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6VPL03

Test begins on the next page.

Reading and Writing

33 QUESTIONS

DIRECTIONS

The questions in this section address a number of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s).

All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

1

Novelist Leon Forrest admired William Faulkner's writing style. Forrest's novel *Divine Days* contains a long passage in tribute to Faulkner that is a perfect _____ of Faulkner's style: anyone familiar with Faulkner's writing would see the resemblance.

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

A) forgetting
B) rejection
C) imitation
D) opinion

2

Shoppers can help keep money cycling within a community by making purchases at small local businesses instead of large retailers. Some cities are _____ programs to encourage this behavior, establishing reward points and other incentives for shopping at small businesses.

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

A) instituting
B) occupying
C) underestimating
D) encountering

3

Economists often assert that countries looking to increase their reliance on solar energy should expand their capacity for storage; having an ample reserve of stored energy can mitigate the effects of _____ solar energy collection caused by unpredictable shifts in cloud cover and haze.

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

A) developments of
B) fluctuations in
C) calibrations with
D) incentives for

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CONTINUE

4

As discussed by scholar Anna Mladentseva, many artworks produced in the mid-1990s to the early 2000s exclusively for exhibition on the internet, such as Sinae Kim's *Genesis* (2001), have become inaccessible because viewing them requires the use of _____ software (most notably Adobe Flash, discontinued in 2021).

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

A) defunct
B) arcane
C) ubiquitous
D) extraneous

5

The following text is from the 1989 novel *The Ancient Child* by Kiowa writer N. Scott Momaday. The main character has achieved tremendous commercial success as a painter.

> More and more often he was asked to compromise his art or himself in one way or another, and more often than not he did so, for he was inclined to be passive and naïve; it was difficult for him to say no. Those who exhibited his work, who praised and purchased it, and who demanded its proliferation began to determine it.

©1989 by N. Scott Momaday

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

A) Conclude
B) Dictate
C) Evaluate
D) Select

6

Ordinary soap bubbles usually exist for a minute or less before popping due to either a rupture forced by gravity-induced drainage or the evaporation of the liquid from which the bubble is composed. But physicist Aymeric Roux and colleagues discovered ways to mitigate these factors, resulting in bubbles that can last for a year or more. For example, glycerol tends to adhere to water molecules, so a bubble with a shell that contains both water and glycerol is able to draw additional water molecules from the surrounding air and thereby compensate for evaporation.

Which choice best states the purpose of the underlined portion in the text as a whole?

A) It describes the effects of a process devised by researchers that increases the longevity of an object discussed in the text.
B) It details the circumstances that prompted the research discussed in the text.
C) It presents a reason why the phenomenon discussed in the text that the researchers wanted to avoid will inevitably occur.
D) It mentions a method discussed in the text that researchers intend to test in future experiments.

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CONTINUE

7

Generally it takes Tule geese about four days to migrate south for the winter. From their summer breeding grounds in Cook Inlet, Alaska, the birds begin by flying over the Gulf of Alaska, keeping about 100 miles from the Canadian shore. They pause to rest on the Pacific Ocean, then fly toward Summer Lake, Oregon, before finally arriving at their winter destination of Sacramento Valley, California. In 2020, however, it took the geese over twice as long to make their way from Cook Inlet to Sacramento Valley. According to researchers, the reason was airborne pollutants.

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

A) It illustrates a change in Tule geese's usual flight behavior.

B) It suggests an explanation for why Tule geese breed in Alaska.

C) It describes part of the Tule geese's typical winter migration journey.

D) It compares Tule geese to other birds that migrate south for the winter.

8

In 1154, Muhammad al-Idrisi completed a collection of maps of the lands known to medieval Arabic and European scholars. This collection was titled *Al-Kitāb al-Rujārī* (*The Book of Roger*), after the Norman king Roger II who hired him to create it. To create the collection, al-Idrisi consulted Arabic and Greek maps and interviewed travelers about the lands they visited. He included these travelers' stories alongside the map illustrations.

Which choice best states the main purpose of the text?

A) To discuss the benefits of studying mapmaking

B) To explain how travelers created maps

C) To describe a collection of medieval maps and how it was created

D) To compare medieval Arabic and Greek mapmaking techniques

9

A study by Dr. Paul Hanel and colleagues concluded that people are more likely to behave politely when listening to ideas they disagree with if they think about values before they engage in a discussion. Study participants were assigned to one of two groups. The experimental group spent a few minutes writing about one of their personal values before they had a group discussion on a controversial topic. And the control group spent a few minutes writing about a drink (tea, milk, etc.) before their group discussion on that topic. Hanel and colleagues found that the experimental group's discussion was more civil than the control group's discussion was.

Which choice best describes the main purpose of the text?

A) To describe a widely held belief and how a study's results support that belief

B) To argue that researchers were surprised by the results of a certain study

C) To suggest ways to improve a certain study's experimental design

D) To explain a study's conclusion and how a research team arrived at that conclusion

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CONTINUE

10

In the 1960s, Chavela Vargas became an unlikely star in ranchera, a style of traditional Mexican music. Most ranchera singers had clear, polished voices and performed with a full band. But Vargas accompanied her raspy voice with just her guitar. Dressed in men's trousers and a poncho, she would perform classic songs that had been written from a male point of view and were usually sung by men. She also altered those songs by performing them much more slowly than other ranchera singers did. The slower tempo allowed her to express the emotional quality of the lyrics more fully.

According to the text, what is one way that Vargas differed from other ranchera singers?

A) She possessed a voice that was clear and polished.

B) She avoided singing songs written from a male point of view.

C) She disliked performing classic songs.

D) She altered classic songs by slowing them down.

11

Archaeologists have discovered a runestone in Norway that may contain the earliest example of written words in Scandinavia. Carbon dating at the discovery site revealed that the stone was likely carved between 1 and 250 CE. Runologist Kristel Zilmer believes the stone will be helpful in learning more about the use of runic alphabets in early Iron Age Scandinavia.

Which choice best states the main topic of the text?

A) Battles of the Iron Age

B) A runestone found in Norway

C) A new method for dating rock samples

D) The research interests of Kristel Zilmer

12

In her 1998 book *Blues Legacies and Black Feminism*, Angela Y. Davis bases her analysis in part on recordings of songs sung in the 1920s by Gertrude "Ma" Rainey and Bessie Smith. Davis focuses on how Rainey and Smith improvised the lyrics—replacing the original lines with mischievous jokes and wordplay. Davis's work was particularly labor intensive because in order to transcribe, or write down, the lyrics as Rainey and Smith sang them, Davis had to listen repeatedly to the vinyl recordings, which weren't very clear.

What does the text most strongly suggest about the songs sung by Rainey and Smith?

A) The songs have grown in popularity since Rainey and Smith first sang them.

B) There were more recordings made of Rainey's songs than there were of Smith's.

C) There were few, if any, reliable transcriptions of Smith's and Rainey's improvised lyrics when Davis began her research.

D) According to Davis, the songs sung by Rainey were more musically innovative than those sung by Smith typically were.

13

Happy House is a 1920 novel by Jane Abbott. The narrator presents a young woman as being unimpressed with the house she is visiting: _____

Which quotation from *Happy House* most effectively illustrates the claim?

A) "Her first feeling was of disappointment; in the square lines of the house there was little claim to beauty."

B) "Someone had opened one of the blinds so here there was more light."

C) "The door, built squarely in the middle of the house, opened almost directly upon a stone-flagged path that led in a straight line to the road."

D) "She tip-toed through the hall and opened the door on the right."

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CONTINUE

14

Ochre sea stars live in tidal pools along the shoreline of the Pacific Ocean. At night, they move to higher shore levels in search of prey. But scientists Corey Garza and Carlos Robles noticed that ochre sea stars stayed at lower levels at night after heavy rains. Garza and Robles hypothesized that a layer of fresh water formed by rainfall was a barrier to the sea stars. To test their hypothesis, the scientists did an experiment. They placed some sea stars in a climbable tank of seawater and other sea stars in a similar tank of seawater with a layer of fresh water on top. Then, the scientists watched the sea stars' behavior at night.

Which finding from the experiment, if true, would most directly support Garza and Robles's hypothesis?

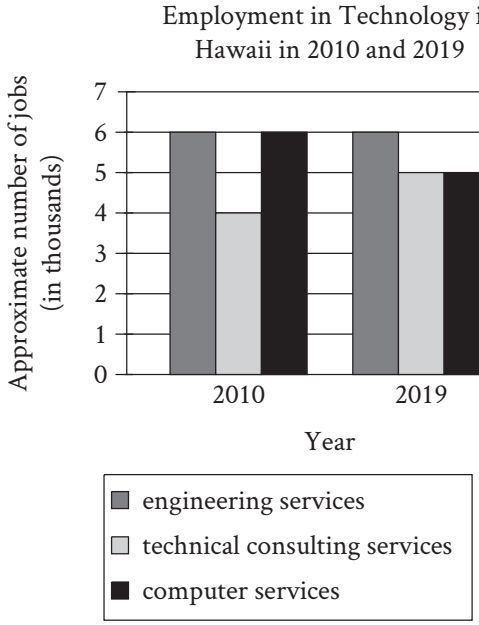
A) None of the sea stars climbed to the tops of the tanks, but sea stars in the tank with only seawater moved around the bottom of the tank more than sea stars in the other tank did.

B) Sea stars in the tank with only seawater climbed to the top of the tank, but sea stars in the other tank stopped climbing just below the layer of fresh water.

C) Both groups of sea stars climbed to the tops of the tanks, but sea stars in the tank with only seawater climbed more slowly than sea stars in the other tank did.

D) Sea stars in the tank with only seawater mostly stayed near the bottom of the tank, but sea stars in the other tank climbed into the layer of fresh water.

15



A student in Hawaii is interested in pursuing a career in technology and decides to do some research on local trends. The student notices that the number of jobs in computer services in 2010 was _____

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

A) higher than the number of jobs in technical consulting services, and in 2019 was about the same as the number of jobs in engineering services.

B) about the same as the number of jobs in engineering services, and in 2019 was about the same as the number of jobs in technical consulting services.

C) lower than the number of jobs in engineering services, but in 2019 was higher than the number of jobs in engineering services.

D) about the same as the number of jobs in technical consulting services, but in 2019 was lower than the number of jobs in technical consulting services.

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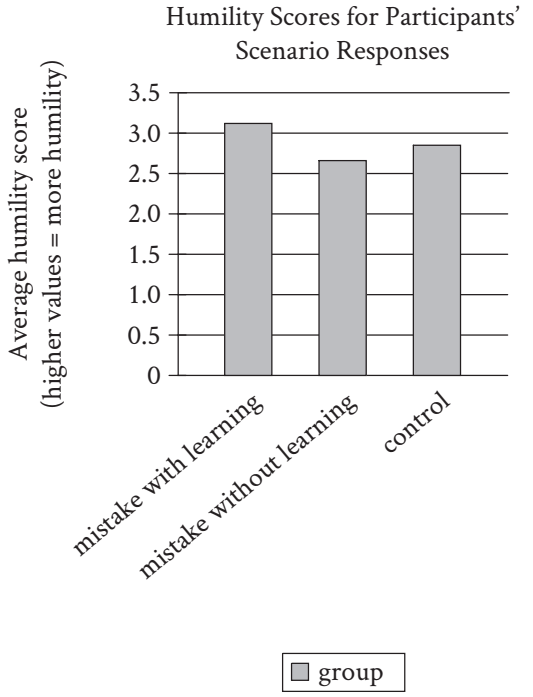
CONTINUE

16



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

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

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

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

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

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

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CONTINUE

17

If an animal has been extinct for a long time, how can scientists learn what color it was? One group of scientists came up with a possible answer. When the scientists examined the fossilized feather of an extinct bird, they found melanosomes in it. Melanosomes produce pigment, or grains of color, inside cells. Because melanosomes are shaped differently depending on which colors they produce, the scientists hypothesized that they could _____

Which choice most logically completes the text?

A) show how melanosomes can be found in fossils belonging to animals from other extinct species.

B) determine the colors of the bird based on the appearance of the melanosomes in the feather.

C) explain why the melanosomes in the feather were so well preserved.

D) identify the colors of extinct animals whose fossils lack melanosomes.

18

Silicon-based photovoltaic cells account for 95% of the cells used in solar panels worldwide despite converting an average of only 18–22% of the sunlight that reaches them. In a study addressing this relative inefficiency, a team led by Laura Miranda-Pérez demonstrated that the addition of a thin layer of the mineral perovskite—which captures the blue range of light in the solar spectrum, whereas silicon captures the red range—allows the cells to convert 29.5% or more of the Sun's energy into usable electricity. Cells made with only perovskite, however, are no more efficient than silicon-based ones. It's reasonable to conclude, then, that _____

Which choice most logically completes the text?

A) photovoltaic cells with both silicon and perovskite are more efficient because they make use of more of the solar spectrum.

B) photovoltaic cells with only perovskite and no silicon would likely convert more than 29.5% of the Sun's energy.

C) solar power will remain elusive until photovoltaic cells are replaced with a more practical technology.

D) researchers need to evaluate whether other minerals like perovskite are as effective as perovskite seems to be.

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CONTINUE

19

In 1953, a fellow performer tripped on legendary jazz musician Dizzy Gillespie's trumpet, bending its bell upward. When Gillespie tested the damaged instrument, he realized that he _____ sound of a bent bell over that of a straight one.

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

A) preferred; the
B) preferred the
C) preferred, the
D) preferred. The

20

From 1912 to 1951, Charlotta Bass owned and operated the newspaper *The California Eagle*. While it was under Bass's leadership, *The Eagle* _____ one of the US's most influential Black-owned newspapers.

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

A) will become
B) became
C) is becoming
D) to become

21

To illustrate Albert Einstein's special theory of relativity, picture two jugglers: one juggling on a steadily moving parade float, the other juggling while standing still on a sidewalk. The laws of physics are identical for both _____ motion relative to each other. But what, Einstein wondered, about the speed of light?

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

A) jugglers', regardless of they're
B) jugglers, regardless of there
C) juggler's, regardless of their
D) jugglers, regardless of their

22

Horsepower is a unit of measurement used to determine how much power a vehicle produces. The measurement is based on how much and how quickly weight can be _____ one unit of mechanical horsepower is equivalent to the amount of power it takes to lift 550 pounds one foot off the ground in one second.

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

A) moved, for example,
B) moved,
C) moved; for example,
D) moved

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CONTINUE

23

Solarpunk is an art movement that imagines renewable energy-powered technology infused complementarily into nature. In Paolo Bacigalupi's solarpunk short story "Efficiency," an artificial intelligence that absorbs sustainable energies, redistributing them through intricate networks of weights and generators, _____ Chicago's energy grid.

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

A) have been powering
B) power
C) powers
D) are powering

24

Butterfly is a 1988 painting by the Japanese artist Ay-O. Like many of Ay-O's paintings, *Butterfly*, which portrays a swimmer performing the butterfly stroke, attempts to make use of the entire visual light _____ sporting rainbow-striped goggles, the rainbow-hued swimmer splashes through a wavy rainbow of water.

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

A) spectrum
B) spectrum:
C) spectrum while
D) spectrum, while

25

The relationship between genomes and epigenomes reveals how cells with identical DNA develop different _____ whereas the genome in each cell contains a complete DNA sequence, the epigenome consists of chemical compounds that determine which traits in the sequence will be expressed.

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

A) functions
B) functions,
C) functions and,
D) functions:

26

In order to create the Global Positioning System (GPS), scientists had to develop an accurate mathematical model of Earth's shape that accounted for various forces, such as tides. _____ it was mathematician Gladys West who wrote the computer program that could perform these necessary calculations.

Which choice completes the text with the most logical transition?

A) Ultimately,
B) In other words,
C) Secondly,
D) In addition,

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CONTINUE

27

In 1942, the 1,500-mile Alaska Highway was constructed in under nine months, largely due to the skilled work of nearly 4,000 African American soldiers from US Army engineering regiments. The soldiers' contribution was overlooked for decades. _____ in 2017, lawmakers declared October 25 a day of recognition—"Alaska Highway Day"—for the troops who helped build this critical roadway.

Which choice completes the text with the most logical transition?

A) Lastly,
B) Then,
C) Similarly,
D) For example,

28

The Coastal Futures Conservatory in Virginia is known for creating aural representations of ecological data. One such effort combines underwater audio recorded in seagrass beds with data that track rising carbon levels in the seagrass. As carbon levels increase, the audio is correspondingly distorted; _____ listeners can "hear" the changes in the carbon levels.

Which choice completes the text with the most logical transition?

A) furthermore,
B) by comparison,
C) for instance,
D) thus,

29

Observing that a fire in a closed container soon went out, leading eighteenth-century scientists did not conclude that fresh air (specifically, oxygen) is necessary for combustion; instead, many theorized that the container's air had become saturated with a substance called phlogiston. _____ when Joseph Priestley first isolated oxygen gas in 1774, he termed it "dephlogisticated air."

Which choice completes the text with the most logical transition?

A) In other words,
B) For this reason,
C) Alternatively,
D) Nevertheless,

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CONTINUE

30

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

- Komodo dragons are the largest lizards in the world.
- They live on four islands in Komodo National Park, Indonesia.
- The park has a total of twenty-nine islands.

The student wants to emphasize how many islands in Komodo National Park have Komodo dragons living on them. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Komodo dragons, the world's largest lizards, live on islands in Komodo National Park, Indonesia.

B) The largest lizards in the world are found in Komodo National Park.

C) Only four of the twenty-nine islands in Komodo National Park have Komodo dragons living on them.

D) There are twenty-nine islands in Indonesia's Komodo National Park.

31

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

- Pointillism is a painting technique in which small, distinct dots of color are applied in patterns to form an image.
- Betty Acquah is an artist from Ghana who uses pointillism in her work.
- "By extending dabs of color in the subject matter into the background and vice-versa, an illusion of movement is created," she says about pointillism.
- Her work often portrays Ghanaian women, whom she sees as the "unsung heroines of the Ghanaian Republic."
- Her pointillist painting "Exquisite" (2016) features five dancing women twirling their skirts.

The student wants to provide a quotation from Acquah that explains why she used pointillism in "Exquisite." Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) In painting "Exquisite," Acquah applied pointillism to create what she called an "illusion of movement" within the painting's five dancing women and their twirling skirts.

B) Pointillism, the technique used in Acquah's "Exquisite," involves the application of small, distinct dots of color.

C) In "Exquisite," Acquah uses a technique that she says involves "extending dabs of color in the subject matter into the background and vice-versa."

D) "Exquisite" portrays Acquah's fellow Ghanaian women as she sees them: the "unsung heroes of the Ghanaian Republic."

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CONTINUE

32

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

- *The Ramayana* is a Sanskrit epic poem from ancient India.
- In *The Ramayana*, the character Kaikeyi is often portrayed as a villain.
- *Kaikeyi* is a 2022 novel by Vaishnavi Patel.
- The novel is a retelling of the epic poem from Kaikeyi's point of view.
- It often portrays Kaikeyi as heroic.

The student wants to emphasize whose point of view the novel is told from. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) From the point of view of *The Ramayana*, the character Kaikeyi is often a villain.

B) Vaishnavi Patel often portrays the character as heroic.

C) *Kaikeyi* is a retelling of *The Ramayana* from the character Kaikeyi's point of view.

D) *The Ramayana* is an epic poem that features the character Kaikeyi.

33

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

- Marcela Guerrero is a curator at the Whitney Museum of American Art in New York.
- She curated the Whitney's 2018 exhibition *Pacha, Llaqta, Wasichay: Indigenous Space, Modern Architecture, New Art.*
- This exhibition featured works by seven emerging Latino artists.
- She curated the Whitney's 2020 exhibition *Vida Americana: Mexican Muralists Remake American Art, 1925–1945.*
- This exhibition included nearly 200 works by twentieth-century Latino and Mexican artists.

The student wants to describe the exhibition that Guerrero curated in 2018. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Held at the Whitney Museum of American Art, the exhibition *Vida Americana: Mexican Muralists Remake American Art, 1925–1945* included nearly 200 works by twentieth-century Mexican and Latino artists.

B) *Pacha, Llaqta, Wasichay: Indigenous Space, Modern Architecture, New Art*, an exhibition at the Whitney Museum of American Art, featured works by seven emerging Latino artists.

C) In both 2018 and 2020, Marcela Guerrero curated exhibitions at the Whitney Museum of American Art in New York.

D) While one exhibition that Marcela Guerrero curated featured works by emerging artists, another included works by twentieth-century artists.

STOP

If you finish before time is called, you may check your work on this module only. Do not turn to any other module in the test.

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Reading and Writing

33 QUESTIONS

DIRECTIONS

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1

A unique dialect, or regional variety, of Spanish is spoken in Puerto Rico. It contains many words borrowed from the language of the Taínos, the Indigenous people of Puerto Rico. African languages also made important contributions to the Puerto Rican dialect. For example, the way certain vowel sounds are pronounced in it can be _____ to how they are pronounced in Yoruba, a West African language.

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

A) traced
B) surrendered
C) announced
D) offered

2

The Menominee and Anishinaabe peoples have been growing wild rice—known as *manoomin* in the Ojibwe language—in the Great Lakes region of North America for centuries, but climatic changes are causing lakes to get deeper, thereby threatening wild rice. These plants are extremely _____ to water depth during the "floating leaf" stage of development, and if the water is too deep, the buoyancy of the young wild-rice plants can literally uproot them from the lake bottom, destroying them.

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

A) immune
B) sensitive
C) limited
D) receptive

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CONTINUE

3

The invention in 1958 of the integrated circuit (or microchip) radically altered the semiconductor industry. In fact, some historians argue that it fundamentally _____ the industry by enabling it to take advantage of mass production methods for the first time.

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

A) overwhelmed
B) bypassed
C) obstructed
D) transformed

4

The early British postal system required the cost of mail delivery to be paid upon receipt, a system which encouraged inventive strategies by the intended recipient to avoid payment. To improve this system, _____ were proposed in 1837, including the use of a postage stamp, a small receipt pasted to the mail indicating that delivery costs had been paid by the sender.

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

A) investigations
B) expansions
C) reforms
D) possessions

5

Economist Jingting Fan argues that the effects of international trade may display spatial variation at sub-national levels. For instance, imported goods may reduce expenses for a country's average consumer, but for consumers living far from ports, high intranational transport costs could _____ the price advantages associated with imports.

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

A) nullify
B) denigrate
C) underestimate
D) misconstrue

6

The following text is from the 1895 poem "Marshlands" by Emily Pauline Johnson, a Kanienkahagen (Mohawk) writer also known as Tekahionwake.

> Among the wild rice in the still lagoon,
> In monotone the lizard shrills his tune.
> The wild goose, homing, seeks a sheltering,
> Where rushes grow, and oozing lichens cling.
> Late cranes with heavy wing, and lazy flight,
> Sail up the silence with the nearing night.
> And like a spirit, swathed in some soft veil,
> Steals twilight and its shadows o'er the swale.
> Hushed lie the sedges, and the vapours creep,
> Thick, grey and humid, while the marshes sleep.

Which choice best describes the overall structure of the text?

A) It names animal species found in a place, then names plant species there.
B) It sketches a setting by presenting a series of images of nature.
C) It makes an extended comparison of nature to human emotions.
D) It identifies a location, then refers to a person living there.

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7

The following text is from Annie Dillard's 1987 autobiographical novel *An American Childhood*. The narrator is a young girl living in Pittsburgh.

> I walked. My mother had given me the freedom of the streets as soon as I could say our telephone number. I walked and memorized the neighborhood. I made a mental map and located myself upon it. At night in bed I rehearsed the small world's scheme and set challenges: Find the store using backyards only. Imagine a route from the school to my friend's house.
>
> ©1987 by Annie Dillard

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

A) It describes the narrator trying to memorize her telephone number.

B) It provides examples of what the narrator thinks about at night.

C) It gives directions to the narrator's favorite local store.

D) It portrays the narrator's relationship with her mother.

8

Asteroid 6478 Gault has experienced intermittent mass loss since at least 2013, but in contrast to some other asteroids with repeated mass-loss episodes, 6478 Gault has not lost mass at its perihelion (the closest point of its orbit to the Sun), and thus the loss is not attributable to solar energy–driven ice vaporization. And as Jane X. Luu et al. point out, the singular nature of impact ejection makes it untenable as an account of multiple loss episodes of similar duration over several years. Instead, Luu et al. are likely correct that 6478 Gault is shedding mass due to rotational instability.

Which choice best describes the overall structure of the text?

A) It presents a scientific observation, describes a contrast between that observation and other observations, and then explains why those other observations should not be considered credible.

B) It describes an astronomical finding, discusses competing theories about that finding that the author regards as flawed, and then describes new evidence that supports an alternative theory.

C) It introduces a natural phenomenon, refutes two potential explanations for that phenomenon, and then presents a third explanation for that phenomenon that the author regards as plausible.

D) It discusses a physical process, evaluates possible causes of that process, and then states that a persuasive account of the process has yet to be put forward.

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CONTINUE

9

Text 1

Mycoprotein is a fungal biomass that can be eaten as an alternative to meat. Studies of the environmental impact of its manufacture generally agree it is lower than that of beef and closer to that of chicken or pork. But the expense of producing mycoprotein restricts its availability to a few countries with postindustrial economies. Knowing that cost reductions would expand access to mycoprotein, biochemists are exploring solutions, such as a cheaper substrate to feed the mycoprotein as it grows.

Text 2

Cattle farming is a principal cause of global deforestation, and a study by Florian Humpenöder and his colleagues found that replacing 20% of beef consumption worldwide with consumption of mycoprotein would cut deforestation by half if accomplished over the next thirty years. However, this would likely involve only a small change in agricultural water consumption, since water once dedicated to raising cattle would be diverted to raising crops instead.

Based on the texts, how would the author of Text 1 most likely respond to the study findings mentioned in Text 2?

A) By emphasizing that since agricultural water consumption would remain static in the event of replacing beef consumption with mycoprotein consumption, an effort must be made to substitute mycoprotein for chicken and pork in diets as well

B) By asserting that the development of a more inexpensive substrate for mycoprotein production would contribute to the goal of decreasing worldwide deforestation over time

C) By noting that most people would be more likely to use mycoprotein as a substitute for chicken or pork in their diets than as a substitute for beef

D) By pointing out that some countries are responsible for greater deforestation than others and thus, to have any significant effect on the environment, will have to replace more than 20% of their beef consumption with mycoprotein

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CONTINUE

10

When fashion designer Lloyd Henri Kiva New opened his store in Scottsdale, Arizona, in 1945, he quickly became known for creating delicately crafted leather goods, like belts and hats. He was perhaps most renowned for his colorful handbags, which he made by hand using a long and painstaking process. As he gained more customers, New began using sewing machines and other tools to help him produce bags more efficiently, though he continued to handcraft the crucial details that made each bag unique.

Based on the text, what would have been the most likely consequence if New had not begun using sewing machines?

A) He would have been unable to ensure that each bag included unique, handcrafted details.

B) He would have struggled to meet the increasing demand for his bags.

C) He would have had to individually design each bag he produced.

D) He would not have been able to generate as much interest in his bags.

11

The following text is from Anton Chekhov's 1898 short story "Ionitch" (translated by Marian Fell in 1915). The text is set in a Russian city referred to as the city of S.

> If newcomers to the little provincial city of S. complained that life there was monotonous and dull, its inhabitants would answer that, on the contrary, S. was a very amusing place, indeed, that it had a library and a club, that balls were given there, and finally, that very pleasant families lived there with whom one might become acquainted. And they always pointed to the Turkins as the most accomplished and most enlightened family of all.

What does the text suggest about the Turkins?

A) They are relative newcomers to the city of S.

B) They have a unique status in the city of S.

C) They have long disliked living in the city of S.

D) They are amused by the other residents of the city of S.

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CONTINUE

12

The following text is from Milan Kundera's 1984 novel *The Unbearable Lightness of Being* (translated by Michael Henry Heim in 1984). Karenin is a dog that belongs to Tomas and Tereza.

> Karenin was not overjoyed by the move to Switzerland [from Prague]. Karenin hated change. Dog time cannot be plotted along a straight line; it does not move on and on, from one thing to the next. It moves in a circle like the hands of a clock, which—they, too, unwilling to dash madly ahead—turn round and round the face, day in and day out following the same path. In Prague, when Tomas and Tereza bought a new chair or moved a flower pot, Karenin would look on in displeasure. It disturbed his sense of time. It was as though they were trying to dupe the hands of the clock by changing the numbers on its face.

©1984 by Milan Kundera. Translation ©1984 by Harper & Row, Publishers, Inc.

Which choice best states the main idea of the text?

A) As a dog, Karenin possesses a sense of time that involves a strong preference for predictability and an aversion to disruption.

B) After he's moved to a new home, Karenin's negative response to changes has become more pronounced.

C) Similar to Tomas and Tereza, Karenin comprehends time as circular rather than as a straightforward progression.

D) As is the case for other dogs, Karenin's sense of time seems to accelerate depending on the objects and places that surround him.

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CONTINUE

13

Incorporated and Unincorporated Self-Employment Rates in Four Occupational Fields, 2015

Occupational field	Incorporated self-employment rate	Unincorporated self-employment rate
Construction and resource extraction	4.4%	14.8%
Installation, maintenance, and repair	2.7%	6.2%
Management, business, and financial services	8.9%	9.7%
Sales and related	5.8%	7.8%

Self-employed workers—individuals who are not employees of other individuals or businesses but instead earn their income as business owners, independent contractors, or freelance workers—make up an important part of the US labor force. In order to receive legal and tax benefits enjoyed by corporations, self-employed individuals may choose to incorporate their business. A 2015 survey of incorporated and unincorporated self-employment rates in four occupational fields showed that the highest incorporated self-employment rate occurred among people working in _____

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

A) sales and related occupations.

B) installation, maintenance, and repair occupations.

C) construction and resource extraction occupations.

D) management, business, and financial services occupations.

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CONTINUE

14

There Is Confusion is a 1924 novel by Jessie Redmon Fauset. In the novel, the narrator portrays the character Joanna as someone who admires ambition in other people to the exclusion of all other qualities:

_____

Which quotation from *There Is Confusion* most effectively illustrates the claim?

A) "Joanna was mightily interested in people who had a 'purpose' in life. Otherwise not at all."

B) "Indeed from the very beginning Joanna showed her preference for her father."

C) "Joanna was like her father not only so far as ambition was concerned but also in her willingness to work."

D) "She had a good sense of logic, a strong power of concentration, and a remarkably retentive and visualizing memory."

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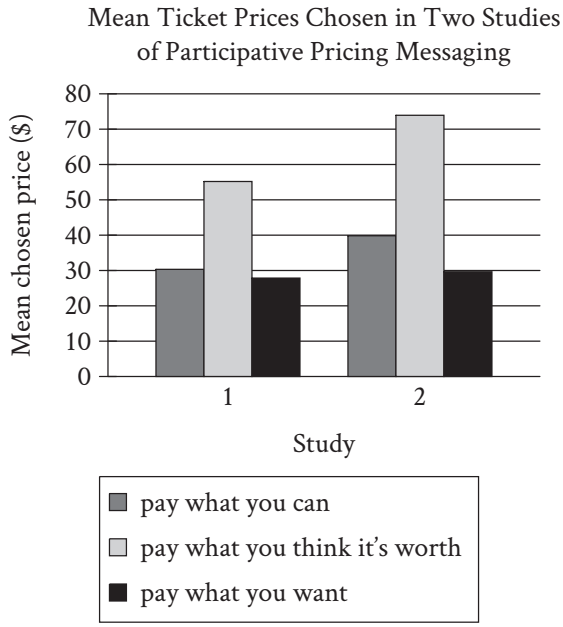
CONTINUE

15



Participative pricing, in which purchasers choose the prices they pay for products, can enable sellers to capitalize on the heterogeneous values consumers assign to the same goods and services, but doing so requires careful messaging. Annie Peng Cui and Jennifer Wiggins recruited 171 participants (ages 18–60) online for an initial study and 83 students (ages 18–31) at a state university for a second study to test the effect of three different messages—"pay what you can," "pay what you think it's worth," and "pay what you want"—on how much participants would pay for concert tickets. Their results illustrate both the heterogeneity of consumer valuations and how sellers can benefit by prompting consumers to consider their own valuations: _____

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

A) the students tended to value the concert tickets more highly than did the more age-diverse group recruited online, but when considering what they could afford to pay, the students tended to choose a lower price than did the other group.

B) in all three messaging conditions, the group of participants recruited online tended to choose lower prices than did the students, but both groups tended to choose prices closest to the actual cost of the tickets when prompted to consider the tickets' value.

C) the students tended to value the concert tickets more highly than did the more age-diverse group recruited online, but both groups tended to choose a higher price when considering the value of the tickets than when considering what they could afford or wanted to pay.

D) within each group of participants, there was wide variation in the value that individuals assigned to the concert tickets, but the students tended to assign a higher value to the tickets than did the more age-diverse group recruited online.

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CONTINUE

16

Initially observed in 2017, the interstellar object ‘Oumuamua is the first object of its kind to be seen in our solar system. Researchers have been puzzled because its acceleration cannot be entirely explained by the gravitational pull of nearby bodies: there must be a nongravitational influence on its velocity and trajectory. Some previously suggested explanations for this nongravitational acceleration involve mechanisms that are unlikely or unrealistic, such as geometric effects from ‘Oumuamua being potentially composed of several spatially separated bodies. Now, Jennifer Bergner and colleagues propose that the nongravitational acceleration is due to the gaseous expulsion of entrapped hydrogen from ‘Oumuamua’s water-rich icy body.

Which statement, if true, would most strongly support the claim made by Bergner and colleagues about the cause of ‘Oumuamua’s acceleration?

A) Existing proposed models of outgassing from ‘Oumuamua include the direct conversion of nitrogen or carbon monoxide from a solid to a gaseous state without becoming liquid, but these models have theoretical or observational inconsistencies.

B) ‘Oumuamua’s trajectory is inconsistent with a nongravitational acceleration that would be caused by the release of hydrogen gas resulting from the processing of water ice (H_2O), but the interstellar object’s observable properties can be explained if it has a significant component of molecular hydrogen ice (H_2).

C) Since nongravitational accelerations of interstellar objects are several orders of magnitude weaker than gravitational accelerations, deviation from behavior that could be fully attributed to gravitational pull has been detected on a limited number of objects similar to ‘Oumuamua.

D) Exposure to interstellar cosmic radiation can result in the formation of embedded pockets of hydrogen gas in water ice; moreover, when traveling through the solar system, ‘Oumuamua experienced warming sufficient to alter its icy structure and allow for outgassing.

17

A main goal of the Association for the Advancement of Creative Musicians (AACM), an arts organization founded in 1965, is to advance new works by Black musicians. The AACM achieves this goal in part by focusing on young artists. By having established musicians and composers serve as mentors, the AACM gives young artists the benefits of expert technical training and creative guidance. Numerous organizations offer similar kinds of support to new generations of painters, writers, and other artists, suggesting that _____

Which choice most logically completes the text?

A) artists of all ages benefit more from technical training than from creative guidance.

B) many arts organizations recognize the importance of providing opportunities for young artists to learn from experienced mentors.

C) most established artists could become even better artists by serving as mentors.

D) finding a mentor is more important for musicians than it is for painters, writers, and other types of artists.

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CONTINUE

18

Overgrazing by purple sea urchins has caused many kelp forests along North America's west coast to be replaced by urchin barrens—areas stripped of vegetation and covered in purple sea urchins. Urchins in barrens persist in a state of starvation that lessens their nutritional value—and thus their appeal—to many predators. Sarah Gravem and colleagues placed sunflower sea stars, a once-abundant predator species suffering massive population declines in recent years, in aquariums that each contained a nutritionally poor and a nutritionally rich purple sea urchin. The researchers found that the sea stars selected the nutritionally rich urchin in 42.7% of trials and the nutritionally poor urchin in 37.5% of trials, suggesting that _____

Which choice most logically completes the text?

A) sunflower sea stars are willing to hunt sea urchins, but if given a choice, they will prey on other more nutritious marine animals instead.

B) sunflower sea stars are reluctant to feed on both nutritionally poor and nutritionally rich sea urchins and are therefore unlikely to thrive in kelp forests.

C) sunflower sea stars are less likely to consume sea urchins in barrens than other species of sea stars are, putting sunflower sea stars at a high risk of extinction.

D) sunflower sea stars do not always avoid foraging on nutritionally poor sea urchins, making sunflower sea star population recovery a potentially important tool for controlling urchin barrens.

19

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

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

A) are

B) have been

C) are being

D) is

20

Light of Truth is a bronze and marble sculpture by artist Richard Hunt. It honors civil rights icon Ida B. Wells. The sculpture _____ in a tree-lined plaza in Chicago, just a few blocks from where Wells lived.

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

A) are standing

B) have been standing

C) stands

D) were standing

21

The short story "Rogue Enchantments" by Isabel Ibañez appears in *Reclaim the* _____ anthology of fantasy and science fiction written by authors of Latin American descent.

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

A) *Stars*. An

B) *Stars*, while an

C) *Stars* an

D) *Stars*, an

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CONTINUE

22

Novelist Jane Austen greatly admired the work of Fanny Burney, a popular English author. In fact, scholars believe that a passage from the last chapter of *Cecilia*, a 1782 novel by Burney, likely inspired the title of one of _____ *Pride and Prejudice*.

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

A) Austen's most famous novels,
B) Austens' most famous novels',
C) Austens most famous novels,
D) Austen's most famous novel's,

23

Customers who are satisfied with how a company resolves a service issue may regard that company more positively than they would if no such issue had occurred. This idea is known as the service recovery _____ research suggests that it has important implications for customer loyalty and retention.

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

A) paradox,
B) paradox
C) paradox, and
D) paradox and,

24

It can take time for proposed amendments to the US Constitution to become law. For example, the Twenty-Second Amendment, which limits the number of _____ can serve, was first proposed in 1947 but wasn't approved by the required three-fourths majority of state legislatures until 1951.

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

A) terms presidents
B) term's presidents
C) term's president's
D) terms president's

25

Tortoises can be found in many works of literature. For example, in Tom Stoppard's 1993 play *Arcadia*, there is a tortoise that _____ by two names (Plautus and Lightning) and appears in both of the play's parallel timelines. As a character, the tortoise symbolizes the connection between the past and present.

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

A) goes
B) will have gone
C) went
D) had gone

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CONTINUE

26

By analyzing the level of radioactive decay within a fossil specimen, scientists can establish the age of that fossil with a high degree of precision. When radioactive elements aren't present, scientists turn to _____ analysis of Earth's sediment layers (strata)—to estimate how old a fossil is based on the age of the strata in which the fossil is found.

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

A) stratigraphy—the
B) stratigraphy (the
C) stratigraphy: the
D) stratigraphy, the

27

In modern plays, actors typically won't acknowledge the _____ do so breaks the fourth wall, a metaphorical barrier between actors and audiences that allows viewers to suspend the knowledge that they're watching a staged performance.

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

A) audience. As to
B) audience to
C) audience. To
D) audience, to

28

Paleontologists once thought that early apes lived in tropical forests, but recent research suggests that they may have actually lived in savannas. Tropical forests are humid and have many trees spaced close together. _____ savannas are drier, and their trees are spaced further apart.

Which choice completes the text with the most logical transition?

A) For instance,
B) In comparison,
C) Firstly,
D) In conclusion,

29

When sculptor Frédéric Auguste Bartholdi was designing the Statue of Liberty, he sought the advice of engineer Gustave Eiffel. Eiffel suggested that he make the statue's arm thick and position it straight above the figure's head. _____ Bartholdi decided to slim the arm and tilt it out at an angle.

Which choice completes the text with the most logical transition?

A) Additionally,
B) Instead,
C) Thus,
D) For example,

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CONTINUE

30

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

- Some atoms contain an excess of neutrons.
- Often, these neutrons form a "skin" on the atom's surface.
- An atom of lead-208 has a neutron skin.
- The thickness of its neutron skin is approximately 0.28 trillionths of a millimeter.

The student wants to emphasize the thickness of lead-208's neutron skin. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) The neutron skin surrounding an atom of lead-208 measures about 0.28 trillionths of a millimeter.

B) Atoms with excess neutrons will often acquire a neutron skin.

C) An atom of lead-208, like some other atoms, is surrounded by a neutron skin.

D) Neutrons surround the surface of an atom of lead-208.

31

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

- Some animals have evolved to physically resemble another animal, plant, or object.
- This is known as mimicry.
- Crab spiders mimic the appearance of flowers.
- This helps crab spiders ambush their prey.
- Katydids mimic the appearance of leaves.
- This helps katydids hide from their predators.

The student wants to emphasize a difference in how katydids and crab spiders use mimicry. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Katydids mimic the appearance of flowers, and crab spiders mimic that of leaves.

B) Katydids and crab spiders are two examples of animals that use mimicry.

C) Unlike crab spiders, which use mimicry to ambush prey, katydids use mimicry to hide from predators.

D) Animals that use mimicry have evolved to resemble another animal, plant, or object.

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CONTINUE

32

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

- *Here I Have Returned* is a sculpture by Egyptian American artist Sherin Guirguis.
- It is a large, curved strip of wood inspired by the shape of a sistrum.
- A sistrum is a curved musical instrument played by ancient Egyptian priestesses in ceremonies.
- Guirguis says that the sculpture symbolizes "women who have lifted and supported Egyptian society and culture."
- Overall, Guirguis wants her works to "engage audiences in a dialogue about power, agency, and social transformation."

The student wants to use a quotation from Guirguis to explain what the sculpture represents. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Guirguis, whose works include a sculpture that is a large, curved strip of wood, has explained that she wants her work to create a dialogue with audiences.

B) Inspired by the sistrum played by Egyptian priestesses, *Here I Have Returned* symbolizes "women who have lifted and supported Egyptian society and culture," according to Guirguis.

C) According to Guirguis, the curved strip of wood used in *Here I Have Returned* was inspired by the sistrum, a musical instrument played by ancient Egyptian priestesses in ceremonies.

D) Guirguis, the sculptor of *Here I Have Returned*, wants her works to "engage audiences in a dialogue about power, agency, and social transformation."

33

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

- A sestina is a thirty-nine-line poetic form.
- Each line of the poem ends with one of six end words, which alternate according to a set pattern.
- "Forage Sestina" is a sestina by Marilyn Hacker.
- Its end words are *words*, *structure*, *wire*, *beam*, *wall*, and *room*.
- "Towards Autumn" is a sestina by Marilyn Hacker.
- Its end words are *daughter*, *friend*, *bread*, *mother*, *lover*, and *myself*.

The student wants to use one of the poems to illustrate the sestina form. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Hacker employs the sestina, a poetic form with thirty-nine lines and six end words, in both "Forage Sestina" and "Towards Autumn."

B) As a sestina, "Towards Autumn" contains thirty-nine lines and six end words—in this case, *daughter*, *friend*, *bread*, *mother*, *lover*, and *myself*—that alternate in a set pattern.

C) The thirty-nine-line sestina form uses the words *daughter*, *friend*, *bread*, *mother*, *lover*, and *myself*, which are found in the poem "Forage Sestina."

D) Hacker has used the sestina form multiple times, as in "Towards Autumn," which contains these six words: *words*, *structure*, *wire*, *beam*, *wall*, and *room*.

STOP

If you finish before time is called, you may check your work on this module only.
Do not turn to any other module in the test.

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No Test Material On This Page

Math

27 QUESTIONS

DIRECTIONS

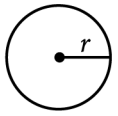
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

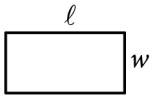
Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

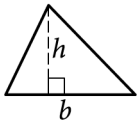
REFERENCE



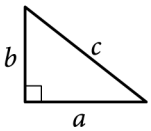
$A = \pi r^2$
$C = 2\pi r$



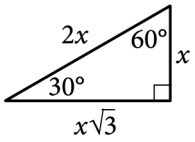
$A = \ell w$

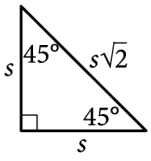


$A = \frac{1}{2}bh$

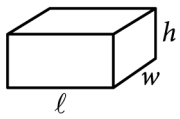


$c^2 = a^2 + b^2$

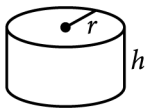




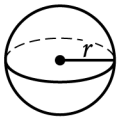
Special Right Triangles



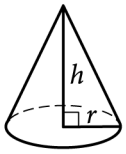
$V = \ell wh$



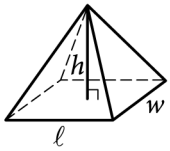
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



$V = \frac{1}{3}\pi r^2 h$



$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π.

The sum of the measures in degrees of the angles of a triangle is 180.

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CONTINUE

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

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CONTINUE

1

$$|x + 45| = 48$$

What is the positive solution to the given equation?

A) 3

B) 48

C) 93

D) 96

2

$$x = 4$$
$$y = 5 - x$$

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

A) 1

B) 4

C) 5

D) 9

3

A mixture consisting of only vitamin D and calcium has a total mass of 150 grams. The mass of vitamin D in the mixture is 50 grams. What is the mass, in grams, of calcium in the mixture?

A) 200

B) 150

C) 100

D) 50

4

A contract for a certain service requires a onetime activation cost of $35 and a monthly cost of $23. Which equation represents this situation, where c is the total cost, in dollars, of this service contract for t months?

A) $c = \frac{t}{23} + 35$

B) $c = \frac{t}{35} + 23$

C) $c = 23t + 35$

D) $c = 35t + 23$

5

The function f is defined by $f(x) = 3x - 8$. What is the value of $f(7)$?

A) 29

B) 13

C) −5

D) −29

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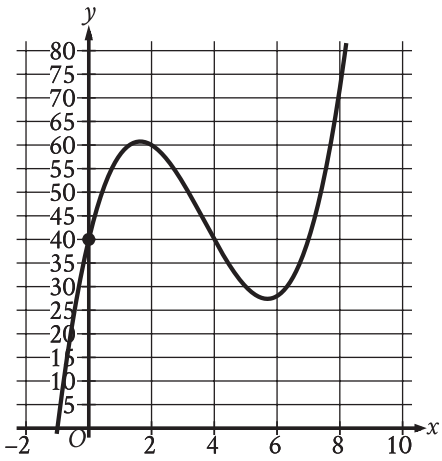
CONTINUE

6



The y-intercept of the graph shown is (x, y). What is the value of y ?

7

$$8x - 7x + 130 = 260$$

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

8

A geologist needs to collect at least 67 samples of lava from a volcano. If the geologist has already collected 63 samples from the volcano, what is the minimum number of additional samples the geologist needs to collect?

A) 130

B) 63

C) 4

D) 0

9

Each of 157 gemstones can be classified as one of three classifications, as shown in the frequency table.

Classification	Frequency
color X	119
color Y	3
color Z	35

If one of the gemstones is selected at random, what is the probability of selecting a gemstone of color Y?

A) $\frac{3}{157}$

B) $\frac{35}{157}$

C) $\frac{119}{157}$

D) $\frac{154}{157}$

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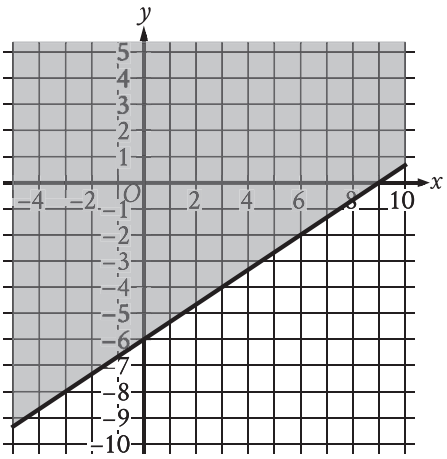
CONTINUE

10



The shaded region shown represents the solutions to which inequality?

A) $y \geq \frac{2}{3}x - 6$

B) $y \geq \frac{2}{3}x + 6$

C) $y \geq \frac{2}{3}x - 9$

D) $y \geq \frac{2}{3}x + 9$

11

In triangle ABC, $AB = 4{,}680$ millimeters (mm) and $BC = 4{,}680$ mm. Which statement is sufficient to prove that triangle ABC is equilateral?

A) $AC = 4{,}680$ mm

B) $AC = 468$ mm

C) $AC = 46.8$ mm

D) $AC = 4.68$ mm

12

$$P(t) = 24.8(1.036)^t$$

The function P gives the predicted population, in millions, of a certain country for the period from 1984 to 2018, where t is the number of years after 1984. According to the model, what is the best interpretation of the statement "$P(8)$ is approximately equal to 32.91"?

A) In 1984, the predicted population of this country was approximately 8 million.

B) In 1984, the predicted population of this country was approximately 32.91 million.

C) 8 years after 1984, the predicted population of this country was approximately 32.91 million.

D) 32.91 years after 1984, the predicted population of this country was approximately 8 million.

13

A right circular cylinder has a volume of 377 cubic centimeters. The area of the base of the cylinder is 13 square centimeters. What is the height, in centimeters, of the cylinder?

14

The list gives the mass, in grams, of 5 alpine marmots.

4,010; 4,010; 3,030; 4,050; 3,050

What is the mean mass, in grams, of these 5 alpine marmots?

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CONTINUE

15

$$x = 3$$
$$y = (15 - x)^2$$

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

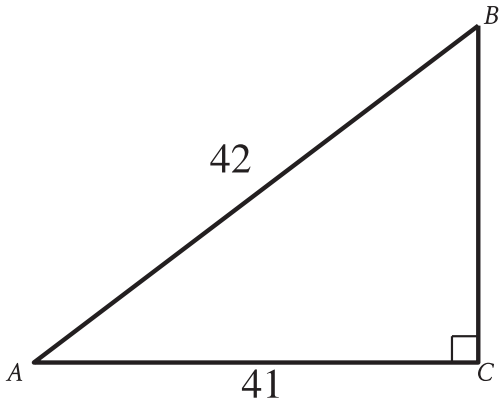
A) 432

B) 54

C) 45

D) 18

16



Note: Figure not drawn to scale.

What is the value of $\cos A$ in the triangle shown?

A) $\frac{42}{41}$

B) $\frac{41}{42}$

C) $\frac{1}{42}$

D) $\frac{1}{41}$

17

A circle has a radius of 43 meters. What is the area, in square meters, of the circle?

A) $\frac{43\pi}{2}$

B) 43π

C) 86π

D) $1{,}849\pi$

18

An object has a mass of 168 grams and a volume of 24 cubic centimeters. What is the density, in grams per cubic centimeter, of the object?

A) 7

B) 144

C) 192

D) 4,032

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CONTINUE

19

A company has a newsletter. In January 2018, there were 1,300 customers subscribed to the newsletter. For the next 24 months after January 2018, the total number of customers subscribed to the newsletter each month was 7% greater than the total number subscribed the previous month. Which equation gives the total number of customers, c, subscribed to the company's newsletter m months after January 2018, where $m \leq 24$?

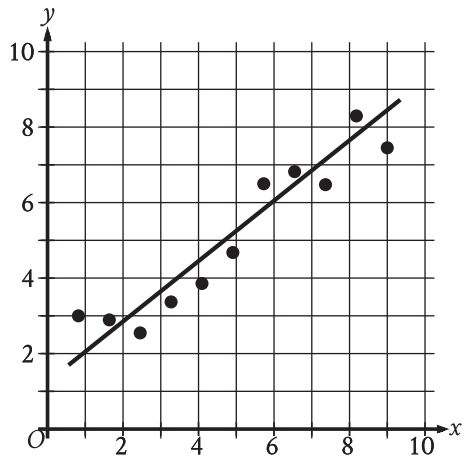
A) $c = 1{,}300(0.07)^m$

B) $c = 1{,}300(1.07)^m$

C) $c = 1{,}300(1.7)^m$

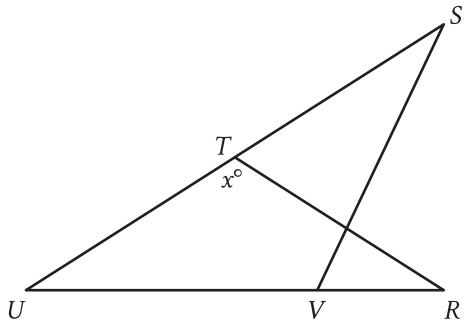
D) $c = 1{,}300(7)^m$

20



The scatterplot shows the relationship between two variables, x and y. A line of best fit is also shown. For how many of the 11 data points does the line of best fit predict a greater y-value than the actual y-value?

21



Note: Figure not drawn to scale.

In the figure, $RT = TU$, the measure of angle VST is 29°, and the measure of angle RVS is 41°. What is the value of x ?

22

$$-12x + 14y = 36$$
$$-6x + 7y = -18$$

How many solutions does the given system of equations have?

A) Exactly one

B) Exactly two

C) Infinitely many

D) Zero

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CONTINUE

23

The expression $0.35x$ represents the result of decreasing a positive quantity x by what percent?

A) 3.5%

B) 35%

C) 6.5%

D) 65%

24

Objects R and S each travel at a constant speed. The speed of object R is half the speed of object S. Object R travels a distance of $4x$ inches in y seconds. Which expression represents the time, in seconds, it takes object S to travel a distance of $24x$ inches?

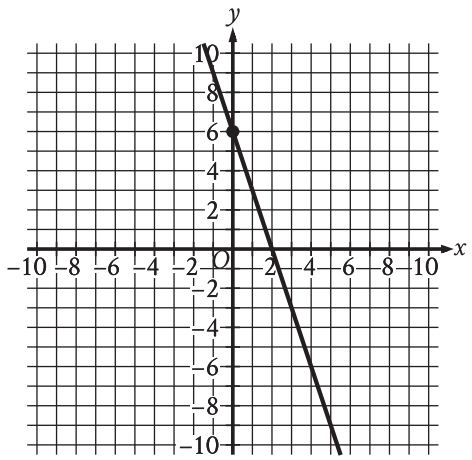
A) $12y$

B) $3y$

C) $16y$

D) $6y$

25



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

A) $Rx + 18y = 36$

B) $Rx - 18y = -36$

C) $18x + Ry = 36$

D) $18x - Ry = -36$

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CONTINUE

26

A sample of a certain alloy has a total mass of 50.0 grams and is 50.0% silicon by mass. The sample was created by combining two pieces of different alloys. The first piece was 30.0% silicon by mass and the second piece was 80.0% silicon by mass. What was the mass, in grams, of the silicon in the second piece?

A) 9.0

B) 16.0

C) 20.0

D) 30.0

27

The product of two positive integers is 462. If the first integer is 5 greater than twice the second integer, what is the smaller of the two integers?

STOP

If you finish before time is called, you may check your work on this module only.
Do not turn to any other module in the test.

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No Test Material On This Page

Math

27 QUESTIONS

DIRECTIONS

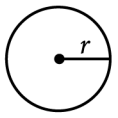
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

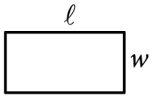
Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

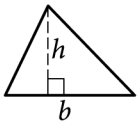
REFERENCE



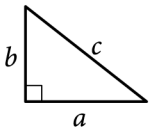
$A = \pi r^2$
$C = 2\pi r$



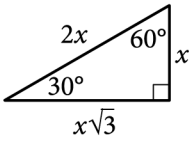
$A = \ell w$

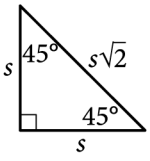


$A = \frac{1}{2}bh$

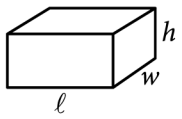


$c^2 = a^2 + b^2$

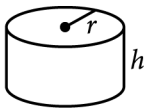




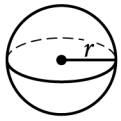
Special Right Triangles



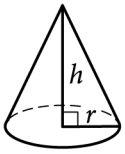
$V = \ell wh$



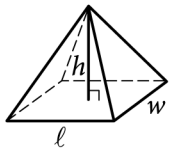
$V = \pi r^2 h$



$V = \frac{4}{3}\pi r^3$



$V = \frac{1}{3}\pi r^2 h$



$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π.

The sum of the measures in degrees of the angles of a triangle is 180.

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CONTINUE

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

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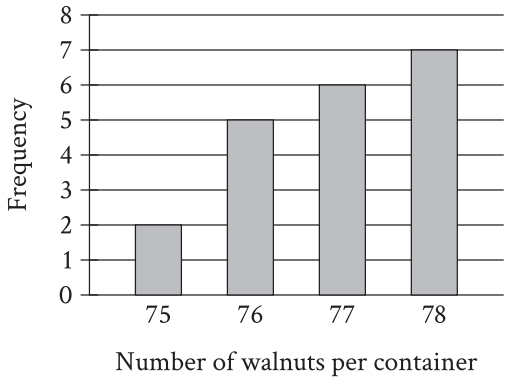
CONTINUE

1

The bar graph shows the distribution of the number of walnuts per container for 20 containers at a grocery store.



How many of these containers of walnuts contain exactly 78 walnuts?

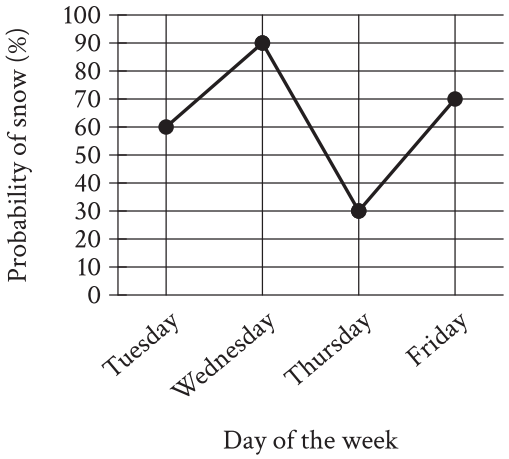
A) 2

B) 7

C) 20

D) 78

2



The line graph shows the probability of snow, as a percent, at a certain location for each day during a four-day period. According to the line graph, for which day during this four-day period is the probability of snow 30%?

A) Tuesday

B) Wednesday

C) Thursday

D) Friday

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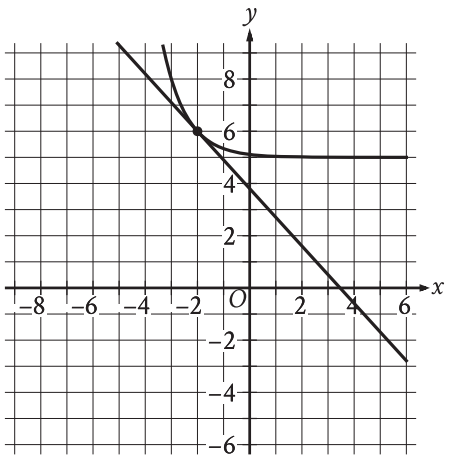
CONTINUE

3



The graph of a system of a linear equation and a nonlinear equation is shown. What is the solution (x, y) to this system?

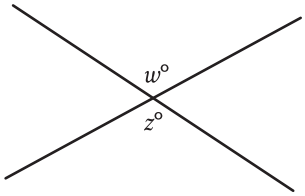
A) $(6, 0)$

B) $(-2, 6)$

C) $(0, -2)$

D) $(0, 0)$

4



Note: Figure not drawn to scale.

In the figure, two lines intersect at a point. If $w = 136$, what is the value of z ?

A) 36

B) 44

C) 68

D) 136

5

Which expression is equivalent to $19(x^2 - 7)$?

A) $19x^2 - 133$

B) $19x^2 - 26$

C) $19x^2 - 7$

D) $19x^2 + 12$

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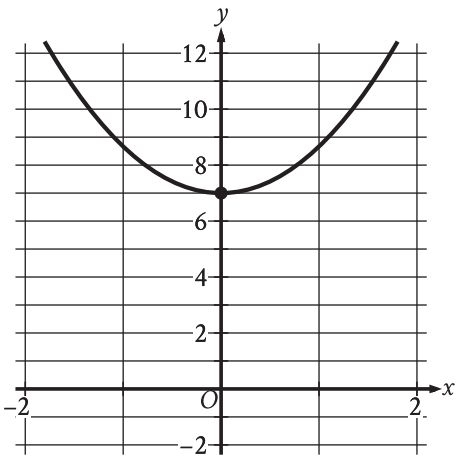
CONTINUE

6



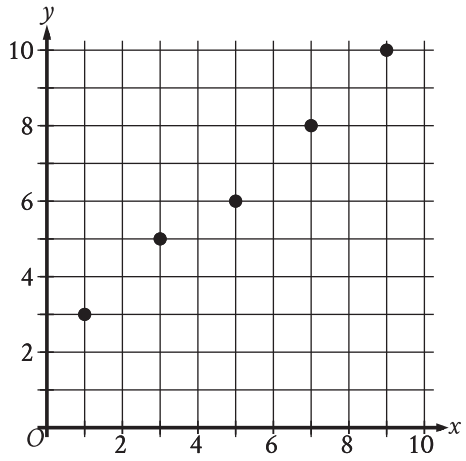
The parabola shown intersects the y-axis at the point (x, y). What is the value of y ?

7

If $2x + 3 = 9$, what is the value of $6x - 1$?

8

The scatterplot shows the relationship between two variables, x and y.



Which equation is the most appropriate linear model for this relationship?

A) $y = -0.9x - 2.2$

B) $y = -0.9x + 2.2$

C) $y = -0.9x$

D) $y = 0.9x + 2.2$

9

$$d = 16 - \frac{x}{30}$$

The equation shown gives the estimated amount of diesel d, in gallons, that remains in the gas tank of a truck after being driven x miles, where $0 \leq x \leq 480$. What is the estimated amount of diesel, in gallons, that remains in the gas tank of the truck when $x = 300$?

A) 0

B) 6

C) 14

D) 16

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CONTINUE

10

$$g(x) = 11x + 4$$

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

A)

x	$g(x)$
−1	7
0	11
1	15

B)

x	$g(x)$
−1	−4
0	0
1	4

C)

x	$g(x)$
−1	−7
0	4
1	15

D)

x	$g(x)$
−1	−11
0	0
1	11

11

The pressure exerted on a scuba diver at sea level is 14.70 pounds per square inch (psi). For each foot the scuba diver descends below sea level, the pressure exerted on the scuba diver increases by 0.44 psi. What is the total pressure, in psi, exerted on the scuba diver at 105 feet below sea level?

A) 60.90

B) 31.50

C) 14.70

D) 0.44

12

The function f is defined by $f(x) = 4x^{-1}$. What is the value of $f(21)$?

A) −84

B) $\frac{1}{84}$

C) $\frac{4}{21}$

D) $\frac{21}{4}$

13

The area of a rectangle is 57 square inches. The length of the longest side of the rectangle is 19 inches. What is the length, in inches, of the shortest side of this rectangle?

14

How many yards are equivalent to 77 rods? (5.5 yards = 1 rod)

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CONTINUE

15

$$x^2 - 12x + 27 = 0$$

How many distinct real solutions does the given equation have?

A) Exactly two

B) Exactly one

C) Zero

D) Infinitely many

16

For the linear function g, the graph of $y = g(x)$ in the xy-plane has a slope of 2 and passes through the point (1, 14). Which equation defines g ?

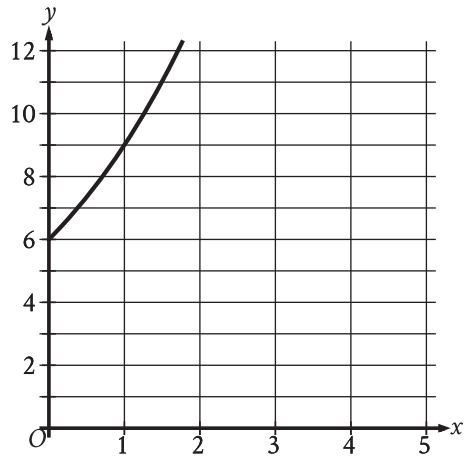
A) $g(x) = 2x$

B) $g(x) = 2x + 2$

C) $g(x) = 2x + 12$

D) $g(x) = 2x + 14$

17



The graph gives the estimated population y, in thousands, of a town x years since 2003, where $0 \le x \le 5$. Which of the following best describes the increase in the estimated population from $x = 0$ to $x = 1$?

A) The estimated population at $x = 1$ is 0.5 times the estimated population at $x = 0$.

B) The estimated population at $x = 1$ is 1.5 times the estimated population at $x = 0$.

C) The estimated population at $x = 1$ is 2.5 times the estimated population at $x = 0$.

D) The estimated population at $x = 1$ is 3.5 times the estimated population at $x = 0$.

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CONTINUE

18

In March, the price of a collectible card was $15.50. In April, the price of the collectible card was $17.36. The price of the collectible card in April was p% of the price of the collectible card in March. What is the value of p ?

A) 12

B) 88

C) 112

D) 188

19

$$x = 8a(b + 9)$$

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

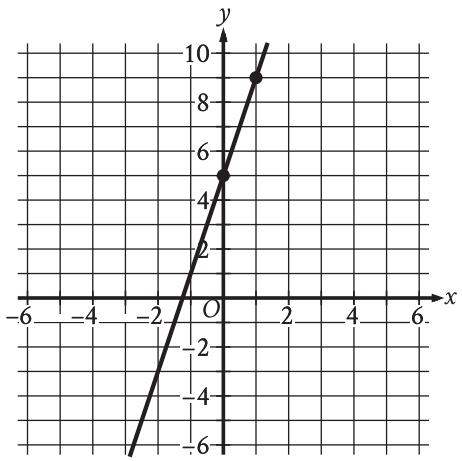
A) $a = \frac{x}{8} - (b + 9)$

B) $a = \frac{x}{8(b + 9)}$

C) $a = \frac{8(b + 9)}{x}$

D) $a = 8x(b + 9)$

20



Line j is shown in the xy-plane. Line k (not shown) is parallel to line j. What is the slope of line k ?

21

A line segment that has a length of 115 centimeters (cm) is divided into three parts. One part is 47 cm long. The other two parts have lengths that are equal to each other. What is the length, in cm, of one of the other two parts of equal length?

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CONTINUE

22

$$p(x) + 57 = x^2$$

The given equation relates the value of x and its corresponding value of $p(x)$ for the function p. What is the minimum value of the function p ?

A) −3,249

B) −57

C) 57

D) 3,249

23

x	y
−18	−48
7	52

The table shows two values of x and their corresponding values of y. In the xy-plane, the graph of the linear equation representing this relationship passes through the point $\left(\frac{1}{7}, a\right)$. What is the value of a ?

A) $-\frac{4}{11}$

B) $-\frac{4}{77}$

C) $\frac{4}{7}$

D) $\frac{172}{7}$

24

$$y = 576^{(2x+2)}$$

The graph of the given equation in the xy-plane has a y-intercept of (r, s). Which of the following equivalent equations displays the value of s as a constant, a coefficient, or the base?

A) $y = 331{,}776^{(x+1)}$

B) $y = 24^{(4x+4)}$

C) $y = \frac{1}{24}(24)^{(4x+5)}$

D) $y = \frac{1}{576}(576)^{(2x+3)}$

25

If $k - x$ is a factor of the expression $-x^2 + \frac{1}{29}nk^2$, where n and k are constants and $k > 0$, what is the value of n ?

A) −29

B) $-\frac{1}{29}$

C) $\frac{1}{29}$

D) 29

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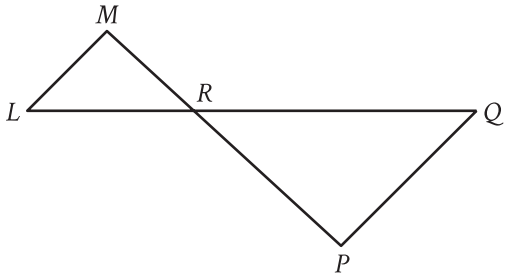
CONTINUE

26



Note: Figure not drawn to scale.

In the figure, $\overline{LQ}$ intersects $\overline{MP}$ at point R, and $\overline{LM}$ is parallel to $\overline{PQ}$. The lengths of $\overline{MR}$, $\overline{LR}$, and $\overline{RP}$ are 6, 7, and 11, respectively. What is the length of $\overline{LQ}$?

A) $\frac{119}{11}$

B) $\frac{77}{6}$

C) $\frac{113}{6}$

D) $\frac{119}{6}$

27

$$5(x + 7) = 15(x - 17)(x + 7)$$

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

STOP

If you finish before time is called, you may check your work on this module only. Do not turn to any other module in the test.

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GENERAL DIRECTIONS

- You may work on only one module at a time.
- If you finish a module before time is called, check your work on that module only. You may NOT turn to any other module.

TIMING

Reading and Writing, Module 1: 39 minutes

Reading and Writing, Module 2: 39 minutes

10-minute break

Math, Module 1: 43 minutes

Math, Module 2: 43 minutes

The above are standard times. If you are approved for accommodations involving additional time, you should give yourself that time when you practice.

MARKING YOUR ANSWERS

- Be sure to answer your questions properly in this book.
- Circle only one answer to each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

USING YOUR TEST BOOK

- You may use the test book for scratch work.
- You may not fold or remove pages or portions of a page from this book, or take the book from the testing room.

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