

The following text is adapted from Mary Seacole's 1857 autobiography *Wonderful Adventures of Mrs. Seacole in Many Lands*.

That journey across the Isthmus [of Panama], insignificant in distance as it was, was by no means an easy one. It seemed as if nature had determined to throw every conceivable obstacle in the way of those who should seek to join the two great oceans of the world.

Mark for Review



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

A Visible

B Possible

C Regular

D Open



In a 2018 article celebrating films depicting the Black experience, critics for the *New York Times* ~~csmxxg0109~~ William Greaves's 1968 film *Symbiopsychotaxiplasm, Take One* and Spike Lee's 1992 film *Malcolm X*, praising the former as "a vital artifact of its time" and the latter as "electrifying."

2 Mark for Review

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

A overlooked

B commended

C satirized

D inspired

Louise Arner Boyd, who led several scientific expeditions off the coast of Greenland in the 1930s, undoubtedly accomplished much, but to gain a lasting place in our historical memory, there is little that can _____ being the first to do something. For example, people will always remember that Enid Gordon-Gallien led the expedition that first mapped the area around Kalambo Falls between Zambia and Tanzania.

3

Mark for Review

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

(A) prevail over

(B) constrain within

(C) overreach by

(D) fluctuate with

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4 Mark for Review

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

 A undermine B exaggerate C correct D mock



When people think of dinosaurs with feathers, they typically think of winged dinosaurs, such as the bat-like *Yi qi*. However, many dinosaurs that didn't have wings also had feathers on their bodies. For instance, research indicates that the wingless, predatory *Juravenator* likely had feathers.

5 Mark for Review

Which choice best states the main purpose of the text?

A To argue that only one species of dinosaur had feathers

B To explain why feathered dinosaurs went extinct

C To point out the differences between dinosaur feathers and bird feathers

D To discuss the presence of feathers on certain types of dinosaurs

Can field mustard plants grow on Mars? Can pea plants? You might think the answer to these questions is obviously no, but researchers in the Netherlands recently showed that the seeds of many common plant species can germinate in soil designed to simulate Martian conditions, as long as water is supplied. In fact, some species actually did *better* in Martian soil than in Earth soil: 30 percent of field mustard seeds sprouted when planted in simulated Martian soil, compared with 4 percent that did when planted in soil from their home planet.

6 Mark for Review

Which choice best states the main purpose of the text?

- (A) To explain an important study of differences in the composition of Martian soil and the composition of Earth soil
- (B) To present a surprising finding about plants grown in soil intended to be similar to Martian soil
- (C) To answer long-standing questions about how Martian soil conditions can be simulated on Earth
- (D) To discuss an unexpected result about the role of water in plants grown in simulated Martian soil

Researchers César A. Hidalgo, Elisa Castañer, and Andres Sevtsuk created a computer model to predict the mix of gyms, beauty salons, 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 Central Square. The predictive model, which incorporates this algorithm, is sure to be invaluable in determining the optimal mix of a city's amenities.

7 Mark for Review ABC

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 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.
- (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 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.

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Highlights & Notes More

The following text is adapted from Adib Khorram's 2018 novel *Darius the Great Is Not Okay*. The narrator, Darius, is a teenager visiting family in Iran. He and his friend Sohrab are at the entrance of the ruins of the ancient city of Persepolis.

"The Gate of All Nations," Sohrab said. He gestured to the lamassus [sculptures] and pillars surrounding us. "That's the name in English."

It wasn't much of a gate anymore, since anyone of any nation could have easily stepped around it instead of walking through. But it was still amazing.

Behind the lamassu, more columns sprouted from the ground like ancient trees in a petrified forest, forty feet tall, spindly but still miraculously upright. Giant stone slabs formed the remains of what must once have been a breathtaking structure.

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8

Mark for Review



Which choice best states the main idea of the text?

- (A) Darius has seen the columns before.
- (B) Darius is surprised that Sohrab knows so much about the ruins.
- (C) Darius wants to learn about the people who built Persepolis.
- (D) Darius is impressed by the overall sight of the ruins.



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.

9

Mark for Review

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

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

Many believe that lullabies, characterized by their slow tempos, contain some acoustic features that are universally calming to infants. In a study, Constance M. Bainbridge and colleagues played both a lullaby sung in the Luk Saami language and a non-lullaby sung in the Tundra Nenets language to a group of infants. The researchers also measured the infants' heart rates, as a reduced heart rate is considered a measure of relaxation. They claim that the lullaby did indeed relax the infants.

10

Mark for Review

Which finding, if true, would most directly support Bainbridge and colleagues' claim?

- (A) The heart rates of infants in the study were more irregular during the lullabies than during non-lullabies.
- (B) Infants' heart rates were substantially lower during the lullaby than during the non-lullaby.
- (C) Parents of infants in the study chose the lullaby over the non-lullaby when asked which song they would use to calm their child.
- (D) Both the song in Luk Saami and the song in Tundra Nenets were sung by a female singer.

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Highlights & Notes

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Memoirs of Elleeanor Eldridge is an 1838 historical account by Elleeanor Eldridge and Frances Harriet Whipple Green. In the book, the authors assert that people don't need to be famous to be worthy of memoirs, writing, _____.

11

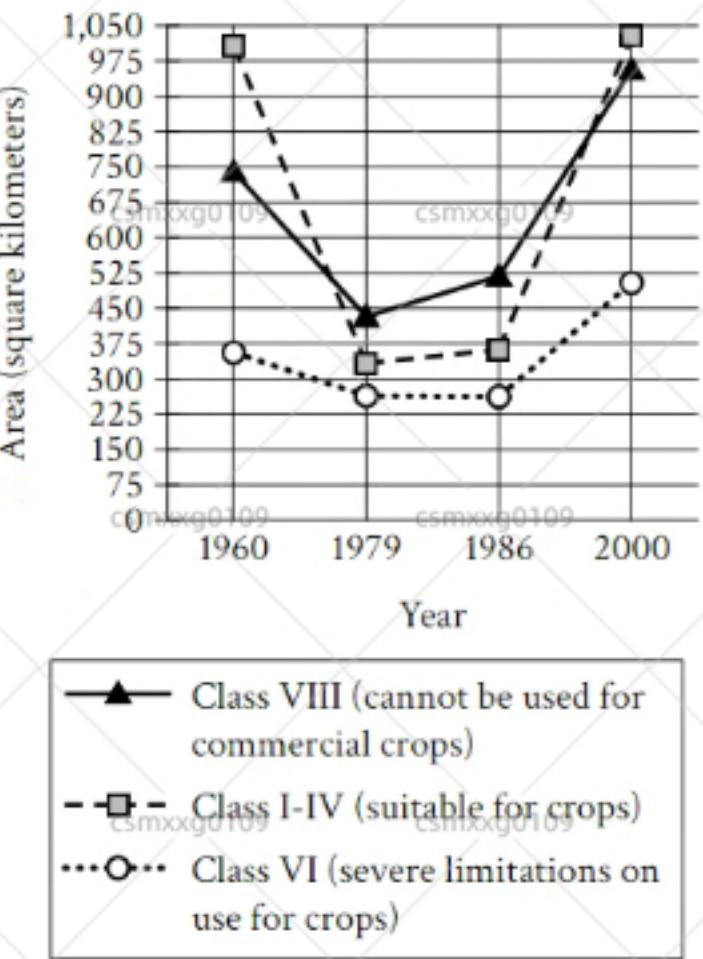
Mark for Review



Which quotation from *Memoirs of Elleeanor Eldridge* most effectively illustrates the claim?

- (A) "Then let no one turn with too much [fussiness] from the simple story of the humble Elleeanor, though it may contain few, or none, of the thrilling charms of poetry and passion."
- (B) "There is often a kind of [deceptive] light, playing around such [famous] names, calculated to dazzle and mislead, by their false lustre, until the eye can no longer receive the pure light of Truth, or the mind appreciate real excellence, or intrinsic worth."
- (C) "It should not be considered essential to the interest and value of biography, that its subject be of exalted rank, or illustrious name."
- (D) "How careful ought we to be to speak nothing but the truth, even in regard to the most trifling circumstances; and not only so, but to be well assured that what we suppose to be true, is *truth*, before we receive it as such."

Forest Area for Three Land Use Capability Classes in the Chorotega Region, Costa Rica



To understand the extent of deforestation in the Chorotega region of Costa Rica, Juan Pablo Arroyo-Mora and colleagues used historical aerial photography and remote sensing data to track changes in the forest cover area across different land use capability classes (categories that indicate possible uses of forest land). Due to the Chorotega region's accessibility, various types of forested areas were converted to cattle pasture as rising international meat prices drove a cattle ranching boom in the 1960s and 1970s. By the mid-1980s, however, increased public awareness and environmental reforms, along with a decline in meat prices, triggered a natural regrowth process, as evident by the _____.

12

Mark for Review

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

- (A) decrease in the forest cover area for all classes from 1960 to 1979.
- (B) difference between the forest cover area in Class I-IV and in Class VI in 2000.
- (C) increase in the forest cover area for all classes from 1979 to 2000.
- (D) similarity in forest cover area in Class I-IV and Class VIII in 1986.

Peering at Adult Orangutans by Immature Orangutans				
Individual	Site	Sex	Total number of peering events observed	Proportion of peering events directed at immigrants to immature individual's home region
5	Suaq	female	1	0.00
6	Tuanan	female	6	0.33
10	Suaq	male	33	0.64
8	Tuanan	male	1	1.00

One way that young orangutans acquire foraging skills is through a behavior scientists call peering—closely watching older orangutans as they engage in an activity that the young have not yet mastered. Since male orangutans typically leave the area of their birth upon maturity and females do not, Beatrice Ehmann and her colleagues hypothesized that it is more advantageous for immature males than females to devote attention to orangutans who are immigrants to the home region of the immature individual, and this should be reflected in sex-specific differences in peering behavior.

13 Mark for Review

Which choice best describes data from the table that support Ehmann and colleagues' hypothesis?

- (A) The proportion of peering events directed at immigrants to immature orangutans' home regions ranged from a low of 0.00 to a high of 1.00.
- (B) Individual 5 and individual 6 directed a lower proportion of peering events at immigrants to their home regions than did individual 8 and individual 10.
- (C) Individual 8 directed a higher proportion of peering events at immigrants to its home region than did individual 10, and individual 6 directed a higher proportion of peering events at immigrants to its home region than did individual 5.
- (D) Individual 10 had the highest total number of peering events observed at 33.

British professional soccer team Arsenal Football Club, whose home uniform color is mainly red, won more than half its home matches between 1947 and 2003. This is a higher proportion than the proportion of home matches won by Watford Football Club, whose home uniform color is not red, during the same period. According to a study by Martin J. Attrill and colleagues, the color red can cause people to respond with fear and hesitation, which the researchers think helps explain Arsenal's success. Nadav Goldschmied and colleagues reanalyzed the published data from this study, however, and found no evidence that red-uniformed teams are more likely than other teams to win, suggesting that Watford's home-match win percentage _____.

14

Mark for Review

ABC

Which choice most logically completes the text?

- (A) would likely have remained roughly the same if its players had been wearing red uniforms.
- (B) may have influenced other teams to change their uniform colors.
- (C) was directly tied to its players' general satisfaction with their uniform color.
- (D) was likely influenced by its players' associations with the color red.



Studies have shown that when we listen to high-tempo music (songs with a high number of beats per minute, or bpm) during endurance exercise, we perceive our effort as lower than it actually is, which leads to an increased pace and a higher heart rate. Researchers recently designed a follow-up study in which participants jogged outdoors for 30 minutes while listening to Aerosmith's "Livin' on the Edge" (169 bpm) continuously. The next day, participants performed the same activity while listening to Beyoncé's "Irreplaceable" (88 bpm). As expected, listening to that song resulted in participants _____.

15

Mark for Review

Which choice most logically completes the text?

- (A) perceiving their effort as higher while jogging than they had the previous day.
- (B) jogging a longer distance in the 30 minutes than they had the previous day.
- (C) varying their jogging pace more than they had the previous day.
- (D) exhibiting a higher average heart rate while jogging than they had the previous day.

In the 1960s and the 1970s, a loose-knit group of writers including Sonia Sanchez, Gwendolyn Brooks, and James Baldwin ____ monumental works of poetry and fiction exploring the Black American experience and together came to be known as the Black Arts movement.

16

Mark for Review

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

- (A) are publishing
- (B) published
- (C) will publish
- (D) publish

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Highlights & Notes More



An upcoming exhibition will showcase Vincent van Gogh's drawing *Building in Eindhoven*, which Van Gogh _____ in the city of Nuenen nearly 150 years ago.

17 Mark for Review

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

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

At 1,666 years old, RCR 1, a foxtail pine (*Pinus balfouriana*) located in the United States, is one of the oldest known trees in the world. With almost two millennia of climate data in its tree rings, a single tree like _____ claims dendrochronologist Valerie Trouet, can tell the history of the world.

18

Mark for Review

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

- (A) this:
- (B) this;
- (C) this
- (D) this,

In the Silurian hypothesis, astrophysicist Adam Frank and climatologist Gavin Schmidt suggest the geological record may contain evidence of prehuman advanced civilizations. This sensational hypothesis obscures the scientists' practical _____. Frank and Schmidt don't believe such a civilization existed, and their "hypothesis" is a thought experiment exploring the traces our own civilization will leave on the geological record.

19

Mark for Review

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

- (A) aim, however,
- (B) aim, however;
- (C) aim. However,
- (D) aim: however,

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Highlights & Notes

More



A 2012 study led by ____ studied the impact of fertilizers containing nitrogen on grassland arthropod populations. Another study, led by Kimberly J. La Pierre in 2015, looked at fertilizers containing nitrogen and two other macronutrients: phosphorus and potassium.

20

Mark for Review

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

- (A) researcher, Alex D.K. Dittrich,
- (B) researcher, Alex D.K. Dittrich
- (C) researcher Alex D.K. Dittrich
- (D) researcher Alex D.K. Dittrich,

Included among a particular group of mid-twentieth-century artists known as the New York School, French abstract painter was known for using energetic brushstrokes and for capturing the energy and chaos of modern life.

21

Mark for Review

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

(A) painter Louise Bourgeois

(B) painter Louise Bourgeois,

(C) painter, Louise Bourgeois

(D) painter, Louise Bourgeois,

Scientists were able to isolate a relatively pure sample of cadmium in 1817, the same year they first discovered the element's existence. _____ the isolation process took longer for niobium, which was isolated in its pure form 63 years after scientists first discovered it.

22

Mark for Review



Which choice completes the text with the most logical transition?

- (A) For instance,
- (B) Thus,
- (C) Similarly,
- (D) By contrast,

When ordering the branches of the Colville River system by Hack's method, one begins with the riverway's lowest point, the Colville River. _____ when using Strahler's method, one begins at the top of the river system, with the Okokmilaga River and other tributaries fed by the riverway's source, Alaska's De Long Mountains.

23

Mark for Review

Which choice completes the text with the most logical transition?

- (A) Indeed,
- (B) Specifically,
- (C) In other words,
- (D) Alternatively,



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

- Buland Darwaza is a historic gateway.
- It is located in the city of Agra, India.
- It is one of the many remaining structures built by the Mughal Empire.
- The Mughal Empire was a South Asian empire.
- It lasted from the early sixteenth century to the mid-nineteenth century.

24

Mark for Review

The student wants to specify the location of Buland Darwaza. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Buland Darwaza is a historic gateway built by the Mughal Empire.
- (B) Buland Darwaza was built by the Mughal Empire, a South Asian empire that started in the early sixteenth century.
- (C) The Mughal Empire, which built Buland Darwaza, lasted from the early sixteenth century to the mid-nineteenth century.
- (D) Buland Darwaza can be found in Agra, a city in the country of India.

- Antonio Stradivari (1644–1737) made about 1,000 violins in his lifetime.
- Musicians prize his Stradivarius violins for their famed sound quality.
- Many of the 500 or so that exist today are named for a previous owner.
- The ex-Berglund Stradivarius is named for Paavo Berglund, a Finnish violinist.

25 Mark for Review

Which choice most effectively uses information from the given sentences to explain how the ex-Berglund Stradivarius got its name?

- (A) The ex-Berglund Stradivarius is named after its former owner, Paavo Berglund.
- (B) Of the 1,000 or so violins Antonio Stradivari made, only about 500 exist today.
- (C) Designed by Antonio Stradivari, Stradivarius violins like the ex-Berglund are renowned for their quality.
- (D) Paavo Berglund was a Finnish violinist.



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

- For centuries in Japan, it was common practice for farmers to cultivate terraced rice fields (*tanada* in Japanese).
- Tanada were built by carving the steep hillsides into a series of large, flat steps.
- This agricultural method allowed farmers to increase arable land and prevent landslides.
- The Sawajiri tanada in Miyagi Prefecture, Japan, was developed during the Sengoku period.
- The Sengoku period (1467 CE–1615 CE) was characterized by social upheaval and civil war.

26 ABC

The student wants to explain the design of the Sawajiri tanada. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) The Sawajiri terraced rice field, or tanada, was built by carving the steep hillside into a series of large, flat steps, making the land more arable and less prone to landslides.
- (B) Developed in the Sengoku period, the Sawajiri tanada was built during a time of Japanese history characterized by social upheaval and civil war.
- (C) The agricultural method of carving hillsides into terraced rice fields was common practice in Japan for centuries.
- (D) During the Sengoku period, a farming method was used that involved carving large, flat steps out of the steep hillsides.



27

Mark for Review

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

- Elizabeth Catlett (1915–2012) was a celebrated African American artist.
- She is best known for creating sculptures and prints that explore the Black experience.
- *Face* is a 1973 sculpture by Catlett.
- It is made of marble.

The student wants to describe a sculpture by Elizabeth Catlett. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Made of marble, *Face* is a 1973 sculpture by Elizabeth Catlett.
- (B) Artist Elizabeth Catlett is best known for creating sculptures and prints that explore the Black experience.
- (C) Elizabeth Catlett was a celebrated artist whose work includes sculptures.
- (D) Elizabeth Catlett, a celebrated artist, was born in 1915.

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Writer Lydia Davis observed that while traditional literary forms, such as the novel, are recognizable as such even as they evolve, there are more _____ forms that might, for example, borrow elements from both fables and realist narratives to make something unconventional. The late-period pieces of James Tate arguably fit in this category, since they straddle the line between prose and poetry.

1 Mark for Review

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

- (A) dispersed
- (B) customary
- (C) amorphous
- (D) neutral

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Highlights & Notes

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A speaker at a recent children's book publishing conference noted that, while many illustrators do excellent work, in her mind, no one has ever _____ Amos Ferguson's work as the illustrator of *Under the Sunday Tree*: there is no better example of the form, according to the speaker.

2 Mark for Review

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

- (A) convened
- (B) eclipsed
- (C) cited
- (D) augmented

Some robots such as Justin (developed in 2008) and TALOS (developed in 2017) feature humanoid characteristics like the ability to respond to voice commands so that people will find it easier to interact with them. While these features can help to ____ feelings of comfort in people, a robot that looks *too* human can fall into the “uncanny valley,” meaning that its appearance unintentionally unsettles those who encounter it.

3 Mark for Review

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

- A counterbalance
- B repudiate
- C constrict
- D engender



Though most hoaxes perpetrated as jokes by mischievous users of Wikipedia, an online encyclopedia that almost anyone can freely edit, have quickly been detected and removed, a few entries that knowledgeable readers should have realized were ___, such as those for the country singer-songwriter Joseph G. Williams and the television miniseries *Sheer Perfection*, persisted on the site for many years before they were finally recognized as falsehoods and deleted.

4 Mark for Review

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

A spurious

B scrupulous

C palpable

D compulsory

In 2015 Filipa Faleiro and colleagues published a study concluding that ocean acidification has a strong effect on the behavior of *Hippocampus guttulatus*, a species of fish. However, Faleiro and colleagues' study relied on a mean sample size of only 6 fish. In a 2022 review of various scientists' conclusions about the impacts of ocean acidification on fish behavior, Timothy D. Clark and colleagues caution that relying on such a relatively small sample size can increase the potential for biased analysis. Such analysis, in turn, can contribute to reports of exaggerated effects.

5 Mark for Review

Which choice best describes the overall structure of the text?

- (A) It summarizes a problem that scientists are investigating, then provides a possible solution to that problem.
- (B) It describes a characteristic of a fish species, then explains why that characteristic is noteworthy.
- (C) It presents the result of a study, then raises a potential concern related to that result.
- (D) It states a similarity between two scientific studies, then notes a difference between them.

**Text 1**

According to a study by a conservation group representing 11 tribal nations in the Great Lakes region, the firefly (*waawaatesi* in the Ojibwe language) will have significantly worse outcomes over the next 50 years if temperatures increase as much as some models suggest. By contrast, the white-tailed deer (*waawaashkeshi* in Ojibwe) should be able to withstand the highest predicted warming without much harm and so likely won't require the conservation efforts that the firefly will.

Text 2

US government agencies involved in conservation are unfortunately not able to address every possible threat to natural resources. They must use the best information available to decide which species are most threatened and therefore most in need of conservation efforts.

6

Mark for Review

Based on the texts, both authors would most likely agree with which statement?

- (A) A collaborative approach is necessary to keep temperatures in the Great Lakes region from increasing to the highest predicted levels.
- (B) Agencies involved in natural-resource management in the Great Lakes region should focus their conservation efforts more on the firefly than on the white-tailed deer.
- (C) Conservation efforts focused on the firefly are more likely to be successful if they incorporate state and federal agency resources with the knowledge of tribal groups in those efforts.
- (D) State, federal, and tribal groups involved in natural-resource management in the Great Lakes region should immediately begin conservation programs for both the firefly and white-tailed deer.

According to historical documents, Marietta Strozzi—a young woman who was prominent in fifteenth-century Florentine culture—inspired several artworks, including a portrait bust sculpted by Desiderio da Settignano. Multiple sculptures dating to the period have been alleged to be the reported bust, but none have been authenticated as Desiderio's depiction of Strozzi. Given the historical importance of both Strozzi and Desiderio's sculpture of her, positively identifying the bust would be a notable accomplishment for art historians.

7 Mark for Review

Which choice best states the main idea of the text?

- (A) Although there is documentation that Desiderio was commissioned to sculpt the portrait bust of Strozzi, numerous instances of false identification have made art historians skeptical that the sculpture will be uncovered.
- (B) Although successfully finding and authenticating Desiderio's portrait bust of Strozzi remains a challenge, the historical importance of the work justifies the continued pursuit of this goal.
- (C) Although numerous fifteenth-century Florentine portrait busts have been recovered over time, evidence has led art historians to conclude that Desiderio's bust of Strozzi is likely no longer extant.
- (D) Although historians strongly suspect that a particular sculpture is Desiderio's portrait bust of Strozzi, they do not currently have a method for conclusively verifying the artist or subject.



Optimal foraging theory (OFT) holds that animals' foraging behaviors reflect cost-benefit trade-offs that vary by species and with dynamic ecological circumstances. One such circumstance is lunar intensity, which Alexander Lang and colleagues found to be negatively associated with foraging by white-throated round-eared bats but Patricia C. Wright found to be positively associated with foraging by three-striped night monkeys. This discrepancy is explicable in terms of OFT: the monkeys' greater reliance on vision means that higher lunar intensity benefits them more than it benefits the bats.

8 Mark for Review

According to the text, the difference between Lang and colleagues' findings and Wright's findings can be attributed to which difference between white-throated round-eared bats and three-striped night monkeys?

- (A) The bats are less reliant on vision than the monkeys are.
- (B) The bats decrease their foraging activity as lunar intensity increases, whereas the monkeys increase their foraging activity.
- (C) The bats are more vulnerable to predators than the monkeys are.
- (D) The bats encounter different levels of lunar intensity than the monkeys do.

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Highlights & Notes

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The following text is adapted from Guy de Maupassant's 1884 short story "A Recollection," from the collection *Guy de Maupassant Short Stories* (translated by Albert M.C. McMaster et al. in 1903). The narrator is taking a boat down the Seine river from Paris, France, to the surrounding countryside.

I took up a position in the bows [front of the boat], standing up and looking at the quays, the trees, the houses and the bridges disappearing behind us. And suddenly I perceived the great viaduct of Point du Jour which blocked the river. It was the end of Paris, the beginning of the country, and behind the double row of arches the Seine, suddenly spreading out as though it had regained space and liberty, became all at once the peaceful river which flows through the plains, alongside the wooded hills, amid the meadows, along the edge of the forests.

9 Mark for Review

Based on the text, which choice best expresses the narrator's characterization of the Seine?

A The journey along the Seine is mostly peaceful, but the current intensifies briefly under the Point du Jour.

B The waters of the Seine are more confined and rough in Paris than they are in the countryside.

C The Seine is similar to Paris in that it is beautiful and slow to change.

D As the journey progressed from Paris to the countryside, the waters of the Seine gradually cleared.



Water flowing around an obstruction creates vortices (patterns of swirls) of varying size; by detecting the vortices, fish can determine the size and position of the obstruction.

Testing by Yuzo R. Yanagisuru, Otar Akanyeti, and James C. Liao using models of three head shapes—narrow (low ratio of width to length), intermediate, and wide (high ratio of width to length)—showed that for large vortices, fish with intermediate heads would be better able than narrow-headed fish to distinguish between vortices and general turbulence in the water. A second research team has therefore hypothesized that in low-visibility conditions, intermediate-headed fish will be more likely than narrow-headed fish to detect obstructions that create large vortices.

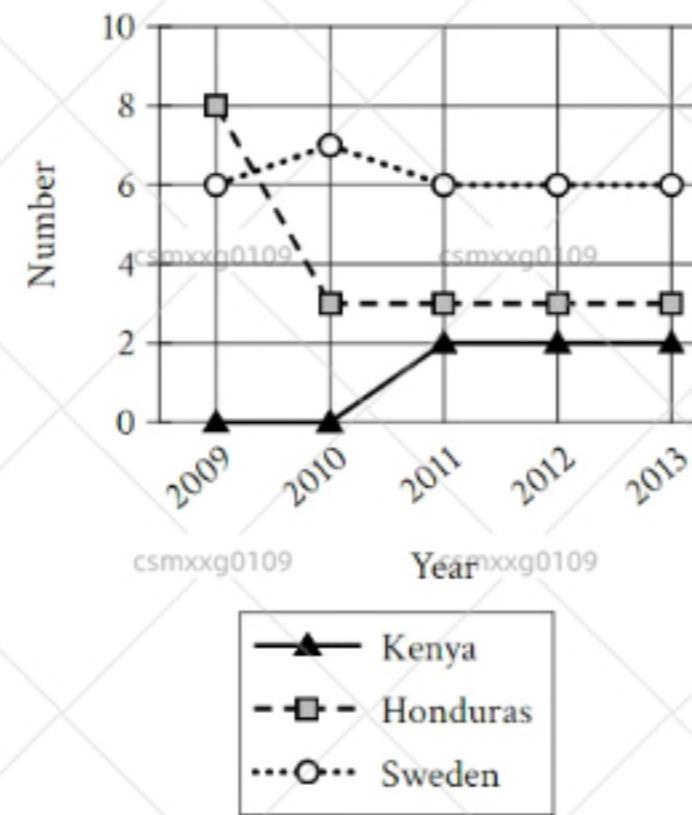
10

Mark for Review

Which finding, if true, would most directly support the second research team's hypothesis?

- (A) A study using obstructions that created large vortices in low-visibility conditions found that some specimens of the intermediate-headed black sea bass (*Centropristes striatus*) bumped into the obstructions more often than other specimens of the same fish did.
- (B) A study using obstructions that created large vortices in low-visibility conditions found that the narrow-headed flat needlefish (*Abelennes hians*) bumped into obstructions more often than the intermediate-headed black sea bass (*Centropristes striatus*) did.
- (C) A study using obstructions that created large vortices in low-visibility conditions found that the intermediate-headed black sea bass (*Centropristes striatus*) bumped into the obstructions just as often as the narrow-headed flat needlefish (*Abelennes hians*) did.
- (D) A study using obstructions that created large vortices in low-visibility conditions found that the flat needlefish (*Abelennes hians*), which has a relatively narrow head, bumped into more than half of the obstructions.

Women Judges and Magistrates on High Courts, 2009–2013



A report from an international organization that monitors the numbers of women serving as judges or magistrates on various nations' highest courts, such as the Supreme Court in Sweden and the Supreme Court in Honduras, indicates that among the countries that had a different number of women on these courts in 2013 than they had in 2009, the number increased in some countries but decreased in others. For instance, the number of women judges and magistrates on high courts in _____

11 Mark for Review

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

- (A) Honduras was lower in 2013 than in 2009, whereas the number in Sweden was the same in 2013 as in 2009.
- (B) Kenya was greater in 2013 than in 2009, whereas the number in Honduras was lower in 2013 than in 2009.
- (C) Kenya was greater in 2013 than in 2009, whereas the number in Sweden was the same in 2013 as in 2009.
- (D) Sweden was the same in 2013 as in 2009, but it had more women on its high courts than either Kenya or Honduras did in 2013.

Psychologists Gregory Bryant, Dorsa Amir, and colleagues investigated cross-cultural perceptions of spontaneous (real) laughter and volitional (fake or forced) laughter. Study participants from 21 societies, including those in Austria and Turkey, listened to randomized recordings of 18 spontaneous laughs taken from natural conversations between pairs of women and 18 volitional laughs produced separately by 18 different women in response to an experimenter's instruction to laugh. Analysis of the participants' evaluations of the laughs prompted the team to conclude that the ability to distinguish between spontaneous and volitional laughter appears to be universal across cultures.

12

Mark for Review

ABC

Which quotation from a psychologist not involved in the team's study would most directly weaken the team's conclusion?

- (A) "When an individual chooses to produce volitional laughter in a natural social context, the laughter often shares certain acoustic qualities, such as pitch and fluctuation of intensity, with spontaneous laughter."
- (B) "Although the team considered the average size of communities in each society in the study, that demographic factor was found to have no effect on listeners' identifications of laughter as spontaneous or volitional."
- (C) "Judgments of spontaneous laughter are often associated with acoustic features such as greater intensity variability and higher pitch."
- (D) "Recent studies in communications have shown that certain acoustic features of spontaneous laughter, such as pitch and intensity, are consistent both within and across societies."



Arthurian legends (tales related to the character of King Arthur) derive from many sources, such as *Annales Cambriae*, composed around 970, and *Perceval, the Story of the Grail* from around 1181. One of the most significant sources, Geoffrey of Monmouth's *History of the Kings of Britain*, was written in Latin in the 1130s; some material from it was later adapted by the Norman poet Wace into the *Roman de Brut* in 1155. But while no source before 1155 includes references to the famous Round Table at which Arthur's knights assembled, both the *Roman de Brut* and Sir Thomas Malory's 15th-century compilation of Arthurian legends, *Le Morte d'Arthur*, do. It can therefore be inferred that

13 Mark for Review

Which choice most logically completes the text?

- (A) Geoffrey of Monmouth was unaware of stories of the Round Table when composing his *History*, though historians know that works containing such stories were available to him.
- (B) *Le Morte d'Arthur* is more historically accurate than *History* because *Perceval, the Story of the Grail* had not been written when Geoffrey of Monmouth was writing his work.
- (C) Malory did not use *Annales Cambriae* as a source for information he presented about the Round Table.
- (D) Geoffrey of Monmouth's accounts of Arthurian legends in his *History* are more similar overall in content to the accounts in *Perceval, the Story of the Grail* than they are to the accounts in *Roman de Brut*.

Section 1, Module 2: Reading and Writing

28:07

Hide



Highlights & Notes

More



Exclusively inhabiting tropical countries such as Tanzania, wild chimpanzees lack adaptations to seasonal variations in ultraviolet B (UVB) irradiance from sunlight, since UVB exposure enables vertebrates to synthesize vitamin D, this raises questions about how chimpanzees in mid-latitude zoos are affected by the lower and more variable UVB irradiance in those locations. In a study of zoo chimpanzees in France and other mid-latitude countries, Sophie Moitier and colleagues found not only that chimpanzees' vitamin D levels correlate with UVB irradiance but also that vitamin D levels show no evidence of plateauing as UVB irradiance reaches its highest local levels, suggesting that

14

Mark for Review

Which choice most logically completes the text?

- (A) adaptations to seasonal variations in UVB irradiance may be emerging in zoo chimpanzees in France and other mid-latitude countries.
- (B) averaged across seasons, vitamin D levels in zoo chimpanzees in mid-latitude countries such as France tend to be comparable to those in wild chimpanzees in tropical countries such as Tanzania.
- (C) providing supplemental vitamin D to chimpanzees in zoos in France and other mid-latitude countries would likely not be beneficial.
- (D) zoo chimpanzees in France and other mid-latitude countries tend to synthesize less vitamin D than they are inherently capable of synthesizing.



Writer Silvia Moreno-Garcia's love of short fiction began when she read a collection of Edgar Allan Poe's stories as a child, and she would develop into a prolific short story writer herself, publishing pieces like "In the Details" (2015) and "Shade of the Ceiba Tree" (2011). Yet she's best known as a novelist, in part due to her _____ Gothic (2020) earning a spot on the *New York Times* Best Sellers list.

15

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

- (A) novel (*Mexican*)
- (B) novel *Mexican*
- (C) novel: *Mexican*
- (D) novel, *Mexican*



Within Earth's biomes, there are four main types of desert: arid, semiarid, coastal, and cold. The Australian Desert in Australasia is an arid desert. It is one of the largest such deserts in the world, with a total area of about 2,700,000 km².

16

Mark for Review

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

(A) desert, for example

(B) desert, for example,

(C) desert, for example;

(D) desert; for example,



The Quadrantid meteor shower has a zenithal hourly rate (ZHR) of 110, meaning that at the shower's peak, 110 meteors per hour could potentially be seen by a hypothetical observer. A calculation that assumes ideal viewing conditions.

17

Mark for Review

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

- (A) the number of meteors an actual viewer observes in an hour may differ considerably from the ZHR.
- (B) ~~is~~ there may be a considerable difference between the number of meteors an actual viewer observes in an hour and the ZHR.
- (C) an actual viewer's observed number of meteors in an hour and the ZHR may differ considerably.
- (D) the ZHR may differ considerably from the number of meteors an actual viewer observes in an hour.

Section 1, Module 2: Reading and Writing

Directions ▾

27:01

Hide



Though he's performed on many respected albums, including *DBIII: Live at the Cotton Club Tokyo* by Dean Brown, drummer Dennis Chambers may be best known for his time as house drummer for the hip-hop label Sugar Hill Records. He did not play drums on the label's classic song "Rapper's Delight," ____ joined the label after the song's release.

18

Mark for Review



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

(A) however, he

(B) however he

(C) however and he

(D) however. He



With one in Finland and another in Japan, the observatory sites that form the Super Dual Auroral Radar or SuperDARN, as space physicists like Tadahiko Ogawa call it—number nearly five dozen. Located across the globe, the radars track gravity waves and other geospace phenomena.

19 Mark for Review

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

(A) Network:

(B) Network

(C) Network—

(D) Network,

The Organisation for Economic Co-operation and Development (OECD) tracks comparative price list data for its thirty-eight member countries. For instance, in July 2021, a hypothetical basket of goods priced at 100 US dollars (USD) in the United States would have cost 39 USD and 130 USD in fellow OECD _____ and Iceland, respectively.

20

Mark for Review

ABC

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

(A) nations; Colombia

(B) nations: Colombia

(C) nations, Colombia

(D) nations Colombia

With their distinctive cone shapes and steeply sloping sides, the volcanoes Maungarei (New Zealand) and Fisher (Alaska) may look similar from afar. Pranabendu Moitra and other volcanologists, _____ can tell by how each was formed that Maungarei is a cinder cone volcano, while Fisher is a composite volcano.

21

Mark for Review



Which choice completes the text with the most logical transition?

A for example,

B in addition,

C though,

D therefore,

In a 2022 analysis, researchers investigated how negative adjectives like “unhappy” evolve. _____ the researchers applied a statistical model to a set of words to infer the rate of cognate replacement—the rate at which a word will be replaced over time with a noncognate form—in Indo-European languages.

22

Mark for Review



Which choice completes the text with the most logical transition?

(A) Specifically,

(B) Thus,

(C) Granted,

(D) Therefore,



The title of "Of Moderation," an essay by French philosopher Michel de Montaigne, suggests a straightforward topic. However, Montaigne's expansive, curious mind meant that he never limited himself to one subject. _____ the essay is not just a discussion of moderation but a broad exploration of Montaigne's entire worldview.

23

Mark for Review

Which choice completes the text with the most logical transition?

(A) Additionally,

(B) That said,

(C) Lastly,

(D) Predictably,



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

- Singuilucan is a municipality in the state of Hidalgo, Mexico.
- Municipalities are governmental regions responsible for providing many public services to their residents.
- One service they provide is water treatment.
- Singuilucan covers an area of roughly 420 km².
- Hidalgo is divided into 84 municipalities.

24

Mark for Review

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

- (A) Singuilucan is one of 84 governmental regions, known as municipalities, across Hidalgo.
- (B) Providing water treatment is just one example of the public services that municipalities provide.
- (C) The municipality of Singuilucan in Hidalgo, Mexico, covers an area of roughly 420 km².
- (D) Singuilucan—a governmental region in the state of Hidalgo, Mexico—provides many public services to its residents.

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.

25

Mark for Review

ABC

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) The hypotheses of Fodor and Carruthers differ in whether they consider low-level cognitive systems, such as perception and language, modular.
- (C) In 2003, Carruthers proposed the massive modularity hypothesis, disagreeing with Fodor's earlier hypothesis that the mind is composed of innate neural structures.
- (D) Following Fodor's 1983 hypothesis, Carruthers proposed that modularity of mind includes all cognitive systems.

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

- There are more than 500 National Wildlife Refuges (NWRs) across the United States.
- The Mason Neck NWR is a 2,276-acre area in Virginia, on the Atlantic coast.
- It was established to protect the endangered bald eagle.
- The Coachella Valley NWR is a 3,592-acre area in California, on the Pacific coast.
- It was established to protect the endangered Coachella Valley fringe-toed lizard.

26

Mark for Review

The student wants to provide an overview of the NWR program. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Both the Mason Neck NWR and the Coachella Valley NWR were established to protect endangered species.
- (B) One of more than 500 NWRs in the US, the Mason Neck NWR encompasses 2,276 acres in Virginia.
- (C) The US's more than 500 NWRs protect endangered species from coast to coast.
- (D) California's Coachella Valley NWR was established to protect the endangered Coachella Valley fringe-toed lizard.

Section 1, Module 2: Reading and Writing

24:44

Directions ▾

Hide



Highlights & Notes

More

- Vexillology is the study of flags.
- The flags of many countries include symbols like animals, plants, or landforms.
- These symbols often represent an aspect of the region's history, culture, or landscape.
- The flag of Cyprus includes an olive branch.
- The flag of Andorra includes a cow.

27

Mark for Review



Which choice most effectively uses information from the given sentences to make and support a generalization about symbols on flags?

- (A) Many countries feature symbols on their flags, and the study of these designs is known as vexillology.
- (B) Cyprus's flag includes an olive branch, a symbol that is important to that country's national identity.
- (C) The flags of some countries include symbols of plants; Cyprus's, for example, includes an olive branch.
- (D) Vexillology is the study of flags; accordingly, vexillologists are interested in flags from around the world.

1

Mark for Review



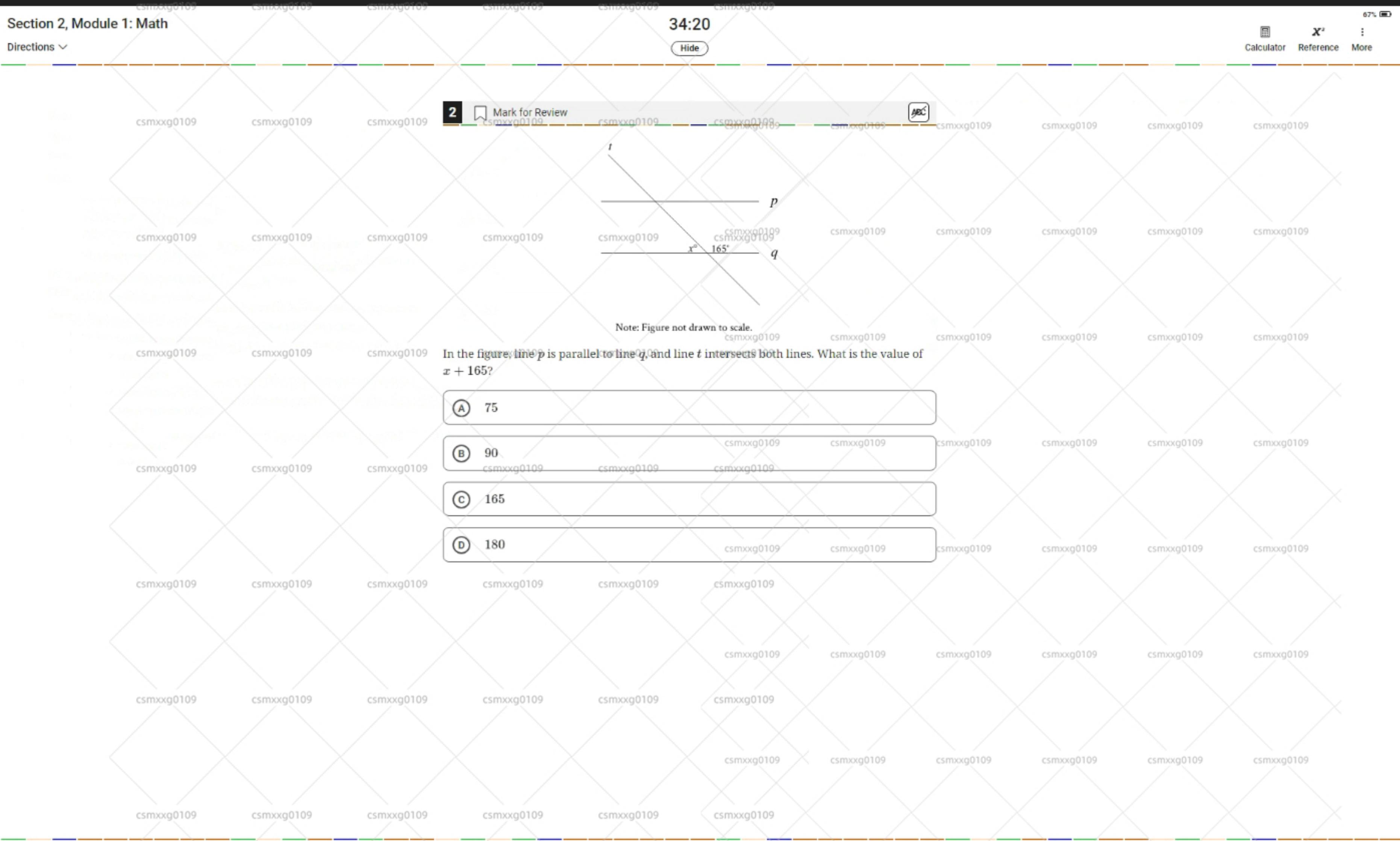
Line r in the xy -plane has a slope of 8 and passes through the point $(0, 11)$. Which equation defines line r ?

A $y = -11x + 8$

B $y = 11x + 8$

C $y = 8x - 11$

D $y = 8x + 11$



Hide

3 Mark for Review

The y -intercept of the graph of $y = x^2 + 18$ in the xy -plane is $(0, y)$. What is the value of y ?

Answer Preview:**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 $\frac{7}{2}$	$3\frac{1}{2}$ $1\frac{1}{2}$
$\frac{2}{3}$	$\frac{2}{3}$.6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	$-\frac{1}{3}$ -.3333 -0.333	-.33 -0.33

Directions ▾

33:54

Hide

Calculator

Reference

More

4

Mark for Review



A large square has an area of 1,296 square centimeters (cm^2). Small squares of area 36 cm^2 are cut out of the large square one by one. Which function f gives the area of the resulting figure, in cm^2 , after x small squares are cut out?

(A) $f(x) = 1,296 - 36x$

(B) $f(x) = 1,332x$

(C) $f(x) = 1,296x - 6$

(D) $f(x) = 1,290x$

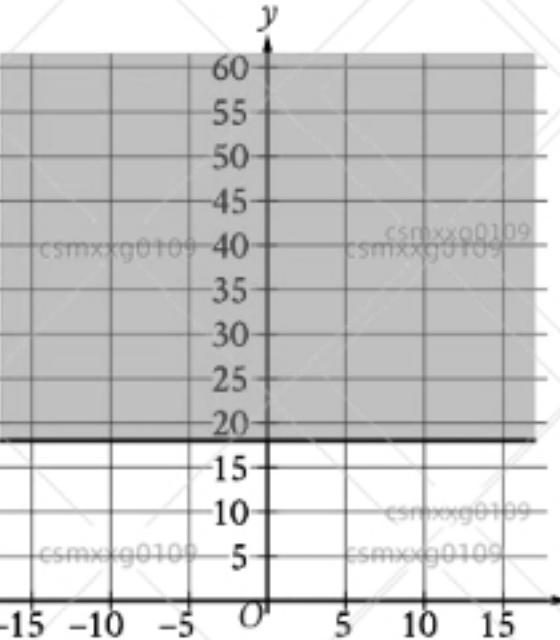
Section 2, Module 1: Math

33:41

[Hide](#)

5

Mark for Review



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

- A $x \leq 18$
- B $x \geq 18$
- C $y \leq 18$
- D $y \geq 18$

Section 2, Module 1: Math

Directions ▾

6

Mark for Review

How many solutions does the equation $7x + 5 = 7x + 8$ have?

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

Directions

33:13

Hide

Calculator Reference More

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 $\frac{7}{2}$	$3\frac{1}{2}$ 1/2
$\frac{2}{3}$	$\frac{2}{3}$.6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	$-\frac{1}{3}$ -.3333 -0.333	-.33 -0.33

7 Mark for Review

 $h(x) = x + b$
For the linear function h , b is a constant and $h(0) = 21$. What is the value of b ?**Answer Preview:**

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 $\frac{7}{2}$	$3\frac{1}{2}$
$\frac{2}{3}$	$\frac{2}{3}$.6666 .6667 $\frac{0.66}{0.67}$ 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	$-\frac{1}{3}$ -.3333 -0.333	-.33 -0.33

8 **Mark for Review**The function g is defined by $g(x) = 2x - 148$. For what value of x does $g(x) = 78$?**Answer Preview:**

9

Mark for Review



The Mars Perseverance rover is a robot designed to collect samples of rock and soil. During an experiment, the rover moves at a constant speed on a straight path toward a designated target. The equation $y = 500 - 145x$ gives the rover's remaining distance from its target y , in meters, x hours after the start of the experiment. What is the best interpretation of 500 in this context?

- (A) The number of hours it takes the rover to reach its target
- (B) The rover's speed, in meters per hour, during the experiment
- (C) The rover's distance, in meters, from its target at the start of the experiment
- (D) The total distance, in meters, the rover travels in 1 hour

Section 2, Module 1: Math

32:23

[Hide](#)[Calculator](#) [Reference](#) [More](#)

10

 [Mark for Review](#)

A biologist is designing a study to observe the behavior of male and female amethyst-throated hummingbirds. According to the study's design, at least 91 hummingbirds will be observed, and the positive difference between the number of males, x , and the number females, y , will not exceed 8. Which of the following systems of inequalities represents this situation?

(A) $x + y \geq 91$
 $|x - y| \leq 8$

(B) $x + y \geq 91$
 $x - y \leq 8$

(C) $x + y \leq 91$
 $x - y \leq 8$

(D) $x + y \leq 91$
 $|x - y| \leq 8$

11

Mark for Review



The graph of a polynomial function $y = f(x)$ in the xy -plane passes through the point $(3, 5)$. What is the value of $f(3)$?

 A 3 B 5 C 8 D 15

Section 2, Module 1: Math

Directions ▾

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Calculator Reference More

12 **Mark for Review**

A district school board in a certain state is proposing a change to the length of lunch periods for all high schools in the district. A sample of 365 high school students was selected at random from all high school students in the district. The selected students were asked whether they approved of the proposed change, and 211 students responded that they did not approve. Which of the following is the largest population to which the results of the survey can be generalized?

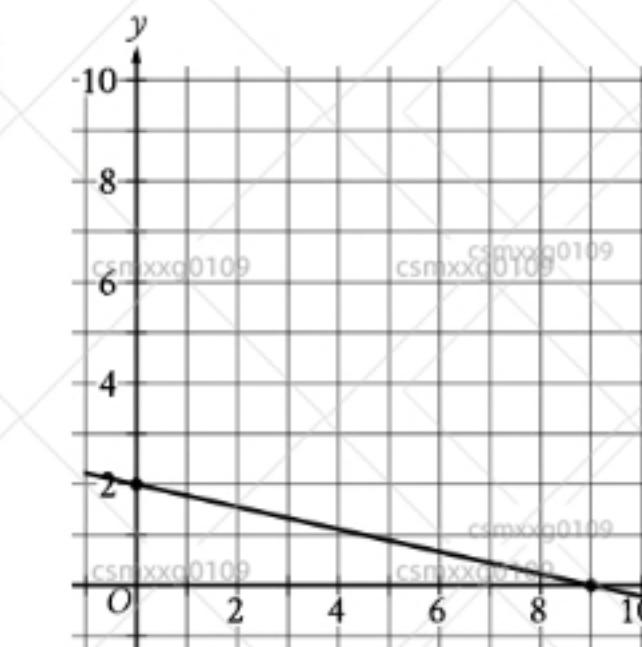
- A** All high school students in the district
- B** The 365 students who were surveyed
- C** All high school students in the state
- D** The 211 students who responded that they did not approve of the proposed change

13 Mark for Review

A company that produces only one type of item wants to estimate the percent of the items produced in a typical week that are defective. A random sample of 540 of the items produced in a certain week were tested. Based on the sample, it is estimated that 12.5% of all items produced by the company in this week are defective, with an associated margin of error of 2.79%. Based on the estimate and associated margin of error, which of the following is the most appropriate conclusion about all items produced by the company during this week?

- (A) 2.79% of the items are defective.
- (B) It is plausible that between 9.71% and 15.29% of the items are defective.
- (C) 12.5% of the items are defective.
- (D) It is plausible that more than 15.29% of the items are defective.

14 ABC



The graph of the linear equation $4x + By = 36$ is shown, where B is a constant. What is the value of B ?

A $\frac{2}{9}$

B 2

C 9

D 18

15

Mark for Review

ABC

Which system of linear equations has infinitely many solutions?

(A) $6x + 2y = 12$
 $x + 12y = 72$

(B) $2y = 12$
 $x + 12y = 72$

(C) $x + 2y = 12$
 $6x + 12y = 72$

(D) $6x + 2y = 12$
 $6x + 12y = 72$

16

Mark for Review

ABC

$$x^2 + y + 7 = 7$$

$$4x + 4 - y = 0$$

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

(A) -4

(B) -2

(C) 1

(D) 4

17

Mark for Review



The equation $y = -4.9(x - 8.8)^2 + 11,900$ gives the estimated height above ground, y , in meters, of a plane, where x is the number of seconds since it started a parabolic maneuver. If this equation is graphed in the xy -plane, which of the following is the best interpretation of the vertex of the graph?

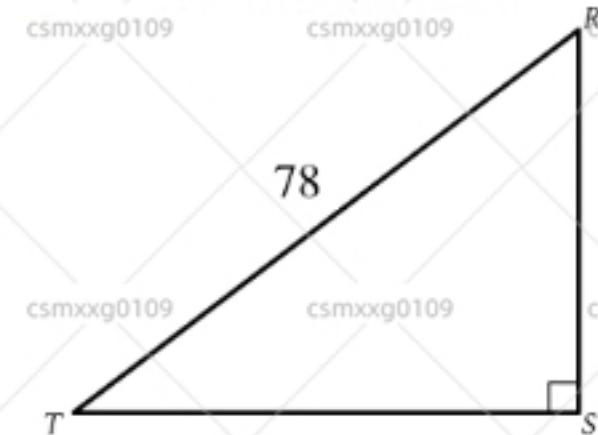
- (A) The plane reached an estimated maximum height of 11,900 meters 4.9 seconds after it started the parabolic maneuver.
- (B) The plane reached an estimated maximum height of 11,900 meters 8.8 seconds after it started the parabolic maneuver.
- (C) The plane reached an estimated maximum height of 4.9 meters 11,900 seconds after it started the parabolic maneuver.
- (D) The plane reached an estimated maximum height of 8.8 meters 11,900 seconds after it started the parabolic maneuver.

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 $\frac{7}{2}$	$3\frac{1}{2}$ $3\frac{1}{2}$
$\frac{2}{3}$	$\frac{2}{3}$.6666 .6667 0.666 0.667	.66 .66 .67 .67
$-\frac{1}{3}$	$-\frac{1}{3}$ -.3333 -0.333	-.33 -0.33

18 

Note: Figure not drawn to scale.

In the triangle shown, $RS = \sqrt{155}$. What is the value of $\sin R$?**Answer Preview:**

19 ABC



The figure shown is a right circular cylinder with a radius of r and height of h . A second right circular cylinder (not shown) has a volume that is 576 times as large as the volume of the cylinder shown. Which of the following could represent the radius R , in terms of r , and the height H , in terms of h , of the second cylinder?

(A) $R = 9r$ and $H = 8h$

(B) $R = 9r$ and $H = 64h$

(C) $R = 8r$ and $H = 9h$

(D) $R = 64r$ and $H = 9h$

Hide

20

Mark for Review



$$(x - 5)^2 + (y + 3)^2 = 36$$

The given equation represents circle P in the xy -plane. Circle Q has a center that is 3 units to the right of and 2 units below the center of circle P . Circle Q has a diameter that is double the diameter of circle P . Which equation represents circle Q ?

A $(x - 8)^2 + (y + 5)^2 = 144$

B $(x - 2)^2 + (y + 1)^2 = 144$

C $(x - 8)^2 + (y + 5)^2 = 72$

D $(x - 2)^2 + (y + 1)^2 = 72$

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.
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Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	.35 3.50 $\frac{7}{2}$	$3\frac{1}{2}$
$\frac{2}{3}$.6666 .6667 0.666 0.667	.66 .67 .667
$-\frac{1}{3}$	-.3333 -.333 -0.333	-.33 -0.33

21 **Mark for Review**

$$(x - 6) - 8(y + 2) = 131$$

$$(x - 6) + 8(y + 2) = 438$$

The solution to the given system of equations is (x, y) . What is the value of $10(x - 6)$?**Answer Preview:**

22

Mark for Review



On average, a certain tree grows 39 centimeters every m months. At this rate, which expression represents the number of centimeters, on average, the tree grows every k years?

(A) $\frac{13m}{4k}$

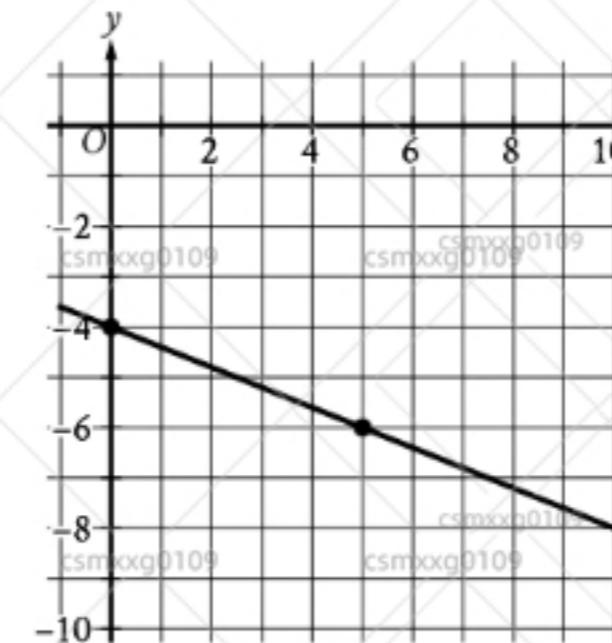
(B) $\frac{13m}{4m}$

(C) $\frac{468m}{k}$

(D) $\frac{468k}{m}$

1

Mark for Review



The graph of the linear function f is shown, where $y = f(x)$. Which equation defines f ?

(A) $f(x) = \frac{2}{5}x - 4$

(B) $f(x) = \frac{5}{2}x - 4$

(C) $f(x) = -\frac{2}{5}x - 4$

(D) $f(x) = -\frac{5}{2}x - 4$

2 **Mark for Review**

If $7(x + 2) = 49$, what is the value of $x + 2$?

**(A)** 5**(B)** 7**(C)** 40**(D)** 42

3 **Mark for Review**Which expression is equivalent to $\sqrt{x^{197}}$, where $x > 0$?

(A) $x^{\frac{197}{2}}$

(B) x^{394}

(C) x^{105}

(D) $x^{\frac{2}{197}}$

4

The number of bacteria in a liquid medium doubles every day. There are 83,000 bacteria in the liquid medium at the start of an observation. Which of the following represents the number of bacteria, y , in the liquid medium t days after the start of the observation?

(A) $y = \frac{1}{2}(83,000)^t$

(B) $y = 2(83,000)^t$

(C) $y = 83,000\left(\frac{1}{2}\right)^t$

(D) $y = 83,000(2)^t$

5 **Mark for Review**

Which expression is equivalent to $(9t^4 - 2t^2 + 9t - 5) - (4t^4 - 4t^3 + 5t^2 - 5)$?

(A) $5t^4 + 4t^3 - 7t^2 + 9t - 10$

(B) $5t^4 + 4t^3 - 7t^2 + 9t$

(C) $5t^4 + 2t^3 + 14t - 10$

(D) $5t^4 + 2t^3 - 4t$

6 Mark for Review

$$b - 59 = \frac{x}{y}$$

The given equation relates the positive numbers b , x , and y . Which equation correctly expresses x in terms of b and y ?

(A) $x = \frac{b-59}{y}$

(B) $x = by - 59y$

(C) $x = by - 59$

(D) $x = \frac{by-59}{y}$

7

Mark for Review



Ari examined a set of 85 plants. The lightest plant had a mass of 2.8 kilograms kg and the heaviest plant had a mass of 6.2 kg. Chihiro examined the same set of 85 plants and also an additional plant with a mass of 11.6 kg. Which of the following must be true about the set of plants that Ari examined and the set of plants that Chihiro examined?

- (A) The standard deviation of the masses, in kg, of the plants that Ari examined is greater than the standard deviation of the masses, in kg, of the plants that Chihiro examined.
- (B) The range of the masses, in kg, of the plants that Ari examined is greater than the range of the masses, in kg, of the plants that Chihiro examined.
- (C) The median of the masses, in kg, of the plants that Ari examined is less than the median of the masses, in kg, of the plants that Chihiro examined.
- (D) The mean of the masses, in kg, of the plants that Ari examined is less than the mean of the masses, in kg, of the plants that Chihiro examined.

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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8 **Mark for Review**

A linear model estimates the population of a city from 1992 to 2016. The model estimates the population was 53 thousand in 1992, 224 thousand in 2012, and x thousand in 2016. To the nearest whole number, what is the value of x ?

Answer Preview:

9

Mark for Review



For the polynomial function v , $v(2) = 3$ and $v(0) = -13$. The graph of $y = v(x)$ in the xy -plane passes through the points $(-2, 7)$ and $(6, 0)$. Which of the following must be true?

A When $v(x)$ is divided by $(x + 13)$, the remainder is 0.

B When $v(x)$ is divided by $(x + 7)$, the remainder is -2 .

C When $v(x)$ is divided by $(x + 2)$, the remainder is 3.

D When $v(x)$ is divided by $(x - 6)$, the remainder is 0.

10

Mark for Review



Triangles ABC and DEF are similar, where A corresponds to D , and B corresponds to E .

The measure of angle A is 26° , and $AB = 4$. Which of the following statements must be true?

- I. The measure of angle D is 26° .
- II. $DE = 4$

A I only

B II only

C I and II

D Neither I nor II

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11 **Mark for Review**

A clothing store buys shirts at a wholesale price of 4.00 dollars each and resells them each at a retail price that is 340% of the wholesale price. At the end of the season, any remaining shirts are marked at a discounted price that is 80% off the retail price. What is the discounted price of each remaining shirt, in dollars?

Answer Preview:

12

$$f(x) = 6,110(0.18)^{\frac{x}{12}}$$

The function f gives the value, in dollars, of a certain piece of equipment after x months of use. If the value of the equipment decreases each year by $p\%$ of its value the preceding year, what is the value of p ?

(A) 2

(B) 13

(C) 18

(D) 82

Student-produced response directions

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13 **Mark for Review**

$$x^2 + 5x = 37$$

The solutions to the given equation are $\frac{m+\sqrt{q}}{2}$ and $\frac{m-\sqrt{q}}{2}$, where m and q are integers. What is the value of $m+q$?

Answer Preview:

14 ABC

In the equation $5x^2 + 45x + c = 0$, c is a constant. If the equation has exactly one real solution, what is the value of c ?

(A) 0**(B)** $\frac{9}{2}$ **(C)** 50**(D)** $\frac{405}{4}$

15



$$p(x) = 2x^2 + 12x + 19$$

What is the minimum value of the given function?

(A) -19

(B) -3

(C) 1

(D) 19

Hide

16

Mark for Review



$$\begin{aligned}2x + 7y &= 5 \\12x + 42y &= 30\end{aligned}$$

For each real number r , which of the following points lies on the graph of each equation in the xy -plane for the given system?

A $(r - \frac{2r}{7} + \frac{5}{7}, r)$

B $(-\frac{2r}{7} + \frac{5}{7}, r)$

C $(-\frac{2r}{7} + 5, \frac{2r}{7} + 30)$

D $(\frac{r}{6} + 5, -\frac{r}{6} + 30)$

Student-produced response directions

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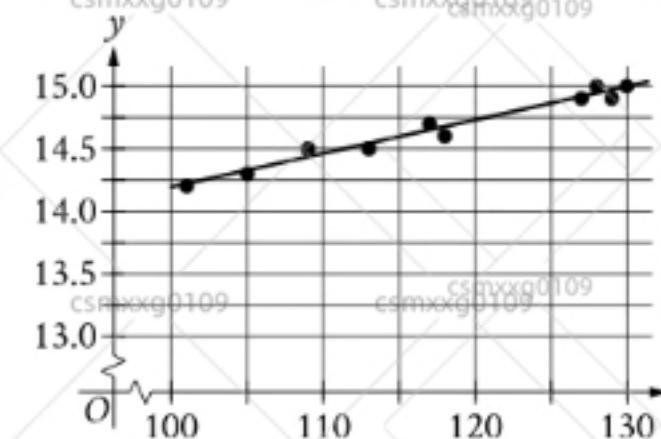
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17 **Mark for Review**

The length of each edge of a box is 79 centimeters. Each side of the box is in the shape of a square. The box does not have a lid. What is the exterior surface area, in square meters, of this box without a lid? (1 meter = 100 centimeters)

Answer Preview:

18 ABC



The scatterplot shows the relationship between two variables, x and y , for data set P. A line of best fit for the data is also shown. Data set Q is created by adding 649 units to the value of x for each data point from data set P. Which of the following could be an equation of a line of best fit for data set Q?

(A) $y = 28 + \frac{35}{1,301}x$

(B) $y = 18 + \frac{1}{131}x$

(C) $y = 9 + \frac{1}{131}x$

(D) $y = -6 + \frac{35}{1,301}x$

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19 **Mark for Review**

Circle F in the xy -plane is represented by the equation $(x - 13)^2 + (y - 9)^2 = 196$. Circle G is obtained by shifting circle F 5 units to the left and 11 units up. An equation representing circle G is $(x + h)^2 + (y + k)^2 = 196$, where h and k are constants. What is the value of $h + k$?

Answer Preview:

Student-produced response directions

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20 **Mark for Review**

$$\sqrt{k-x} = 39 - x$$

In the given equation, k is a constant. The equation has exactly one real solution. What is the minimum possible value of $4k$?

Answer Preview:

29:09

Hide

21

Mark for Review



The functions f and g are defined by the given equations, where $x \geq 0$. Which of the following equations displays, as a constant or coefficient, the maximum value of the function it defines, where $x \geq 0$?

I. $f(x) = 19(1.27)^x + 43$

II. $g(x) = 8(0.77)^x$

(A) I only

(B) II only

(C) I and II

(D) Neither I nor II

22

Mark for Review



An object's speed is increasing at a rate of 4.9 meters per second squared. What is this rate, in miles per minute squared, rounded to the nearest tenth? (Use 1 mile = 1,609 meters.)

(A) 0.2

(B) 11

(C) 131.4

(D) 328.4