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Highlights & Notes More

During his career, Cuban composer and pianist Ernesto Lecuona produced hundreds of compositions. Especially impressive is how ____ his body of work is: Lecuona showcased a diverse range of musical talents in different areas, from orchestral pieces and operas to popular film scores.



- 1 Mark for Review

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

(A) outdated

(B) varied

(C) forgotten

(D) lonely

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The following text is from Amy Tan's 1989 novel *The Joy Luck Club*. The narrator describes practicing the piano when she was a child.

For the talent show, I was to play a piece called "Pleading Child" from Schumann's *Scenes from Childhood*. It was a simple, moody piece that sounded more difficult than it was. I was supposed to memorize the whole thing, playing the repeat parts twice to make the piece sound longer. But I dawdled over it, playing a few bars and then cheating, looking up to see what notes followed. I never really listened to what I was playing. I daydreamed about being somewhere else, about being someone else.

©1989 by Amy Tan

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Mark for Review

ABC

Based on the text, when the narrator describes herself as "cheating," what does she most likely mean?

- (A) She was gaining an unfair advantage over other contestants in the talent show.
- (B) She was lying to herself about her musical ability.
- (C) She was deceiving her piano teacher.
- (D) She was violating an expectation about how to perform the piece.

The Historical Dictionary of Science Fiction is a crowdsourced project started in 2001 by lexicographer Jesse Sheidlower to record terms that originated in science fiction. Volunteers share digitized excerpts from personal collections of sci-fi magazines not typically preserved in libraries—_____ that allow the earliest uses of phrases such as “warp speed” (1952) to be identified and added to the dictionary.

**3** A small circular icon with a checkmark and a speech bubble inside. **Mark for Review**

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

(A) contributions

(B) resolutions

(C) justifications

(D) negotiations

Agglomeration economies arise when multiple firms in related industries _____ an area, as with iron and steel production firms and cutlery and hardware manufacturers in Wolverhampton, UK. Economists have assumed that companies cluster for the same reasons, but Giulia Faggio et al. found that factors driving agglomeration in some cases are only weakly correlated with agglomeration in others.

**4**

Mark for Review

ABC

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

(A) intercede in

(B) concur with

(C) appeal to

(D) amass in

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.

**5**

Mark for Review



Which choice best states the main purpose of the text?

- (A) It contrasts great-uncle Richard's wary first impressions of Adam with his ultimate affection toward him.
- (B) It showcases how Adam's flexibility and consideration strengthen his relationship with his great-uncle Richard.
- (C) It states the reasons why Adam and his great-uncle Richard decide to sleep on the ship rather than finding lodging on land.
- (D) It describes why Adam and his great-uncle Richard are excited for their upcoming journey on the ship.

Community science, which involves professional scientists collaborating with amateur science enthusiasts to study a topic, is often an effective and engaging way to conduct research. It can allow people to assist with conservation efforts, spark youth interest in science, and increase the amount of data researchers can collect. This approach was essential to the success of a study by biologist Abigail Merrill and colleagues of how butterfly color relates to flower choice, which included findings from hundreds of students and community members in northwestern Arkansas.

6

A small blue icon of a ribbon-like bookmark with a small circle at the end.

Mark for Review

A small blue icon containing the letters "ABC" in white.

Which choice best describes the overall structure of the text?

- (A) It introduces the topic of a scientific study, describes the study's importance, and then presents the study's results.
- (B) It identifies a particular approach to research, lists some benefits of that approach, and then mentions a study in which that approach was used.
- (C) It argues for a new approach to scientific research, comments on the public's opinion about the approach, and then describes how that approach was applied in a certain study.
- (D) It describes the development of a type of scientific collaboration, shows how that type of collaboration has been used in a particular field of study, and then suggests future collaborative projects.



Io is among Jupiter's four largest moons and was discovered in 1610 by Galileo. Advances in space exploration and imaging technologies have since enabled scientists to discover even more moons orbiting Jupiter. For example, scientists used the *Voyager 1* space probe to discover Adrastea in 1979. And more recently, researchers discovered 12 moons using the Dark Energy Camera at the Cerro Tololo Inter-American Observatory in Chile. As of 2023, the number of confirmed moons orbiting Jupiter was 95, and scientists think further exploration will reveal more.

**7**

Mark for Review



According to the text, in which year was Adrastea discovered?

(A) 1979

(B) 1892

(C) 2001

(D) 1610

Founded in 1991, the Museo de Las Americas showcases art from Latin America, including the art of Indigenous peoples. It is located in Denver and has more than 4,800 objects in its collection. Since 2000, a number of other institutions devoted to Latino cultures have opened in the United States. A notable example is LA Plaza de Cultura y Artes in Los Angeles. It opened in 2011 and focuses on Mexican American art and culture.

**8**

A small circular icon with a checkmark inside. Next to it is the text "Mark for Review".



Which contrast does the text draw between the Museo de Las Americas and LA Plaza de Cultura y Artes?

- (A) LA Plaza de Cultura y Artes is visited by more people.
- (B) LA Plaza de Cultura y Artes has more objects in its collection.
- (C) LA Plaza de Cultura y Artes is housed in a larger building.
- (D) LA Plaza de Cultura y Artes opened more recently.

The Wonderful Wizard of Oz is a 1900 novel by L. Frank Baum. In the novel, the narrator describes a character's house as having become very faded in appearance over time: _____



9

Mark for Review



Which quotation from *The Wonderful Wizard of Oz* most effectively illustrates the claim?

(A) "Before [Dorothy and her companions] was a great stretch of country having a floor as smooth and shining and white as the bottom of a big platter. Scattered around were many houses made entirely of china and painted in the brightest colors."

(B) "There were four walls, a floor and a roof, which made one room; and this room contained a rusty looking cookstove, a cupboard for the dishes, a table, three or four chairs, and the beds."

(C) "When Dorothy stood in the doorway and looked around, she could see nothing but the great gray prairie on every side. Not a tree nor a house broke the broad sweep of flat country."

(D) "Once the house had been painted, but the sun blistered the paint and the rains washed it away, and now the house was as dull and gray as everything else."

To help combat the growing rate of microplastic pollution, a team of researchers developed a synthetic sponge that can soak up microplastic particles from liquid. The sponge, composed mainly of starch and gelatin, does this by trapping the tiny particles within its pores. Guoqing Wang, one of the researchers, says that the formula for the sponge can be adjusted to best suit the size of particle the sponge is intended to trap, making it versatile in its potential applications. Chemist Christian Adlhart, however, claims that this sponge would be difficult to mass-produce.

10

A small icon of a document with a checkmark, followed by the text "Mark for Review".



Which finding, if true, would most directly support Adlhart's claim?

- (A) Textiles are one of the largest sources of microplastic pollution in our oceans.
- (B) The sponge created by Wang and his team has a relatively light weight for its volume, making it potentially easy to ship to different locations.
- (C) The absorption capabilities of the sponge created by Wang and his team varied depending on the liquid solution used in the team's experiments.
- (D) The worldwide supply of starch and gelatin is in high demand from the food industry, so those substances would be difficult to source in significant quantities.

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Highlights & Notes

More

Life Among the Paiutes is an 1882 autobiographical narrative by Sarah Winnemucca Hopkins, a Northern Paiute author, educator, and activist. In the work, Winnemucca directly addresses the reader to explain certain customs, writing _____.



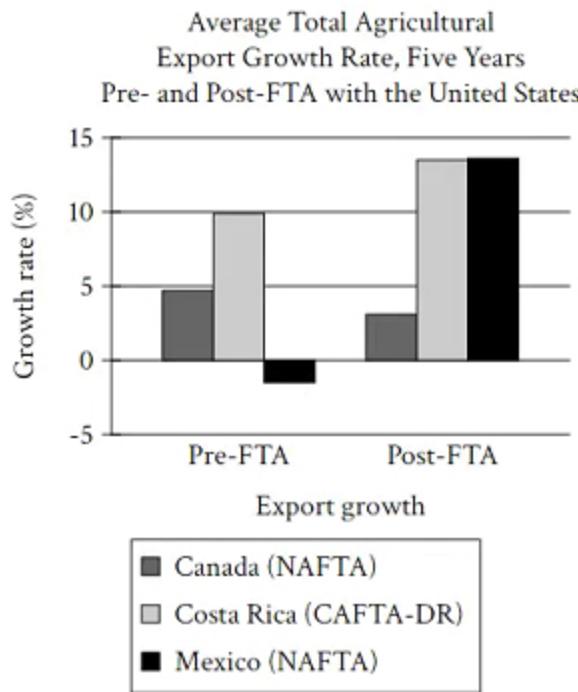
11

Mark for Review



Which quotation from *Life Among the Paiutes* most effectively illustrates the claim?

- (A) "We would all go in company to see if the flowers we were named for were yet in bloom, for almost all the girls are named for flowers."
- (B) "Nothing happened during the day, and after awhile mother told us not to say a word about why we left, for grandpa might get mad with us."
- (C) "Now, my dear reader, there is no word so endearing as the word father, and that is why [my people] call all good people father or mother."
- (D) "But how can I describe the scene that followed? Some of you, dear readers, can imagine."



To measure whether countries in free trade agreements (FTAs)—agreements among nations to reduce tariffs, duties, and other trade barriers—experience changes in total agricultural exports, economist Kayode Ajewole and colleagues calculated average export growth rates for several countries over the five years



12

Mark for Review



Which choice best describes data from the graph that weaken the student's claim?

- (A) Although agricultural exports from Mexico decreased over the five years before NAFTA, a reversal in this trend was observed over the five years after Mexico joined NAFTA.
- (B) All the countries shown had positive growth in agricultural exports over the five years after joining their respective FTAs, but their rates of export growth varied.
- (C) Over the five years after Costa Rica joined CAFTA-DR, agricultural exports from Costa Rica grew at a rate of about 13.5 percent, which is higher than the rate over the five years before Costa Rica joined the agreement.
- (D) Although agricultural exports from Canada grew over the five years after Canada joined NAFTA, their growth rate was even higher in the five years before NAFTA.

Average Monetized Productivity Loss at Two Points After Programs Began, in Australian Dollars

| Type of training | 12 weeks | 12 months |
|------------------|----------|-----------|
| EET | 268 | 171 |
| EHP | 282 | 436 |

Michelle Pereira et al. hypothesized that introducing health improvements into workplaces would increase productivity by reducing absenteeism (sick employees not working) and presenteeism (sick workers working less productively due to illness). Pereira's team enrolled groups of Australian workers in two programs: one that gave employees exercise training (EET) and one that enrolled employees in health promotion seminars (EHP). They then calculated the productivity loss of those groups at 12 weeks and 12 months after the programs began (based on the 28 days preceding each point). They concluded that exercise training was more effective at restraining productivity loss than health promotion seminars were, though this result took time to become apparent.

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Mark for Review



Which choice best describes data from the table that most effectively strengthen Pereira and colleagues' conclusion?

- (A) Productivity loss was largely due to absenteeism for the EHP group at 12 months after the program began, while productivity loss was largely due to presenteeism for the EET group at 12 months after the program began.
- (B) Productivity loss for the EET group barely decreased between 12 weeks and 12 months after the program began, while productivity loss for the EHP group significantly increased during the same time period.
- (C) Productivity loss was fairly similar for the EET and EHP groups 12 weeks after each program began, but at 12 months afterward it had significantly increased for the EHP group and significantly decreased for the EET group.
- (D) Productivity loss was consistently higher for the EHP group than for the EET group over the twelve months that it was measured, though the size of the difference between the two decreased over that time.



Born in Chile in 1917, artist and ethnomusicologist Violeta Parra was a pioneer in the *nueva canción chilena* (Chilean New Song) movement that emerged in the late 1950s and then spread throughout Latin America, Portugal, and Spain as *nueva canción*. Parra traveled all over Chile compiling extensive records of authentic folk music as well as recipes, proverbs, and other facets of cultural history. These records formed the foundation for the early movement's revival of traditional Chilean folk forms in new songs that represented modern realities of the working class and strongly advocated for social change. As the movement spread beyond Chile, the breadth of musical traditions incorporated into its foundation also expanded.



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Mark for Review



Which detail about songs associated with *nueva canción*, if true, would best illustrate the underlined claim?

- (A) Many were written with parts meant to be played on the *quena*, a traditional flute used across Andean countries, including Chile.
- (B) Many demonstrate the stylistic influence of *corrido*, a genre of narrative songs from Mexico that had come to be characterized by political themes in the early 1800s.
- (C) Many feature political commentary addressing contemporary issues that stemmed from shared experiences of European colonization in Latin American countries.
- (D) Many were produced by Argentinian artists in the late 1950s, with others by artists in additional Latin American countries first emerging soon after.

Museo Castillo Serrallés, a history museum in Ponce, Puerto Rico, is one of more than eighty museums in the US territory. Puerto Rico's museums ____ visitors about everything from the territory's history to its architecture to its coffee.

**15**

Mark for Review

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

(A) inform

(B) informing

(C) to inform

(D) having informed

An upcoming exhibition will showcase Vincent van Gogh's drawing *Snowy Landscape with the Old Tower*, which Van Gogh _____ in the city of Nuenen nearly 150 years ago.

2

6

16  [Mark for Review](#)



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

- (A) is completing
 - (B) will complete
 - (C) completed
 - (D) has been comp

Kizomba, a genre of dance that originated in Angola, has become an international _____ 2022, the Indian dance duo known as Elvis and Namrata defeated performers from around the world to win the annual Olympiads of Kizomba competition held in Paris, France, becoming the first ever Asian winners.

**17**

Mark for Review

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

(A) phenomenon in

(B) phenomenon and in

(C) phenomenon. In

(D) phenomenon, in

Round Rock Chapter, which covers 201,000 acres, is one of the 110 chapters of the Navajo ____ *Diné bizaad* (the Navajo language), the chapter is called *Tsé Nikáni*.

**18**

Mark for Review

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

(A) Nation and in

(B) Nation in

(C) Nation, in

(D) Nation. In

The 2020 documentary *Without a Whisper—Konnont:Kwe* was directed by Katsitsionni Fox. It explores how Indigenous Haudenosaunee culture shaped the woman suffrage movement in the early nineteenth ____ how the personal and political authority Haudenosaunee women had in their communities influenced the first suffragists in the US.

**19**

Mark for Review

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

(A) century; revealing

(B) century, revealing

(C) century. Revealing

(D) century revealing

For the past 20 million years, Earth's magnetic poles in the far north and far south have remained roughly where they are today. This has not always been the _____ throughout geologic history. Earth's magnetic poles have swapped places several times through a process called polar wandering.

**20**

Mark for Review

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

- (A) case, though,
- (B) case, though;
- (C) case, though
- (D) case; though,

5 minutes left in this part of the test. A small black 'X' icon inside a white rounded rectangle.

As part of a study, participants were asked to list animals they thought of as “charismatic,” which was defined as “attractive, fascinating, or appealing.” Researchers compiled the responses into a single list and found that elephants were ranked higher than crocodiles. _____ elephants were ranked third, and crocodiles were ranked fifteenth.

21

A blue ribbon icon with a white bookmark symbol.

Mark for Review

ABC

Which choice completes the text with the most logical transition?

(A) Therefore,

(B) Specifically,

(C) On the other hand,

(D) Later,

In 1920, the US Geological Survey determined the geographic center of Montana using only a cardboard cutout of the state and a piece of string. ____ this apparently crude technique yielded a relatively close approximation: when the 1920 center was compared to a center determined by a computer program nearly a hundred years later, the two diverged by just a mile.

**22**

Mark for Review



Which choice completes the text with the most logical transition?

- (A) Still,
- (B) Fittingly,
- (C) Similarly,
- (D) In other words,

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.



23

Mark for Review

ABC

Which choice completes the text with the most logical transition?

(A) fittingly,

(B) for example,

(C) likewise,

(D) though,

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

- Documentary TV programs in the slow TV genre consist of uninterrupted broadcasts of ordinary events in real time.
- *MORA: Zeichner* is a German slow TV program.
- The 45-minute-long program documented an artist making a pencil drawing during a train journey.
- It first aired in 2016.
- Slow TV has been called “the world’s most boring television.”
- American journalist Nathan Heller praises it, writing that “it affords a visceral kind of armchair tourism.”

**24**

Mark for Review



The student wants to use a quotation to refute the claim that slow TV programs are boring. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) *MORA: Zeichner* can afford a “visceral kind of armchair tourism,” as Heller puts it.
- (B) While some have praised slow TV for affording “a visceral kind of armchair tourism,” others have called it “the world’s most boring television.”
- (C) Far from boring, slow TV programs can provide a “visceral kind of armchair tourism,” as Heller puts it, whereby viewers can watch artists at work in real time.
- (D) With broadcasts of ordinary events, like artists at work, occurring in real time, slow TV just might be “the world’s most boring television.”

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

- Dinosaur fossil specimens can be found at science museums all over the world.
- Many dinosaur fossil specimens are given nicknames.
- The Denver Museum of Nature and Science in Denver, Colorado, houses a dinosaur fossil specimen nicknamed Pops.
- Pops lived in the Late Cretaceous period, which ended more than 65 million years ago.
- It is a member of the genus *Triceratops*.

**25**

Mark for Review

The student wants to provide an example of a dinosaur fossil specimen's nickname. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Nicknames are given to many dinosaur fossil specimens, including one housed at a museum in Denver, Colorado.
- (B) A *Triceratops* fossil specimen from the Late Cretaceous period, which ended more than 65 million years ago, is housed at the Denver Museum of Nature and Science.
- (C) Dinosaur fossil specimens can be found at museums all over the world, and many of these specimens are given nicknames.
- (D) Pops is the nickname of a *Triceratops* fossil specimen housed at the Denver Museum of Nature and Science in Denver, Colorado.

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

- A soundscape refers to the sounds heard in a specific place.
- The Japanese Ministry of the Environment made a list of 100 soundscapes of Japan.
- Each soundscape on the list was selected for its cultural significance to Japan.
- The sound of black-tailed gulls at Hachinohe Port in Aomori Prefecture is on the list.
- Aomori Prefecture is on northern Honshu Island, Japan.

**26**

Mark for Review



The student wants to specify where a soundscape of cultural significance to Japan can be heard. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) The sound of black-tailed gulls was included on a list of 100 soundscapes.
- (B) The soundscape was selected by the Japanese Ministry of the Environment for its cultural significance to Japan.
- (C) The soundscape included the sounds heard in a specific place.
- (D) The sound of black-tailed gulls at Hachinohe Port can be heard in Aomori Prefecture on northern Honshu Island, Japan.

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

- Most of the plant and bird species in Oahu, Hawaii, are non-native.
- In a 2019 study, researchers wanted to know what role non-native birds play in dispersing plant seeds in Oahu.
- Researchers catalogued plant seeds found in fecal samples from non-native birds.
- *Ilex anomala*, a flowering shrub, was one of fifteen native species catalogued.
- *Trema orientalis*, a tree, was one of twenty-nine non-native species catalogued.
- Researchers concluded that non-native birds play a vital role in dispersing the seeds of native and non-native plants.

**27**

Mark for Review

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

- (A) Most plant species found in Oahu, Hawaii, like *Trema orientalis*, are non-native.
- (B) A 2019 study catalogued plant seeds found in bird fecal samples in Oahu, Hawaii, to determine what role non-native birds play in seed dispersal.
- (C) Though *Ilex anomala* and *Trema orientalis* can both be found in Oahu, Hawaii, only the former plant is native.
- (D) Seeds from *Ilex anomala* and *Trema orientalis* plants were found in the fecal samples of non-native Hawaiian birds, according to a 2019 study.

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Often, the Nobel Prize in Chemistry is given to a single person, such as Richard Martin Willstätter in 1915. But sometimes the Nobel Committee wants to reward work attributed to two or three individuals, in which case, the award is given _____. For instance, in 2020, Jennifer Doudna was among those awarded for “the development of a method for genome editing.”



1

Mark for Review



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

(A) retroactively

(B) ceremoniously

(C) jointly

(D) reluctantly

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A set of small, light-colored icons located in the top right corner of the screen.

As with other river deltas, the Krishna River delta is ____: it is a constantly evolving network of channels and strips of land that change in size and shape as the river deposits new sedimentary particles where the river meets the waters of the Bay of Bengal.



2

A small circular icon containing a bookmark symbol (a ribbon-like shape). **Mark for Review**

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

(A) sustainable

(B) unrivaled

(C) immutable

(D) dynamic

Many of late nineteenth-century artist James McNeill Whistler's oil paintings and lithographs depict the streets of European cities. While his contemporaries' approaches to these subjects were often sentimental, Whistler's eye seemed _____. In this way, he anticipated the early twentieth-century photographs of Walker Evans, which create the illusion of being objective documentations of life.



3 Mark for Review

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

(A) tranquil

(B) peculiar

(C) nostalgic

(D) dispassionate

The following text is adapted from George Eliot's 1857 short story "The Sad Fortunes of the Rev. Amos Barton." Mr. Ely is a clergyman in the town of Milby.

By the laity of Milby and its neighbourhood [Mr. Ely] was regarded as a man of quite remarkable powers and learning, who must make a considerable sensation in London pulpits and drawing-rooms on his occasional visit to the metropolis; and by his brother clergy he was regarded as a discreet and agreeable fellow. Mr. Ely never got into a warm discussion; he suggested what might be thought, but rarely said what he thought himself; he never let either men or women see that he was laughing at them, and he never gave any one an opportunity of laughing at *him*.

**4**

Mark for Review



Which choice best describes the overall structure of the text?

- (A) It relates how Mr. Ely had initially earned the respect of his colleagues and then recounts the circumstances under which their views of him began to change.
- (B) It implies that Mr. Ely's neighbors are more naïve in their estimation of him than people in London are and then explains why his neighbors have been so easily misled.
- (C) It presents the favorable opinion of Mr. Ely that other people hold and then describes the behaviors of Mr. Ely that enable him to maintain that favorable opinion.
- (D) It highlights the disparity between Mr. Ely's public and private behavior and then conveys why he labors to obscure his true self from other people.



Mexican architect Luis Barragán's prolific career, which spanned the 1920s to the 1980s, evolved through distinct phases. After traveling to the United States and Europe in the early 1930s and immersing himself in a broader architectural discourse, Barragán shifted his style to incorporate principles of modernism, as seen in the Pizarro Suárez House. The project's unadorned geometric forms, typical of the modernist aesthetic, contrasted with the historically inspired architecture seen in his earlier projects in Guadalajara, such as the house in Calle Pedro Loza.

**5** Mark for Review

Which choice best describes the overall structure of the text?

- (A) It summarizes the career of a particular architect, states how a journey influenced that architect's career, and then emphasizes how influential that architect's career has been.
- (B) It presents a general claim about a particular architect's career, describes the early stages of the architect's career, and then explains a later shift in that career.
- (C) It explains the design aesthetic of a particular architect, acknowledges the sources of those design choices, and then contrasts that aesthetic with the designs of earlier architects.
- (D) It provides a general statement about the career of a particular architect, highlights a transition in that career, and then expounds on the ways that transition is evident in the architect's work.

Researchers César A. Hidalgo, Elisa Castañer, and Andres Sevtsuk created a computer model to predict the mix of hotels, bicycle stores, and other businesses found in a given neighborhood. How we define a neighborhood and its boundaries is subjective, so the team used a clustering algorithm to locate dense groupings of amenities that represent human-identified neighborhoods like Boston's North End. The predictive model, which incorporates this algorithm, is sure to be invaluable in determining the optimal mix of a city's amenities.

**6** Mark for Review

Which choice best describes the overall structure of the text?

- (A) It describes how an algorithm can predict the success of certain businesses, discusses an example of a use of that algorithm, and suggests potential uses of the algorithm in other fields.
- (B) It explains why urban planners are interested in understanding the locations of certain businesses, details a study that has addressed this question, and identifies one key finding.
- (C) It summarizes trends in recent urban development, describes a potential problem for urban planners, and suggests a computational tool that can be used to solve that problem.
- (D) It introduces a research team's study of urban neighborhoods, describes an aspect of the study's methodology, and suggests a potential application of the team's research.

Text 1

Hycean planets are a class of exoplanets (planets outside our solar system) with oceans of liquid water—critical to supporting life—and atmospheres rich in hydrogen. Computer models have determined that for potential hycean planets, the range of the habitable zone (HZ), the distance from a star that allows a planet to retain liquid water on its surface, begins at about 1 astronomical unit (AU). In 2021, Nikku Madhusudhan et al. identified K2-18 b as a hycean candidate, noting that the planet is located right on the inner edge of the HZ.

Text 2

In a 2023 paper, Shang-Min Tsai et al. claimed that the hydrogen-rich atmospheres of K2-18 b and other hycean candidates admit wavelengths of light that cause elevated surface temperatures and increased water evaporation. Unlike earlier assessments, Tsai et al.'s calculations therefore placed the inner edge for these planets' HZ as far out as 3.85 AU.



7 Mark for Review

Based on the texts, how would Tsai et al. (Text 2) most likely respond to Madhusudhan et al.'s research, as presented in Text 1?

- (A) By arguing that K2-18 b and other hycean candidates are unlikely to support life because these planets are located too far from the stars they orbit
- (B) By maintaining that Madhusudhan et al. relied on a model whose estimates of surface temperatures on hycean candidates are likely too high
- (C) By stating that the chemical composition of the atmosphere of the hycean candidate Madhusudhan et al. identified suggests that this planet's surface is unlikely to harbor liquid water
- (D) By observing that unlike the hycean candidate Madhusudhan et al. discovered, most other types of planets with hydrogen-rich atmospheres are likely located within the HZ

When Kenyan writer Ngũgĩ wa Thiong'o, who had previously published four novels in English, began writing in his native language, Gĩkũyũ, in the 1970s, several fellow writers and critics cautioned that doing so might make his works inaccessible outside his own community. Some noted that Kiswahili—widely spoken in Kenya and elsewhere in Africa—would be a more practical choice. Rejecting their arguments, Ngũgĩ went on to author dozens of acclaimed works in Gĩkũyũ that have been translated into a total of more than thirty languages.

- 8 Mark for Review

Which choice best states the main idea of the text?

 - (A) Although Ngũgĩ insisted on publishing his first works in Gĩkũyũ, they have since been translated into many other languages.
 - (B) Although Ngũgĩ's decision to write in Gĩkũyũ was met with some skepticism, it didn't prevent him from achieving literary success.
 - (C) The reaction to Ngũgĩ's rejection of English illustrates that some literary experts believe that fame is most easily gained by writing in a widely understood language, such as Gĩkũyũ.
 - (D) In the 1970s, Ngũgĩ became convinced that literature ought to be written in authors' native languages, and he proceeded to publish many works in Gĩkũyũ.

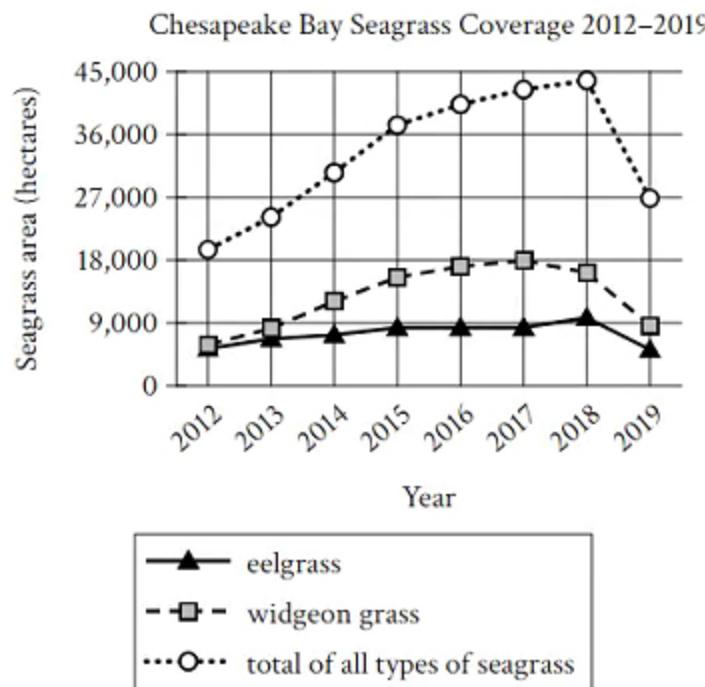
In a study by Mika R. Moran, Daniel A. Rodriguez, and colleagues, residents of Quito, Ecuador, and Buenos Aires, Argentina, were surveyed about parks in their cities. Of the 618 respondents from Quito, 82.9% indicated that they use the city's parks, and of the 683 respondents from Buenos Aires, 69.9% indicated using city parks. Given that the percentage of Quito respondents who reported having access to other desired amenities near parks was much lower than that reported by Buenos Aires respondents, the difference in park use can't be explained by Quito residents having more access to desired nonpark amenities near parks.



9  Mark for Review 

Which choice best describes the main idea of the text?

- (A) The study's findings suggest that an increase in the number of amenities near city parks would likely increase park use in Quito but not in Buenos Aires.
- (B) Although the study found that a greater proportion of residents use parks in Quito than in Buenos Aires, that difference isn't due to greater access to amenities near parks in Quito.
- (C) Even though the study found that parks in Buenos Aires are more likely to be close to other amenities than parks in Quito are, Quito has more amenities overall than Buenos Aires does.
- (D) The study's finding that a greater proportion of residents use parks in Quito than in Buenos Aires is partly due to the greater prevalence of parks in Quito.



Chesapeake Bay seagrass meadows constitute crucial habitats for many aquatic species. Historically, eelgrass has been predominant, but widgeon grass is proving better suited to recent increases in sea temperature, tolerating heat better and growing faster than eelgrass does. Although the increase in widgeon grass has been associated with a substantial increase in total seagrass coverage

10

Mark for Review

ABC

Which statement, if true, would account for data shown in the graph and would illustrate the point made by the researchers?

- (A) In early 2018, a fungal infection that affects widgeon grass and eelgrass but does not affect other types of seagrass spread through the bay.
- (B) Water temperatures in the bay increased slowly from 2012 to 2018, but in early 2019 there was an unprecedentedly large increase in temperatures, which reached levels that can be tolerated by few seagrass species other than widgeon grass.
- (C) Between 2012 and 2017, the total area covered by widgeon grass and the total area covered by all types of seagrass increased as water temperatures in the bay increased.
- (D) In early 2019, unusually heavy rains washed excessive nutrients into the bay, leading to algal blooms that prevented sunlight from reaching many seagrass species.

Piezoelectric harvesters convert kinetic energy (resonance) to electrical energy, precluding the need for external electrical sources. The vibration of a spacecraft, for example, can provide sufficient energy to power many of its sensors piezoelectrically. A newly designed piezoelectric harvester incorporating a highly conductive carbon-fiber-reinforced polymer (CFRP) electrode has been shown to provide steady energy loads during resonance, an absolute prerequisite for wireless communication devices to be powered piezoelectrically.

11

Mark for Review

Which finding, if true, would most directly support the text's claim about wireless communication devices?

- (A) The high conductivity of the CFRP is what makes the energy output from a piezoelectric harvester sufficient for wireless communication devices.
- (B) The CFRP electrode is incompatible with most wireless communication devices.
- (C) Intermittent or unpredictable electrical supply undermines the efficacy of wireless communication devices.
- (D) The near-constant kinetic vibration of a spacecraft makes it possible to power its wireless communication devices using only non-CFRP piezoelectric harvesters.

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 _____

12

Which choice most logically completes the text?

- (A) 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.
- (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) 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.
- (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.

Microbial fuel cells (MFCs) capitalize on the ability of some species of bacteria to metabolize metal, liberating electrons. The bacteria form a dense biofilm on the surface of an electron-collecting anode, but moving the electrons from the bacterial cytoplasm to an external electrode requires that the electrons pass through a series of inefficient oxidation-reduction (redox) reactions. Accordingly, MFC power output rarely exceeds a density of 0.30 milliwatts per square centimeter (mW/cm^2). In an experiment, researchers added silver nanoparticles to carbon paper covering the anode in an MFC. The resulting power density was 0.66 mW/cm^2 . Since metals such as silver exhibit high electrical conductivity, the researchers hypothesized that _____.



13

Mark for Review



Which choice most logically completes the text?

- (A) silver nanoparticles may increase the metabolic processes of the bacteria, thereby increasing the number of free electrons available to transfer to the electrode.
- (B) as the density of the biofilm increases, the series of redox reactions may accelerate independent of the presence of the silver nanoparticles.
- (C) silver nanoparticles may allow electrons to bypass the series of redox reactions and transfer directly to the electrode.
- (D) electrons may be conducted directly to the electrode before the silver nanoparticles catalyze the redox reactions.

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 _____

**14**

Mark for Review



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) 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.
- (C) 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.
- (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.

Included in *What Absence Is Made Of*, a 2017 group exhibition at the Hirshhorn Museum and Sculpture Garden in Washington, DC, was the work of artist Lorna Simpson, who is best known for her multimedia artworks that juxtapose images of African American women with text fragments. Her work challenges conventional notions of race, gender, history, and _____ she is credited with expanding the horizons of conceptual photographic art.

**15**

Mark for Review



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

- (A) memory and
- (B) memory,
- (C) memory, and
- (D) memory

The editors of *Home Ground: A Guide to the American Landscape* turned to D.J. Waldie, a nonfiction writer, to craft the entry for "thalweg," a term referring to a line connecting the lowest points of a valley. For "cape," however, the editors chose the _____ author of *Inheritance*.

16

A small icon of a document with a checkmark.

Mark for Review

ABC

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

- (A) novelist Lan Samantha Chang,
- (B) novelist Lan Samantha Chang
- (C) novelist, Lan Samantha Chang,
- (D) novelist, Lan Samantha Chang

The Austronesian language family comprises some 1,200 languages—including the _____ Gilbertese and Tongan, which are spoken by 120,000 and 108,000 speakers, respectively—and accounts for one-fifth of the world's languages, making it of keen interest to linguists like Marian Klamer.



17 Mark for Review ABC

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

(A) languages,

(B) languages:

(C) languages

(D) languages—

If you had turned on the radio in the summer of 1961, chances are you would have heard the hit ____ "A Tear" by Gene McDaniels. The song spent four straight weeks on the Billboard Hot 100 chart that year.

**18**

Mark for Review



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

(A) song:

(B) song';

(C) song,

(D) song

Recent analysis of 1999 OX3—an outer solar system object orbiting the Sun between Jupiter and Neptune—has determined its color to be red, suggesting a rocky composition. Such interpretations are ultimately ____ the object's red coloration may be an incidental effect of radiation, solar wind, or collisions with other objects rather than evidence of its physical makeup.

**19**

Mark for Review



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

(A) speculative; though

(B) speculative, though,

(C) speculative, though

(D) speculative, though:

Mitochondrial genomes reproduce asexually, which should over time result in an accumulation of harmful mutations and a decline in mitochondrial functionality. However, nuclear genes are hypothesized to coevolve with the rate of mitochondrial decline, eliminating mutational erosion. Such a compensatory measure ____ the organelle's decline, unlike enzyme-stabilizing accessory proteins, offers an evolutionary explanation of mitochondrial reproduction.



20

Mark for Review



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

- (A) counteracting
- (B) had counteracted
- (C) counteracted
- (D) counteracts

In his 2011 book, historian Sebouh David Aslanian quantifies the reading patterns of early modern Armenian merchants from New Julfa. Aslanian's macroanalysis _____ nearly 1,000 book titles published between 1512 and 1800 shows not only the steady popularity of religious texts but also a broadening interest in secular books, especially those on history and geography.



21 Mark for Review A small rectangular icon with the letters 'ABC' inside.

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

(A) examined

(B) examining

(C) examines

(D) had examined

Despite its great distance from Earth—it is 570 light-years away—the star Shaula is one of the brightest stars in the sky, ranking 23rd. Although not as bright as Shaula, the star Alsephina also ranks among the 50 brightest stars (45th, to be exact). _____ Alsephina's brightness is likely due to the star's relative proximity: Alsephina is only 80 light-years from Earth.

22

 Mark for Review

Which choice completes the text with the most logical transition?

- (A) Indeed,
- (B) As a result,
- (C) Granted,
- (D) Similarly,

In an ekphrastic poem, a poet explores a work of visual art, such as a drawing, sculpture, or painting. Robert Hayden's 1994 poem "Monet's Waterlilies," for example, meditates on Claude Monet's 1899 painting *Water Lilies*; Sasha Pimentel's 2017 poem "The Kiss," _____ takes a painting as its subject: Gustav Klimt's 1908 work *The Kiss*.

**23**A small circular icon containing a bookmark symbol. **Mark for Review**

Which choice completes the text with the most logical transition?

(A) nevertheless,

(B) likewise,

(C) hence,

(D) conversely,

Contemplating the beauty of a natural landscape, the serene speaker of William Wordsworth's poem "Lines Composed a Few Miles above Tintern Abbey" (1798) seems wholly insulated from society. As scholars have argued, however, Wordsworth's retreat to nature was an aesthetic response to—and implicit critique of—England's rapid industrialization and urbanization at that time. _____ despite its idyllic quality, the poem bears the imprint of the dramatic changes affecting English life.



24

Mark for Review

Which choice completes the text with the most logical transition?

- (A) Nevertheless,
- (B) For example,
- (C) Moreover,
- (D) As such,

- The South Sudan Workers Trade Union Federation (SSWTUF) is a national union federation for the African nation of South Sudan.
- It helps improve conditions for workers in that nation.
- ITUC-Africa is a regional union federation that represents national union federations across Africa.
- It represents the SSWTUF.

25

Mark for Review

ABC

Which choice most effectively uses information from the given sentences to explain the purpose of national union federations?

- (A) The SSWTUF is one of the national union federations represented by ITUC-Africa.
- (B) Regional union federations like ITUC-Africa represent the national union federations in a specific area.
- (C) National union federations, such as the SSWTUF, work to improve conditions for workers in their member nations.
- (D) The SSWTUF is a national union federation in Africa.

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

- Emphasis analysis and cultural analysis are two approaches to art criticism.
- Emphasis analysis examines how visual elements are weighted in an artwork's composition.
- Such an analysis of Anne Vallayer-Coster's *Still Life with Lobster* might consider how the painting's sharply contrasting colors place primary emphasis on the lobster in the foreground.
- Cultural analysis considers the cultural trends, beliefs, and values of an artwork's time.
- Such an analysis of Pablo Picasso's *Les Demoiselles d'Avignon* might consider how the painting's portrayal of fragmented human figures challenged conventions of beauty during a time of cultural upheaval (early twentieth century).

**26**

Mark for Review



The student wants to present cultural analysis to an audience unfamiliar with the concept. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) An approach to art criticism, cultural analysis considers the cultural trends, beliefs, and values of an artwork's time.

- (B) An emphasis analysis of *Still Life with Lobster* might consider how the painting's sharply contrasting colors place primary emphasis on the lobster in the foreground.
- (C) *Les Demoiselles d'Avignon*'s portrayal of fragmented human figures challenged conventions of beauty during a time of cultural upheaval (early twentieth century).
- (D) Emphasis analysis differs from cultural analysis in that emphasis analysis examines how visual elements are weighted in an artwork's composition.

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.



27 Mark for Review

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.

Directions ▾

Hide

 Calculator x^2 More

1

Mark for Review



$$s = 40 + 2t$$

The equation gives the speed s , in miles per hour, of a certain car t seconds after it began to accelerate. What is the speed, in miles per hour, of the car 3 seconds after it began to accelerate?

(A) 40

(B) 42

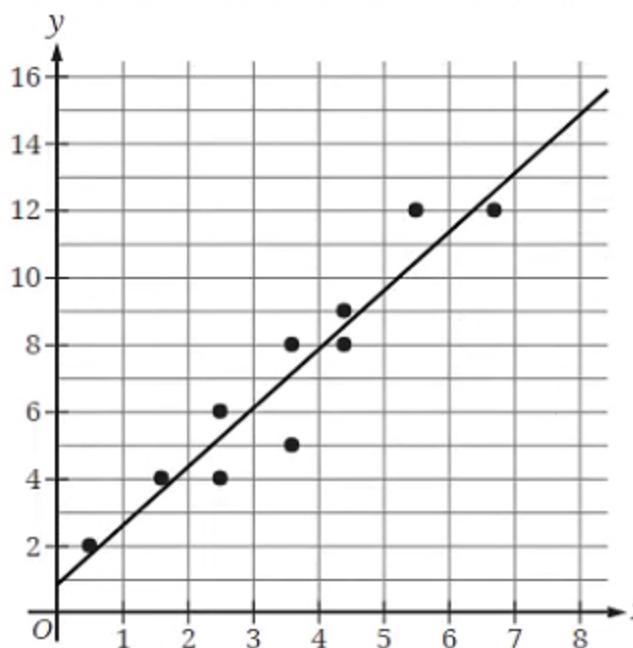
(C) 43

(D) 46

Directions

Hide

Calculator Reference More



Which of the following equations best represents the line of best fit shown?

(A) $y = 0.8 + 1.7x$

(B) $y = 0.8 - 1.7x$

(C) $y = -0.8 + 1.7x$

(D) $y = -0.8 - 1.7x$

3

Mark for Review



The width of a rectangle is 5 centimeters. The length of the rectangle is 30 centimeters longer than the width. What is the area, in square centimeters, of this rectangle?

(A) 175

(B) 40

(C) 10

(D) 5

Student-produced response directions

- If you find **more than one correct answer**, enter only one answer.
- You can enter up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer.
- If your answer is a **fraction** that doesn't fit in the provided space, enter the decimal equivalent.
- 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 ($\frac{7}{2}$) or its decimal equivalent (3.5).
- Don't enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

| Answer | Acceptable ways to enter answer | Unacceptable: will NOT receive credit |
|--------|---------------------------------|---------------------------------------|
| 3.5 | 3.5 3.50 $\frac{7}{2}$ | $3\frac{1}{2}$ $3\ 1/2$ |
| | $\frac{2}{3}$ | |

4

Mark for Review

If $7 + x = 3$, what is the value of $56 + 8x$?

Answer Preview:

5

Mark for Review



In one week in 2017, a technician earned a total of \$1,055 by working at her regular job and at a second job doing part-time work. The equation $20h + 17c = 1,055$ represents this situation, where h is the number of hours worked at her regular job and c is the number of hours worked at her second job. Which of the following is the best interpretation of 20 in this context?

- (A) The amount, in dollars, the technician earned for each hour she worked at her regular job
- (B) The amount, in dollars, the technician earned for each hour she worked at her second job
- (C) The number of hours the technician worked in one week at her regular job
- (D) The number of hours the technician worked in one week at her second job

6

Mark for Review



The table shows the frequency of values in a data set.

| Value | Frequency |
|-------|-----------|
| 20 | 6 |
| 26 | 1 |
| 32 | 6 |
| 38 | 3 |

What is the minimum value of the data set?

(A) 1

(B) 6

(C) 20

(D) 26

Hide

7

Mark for Review

The list gives the mass, in grams, of 5 ruffed lemurs.

3,810; 3,810; 3,030; 3,810;

What is the mean mass, in grams, of these 5 ruffed lemurs?

Answer Preview:

ctions

answer, enter only one answer.

or a **positive** answer and up to 6

sign) for a **negative** answer.

esn't fit in the provided space, enter

esn't fit in the provided space, enter it
with a decimal point and up to 2 digits after the decimal point.

(such as $3\frac{1}{2}$), enter it as an improper
fraction or mixed number (3.5).

Enter sign, comma, or dollar sign.

les

| |
|--|
| Unacceptable: will NOT receive credit |
|--|

31/2

3 1/2

Directions ▾

Hide

8

Mark for Review



$$x + 7 = 13$$

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

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

A (6, 180)

B (6, 185)

C (13, 5)

D (13, 850)

Student-produced response directions

- If you find **more than one correct answer**, enter only one answer.
- You can enter up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer.
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- Don't enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

| Answer | Acceptable ways to enter answer | Unacceptable: will NOT receive credit |
|--------|---------------------------------|---------------------------------------|
| 3.5 | 3.5 3.50 7/2 | 31/2 3 1/2 |



9

Mark for Review

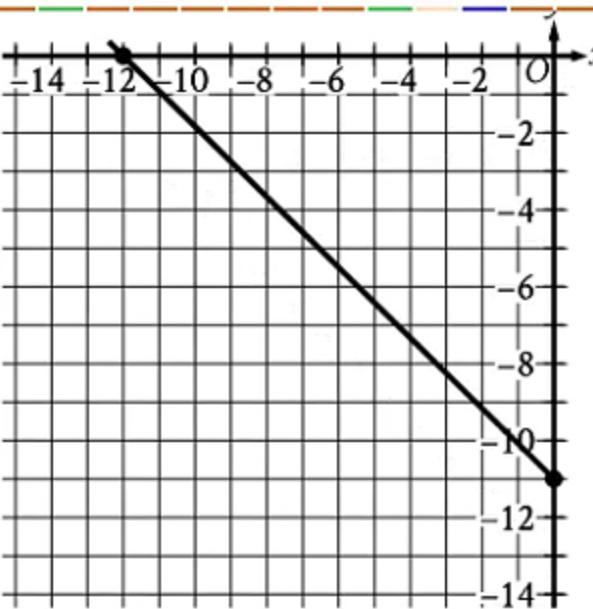
The expression $19x^5 + 20x^5 - 10x^5$ is equivalent to bx^5 , where b is a constant. What is the value of b ?

Answer Preview:

Directions ▾

Hide

Calculator Reference More



The point $(v, -5)$ lies on the line shown. What is the value of v ?

(A) $-\frac{72}{11}$

(B) $-\frac{11}{12}$

(C) $\frac{72}{11}$

(D) $\frac{192}{11}$

11

Mark for Review



$$f(x) = 22x$$

For the given linear function f , which table gives three values of x and their corresponding values of $f(x)$?

(A)

| x | $f(x)$ |
|-----|--------|
| 0 | 0 |
| 1 | 0 |
| 2 | 0 |

(C)

| x | $f(x)$ |
|-----|--------|
| 0 | 0 |
| 1 | 22 |
| 2 | 44 |

(B)

| x | $f(x)$ |
|-----|--------|
| 0 | 22 |
| 1 | 22 |
| 2 | 22 |

(D)

| x | $f(x)$ |
|-----|--------|
| 0 | 22 |
| 1 | 22 |
| 2 | 0 |

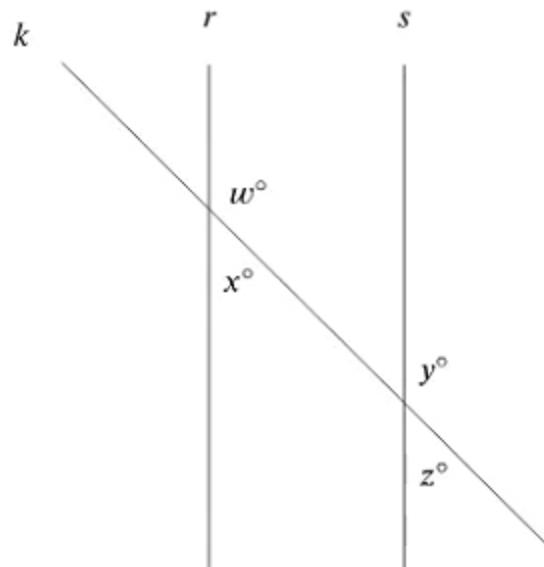
Directions ▾

Hide

 Calculator x^2 Reference More

12

Mark for Review



Note: Figure not drawn to scale.

In the figure shown, line k intersects lines r and s . If $w = 146$, which additional piece of information is sufficient to prove that lines r and s are parallel?

(A) $x = 34$ (C) $w + y = 180$ (B) $y = 146$ (D) $y + z = 180$

13

Mark for Review



Which expression is equivalent to $(133y)^{\frac{1}{2}}$, where $y > 1$?

A $133 \cdot \sqrt{y}$

B $\sqrt{133} \cdot y$

C $\sqrt{133y}$

D $\sqrt{(133y)^2}$

Directions ▾

[Hide](#)

Calculator Reference More

14

Mark for Review

ABC

$$f(x) = -26(2)^{\frac{x}{6}}$$

Which table gives four values of x and their corresponding values of $f(x)$ for the given exponential function?

(A)

| | | | | |
|--------|-----|---|-----|------|
| x | -6 | 0 | 6 | 12 |
| $f(x)$ | -13 | 0 | -52 | -104 |

(C)

| | | | | |
|--------|----|-----|-----|------|
| x | -6 | 0 | 6 | 12 |
| $f(x)$ | 13 | -26 | -52 | -104 |

(B)

| | | | | |
|--------|-----|-----|-----|------|
| x | -6 | 0 | 6 | 12 |
| $f(x)$ | -13 | -26 | -52 | -104 |

(D)

| | | | | |
|--------|-----|-----|-----|-----|
| x | -6 | 0 | 6 | 12 |
| $f(x)$ | -13 | -26 | -52 | -78 |

15

Mark for Review



The measure of angle B is $\frac{3\pi}{4}$ radians. What is the value of $\sin(B)$?

(A) $-\frac{\sqrt{3}}{2}$

(B) $-\frac{\sqrt{2}}{2}$

(C) $\frac{1}{2}$

(D) $\frac{\sqrt{2}}{2}$

Directions ▾

Hide

Student-produced response directions

- If you find **more than one correct answer**, enter only one answer.
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- If your answer is a **mixed number** (such as $3\frac{1}{2}$), enter it as an improper fraction ($\frac{7}{2}$) or its decimal equivalent (3.5).
- Don't enter **symbols** such as a percent sign, comma, or dollar sign.

Examples

| Answer | Acceptable ways to enter answer | Unacceptable: will NOT receive credit |
|--------|---------------------------------|---------------------------------------|
| 3.5 | 3.5 3.50 $\frac{7}{2}$ | $3\frac{1}{2}$ $3\frac{1}{2}$ |
| | | |

16

Mark for Review

A school is ordering tablet computers for its students. The tablets cost \$164 each, and 6% tax is added to the total cost of the order. If the school can spend no more than 44,800 dollars on the tablets, including tax, what is the maximum number of tablets that the school can order?

Answer Preview:

Student-produced response directions

- If you find **more than one correct answer**, enter only one answer.
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Examples

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| | 2 /2 | |

17

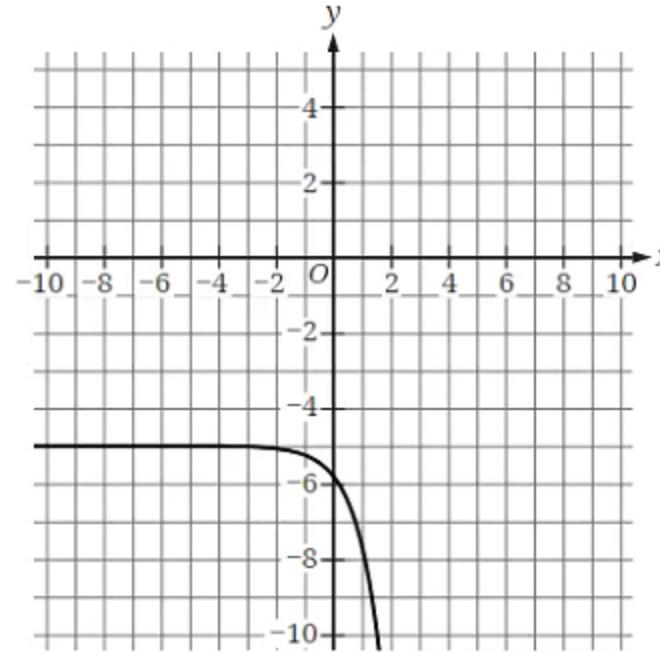
Mark for Review

A triangular prism has a height of 3 centimeters (cm) and a volume of 60 cm^3 . What is the area, in cm^2 , of the base of the prism? (The volume of a triangular prism is equal to Bh , where B is the area of the base and h is the height of the prism.)

Answer Preview:

18

Mark for Review



The graph of $y = f(x)$ is shown, where $f(x) = ab^x + c$, and a , b , and c are constants. For how many values of x does $f(x) = 0$?

(A) Three

(C) One

(B) Two

(D) Zero

 x^2 

Directions ▾

Hide

Calculator Reference More

19

Mark for Review



$$x(x + 4) - 140 = 3x(x - 10)$$

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

(A) 6

(B) 10

(C) 14

(D) 17

Directions ▾

20

Mark for Review



$$-3x^2 - 7x + 1 = 0$$

What is the greatest solution to the given equation?

(A) $-\frac{7}{3} + \frac{\sqrt{61}}{3}$

(B) $-\frac{7}{3} - \frac{\sqrt{61}}{3}$

(C) $-\frac{7}{6} + \frac{\sqrt{61}}{6}$

(D) $-\frac{7}{6} - \frac{\sqrt{61}}{6}$

Student-produced response directions

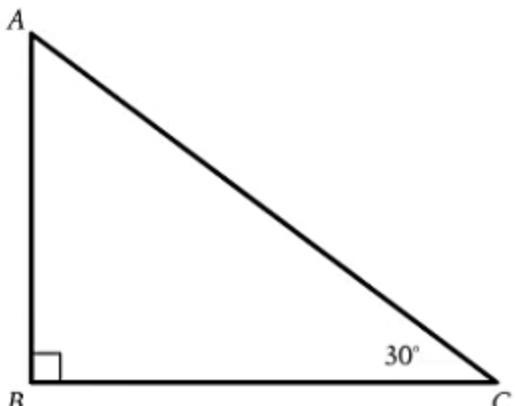
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- If your answer is a **decimal** that doesn't fit in the provided space, enter it by truncating or rounding at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), enter it as an improper fraction (7/2) or its decimal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

Examples

| Answer | Acceptable ways to enter answer | Unacceptable: will NOT receive credit |
|--------|---------------------------------|---------------------------------------|
| 3.5 | 3.5 3.50 $\frac{7}{2}$ | $3\frac{1}{2}$ $3\ 1/2$ |
| | | |

21

Mark for Review



Note: Figure not drawn to scale.

In triangle ABC , $BC = 36\sqrt{3}$. What is the value of $\cos A$?

Answer Preview:

22

Mark for Review



The positive number a is 2,047% of the sum of the positive numbers b and c , and b is 89% of c . What percent of b is a ?

(A) 21.36%

(B) 38.69%

(C) 2,300%

(D) 4,347%



Directions ▾

Hide

Calculator Reference More

1

Mark for Review



How many solutions does the equation $2x - 3 = 2x$ have?

- A Zero
- B Exactly one
- C Exactly two
- D Infinitely many



Directions ▾

Hide

2

Mark for Review



In the linear function f , $f(0) = 2$ and $f(7) = 2$. Which equation defines f ?

(A) $f(x) = 0$

(B) $f(x) = 7$

(C) $f(x) = 2$

(D) $f(x) = x + 2$

3

Mark for Review



A rectangle has a length that is 92 times its width. The function $y = (92w)(w)$ represents this situation, where y is the area, in square feet, of the rectangle and $y > 0$. Which of the following is the best interpretation of $92w$ in this context?

- A The length of the rectangle, in feet
- B The area of the rectangle, in square feet
- C The difference between the length and the width of the rectangle, in feet
- D The width of the rectangle, in feet

4

Mark for Review



$$T(x) = 67 - 8x$$

The function T estimates the temperature, in degrees Fahrenheit ($^{\circ}\text{F}$), in a certain city one day in January, where x is the number of hours after 10 a.m. and $1 \leq x \leq 5$. According to the function, what was the estimated decrease in temperature each hour, in $^{\circ}\text{F}$, in this city during this time period?

(A) 4

(B) 8

(C) 59

(D) 67

Directions ▾

Hide

5

Mark for Review



At a convention center, there are a total of 375 visitors. Each visitor is located in either room A, room B, or room C. If one of these visitors is selected at random, the probability of selecting a visitor who is located in room A is 0.68, and the probability of selecting a visitor who is located in room B is 0.24. How many visitors are located in room C?

(A) 8

(B) 30

(C) 61

(D) 165



Directions ▾

Hide

6

Mark for Review



An object is launched from a height of 121 feet above the ground. A quadratic function f models the height above the ground, in feet, of the object t seconds after it is launched. According to the model, 2 seconds after the object is launched, it reaches a maximum height of 185 feet above the ground. Which equation defines f ?

(A) $f(t) = -16(t + 185)^2 - 2$

(B) $f(t) = -16(t - 185)^2 + 2$

(C) $f(t) = -16(t + 2)^2 - 185$

(D) $f(t) = -16(t - 2)^2 + 185$

Directions ▾

Hide

Student-produced response directions

- If you find **more than one correct answer**, enter only one answer.
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Examples

| Answer | Acceptable ways to enter answer | Unacceptable: will NOT receive credit |
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| 3.5 | 3.5 3.50 $\frac{7}{2}$ | $3\frac{1}{2}$ $3\ 1/2$ |
| | | |

7

Mark for Review

$$7y = -6x + 2,550$$

$$24x - 28y = 1,800$$

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

Answer Preview:

Directions ▾

Hide

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Examples

| Answer | Acceptable ways to enter answer | Unacceptable: will NOT receive credit |
|--------|---------------------------------|---------------------------------------|
| 3.5 | 3.5 3.50 $\frac{7}{2}$ | $\frac{31}{2}$ $3\frac{1}{2}$ |
| | | |

8

Mark for Review

To study fluctuations in leaf water potential, samples of wood were taken from 21 trees and cut in the shape of a cube. The length of the edge of one of these cubes is 3.000 centimeters. This cube has a density of 0.220 grams per cubic centimeter. What is the mass of this cube, in grams?

Answer Preview:

Directions ▾

9

Mark for Review

$$-2|3x + 7| + 8 = -6$$

What are all solutions to the given equation?

(A) 0

(B) 0 and $-\frac{8}{3}$

(C) 0 and $-\frac{14}{3}$

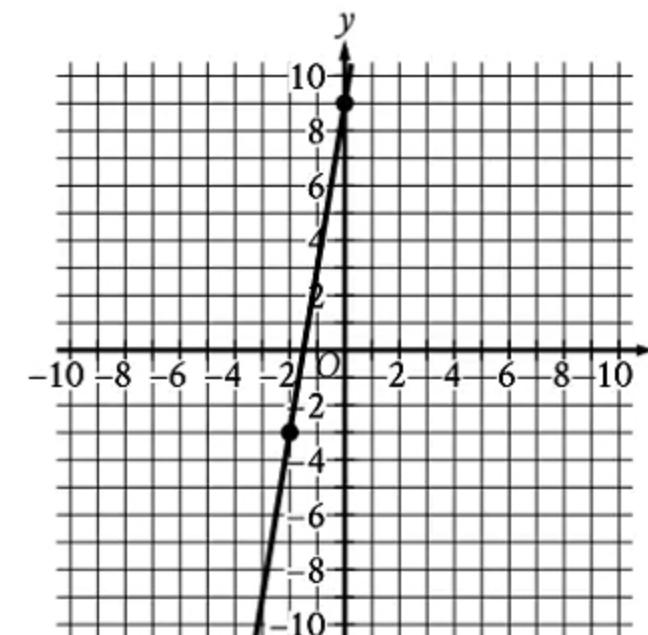
(D) There is no solution.

Directions ▾

Hide

10

Mark for Review



The graph shows a linear relationship between x and y . Which equation represents this relationship, where R is a positive constant?

(A) $Rx + 12y = 18$

(B) $Rx - 12y = -18$



Directions ▾

Hide

11

Mark for Review



The function f is defined by $f(x) = -10(3)^x + \frac{1}{k}$, where k is a constant. If $y = f(x)$ is graphed in the xy -plane, what is the y -coordinate of the y -intercept of the graph?

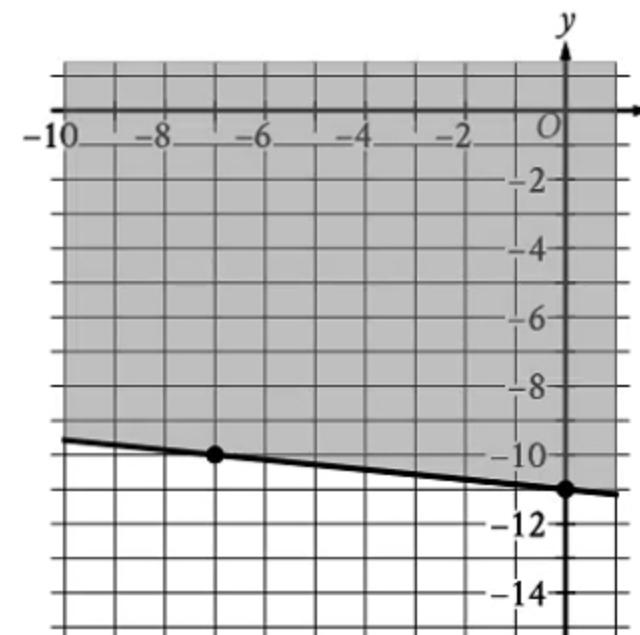
(A) -10 (B) $\frac{1-10k}{k}$ (C) $\frac{1}{k}$ (D) $\frac{1-k}{k}$

Directions ▾

Calculator Reference More

12

Mark for Review



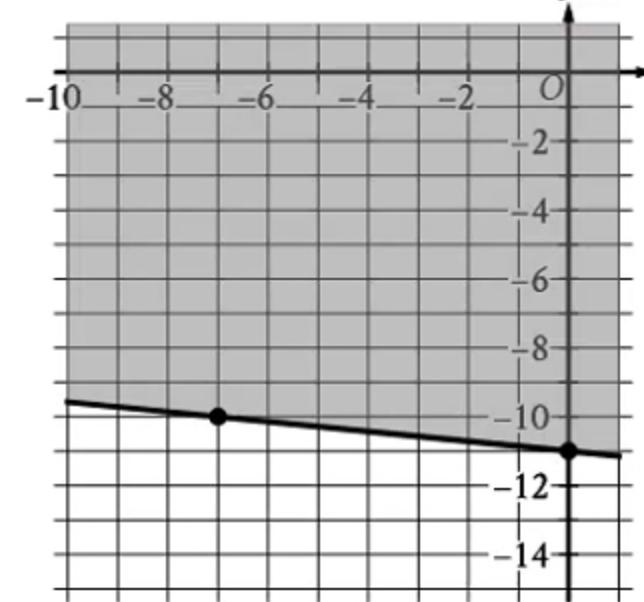
The shaded region shown represents the solutions to $rx + ty \geq -77$, where r and t are constants. What is the value of $r + t$?

(A) 8

(B) 6

Directions ▾

Hide



The shaded region shown represents the solutions to $rx + ty \geq -77$, where r and t are constants. What is the value of $r + t$?

(A) 8

(B) 6

(C) -6

(D) -7



Directions ▾

Hide

Calculator Reference More

13

Mark for Review



$$3x = 45y - 27$$

One of the two equations in a system of linear equations is given. The system has no solution. Which equation could be the second equation in this system?

(A) $x = 5y$

(B) $\frac{1}{3}x = 5y$

(C) $x = 15y - 9$

(D) $\frac{1}{3}x = 15y - 9$

14

Mark for Review



A cooking school is offering a promotion where the first class is free, the second class is half off the regular price, and the remaining classes are regularly priced. If the regular price of a class is \$22.80, which function f gives the total cost, in dollars, of x classes taken using this promotion, where $x \geq 2$?

(A) $f(x) = 22.80(x - 1) + 11.40$

(B) $f(x) = 22.80(x - 2) + 11.40$

(C) $f(x) = 22.80(x - 1) + 11.40(x - 2)$

(D) $f(x) = 22.80(x - 2) + 11.40(x - 1)$

Directions ▾

Hide

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| | | |

15

Mark for Review

The function f is defined by $f(x) = 6x + 14$. What is the y -coordinate of the y -intercept of the graph of $y = f(x)$ in the xy -plane?

Answer Preview:

Directions ▾

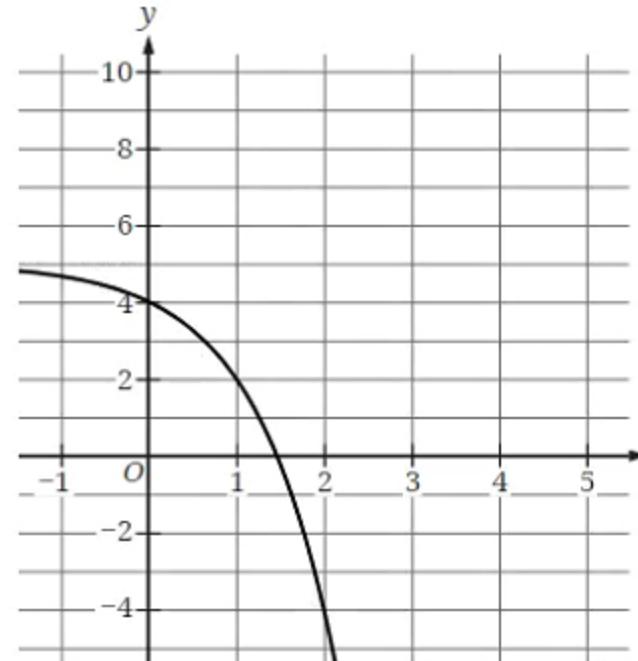
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Calculator Reference More

16

Mark for Review

ABC



The graph of $y = f(x) + 2$ is shown. Which equation defines function f ?

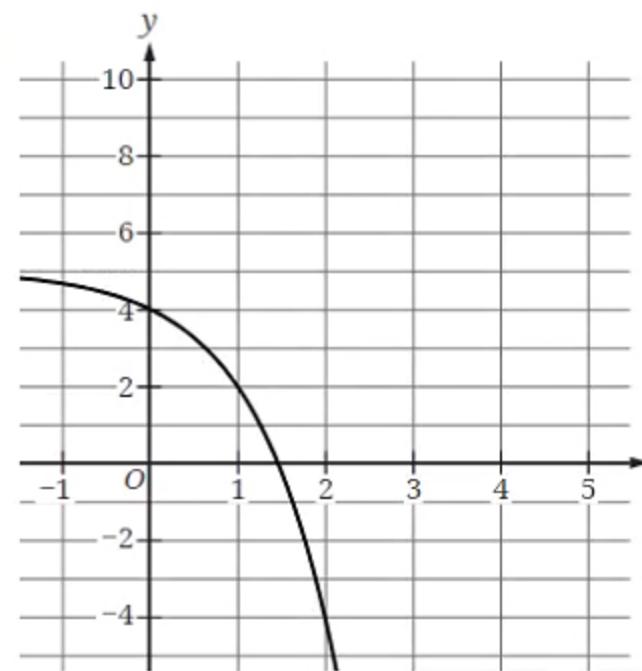
(A) $f(x) = -3^x + 1$

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

(C) $f(x) = -3^x + 4$

Directions ▾

Hide



The graph of $y = f(x) + 2$ is shown. Which equation defines function f ?

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

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

(C) $f(x) = -3^x + 4$

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

17

Mark for Review



A square map has a side length of 55 inches, and 1 inch on the map represents an actual distance of 13 miles. A smaller version of the same map is printed as a square with the side length 70% shorter than the side length of the previous map. On the smaller map, which of the following is closest to the actual distance, in miles, represented by 1 inch?

(A) 3.90

(B) 7.65

(C) 38.50

(D) 43.33

18

Mark for Review



$$y = x - c$$

$$y = -4(x - 8)^2$$

In the given system of equations, c is a constant. The system has two distinct real solutions. Which of the following could be the value of c ?

(A) 3

(B) 7

(C) $\frac{127}{16}$

(D) 13



Directions ▾

Hide

Calculator

Reference

More

19

Mark for Review



In triangle ABC , the measure of angle A is 52° and $AC = 35$. In triangle PQR , the measure of angle P is 52° and $PR = 105$. Which additional piece of information is sufficient to prove that triangle ABC is similar to triangle PQR ?

- (A) $AB = 30$ and $PQ = 30$.
- (B) $AB = 30$ and $QR = 90$.
- (C) The measures of angle B and angle R are 34° and 94° , respectively.
- (D) The measures of angle B and angle Q are 52° and 34° , respectively.

Directions ▾

Hide

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Examples

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|--------|---------------------------------|---------------------------------------|
| 3.5 | 3.5 3.50 7/2 | 31/2 3 1/2 |
| | | |



20

Mark for Review

The perimeter of an equilateral triangle is 876 centimeters. The three vertices of the triangle lie on a circle. The radius of the circle is $w\sqrt{3}$ centimeters. What is the value of w ?

Answer Preview:



Directions

Hide



Student-produced response directions

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| | | $\frac{7}{2}$ |

21

Mark for Review

The function f is defined by $f(x) = \frac{|x|}{a} - 14$, where $a < 0$. What is the product of $f(15a)$ and $f(8a)$?

Answer Preview:

Directions ▾

Hide



Student-produced response directions

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| 3.5 | 3.5 3.50 7/2 | 31/2 3 1/2 |
| | | |

22

Mark for Review

The function f is defined by $f(x) = ab^{\frac{x}{n}}$, where a , b , and n are constants, and b and n are integers. If $f(4) = 5$ and $f(7) = 135$, what is the value of $f(9)$?

Answer Preview: