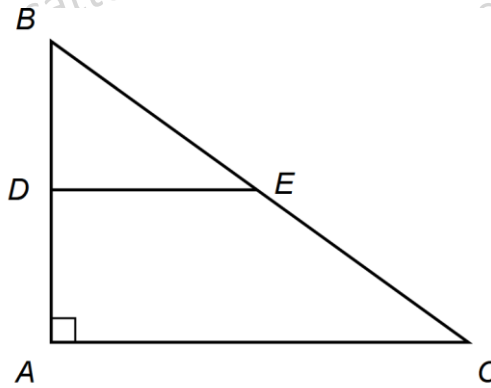
A. $14m - 2\sqrt{15}$

B. $-14m + 2\sqrt{15}$

C. $\frac{7m}{2} - \frac{\sqrt{15}}{2}$

D. $-\frac{7m}{2} + \frac{\sqrt{15}}{2}$

14



Note: Figure not drawn to scale.

In triangle ABC , DE is parallel to AC , $BD = AD$, $BE = 9$, and $AC = 8$. What is the length of BC ?

- A. 72
- B. 18
- C. 17
- D. 16

15

Consider the system of equations below:

$$2x + 3y = 19$$

$$x - y = 2$$

What is the value of $x + y$?

- A. 5
- B. 7
- C. 8
- D. 11

16

A researcher conducted a study to examine the melatonin levels of gamers and the amount of time the gamers spent playing video games. A total of 125 gamers were selected at random from three countries. The melatonin levels of the gamers and the amount of time they spent playing video games were recorded over a 4-week period. The table gives the number of selected gamers from each country.

Country	Sweden	South Korea	United States
Number of gamers	25	49	51

If the results of this study suggest a relationship between melatonin levels and the amount of time spent playing video games, which of the following aspects of the study will prevent the results from being generalized to all gamers?

- A. The gamers were not selected at random from all gamers.
 - B. The number of selected gamers is too small.
 - C. The number of selected gamers from each country is different.
 - D. The melatonin levels of the selected gamers were not measured over a long enough period of time.
-

17

In right triangle $\triangle ABC$, angle C measures 90° . If $\cos(A) = \frac{5}{13}$, what is the value of $\tan(A)$?

- A. $\frac{12}{5}$
 - B. $\frac{5}{12}$
 - C. $\frac{12}{13}$
 - D. $\frac{13}{5}$
-

18

At a hotel, guests used the pool for a total of t hours in March. At the same hotel, guests used the pool for $3.41t$ hours in April. What is the percent increase in the number of hours guests used the pool from March to April?

- A. 2.41%
 - B. 3.41%
 - C. 241%
 - D. 341%
-

19

$$-14(3x - 4)^2 + 6(3x - 2)^2$$

The given expression can be rewritten as $\frac{a}{4}x^2 + \frac{b}{4}x + \frac{c}{4}$, where a , b , and c are constants. What is the value of $a + b + c$?

- A. -32
 - B. -16
 - C. -8
 - D. -2
-

20

The sum of three consecutive even integers is less than 123. The least of the three integers is x . What is the greatest possible value of x ?

- A. 41
 - B. 40
 - C. 39
 - D. 38
-

21

Right rectangular prism X is similar to right rectangular prism Y. The surface area of right rectangular prism X is 52 square centimeters (cm^2), and the surface area of right rectangular prism Y is 832 cm^2 . The volume of right rectangular prism X is 10.5 cubic centimeters (cm^3). What is the volume, in cm^3 , of right rectangular prism Y?

22

$$18(w - a)(w + 5) = 6(w + 5)$$

In the given equation, a is a constant. The sum of the solutions to the equation is $\frac{37}{3}$. What is the value of a ?

STOP

If you finish before time is called, you may check your work on this module only. Do not turn to any other module in the test.