SAT SEPTEMBER BANK

Section 1, Module 1: Reading and Writing

Question 1

The Gleaners, painted in the realist style by Jean-François Millet, depicts peasants picking stray wheat from a field after the harvest. The realists' emphasis on accurately portraying the experiences of average working people was largely a rejection of the romantic style evident in many paintings by Horace Vernet, which instead _____ blank their subjects' positive traits, altering subjects to appear more beautiful or heroic than they actually were.

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

A) counteract

B) rectify

C) apprehend

D) **magnify**

Question 2

The tomato was domesticated in South America. Its physical structure is no longer identical to the structure of the wild plant it is descended from. Maize (corn) also _____ blank its wild ancestor. That ancestor plant had a few small kernels. Indigenous people in Mexico carefully bred the crop until it had numerous fleshy kernels.

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

A) argues with

B) varies from

C) helps with

D) reacts to

Question 3

The collectibles market is one of the most difficult segments of the consumer economy to _____ blank. Few economists would have predicted, for example, that the prices of video game cartridges from the 1980s and 1990s would soar in the late 2010s, but soar they did.

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

A) monitor

B) avoid

C) exchange

D) forecast

Question 4

Buenaventura, Colombia, was named a City of Gastronomy by UNESCO in 2017, a title that _____ blank that Buenaventura has a unique and vibrant food culture worthy of celebration.

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

A) **denotes**

B) renounces

C) complains

D) discovers

Question 5

The following text is from Louise Erdrich's 1986 novel *The Beet Queen*. Celestine takes her infant daughter with her to the butcher shop where she makes sausages.

Sometimes Celestine turned around and met the direct gaze of her daughter, a look so penetrating that Celestine's breath caught. She dropped the spice, the string, the knife she was using, and took the girl up in her arms, ready for her to speak as if a spell had suddenly lifted.

When the baby flexed her entire body and struggled to free herself, Celestine put her down. No matter how thorough Celestine's exhaustion, no matter how little sleep she'd had, there was a nerve of excitement running through each hour.

Which choice best states the main purpose of the text?

A) To demonstrate Celestine's unhappiness in the workplace

B) **To portray Celestine's excitement about her daughter**

C) To show that Celestine enjoys imagining her daughter's future life

D) To explain how Celestine's coworkers bond with her daughter

Question 6

A team investigating frugivorous (fruit-eating) birds found that their feeding patterns vary depending on where they live within their habitat range. At the geographic boundaries of their natural range, these birds become highly selective, choosing fruits that closely match their beak size to maximize energy intake while minimizing effort. However, this fruit-selection strategy doesn't occur at elevation boundaries (the highest and lowest altitudes of their range). In these areas, other factors, such as territorial competition among species, have a stronger influence on feeding patterns.

Which choice best states the main purpose of the text?

A) To discuss how competition among frugivorous bird species influences their habitat boundaries

B) To describe research methods that can be used to study the habitat preferences of frugivorous birds

C) **To present research findings concerning how location within a habitat affects the feeding patterns of frugivorous birds**

D) To explain why habitat boundaries are more important than beak size in determining the feeding patterns of frugivorous birds

Question 7

In the 1940s, Carl T. Rowan began his journalism career, becoming a renowned columnist referred to as the nation's "most visible Black journalist." Rowan's accomplishment is just one example of the rich history of Black journalism in the United States. That history is preserved by the National Association of Black Journalists, which was founded in Washington, DC, in 1975 to support Black media professionals and honor people like Rowan.

Which choice best describes the overall structure of the text?

A) It summarizes a theory about journalism, then explains how a journalistic practice has changed over time.

B) It describes the career of a well-known figure in Black journalism, then compares that career to one of a figure who is lesser known.

C) It introduces the history of an organization honoring Black journalists, then suggests how that organization might recruit more members.

D) **It mentions a specific achievement in Black journalistic history, then describes an organization dedicated to upholding that history.**

Question 8

Though Vasily Grossman's novel *Stalingrad* is considered inferior to his later work *Everything Flows*, some critics praise it despite an arduous writing process required to satisfy Soviet censors (Tom Birchenough in *The Arts Desk* called *Stalingrad* "a monumental achievement"). Of the novel's eleven drafts, the second is inexplicably missing, the sixth closely hews to Soviet orthodoxy, and published versions most resemble the fifth. The English edition's translators culled material from unpublished drafts and published Russian versions to create a comprehensive edition.

Which choice best describes the overall structure of the text?

A) It describes a novel whose critical reputation has declined over time, explains the cause of that decline, and reports the effort of translators to rehabilitate a work they believe has been unjustly ignored.

B) It refers to a novel that has several different published and unpublished versions, identifies characteristics that have led critics to prefer one version to others, and tells how translators justified their choice to bring one particular version of the novel into another language.

C) **It notes a novel's critical reception, addresses the complicated history of the novel's development, and suggests how that history informed the work of the novel's English translators.**

D) It mentions a novel whose quality critics do not agree on, discusses obstacles that make it difficult to determine what the best version of that novel might be, and offers a reason why some critics find a translation of the novel to be superior to the original.

Question 9

Vehicle transmissions and many other widely used mechanical systems have moving parts that rub or slide against one another, creating friction. This friction increases energy consumption and causes wear, which decreases the stability and life span of the system. Using carbon nanotubes and oil, Jun Qu and colleagues at a US Department of Energy lab have created a coating for moving parts that reduces friction to the point where it is almost nonexistent. The new coating is suitable for common applications, unlike other approaches that require special conditions.

What does the text most strongly suggest about the coating created by Qu and colleagues?

A) It is unlikely to reduce wear in mechanical systems that have multiple moving parts.

B) It is unlikely to be widely used because it can be applied only under special conditions.

C) It can likely improve the energy consumption of certain mechanical systems but not of vehicle transmissions.

D) **It can likely be used to reduce energy consumption and wear in vehicle transmissions and other common mechanical systems.**

Question 10

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 Burt Kotler and colleagues found to be negatively associated with foraging by greater Egyptian gerbils but Eduardo Fernández-Duque and colleagues found to be positively associated with foraging by Azara's 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 gerbils.

Information in the text best supports which statement about OFT?

A) It may be weakened by the finding that the costs and benefits associated with a particular ecological circumstance vary by species.

B) It can explain why some species act in accordance with cost-benefit trade-offs and others do not.

C) It tends to allow for a better understanding of the benefits of ecological circumstances than the costs of those circumstances.

D) **It can account for observations of different species responding differently to similar ecological circumstances.**

Question 11

High-speed rail (HSR) systems have trains that move at much higher speeds than traditional trains. HSR is expanding in Greece, Sweden, and many other countries around the world. The United States, however, has been slow to build HSR systems. Researchers surveyed United States residents about their attitudes toward HSR. The researchers claim that this survey reveals that there is strong support for building more HSR lines in the United States.

Which quotation from a survey respondent would best illustrate the underlined claim?

A) "I have traveled on high-speed rail lines in Greece but not in Sweden."

B) "I prefer riding buses instead of taking trains because buses travel to more locations."

C) **"I think high-speed rail is wonderful. The United States needs to build more high-speed rail lines."**

D) "I believe that the United States has enough high-speed rail lines. It should invest in airports instead."

Question 12

Numbers of the 23 Non-native Tree Species Reported and the Insect and Fungus Threats to Them

Country	Trees	Fungi	Insects
Great Britain	18	290	120
Belgium	4	13	11
Poland	10	25	105

Elisabeth Pötzelsberger and colleagues gathered data on 23 non-native tree species grown in Europe. They analyzed reports from Great Britain, Poland, and Belgium about the number of these species grown in those countries as well as the numbers of insect and fungus species that damage those trees. The researchers concluded that Great Britain had a greater number of damaging fungus species than either of the other countries did.

Which choice best describes data from the table that support Pötzelsberger and colleagues' conclusion?

A) Poland and Belgium reported 10 and 4 damaging fungus species, respectively, which is far fewer than Great Britain reported.

B) Great Britain reported 290 damaging fungus species, whereas Poland reported 105 damaging insect species.

C) Belgium reported 13 damaging fungus species but only 11 damaging insect species.

D) **Great Britain reported 290 damaging fungus species, which is more than either Poland or Belgium reported.**

Question 13

Life Among the Paiutes is an 1882 autobiographical narrative by Sarah Winnemucca Hopkins. In the work, Winnemucca explicitly indicates when and how she is shifting the focus of the narrative, as when she writes, _____ blank

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

A) **"I will now stop writing about myself and family and tribe customs, and tell about the wars, and the causes of the wars. I will jump over about six years."**

B) "But how can I describe the scene that followed? Some of you, dear readers, can imagine."

C) "Can you wonder, dear readers, that I like to have my people taken care of by the army?"

D) "We left Stockton and went on farther to a place called San Joaquin River. It took us only one day to go there. We only crossed that river at that time."

Question 14

Average Ratings of Perceived Personality Traits of Dogs and Human Willingness to Keep or Interact with Them

Image ID number	Irises	Not friendly (0)–Friendly (5)	Immature (0)–Mature (5)	Would not keep (0)–Would keep (3)	Would not interact with (0)–Would interact with (3)
24	light	2.67	4.03	1.4	1.7
14	light	2.11	3.27	1.55	1.85
6	dark	4.03	2.95	1.85	2.15
3	dark	3.88	2.51	2.35	2.65

Studies have found that when looking at other people's eyes, humans tend to perceive dilated pupils positively and constricted pupils negatively. Noting that a dark iris—the colored portion surrounding the pupil—is hard to distinguish from the black of the pupil (and thereby affects the pupil's apparent size) and that many domestic dogs have dark irises, Akitsugu Konno et al. showed close-up images of dogs' faces to human participants and asked them to rate the dogs' traits and their own attitudes toward the dogs. Their findings suggest that _____ blank

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

A) **humans' responses to pupil size in other people may extend to dogs, as participants responded more positively to images of dogs whose iris colors were likely to make their pupils appear large than they did to images of dogs whose iris colors were unlikely to have that effect.**

B) differences in dogs' pupil size may elicit a stronger response in humans than differences in people's pupil size do, as participants' responses to the images when dogs' pupils were actually large were indistinguishable from participants' responses when dogs' pupils only appeared to be large due to iris color.

C) humans may not be as sensitive to pupil size in dogs as they are to pupil size in other people, as participants' responses to the images show no relationship to differences in the shade of dogs' irises that could affect how large the dogs' pupils appear to be.

D) iris color in domestic dogs may be an adaptation to elicit positive responses from humans, as participants responded more negatively to images of dogs whose iris colors can make pupils appear large than they did to images of dogs without such iris colors.

Question 15

The hwamei and other fruit-eating bird species introduced to the Hawaiian island of Oahu in the last 150 years have recently been found to spread seeds from the fruits of forest plants native to Oahu that are at risk of extinction, such as the kolea lau nui tree. Many of these vulnerable plant species rely on the activity of fruit-eating birds to help spread the plants' seeds in the wild. All fruit-eating bird species native to Oahu have gone extinct, suggesting that _____ blank

Which choice most logically completes the text?

A) **hwameis and other non-native birds play an important role that used to be filled by birds that were native to Oahu.**

B) populations of hwameis and other non-native birds will probably soon experience rapid growth.

C) non-native birds, such as the hwamei, will also be at risk of extinction if they lose access to kolea lau nui trees.

D) non-native birds, such as the hwamei, now spread more seeds from the kolea lau nui tree than birds native to Oahu did in the past.

Question 16

Audrey Whitty is the director of the National Library of Ireland in Dublin. In this role, Whitty _____ blank the library's collections, which feature a large number of manuscripts by Irish writers.

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

A) **oversees**

B) overseeing

C) having overseen

D) to oversee

Question 17

The epic poem *The Legend of Keret* dates back to the 14th century BCE. Originally _____ blank in Ugaritic, it has since been translated into other languages.

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

A) is written

B) **written**

C) was written

D) had been written

Question 18

Though it was designated as mission _____ blank mission was actually the fifty-fourth flight under NASA's Space Shuttle Program.

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

A) STS-56 the

B) STS-56. The

C) STS-56, and the

D) **STS-56, the**

Question 19

The grammar of the Uyghur language includes several noun cases common to most Turkic _____ blank the locative case, for instance, indicates that an action is occurring at, on, or near a particular noun.

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

A) languages, such as

B) languages,

C) **languages;**

D) languages; such as

Question 20

The radial velocity method, a means of indirect planetary discovery, has detected previously unknown exoplanets at vast distances from _____ blank the Neptune-like planet GJ 15 A c; at 296 light-years away, the gas giant 42 Draconis b; and, as of 2023, over 1,000 other exoplanets that are too far away and dim to be observed directly.

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

A) Earth, at 12 light-years away,

B) Earth at 12 light-years away:

C) **Earth: at 12 light-years away,**

D) Earth at 12 light-years away,

Question 21

Jean-Pierre Lescot is well known for his work as a puppeteer. _____ blank he specializes in shadow puppetry. This style of puppetry involves holding a figure in front of a light source to project a shadow onto a translucent screen.

Which choice completes the text with the most logical transition?

A) By doing so,

B) Second,

C) By contrast,

D) **In particular,**

Question 22

Portuguese researcher Isabel C.F.R. Ferreira reports that the gentisic acid in termite mushrooms benefits the mushroom by combating harmful molecules called free radicals. _____ blank Ferreira suggests that the acid can promote cellular health in humans, who also experience free radical damage.

Which choice completes the text with the most logical transition?

A) **Moreover,**

B) Rather,

C) For example,

D) Conversely,

Question 23

In economics, potatoes are considered a soft commodity, while copper and crude oil are considered hard commodities. The categorical distinction between soft and hard commodities lies not in the products' strength or durability but in their origin: the former type is grown or farmed, while the latter is mined or drilled. _____ blank pine lumber is as much a soft commodity as potatoes, despite its decidedly sturdier composition.

Which choice completes the text with the most logical transition?

A) **By this definition,**

B) In a notable exception to this rule,

C) Summarizing this principle,

D) Though it is grown from the earth,

Question 24

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

- 1992 was the 500th anniversary (quincentennial) of Columbus's first voyage to the Americas.
- 1992: Native artist Jaune Quick-to-See Smith (Confederated Salish and Kootenai Tribes) curated a traveling art exhibition titled *The Submuloc Show/Columbus Wohs*.
- Smith called the exhibition "a visual commentary on the Columbus quincentennial from the perspective of America's first people."
- In a 2020 article, art historian Ariel Bonilla analyzed Smith's response to the Columbus quincentennial celebration.
- Bonilla: "Smith used her curatorial role to create a counter-narrative…visualizing the Native American survival of Columbian conquest."
- Bonilla: Smith's show was "disinterested in financial gain as a primary or even secondary motivation."

The student wants to use a quotation from Bonilla to explain Smith's motivation for curating the show. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) According to Bonilla, Smith's "primary or even secondary motivation" for curating the show was to analyze Columbus from the perspective of a Native artist.

B) According to Bonilla, Smith was "disinterested in financial gain as a primary or even secondary motivation" in her curation of the exhibition, a celebration of the 500th anniversary of Columbus's first voyage to the Americas.

C) **According to Bonilla, Smith curated the exhibition to "create a counter-narrative" in response to the Columbus quincentennial, one focused instead on "Native American survival."**

D) According to Bonilla, Smith curated *The Submuloc Show/Columbus Wohs* as "a visual commentary on the Columbus quincentennial from the perspective of America's first people."

Question 25

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

- A copyright prevents a book's contents from being reproduced (published) without permission from the copyright holder.
- When a book's copyright expires, the book enters the public domain and can be legally reproduced by anyone.
- *The Prophet* is a collection of prose poems by Kahlil Gibran.
- It entered the public domain in 2019.
- *Those Barren Leaves* is a novel by Aldous Huxley.
- It entered the public domain in 2021.

The student wants to emphasize the order in which *The Prophet* and *Those Barren Leaves* entered the public domain. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) *The Prophet*, a collection of prose poems by Kahlil Gibran, and *Those Barren Leaves*, a novel by Aldous Huxley, are both in the public domain.

B) The year was 2021, and the copyrights to *The Prophet* and *Those Barren Leaves* had finally expired.

C) Though they once were copyrighted works, *The Prophet* and *Those Barren Leaves* are now in the public domain.

D) ***The Prophet*, a collection of prose poems by Kahlil Gibran, entered the public domain in 2019, with Aldous Huxley's novel *Those Barren Leaves* following in 2021.**

Question 26

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

- The A.M. Turing Award is a prestigious award given by the Association for Computing Machinery (ACM).
- The ACM gives the award for "major contributions of lasting importance to computing."
- It is named after groundbreaking British mathematician Alan Turing.
- Michael Stonebraker won the award in 2014 for contributions to the underlying development of modern database systems.

The student wants to explain whom the award is named for. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) In 2014, Michael Stonebraker won the A.M. Turing Award for contributions to the underlying development of modern database systems.

B) It was in 2014 that Michael Stonebraker won the A.M. Turing Award.

C) **The A.M. Turing Award is named for groundbreaking British mathematician Alan Turing.**

D) The A.M. Turing Award is given for "major contributions of lasting importance to computing."

Question 27

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

- Isaac Bashevis Singer was an acclaimed writer.
- His first published work of fiction was a short story.
- It was called "Gimpel the Fool."
- It first appeared in *The Partisan Review* in 1953.

The student wants to identify the title of Isaac Bashevis Singer's first published short story. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Isaac Bashevis Singer's first published work of fiction appeared in 1953.

B) **Isaac Bashevis Singer's first published short story was called "Gimpel the Fool."**

C) Acclaimed writer Isaac Bashevis Singer's first published work of fiction was a short story.

D) In 1953, a short story by Isaac Bashevis Singer appeared in *The Partisan Review*.

Section 1, Module 2: Reading and Writing

Question 1

Corrine Walsh and colleagues _____ blank pots of sterilized soil with slurries of live microbes collected from soil in five sites across Colorado, including areas of aspen grove and sagebrush. Walsh and team then grew mustard plants in the pots to see if the different microbial slurries affected levels of spicy glucosinolates like 3-methylthiopropyl in the plants' seeds.

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

A) sanitized

B) estimated

C) precluded

D) **populated**

Question 2

The following text is adapted from John Matheus's 1926 short story, "Mr. Bradford Teaches Sunday School." Mr. Bradford is driving through the countryside in Florida.

The moss in the towering water oaks had become enlivened with a verdant sheen of silver and hung like festoons of carnival or like funeral decorations for the mourning of the dead. The pine green was resplendent. The bald cypresses spread themselves along the water courses while the willows wept as they always did. Mr. Bradford was conscious of this gorgeous display of nature.

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

A) Falsehood

B) Imitation

C) **Spectacle**

D) Pretentiousness

Question 3

As a work of scholarship, *Advancing U.S. Latino Entrepreneurship* (2020) is notable for its _____ blank. Featuring contributions from Zulema Valdez, Robert W. Fairlie, and others, it explores contemporary issues while also providing context dating all the way back to the sixteenth century on Latino populations and their experiences with business and commerce.

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

A) **scope**

B) reputation

C) impartiality

D) terseness

Question 4

The _____ blank of leaf-vein architectures—the branching venation of *Pteris cretica*, the hierarchical netlike venation of *Diospyros mespiliformis*, and others—likely resulted from competing selective pressures to maximize fluid transport, photosynthesis, and robustness against herbivory. The associated trade-offs may account for the range of adaptations in different lineages.

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

A) **multifariousness**

B) culpability

C) obstinacy

D) entanglement

Question 5

The metal featured in both the structure of the Koka House by Hearth Architects and the hardware in the House in Takamatsu by FujiwaraMuro Architects is representative of a trend in contemporary Japanese interior design to juxtapose sleek, modern accents with traditional organic materials such as cypress. The proent featuring of metal stems from the post–World War II emphasis on technological progress, while more traditional natural materials help preserve longstanding architectural and aesthetic approaches.

Which choice best describes the overall structure of the text?

A) The text introduces the salient characteristics of two buildings and then details the historical events that occasioned the buildings' designs.

B) The text cites examples of a design trend and then briefly establishes the principles underlying the trend.

C) The text distinguishes between two aesthetic approaches to architecture and then submits that one approach has had more of a long-term impact than the other has had.

D) The text names projects that are noteworthy for their inclusion of certain materials and then explains past important uses of the materials.

Question 6

Text 1
In separate studies, Marine Fernandez and colleagues and Xinhua He 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—an essential step He 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.

Based on the texts, the author of Text 1 and the author of Text 2 would most likely agree with which statement?

A) A barrier that is impervious to both roots and fungal strands is necessary to examine nutrient transfer via a CMN.

B) Excluding root-to-root transfer of nutrients between plants is sufficient to evaluate whether any observed nutrient transfer involved a CMN.

C) He and colleagues' study did not find convincing evidence of nutrient transfer between individual plants.

D) **It is impossible to determine whether a CMN is the mechanism for any observed nutrient transfer unless root-to-root transfer is precluded.**

Question 7

Mauricio Drelichman and Hans-Joachim Voth's research into the debt defaults of Philip II (who ruled an empire including Spain and much of Luxembourg from 1556 to 1598) relates to other work on European early modern state finance, including Reinhardt, Rogoff, and Savastano's research on the history of debts and defaults since 1500. But Drelichman and Voth's unique contribution to the field is their reconstruction of the earliest extant set of annual fiscal records for any sovereign state, demonstrating in turn that Philip's defaults were caused by short-term cash shortages, not long-term unsustainable debts.

Which choice best states the main idea of the text?

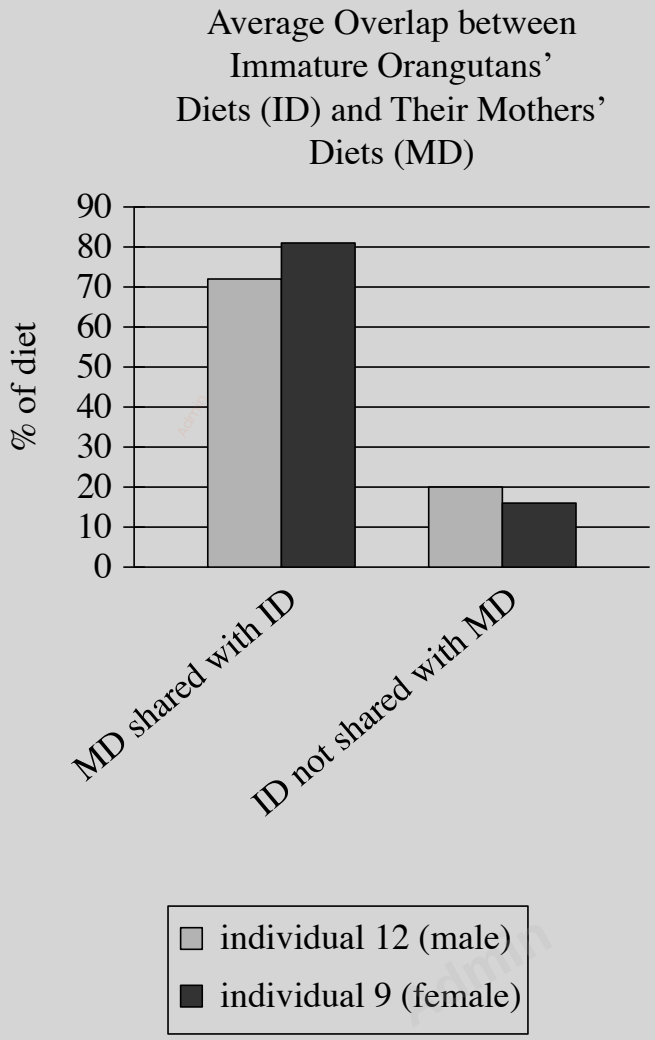
A) The research by Drelichman and Voth suggests that the logistics of ruling both Spain and much of Luxembourg led to short-term problems with cash that forced Philip II to default on his debts.

B) Analysis of the earliest available records of a sovereign state's finances can be found not in the work of Reinhardt, Rogoff, and Savastano but in that of Drelichman and Voth.

C) Drelichman and Voth's research on Philip II's debt defaults builds on earlier work by Reinhardt, Rogoff, and Savastano, adding nuance to the earlier work's findings.

D) **Drelichman and Voth advanced the field of research on European early modern state finance by assembling a novel collection of evidence that gave them insight into Philip II's debt defaults.**

Question 8



- For each data category, the following bars are shown:
  - individual 12 (male)
  - individual 9 (female)
- The % of diet data for the 2 categories are as follows:
  - MD shared with ID:
    - individual 12 (male): 72%
    - individual 9 (female): 81%
  - ID not shared with MD:
    - individual 12 (male): 20%
    - individual 9 (female): 16%

Male orangutans typically disperse from the territory in which they were born when they reach maturity, whereas females typically do not. Beatrice Ehmann and her colleagues hypothesized that this difference in life trajectory should be reflected in the diets of immature orangutans: males should share fewer of their mothers' dietary preferences than females do since those preferences tend to be particular to the food resources available in the local area and may be of relatively low utility beyond it. The researchers calculated the percent of mother orangutans' diets shared with their offspring's diets and the percent of immature orangutans' diets not shared with their mothers' diets.

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

A) The majority of the diet of the mother of individual 9 was shared with the diet of individual 9, whereas significantly less than half the diet of the mother of individual 12 was shared with the diet of individual 12.

B) The percent of individual 9's mother's diet that was shared with individual 9's diet ranged from approximately 72% to approximately 81%, whereas the percent of individual 12's mother's diet that was shared with individual 12's diet ranged from approximately 16% to approximately 20%.

C) Neither individual 12 nor individual 9 had a diet that consisted mostly of food not shared with the individual's mother's diet, whereas more than half of both individuals' mothers' diets were shared with their offspring's diets.

D) **The percent of the mother's diet shared with its offspring's diet was smaller for individual 12 than for individual 9, and the percent of the individual's diet not shared with its mother's diet was greater for individual 12 than for individual 9.**

Question 9

Broken-Wing Display in Various Bird Species

Species name	Common name	Order	Performs broken-wing display?
Coccyzus americanus	yellow-billed cuckoo	Cuculiformes	Yes
Actitis hypoleucos	common sandpiper	Charadriiformes	Yes
Cinclosoma ajax	painted quail-thrush	Passeriformes	No
Calidris maritima	purple sandpiper	Charadriiformes	No
Dendroica pinus	pine warbler	Passeriformes	Yes

While observing birds for a biology class, a group of students noticed an African oystercatcher (*Haematopus moquini*), a bird of the order Charadriiformes (shorebirds), slowly move away, make loud noises, and feign an injured wing as the group approached the bird's ground nest. Researching this behavior, the students learned that this phenomenon is commonly referred to as "broken-wing display" and is meant to lure predators away from the nesting site and toward a seemingly vulnerable adult bird. Upon learning of other birds that also exhibit the behavior they had observed, the students hypothesized that the phenomenon is exclusive to shorebirds.

Which choice best describes data from the table that weaken the students' claim?

A) Unlike the common sandpiper, the purple sandpiper is not known to perform broken-wing display, even though both are in the order Charadriiformes.

B) Neither the painted quail-thrush nor the purple sandpiper is known to perform broken-wing display.

C) **Both the yellow-billed cuckoo and the pine warbler are known to perform broken-wing display.**

D) The common sandpiper, in the order Charadriiformes, is known to perform broken-wing display, and the painted quail-thrush, in the order Passeriformes, is not.

Question 10

The bird species *Corapipo gutturalis* (the white-throated manakin) practices a foraging strategy known as sallying (catching insects in flight and returning to a perch to eat them), enabling it to scan for prey and predators simultaneously. Conversely, *Philydor pyrrhodes* (the cinnamon-rumped foliage-gleaner), with which *C. gutturalis* shares territory in French Guiana, practices foliage gleaning (picking insects off leaves), substantially limiting the bird's field of vision while foraging. Biologist Ari Martínez and colleagues hypothesized that the greater vulnerability inherent in the latter strategy is reflected in greater 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 alarm calls from another local bird species, *P. pyrrhodes* displayed predator-avoidance behavior, whereas *C. gutturalis* did not display any behavioral change.**

B) When Martínez and colleagues played *C. gutturalis* alarm calls, only *C. gutturalis* displayed predator-avoidance behavior, whereas both *C. gutturalis* and *P. pyrrhodes* displayed such behavior when *P. pyrrhodes* alarm calls were played.

C) When Martínez and colleagues played control sounds of random noise, only *P. pyrrhodes* displayed predator-avoidance behavior, whereas both *P. pyrrhodes* and *C. gutturalis* displayed such behavior when alarm calls from another local bird species were played.

D) When Martínez and colleagues played alarm calls from a species that does not share territory with *C. gutturalis* and *P. pyrrhodes*, *C. gutturalis* displayed predator-avoidance behavior, whereas *P. pyrrhodes* did not display any behavioral change.

Question 11

Estonia, which, according to international indices, has relatively strong democratic institutions and low intranational income inequality, experienced an inflation rate of 3.43% in 2018, whereas Senegal, which shows the opposite pattern on such indices, had an inflation rate of only 0.46% that year. Such a comparison may seem consistent with the theoretical critique that by diluting control over the economy, democratic institutions inhibit states' ability to counteract inflationary pressures, but when Raj Desai et al. examined democratic strength, intranational inequality, and inflation in more than 100 countries, they found that democratic strength, if associated with low inequality, restrains inflationary pressures, which would suggest that _____ blank

Which choice most logically completes the text?

A) **factors other than Estonia's political structure contributed to the country's inflation rate exceeding that of Senegal in 2018.**

B) inflation in Estonia in 2018 would have been higher if Estonia's government had less control over the economy.

C) international indices may have underestimated the strength of Estonia's democratic institutions relative to Senegal's.

D) the 2018 difference between Estonia's inflation rate and Senegal's inflation rate is primarily but not exclusively attributable to the different levels of intranational income inequality in the two countries.

Question 12

Habitat management areas and other types of protected areas (PAs) are established to promote conservation, but because they restrict certain economic activities, it is widely believed that they hinder local economic development. However, a study by Heng Zhu and team investigating five PAs, including South Luangwa National Park (a terrestrial PA in Zambia) and Abrolhos Marine Park (a marine PA in Brazil), estimated the impact of tourism on these regions and concluded that tourism likely results in increased household incomes in local communities. But whereas terrestrial PAs were in remote places with few alternative amenities to attract tourists, marine PAs were close to additional amenities not part of the PA. Thus, the researchers conceded that although _____ blank

Which choice most logically completes the text?

A) **economic activity in the tourism sector in communities around South Luangwa can likely be attributed to interest in it as a protected area, economic activity in tourism around Abrolhos may be unrelated to the PA.**

B) tourism at Abrolhos and surrounding regions likely fluctuated erratically in the period shortly after the PA was created, tourism at South Luangwa remained largely stable.

C) the establishment of both PAs likely benefited their respective local economies, such gains likely derived mainly from the tourism industry in South Luangwa and from industries unrelated to tourism in Abrolhos.

D) household income increased in the areas surrounding both PAs, it likely grew at a much faster rate for households near Abrolhos than for households near South Luangwa.

Question 13

The subscription economy has rapidly expanded to include a wide range of products—from children's toys to video gaming services—in part because consumers appreciate the convenience of automatic payments. But as a study by Liran Einav and team shows, consumers are typically inattentive to automatic payments and remain subscribed to services long after their value has worn off. The study also found that subscribers were much more likely to discontinue a service when they had to make an active renewal decision (for example, when they need to update payment information to remain subscribed) than at other times. The researchers therefore concluded that a regulation requiring all subscribers to complete payments manually would likely _____ blank

Which choice most logically completes the text?

A) decrease subscribers' valuation of the subscription services at a faster rate than if no such regulation were implemented.

B) result in reduced average subscription durations, but the overall experience of the longest-subscribing consumers would improve.

C) deter attentive consumers from subscribing in the first place but would have little effect on whether inattentive consumers decide to subscribe.

D) **enable dissatisfied subscribers to save more money than they would without such a regulation in place but at the expense of a feature that may have induced them to subscribe initially.**

Question 14

For her 2010 installation "Dubling," Brazilian artist Elida Tessler extracted every gerund from James Joyce's novel _____ blank capped empty wine bottles and creating 4,311 postcards featuring images of Dublin's River Liffey, she forged a visual connection between the flowing waters so central to Joyce's narrative and the novel's stream-of-consciousness style.

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

A) ***Ulysses*. Stamping all 4,311 "-ing" verbs onto individual corks that**

B) *Ulysses* by stamping all 4,311 "-ing" verbs onto individual corks that

C) *Ulysses*, stamping all 4,311 "-ing" verbs onto individual corks. That

D) *Ulysses*, stamping all 4,311 "-ing" verbs onto individual corks that

Question 15

Should the Czech Republic cut taxes? As of 2017, the Czech Republic's top tax rate (46%) was lower than the highest point on the country's Laffer curve. A theoretical relationship between tax rates and revenues, the curve can be used to determine whether tax cuts will ultimately increase a country's tax revenue, according to some _____ blank 2017 data suggested that the Czech Republic was below the threshold for a tax cut.

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

A) economists. The

B) economists the

C) economists, the

D) economists; as the

Question 16

Now seen as a mechanical precursor to the e-reader, Spanish educator and inventor Ángela Ruiz Robles's Enciclopedia Mecánica eschewed pages in favor of three horizontal paper scrolls that could be easily swapped out to accommodate a range of subjects. Though Ruiz Robles's prototype had limited functionality, interactive features described in her 1949 patent—such as a button labeled "verb" that would illuminate relevant text when pressed— _____ blank an impressive early vision of hypertext.

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

A) reveal

B) revealing

C) has revealed

D) reveals

Question 17

Breaking ties with Serbia and Montenegro in 2006 catalyzed a host of infrastructural changes for the newly independent Montenegro, among them a new country dialing code from the International Telegraph and Telephone Consultative Committee _____ blank incoming international telephone calls to reach the country.

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

A) had enabled

B) would enable

C) enabling

D) enabled

Question 18

Some places that were once part of the Spanish Empire, such as Sardinia, reveal few traces of a past connection to Spain, linguistic or otherwise. In contrast, Costa Rica broke free from the Spanish Empire in the nineteenth century yet still bears its imperial history in its language, Spanish _____ blank spoken by most current residents of Costa Rica.

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

A) being

B) will be

C) is being

D) is

Question 19

A single specimen of *T. parkerae,* collected at a depth of 1,856 fathoms (3,394 meters) in the South Pacific, and a single specimen of *G. truncatulinoides,* collected at a depth of 620 fathoms (1,134 meters) in the North Atlantic, have been preserved as exemplars of their respective _____ blank former in a repository at Washington, DC's Museum of Natural History and the latter in a repository at London's Natural History Museum.

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

A) species; the

B) species, and the

C) species, the

D) species. The

Question 20

Located on the southwest coast of Finland, the city of Turku was a member of a powerful mercantile alliance that dominated northern European trade between the 13th and 17th _____ blank a loose confederation of cities from eleven modern-day countries, it has been described as a precursor to today's European Union.

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

A) centuries—the Hanseatic League;

B) centuries: the Hanseatic League,

C) centuries, the Hanseatic League,

D) centuries; the Hanseatic League,

Question 21

Maureen Mahon of New York University, along with researchers Alison Martin of Dartmouth College and Tammy Kernodle of Miami University, _____ blank on the advisory team for the Timeline of African American Music, an interactive digital resource that explores African American musical history from the 1600s to the present day.

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

A) have served

B) are serving

C) serves

D) serve

Question 22

Every US state has an associated state soil, which is typically selected by a group of experts, then passed through the state legislature to receive its official designation. For example, Vermont's Tunbridge soil was formally designated in 1985, and Oregon's Jory soil in 2011. _____ blank years pass between a soil's selection and official designation, as the legislative process can be notoriously slow.

Which choice completes the text with the most logical transition?

A) Indeed,

B) Similarly,

C) In many cases,

D) Therefore,

Question 23

Although the Indo-European language of Bislama has only about 10,000 living speakers, most in Vanuatu, the New York City–based Endangered Language Alliance has identified a group of Bislama speakers in the city's borough of Manhattan. _____ blank in the borough's Midtown East neighborhood, these speakers are both helping to ensure Bislama's survival and contributing to the city's unmatched linguistic diversity.

Which choice completes the text with the most logical transition?

A) There,

B) Consequently,

C) For example,

D) Likewise,

Question 24

John Thomson employed the pseudonym "Gracchus"—the name of an ancient Roman politician—in political essays he wrote in 1795, a choice that accomplished far more than simply concealing his authorship. _____ blank it wasn't an arbitrary pen name but rather a complex rhetorical strategy through which Thomson aligned his political views with the venerated republican ideals of the ancient world, thereby bolstering the authority of his writing.

Which choice completes the text with the most logical transition?

A) Indeed,

B) Conversely,

C) However,

D) In addition,

Question 25

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

- A U-shaped curve in a river channel is called a meander.
- A meander forms when water erodes sediment from one side of the riverbank and redeposits that sediment on the opposite side.
- Meanders will gradually change shape and migrate downstream over time.
- A river with high sinuosity has many meanders, and a river with low sinuosity has few.
- The Powder River in the United States has high sinuosity.

The student wants to describe how meanders are formed. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) The U-shaped curves, or meanders, that form in a river will gradually change shape and migrate downstream.

B) A high-sinuosity river, the Powder River has many meanders that will change shape and shift downstream over time.

C) Over time, many meanders have formed in the Powder River, a river in the United States with high sinuosity.

D) Over time, water erodes sediment from one side of a riverbank and redeposits it on the other, resulting in a U-shaped curve, or meander, in the river channel.

Question 26

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

- Angelino Dulcert was a fourteenth-century Majorcan cartographer of portolan charts.
- Francesco Pizigano was a fourteenth-century Venetian cartographer of portolan charts.
- Portolan charts were early nautical charts that mapped the waterways of the Mediterranean and Black Seas.
- Portolan charts in the Venetian tradition tended to be sparse in illustrations.
- Those in the Majorcan tradition tended to be richly illustrated.
- In Majorcan charts, the Tagus River is depicted as a shepherd's crook, and the Atlas Mountains are depicted as a palm tree.

The student wants to make a distinction between the two portolan traditions. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Being in the Majorcan tradition, the portolan charts of Angelino Dulcert differed from those of the Venetian cartographer Francesco Pizigano.

B) Majorcan portolan charts, unlike their sparser Venetian counterparts, tended to be richly illustrated.

C) While portolan charts in the Majorcan tradition tended to be richly illustrated, those in the Venetian tradition mapped the waterways of the Mediterranean and Black Seas.

D) Unlike Venetian portolan charts, which could include illustrations of shepherds' crooks and palm trees, Majorcan charts were sparse in illustration.

Question 27

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

- Artistic works made readily accessible to the general public are categorized as public art.
- Artist Zenos Frudakis's twenty-foot-long bronze sculpture *Freedom Sculpture* is on display along a public sidewalk in Philadelphia, Pennsylvania.
- This work of public art depicts a group of people emerging from the side of a building.
- Artist Louise Bourgeois's thirty-foot-tall metal sculpture *Maman* is displayed on the grounds of a public art museum in Bilbao, Spain.
- This work of public art depicts a spider standing near a walkway.

The student wants to contrast the two sculptures. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Frudakis's *Freedom Sculpture*, unlike Bourgeois's *Maman*, depicts human subjects.

B) In contrast to Frudakis's *Freedom Sculpture*, Bourgeois's *Maman* is displayed in a public place.

C) Bourgeois's sculpture *Maman*, which depicts a spider standing near a walkway, is on display in Bilbao, Spain.

D) *Freedom Sculpture* by Frudakis and *Maman* by Bourgeois are two examples of public art.

Section 2, Module 1: Math

Question 1

Which expression is equivalent to $v^4 - 450v^3$?

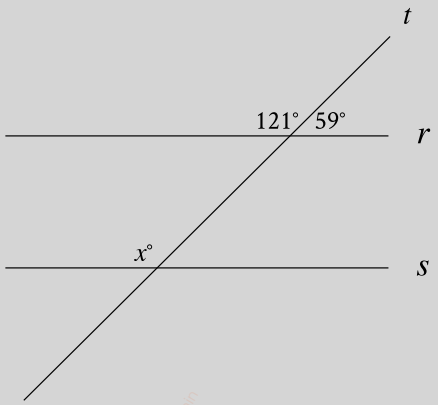
A) $(v^2 - 45)(v^2 - 10)$

B) $(v^2 + 45)(v^2 - 10)$

C) $v^3(v + 450)$

D) $v^3(v - 450)$

Question 2



Note: Figure not drawn to scale.

In the figure shown, line r is parallel to line s, and line t intersects both lines. What is the value of x?

A) 121

B) 90

C) 31

D) 180

Question 3

The expression $\frac{\sqrt[7]{p^5}}{\sqrt{p^{t+3}}}$, where t is a constant, is equivalent to $\sqrt[7]{p^2}$ for all positive values of p. What is the value of t?

A) $-\frac{15}{7}$

B) $-\frac{27}{7}$

C) $-\frac{24}{7}$

D) $-\frac{18}{7}$

Question 4

The width of a rectangle is 3 centimeters. The length of the rectangle is 20 centimeters longer than the width. What is the area, in square centimeters, of this rectangle?

A) 6

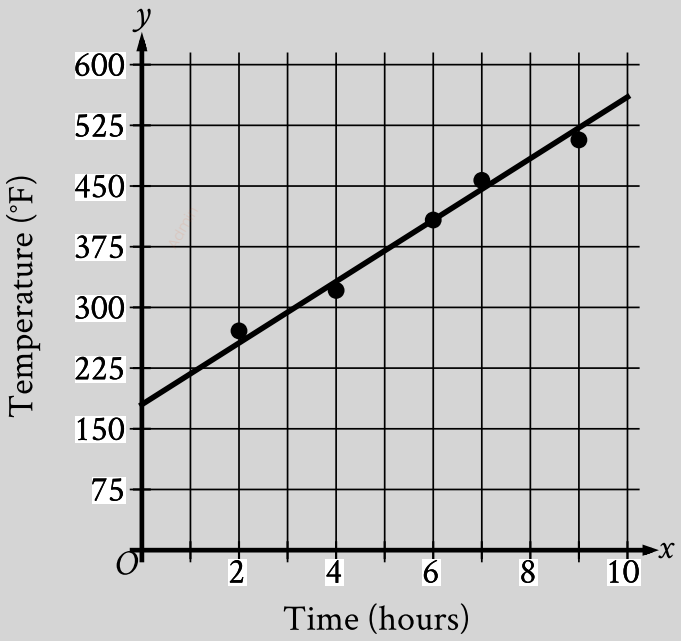
B) 26

C) 69

D) 3

Question 5

For the first 10 hours of an experiment, the scatterplot shows the temperature y, in degrees Fahrenheit ($^\circ$F), of an object at various times x, in hours, since the start of the experiment. A line of best fit is also shown.



Which of the following is the best interpretation of the slope of the line of best fit?

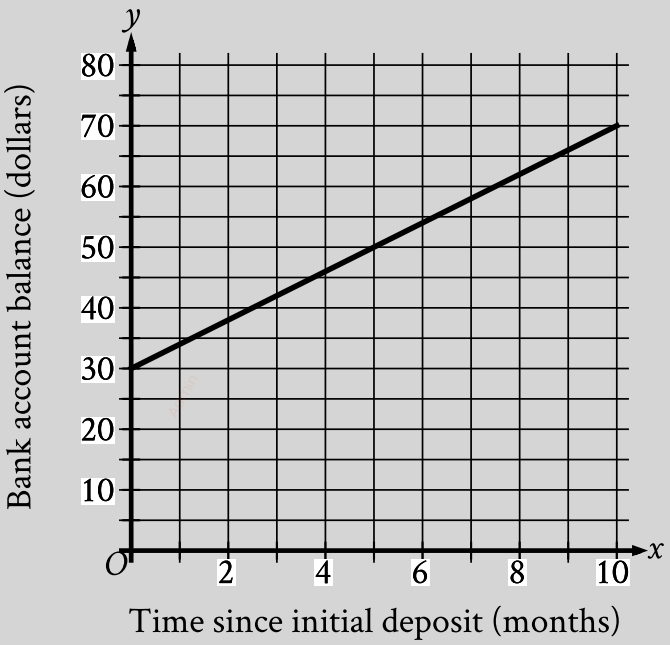
A) **The predicted temperature increases at a constant rate of approximately 40°F per hour over the 10-hour period.**

B) The predicted temperature decreases at a constant rate of approximately 40°F per hour over the 10-hour period.

C) The predicted temperature decreases at a constant rate of approximately 180°F per hour over the 10-hour period.

D) The predicted temperature increases at a constant rate of approximately 180°F per hour over the 10-hour period.

Question 6



A bank account was opened with an initial deposit. Over the next several months, regular deposits were made into this account, and there were no withdrawals made during this time. The graph of the function f shown, where $y = f(x)$, estimates the account balance, in dollars, in this bank account x months since the initial deposit. To the nearest whole dollar, what is the amount of the initial deposit estimated by the graph?

Answer:

30

Question 7

$$y = -15x + 19$$

$$y = -20x + 24$$

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

A) $(24, 19)$

B) $(19, 24)$

C) $(4, 1)$

D) $(1, 4)$

Question 8

$$f(x) = -16x^2 + 85$$

The function f gives the estimated height, in feet, of an acorn x seconds after the acorn fell from a tree. Based on the function, what is the estimated height, in feet, of the acorn before it fell from the tree?

Answer:

85

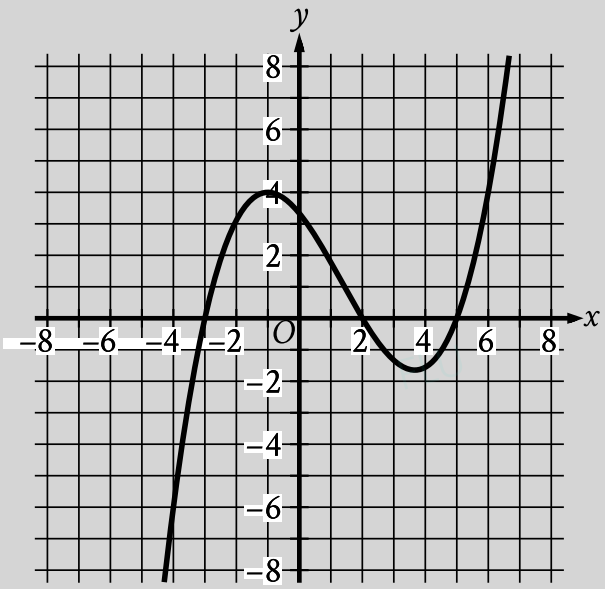
Question 9

During hibernation, American black bears do not eat or replenish calories. A certain black bear weighed 304 pounds when entering hibernation and lost weight at a rate of 0.6 pound per day. At this rate, how many days after entering hibernation did the black bear weigh 250 pounds?

Answer:

90

Question 10



The graph of the polynomial function f is shown, where $y = f(x)$. What is the value of $f(2)$?

A) 2

B) 0

C) 5

D) -3

Question 11

A freight elevator can hold a maximum weight of $5{,}340$ pounds during one trip. A 190-pound person needs to deliver several boxes using the freight elevator. Some of these boxes weigh 25 pounds each and the others weigh 64 pounds each. Which inequality represents the possible combinations of the number of 25-pound boxes, x, and the number of 64-pound boxes, y, the person can deliver during one trip if only the person and the boxes are on the freight elevator?

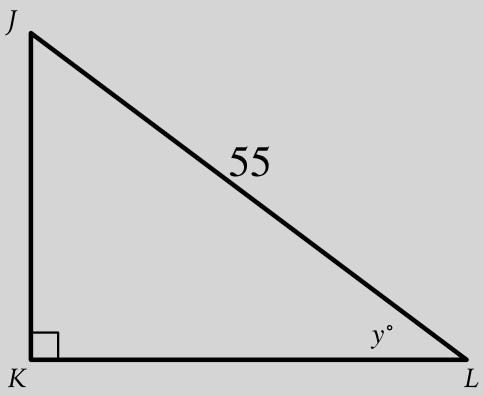
A) $64x + 25y \geq 5{,}340$

B) $64x + 25y \leq 5{,}340$

C) $25x + 64y \geq 5{,}150$

D) $25x + 64y \leq 5{,}150$

Question 12



Note: Figure not drawn to scale.

In triangle JKL, $\cos y^\circ = \frac{54}{55}$. What is the length of $\overline{KL}$?

Answer:

54

Question 13

What is the *x*-intercept of the graph of $4x + y = 24$ in the *xy*-plane?

A) $(6, 0)$

B) $(0, 0)$

C) $(28, 0)$

D) $(4, 0)$

Question 14

$$b - 38 = \frac{x}{y}$$

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

A) $x = by - 38$

B) $x = \frac{b-38}{y}$

C) $x = by - 38y$

D) $x = \frac{by-38}{y}$

Question 15

In the *xy*-plane, the graph of the linear function h contains the points $(0, 0)$ and $(1, 32)$. Which equation defines h, where $y = h(x)$?

A) $h(x) = 32x + 32$

B) $h(x) = \frac{1}{32}x + 32$

C) $h(x) = x + 32$

D) $h(x) = 32x$

Question 16

$$9x + y = 22$$

$$10x - y = 16$$

How many solutions does the given system of equations have?

A) **Exactly one**

B) Infinitely many

C) Zero

D) Exactly two

Question 17

The measure of angle K is $\frac{\pi}{4(12)}$ radians. The measure of angle L is 12 times the measure of angle K. What is the measure, in **degrees**, of angle L?

A) 57

B) 12

C) 45

D) 33

Question 18

$$\frac{(x-5)(x-7)}{x-4} = 0$$

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

A) 4

B) 7

C) 16

D) 12

Question 19

What is the *y*-intercept of the graph of $y = 5^x + 20$ in the *xy*-plane?

A) $(0, 5)$

B) $(0, 21)$

C) $(0, 20)$

D) $(0, 25)$

Question 20

$$-3x + 15px = 30$$

In the given equation, p is a constant. The equation has no solution. What is the value of p?

A) $\frac{2}{3}$

B) 0

C) 2

D) $\frac{1}{5}$

Question 21

The density of a certain type of marble stone is 2.6000 grams per cubic centimeter. If a sample of this type of stone is in the shape of a sphere with a diameter of 31.000 centimeters, what is the mass of this sample, in grams, to the nearest whole number? (Use 3.14159 for π.)

Answer:

40556

Question 22

The function w is defined by $w(r) = \frac{1}{r-4} - \frac{r-7}{-r+5.25}$. What is the greatest possible value of r such that $w(r) = 0$?

Answer:

13/2

Section 2, Module 2: Math

Question 1

$$1.5c + 3d = 42$$

The given equation describes the relationship between the number of cats, c, and the number of dogs, d, that can be cared for at a pet care business during a week. If the business cares for 14 dogs during a week, how many cats can it care for during this week?

A) 0

B) 42

C) 21

D) 3

Question 2

Stefan purchased 700 feet of fencing. He used 80% of this fencing to surround a vegetable garden. How many feet of fencing did Stefan use to surround the vegetable garden?

A) 40

B) 16

C) 560

D) 620

Question 3

$$x + 7 = 16$$

$$y = 3x^2 + 3$$

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

A) $(9, 246)$

B) $(16, 771)$

C) $(9, 243)$

D) $(16, 3)$

Question 4

If $(x + 2)^2 = 28$, what is the value of $x^2 + 4x$?

A) 56

B) 28

C) 32

D) 24

Question 5

$$8(t+4)-10(t+4)=34$$

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

Your Response:

Enter your answer here...

Question 6

Which expression represents the product of $\left(x^{-9}y^{8}z^{4}\right)$ and $\left(x^{5}z^{4}+y^{3}z^{-7}\right)$?

A) $x^{-4}y^{8}z^{8}+y^{3}z^{-7}$

B) $x^{-4}z^{8}+x^{-9}z^{-3}$

C) $x^{-4}y^{8}z^{8}+x^{-9}y^{11}z^{-3}$

D) $x^{-4}z^{8}+y^{11}z^{-3}$

Question 7

On January $1, 2000$, the population of a town was $26{,}252$ and on January $1, 2010$, the population was $26{,}753$. The equation $10x + 26{,}252 = 26{,}753$ describes this situation. Which of the following is the best interpretation of x in this context?

A) The percentage by which the population of the town increased each year between 2000 and 2010

B) The total increase in population between 2000 and 2010

C) The projected population of the town 10 years after 2010

D) The average increase per year of the population between 2000 and 2010

Question 8

A rectangle has a perimeter of 36 inches. If the sum of the lengths of three sides of the rectangle is 21 inches, what is the length, in inches, of the fourth side?

A) 3

B) 57

C) 15

D) 36

Question 9

Cube B has a volume of 216 cubic inches. The length of each edge of cube A is k times the length of each edge of cube B. If cube A has a volume of $5{,}832$ cubic inches, what is the value of k?

A) 27

B) 3

C) 6

D) 36

Question 10

A researcher observes a sample of a nuclide. An exponential model estimates that the mass, in grams, of the sample decreases by 23% every 21.87 minutes. Which of the following equations could represent this model, where M is the estimated mass, in grams, of the sample t minutes after the researcher began observing the sample?

A) $M = 100(0.77)^{\frac{t}{21.87}}$

B) $M = 100(0.23)^{\frac{t}{21.87}}$

C) $M = 100(0.23)^{t+21.87}$

D) $M = 100(0.77)^{t+21.87}$

Question 11

A department store sells pants in three lengths: short, regular, and long. The table summarizes the distribution of pant length, by color, for all the pants in the store.

	Black	Brown	Blue	Total
Short	19	20	24	63
Regular	17	21	22	60
Long	14	25	19	58
Total	50	66	65	181

A pair of pants is selected at random. What is the probability of selecting a pair of pants that is brown, given that the pair of pants is regular length? (Express your answer as a decimal or fraction, not as a percent.)

Your Response:

Enter your answer here...

Question 12

$$5\left(9x + 7 + \frac{c}{5}\right) = 45x$$

In the given equation, c is a constant. The equation has infinitely many solutions. What is the value of c?

Your Response:

Enter your answer here...

Question 13

An equation of the line in the *xy*-plane that contains the points $(0, -6)$ and $(-3, 0)$ is $Ax + By = 7$, where A and B are constants. What is the value of B?

A) $-\frac{7}{3}$

B) $-\frac{6}{7}$

C) $-\frac{3}{7}$

D) $-\frac{7}{6}$

Question 14

$$y > 2x - 90$$

$$y < -\frac{1}{6}x - 8$$

For which of the following tables are all the values of x and their corresponding values of y solutions to the given system of inequalities?

A)

x	y
18	-8
24	-9
30	-10

B)

x	y
18	-14
24	-15
30	-16

C)

x	y
18	-11
24	-12
30	-13

D)

x	y
18	-57
24	-58
30	-59

Question 15

$$g(x) = \frac{1}{11}(5(2)^x + 4)$$

The function g is defined by the given equation. For all values of x, the value of $g(x)$ is greater than k, where k is a constant. What is the greatest possible value of k?

A) 4

B) $\frac{4}{11}$

C) 0

D) $\frac{9}{11}$

Question 16

At a nature preserve, a wildlife biologist counted ducks from an observation deck at the same time each day for 41 days. The table summarizes the resulting data set, data set A.

Number of ducks	Number of days
0	1
1	7
2	8
3	9
4	8
5	7
18	1

The data value 18 was recorded in error and is removed from data set A to create data set B, which consists of the remaining 40 data values. Which statement best compares the median of data set A and the median of data set B?

A) There is not enough information to compare the medians of the two data sets.

B) The median of data set B is equal to the median of data set A.

C) The median of data set B is greater than the median of data set A.

D) The median of data set B is less than the median of data set A.

Question 17

Each 3.0-ounce serving of cheddar cheese and each 1.2-ounce serving of tuna provides about 1 microgram of vitamin B12. If a total of 3.6 micrograms of vitamin B12 are consumed from eating x ounces of cheese and y ounces of tuna, which equation best represents this situation?

A) $3.0x + 1.2y = 3.6$

B) $0.33x + 0.83y = 3.6$

C) $1.2x + 3.0y = 3.6$

D) $0.83x + 0.33y = 3.6$

Question 18

A certain town has an area of $13{,}753{,}344$ square yards. What is the area, in square miles, of this town? $(1 \text{ mile} = 1{,}760 \text{ yards})$

A) 7,814.4

B) 2.11

C) 3,708.55

D) 4.44

Question 19

$$f(x) = 4d(18x + 19) + 20$$

Which of the following represents the *x*-intercept of the graph of $y = f(x) + 6$ in the *xy*-plane, where d is a constant?

A) $\left(\frac{-76d-26}{72d}, 0\right)$

B) $\left(6 - \frac{76d+20}{72d}, 0\right)$

C) $(76d + 26, 0)$

D) $\left(-\frac{39}{72d+6}, 0\right)$

Question 20

In triangle ABC, the measure of angle A is 56° and $AC = 35$. In triangle PQR, the measure of angle P is 56° and $PR = 105$. Which additional piece of information is sufficient to prove that triangle ABC is similar to triangle PQR?

A) $AB = 50$ and $PQ = 50$.

B) The measures of angle B and angle R are 32° and 92°, respectively.

C) The measures of angle B and angle Q are 56° and 32°, respectively.

D) $AB = 50$ and $QR = 150$.

Question 21

A quadratic function gives the estimated length of daylight $d(t)$, in hours, in a certain city t months after March 1, where $0 \leq t \leq 7$. According to the function, the estimated length of daylight is 13.44 hours 5 months after March 1 and the maximum estimated length of daylight is 13.89 hours 3.5 months after March 1. Based on this function, what is the estimated length of daylight, in hours, on March 1?

Your Response:

Enter your answer here...

Question 22

$$kx^2 - 16x = 27x^2 - 8$$

In the given equation, k is an integer constant. If the equation has two distinct real solutions, what is the greatest possible value of k?

Your Response:

Enter your answer here...