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SAT®

6XSL01

Test begins on the next page.

Reading and Writing

33 QUESTIONS

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.

1

Ezra Pound's poetry can be hard to _____: it is dense, experimental, and so full of references and allusions that many readers have a difficult time even identifying the poems' subjects.

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

A) comprehend
B) dislike
C) interrupt
D) overlook

2

The unique *subak* water management system used to irrigate the rice paddy fields of the Indonesian island of Bali has a rich cultural, philosophical, and historical significance dating back to the ninth century. The many elements of subak—terraces, canals, and water temples—are _____: they are joined together into a single cohesive unit.

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

A) outmoded
B) informal
C) interconnected
D) optional

CONTINUE

3

Although the government of the Soviet Union attempted to _____ Georgi Vladimov's novel *Faithful Ruslan*, copies of the book circulated in secret among readers in several parts of the country.

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

A) replicate
B) critique
C) import
D) suppress

4

Scholars long thought that the initial spread of silk beyond China occurred in the second century CE, but this view has been _____ by new archaeological evidence from South Asia that reveals that the people of the Indus Civilization made use of silk at least 1,000 years earlier.

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

A) investigated
B) misinterpreted
C) anticipated
D) contradicted

5

A casual description of Scherezade García's 2019 mural *Blame It on the Bean: The Power of Coffee* can make the work seem _____—a painting that is housed in a coffee shop and that depicts three women drinking coffee may not sound particularly ambitious—but in fact the work is a complex, dynamic meditation on gender and the legacy of colonialism that demands serious attention.

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

A) unassuming
B) shrewd
C) incongruous
D) pretentious

6

The following text is adapted from Akwaeke Emezi's 2019 novel *Pet*. Jam is a teenager who lives with her father, Aloe, and her mother, Bitter, who is a painter.

> Bitter finished the painting in the dark morning of a day—it was well past midnight when Jam heard the studio door creak open. She stared into the velvet black of her room and listened to her mother's footsteps walking in her [mother] and Aloe's bedroom. There was a weight thrumming through the floorboards in a low song, and that was how Jam knew the painting was done. Bitter's feet were singing the news.

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

A) It indicates that Jam is more interested in music than in art.
B) It adds to the idea that Bitter's footsteps reveal something to Jam.
C) It indicates that Bitter always sings when working on a painting.
D) It describes Aloe's reaction upon seeing the painting for the first time.

CONTINUE

7

The following text is from Bram Stoker's 1911 novel *The Lair of the White Worm*. Adam is meeting his great-uncle Richard at a port.

> The meeting so auspiciously begun proceeded well. Adam, seeing that the old man was interested in the novelty of the ship, suggested that he should stay the night on board, and that he would himself be ready to start at any hour and go anywhere that the other suggested. This affectionate willingness to fall in with his own plans quite won the old man's heart. He warmly accepted the invitation, and at once they became not only on terms of affectionate relationship, but almost like old friends.

Which choice best states the main purpose of the text?

A) It states the reasons why Adam and his great-uncle Richard decide to sleep on the ship rather than finding lodging on land.

B) It showcases how Adam's flexibility and consideration strengthen his relationship with his great-uncle Richard.

C) It describes why Adam and his great-uncle Richard are excited for their upcoming journey on the ship.

D) It contrasts great-uncle Richard's wary first impressions of Adam with his ultimate affection toward him.

8

Curious about how people visually perceive objects in their dreams, Stephen LaBerge and team recruited lucid dreamers—people aware that they're dreaming as it's happening—for a research study. These participants were reliably able to signal when they had entered a dream state; the team then observed participants' eye movements as they slept. The smoothness with which participants' eyes tracked objects in their dreams closely matched how sighted people who are awake visually track objects around them, suggesting to the team that the brain perceives dream objects as the product of something other than pure imagination.

Which choice best states the function of the underlined portion in the text as a whole?

A) To offer key evidence that undermines LaBerge and team's initial hypothesis

B) To show the unexpected result that led LaBerge and team to change the focus of their study

C) To illustrate an important real-world implication of LaBerge and team's main finding

D) To identify a comparable circumstance that helps justify LaBerge and team's conclusion

CONTINUE

9

Text 1
Good art often challenges and disrupts social and aesthetic norms, but the creation of public art—paintings, sculptures, and performance pieces displayed in nonmuseum or nontheatrical public settings—typically requires broad agreement among artists, civic officials, and community members about the works' message and artistic goals. Public art that fails to appease everyone by being sufficiently aesthetically and conceptually bland almost inevitably provokes backlash.

Text 2
Public art is commonly displayed in spaces intended for purposes other than meaningful aesthetic engagement. Some critics of public art therefore note that norm-defying pieces that aren't effectively integrated within their surroundings in a manner that primes passersby to appreciate the pieces' merits (as is often the case) tend to be regarded more unfavorably than similarly provocative art encountered in museums is.

Based on the texts, how would the critics mentioned in Text 2 most likely respond to the underlined claim in Text 1?

A) By arguing that the reason members of the general public might disagree about a public artwork's merits is unrelated to the unconventionality of its appearance and ideas
B) By agreeing with the idea that only works of art that are universally appealing are suitable for displaying in public spaces
C) By disputing the notion that civic leaders and community members are easily placated by art that is intended mainly to reinforce social norms
D) By contending that the kinds of reactions controversial public artworks often receive aren't exclusively the result of attributes inherent in the works themselves

10

The average age at which people in the United States start businesses is 35. Economist Andrés Hincapié studied why young adults are relatively less likely to start businesses and whether there are ways to increase entrepreneurship in early adulthood. Hincapié found that one impediment is lack of knowledge about the practical details of how businesses are started; he further found that simply providing young adults with good informational resources on the topic significantly alleviates this problem.

Based on the text, what would Hincapié most likely say is a promising way to increase entrepreneurship in early adulthood?

A) Creating social networks of young adults who are interested in starting a business
B) Encouraging young adults to brainstorm business ideas
C) Providing young adults with practical information about how to start a business
D) Giving young adults training opportunities at a variety of businesses

CONTINUE

11

Few animals are known to spit: among them are humans, cobras, and camels. But in January 2022 at a nature preserve in southern England, bird-watcher Clare Jacobs observed a gray seal spitting a jet of water at a white-tailed eagle flying overhead. Seals had never been seen spitting before. Biologist Sean Twiss, who studies gray seals, believes that the seal may have been attempting to scare the eagle away from a food source or that the seal may have just been playing.

Which choice best states the main topic of the text?

A) Bird-watching in southern England

B) A previously unseen behavior of gray seals

C) How white-tailed eagles defend their territory against other predators

D) Differences between gray seals and white-tailed eagles

12

The following text is from Mark Haber's 2022 novel *Saint Sebastian's Abyss*. The narrator and Schmidt are both art critics.

> When my first wife admitted to Schmidt over dinner that she didn't find art, painting in particular, especially compelling, Schmidt winced, set down his fork, and sighed dramatically; he then excused himself, explaining an appointment he'd forgotten about had suddenly and inexplicably been remembered, while making it abundantly clear there was no appointment at all.

Based on the text, what is notable about Schmidt's behavior?

A) Schmidt is only given to theatrical behavior when in the company of the narrator and his first wife.

B) Schmidt's absentmindedness regarding his schedule is uncharacteristic of him.

C) Schmidt's departure is occasioned by the resumption of a previous disagreement with the narrator's first wife about a particular painting.

D) Schmidt conveys his feelings about one of his dining companions without explicitly stating them.

CONTINUE

13

The following text is from Mick Herron's 2023 novel *The Secret Hours*. The narrator is describing members of a government committee.

> Finally, and adding much-needed gravitas, was Sir Winston Day, whose features seemed moulded to adorn a bust, or possibly a stamp, and whose forehead was so evidently bulging with grey matter that it would have been impertinent to inquire too closely into the actual achievements his half century of public service had produced. His recently published memoirs possibly cast light on this enigma, but given that such details were not provided until after the thirty-page mark, they might as well have remained state secrets.

Based on the text, which choice best describes Sir Winston Day?

A) He has the appearance of a distinguished figure, but it is uncertain whether he has accomplished anything to earn distinction.

B) He looks like a person worthy of respect, but his memoirs reveal that some of his actions were dishonorable.

C) He would be a celebrated public figure if his achievements did not have to be kept secret.

D) He has maintained a modest profile even though he has served the public capably for many years.

14

Studies of ocean wave breaking have predominantly focused on traveling waves (those propagating along the horizontal plane), so Mark McAllister et al. utilized a circular wave tank to produce and study spike waves, axisymmetric standing waves that can erupt vertically when traveling waves propagating in opposing directions intersect. Traveling waves break when wave steepness (height-to-length ratio) passes a critical threshold; breaking thus constrains wave height. McAllister et al. found that spike waves can exceed that constraint, as other factors than just steepness (e.g., jet stability and cavity shape) mediate spike-wave breaking.

Which choice best states the main idea of the text?

A) Previous studies have suggested that steepness mediates breaking in traveling waves, but the study by McAllister et al. shows that jet stability and cavity shape may also influence breaking in such waves.

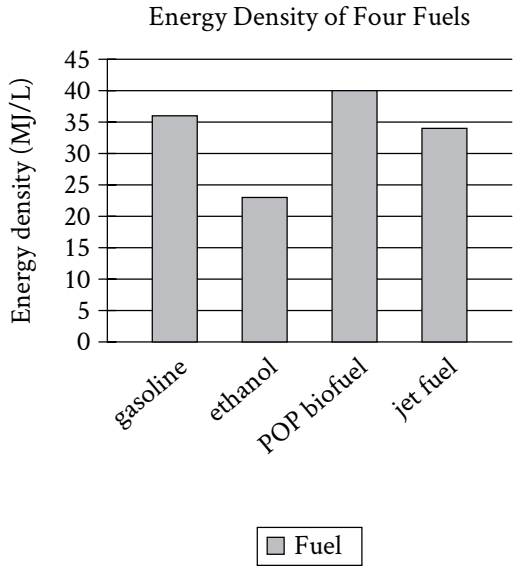
B) The process of breaking limits the height of traveling waves, but the study by McAllister et al. suggests that spike waves can exceed those limits if their height-to-length ratio reaches a critical threshold.

C) McAllister et al. suggest that spike waves can form when traveling waves propagating in opposing directions intersect and that spike waves tend to be higher than traveling waves.

D) The study by McAllister et al. suggests that when traveling waves intersect in specific ways, the resulting wave may be higher than would be expected based on the properties of traveling waves.

CONTINUE

15



A team of researchers used bacteria to create a biofuel (a renewable fuel produced from plants, algae, or other living materials). The team called the new fuel POP biofuel. To determine how much energy is stored in POP biofuel compared to other fuels, the team calculated the fuels' energy density, in megajoules per liter (MJ/L). The team found that the fuel with the highest energy density is _____

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

A) jet fuel.
B) POP biofuel.
C) ethanol.
D) gasoline.

16

Founded in 1965 and originally established as a cultural extension of the United Farm Workers—a union representing many Mexican American agricultural workers at the time—the theater troupe El Teatro Campesino has achieved recognition as a source of inspiration for subsequent Chicano theater companies and as a contributor to the dramatic arts. In an article about the company, a theater historian posits that a significant stylistic influence on El Teatro's early performances was the audience-mediated slapstick comedy of *carpa* theater, vaudeville-style shows popular in Mexico and the US Southwest in the 1920s and '30s.

Which quotation from the article would best illustrate the theater historian's claim?

A) "The company presented *actos*, short comedy sketches, that often relied on exaggerated physical humor to groups of agricultural workers, whose reactions—enthusiastic cheers of appreciation and, occasionally, loud boos of disapproval—promoted improvisation."
B) "The company was focused on the reality of the present situation and discovered that humor was often found in that reality; consequently, comedy became a tool to convey social critique while entertaining and inspiring audiences."
C) "The company relied heavily on satire, humor, and references to contemporary popular culture as well as a make-do aesthetic—often referred to as *rasquache*—that reflected not only the troupe's limited financial resources but also its sociopolitical message."
D) "The members of the company, which in addition to founder Luis Valdez consisted entirely of nonprofessional actors, traveled into farm fields, where they, with minimal props and costumes, performed comedy in the form of brief humorous vignettes."

CONTINUE

17

Researchers Eugeni Vidal-Tortosa and Robin Lovelace looked at the relationship between street lighting in a city and people's willingness to ride a bicycle. Their results suggest that poor street lighting can deter new or inexperienced cyclists from riding in a city but has little effect on experienced cyclists. Therefore, increasing the number of streetlights in a city could potentially _____

Which choice most logically completes the text?

A) decrease the number of new or inexperienced cyclists riding in the city.

B) increase the number of experienced cyclists riding in the city.

C) decrease the number of experienced cyclists riding in the city.

D) increase the number of new or inexperienced cyclists riding in the city.

18

Like many other genera of wild bees, bumblebees have in recent decades experienced population collapse caused by, among other factors, habitat destruction and climate variation. Bumblebees are also one of the most researched bee genera, second only to honeybees. As a result, ecologists have gained much of their insight about wild-bee declines from bumblebees. In a 2021 paper, zoologist Guillaume Ghisbain notes that bumblebees are among the relatively few wild-bee genera that display social behaviors and dietary generalism (ability to obtain nectar and pollen from a diversity of plant species), two traits that are associated with increased resilience to some specific environmental changes. Ghisbain therefore contends that _____

Which choice most logically completes the text?

A) although bumblebees and many other wild bees have experienced similar population declines in the past, compared with other wild bees, bumblebees are likely at greater risk of being harmed by climate variation than by habitat destruction.

B) although bumblebees have been more extensively studied than most wild bees, researchers should not use bumblebees to draw conclusions about the decline of other wild bees, even ones with feeding patterns and levels of sociability that are similar to those of bumblebees.

C) because bumblebees and other bees with generalist diets are less negatively affected by environmental stress than bees with specialized diets are, they are less likely to experience major population changes in the future than bees with specialized diets are.

D) because the responses of bumblebees and other wild bees to environmental threats are not always comparable, researchers need to exercise caution when extrapolating information about wild-bee population declines from bumblebees.

CONTINUE

19

When using a search engine, many people click just the first one or two results. Click restraint is the practice of scanning a search results page and evaluating what you see before deciding which link _____

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

A) should you choose.
B) you should choose?
C) should you choose?
D) you should choose.

20

Following her debut album release in 2002, Mexican singer-songwriter Natalia Lafourcade quickly shot to fame. By 2023, she _____ one of the most celebrated musicians in Latin America, having released twelve albums and won seventeen Latin Grammy awards—more than any other female artist in history.

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

A) will become
B) becomes
C) will have become
D) had become

21

The rough frog is a species of amphibian native to Australia. Currently, the frog's range _____ parts of northern New South Wales and southeastern Queensland.

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

A) includes
B) included
C) will have included
D) had included

22

According to the original text of the US Constitution, written in 1787, the presidential candidate receiving the second-most Electoral College votes becomes vice president. The 12th amendment, ratified in _____ separated the elections for the two offices.

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

A) 1804—
B) 1804,
C) 1804:
D) 1804

CONTINUE

23

The musical scores of Japanese composer Hiroyuki Sawano are famous for their mysterious titles. Laden with emojis and seemingly meaningless words, and driven largely by Sawano's "personal feeling and mood," _____

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

A) the listener can approach each piece free from expectations because of the titles.
B) the titles allow the listener to approach each piece free from expectations.
C) each piece can be approached by the listener free from expectations because of the titles.
D) the listener's approach to each piece because of the titles can be free from expectations.

24

Artist Yto Barrada's exhibition *Ways to Baffle the Wind* incorporates sculptures, textiles, and films. Barrada's pieces, utilizing elements as disparate as plant-dyed fabrics, wire crab traps filled with stones, and cotton balls dangling above a fan, _____ the ways humans attempt to organize and regulate nature.

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

A) explore
B) has explored
C) explores
D) exploring

25

Helical _____ widely understood to confer stability and efficiency in the locomotion of a variety of microscopic organisms—including bacteria, eukaryotic algae, and ciliates—bestows similar advantages, albeit via different propulsive modes, to larger oceanic macroplanktons, such as salps.

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

A) swimming, is
B) swimming is
C) swimming has been
D) swimming,

26

The tiny transistors that control the flow of electricity in modern devices may one day be made of wood. Researchers in Switzerland have found a way to use heat and chemicals to widen the grooves in dry pieces of balsa wood. _____ these grooves become wide enough that electrical conductors can be passed through them.

Which choice completes the text with the most logical transition?

A) For example,
B) Previously,
C) In contrast,
D) As a result,

CONTINUE

27

Al-Andalus, the historical region of the Iberian Peninsula that includes most of modern-day Spain, was ruled by various Arabic-speaking Muslim states between the eighth and fifteenth centuries. _____ many Arabic words, such as "alacrán"—meaning "scorpion"—made their way into the Spanish language.

Which choice completes the text with the most logical transition?

A) For example,
B) Instead,
C) Specifically,
D) Consequently,

28

Imagine a magazine that a reader has thrown away. This magazine is post-consumer waste, as it became waste after reaching the consumer. _____ the paper scraps left over from printing the magazine are pre-consumer waste, as they became waste before reaching the consumer.

Which choice completes the text with the most logical transition?

A) By contrast,
B) For example,
C) As a result,
D) Specifically,

29

In astrophysics, a ring of debris orbiting a larger object within the object's Roche limit is expected to persist as a ring, whereas a ring of debris orbiting outside this limit would likely accrete into a satellite (e.g., a moon). Bruno Morgado and colleagues, _____ detected a dense ring of material orbiting the trans-Neptunian object Quaoar at a distance of 2,500 miles, well outside the calculated Roche limit of 1,100 miles, that has remained intact.

Which choice completes the text with the most logical transition?

A) though,
B) for example,
C) fittingly,
D) likewise,

CONTINUE

30

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

- "Organ^2/ASLSP (As Slow as Possible)" is a musical piece by avant-garde composer John Cage.
- A specially designed automated organ in St. Burchardi Church in Halberstadt, Germany, began playing the piece in 2001.
- It is scheduled to stop playing the piece in 2640.
- The performance will last 639 years.
- It will be the longest continuous musical performance in history.

The student wants to indicate how long John Cage's musical piece will last. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) John Cage is the composer of the musical piece "Organ^2/ASLSP (As Slow as Possible)."

B) "Organ^2/ASLSP (As Slow as Possible)" is a musical piece currently being played in St. Burchardi Church in Halberstadt, Germany.

C) Lasting 639 years, John Cage's musical piece will be the longest continuous musical performance in history.

D) An organ in St. Burchardi Church in Halberstadt, Germany, began playing a musical piece by avant-garde composer John Cage.

31

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

- 1914: British explorer Ernest Shackleton and a small crew embarked on an expedition to Antarctica.
- 1915: Shackleton's ship *Endurance* became stuck in ice before eventually breaking apart and sinking.
- 1916: After more harrowing sea-ice adventures, the entire crew was rescued.
- 1959: Historian Alfred Lansing wrote a book called *Endurance: Shackleton's Incredible Voyage*.
- 2001: Filmmaker George Butler released a documentary called *The Endurance: Shackleton's Legendary Antarctic Expedition*.
- 2022: The wreckage of *Endurance* was discovered at the bottom of Antarctica's Weddell Sea.

The student wants to provide a historical overview of the Shackleton expedition. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Leaving in 1914 for Antarctica, Shackleton and his crew underwent many harrowing sea-ice adventures, including losing their ship in 1915, before being rescued in 1916.

B) In 1914, the Shackleton expedition sailed to Antarctica, where, in 1916, they rescued the crew of a ship that had sunk, *Endurance* (the wreckage of which was discovered in 2022).

C) Shackleton's expedition has inspired a 1959 book, a 2001 film, and a 2022 discovery.

D) Alfred Lansing wrote about the history of Shackleton's 1914–16 expedition in the book *Endurance: Shackleton's Incredible Voyage* (1959); years later, in 2001, George Butler released a documentary about the expedition.

CONTINUE

32

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

- The meter of a poem is the rhythmic structure or pattern of accents in its lines.
- Alliterative meter is structured by a pattern of repeated sounds.
- Quantitative meter is structured by a pattern of long and short syllables.
- The Old English poem *Widsith* uses an alliterative meter.
- The Sanskrit poem *Meghadūta* uses a quantitative meter.

The student wants to emphasize a difference between the meters of the two poems. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) The poem *Widsith* is written in Old English, but *Meghadūta* is written in Sanskrit.

B) Alliterative meter is a pattern of repeated sounds, but quantitative meter is a rhythmic structure or pattern of accents.

C) The Sanskrit poem *Meghadūta* uses a quantitative meter, while the meter of the Old English poem *Widsith* uses a pattern of long and short syllables.

D) The lines of the poem *Meghadūta* use a pattern of long and short syllables, whereas *Widsith*'s lines use a pattern of repeated sounds.

33

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

- Leaders of the Province of Guatemala proclaimed independence for Central America from the Spanish Empire on September 15, 1821.
- The accompanying Declaration of Independence was written by Honduran scholar and politician José Cecilio del Valle.
- The 1812 Spanish Constitution had provided some degree of independence for Central America, but it was repealed by the Spanish king in 1814.
- Valle, a loyal advisor to the Spanish Empire's administrators in Central America, had long opposed independence.
- He changed his mind after Colonel Rafael del Riego's 1820 revolt, which demanded the return of rights lost in 1814.

The student wants to place the 1821 Declaration of Independence in the context of Valle's changing political beliefs. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Colonel Riego's revolt was the inspiration that Valle, a long-standing opponent of Central American independence, needed to change his political beliefs.

B) Long an opponent of Central American independence, Valle changed his mind after an 1820 revolt and wrote the 1821 declaration.

C) A change in Valle's political beliefs that occurred when the Spanish king repealed the 1812 constitution led to Valle writing Central America's Declaration of Independence.

D) The writing of Central America's Declaration of Independence may not have happened were it not for Colonel Riego's 1820 revolt.

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.

No Test Material On This Page

Reading and Writing

33 QUESTIONS

DIRECTIONS

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

1

Ancient Inca inhabiting the Andes Mountains used terraces, rows of flattened land with built-in irrigation systems, to grow crops at different altitudes. This method of farming proved to be highly _____, as evidenced by the great number and variety of crops grown at that time.

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

A) chaotic
B) uniform
C) effective
D) burdensome

2

Since the Hubble Space Telescope was launched into space in 1990, astronauts have needed to complete regular missions to repair the telescope and keep it working smoothly. Researchers hope that robots will soon be able to make these repairs. Employing robots instead of humans to make repairs will be helpful, as _____ astronauts to maintain the telescope can be expensive.

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

A) straightening
B) forgetting about
C) relying on
D) reducing

CONTINUE

3

There are many famous examples of election pollsters making inaccurate predictions in presidential elections. But neuroscientist and election pollster Sam Wang has said that these prediction failures should not lead campaigns to _____ election polling entirely. Polling is about more than just predicting the winner; throughout campaigns, it helps strategists identify where their efforts are most likely to be effective.

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

A) distort
B) enact
C) neglect
D) supplement

4

Steiger Butte Drum, a family ensemble from the Klamath Tribes of the Pacific Northwest, collaborated with composer Michael Gordon to create *Natural History*, a work featuring traditional drumming and vocals alongside an orchestra and chorus. Steiger Butte Drum's participation is _____ to the piece: members not only contributed to its composition but also must be included in all performances.

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

A) tangential
B) subsequent
C) analogous
D) integral

5

The following text is from a 1955 translation of Samuel Beckett's 1951 novel *Molloy* (translated by the author and Patrick Bowles). In the text, Molloy has arrived at the town ramparts, an elevated walkway atop the city walls.

> And having cleared the ramparts I had to confess the sky was clearing, prior to its winding in the other shroud, night. Yes, the great cloud was ravelling, discovering here and there a pale and dying sky, and the sun, already down, was manifest in the livid tongues of fire darting towards the zenith, falling and darting again, ever more pale and languid, and doomed no sooner lit to be extinguished.

As used in the text, what does the word "manifest" most nearly mean?

A) Realized
B) Perceptible
C) Situated
D) Dwindling

6

In the past, historians who wanted to examine Frederick Douglass's diary and other personal papers had to visit the Library of Congress in Washington, DC, to view them on microfilm (film containing scaled-down reproductions of documents). But traveling to the library often added time and costs to research projects. Now, by going to the library's website, researchers can access digitized versions of Douglass's papers without physically going anywhere.

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

A) It gives information about a famous person.
B) It explains the meaning of a word.
C) It describes a debate among historians.
D) It summarizes an unexpected finding.

CONTINUE

7

Following the eradication of the gray wolf in Yellowstone National Park in 1926, the population of elk—a primary prey of the gray wolf—exceeded a healthy size for the park's ecosystem. Elk overpopulation led to overgrazing of areas that a multitude of other animals relied on for food and shelter. As scientists began to see how essential the gray wolf was to the Yellowstone food chain, ecological restoration strategies were employed to reintroduce the gray wolf to the park in 1996. The rebound effect in the park's natural ecosystem was noticed almost immediately.

Which choice best describes the overall structure of the text?

A) It summarizes a problem that developed in Yellowstone National Park in the 1920s and then offers potential solutions to that problem.

B) It mentions the elimination of the gray wolf from Yellowstone National Park and then explains why the wolf was eventually restored to the park.

C) It presents a claim about the health of the Yellowstone National Park gray wolf population and then gives specific examples to support that claim.

D) It explains why Yellowstone National Park allowed the eradication of the gray wolf and then discusses the consequences of reintroducing the wolf to the park.

8

A team of researchers discovered that Matabele ants can identify an infected wound in a member of the colony and then treat the infection by covering the wound with antimicrobial secretions that the ants produce. The team found that the mortality rate for Matabele ants with infected injuries was reduced by 90% with this treatment, and they are hopeful that this discovery could aid in the development of new antibiotics for human use.

Which choice best describes the overall structure of the text?

A) It summarizes research findings on Matabele ants and then identifies an area for further research.

B) It introduces a study of Matabele ants and then explains the research methods used in the study.

C) It describes unique properties of Matabele ants and then speculates on how those properties evolved.

D) It identifies an issue concerning Matabele ants and then proposes a solution to address the issue.

CONTINUE

9

Built in the 1970s, Raccoon Mountain is a pumped-storage hydropower facility (a "water-battery") located in the United States along the Tennessee River. When energy demand is low, excess power from the regional electric utility's nuclear plants is used to pump water (from a lower reservoir filled from the Tennessee River) up a shaft to the summit lake, where the water is stored as gravitational potential energy. When energy demand peaks, the water drains down from the summit lake, spinning turbines and generating upward of 1,700 megawatts of power—enough to power one million homes for twenty hours.

Which choice best states the main purpose of the text?

A) To point out the differences between two methods of energy generation
B) To explain the basics of how a specific energy technology works
C) To encourage regional electric utilities to build energy storage facilities
D) To discuss the benefits of a new energy technology

10

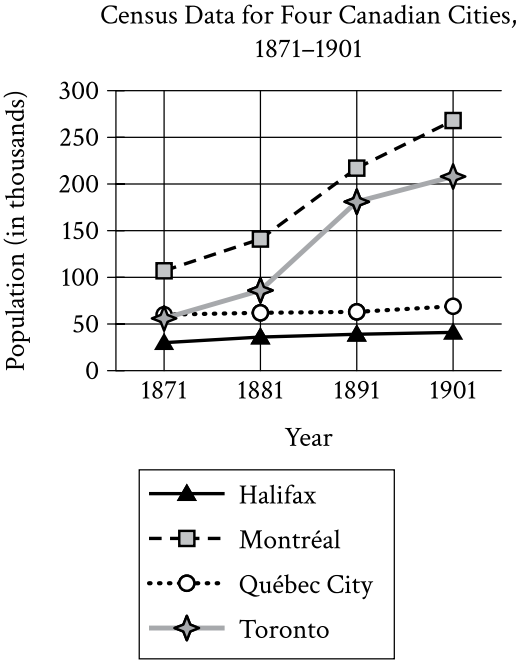
Ruth Asawa was an accomplished artist who worked in many art forms, including her unique tied-wire sculptures, but she was dedicated to more than the creation of art. Asawa also wanted to bring art to children in her hometown of San Francisco, California. To that end, in 1968 she cofounded the Alvarado School Arts Workshop, which brought works of art and artists into public schools, and in 1982 she helped found a San Francisco public arts high school, which was later named after her.

Which choice best states the main idea of the text?

A) Asawa inspired many other artists to share their work with students in public schools.
B) Asawa's unique sculptures were appreciated more by local art communities than they were nationwide.
C) Asawa's interest in art education prompted her to create art programs for students in San Francisco.
D) Asawa left a promising career as a sculptor to work as an art teacher in San Francisco schools.

CONTINUE

11

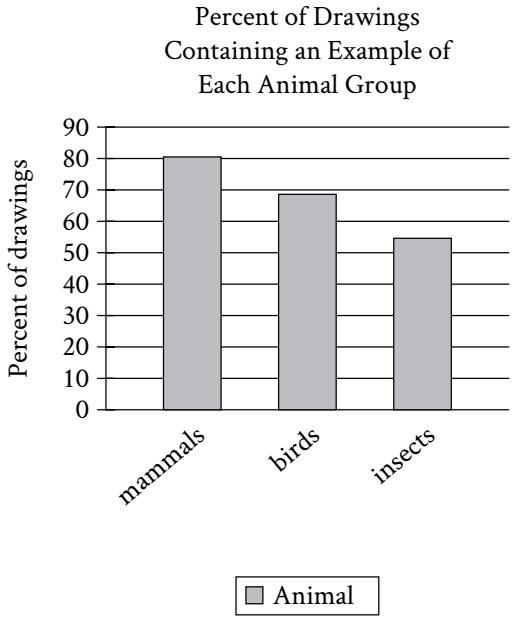


The first national census in Canada was conducted in 1871. The graph shows the population sizes of some of the largest Canadian cities from each of the first four national censuses, which occurred every ten years.

According to the graph, which city had the largest population in 1891?

A) Toronto
B) Montréal
C) Québec City
D) Halifax

12



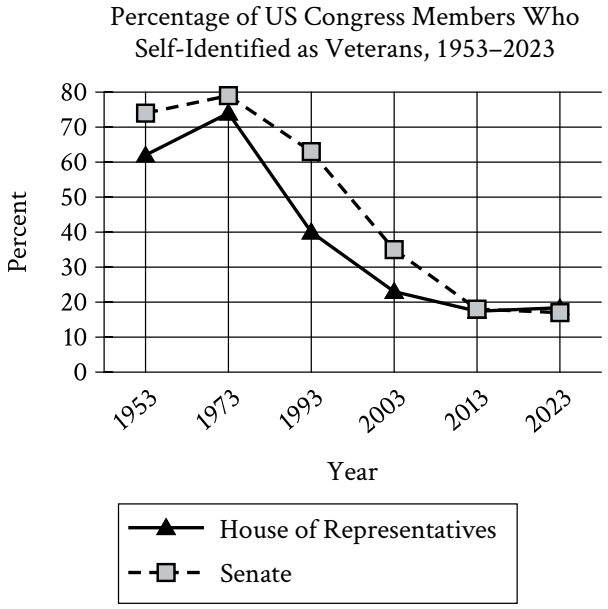
Researchers Kate Howlett and Edgar Turner asked 401 schoolchildren in the United Kingdom to draw and label local wildlife. The researchers suggest that the children may be more aware of mammals than of other animals in their environments.

Which choice best describes data from the graph that support the researchers' conclusion?

A) There were about as many drawings with an example of an insect as there were with an example of a bird.
B) The fewest number of drawings contained an example of a bird.
C) More of the drawings had an example of an insect than an example of a mammal.
D) More of the drawings had an example of a mammal than either an example of a bird or an example of an insect.

CONTINUE

13



Since the nation's earliest days, both houses of the United States Congress have counted many military veterans among their elected officials, including Hiram L. Fong (who served in the US Army Air Force) and Ralph Harold Metcalfe Sr. (who served in the US Army). A research institute gathered historical data about congressional members who have reported past military experience and determined that _____

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

A) from 2003 to 2023, the House of Representatives had a higher percentage of those members than the Senate did.

B) from 1953 to 2003, those members constituted a majority in both houses of Congress.

C) the percentage of those members decreased substantially in both houses of Congress from 1973 to 2013.

D) the percentage of those members remained fairly consistent, regardless of house, from 1993 to 2023.

14

"Aunt Sue's Stories" is a 1926 poem by Langston Hughes. In the poem, the speaker indicates that the stories Aunt Sue tells are based on Aunt Sue's personal experiences, saying that _____

Which choice most effectively uses a quotation from "Aunt Sue's Stories" to illustrate the claim?

A) dark shadows "cross and recross / Aunt Sue's stories."

B) a listening child "knows that Aunt Sue / Never got her stories out of any book at all, / But that they came / Right out of her own life."

C) the stories are told during "Summer nights on the front porch."

D) the people in the stories "Mingle themselves softly / In the flow of old Aunt Sue's voice, / Mingle themselves softly."

15

Olms are salamanders that live in underwater caves. Scientists once thought that olms stay in their caves all their lives. However, Raoul Manenti and team claim that olms regularly come to the surface to perform important activities such as finding food.

Which finding, if true, would most strongly support the underlined claim?

A) Researchers determine that olms don't breed often.

B) Researchers confirm that olms live in only a few cave systems.

C) Researchers discover that earthworms from surface soils are a major part of olms' diet.

D) Researchers learn that olms' brains differ from other salamanders' brains.

CONTINUE

16

In Diné (Navajo) culture, *ikaah* (sandpaintings) are created and then erased as part of sacred healing ceremonies lasting no more than a few days, but Diné *hataałii* (chanter, healer, cultural guide) Fred Stevens developed fixatives to preserve desacralized sandpaintings. While on a US-sponsored cultural ambassadorial trip in Europe and the Americas in the 1960s, Stevens produced several such sandpaintings and gave them to cultural institutions. This may seem in tension with the role of cultural ambassador—how could static objects authentically represent an inherently ephemeral and dynamic practice?—but such a view is itself overly object-focused and neglects how Stevens strove to convey exactly those characteristics of *ikaah* as a cultural practice.

Which quotation from an art historian would most directly support the claim made in the text?

A) "While Stevens's ambassadorial sandpaintings are undoubtedly educative for audiences that have little exposure to Diné culture, they should not be confused with authentic *ikaah*, which cannot be extricated from a practice that is intentionally and necessarily transitory nor condensed into a single persistent object."

B) "The most compelling way to reconcile the apparent tension between the temporary and performative nature of *ikaah* and the persistent and static nature of Stevens's ambassadorial sandpaintings is to recognize that Stevens was an ambassador not only of Diné culture but of a US art culture that tended to value permanent works over ephemeral ones."

C) "Stevens's ambassadorial sandpaintings are best understood not as self-contained objects but as reminders of the public creations of the sandpaintings, during which Stevens conducted appropriate *ikaah* rituals and encouraged viewers to closely track his movements and subtle shifts in the sand throughout the process."

D) "It is important to recall Stevens's own actions as a gift-giver—a temporary and performative role—of the sandpaintings, for by taking those actions, Stevens publicly enacted the transmission of knowledge of both traditional *ikaah* practices and cutting-edge chemistry (in the form of the preservative additives), a hybrid that reflects the dynamism of Diné culture."

CONTINUE

17

In Switzerland, the white fuzzy mountain flowers known as edelweiss are widely treated as a symbol of strength and courage. Although edelweiss can thrive in extreme conditions, they aren't notably tougher or harder to reach than other mountain flowers growing in the Swiss Alps. Historian Tobias Scheidegger has shown that the popular view of the flowers originated in the mid-1800s when mountain climbing became popular in Switzerland. Mountain climbers spread the idea that the flowers grew only in steep, icy terrains that were dangerous to climb to. Scheidegger says that these claims were self-interested. He suggests that mountain climbers presented edelweiss in this way in order to _____

Which choice most logically completes the text?

A) make themselves appear brave and strong for being able to climb to difficult places where edelweiss supposedly grew.

B) encourage more flower enthusiasts to explore the Swiss Alps.

C) share their observations about the unusual characteristics of edelweiss with scientists.

D) prove that edelweiss were more common in the Swiss Alps than in other mountain regions in Europe.

18

The ratio of methane to other atmospheric constituents—represented by a measure called the methane mole fraction—influences a variety of meteorological phenomena, notably precipitation and humidity. For Titan, Saturn's largest moon, the observational data that exist are too sparse and discrepant to fully constrain the range of the methane mole fraction at various atmospheric levels. Juan Lora and colleagues point out that outputs of the IPSL atmospheric model of Titan, which track closely to observations in some respects, reflect how the model's developers responded to this challenge: by prescribing a uniform methane mole fraction for the lowest level of the atmosphere. It is therefore important to note that _____

Which choice most logically completes the text?

A) some disagreements between the model's simulations of Titan's precipitation and humidity and the moon's actual precipitation and humidity are to be expected.

B) further observations of Titan may clarify the moon's methane mole fraction sufficiently for the model to employ a single value rather than a range.

C) even though the model's outputs sometimes agree with observational data, Titan's real methane mole fraction is likely higher than the methane mole fraction used in the model.

D) inconsistencies across the model's simulations of Titan's precipitation and humidity could be attributable to variations in the moon's methane mole fraction.

CONTINUE

19

Ganga is a folk singing tradition that originated in the Dinaric Alps in southern Europe. Ganga singers sing different melodies at the same time. The clashing notes can echo a long way across the mountains, which is why _____

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

A) ganga has been used as a communication method?
B) ganga has been used as a communication method.
C) has ganga been used as a communication method.
D) has ganga been used as a communication method?

20

A popular suite of mapping and spatial analysis software, ArcGIS enables cartographers like Karachi Cartography founder Namra Khalid _____ maps by analyzing and arranging raw geospatial data.

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

A) create
B) to create
C) creating
D) created

21

The part of a compound that determines the compound's color is _____ the chromophore. One example of a chromophore is hemoglobin, which gives human blood its red color.

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

A) called,
B) called
C) called—
D) called;

22

In rural Minnesota, ecologist Leroy Walston conducted a study to determine whether seeding solar panel fields with wildflowers could bolster pollinator populations in nearby food crops. Walston's findings indicate that—assuming solar panel installers' _____ practice has the potential to increase the number of native bees in crops near solar fields throughout the Midwest by up to 20 percent.

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

A) cooperation, this
B) cooperation—this
C) cooperation: this
D) cooperation this

CONTINUE

23

Key-value pairs are an important aspect of JavaScript Object Notation (JSON), an electronic file format for storing and transmitting data. Keys function as labels, while values contain the actual information. In a JSON file storing data about fire belly _____ instance, you could encounter a key such as "species" with the associated value of "*Cynops orientalis*."

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

A) newts. For
B) newts, for
C) newts: for
D) newts; for

24

Most of the ice found on Earth is ice Ih, distinguished by a crystalline structure in which molecules form a hexagonal pattern. Amorphous ice, on the other hand, constitutes most of the ice in the ultrafrigid environment of outer space. Defined by a disorganized molecular structure, _____

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

A) ice Ih contains crystals, whereas amorphous ice, which lacks the thermal energy to form them, does not.
B) amorphous ice lacks the thermal energy to form the crystals found in ice Ih.
C) the lack of thermal energy in amorphous ice explains its inability to form the crystals found in ice Ih.
D) ice Ih differs from amorphous ice in that it possesses the thermal energy to form crystals.

25

Recordings of electrical activity in the brain, _____ increased activity in brain areas associated with suppressing motor functions.

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

A) electrograms show that while responding to hypothetical match scenarios, the most highly skilled soccer players have
B) the most highly skilled soccer players responding to hypothetical match scenarios have electrograms that show
C) responses to hypothetical match scenarios show that the most highly skilled soccer players have electrograms with
D) hypothetical match scenario responses show that the most highly skilled soccer players captured in electrograms have

CONTINUE

26

If an animal can recognize itself in a reflective surface ("the mirror test"), it is considered to have self-awareness. In a recent study, scientists _____ for evidence of self-awareness in snakes, species that rely primarily on olfactory rather than visual processing, adapted the test to foreground smell, modifying the scent trails of North American eastern garter snakes and African ball pythons.

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

A) searched
B) searching
C) were searching
D) have searched

27

The traditional process of Turkish paper marbling (ebru) generally proceeds like this: First, the artisan fills a shallow tray with a water bath solution. Next, the artisan adds inks or paints to the solution, which can then be manipulated into intricate designs. _____ the artisan slips paper in and out of the liquid, transferring the design onto the paper.

Which choice completes the text with the most logical transition?

A) Actually,
B) Therefore,
C) Nevertheless,
D) Finally,

28

While studying jorō spiders, a large species originally from East Asia, University of Georgia researchers wondered if the spiders' rapid spread throughout the southeastern US was a result of aggressive behavior. _____ they discovered that jorō spiders are gentle giants who react to even minor disturbances by "freezing" in place for an hour or more.

Which choice completes the text with the most logical transition?

A) Therefore,
B) Instead,
C) For example,
D) In other words,

29

Upper-atmospheric jets—phenomena whereby electrical discharges cause narrow cones of blue light to briefly burst upward from the tops of thunderclouds—have been observed reaching the ionosphere. The extreme altitudes involved (the ionosphere begins about 80 km above Earth) mark these gigantic jets as outliers; _____ the majority of jets reach heights of only 20 to 50 km.

Which choice completes the text with the most logical transition?

A) nevertheless,
B) consequently,
C) indeed,
D) in addition,

CONTINUE

30

In Annie Dillard's *Pilgrim at Tinker Creek*—where, early on, the author marvels at a single goldfish's delicate fins but later winces when imagining a horde of goldfish laying and eating their own eggs—Dillard struggles to reconcile the complicated juxtapositions of the natural world. _____ nature's mesmerizing intricacy and pitiless harshness prove inextricably linked for Dillard, like "two branches of the same creek."

Which choice completes the text with the most logical transition?

A) To that end,
B) Ultimately,
C) Moreover,
D) Hence,

31

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

- In a 2020 study, researchers in California investigated how many potential nesting sites female wood ducks visited during the nesting season.
- The researchers placed nest boxes throughout the survey area and tagged 138 female wood ducks with radio frequency ID trackers.
- These trackers recorded how many nest boxes each duck visited.
- 67 ducks (48.5%) visited only one nest box.
- 18 ducks (13.0%) visited 10 or more nest boxes.
- Younger ducks were more likely to visit multiple nest boxes.

The student wants to present the methods used in the 2020 study. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) By recording how many nest boxes each duck visited, the researchers discovered that only a relatively small percentage (13.0%) of the ducks visited 10 or more nest boxes.
B) After tracking how many nest boxes the 138 wood ducks visited, the researchers found that the younger ducks tended to visit more nest boxes than the older ducks.
C) The researchers tagged 138 female wood ducks with radio frequency ID trackers and recorded how many nest boxes each duck visited during the nesting season.
D) The researchers investigated each nesting site for signs that it had been visited by the female wood ducks.

CONTINUE

32

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

- Pedestrian malls are outdoor streets in a city or town where vehicle traffic is prohibited.
- Many pedestrian malls were built in the 19th and 20th centuries in Europe and Asia.
- Qianmen Dajie is a famous pedestrian mall in Beijing.
- It has existed since the Ming dynasty (1368–1644 CE).
- Rue Mouffetard is a famous pedestrian mall in Paris.
- It has existed since the mid-Roman Empire (117–235 CE).

The student wants to emphasize a similarity between the ages of the malls. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) The Qianmen Dajie pedestrian mall has roots as far back as the Ming dynasty; likewise, Rue Mouffetard has existed for centuries.

B) Both Qianmen Dajie and Rue Mouffetard are famous pedestrian malls, the former in Beijing and the latter in Paris.

C) Qianmen Dajie and Rue Mouffetard are pedestrian malls, outdoor streets closed to vehicle traffic.

D) Qianmen Dajie and Rue Mouffetard are examples of pedestrian malls, which proliferated in Europe in the 19th and 20th centuries.

33

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

- Modularity of mind is the notion that the mind is at least partly composed of innate neural structures (modules) that perform fast, necessary tasks.
- 1983: cognitive scientist Jerry A. Fodor hypothesized that low-level cognitive systems (e.g., perception, language) are modular.
- In Fodorian modularity, high-level systems (e.g., reasoning) are not modular.
- 2003: cognitive scientist Peter Carruthers proposed the massive modularity hypothesis (MMH).
- MMH expands modularity to include all cognitive systems.

The student wants to compare Fodor's hypothesis with Carruthers's. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) In considering some but not all cognitive systems modular, Fodorian modularity is not as expansive in its definition of modularity as MMH is.

B) Following Fodor's 1983 hypothesis, Carruthers proposed that modularity of mind includes all cognitive systems.

C) The hypotheses of Fodor and Carruthers differ in whether they consider low-level cognitive systems, such as perception and language, modular.

D) In 2003, Carruthers proposed the massive modularity hypothesis, disagreeing with Fodor's earlier hypothesis that the mind is composed of innate neural structures.

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.

No Test Material On This Page

Math

27 QUESTIONS

DIRECTIONS

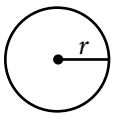
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

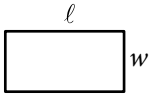
Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

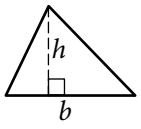
REFERENCE



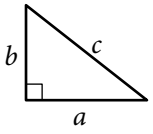
$A = \pi r^2$
$C = 2\pi r$



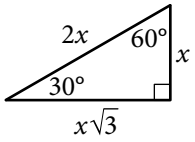
$A = \ell w$

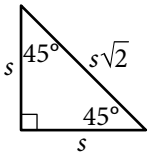


$A = \frac{1}{2}bh$

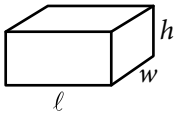


$c^2 = a^2 + b^2$

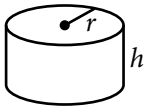




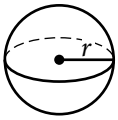
Special Right Triangles



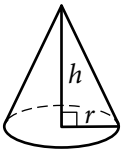
$V = \ell wh$



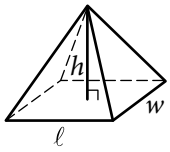
$V = \pi r^2 h$



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



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



$V = \frac{1}{3}\ell wh$

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.

CONTINUE

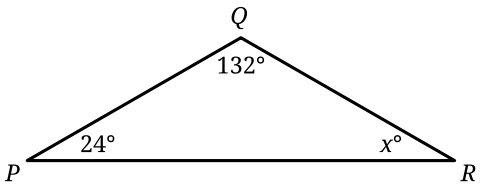
For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

CONTINUE

1



Note: Figure not drawn to scale.

In the triangle shown, $PQ = QR$. What is the value of x?

A) 156
B) 66
C) 48
D) 24

2

$$4x + 1 = 33$$

Which equation has the same solution as the given equation?

A) $4x = 32$
B) $4x = 5$
C) $4x = 1$
D) $4x = -32$

3

For the linear function f, the graph of $y = f(x)$ in the xy-plane has a slope of 7 and passes through the point $(0, 5)$. Which equation defines f?

A) $f(x) = 5x$
B) $f(x) = 35x$
C) $f(x) = 7x + 5$
D) $f(x) = 12x + 5$

4

$$8x^2 - 40 = 32$$

What is the positive solution to the given equation?

A) 3
B) 4
C) 9
D) 72

CONTINUE

5

A total of 50 children attended a summer camp and were offered 4 types of sandwiches. The table shows the number of children who chose each type of sandwich.

Type of sandwich	Number of children
Turkey	15
Chicken	23
Ham	3
Vegetarian	9
Total	50

If one of these children is selected at random, what is the probability of selecting a child who chose a vegetarian sandwich?

A) $\frac{9}{100}$

B) $\frac{9}{50}$

C) $\frac{1}{4}$

D) $\frac{9}{10}$

6

Amara grows cherry tomatoes in her backyard. This year, she harvested 750 cherry tomatoes and gave 10% of them to her neighbor. How many of the harvested cherry tomatoes did Amara give to her neighbor?

7

$$x + y = 125$$
$$x + y + y = 155$$

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

8

In a chess tournament, each participant earns 1 point for each game the participant plays that ends in a draw and 3 points for each game the participant wins. A certain participant in this tournament has earned 41 points. Which equation represents this situation, where d represents the number of games this participant has played that ended in a draw and w represents the number of games this participant has won?

A) $d + 3w = 41$

B) $3d + w = 41$

C) $d + \frac{w}{3} = 41$

D) $\frac{d}{3} + w = 41$

CONTINUE

9

The function g is defined by $g(x) = \sqrt{x} + 300$. What is the value of $g(x)$ when $x = 81$?

A) 9
B) 300
C) 309
D) 381

10

A cable provider wanted to know how many of its 30,000 customers would be interested in a new service plan. The provider selected 300 customers at random and asked each customer whether the customer would be interested in the new plan. Of those surveyed, 8 said they would be interested. Which of the following is the best estimate of the total number of customers who would be interested in the new service plan?

A) 8
B) 80
C) 800
D) 8,000

11

Which expression is equivalent to $64t^2s^3 - 56t^3s$?

A) $4ts(16s^2 - 14ts)$
B) $4ts(16t^2s^2 - 14t)$
C) $4t^2s(16ts - 14s)$
D) $4t^2s(16s^2 - 14t)$

12

$$x + 5 = 14$$
$$y = 4x^2 + 4$$

At what point (x, y) do the graphs of the equations in the given system intersect?

A) (9, 324)
B) (9, 328)
C) (14, 4)
D) (14, 788)

13

$$8x + 11y = 170$$

The equation gives the possible combinations of the number of 2009 premium grade Log Cabin Pennies, x, and the number of 1996 select grade Lincoln Pennies, y, in a collection that is worth a total of $170. If there are 6 1996 select grade Lincoln Pennies in the collection, how many 2009 premium grade Log Cabin Pennies are in the collection?

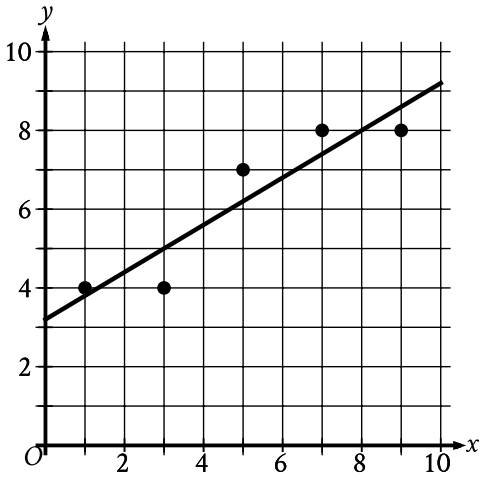
CONTINUE

14

The population of the town of Smithville doubled every 75 years from 1659 to 1959. The population of this town was 240,000 in 1959. What was the population of this town in 1659?

15

The scatterplot shows the relationship between x and y. A line of best fit is also shown.



Which of the following is closest to the slope of this line of best fit?

A) 0.60

B) 2.50

C) 7.80

D) 8.00

16

Which quadratic equation has exactly one distinct real solution?

A) $(x + 15)^2 = 0$

B) $(x + 15)^2 = -45$

C) $(x + 15)^2 = 45$

D) $(x + 15)^2 = 135$

17

The cost to rent a bus from Company X is \$950 for the first 3 hours and an additional \$50 per hour for each hour after the first 3 hours. If the total cost to rent the bus from Company X for t hours, where $t > 3$, is \$1,150, which equation represents this situation?

A) $950(t - 3) + 50t = 1{,}150$

B) $950(3t) + 50t = 1{,}150$

C) $950 + 50(t - 3) = 1{,}150$

D) $950 + 50(3t) = 1{,}150$

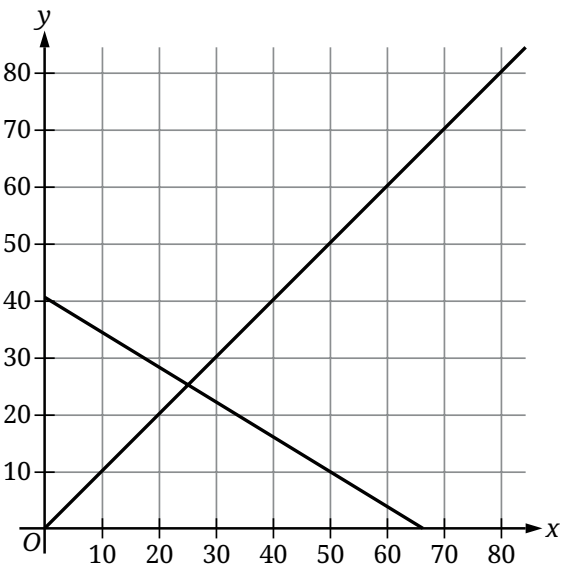
CONTINUE

18

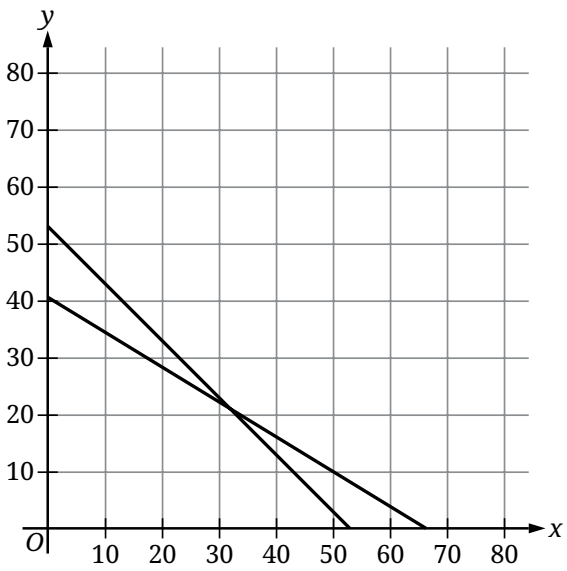
$$x + y = 53$$
$$11x + 18y = 730$$

The given equations represent the possible numbers of beach chairs, x, and umbrellas, y, rented at a park last month and the total spent, in dollars, to rent those beach chairs and umbrellas. Which of the following graphs represents this situation?

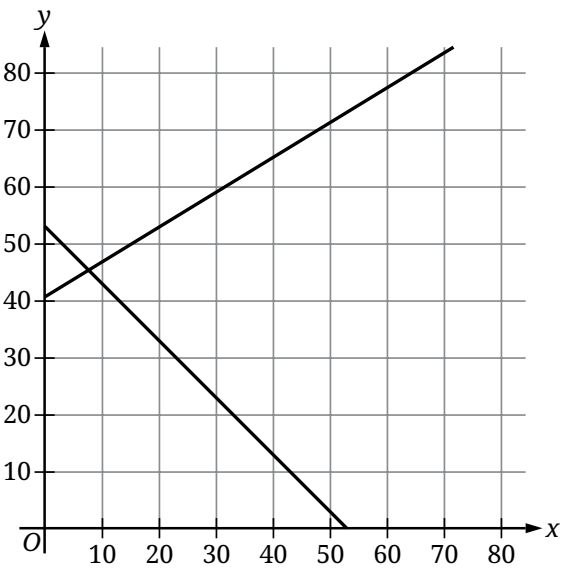
A)



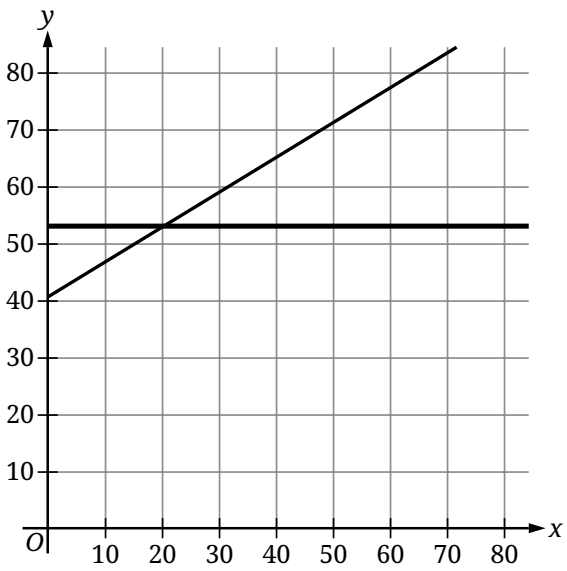
B)



C)

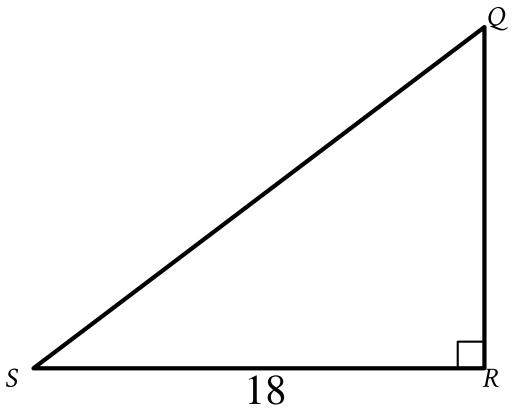


D)



CONTINUE

19



Note: Figure not drawn to scale.

In triangle QRS shown, $QR < RS$. Which expression represents the length of $\overline{QS}$?

A) $18 \cos Q$

B) $18 \sin Q$

C) $\frac{18}{\cos Q}$

D) $\frac{18}{\sin Q}$

20

Circle A in the xy-plane has the equation $(x + 5)^2 + (y - 5)^2 = 25$. Circle B has the same center as circle A. The radius of circle B is two times the radius of circle A. The equation defining circle B in the xy-plane is $(x + 5)^2 + (y - 5)^2 = k$, where k is a constant. What is the value of k?

21

$$x^2 + 7x + 5 = 0$$

One solution to the given equation can be written as $x = \frac{-7 + \sqrt{k}}{2}$, where k is a constant. What is the value of k?

22

A scientist measured the lengths of 240 gray seals from Muskeget Island and 120 gray seals from Sable Island. The scientist determined that the mean length of the 240 gray seals from Muskeget Island was 88 inches and the mean length of the 120 gray seals from Sable Island was 94 inches. What was the mean length of all 360 gray seals the scientist measured for this study?

A) 89

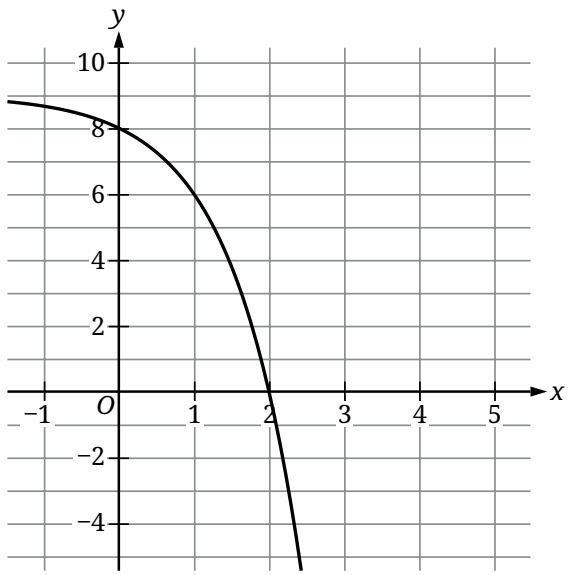
B) 90

C) 91

D) 92

CONTINUE

23



The graph of $y = f(x) + 4$ is shown. Which equation defines function f?

A) $f(x) = -3^x + 1$

B) $f(x) = -3^x + 5$

C) $f(x) = -3^x + 8$

D) $f(x) = -3^x + 9$

24

Two lines intersect at exactly one point, forming two acute angles and two obtuse angles. The measure of one of these angles is $(9x - 140)°$. Which of the following could **NOT** be the sum of the measures of any two of these angles?

A) $(-18x + 280)°$

B) $(-18x + 640)°$

C) $(18x - 280)°$

D) $180°$

25

$$2x + 9y = 7$$

The given equation is one equation in a system of two linear equations. If the system of equations has at least one solution, which of the following equations could be the other equation in the system?

I. $3x + 13.5y = 10.5$

II. $3x - 13.5y = 10.5$

A) I only

B) II only

C) I and II

D) Neither I nor II

CONTINUE

26

A right rectangular prism has a base area of $24t$ square centimeters (cm^2). The length of the base of the rectangular prism is $\frac{8}{3}$ cm, and the height of the rectangular prism is 15 cm. Which expression represents the surface area, in cm^2, of the right rectangular prism?

A) $48t + 160$
B) $318t + 80$
C) $1{,}968t + 80$
D) $360t$

27

For a particular car, the linear function f gives the predicted power, in brake horsepower (bhp), for engine speeds between 1,000 revolutions per minute (rpm) and 6,000 rpm. According to this function, the car's predicted power is 433 bhp at an engine speed of 3,331 rpm and 600 bhp at an engine speed of 4,500 rpm. The equation $f(x) = \frac{1}{7}(x - a) + 433$ defines f, where x is the engine speed, in rpm, and a is a constant. 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.

Math

27 QUESTIONS

DIRECTIONS

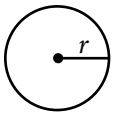
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

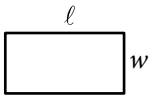
Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

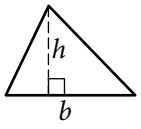
REFERENCE



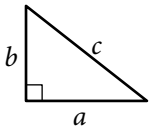
$A = \pi r^2$
$C = 2\pi r$



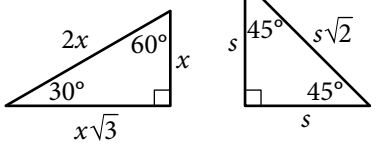
$A = \ell w$



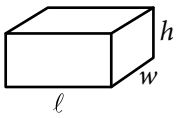
$A = \frac{1}{2}bh$



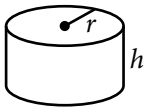
$c^2 = a^2 + b^2$



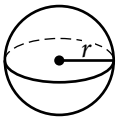
Special Right Triangles



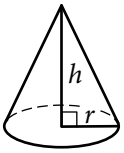
$V = \ell wh$



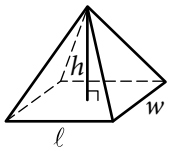
$V = \pi r^2 h$



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



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



$V = \frac{1}{3}\ell wh$

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.

CONTINUE

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

CONTINUE

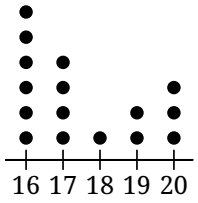
1

Which expression is equivalent to $6x + 5x + 4y$?

A) $15x$
B) $15y$
C) $11x + 4y$
D) $30x + 4y$

2

To study the characteristics of sea stars in a group of tide pools, researchers measured the diameter of the sea stars within the tide pools. The dot plot gives the diameter, to the nearest inch, of each of the sea stars in these tide pools.



Based on the dot plot, how many sea stars had a diameter, to the nearest inch, of 16 inches?

A) 16
B) 6
C) 4
D) 1

3

A rectangle has a length of 56 inches and a width of 28 inches. What is the area, in square inches, of the rectangle?

A) 28
B) 84
C) 168
D) 1,568

4

$$10x = 110$$
$$6x - 63 = y$$

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

A) 63
B) 11
C) 10
D) 3

CONTINUE

5

The function f is defined by $f(x) = 9(2x + 3)$. For what value of x does $f(x) = 63$?

A) 2
B) 5
C) 7
D) 30

6

$$10x = 86$$

What value of x is the solution to the given equation?

7

$$y = 3{,}600\,(a)^x$$

The given equation, where a is a positive constant, gives the predicted number of bacteria, y, in a growth medium x hours after the number of bacteria was initially measured. According to the equation, what was the predicted number of bacteria initially measured in the growth medium?

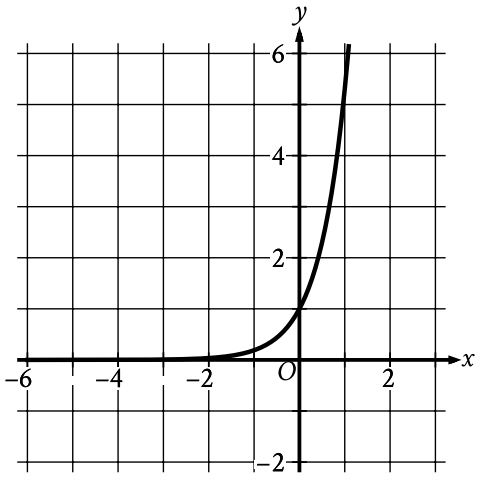
8

Leo goes to a packing store to buy containers and tape. Leo has \$15. Each container costs \$1.87 and each roll of tape costs \$2.40. Which inequality represents the relationship between the number of containers, c, and the number of rolls of tape, t, Leo can buy?

A) $1.87c + 2.40t \leq 15$
B) $1.87c + 2.40t \geq 15$
C) $2.40c + 1.87t \leq 15$
D) $2.40c + 1.87t \geq 15$

9

The graph of the function f is shown, where $y = f(x)$.

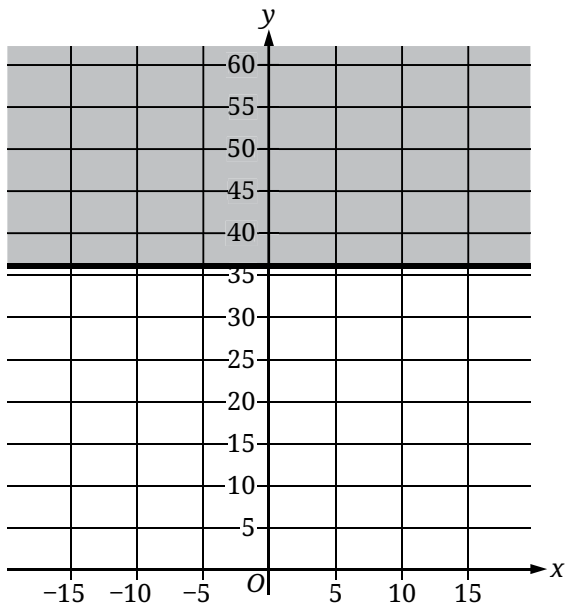


Which of the following best describes the function f?

A) Decreasing exponential
B) Increasing exponential
C) Decreasing linear
D) Increasing linear

CONTINUE

10



The shaded region shown in the graph represents all the solutions to which inequality?

A) $x \leq 36$
B) $x \geq 36$
C) $y \leq 36$
D) $y \geq 36$

11

There are 240 players in a tennis competition that includes 4 rounds of matches. Each player in the competition will play a match against another player in round 1. At the end of each round, the player who loses the match is eliminated and the player who won the match advances to the next round to play a match against another winning player. Which equation gives the number of players, p, eliminated at the end of round r, where $r \leq 4$?

A) $p = 15\left(\frac{1}{2}\right)^r$

B) $p = 15(2)^r$

C) $p = 240\left(\frac{1}{2}\right)^r$

D) $p = 240(2)^r$

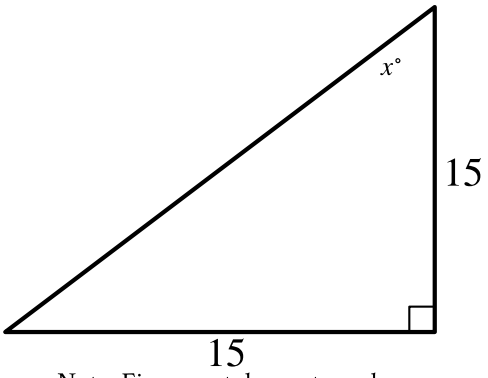
12

Line k is defined by $y = 6x + 4$. Line j is parallel to line k in the xy-plane and passes through the point $(0, 5)$. Which equation defines line j?

A) $y = 6x + 5$
B) $y = -5x + 5$
C) $y = -6x + 5$
D) $y = 5x + 5$

CONTINUE

13



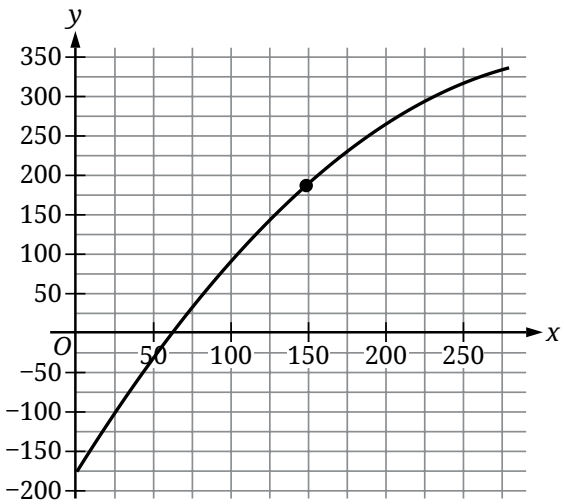
Note: Figure not drawn to scale.

In the triangle shown, what is the value of x?

14

What is the radius of the circle in the xy-plane defined by $(x + 2)^2 + (y + 5)^2 = 169$?

15



The graph shows the estimated boiling point y, in degrees Celsius, of a normal paraffin with a molecular weight of x grams per mole, where $1 \leq x \leq 280$. Which statement is the best interpretation of the point (149.02, 186.05)?

A) A normal paraffin with a molecular weight of 186.05 grams per mole has an estimated boiling point of 149.02 degrees Celsius.

B) A normal paraffin with a molecular weight of 149.02 grams per mole has an estimated boiling point of 186.05 degrees Celsius.

C) The minimum estimated boiling point for normal paraffins corresponds to a paraffin with a molecular weight of 149.02 grams per mole and an estimated boiling point of 186.05 degrees Celsius.

D) The maximum estimated boiling point for normal paraffins corresponds to a paraffin with a molecular weight of 149.02 grams per mole and an estimated boiling point of 186.05 degrees Celsius.

CONTINUE

16

For the polynomial function f, the graph of $y = f(x)$ in the xy-plane passes through the points $(-5, 0)$, $(1, 0)$, and $(4, 0)$. Which of the following must be a factor of $f(x)$?

A) $x + 1$
B) $x + 4$
C) $x - 1$
D) $x - 5$

17

x	$g(x)$
1	32
2	28
3	24
4	20

For the linear function g, the table shows four values of x and their corresponding values of $g(x)$. The function can be written as $g(x) = mx + b$, where m and b are constants. What is the value of b?

A) 4
B) 16
C) 32
D) 36

18

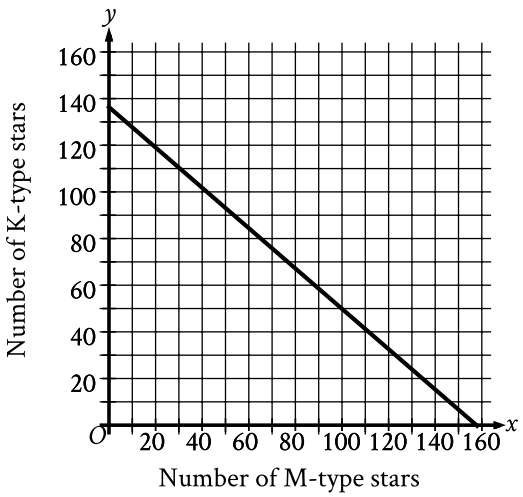
x	24	30	32
$f(x)$	-8	-8	8

For the quadratic function f, the table shows three values of x and their corresponding values of $f(x)$. Which equation defines f?

A) $f(x) = (x - 24)(x - 30) + 4$
B) $f(x) = (x - 24)(x - 30) - 8$
C) $f(x) = (x - 8)(x - 32) + 32$
D) $f(x) = (x - 8)(x - 32) - 32$

CONTINUE

19



A certain open star cluster contains M-type stars and K-type stars. The estimated total mass of M-type and K-type stars in this open star cluster is 127,882 quettagrams. The graph shown models the possible combinations of the number of M-type stars, x, and K-type stars, y, that could be in this open star cluster if all the M-type stars have the same estimated mass and all the K-type stars have the same estimated mass. Based on the graph, which of the following is closest to the estimated mass, in quettagrams, of each M-type star in this cluster?

A) 811

B) 938

C) 51,904

D) 75,978

20

$$\sqrt[3]{p^2} = t^{\frac{9}{7}}$$

In the given equation, $p > 1$ and $t > 1$. If $t = p^{3n-1}$, where n is a constant, what is the value of n?

21

The number a is 55% less than the number b. The number b is 320% greater than 160. What is the value of a?

22

$$f(x) = -6x^2 + 60x - 126$$

The function f is defined by the given equation. Which of the following equivalent forms of the equation displays the maximum value of the function as a constant or coefficient?

A) $f(x) = -6x^2 + 42x + 18x - 126$

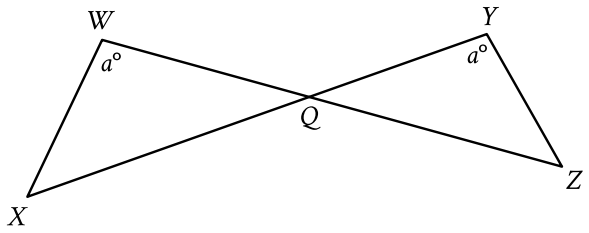
B) $f(x) = -6x(x - 7) + 18(x - 7)$

C) $f(x) = -6(x - 5)^2 + 24$

D) $f(x) = -6(x - 7)(x - 3)$

CONTINUE

23



Note: Figure not drawn to scale.

In the figure shown, $\overline{WZ}$ and $\overline{XY}$ intersect at point Q, $YQ = 21$, $WQ = 70$, $WX = 60$, and $XQ = 120$. What is the length of $\overline{YZ}$?

A) 18
B) 36
C) 120
D) 200

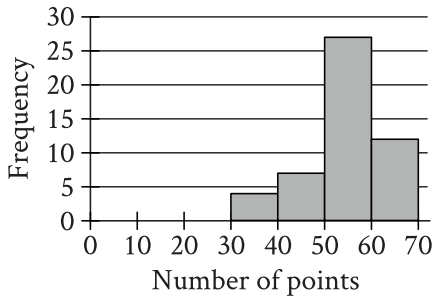
24

$$52(x^3 + 64)(x^4 - 81) = 0$$

How many distinct real solutions does the given equation have?

A) Exactly two
B) Exactly three
C) Exactly five
D) Exactly seven

25



The histogram summarizes data set A, which represents the number of points per player earned by 50 players of a game. A new player earns 18 points playing the game, and this number of points is added to data set A to create data set B with 51 values. Which of the following must be true?

I. The median number of points per player for data set B is less than the median number of points per player for data set A.

II. The mean number of points per player for data set B is less than the mean number of points per player for data set A.

A) I only
B) II only
C) I and II
D) Neither I nor II

CONTINUE

26

In triangle XYZ, the measure of angle X is 90°. Point W lies on segment YZ, and segment WX is perpendicular to segment YZ. The length of segment WY is 572, and the length of segment WX is 429. What is the value of $\tan Z$?

A) $\frac{3}{5}$

B) $\frac{3}{4}$

C) $\frac{4}{5}$

D) $\frac{4}{3}$

27

An area of 46.00 square nautical miles is equivalent to k square kilometers. To the nearest tenth, what is the value of k? (1 nautical mile = 1.852 kilometers)

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.

The SAT®

GENERAL DIRECTIONS

- You may work on only one module at a time.
- If you finish a module before time is called, check your work on that module only. You may NOT turn to any other module.

TIMING

Reading and Writing, Module 1: 39 minutes

Reading and Writing, Module 2: 39 minutes

10-minute break

Math, Module 1: 43 minutes

Math, Module 2: 43 minutes

The above are standard times. If you are approved for accommodations involving additional time, you should give yourself that time when you practice.

MARKING YOUR ANSWERS

- Be sure to answer your questions properly in this book.
- Circle only one answer to each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

USING YOUR TEST BOOK

- You may use the test book for scratch work.
- You may not fold or remove pages or portions of a page from this book, or take the book from the testing room.