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SAT 2024 May Digital

section 1

module 1:
Reading and writing

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The following text is from Mark Oshiro's 2018 novel *Anger Is a Gift*. In the novel, Moss and his friends are on a subway train in Northern California.

> Lights from the outside world then filled the train car as it rose out of the ground and climbed the elevated track. As long as Moss had lived in West Oakland, he'd never tired of this specific view, so he pointed toward the windows. "Check it," he said, and the Port of Oakland began to pass by them.

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1 Mark for Review

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

(A) Imaginary

(B) Correct

(C) Energetic

(D) Particular

The following text is adapted from John Matheus's 1925 short story "Fog."

> The fog extended its tentacles over city and river, gradually obliterating traces of familiar landscapes. At five-thirty the old Panhandle bridge, supported by massive sandstone pillars, stalwart, as when erected fifty years before to serve a generation now passed behind the portals of life, had become a spectral outline against the sky.

2 Mark for Review

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

(A) Cherished

(B) Defended

(C) Held up

(D) Improved on

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

3 Mark for Review

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

(A) replicate

(B) import

(C) suppress

(D) critique

Although the clustering of information technology firms in Northern California is often cited as typical of industrial agglomeration, Giulia Faggio et al. use UK data to show that the mix of factors driving the phenomenon is _____ across industries: while the potential for knowledge spillovers can prompt agglomeration, collocation among tube manufacturers occurs for different reasons.

4 Mark for Review

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

(A) credible

(B) heterogeneous

(C) imperative

(D) decisive

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The following text is from Anne Spencer's 1922 poem "Translation."

We trekked into a far country,
My friend and I.
Our deeper content was never spoken,
But each knew all the other said.
He told me how calm his soul was laid
By the lack of anvil and strife.
"The wooing kestrel," I said, "mutes his mating-note
To please the harmony of this sweet silence."

5 Mark for Review

Which choice best describes the function of the reference to the "wooing kestrel" (a type of bird) in the text as a whole?

(A) It emphasizes the speaker's belief that her friend is not sharing his true feelings with her.

(B) It suggests that nature has secrets that humans are fundamentally incapable of discovering.

(C) It illustrates the assertion that peace is a subjective state rather than an objective one.

(D) It presents the natural world as aligning with the experience of the speaker and her friend.

The 2021 novel *My Heart Is a Chainsaw* confirmed that Stephen Graham Jones is one of the most talented writers of horror fiction today. By featuring main characters who are Blackfeet, like Jones himself, the novel also helped to ensure that Indigenous people have a place within the horror genre. But Jones is hardly the only Indigenous voice in horror: Lisa Fuller, a member of the Murri people of Australia, has also written in the genre. Her acclaimed 2019 young adult novel *Ghost Bird* is set in a Murri community in Queensland, Australia.

6 Mark for Review

Which choice best describes the function of the underlined sentence?

(A) It predicts that non-Indigenous authors will include more Indigenous characters in their work.

(B) It challenges the widely held view that Stephen Graham Jones based *My Heart Is a Chainsaw* on events in his own life.

(C) It highlights the significance of the portrayal of Indigenous people in *My Heart Is a Chainsaw*.

(D) It asks why so many readers who don't enjoy the horror genre have purchased *My Heart Is a Chainsaw*.

Horizontal gene transfer involves the exchange of genetic material between organisms not in a parent-offspring relationship. It is common among prokaryotes (single-celled organisms, such as the bacteria *Enterococcus cecorum* and *Moraxella caviae*). The process can have the effect of increasing bacterial resistance to antibiotics; as such, an understanding of how to prevent horizontal gene transfer might result in the mitigation of dangerous pathogens (organisms that cause disease).

7 Mark for Review

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

(A) It suggests that a commonly held belief regarding an organism is mistaken.

(B) It summarizes the history of research into a biological phenomenon.

(C) It illustrates why one organism may pose more of a threat than another.

(D) It explains a practical benefit of researching a particular biological process.

In 2013 Oona M. Lönnstedt and colleagues published a study concluding that ocean acidification has a strong effect on the behavior of *Pomacentrus amboinensis*, a species of fish. However, Lönnstedt and colleagues' study relied on a mean sample size of only about 28 fish. In a 2022 review of various scientists' conclusions about the impacts of ocean acidification on fish behavior, Jeff C. Clements 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.

8 Mark for Review

Which choice best states the main topic of the text?

(A) A possible shortcoming of a study involving *Pomacentrus amboinensis*

(B) A discovery regarding the evolution of *Pomacentrus amboinensis*

(C) A change in fish behavior first reported in 2022

(D) A newly identified cause of ocean acidification

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Historians point to the rule of the Piast dynasty as crucial to the formation of the Polish state. However, some differentiate between members of the dynasty like Władysław I Herman, who ruled as duke from 1079 to 1102 CE, and less well-documented figures like Lestek, who is said to have ruled in the 9th and 10th centuries but whose historical actuality is disputed. Lestek appears in the *Gesta principum Polonorum*, a chronicle of medieval Polish history written between 1112 and 1118. However, the chronicle's documentation of Lestek relies on oral tradition, unlike its records of later rulers.

9 Mark for Review

According to the text, what is a difference between how historians view Lestek and how they view Władysław I Herman?

(A) Historians believe that the *Gesta principum Polonorum* provides more evidence for Lestek's existence than it does for Władysław I Herman's existence.

(B) Historians agree that Władysław I Herman existed, but disagree about whether Lestek existed.

(C) Historians agree that Lestek ruled Poland much later than Władysław I Herman.

(D) Historians find the orally transmitted stories affirming the existence of Władysław I Herman to be more convincing than similar stories about Lestek.

Days per Winter That Lakes Have Surface Ice

Lake	Latitude (degrees)	1980–81	1985–86	1990–91	1995–96	2000–01	2005–06
Spirit Lake	43.46	102	135	121	134	147	126
Lake Kegonsa	42.97	94	116	104	113	124	101
Näckten	62.913	177	168	144	174	133	134

It is common for freshwater lakes near or above a latitude of 45° north of the equator, like Lake Stechlin in Germany, to accumulate surface ice in winter. The amount and duration of ice depends on many factors, including local weather conditions as well as the lake's depth, volume, and surface area, but a climate researcher claims that the higher a lake's latitude, the more days per winter it will typically have measurable amounts of surface ice.

10 Mark for Review

Which choice best describes data in the table that support the researcher's claim?

(A) Näckten is at a higher latitude than Lake Kegonsa and typically had fewer days of ice per winter than Lake Kegonsa did.

(B) Spirit Lake had 102 days of ice in the winter of 1980–81 and 126 days of ice in the winter of 2005–06.

(C) Näckten had 177 days of ice in the winter of 1980–81 and 134 days of ice in the winter of 2005–06.

(D) Näckten is at a higher latitude than Lake Kegonsa and typically had more days of ice per winter than Lake Kegonsa did.

Impact of Four Key Industries on Oklahoma Economy in 2017

Industry	Approximate total contribution by industry	Number of people employed by industry	Average contribution per employee by industry
Tribal economic activity	$7,312,400,000	51,674	$141,510
Administration/waste	$5,830,600,000	96,964	$60,132
Wholesale trade	$10,723,400,000	58,346	$183,790
Construction	$6,797,300,000	77,247	$87,994

The Osage Nation, the Seminole Nation, and the more than thirty other tribes in Oklahoma operate numerous businesses and generate billions of dollars in revenue. An economics student is researching the tribes' collective activity as a single industry. The student wants to compare the

11 Mark for Review

Which choice most effectively uses data from the table to complete the comparison?

(A) below all three of the other industries listed in the table.

(B) below wholesale trade but above both construction and administration/waste.

(C) above all three of the other industries listed in the table.

(D) above either administration/waste or construction and nearly equal to wholesale trade.

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Uncle Vanya: Scenes from Country Life in Four Acts is an 1898 play by Anton Chekhov, originally written in Russian. In the play, Professor Serebrakoff and his wife Helena have come to stay at their country estate, which Vanya manages with the help of Sonia, the professor's daughter from a previous marriage. Chekhov depicts Vanya's opinion of Professor Serebrakoff as having changed significantly, as is evident when _____

12 Mark for Review

Which quotation from a translation of *Uncle Vanya* most effectively illustrates the claim?

(A) Vanya says to Professor Serebrakoff, "For twenty-five years I have managed [the country estate], and have sent you the returns from it like the most honest of servants, and you have never given me one single word of thanks for my work, not one—neither in my youth nor now."

(B) Professor Serebrakoff says to Helena, "It is funny that everybody listens to [Vanya] and his old idiot of a mother, but the moment I open my lips you all begin to feel ill-treated."

(C) Vanya says to Professor Serebrakoff, "This place [the country estate] could never have been bought had I not renounced my inheritance in favor of my sister [the professor's late wife], whom I deeply loved—and what is more, I worked for ten years like an ox, and paid off the debt."

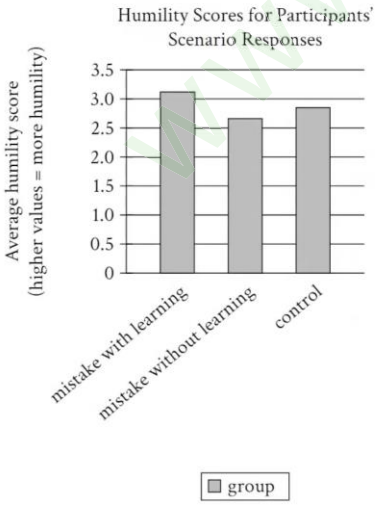
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have managed [the country estate], and have sent you the returns from it like the most honest of servants, and you have never given me one single word of thanks for my work, not one—neither in my youth nor now."

(B) Professor Serebrakoff says to Helena, "It is funny that everybody listens to [Vanya] and his old idiot of a mother, but the moment I open my lips you all begin to feel ill-treated."

(C) Vanya says to Professor Serebrakoff, "This place [the country estate] could never have been bought had I not renounced my inheritance in favor of my sister [the professor's late wife], whom I deeply loved—and what is more, I worked for ten years like an ox, and paid off the debt."

(D) Vanya says to himself, "I was proud of [Professor Serebrakoff] and of his learning; I received all his words and writings as inspired and now? Now he has retired, and what is the total of his life? A blank! He is absolutely unknown, and his fame has burst like a soap-bubble. I have been deceived; I see that now, basely deceived."



13 Mark for Review

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

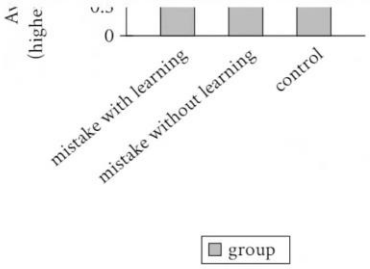
(A) The managers who reflected on a past mistake that resulted in learning exhibited more humility on average than the managers in the other two groups did.

(B) None of the three groups' average humility scores exceeded 3.5.

(C) The managers in the control group exhibited only slightly less humility on average than the managers in the two experimental groups did.

(D) All three groups exhibited less humility on average than the researchers expected.

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Jia Hu and colleagues hypothesized that workplace leaders who reflect on lessons learned from past mistakes are likely to exhibit more humility than leaders who don't engage in such reflection. To test this, the team placed 301 managers in one of three groups. Participants in two experimental groups were asked to reflect on a mistake, one group focusing on a mistake that resulted in learning and the other group focusing on a mistake that didn't result in learning. Participants in a control group were asked to reflect on their daily routine. All the participants then described how they would respond to a workplace scenario. After evaluating the responses for evidence of humility, the researchers concluded that their hypothesis was correct.

13 Mark for Review

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

(A) The managers who reflected on a past mistake that resulted in learning exhibited more humility on average than the managers in the other two groups did.

(B) None of the three groups' average humility scores exceeded 3.5.

(C) The managers in the control group exhibited only slightly less humility on average than the managers in the two experimental groups did.

(D) All three groups exhibited less humility on average than the researchers expected.

Nora Ephron's 1983 novel *Heartburn* is regularly described as autobiographical. That characterization is apt—there are many parallels between the experiences of the novel's narrator, Rachel Samstat, and those of Ephron—but it should not be taken to mean that all the people and events depicted in *Heartburn* are based on actual people and events. The novel is largely pure invention, and readers who neglect this fact and instead try to identify more and more real-life analogues thus risk _____

14 Mark for Review

Which choice most logically completes the text?

(A) overemphasizing the extent to which Ephron took inspiration from earlier writers.

(B) positing unsupportable connections between *Heartburn* and Ephron's life.

(C) misrepresenting *Heartburn* as being more widely read than it actually is.

(D) minimizing the fact that Ephron drew on real-world material when writing *Heartburn*.

What is the correct pronunciation of Kiribati? In the Gilbertese language spoken by residents of the island nation, the letter combination *-ti* makes the *-s* sound; as a result, the country's name _____ pronounced "Kiribas."

15 Mark for Review

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

(A) is

(B) are being

(C) have been

(D) are

A recipient of both the Wolf Prize in Chemistry and the Robert A. Welch Award, chemist Ahmed Zewail expanded the limits of measurability when he devised a novel technique in optical spectroscopy that allows researchers _____ chemical reactions occurring within molecules at a quadrillionth of a second, or one femtosecond.

16 Mark for Review

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

(A) to study

(B) will study

(C) who study

(D) studying

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Both Arteaga, in the state of Coahuila, and Lagos de Moreno, in the state of Jalisco, have been designated by Mexico as *pueblos mágicos* (magical villages) to celebrate these _____ natural beauty and unique cultural traditions.

17 Mark for Review

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

(A) town

(B) town's

(C) towns

(D) towns'

The size of bird eggs varies widely across species, and the researchers, _____ computer imaging to compare the lengths of eggs from species like *Chloroceryle americana* and *Francolinus coqui*, aimed to shed light on the evolutionary basis for such variation.

18 Mark for Review

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

(A) using

(B) to use

(C) use

(D) used

A lady-in-waiting's account of Japanese courtly life in the tenth century, Sei Shōnagon's *Pillow Book* is filled with daily observations and musings. Some of these appear as _____ "Things That Arouse a Fond Memory of the Past," Shōnagon catalogs her appreciation for pressed silk, a moonlit night, and dried hollyhock.

19 Mark for Review

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

(A) lists: in

(B) lists in

(C) lists in:

(D) lists, in

In his work, acclaimed Cahuilla _____ Gerald Clarke uses basketry, acrylic paintings, and other mediums to explore Native perspectives on truth and beauty.

20 Mark for Review

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

(A) artist, and 2007 Eiteljorg Fellowship recipient

(B) artist and 2007 Eiteljorg Fellowship recipient

(C) artist and 2007 Eiteljorg Fellowship recipient—

(D) artist and 2007 Eiteljorg Fellowship recipient,

Scientists long debated the origins of chondrules, tiny glass beads that formed in meteors billions of years ago. For decades, different theories were proposed, from lightning strikes to powerful rock collisions, but none had sufficient evidentiary support. _____ scientists found strong evidence that chondrules were formed by shock waves in nearby nebulae.

21 Mark for Review

Which choice completes the text with the most logical transition?

(A) For example,

(B) Finally,

(C) Similarly,

(D) Therefore,

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Voting members of the 2006 Latin Grammys were impressed by Los Tigres del Norte's album *Historias Que Contar* and its contribution to the norteño genre, a form of regional Mexican music featuring accordion and bajo sexto guitar that first developed in northern Mexico in the late nineteenth century. _____ they awarded the group the Best Norteño Album award.

22 Mark for Review

Which choice completes the text with the most logical transition?

(A) In contrast,

(B) Accordingly,

(C) Meanwhile,

(D) Nevertheless,

As anthropologist Cristina Grasseni explains, with the rise in demand for artisanal cheeses claiming to be typical of specific Italian regions, such as Pecorino Siciliano cheese from Sicily, came the need to guarantee the veracity of such claims to consumers. _____ the European Union established DOP status, a label certifying that the cheese was made according to the region's local traditions.

23 Mark for Review

Which choice completes the text with the most logical transition?

(A) Conversely,

(B) Likewise,

(C) Regardless,

(D) Therefore,

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

- Chromosomes are cellular structures that contain genes.
- Genes carry critical instructions for determining an organism's physical traits.
- The fennec fox and the red fox are both species of foxes.
- As a species, the fennec fox has sixty-four chromosomes.
- As a species, the red fox has thirty-four chromosomes.

24 Mark for Review

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

(A) Genes, which are in fennec fox chromosomes, carry critical instructions for determining the fox's physical traits.

(B) While both are species of foxes, the fennec fox and the red fox don't have the same number of chromosomes: fennec foxes have sixty-four, whereas red foxes have only thirty-four.

(C) The fennec fox and the red fox both have chromosomes, which contain genes.

(D) The red fox, a species of fox, has thirty-four cellular structures called chromosomes.

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

- Crown shyness is a phenomenon in which the tops (crowns) of neighboring trees grow close together but don't overlap.
- To explain how this happens, Australian forester M.R. Jacobs proposes the mutual abrasion theory.
- According to Jacobs's theory, when trees brush against one another, branches break off.
- Malaysian scholar Francis S.P. Ng posits the mutual shade avoidance theory.
- According to Ng's theory, when tree branches detect shade from nearby trees' branches, they stop growing.

25 Mark for Review

The student wants to compare the causes of crown shyness proposed in the two theories. Which choice most effectively uses relevant information from the notes to accomplish this goal?

(A) Ng posits the mutual shade avoidance theory, whereas Jacobs proposes an alternative theory.

(B) Both Jacobs and Ng have proposed theories to explain what causes crown shyness.

(C) While Jacobs proposes that crown shyness is caused by neighboring tree branches brushing against one another, Ng posits that it occurs when branches detect shade from nearby trees' branches.

(D) Jacobs's mutual abrasion theory proposes that when neighboring trees brush against one another, branches break off, resulting in a phenomenon in which the tops of trees grow close together but don't overlap.

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- In 2017, a research team led by Mary Caswell Stoddard determined the average lengths of eggs produced by various bird species.
- *Acrocephalus scirpaceus* is a species of bird in the order Passeriformes.
- *Acrocephalus scirpaceus* eggs had an average length of 1.80 cm.
- *Alcedo atthis* is a species of bird in the order Coraciiformes.
- *Alcedo atthis* eggs had an average length of 2.19 cm.

26 Mark for Review

Which choice most effectively uses information from the given sentences to emphasize a difference between the eggs of the two species?

(A) A 2017 study compared the lengths of eggs produced by an array of different bird species, such as *Acrocephalus scirpaceus* and *Alcedo atthis*.

(B) The bird species *Acrocephalus scirpaceus*, which belongs to the order Passeriformes, and *Alcedo atthis*, of the order Coraciiformes, were included in a 2017 study that compared the average lengths of their eggs.

(C) Mary Caswell Stoddard led a research study that determined the average lengths of eggs, including those of *Acrocephalus scirpaceus* birds (1.80 cm) and *Alcedo atthis* birds (2.19 cm).

(D) A 2017 study found that *Acrocephalus scirpaceus* eggs had an average length of 1.80 cm, whereas *Alcedo atthis* eggs were longer, with an average length of 2.19 cm.

- Understanding the history of science is critical for understanding how knowledge evolves.
- Anna Vickers was a French algologist born in 1852.
- She is known for her research on algae in the Canary Islands.
- Margaret Crosfield was a British geologist born in 1859.
- She is known for her research on the hills of Northeast Wales.

27 Mark for Review

Which choice most effectively uses information from the given sentences to emphasize a difference between Vickers and Crosfield?

(A) Though it was conducted long ago, the research performed by algologist Anna Vickers and geologist Margaret Crosfield can help us understand how scientific knowledge evolves.

(B) Algology and geology are just two examples of the myriad fields in which scientists can specialize.

(C) Anna Vickers studied algae in the Canary Islands; Margaret Crosfield, however, studied the hills of Northeast Wales.

(D) Both Anna Vickers and Margaret Crosfield are known for their contributions to science.

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section 1

module 2:
Reading and writing

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Today, the mobile application Instagram is thought of exclusively as a photo- and video-sharing program, but image-sharing was originally _____ the app's main purpose, which was to allow users to indicate their locations to other users in real time. Only once it became clear how popular the secondary feature of image-sharing was did the company shift to making that the app's centerpiece.

1 Mark for Review

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

(A) subordinate to

(B) duplicated in

(C) extracted by

(D) intrinsic to

The Beirut Stock Exchange in Beirut, Lebanon, connects companies operating in Lebanon with potential investors. This is a valuable service since the time and expense necessary to find individual investors might otherwise be _____ for these companies: many of the companies could not operate if they had to do everything necessary to find investors for themselves.

2 Mark for Review

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

(A) distinctive

(B) misconstrued

(C) prohibitive

(D) beneficial

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

3 Mark for Review

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

(A) incongruous

(B) shrewd

(C) pretentious

(D) unassuming

Some robots such as Actroid (developed in 2003) and Auriga (developed in 2011) are designed to resemble humans so that people will find it easier to interact with them. To that end, certain features such as bipedal locomotion can help to _____ people's feelings of comfort, but a robot that looks *too* human can fall into the "uncanny valley," meaning that its appearance unintentionally unsettles those who encounter it.

4 Mark for Review

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

(A) mitigate

(B) constrict

(C) repudiate

(D) buttress

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The *Cygne* is just one of approximately three million known historical shipwrecks spread throughout the world's oceans, and their impact on sea life and underwater ecosystems is of great interest to researchers. Leila Hamdan and colleagues were particularly curious about the effects of wooden shipwrecks on seafloor microbial communities. The researchers studied two wooden shipwrecks in the Gulf of Mexico by placing pieces of pine and oak between zero and 200 meters away from each shipwreck to collect samples of three kinds of microbes: bacteria, archaea, and fungi. They found that across the three microbial communities, peak diversity and richness was observed on pine and oak samples placed approximately 125 meters from the shipwrecks.

5 Mark for Review

Which choice best describes the overall structure of the text?

(A) It states the number of known shipwrecks, describes the historical significance of one of those shipwrecks, and then comments on the various microbes found at the shipwreck site.

(B) It introduces a study of microbial communities near shipwrecks that has received significant scholarly attention, summarizes the results of that study, and then describes a research team's reaction to the study.

(C) It names a famous historical shipwreck, describes the type of wood used to build that ship, and then explains how that wood type influences underwater microbial communities.

(D) It notes a general scientific interest in shipwrecks' ecological effects, describes a specific study related to that interest, and then states one of the study's findings.

The following text is from Lady Gregory's 1904 play *Spreading the News*. Mrs. Tarpey, Bartley, and Mrs. Fallon have been buying and selling goods at the local fair.

> MRS. TARPEY: Good morrow, Bartley Fallon; good morrow, Mrs. Fallon. Well, Bartley, you'll find no cause for complaining to-day; they are all saying it was a good fair.
>
> BARTLEY: (*Raising his voice.*) It was not a good fair, Mrs. Tarpey. It was a scattered sort of a fair. If we didn't expect more, we got less. That's the way with me always; whatever I have to sell goes down and whatever I have to buy goes up. If there's ever any misfortune coming to this world, it's on myself it pitches, like a flock of crows on seed potatoes.

6 Mark for Review

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

(A) It discusses an event that Mrs. Tarpey believes is unlikely to occur.

(B) It presents a vivid image to emphasize a claim that Bartley makes.

(C) It mounts a counterargument to a claim that Bartley made about the fair.

(D) It describes a scene that Bartley witnessed at the fair.

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 Abbigail Merrill and colleagues of how butterfly color relates to flower choice, which included findings from hundreds of students and community members in northwestern Arkansas.

7 Mark for Review

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 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.

(C) 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.

(D) It identifies a particular approach to research, lists some benefits of that approach, and then mentions a study in which that approach was used.

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Text 1

In separate studies, Marine Fernandez and colleagues and Hualiang Zhang and colleagues examined whether plants transfer nutrients to one another using a common mycorrhizal network (CMN)—a lattice of fungal strands in the soil. Fernandez and colleagues excluded all pathways other than the CMN by using barriers to keep the plants' root systems separate while allowing mycorrhizal strands through—a crucial step Zhang and colleagues' study did not take.

Text 2

Fernandez and colleagues took the necessary precaution of separating the plants' root systems (thereby excluding root-to-root transmission). However, any barrier used must allow the thread-like hyphae of a CMN to pass through, and this permeability would also allow liquids through. Thus, the researchers' experimental design cannot ensure that any nutrient transfer observed can be attributed to a CMN and not to some other pathway.

8 Mark for Review

Based on the texts, the author of Text 1 and the author of Text 2 would most likely give the same answer to which question?

(A) Is there an available barrier material that can block roots and liquids while allowing fungal strands through?

(B) Did Zhang and colleagues' study effectively exclude any nutrient pathway other than a CMN?

(C) Are the barriers used in Fernandez and colleagues' study sufficient to ensure that nutrient transfer could only occur via a CMN?

(D) Do plants that transfer nutrients through a root-to-root pathway also transmit nutrients via a CMN?

Using the Stratospheric Observatory for Infrared Astronomy (SOFIA), a team of astronomers mapped out the magnetic field of G47, one of the Milky Way's galactic bones (dense clouds of gas and dust that run through the middle of the arm of a spiral galaxy). Surprisingly, the map revealed a magnetic field with no clear pattern or direction. The researchers had expected the magnetic field to be similar to the more uniform fields seen in galactic bones in other arms of the Milky Way.

9 Mark for Review

According to the text, what was surprising about the researchers' mapping of the magnetic field of galactic bone G47?

(A) It implied that previous mappings of the magnetic field were inaccurate.

(B) It produced magnetic field measurements similar to those for other galactic bones.

(C) It revealed a magnetic field that wasn't uniform.

(D) It showed a weaker magnetic field than expected.

The following text is from Anthony Trollope's 1855 novel *The Warden*. The narrator is describing a rectory, the residence of a clergyperson.

> There was an air of heaviness about the rooms which might have been avoided without any sacrifice of propriety; colours might have been better chosen and lights more perfectly diffused; but perhaps in doing so the thorough clerical aspect of the whole might have been somewhat marred; at any rate, it was not without ample consideration that those thick, dark, costly carpets were put down; those embossed, but sombre [wallpapers] hung up; those heavy curtains draped so as to half exclude the light of the sun.

10 Mark for Review

What does the text most strongly suggest about the rooms in the rectory?

(A) They are meant to feel comfortable but are in reality uninviting.

(B) They have been furnished with the intention of maintaining a sense of appropriateness.

(C) They are decorated in a style that strikes the narrator as too extravagant.

(D) They have many decorations the narrator finds good looking, but they are not particularly practical.

The following text is from Nathaniel Hawthorne's 1830 short story "Sir William Phips."

> Few of the personages of past times (except such as have gained renown in fireside legends as well as in written history) are anything but mere names to their successors. They seldom stand up in our Imaginations like men. The knowledge, communicated by the historian and biographer, is analogous to that which we acquire of a country by the map,—minute, perhaps, and accurate, and available for all necessary purposes, but cold and naked, and wholly destitute of the mimic charm produced by landscape painting.

11 Mark for Review

Which choice best states the main idea of the text?

(A) Historians and biographers should write about little-known people as well as famous people.

(B) The lives of historical figures are usually documented as a collection of facts, rather than as a representation of their personalities.

(C) Historians should record fictional stories told about famous figures as well as stories that are strictly truthful.

(D) Paintings may be more beautiful than maps, but maps are more useful than paintings.

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In what is now Minnesota, the Shakopee Mdewakanton Sioux Community operates the Hoċokata Ti, a cultural center. Relying on traditional knowledge to guide the design of exhibits, this institution presents Dakota history and culture to the tribe's citizens. The Turtle Mountain Band of Chippewa, a tribe in North Dakota, employs a similar strategy in its own cultural center. Both centers contrast with museums that aren't Indigenous-led; when displaying Indigenous artifacts, such museums tend to anticipate mainly non-Indigenous audiences and rely on Euro-centric strategies for designing exhibits.

12 Mark for Review

The text best supports which conclusion about the cultural center operated by the Turtle Mountain Band of Chippewa?

(A) Its exhibits are likely intended to reconcile Indigenous perspectives with Euro-centric perspectives.

(B) Its exhibits likely rely on the traditional knowledge of multiple tribes.

(C) Its ability to present history and culture to tribal citizens is limited by its physical size.

(D) Its exhibits are likely designed for the benefit of audiences consisting mainly of tribal citizens.

13.

The bird species *Saltator grossus* (the slate-colored grosbeak), which weighs about 45 grams, and *Microbates collaris* (the collared gnatwren), which weighs about 10 grams, share territory in French Guiana with *Thamnomanes caesius* (the cinereous antshrike), which emits a loud alarm call when it detects predators. Biologist Ari Martínez and colleagues, who studied the ecological community these species share, hypothesized that since there is an inverse relationship between body size and vulnerability to predation, there will also be an inverse relationship between body size and sensitivity to predator warning signals from neighboring species.

Which finding, if true, would most directly support Martínez and colleagues' hypothesis?

(A) When Martínez and colleagues played *T. caesius* alarm calls, only bird species larger than *S. grossus* displayed predator-avoidance behavior.

(B) *M. collaris* displayed predator-avoidance behavior when Martínez and colleagues played *T. caesius* alarm calls as well as when the researchers played control sounds of random noise.

(C) Many bird species smaller than *S. grossus* displayed predator-avoidance behavior in response to *T. caesius* alarm calls played by Martínez and colleagues, but none smaller than *M. collaris* did.

(D) *M. collaris* displayed predator-avoidance behavior in response to *T. caesius* alarm calls played by Martínez and colleagues, whereas *S. grossus* did not.

14.

Scholars cite *Mr. President*, the 1946 novel by Guatemalan author Miguel Ángel Asturias, as a foundational text of magical realism, the Latin American style of fiction in which antirealistic plot devices—often borrowed from the spiritual and narrative traditions of Indigenous and colonial societies in the Americas—are deployed in an otherwise realistic mode of representation typical of the modern novel. This style has exerted a decisive influence on authors around the world, including Olga Tokarczuk, whose 1996 novel *Primeval and Other Times* resembles classic magical realist novels in its juxtaposition of literary realism with folklore—namely, that of Poland.

Which quotation from a literary scholar would most directly support the claim in the underlined portion of the text?

(A) "Like many works in the Latin American magical realist tradition, *Primeval and Other Times* is indebted to antirealistic elements in the folklore of Poland."

(B) "While *Primeval and Other Times* alternates between realistic and antirealistic modes of representation, details suggesting the influence of Polish folklore nevertheless occur throughout the novel."

(C) "Although Polish folklore clearly informs the style and occasionally antirealistic plot of *Primeval and Other Times*, the novel also shows the inarguable influence of the magical realist tradition of Latin America."

(D) "The logic of the realistic plot of *Primeval and Other Times* is repeatedly and productively disrupted by the presence of imagery and situations drawn from Polish folklore."

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The Bronze Age in Britain lasted from around 2500 BCE to approximately 700 BCE. Collections of metal items (called hoards) from all periods of the Bronze Age have been found in Britain, including the Arreton Down hoard of artifacts from the 17th century BCE, unearthed around 1735, and the much later Hollingbourne hoard of artifacts from the 10th century BCE, unearthed around 2003. Sometime in the Middle Bronze Age (approximately from the 14th century BCE to the 10th century BCE), metalsmiths in Britain began to develop swords for the first time. This fact helps explain why, whereas evidence of sword production was found in _____

15 Mark for Review

Which choice most logically completes the text?

(A) both the Arreton Down hoard and the Hollingbourne hoard, only the latter included evidence of more refined sword production.

(B) hoards discovered before 2003, no such evidence was found in hoards that were discovered later.

(C) the Arreton Down hoard, no intact swords were found among the items in the hoard.

(D) the Hollingbourne hoard, no such evidence was found in the Arreton Down hoard.

Mongolia, which, according to international indices, has relatively strong democratic institutions and low intranational income inequality, experienced an inflation rate of 4.30% in 2017, whereas Cameroon, which shows the opposite pattern on such indices, had an inflation rate of only 0.64% that year. Such comparisons have engendered speculation that by diluting control over the economy, democratic institutions inhibit states' ability to counteract inflationary pressures. To test this possibility systematically, Raj Desai et al. examined democratic strength, intranational inequality, and inflation in more than 100 countries, finding that democratic strength, if associated with low inequality, restrains inflationary pressures, suggesting that _____

16 Mark for Review

Which choice most logically completes the text?

(A) it would be a mistake to treat the relative inflation rates of Mongolia and Cameroon as indicative of an inherent shortcoming in democratic institutions with regard to control over inflation.

(B) speculations about the relative inability of democratic institutions to counteract inflation are based on measures that tend to exaggerate the levels of inflation in strongly democratic countries such as Mongolia.

(C) the factors that contributed to Mongolia's elevated inflation rate relative to Cameroon's have less to do with the countries' political institutions than with the countries' levels of income inequality.

(D) the difference between Mongolia and Cameroon with regard to democratic institution strength may have been greater in 2017 than was represented by international indices.

During the decades-long movement to codify the rights of Latinos *in* the US, certain events were pivotal: the founding of veteran rights group the American GI Forum in _____ *Mendez v. Westminster* court decision in 1946, which affirmed the rights of Latino students, is another such event.

17 Mark for Review

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

(A) 1948, for one. The

(B) 1948. For one, the

(C) 1948, for one, the

(D) 1948 for one, the

Sociologist Alton Okinaka sits on the review board tasked with adding new sites to the Hawai'i Register of Historic Places, which includes Menehune Fishpond, a historic Hawaiian fishpond, and the Wailuku School, built in 1904. Okinaka doesn't make such decisions single-handedly, _____ historical designations must be approved by a group of nine other experts.

18 Mark for Review

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

(A) however. All

(B) however all

(C) however and all

(D) however, all

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Photographer Mária Švarbová has reached audiences well beyond her home country of Slovakia. In 2016, her work was featured at an international photography festival in _____ the exhibited photographs, with their vivid pastel colors, overexposed tones, and mirrorlike symmetry, captivated audiences.

19 Mark for Review

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

(A) Italy, for example;

(B) Italy, for example,

(C) Italy; for example,

(D) Italy, for example

Recently unearthed Neronian tools in France dating to 54,000 years ago and attributed to *Homo sapiens* may provide evidence that interactions between Neanderthals and modern humans occurred 10,000 years earlier than was previously _____ finding that, if true, would overturn current theories about *H. sapiens* migration during the Upper Paleolithic.

20 Mark for Review

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

(A) supposed a

(B) supposed. A

(C) supposed, a

(D) supposed; a

Though he's performed on many respected albums, including *Loud Jazz* by John Scofield, 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 _____ he joined the label after the song's release.

21 Mark for Review

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

(A) Delight." However,

(B) Delight," however;

(C) Delight," however,

(D) Delight" however

Scientists were able to isolate a relatively pure sample of neon in 1898, the same year they first discovered the element's existence. _____ the isolation process took longer for erbium, which was isolated in its pure form 91 years after scientists first discovered it.

22 Mark for Review

Which choice completes the text with the most logical transition?

(A) For instance,

(B) By contrast,

(C) Thus,

(D) Similarly,

The method used in 1920 by the US Geological Survey to calculate the geographic center of Wyoming, involving a cardboard cutout of the state and a piece of string, seems rudimentary today. _____ the center found in a 2015 study using far more advanced technology differed from the original by just a few miles, proving the original method to be relatively accurate.

23 Mark for Review

Which choice completes the text with the most logical transition?

(A) For example,

(B) That said,

(C) As such,

(D) In other words,

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A 2022 study by researchers Hala Altamimi and Qiaozhen Liu investigated the relationship between nonprofit arts organizations' spending and performance. _____ the researchers examined the correlation between how much 22,328 US arts nonprofits spent on overhead—operational costs such as equipment and fundraising—and how many people attended their events (a measure of overall success).

24 Mark for Review

Which choice completes the text with the most logical transition?

(A) By comparison,

(B) Thus,

(C) Specifically,

(D) In addition,

Though Middle English was widely spoken in fourteenth-century England, the English language was rarely employed in literature until poet Geoffrey Chaucer helped pioneer its literary use. _____ his manuscripts contain the first documented uses of over 2,000 English words—like the word "digestion" in his 1395 poem "The Squire's Tale"—which led a contemporary to dub him "the first finder of our fair language."

25 Mark for Review

Which choice completes the text with the most logical transition?

(A) That being said,

(B) Indeed,

(C) Besides,

(D) However,

- Merle Oberon (1911–1979) was an actress born in Mumbai (then known as Bombay), India.
- She was of Indian, Maori, and Irish heritage.
- She was the first Indian-born actress to be nominated for an Academy Award.
- Early in her career, she played many nameless, uncredited roles, such as her role in *Strange Evidence* (1933).
- Later, she played many named, credited roles, such as Jill Baker in *That Uncertain Feeling* (1941).

26 Mark for Review

Which choice most effectively uses information from the given sentences to specify Merle Oberon's role in *That Uncertain Feeling* (1941)?

(A) Merle Oberon was an Indian-born actress who performed in many films, including *Strange Evidence* (1933) and *That Uncertain Feeling* (1941).

(B) Merle Oberon's story begins in Mumbai (then known as Bombay), India, in 1911.

(C) In 1941, Indian-born actress Merle Oberon played the role of Jill Baker in the film *That Uncertain Feeling*.

(D) Though she would go on to receive credit in many films, Merle Oberon started her career playing uncredited, nameless roles in films such as *Strange Evidence* (1933).

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

- Auteur theory is a view of filmmaking that positions the director as the primary author of a film.
- This now dominant theory was coined by film critic Andrew Sarris.
- In a 1963 rebuttal, film critic Pauline Kael argued that film authorship should be shared among screenwriters, directors, and others involved in the filmmaking process.
- In a 2006 book, film critic David Kipen proposed "schreiber theory."
- Schreiber theory repositions the screenwriter as the primary author of a film.

27 Mark for Review

The student wants to compare Kipen's theory of film authorship with Sarris's. Which choice most effectively uses relevant information from the notes to accomplish this goal?

(A) In repositioning the screenwriter (not the director) as the primary author of a film, schreiber theory presents an alternative to the dominant auteur theory.

(B) Film critics Andrew Sarris and David Kipen hold the view that film authorship should be shared among those involved in the filmmaking process.

(C) In a 1963 rebuttal to Sarris's theory that a director is the primary author of a film, Kael proposed that screenwriters should instead be given sole authorship.

(D) Kipen's theory of film authorship contrasts with that of Kael, who famously argued against Sarris's auteur theory in 1963.

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Section 2

Module 1: Math

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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 (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	31/2 3 1/2

1 Mark for Review

$$13x = 42 - x$$

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

3

Answer Preview: 3

2 Mark for Review

An arborist measured and recorded the heights of red maple trees in a certain area. Of the red maple tree heights recorded in this area, the minimum was 42 feet and the maximum was 57 feet. Which inequality is true for all possible values of t, where t represents the recorded height, in feet, of a red maple tree in this area?

(A) $t \leq 42$

(B) $t \geq 57$

(C) $t \geq 99$

(D) $42 \leq t \leq 57$

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3 Mark for Review

Javier deposits $45 in a savings account at the end of each week. At the beginning of the 1st week of a year there was $700 in that savings account. How much money, in dollars, will be in the account at the end of the 6th week of the year?

(A) 430

(B) 745

(C) 751

(D) 970

Student-produced response directions

- If you find **more than one correct answer**, enter only one answer.
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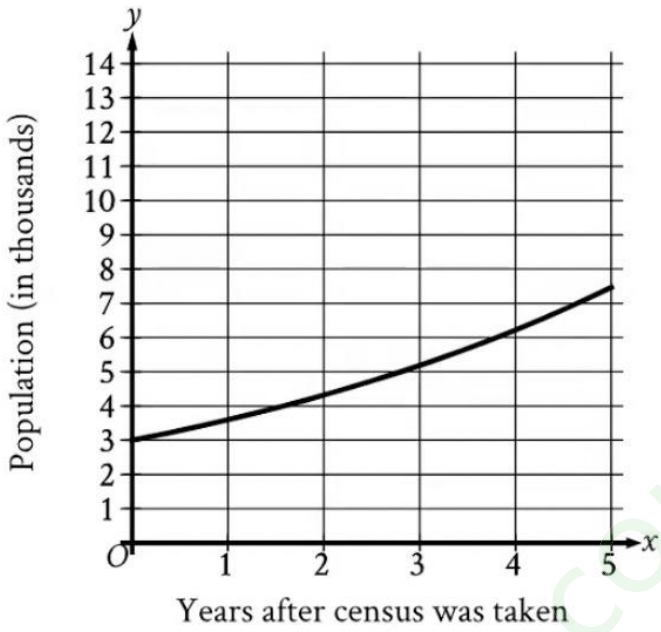
4 Mark for Review

The y-intercept of the graph of $y = 2x^2 + 27$ is $(0, y)$. What is the value of y?

Answer Preview:

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5 Mark for Review



In 2000, a census was taken to determine the population of a certain town. The graph gives the estimated population y, in thousands, of this town x years after the 2000 census was taken, where $0 \leq x \leq 5$. Based on the graph, which of the following is the closest to

In 2000, a census was taken to determine the population of a certain town. The graph gives the estimated population y, in thousands, of this town x years after the 2000 census was taken, where $0 \leq x \leq 5$. Based on the graph, which of the following is the closest to the estimated population 2 years after the 2000 census was taken?

(A) 7,400

(B) 6,200

(C) 4,300

(D) 3,000

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6 Mark for Review

$$f(x) = 5x + b$$

For the linear function f, b is a constant and $f(7) = 35$. What is the value of b?

(A) 0

(B) 1

(C) 5

(D) 7

7 Mark for Review

The function h is defined by $h(x) = 5|x|$. What is the value of $h(-3)$?

(A) -15

(B) 2

(C) 8

(D) 15

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

Value	Frequency
13	8
20	1
27	8
34	6

What is the minimum value of the data set?

(A) 1

(B) 8

(C) 13

(D) 20

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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3.5	3.5 3.50	31/2 3 1/2

9 Mark for Review

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

3,910; 3,910; 3,130; 3,950; 3,150

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

Answer Preview:

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10 Mark for Review

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

Which ordered pair (x, y) is a solution to the given system of equations?

(A) $(8, -5)$

(B) $(8, 25)$

(C) $(3, 8)$

(D) $(2, -5)$

11 Mark for Review

Scientists collected fallen acorns that each housed a colony of the ant species *P. ohioensis* and analyzed each colony's structure. For any of these colonies, if the colony has x worker ants, the equation $y = 0.67x + 2.6$, where $20 \leq x \leq 110$, gives the predicted number of larvae, y, in the colony. If one of these colonies has 46 worker ants, which of the following is closest to the predicted number of larvae in the colony?

(A) 33

(B) 49

(C) 65

(D) 150

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12 Mark for Review

Liam has $\$150$ in an account. Each year he expects to have 2.8% more money in the account than he had the previous year. Which of the following models best describes how Liam expects the money in his account to change over time?

(A) Decreasing exponential

(B) Decreasing linear

(C) Increasing exponential

(D) Increasing linear

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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Examples

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

13 Mark for Review

$$9x + 5y = 19$$
$$-9x - 3y = 7$$

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

26

Answer Preview: 26

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14 Mark for Review

Line k is defined by $y = 6x + \frac{1}{9}$. Line j is perpendicular to line k in the xy-plane. What is the slope of line j?

(A) -9

(B) $-\frac{1}{6}$

(C) $\frac{1}{9}$

(D) 6

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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3.5	3.5 3.50	31/2 3 1/2

15 Mark for Review

The product of a positive number x and the number that is 7 less than x is equal to 228. What is the value of x?

Answer Preview:

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 **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	3.5 3.50	31/2 3 1/2

16 Mark for Review

Raheem bought 9 shirts that were each the same price. He used a coupon for \$54 off the entire purchase. The cost for the entire purchase after using the coupon was \$108. What was the original price, in dollars, for 1 shirt?

Answer Preview:

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17 Mark for Review

$$7|x - 7| = 42$$

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

(A) -6

(B) 0

(C) 14

(D) 49

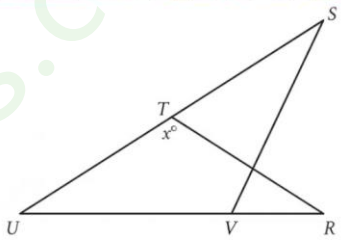
Student-produced response directions

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Examples

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

18 Mark for Review



Note: Figure not drawn to scale.

In the figure, $RT = TU$, the measure of angle VST is 23°, and the measure of angle RVS is 34°. What is the value of x?

Answer Preview:

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19 Mark for Review

A cube has an edge length of 82 inches. A solid sphere with a radius of 41 inches is inside the cube, such that the sphere touches the center of each face of the cube. To the nearest cubic inch, what is the volume of the space in the cube not taken up by the sphere?

(A) 262,672

(B) 288,532

(C) 334,846

(D) 546,087

20 Mark for Review

The function h is defined by $h(x) = a^x + b$, where a and b are positive constants. The graph of $y = h(x)$ in the xy-plane passes through the points $(0, 8)$ and $(2, 32)$. What is the value of ab?

(A) 32

(B) 35

(C) 40

(D) 64

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Section 2

Module 2: Math

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21 Mark for Review

$$f(x) = k(1.84)^x$$

The function f is defined by the given equation, where k is a constant. The value of $f(x)$ increases by $p\%$ for every increase of x by 1. For which of the following functions, where k is a constant, does the value of $g(x)$ increase by $p\%$ for every increase of x by 4?

(A) $g(x) = k(1.84^x)^{\frac{1}{4}}$

(B) $g(x) = k(1.84^x)^4$

(C) $g(x) = k(1.84)^{x-4}$

(D) $g(x) = k(1.84)^{x+4}$

22 Mark for Review

$$f(x) = \sqrt{5x + 6}$$

The function f is defined by the given equation. If $f(a) = -5a$, where a is a constant, what is the value of a?

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

(B) $\frac{2}{5}$

(C) $-\frac{2}{5}$

(D) $-\frac{3}{5}$

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1 Mark for Review

If $2x = 10$, what is the value of $4x$?

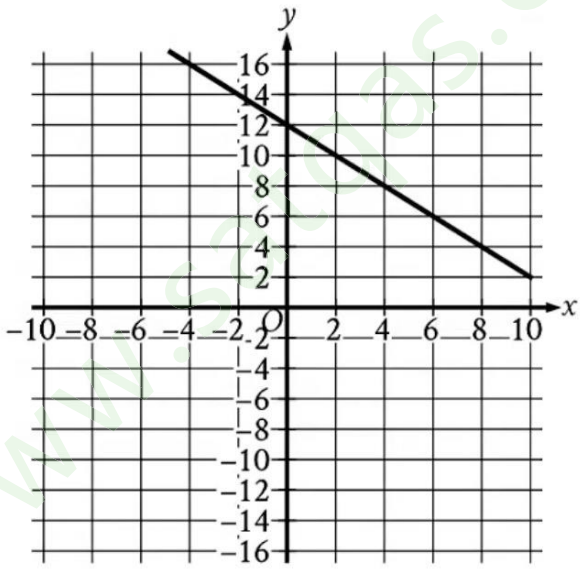
(A) 7

(B) 10

(C) 12

(D) 20

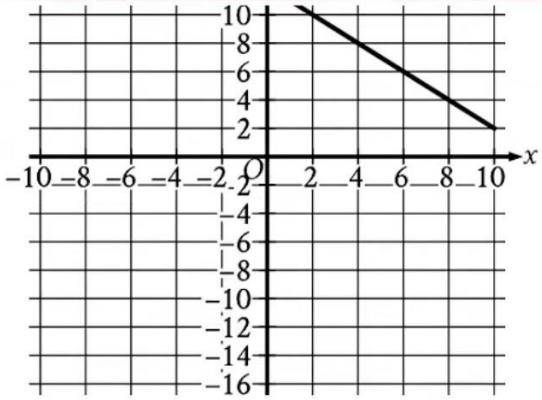
2 Mark for Review



What is an equation of the graph shown?

(A) $y = x + 12$

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What is an equation of the graph shown?

(A) $y = x + 12$

(B) $y = -x + 12$

(C) $y = 2x + 12$

(D) $y = -2x + 12$

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x	$h(x)$
0	1.25
2	1.80
4	2.59

The table shows the exponential relationship between the number of years, x, since Hana started training in pole vault, and the estimated height $h(x)$, in meters, of her best pole vault for that year. Which of the following functions best represents this relationship, where $x \leq 4$?

(A) $h(x) = 1.20(0.25)^x$

(B) $h(x) = 1.20(1.25)^x$

(C) $h(x) = 1.25(0.20)^x$

(D) $h(x) = 1.25(1.20)^x$

5 Mark for Review

$$x^2 = 2{,}601$$

How many distinct real solutions does the given equation have?

(A) Zero

(B) Exactly one

(C) Exactly two

(D) Infinitely many

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6 Mark for Review

The function $P(x) = 533(1.011)^x$ models the population of a certain town each year from 1951 through 1966, where x is the number of years after 1951. Which of the following is the best interpretation of "$P(5)$ is approximately equal to 563" in this context?

(A) The population of the town is estimated to be approximately 5 greater in 1956 than in 1951.

(B) The population of the town is estimated to be approximately 563 in 1956.

(C) The population of the town is estimated to be approximately 5 times greater in 1956 than in 1951.

(D) The population of the town is estimated to increase by approximately 563 every 5 years between 1951 and 1966.

7 Mark for Review

The table shows the distribution of people in a certain city by age group.

Age group	Proportion
Less than 18 years old	27%
18–40 years old	24%
41–65 years old	28%
Greater than 65 years old	21%

If a person in this city is selected at random, which of the following is closest to the probability of selecting a person who is greater than 65 years old, given that the person is at least 18 years old?

(A) 0.21

(B) 0.29

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8 Mark for Review

For a certain rectangular region, the ratio of its length to its width is 10 to 4. If the width of the rectangular region increases by 7 units, how must the length change to maintain this ratio?

(A) It must decrease by 7 units.

(B) It must increase by 7 units.

(C) It must increase by 17.5 units.

(D) It must decrease by 17.5 units.

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 (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	31/2 3 1/2

9 Mark for Review

The expression $(9x - 28)(15x + 4)$ is equivalent to the expression $ax^2 + bx + c$, where a, b, and c are constants. What is the value of b?

Answer Preview:

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10 Mark for Review

Rectangles $ABCD$ and $EFGH$ are similar. The length of each side of $EFGH$ is 6 times the length of the corresponding side of $ABCD$. The area of $ABCD$ is 96 square units. What is the area, in square units, of $EFGH$?

(A) 16

(B) 36

(C) 576

(D) 3,456

11 Mark for Review

Data set A: $8, 11, 12, 15, 21, 27$

Data set B: $9, 12, 13, 16, 22, h$

Data sets A and B each consist of 6 values as shown, where h is a constant. If the standard deviation of data set A is greater than the standard deviation of data set B, which of the following could be the value of h?

I. 23
II. 28
III. 29

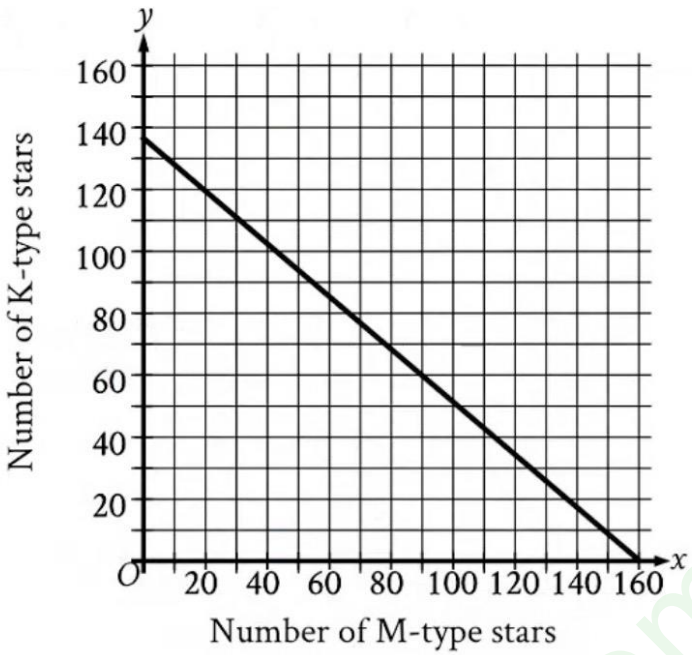
(A) I only

(B) II only

(C) III only

(D) II or III

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A certain open star cluster contains M-type stars and K-type stars. The estimated total mass of M-type and K-type stars in this open star cluster is 132,778 quettagrams. The graph shown models the possible combinations of the number of M-type stars, x, and K-type stars, y, that could be in this open star cluster if all the M-type stars have the same estimated mass and all the K-type stars have the same estimated mass. Based on the graph, which of the following is closest to the estimated mass, in quettagrams, of each M-type star in this cluster?

(A) 828

(B) 973

(C) 52,992

(D) 79,786

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Student-produced response directions

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Examples

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

13 Mark for Review

The function f is defined by $f(x) = (x - 9)(x - 6)(x - 5)$. In the xy-plane, the graph of $y = g(x)$ is the result of translating the graph of $y = f(x)$ up 4 units. What is the value of $g(0)$?

Answer Preview:

14 Mark for Review

At a depth of h meters below the surface, the estimated total pressure P_1, in kilopascals (kPa), a diver experienced is given by $P_1 = 10h + 101$, which is a combination of estimated water pressure and estimated atmospheric pressure. After maintaining a certain depth, the diver descended d additional meters. The estimated total pressure P_2, in kPa, the diver experienced after descending these d additional meters is given by $P_2 = 10d + 311$. Which of the following is the best interpretation of 311 in this context?

(A) The estimated total pressure, in kPa, the diver experienced at a depth of d meters

(B) The estimated increase in the total pressure, in kPa, the diver experienced for each increase in the depth by 1 meter

(C) The estimated increase in the total pressure, in kPa, the diver experienced for each increase in the depth by d meters

(D) The estimated total pressure, in kPa, the diver experienced when the diver began to descend d additional meters

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15 Mark for Review

A circle has diameters $\overline{AC}$ and $\overline{BD}$. The circumference of the circle is 84π, and the length of arc DA is 2 times the length of arc AB. What is the length of arc BC?

(A) 2π

(B) 14π

(C) 21π

(D) 28π

Student-produced response directions

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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	31/2 3 1/2

16 Mark for Review

In triangle XYZ, angle Y is a right angle, the measure of angle Z is 39°, and the length of $\overline{YZ}$ is 22 units. If the area, in square units, of triangle XYZ can be represented by the expression $k\tan 39^\circ$, where k is a constant, what is the value of k?

Answer Preview:

17 Mark for Review

In right triangle RST, the sum of the measures of angle R and angle S is 90 degrees. The value of $\sin(R)$ is $\frac{3\sqrt{17}}{13}$. What is the value of $\cos(S)$?

(A) $\frac{4\sqrt{17}}{51}$

(B) $\frac{3\sqrt{17}}{13}$

(C) $\frac{13\sqrt{17}}{51}$

(D) $\frac{3\sqrt{17}}{4}$

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Student-produced response directions

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- 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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- 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	31/2 3 1/2

18 Mark for Review

The composition of an animal is defined as the muscles, bones, and fat of the animal. A scientist studied the composition of one young swamp buffalo and determined the buffalo had 133 kilograms of muscle, which made up approximately 65.9% of its composition. Of the remaining composition of this buffalo, approximately 46.2% was bone, and the remainder was fat. Based on these approximations, to the nearest tenth, how many kilograms of this buffalo's composition was bone?

Answer Preview:

19 Mark for Review

Which of the following expressions has a factor of $x + 2b$, where b is a positive integer constant?

(A) $3x^2 + 9x + 18b$

(B) $3x^2 + 24x + 18b$

(C) $3x^2 + 30x + 18b$

(D) $3x^2 + 39x + 18b$

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20 Mark for Review

$$31(x - n) = 31y + 31n$$

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

(A) $3x - 3y = 6n$

(B) $3x + 3y = 3n$

(C) $3x + 3y = 6n$

(D) $3x - 3y = 3n$

21 Mark for Review

The cost of renting a piece of equipment is $\$64n$ for the first day and $\$32n$ for each additional day, where n is a positive integer. Which of the following functions gives the cost $C(x)$, in dollars, of renting this equipment for x days, where x is a positive integer?

(A) $C(x) = 32nx + 32n$

(B) $C(x) = 32nx + 64n$

(C) $C(x) = 64nx + 32n$

(D) $C(x) = 64nx - 32n$

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22 Mark for Review

In triangle ABC and triangle DEF, sides AB and DE each have a side length of 6 inches, and angles A and D each have an angle measure of 40°. Which of the following additional pieces of information is(are) sufficient to prove whether triangle ABC is congruent to triangle DEF?

I. The measures of angles B and C are equal.
II. The lengths of sides AC and DF are equal.
III. The lengths of sides BC and EF are equal.

(A) I is sufficient, but II and III are not.

(B) II is sufficient, but I and III are not.

(C) III is sufficient, but I and II are not.

(D) II is sufficient and III is sufficient, but I is not.

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answer

- Section 2 M1 Math
- Q1-10 3 D D 27 B A D C 3610 C
- Q11-20 A C 26 B 19 17 B 158 C B
- Q21-22 DC

- Section 2 M2 Math
- Q1-10 DB_DC B B C -195 D
- Q11-20 A A 10 A C 242 B 93.2 D A
- Q21-22 B B

- Section1 **M1** R & W
- Q1-10 CACBC CDCDC
- Q11-20 CCBCC DADAC
- Q21-27 DACDC BD

- Section1 **M2** R & W
- Q1-10 DDBAB CBBBD
- Q11-20 AAABA DBBCD
- Q21-27 BADBA AB

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