SAT SEPTEMBER BANK

Section 1, Module 1: Reading and Writing

Question 1

Farmhouse Interior, painted in the realist style by Jan Hendrik Weissenbruch, depicts a peasant woman knitting at a table while a cat sits underneath. 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 Pierre-Auguste Cot, 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) rectify

B) counteract

C) **magnify**

D) apprehend

Question 2

Cacao 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) **varies from**

B) helps with

C) reacts to

D) argues with

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 vintage Teenage Mutant Ninja Turtles action figures would soar in the 2010s, but soar they did.

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

A) monitor

B) avoid

C) **forecast**

D) exchange

Question 4

Chengdu, China, was named a City of Gastronomy by UNESCO in 2010, a title that _____ blank that Chengdu 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) renounces

B) discovers

C) complains

D) **denotes**

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 show that Celestine enjoys imagining her daughter's future life

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

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

D) To imply that Celestine is dissatisfied with her job

Question 6

In 1940, John H. Sengstacke founded the National Newspaper Publishers Association to support Black-owned papers. Sengstacke'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 Sengstacke.

Which choice best describes the overall structure of the text?

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

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

C) 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.

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

Question 7

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 (Jordan Penney in *PopMatters* called *Stalingrad* "powerful"). 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 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.**

B) 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.

C) 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.

D) 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.

Question 8

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 be used to reduce energy consumption and wear in vehicle transmissions and other common mechanical systems.**

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

Question 9

Probabilistic models generate predictions based on outcomes of analogous past events, but even as these models project likely outcomes, they implicitly acknowledge that lower-frequency events may occur instead. Because they accommodate multiple potential outcomes, such models may seem incompatible with causal determinism—the view that particular outcomes are inevitable given certain preconditions. But complete foreknowledge of relevant conditions is generally unavailable, suggesting that a state of uncertainty ultimately prevails in which outcomes can be predicted but not definitively foretold.

What does the text most strongly imply about the relationship between probabilistic models and causal determinism?

A) **The predictive use of probabilistic models can be reconciled with acceptance of causal determinism because causal determinism does not necessarily entail the existence of absolute certainty.**

B) The predictive use of probabilistic models represents a rejection of causal determinism because such models associate a single event with multiple potential outcomes.

C) Probabilistic models reflect the influence of causal determinism because their predictions of future outcomes are informed by concrete information about past events.

D) Probabilistic models can be understood as compatible with causal determinism only when their predictions of future events overwhelmingly favor one potential outcome.

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

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

Question 11

High-speed rail (HSR) systems have trains that move at much higher speeds than traditional trains. HSR is expanding in Norway, Japan, 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 prefer riding buses instead of taking trains because buses travel to more locations."

B) "I have traveled on high-speed rail lines in Norway but not in Japan."

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
Poland	10	25	105
Austria	13	51	50
Hungary	1	18	13

Elisabeth Pötzelsberger and colleagues gathered data on 23 non-native tree species grown in Europe. They analyzed reports from Austria, Poland, and Hungary 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 Austria 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) **Austria reported 51 damaging fungus species, which is more than either Poland or Hungary reported.**

B) Poland and Hungary reported 10 and 1 damaging fungus species, respectively, which is far fewer than Austria reported.

C) Austria reported 51 damaging fungus species, whereas Poland reported 105 damaging insect species.

D) Hungary reported 18 damaging fungus species but only 13 damaging insect species.

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) "Nothing happened during the day, and after awhile mother told us not to say a word about why we left, for grandpa might get mad with us."

B) "My dear readers, such is the respect my people have for their chiefs."

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

D) **"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."**

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)
20	light	2.08	4.06	1.5	1.75
14	light	2.11	3.27	1.55	1.85
11	dark	3.18	2.94	1.85	2.05
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) 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.

B) 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.

C) **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.**

D) 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.

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

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

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

Maria Ines Cordeiro is the director of the National Library of Portugal in Lisbon. In this role, Cordeiro _____ blank the library's collections, which feature a large number of works by celebrated Portuguese writers.

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

A) having overseen

B) **oversees**

C) to oversee

D) overseeing

Question 17

The epic poem *The Tale of Genji* dates back to the 11th century. Originally _____ blank in classical Japanese, 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) was written

C) **written**

D) had been written

Question 18

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

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

A) STS-103, and the

B) STS-103. The

C) STS-103 the

D) **STS-103, the**

Question 19

The grammar of the Gujarati language includes several noun cases common to most Indo-Aryan _____ 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 transit method, a means of indirect planetary discovery, has detected previously unknown exoplanets at vast distances from _____ blank the super Earth TRAPPIST-1 b; at 352 light-years away, the super Earth Kepler-102 f; and, as of 2023, over 4,000 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 41 light-years away,

B) **Earth: at 41 light-years away,**

C) Earth at 41 light-years away:

D) Earth at 41 light-years away,

Question 21

Tacettin Diker 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) **In particular,**

B) By contrast,

C) By doing so,

D) Second,

Question 22

Portuguese researcher Isabel C.F.R. Ferreira reports that the caffeic acid in cauliflower 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) For example,

B) **Moreover,**

C) Conversely,

D) Rather,

Question 23

In economics, sugar is 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 sugar, despite its decidedly sturdier composition.

Which choice completes the text with the most logical transition?

A) Though it is grown from the earth,

B) In a notable exception to this rule,

C) **By this definition,**

D) Summarizing this principle,

Question 24

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.
- *Billy Budd, Sailor* is a novella by Herman Melville.
- It entered the public domain in 2020.
- *The Common Reader* is an essay collection by Virginia Woolf.
- It entered the public domain in 2021.

The student wants to emphasize the order in which *Billy Budd, Sailor* and *The Common Reader* entered the public domain. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) *Billy Budd, Sailor*, a novella by Herman Melville, and *The Common Reader*, a essay collection by Virginia Woolf, are both in the public domain.

B) The year was 2021, and the copyrights to *Billy Budd, Sailor* and *The Common Reader* had finally expired.

C) ***Billy Budd, Sailor*, a novella by Herman Melville, entered the public domain in 2020, with Virginia Woolf's essay collection *The Common Reader* following in 2021.**

D) Though they once were copyrighted works, *Billy Budd, Sailor* and *The Common Reader* are now in the public domain.

Question 25

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

- During the Industrial Revolution (from the mid-1700s to the mid-1800s), the number of people living in urban areas of the UK grew substantially (30%).
- Urbanization occurred as large segments of the country's rural population relocated to cities to support the burgeoning manufacturing industry.
- The industrial city of Manchester, England, experienced the most population growth (2,000%).
- A comparison of a 1746 map of Manchester with maps of the city from the late 1800s reflects the city's expansion.
- According to historian Donna Sherman, these maps present "a powerful visual representation of the transformation of Manchester's landscape."

The student wants to connect the quotation from Sherman to the increase in the UK's urban population during the Industrial Revolution. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Sherman claims that maps of Industrial Revolution–era Manchester, England, present "a powerful visual representation of the transformation of Manchester's landscape" during a time period in which the UK experienced a substantial (2,000%) increase in population.

B) Rural populations relocating to cities like Manchester created a phenomenon that Sherman describes as "a powerful visual representation" of how the UK transformed during the Industrial Revolution.

C) Sherman claims that period maps of the UK present "a powerful visual representation" of how the country's rural landscape was transformed by population shifts during the Industrial Revolution.

D) **The sizeable growth in the UK's urban population during the Industrial Revolution is reflected in before-and-after maps that present, in Sherman's view, "a powerful visual representation" of how the increase transformed Manchester.**

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.
- Frances E. Allen won the award in 2006 for seminal contributions to optimizing compiler techniques.

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

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

C) It was in 2006 that Frances E. Allen won the A.M. Turing Award.

D) In 2006, Frances E. Allen won the A.M. Turing Award for seminal contributions to optimizing compiler techniques.

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

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

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

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

Section 1, Module 2: Reading and Writing

Question 1

The following text is from Thomas Hardy's 1874 novel *Far from the Madding Crowd*. In the text, the narrator describes an open tract of land.
The changes of the seasons are less obtrusive on spots of this kind than amid woodland scenery. Still, to a close observer, they are just as perceptible; the difference is that their media of manifestation are less trite and familiar than such well-known ones as the bursting of the buds or the fall of the leaf.

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

A) **Conspicuous**

B) Expansive

C) Headstrong

D) Meddlesome

Question 2

The metal displayed in the structure of ARK by APOLLO Architects Associates and the metal hardware in One-Room Residence of 5 Layers by Matsuyama Architect and Associates are representative aspects of a juxtaposition common in contemporary Japanese architecture: the _____ blank of sleek, contemporary elements and traditional organic materials in a single design is a trend with both aesthetic and highly practical purposes.

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

A) diffusion

B) designation

C) analysis

D) **synthesis**

Question 3

Bats that hunt nocturnally emit pulses of sound that can help them locate airborne moths in the dark. This predation method placed evolutionary pressure on nocturnal moths, some of which eventually developed the ability to detect the pulses, thereby enabling them to _____ blank predation; other moths (particularly the ancestors of butterflies) shifted away from nocturnalism and adapted to being active only during daylight.

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

A) enact

B) annul

C) **evade**

D) attain

Question 4

Described in treatises mainly published between 1768 and 1950 (such as John Austin's *A System of Stenographic Music*), musical stenography used quickly written squiggles and dots in an attempt to preserve, in print and in real time, the _____ blank features of live performances—those that result from impromptu deviations of performers when fidelity to an established musical score is not mandated.

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

A) meticulous

B) inevitable

C) **extemporaneous**

D) inconspicuous

Question 5

The Pacific halibut is ectothermic, or cold-blooded, and the yellowfin tuna is a regional endotherm, meaning that parts of its body are typically warmer than the surrounding water. The basking shark had been classified as a full ectotherm, a position that became _____ blank after researchers Haley R. Dolton and colleagues showed that the basking shark's body temperature is consistently 1.0 to 1.5°C warmer than the water.

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

A) inconsolable

B) unequivocal

C) **untenable**

D) unanticipated

Question 6

The Heege Manuscript (HM) is a collection of booklets of once-unbound paper sheets on which Richard Heege copied various texts at his fifteenth-century home between Derbyshire and Nottinghamshire in England. Most other contemporaneous personal manuscripts like the Findern Anthology (FA) consist primarily of pieces for polite society like genteel romances and other readings favored by elites, whereas the HM has a distinctive emphasis on the popular, including entertainments like nonsense verse, and the practical, with advice about religion.

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

A) To emphasize the ubiquity of hand-copied collections like the FA and the HM in medieval England

B) To illustrate how the discussion of the HM earlier in the text can improve historians' understanding of the FA

C) **To provide context for the text's suggestion that the HM is an outlier among collections of its time**

D) To suggest that the FA is a poor point of comparison for a collection like the HM

Question 7

The following text is Emily Dickinson's circa 1859 poem "Setting Sail."

Exultation is the going
Of an inland soul to sea, —
Past the houses, past the headlands,
Into deep eternity!

Bred as we, among the mountains,
Can the sailor understand
The divine intoxication
Of the first league out from land?

Which choice best describes the overall structure of the text?

A) The speaker recounts feeling profoundly moved by a recent undertaking, then questions the widespread perception that such undertakings are unremarkable.

B) The speaker depicts a common attitude at the outset of a journey, then contrasts that attitude with the speaker's state of mind after embarking on an actual journey.

C) The speaker acknowledges the allure of novel experiences, then hints at the danger of failing to appreciate what is familiar.

D) **The speaker characterizes the experience of a particular emotion by way of a comparison, then extends that comparison to accentuate the intensity of that emotion.**

Question 8

Text 1
The University of Chicago and the online class provider Udacity are two of the many institutions offering training programs in entrepreneurship. But what results do such programs produce? In a study of college students in Scotland, researcher Laura Galloway and colleagues addressed this question and reported that participants who received entrepreneurial training showed positive attitudes toward entrepreneurship.

Text 2
While studies of entrepreneurial training typically report positive results, a close look at these studies reveals widespread methodological shortcomings. This research literature is plagued by unclear hypotheses, insufficient sample sizes, a lack of control groups, and failures to establish pretraining baselines for the measured attributes of participants.

Based on the texts, the author of Text 2 would most like to know the answer to which question about Galloway and colleagues' study that is not addressed in Text 1?

A) Did Galloway and colleagues measure any attributes of the participants in the study after they had received the training?

B) Did Galloway and colleagues compare Scottish college students who received the training with a group of successful entrepreneurs who did not receive the training?

C) **How many Scottish college students did Galloway and colleagues include in the study?**

D) Did the participants that Galloway and colleagues included in the study share any characteristics or life circumstances?

Question 9

Prabuddha De et al. found that a recommender system (RS)—an algorithm that generates personalized product suggestions for online shoppers—impacted consumer behavior and increased sales, a result that was corroborated by Dokyun Lee and Kartik Hosanagar. However, Lee and Hosanagar also determined that whereas an RS had a stronger positive effect on item views for utilitarian products (e.g., toothbrushes) than for hedonic products (e.g., chocolates), the RS had a stronger positive effect on likelihood of purchase for hedonic products than for utilitarian ones.

Information in the text best supports which statement about recommender systems?

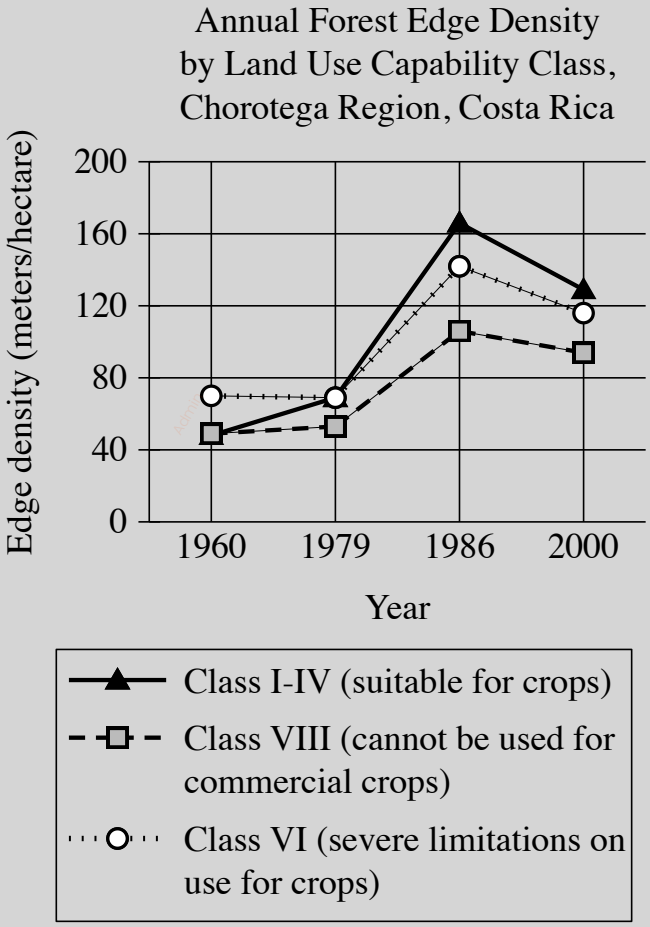
A) **While recommender systems can affect consumer behavior toward suggested products, those effects are not uniform in nature and strength across product categories.**

B) By directing customers toward specific product categories on a retailer's website, recommender systems may limit the variety of items seen by online shoppers.

C) While recommender systems cause consumers to spend more time viewing utilitarian items such as toothbrushes, recommender systems' positive effect on purchase rates is likely limited to hedonic items such as chocolates.

D) By proposing the most useful options to consumers, recommender systems boost the online visibility of utilitarian items that otherwise tend to be overlooked.

Question 10



- The following 3 lines are shown:
  - Class I-IV (suitable for crops)
  - Class VIII (cannot be used for commercial crops)
  - Class VI (severe limitations on use for crops)
- The Class I-IV (suitable for crops) line:
  - Begins at 1960, 48 meters per hectare
  - Rises gradually to 1979, 69 meters per hectare
  - Rises sharply to 1986, 166 meters per hectare
  - Falls gradually to 2000, 129 meters per hectare
- The Class VIII (cannot be used for commercial crops) line:
  - Begins at 1960, 49 meters per hectare
  - Rises gradually to 1979, 53 meters per hectare
  - Rises sharply to 1986, 106 meters per hectare
  - Falls gradually to 2000, 94 meters per hectare
- The Class VI (severe limitations on use for crops) line:
  - Begins at 1960, 70 meters per hectare
  - Falls gradually to 1979, 69 meters per hectare
  - Rises sharply to 1986, 142 meters per hectare
  - Falls gradually to 2000, 116 meters per hectare

Due to the Chorotega region's climate, various types of forested areas were converted to cattle pasture as rising international meat prices drove a cattle ranching boom in the 1960s and 1970s. Juan Pablo Arroyo-Mora and colleagues used historical aerial photography and remote sensing data to track fragmentation metrics across different land use capability classes (categories that indicate possible uses of forest land). One such metric, edge density, can be used to indicate the regularity of forest patch sizes, with decreases in edge density suggesting a trend towards uninterrupted forest patches with more regular shapes. The team found a range of edge density levels, from lows of around 80 meters per hectare or less in the 1960s and 1970s for all classes, to a high in 1986 of approximately _____ blank

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

A) 50 for Class VI.

B) 140 for Class VIII.

C) 50 for Class VIII.

D) 160 for Class I-IV.

Question 11

Studies of Cougar Population Density

Study authors	Location	Methods	Study area (square kilometers)	Maximum density (cougars per 100 square kilometers)
Linda L. Sweanor et al.	New Mexico (United States)	radio-collar tracking	2,059	2.00
Juan I. Zanón-Martinez et al.	Argentina	regular camera trapping	1,179	4.90
Gregory A. Davidson et al.	Oregon (United States)	scat-detecting dogs	1,225	5.50
Robin E. Russell et al.	Montana (United States)	biopsy darting, snow backtracking	8,800	6.70

Studies of the population density of cougars (*Puma concolor*) have yielded a range of results, which may in part reflect differences in the effectiveness of the methods that researchers have used in their studies. For example, the difference between the maximum population density reported by Linda L. Sweanor et al. and that reported by Robin E. Russell et al. might be artificially large if the use of _____ blank

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

A) biopsy darting and snow backtracking underestimates the density of cougars.

B) radio-collar tracking is impractical outside of New Mexico.

C) biopsy darting and snow backtracking is more common in Montana than the use of radio-collar tracking is.

D) radio-collar tracking underestimates the density of cougars.

Question 12

Vegetation has two primary mechanisms by which it reduces air pollution: deposition (absorption of pollutants) and, the more effective, dispersion (dilution of pollutants by ventilation). Accordingly, establishment of green space to reduce major air pollutants such as fine particulate matter in urban areas receives considerable attention. Research by Zander S. Venter et al. comprised data from air-quality monitoring stations in Austria, the US state of California, and thousands of other global locations over a ten-year span, coupled with aerial imagery of those locations from the same period. The researchers ultimately recommended that reducing anthropogenic emissions remain the primary focus of urban air-quality improvement efforts.

Which finding from the study, if true, would most directly account for the recommendation by Venter et al.?

A) The association between levels of fine particulate matter and green space is strongly negative for locations containing or in close proximity to major cities but becomes insignificant for more rural locations.

B) **The association between green space and fine particulate matter levels is moderately negative overall but becomes slightly negative and sometimes positive when consideration is limited to busy streets with tree cover heavy enough to hinder ventilation.**

C) There is a predictable relationship between a location's typical climate conditions and the efficacy of green spaces in that location, but anomalous local weather events have an outsized effect on deposition and dispersion of fine particulate matter.

D) Ambient levels of fine particulate matter are comparable across locations with comparable local infrastructure (e.g., typical building shape) but vary considerably depending on the predominant type of vegetation present.

Question 13

Eastern Ohio's Monroe County is among the most rural counties in the United States: the US Census Bureau classified it as 97.7% rural in 2010. Researchers often struggle to recruit residents of counties like Monroe for inclusion in studies. Melissa Valerio and colleagues tested whether an approach called snowball sampling improves recruitment. Working in two rural counties, they recruited a few people (known as "seeds") with the characteristics desired for a proposed study and asked them to recruit additional participants from their social networks. Though the seeds were given minimal guidance, many more people they recruited had the desired characteristics for the study than would be expected by chance alone, most likely because _____ blank

Which choice most logically completes the text?

A) the seeds' social networks tend to be somewhat smaller than the networks of people who do not live in rural areas.

B) the characteristics that made the seeds desirable for inclusion in the proposed study may be unknown to some members of the seeds' social networks.

C) most seeds' social networks include some people who do not know one another and who share few characteristics.

D) **the seeds' social networks include a high proportion of people who share characteristics with the seeds.**

Question 14

Neuroscientist Artin Arshamian and his team sought to determine what affects a person's perception of an odor as pleasant: is it culture, personal taste, or aspects of human anatomy? The team assessed odor preferences in ten groups of people with different modes of living (urban, agricultural, and hunter-gatherer) including the Semelai people from a small community in the Malay Peninsula and the Chachi people from a small community in Ecuador. The team observed that across cultures, people generally rated odors about the same: eugenol, which smells like cinnamon, was typically rated more pleasant than caprylic acid, which smells like rancid wax. The team's study thus undermined the idea that _____ blank

Which choice most logically completes the text?

A) people agree in their perception of odors as pleasant or unpleasant regardless of where they live.

B) a person who perceives certain odors as pleasant will likely perceive the odors as roughly equal in pleasantness.

C) personal taste has little influence on whether odors are perceived as pleasant or unpleasant.

D) **culture significantly influences whether a person perceives an odor as pleasant or unpleasant.**

Question 15

A soil's microbial community (the microbial taxa present in their relative abundances) is known to affect plants' cyclical processes. Lady Grant and colleagues hypothesized that microbial communities could also affect plants' flavor chemistry, including volatiles and secondary metabolites like glucosinolates. Recognizing that soil moisture varies by location in the wild and could influence plants' chemistry, Grant et al. introduced distinct microbial communities to individually potted mustard plants (*Brassica juncea*) growing in a controlled environment, then measured the plants' glucosinolates, like indole and allyl (the most prominent), that create the spicy and bitter flavors in mustard. This method thus enabled the researchers to _____ blank

Which choice most logically completes the text?

A) disentangle the influence of microbial communities on soil moisture from their influence on glucosinolate content in the plants.

B) demonstrate that differences in plants' flavor chemistry result from differences in the level of glucosinolates regardless of the soil moisture.

C) **distinguish variations in glucosinolates due to differences in microbial communities from those that in a natural setting may be due to differences in soil moisture.**

D) re-create the conditions of studies conducted in the wild that found links between soil microbial communities and levels of indole in mustard plants.

Question 16

Alabama resident James T. Rapier, one of the nearly two thousand African Americans elected to public office during the decade that followed the Civil War, _____ blank his term as a member of the US House of Representatives in 1873.

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

A) beginning

B) **began**

C) to begin

D) having begun

Question 17

Occurring in the constellation Perseus, 240 million light-years from Earth, SN 2006gy was a _____ blank explosion of a massive star, which blasts large amounts of radiation, heavy elements, and debris into space—that was first detected by American astronomer Robert Quimby.

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

A) supernova. The

B) **supernova—the**

C) supernova, the

D) supernova: the

Question 18

Al-Jami' Al-Sahih (the Authentic Collection) is one of the hundreds of thousands of manuscripts that have survived from roughly the sixteenth century to the present _____ blank being passed down through private libraries in the city of Timbuktu, Mali. Many of these manuscripts can be found at the Al-Wangari Manuscript Library.

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

A) day; by

B) **day by**

C) day. By

D) day by,

Question 19

Taking a cultural studies approach to analyzing Willa Cather's novel *My Ántonia* would lead a critic to focus on the intersection with popular culture inherent in the novel. On the other hand, a New Critical analysis _____ blank on elements such as structure and imagery might yield a radically different interpretation of Cather's novel.

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

A) would be focusing

B) focuses

C) focusing

D) would focus

Question 20

The neurotechnology company Q30 Innovations is working on an exciting new technology: collars that increase blood volume in the brain to reduce potential damage to neurons. Q30 Innovations's technology, alongside other such neuromodulation technologies that function by stimulating nervous system structures, _____ blank the way for future advancements in neurotechnology.

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

A) have paved

B) is paving

C) are paving

D) paving

Question 21

The legacy of the Spanish Empire, which once controlled portions of five continents, is evident in Spanish-speaking Honduras, one of many places that reveal their imperial history in their language. Contrast Honduras with Luxembourg, which ceased to be part of the empire in _____ blank the latter's connection to the empire is so attenuated that Spanish is seldom spoken there today.

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

A) **1714:**

B) 1714

C) 1714 and

D) 1714,

Question 22

To determine the approximate age of ocher artifacts excavated from an archaeological site in China, archaeologist Fa-Gang Wang and colleagues collected samples of sediments surrounding the ocher artifacts; these samples were then analyzed using a method known as optically stimulated luminescence (OSL) dating. _____ blank OSL dating indicated that the ocher artifacts were between 39,000 and 41,000 years old.

Which choice completes the text with the most logical transition?

A) In addition,

B) By comparison,

C) **Ultimately,**

D) Similarly,

Question 23

Architect Victor Gruen, the designer of Indiana's Woodmar Plaza shopping mall, conceived of the mall as an indoor version of the European town square, a communal space that encouraged visitors to stroll and linger. _____ blank he designed Woodmar Plaza with long, pedestrian-friendly promenades and ample seating areas clustered around fountains and greenery.

Which choice completes the text with the most logical transition?

A) In addition,

B) Regardless,

C) **Accordingly,**

D) By contrast,

Question 24

In his meta-analysis of recent studies of animal information cascades, Joseph S. McCormick presents several examples of adaptive cascades (i.e., information transfers that benefit a collective), including one that involves humpback whales. However, not all cascades are beneficial. _____ blank his meta-analysis cites one study that described how semipalmated sandpipers abandoned safe nesting grounds unnecessarily due to flock-mates' false alarms.

Which choice completes the text with the most logical transition?

A) In addition,

B) **Indeed,**

C) Instead,

D) In response,

Question 25

As can be seen in the case of *Others*, a New York magazine published from July 1915 to July 1919, some small periodicals influential in the development of the modernist movement have been explored in depth by scholars. The Edinburgh magazine *The Evergreen* (1895–1897), _____ blank remains among those modernist periodicals "of interest and significance about which relatively little is known," according to scholars Peter Brooker and Andrew Thacker.

Which choice completes the text with the most logical transition?

A) for instance,

B) likewise,

C) **though,**

D) moreover,

Question 26

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

- Tea bricks were used as commodity money in 19th-century Mongolia.
- In a commodity money economy, specific goods act as a common unit of monetary exchange that can be used to buy and sell other goods.
- In a barter economy, goods are traded directly between parties without the use of money.
- Economists Bruce Champ and Scott Freeman: bartering requires that "the person with whom you wish to trade must not only have what you want but also want what you have. The inefficiency is apparent; a great deal of time is spent merely finding someone with whom to trade."
- Champ and Freeman: when "individuals might come to accept one particular good in exchange for others even if they do not wish to consume that good…barter economies essentially become monetary economies."

The student wants to paraphrase a quotation from Champ and Freeman to explain the inefficiency of barter economies. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) According to Champ and Freeman, the inefficiencies of barter economies become apparent when goods are traded between parties without the use of money.

B) **The precise alignment of desires that barter economies require, Champ and Freeman contend, makes them inefficient.**

C) Champ and Freeman argue that inefficient barter economies can become monetary economies if a good becomes a unit of exchange.

D) In a barter economy, Champ and Freeman contend, goods are traded directly between parties without the use of money, leading to inefficiency.

Question 27

- Vexillology is the study of flags.
- The flags of many countries include symbols like animals, plants, or landforms.
- These symbols often represent an aspect of the region's history, culture, or landscape.
- The flag of Zambia includes an eagle.
- The flag of San Marino includes a laurel branch.

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

A) Many countries feature symbols on their flags, such as animals, plants, or landforms, and the study of these designs is known as vexillology.

B) Vexillologists study flags, like those of Zambia and San Marino.

C) Countries like Zambia and San Marino use symbols on their flags; examples include animals and plants.

D) **Zambia includes an animal on its flag, whereas San Marino's flag includes a plant.**

Section 2, Module 1: Math

Question 1

Which expression is equivalent to $v^4 - 590v^3$?

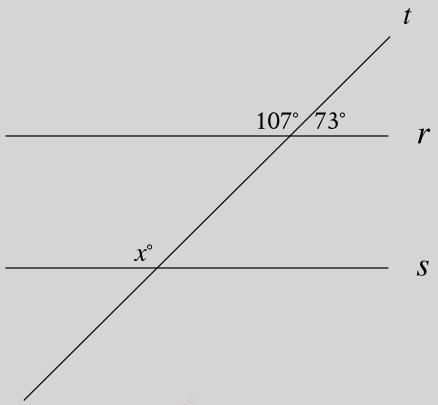
A) $v^3(v + 590)$

B) $(v^2 + 59)(v^2 - 10)$

C) $(v^2 - 59)(v^2 - 10)$

D) $v^3(v - 590)$

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) 90

B) 180

C) 17

D) 107

Question 3

The width of a rectangle is 9 centimeters. The length of the rectangle is 50 centimeters longer than the width. What is the area, in square centimeters, of this rectangle?

A) 18

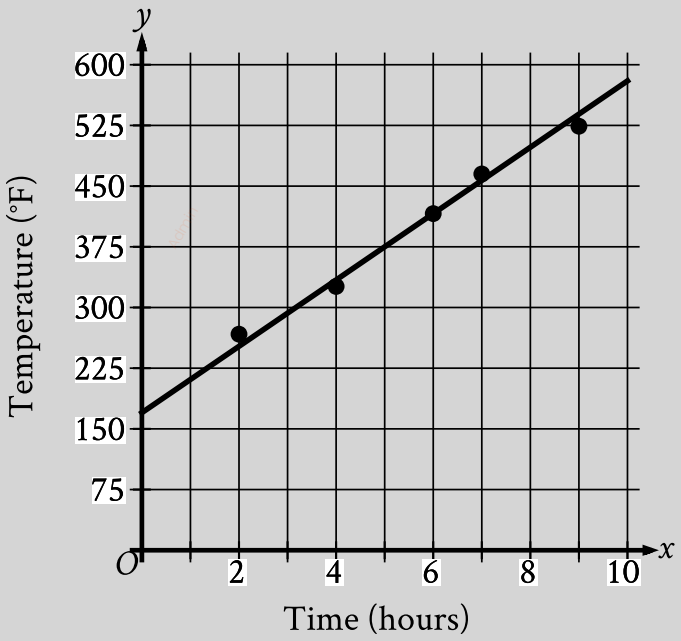
B) 531

C) 9

D) 68

Question 4

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?

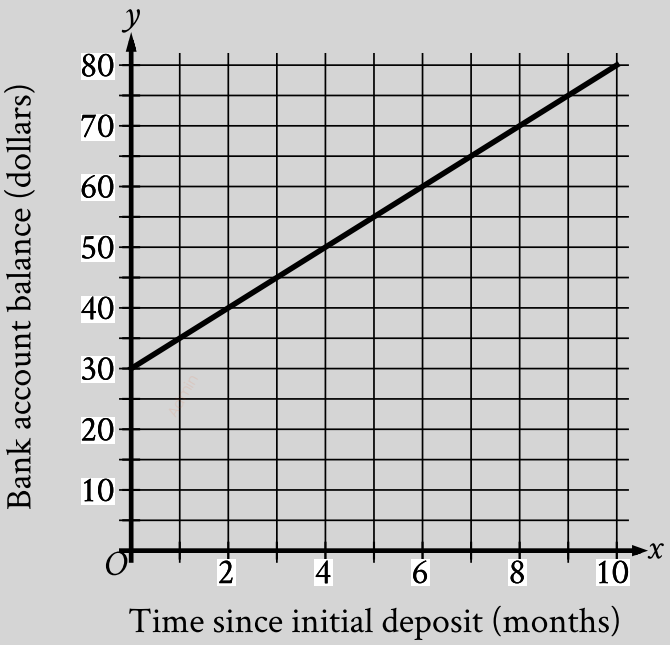
A) The predicted temperature increases at a constant rate of approximately 170°F per hour over the 10-hour period.

B) The predicted temperature decreases at a constant rate of approximately 170°F per hour over the 10-hour period.

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

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

Question 5



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 6

$$y = -10x + 13$$

$$y = -12x + 15$$

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

A) $(13, 15)$

B) $(15, 13)$

C) $(3, 1)$

D) $(1, 3)$

Question 7

$$f(x) = -16x^2 + 76$$

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:

76

Question 8

During hibernation, American black bears do not eat or replenish calories. A certain black bear weighed 515 pounds when entering hibernation and lost weight at a rate of 0.5 pound per day. At this rate, how many days after entering hibernation did the black bear weigh 490 pounds?

Answer:

50

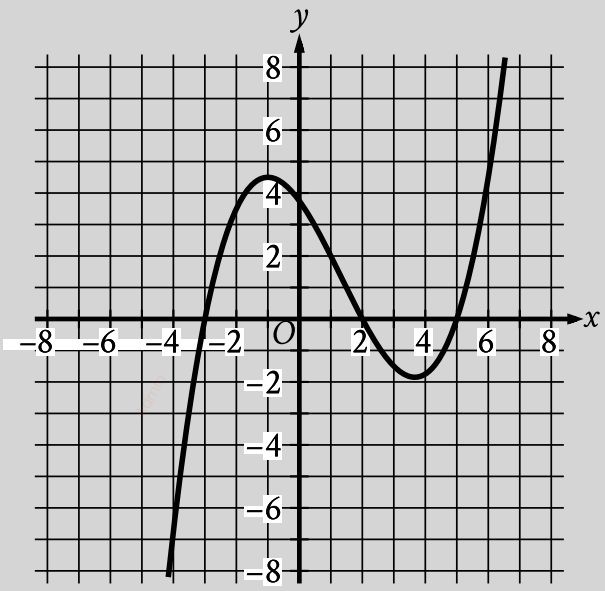
Question 9

If $x + 1 = 3$, what is the value of $2(x + 1)$?

Answer:

6

Question 10



The graph of the polynomial function f is shown, where $y = f(x)$. What is the value of $f(5)$?

A) 2

B) 5

C) -3

D) 0

Question 11

A freight elevator can hold a maximum weight of $5{,}450$ pounds during one trip. A 190-pound person needs to deliver several boxes using the freight elevator. Some of these boxes weigh 23 pounds each and the others weigh 60 pounds each. Which inequality represents the possible combinations of the number of 23-pound boxes, x, and the number of 60-pound boxes, y, the person can deliver during one trip if only the person and the boxes are on the freight elevator?

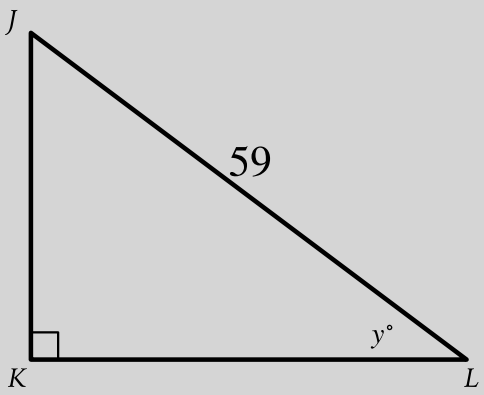
A) $60x + 23y \geq 5{,}450$

B) $23x + 60y \geq 5{,}260$

C) $60x + 23y \leq 5{,}450$

D) $23x + 60y \leq 5{,}260$

Question 12



Note: Figure not drawn to scale.

In triangle JKL, $\cos y^\circ = \frac{58}{59}$. What is the length of $\overline{KL}$?

Answer:

58

Question 13

$$b - 19 = \frac{x}{y}$$

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

A) $x = \frac{b-19}{y}$

B) $x = by - 19y$

C) $x = \frac{by-19}{y}$

D) $x = by - 19$

Question 14

In the *xy*-plane, the graph of the linear function h contains the points $(0, 0)$ and $(1, 10)$. Which equation defines h, where $y = h(x)$?

A) $h(x) = 10x$

B) $h(x) = 10x + 10$

C) $h(x) = \frac{1}{10}x + 10$

D) $h(x) = x + 10$

Question 15

$$3x + y = 21$$

$$9x - y = 3$$

How many solutions does the given system of equations have?

A) Infinitely many

B) Zero

C) Exactly two

D) **Exactly one**

Question 16

The length of a rectangle is 35 centimeters greater than its width. Which equation gives the area A, in square centimeters, of the rectangle in terms of the width w, in centimeters, of the rectangle?

A) $A = (w)(w + 35)$

B) $A = (w)(35w)$

C) $A = (w)\left(\frac{w}{35}\right)$

D) $A = (w)(w - 35)$

Question 17

The measure of angle K is $\frac{\pi}{2(12)}$ radians. The measure of angle L is 12 times the measure of angle K. What is the measure, in **degrees**, of angle L?

A) 102

B) 12

C) 78

D) 90

Question 18

$$\frac{(x-7)(x-8)}{x-3} = 0$$

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

A) 8

B) 18

C) 15

D) 3

Question 19

What is the *y*-intercept of the graph of $y = 6^x + 12$ in the *xy*-plane?

A) $(0, 6)$

B) $(0, 12)$

C) $(0, 18)$

D) $(0, 13)$

Question 20

$$-6x + 42px = 84$$

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

A) $\frac{1}{3}$

B) 0

C) 2

D) $\frac{1}{7}$

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 $w(r) = \frac{1}{r-8} - \frac{r-5}{-r+4.25}$. What is the greatest possible value of r such that $w(r) = 0$?

Answer:

13/2

Section 2, Module 2: Math

Question 1

$$1.5c + 3d = 108$$

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 36 dogs during a week, how many cats can it care for during this week?

A) 3

B) 54

C) 0

D) 108

Question 2

Stefan purchased 500 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) 16

B) 420

C) 400

D) 40

Question 3

$$x + 5 = 14$$

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

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

A) $(9, 243)$

B) $(14, 591)$

C) $(9, 246)$

D) $(14, 3)$

Question 4

If $(x + 2)^2 = 18$, what is the value of $x^2 + 4x$?

A) 14

B) 22

C) 36

D) 18

Question 5

$$6(t+7)-8(t+7)=38$$

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

Answer:

-26

Question 6

Which expression represents the product of $\left(x^{-9}y^{6}z^{5}\right)$ and $\left(x^{4}z^{5}+y^{8}z^{-7}\right)$?

A) $x^{-5}y^{6}z^{10}+y^{8}z^{-7}$

B) $x^{-5}y^{6}z^{10}+x^{-9}y^{14}z^{-2}$

C) $x^{-5}z^{10}+x^{-9}z^{-2}$

D) $x^{-5}z^{10}+y^{14}z^{-2}$

Question 7

On January 1, 2000, the population of a town was $26{,}255$ and on January 1, 2010, the population was $26{,}956$. The equation $10x + 26{,}255 = 26{,}956$ describes this situation. Which of the following is the best interpretation of x in this context?

A) The total increase in population between 2000 and 2010

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

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

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

Question 8

Cube B has a volume of 125 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 $3{,}375$ cubic inches, what is the value of k?

A) 27

B) 3

C) 25

D) 5

Question 9

A right square pyramid has a height of 6 units and a volume of 128 cubic units. What is the length, in units, of one side of the base of the pyramid?

A) 8

B) 256

C) $\frac{64}{3}$

D) $\frac{8\sqrt{3}}{3}$

Question 10

A researcher observes a sample of a nuclide. An exponential model estimates that the mass, in grams, of the sample decreases by 27% every 14.07 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) $M = 100(0.27)^{\frac{t}{14.07}}$

B) $M = 100(0.27)^{t+14.07}$

C) $M = 100(0.73)^{\frac{t}{14.07}}$

D) $M = 100(0.73)^{t+14.07}$

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	25	14	24	63
Regular	23	15	22	60
Long	20	19	19	58
Total	68	48	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.)

Answer:

1/4

Question 12

An equation of the line in the *xy*-plane that contains the points $(0, -8)$ and $(-2, 0)$ is $Ax + By = 9$, where A and B are constants. What is the value of B?

A) $-\frac{2}{9}$

B) $-\frac{9}{8}$

C) $-\frac{9}{2}$

D) $-\frac{8}{9}$

Question 13

$$(x+k)+\tfrac{9}{2}(y+t)+19=0$$

$$(x+k)-\tfrac{9}{2}(y+t)-19=0$$

In the given system of equations, k and t are constants. The solution to this system is (x, y). What is the value of $18(y+t)$?

A) -76

B) 0

C) 38

D) 9

Question 14

$$y > 2x - 72$$

$$y < -\frac{1}{6}x - 9$$

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
12	-11
18	-12
24	-13

B)

x	y
12	-14
18	-15
24	-16

C)

x	y
12	-57
18	-58
24	-59

D)

x	y
12	-8
18	-9
24	-10

Question 15

$$g(x) = \frac{1}{11}(6(2)^x + 7)$$

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) 0

B) $\frac{13}{11}$

C) $\frac{7}{11}$

D) 7

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
13	1

The data value 13 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) The median of data set B is greater than the median of data set A.

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

C) **The median of data set B is equal to 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 1.7 micrograms of vitamin B12 are consumed from eating x ounces of cheese and y ounces of tuna, which equation best represents this situation?

A) $3.0x + 1.2y = 1.7$

B) $0.33x + 0.83y = 1.7$

C) $0.83x + 0.33y = 1.7$

D) $1.2x + 3.0y = 1.7$

Question 18

A certain town has an area of $12{,}669{,}184$ square yards. What is the area, in square miles, of this town? $(1 \text{ mile} = 1{,}760 \text{ yards})$

A) 2.02

B) 7,198.4

C) 4.09

D) 3,559.38

Question 19

$$f(x) = 3d(26x + 27) + 18$$

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) $(81d + 24, 0)$

B) $(\frac{-81d-24}{78d}, 0)$

C) $(6 - \frac{81d+18}{78d}, 0)$

D) $(-\frac{45}{78d+6}, 0)$

Question 20

In triangle ABC, the measure of angle A is 52° and $AC = 40$. In triangle PQR, the measure of angle P is 52° and $PR = 120$. Which additional piece of information is sufficient to prove that triangle ABC is similar to triangle PQR?

A) $AB = 45$ and $PQ = 45$.

B) $AB = 45$ and $QR = 135$.

C) **The measures of angle B and angle R are 40° and 88°, respectively.**

D) The measures of angle B and angle Q are 52° and 40°, respectively.

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 12.66 hours 6 months after March 1 and the maximum estimated length of daylight is 13.91 hours 3.5 months after March 1. Based on this function, what is the estimated length of daylight, in hours, on March 1?

Answer:

11.46

Question 22

$$nx^2 - 16x = 26x^2 - 8$$

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

Answer:

33