PSAT™ 8/9

Practice Test #3

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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

Brazilian artist Camila Rosa started her career with a female street art collective called Coletivo Chá. Rosa says that her artistic style has been _____ by her time in the group and her interest in things like punk rock and political movements. Those inspirations can be seen in her artworks' references to identity and social justice.

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

A) copied
B) believed
C) influenced
D) debated

2

Some animals can wiggle their ears to find prey. Many people think that most humans can't wiggle their ears, maybe because we don't need to do it for survival. But in a 2020 study, Daniel Strauss and team found that study participants made small ear movements without realizing it while listening to podcasts. This finding could suggest that humans might have some _____ to wiggle their ears.

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

A) kindness
B) capacity
C) weakness
D) job

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CONTINUE

3

Greek mythology has influenced artists for centuries and has _____ such works as Richard Hunt's 1958 sculpture *Hero Construction* and Pierre Alechinsky's 1967 painting *The Complex of the Sphinx*. Hunt and Alechinsky both drew on Greek mythology to spark their creativity.

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

A) evaluated
B) reenacted
C) satisfied
D) inspired

4

To assist with the development of new water-repellent materials for aviation and other applications, a team including both engineers and entomologists conducted a study of the water-repellent properties of cicada wings. The team explained that the _____ experts in these two disciplines resulted in a more comprehensive approach than independent efforts by experts in either discipline could have achieved.

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

A) skepticism toward
B) distrust among
C) collaboration between
D) exaggeration of

5

The Egyptian plover—a bird native to Africa—has a type of symbiotic relationship with the Nile crocodile. While a crocodile rests on land with its mouth open for extended periods of time, the plover eats the food that is stuck in the crocodile's teeth. This _____ relationship provides a nutritious meal for the bird and removes potentially dangerous bacteria from the crocodile's mouth.

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

A) interchangeable
B) reciprocal
C) inefficient
D) unequal

6

The following text is from Robert Lowell's 1964 poem "For the Union Dead." The South Boston Aquarium closed permanently in 1954.

> The old South Boston Aquarium stands
> in a Sahara of snow now. Its broken windows are boarded.
> The bronze weathervane cod has lost half its scales.
> The airy tanks are dry.

©2003 by Robert Lowell

Which choice best states the main purpose of the text?

A) To argue that a building should be rehabilitated
B) To explain why a once-popular building was abandoned
C) To describe details of the deteriorated state of a building
D) To contrast the effects of different kinds of weather on a building

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CONTINUE

7

Scientists discovered a 390-million-year-old fossilized forest of *Calamophyton* trees in modern-day England. The scientists believe the emergence of these *Calamophyton* forests changed the land significantly. For example, the tree roots would have greatly reduced soil erosion, and the accumulated twigs the trees shed likely created new habitats for animal life.

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

A) It illustrates how *Calamophyton* forests likely changed conditions on the land.
B) It indicates how fast the *Calamophyton* forest spread.
C) It suggests that there are likely fossilized *Calamophyton* forests from before 390 million years ago.
D) It provides two competing views of when the *Calamophyton* forest likely emerged.

8

The first souvenir postcards in the United States were sold at the 1893 World's Fair in Chicago. People bought them to mail to family and friends or to keep as collectibles. Extremely popular, these postcards sparked a craze for souvenir postcards that lasted into the early 1900s: tourists bought postcards showing pictures of scenery and attractions from across the US, and billions of souvenir postcards were sent through the mail.

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

A) It illustrates the popularity of souvenir postcards during a particular historical period.
B) It compares what early souvenir postcards in the US looked like with what postcards from other countries looked like.
C) It explains why tourism became more widespread in the late 1800s and early 1900s.
D) It describes the various kinds of souvenirs that were available at the Chicago World's Fair.

9

The Marsalis family is often referred to as "the first family of jazz." Four of the children of celebrated pianist Ellis Marsalis Jr. went on to become performers who are also critically acclaimed: drummer Jason, trombonist Delfeayo, saxophonist Branford, and trumpeter Wynton. Wynton notably went on to become the first jazz composer to win the Pulitzer Prize for Music (for his oratorio *Blood on the Fields*).

Which choice best describes the main purpose of the text?

A) To compare the artistic achievements of several musicians
B) To emphasize why musicians should work together
C) To show why a particular musician won a major award
D) To explain why a family of musicians received a nickname

10

The following text is from Rebecca Balcárcel's 2019 novel *The Other Half of Happy*.

> I live in a tilted house. A bowling ball on our living room floor would roll past the couch, past the dining table, all the way to the kitchen sink. And if the sink wasn't there and the wall wasn't there and the bathroom behind *that* wasn't there, the ball would roll all the way to my room at the end of the house. That's what it's like being twelve. Everything rolling toward you.

©2019 by Rebecca Balcárcel

Based on the text, which choice best describes the narrator's house?

A) It is slanted.
B) It has only one room.
C) It is colorful.
D) It was built forty years ago.

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CONTINUE

11

Musician and astronomer Darsan Swaroop Bellie researches gravitational waves. These invisible waves move very quickly through space. They cannot be viewed through a telescope, but they do make sounds that can be detected with special equipment. In his musical composition *Dance of the Black Holes*, Bellie demonstrates what gravitational waves might sound like as two black holes merge in space. With this composition and others, Bellie hopes to make aspects of science more accessible.

According to the text, what is the subject of Bellie's research?

A) Music history
B) Ocean currents
C) Gravitational waves
D) Space travel

12

Zebras' stripes serve to keep away flies. This hypothesis has been supported by the results of several experiments. Recently, for example, researcher Kaia J. Tombak and a team released flies into an enclosure containing uniform (nonstriped) and striped animal pelts. As expected, the flies mostly avoided landing on the striped pelts.

What does the text suggest about the flies in Tombak and her team's experiment?

A) They proved difficult for Tombak and her team to observe.
B) They behaved in ways that surprised Tombak and her team.
C) They landed on all the animal pelts in the enclosure about the same number of times.
D) They preferred landing on the uniform animal pelts in the enclosure.

13

Habitat navigation is a skill that helps animals reach food or safety. To test how navigation works in fish, Shachar Givon and colleagues taught goldfish to drive a vehicle—a motorized fish tank with wheels—on land. The vehicle was programmed to move in the same direction that the fish swam in within the tank. In the experiment, the fish were tasked with driving their tank to a pink board. They received a treat when they succeeded, and they often did. Because the fish could move their tank to the board, Givon concludes that their navigational skills aren't specific to an aquatic environment.

Which choice best states the main idea of the text?

A) Researchers can train animals to complete many different tasks when they offer the animals treats.
B) Fish can navigate only within their natural aquatic environment in order to find food and safety.
C) Research shows that although they live in the water, fish can navigate on land with a little mechanical help.
D) An animal's navigational skills directly depend on that animal's particular environment.

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CONTINUE

14

Commedia dell'arte was a type of theater that emerged in Italy in the 1500s. It became popular throughout Western Europe. In commedia dell'arte, actors didn't have a script. Instead, they created their dialogue and actions onstage in the moment. Actors in these plays also usually wore stylized masks. In a research paper, a student argues that doing so affected how the actors portrayed their characters.

Which quotation from a historian would most directly support the student's argument?

A) "After almost vanishing in the 1800s, commedia dell'arte once again became popular in Italy and Great Britain for a brief period in the 1960s and 1970s."

B) "The use of masks in commedia dell'arte can be traced directly to the theater of ancient Rome."

C) "Masks are also worn in the traditional theater of China, India, and Maya communities in Mexico and Central America."

D) "Since their faces were hidden by masks, actors in commedia dell'arte used hand gestures and other movements of their bodies to display emotions."

15

Based on findings from fossil sites, paleobotanists had developed the so-called partition hypothesis, which holds that there were two distinctly different kinds of biomes during the Devonian period (circa 360 to 420 million years ago). One was a tropical deltaic forest biome home to plants such as the fernlike *Eospermatopteris*, and the other was an arid floodplain forest biome home to plants such as the coniferlike *Archaeopteris*. Recently, however, evolutionary ecologist Khudadad Khudadad examined the remnants of a Devonian forest in what is now Cairo, New York, and concluded that evidence from the Cairo site is inconsistent with the partition hypothesis.

Which finding about the Cairo site, if true, would most directly support Khudadad's conclusion?

A) The site appears to have been a tropical deltaic forest early in the Devonian period but transitioned to an arid floodplain forest after the end of the Devonian period.

B) Although the site appears to have been a tropical deltaic forest during the Devonian period, fossil evidence suggests that *Eospermatopteris* was present at that time.

C) The site appears to have been an arid floodplain forest during the Devonian period and contains fossil evidence of contemporaneous *Eospermatopteris* and *Archaeopteris*.

D) Fossil evidence from the site suggests that several forest plant species other than *Eospermatopteris* and *Archaeopteris* lived there during the Devonian period.

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CONTINUE

16

Archaeologists have traditionally thought that many cities in ancient Mesopotamia, including Uruk and Ur, lay on the extremely dry banks of the Tigris and Euphrates rivers. Jennifer Pournelle and her team found evidence that the land these ancient cities sat on consisted of marshy wetlands. This finding suggests that _____

Which choice most logically completes the text?

A) the land many ancient Mesopotamian cities sat on wasn't as dry as previously believed.

B) people in Ur engaged in trade with people from many parts of ancient Mesopotamia.

C) far fewer fish species are found in rivers today than in ancient times.

D) Uruk was founded at an earlier time than Ur was.

17

Early humans living near the Shinfa-Metema 1 site in present-day Ethiopia faced challenging conditions. The area regularly experienced severe aridity, and the Toba supervolcano eruption nearly 74,000 years ago created an even harsher environment. Some believe these conditions forced humans to relocate, but paleontologist John Kappelman and his team analyzed chipped stones and fossilized animal remains from the site that showed humans were living there after the eruption. Also, the climate at this time caused shallower rivers, which Kappelman hypothesizes would have made catching fish easier. The fossil record indeed shows a decline in the ratio of terrestrial mammals to fish in humans' diets in this period, suggesting that _____

Which choice most logically completes the text?

A) rather than relocating, the humans living at the Shinfa-Metema 1 site likely increased in number.

B) the extreme dryness at this time forced early humans living near the Shinfa-Metema 1 site to move to different locations.

C) terrestrial mammals fed at rivers around the Shinfa-Metema 1 site more frequently following the Toba eruption than they had before the eruption.

D) early humans living around the Shinfa-Metema 1 site adapted to environmental challenges by changing the way they acquired food.

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CONTINUE

18

Nicholas Baumard and colleagues have outlined a method for analyzing popular cultural artifacts (literature, paintings, sculptures, etc.) for their psychological content (sadness, joy, love, etc.) in the hope of revealing psychological trends in a population over time. They reason that recent successes in training algorithms to identify features of digitized texts and images in a humanlike manner suggest that an algorithm could likewise be trained specifically to identify psychological features. This tool might therefore allow historians to discern relationships between psychological shifts in a population and concurrent historical events. But the team cautions that, necessarily, such an algorithm could only be verified to reflect how contemporary people think and therefore _____

Which choice most logically completes the text?

A) should be used prudently because it might not reflect aspects of the psychology of past populations.
B) should be preserved after training to represent a snapshot of the population at a certain time.
C) should not be used to make judgments about more than one artifact at a time.
D) should not be used in conjunction with traditional historical research practices.

19

In the twentieth century, many countries developed secret codes. These codes were used _____ plans during wartime.

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

A) communicates
B) to communicate
C) have communicated
D) communicate

20

Observational drawing and constructive drawing are two different approaches to _____ observational approach involves looking at a subject and drawing it as you see it. For the constructive approach, however, you have to think about the shape and characteristics of a subject, and then use your imagination to draw it.

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

A) art, the
B) art. The
C) art (the
D) art the

21

An analysis of past earnings data for nearly 5,000 US companies indicated a link between a company's market value and its strategy for managing its vulnerability to climate change. The data, collected between 2002 and 2018, show that companies that identified their level of risk and developed a mitigation plan received higher valuations than companies that _____ their risks but didn't create a plan.

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

A) will determine
B) are determining
C) determined
D) determine

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CONTINUE

22

The Tuskegee University Archives' collection includes an original 1957 photograph of Martin Luther King Jr. addressing a group of Tuskegee civil rights activists. Taken by P.H. Polk, the photo _____ King in profile, the glow of a stage light casting his silhouette onto the curtains behind him.

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

A) shows
B) having shown
C) showing
D) to show

23

A number of scientific phenomena have been named after nineteenth-century Czech physiologist Jan Evangelista Purkinje, including the Purkinje effect, which _____ the eye's tendency to perceive objects as blue tinted in low-light conditions.

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

A) will have been
B) was
C) has been
D) is

24

Before the Spanish arrived in the 1400s, the people of La Gomera, one of the Canary Islands, would use a whistled version of their native language to "speak" to each other from far away. Amazingly, under Spanish rule, the _____ adapted their whistling skills to whistle to each other in Spanish.

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

A) islands residents'
B) island's resident's
C) island's residents
D) islands resident's

25

Kizomba, a genre of dance that originated in Angola, has become an international _____ 2022, the Indian dance duo known as Elvis and Namrata defeated performers from around the world to win the annual Olympiads of Kizomba competition held in Paris, France, becoming the first ever Asian winners.

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

A) phenomenon and in
B) phenomenon, in
C) phenomenon in
D) phenomenon. In

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CONTINUE

26

The Grootbos florilegium in South Africa contains a collection of botanical paintings, with each painting depicting a local plant species in exquisite detail. The florilegium includes a vignette painting by contributing artist Sibonelo Chiliza. Unlike most paintings in the florilegium, _____

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

A) Chiliza's vignette contextualizes a plant within an ecosystem.
B) Chiliza contextualizes a plant within an ecosystem in his vignette.
C) the contextualization of a plant within an ecosystem occurs in Chiliza's vignette.
D) a plant's ecosystem is contextualized in Chiliza's vignette.

27

French mathematician Michel Talagrand has shown that over large numbers of trials, variables that appear to be independent and random are in fact extremely likely to cluster around an average. _____ according to Talagrand's research, if you flip a coin 1,000 times, there is a 99.7% probability that the coin will land heads side up between 450 and 550 times.

Which choice completes the text with the most logical transition?

A) However,
B) For instance,
C) In addition,
D) In comparison,

28

Physicist Walter Massey led numerous scientific organizations over his long career. His most prominent appointment came in 1990, when Massey was named director of the National Science Foundation. _____ Massey had served as the first president of the National Society of Black Physicists.

Which choice completes the text with the most logical transition?

A) Thus,
B) In conclusion,
C) For example,
D) Previously,

29

The Eloi are not real: they are fictional creatures that feature in H.G. Wells's acclaimed science fiction novella *The Time Machine*. _____ the Eloi were prime candidates for inclusion in Jorge Luis Borges and Margarita Guerrero's *The Book of Imaginary Beings*, a compendium of fantastical entities from legend and literature.

Which choice completes the text with the most logical transition?

A) In reality,
B) For example,
C) As such,
D) Granted,

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CONTINUE

30

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

- Wilkie Collins's mystery novel *The Woman in White* first appeared in a London literary magazine.
- The novel was published in forty weekly installments between November 1859 and August 1860.
- Every installment ended with a moment of unresolved suspense.
- *The Woman in White* became extremely popular as readers eagerly anticipated the next week's entry.
- The magazine's sales increased to a record-breaking 100,000 copies per issue.

The student wants to emphasize how popular *The Woman in White* became when it was first published. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Every installment of *The Woman in White* ended with a moment of unresolved suspense, which led readers to eagerly anticipate the next week's entry.

B) *The Woman in White* became so popular that sales of the magazine it appeared in increased to a record-breaking 100,000 copies per issue.

C) *The Woman in White*, a mystery novel, first appeared in a London literary magazine.

D) Collins's novel *The Woman in White* was published in forty weekly installments between November 1859 and August 1860.

31

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

- Igneous rock is one of the three main types of rock.
- It is formed when molten rock, known as magma or lava, cools.
- Intrusive igneous rock forms when molten rock cools deep within Earth's crust.
- Extrusive igneous rock forms when molten rock exits Earth's crust and cools on the surface.
- Acadia National Park in Maine contains examples of intrusive igneous rock.
- Crater Lake National Park in Oregon contains examples of extrusive igneous rock.

The student wants to contrast how the igneous rock at the two national parks formed. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Acadia National Park contains examples of intrusive igneous rock; the other type of igneous rock is called extrusive igneous rock.

B) Acadia National Park's igneous rock formed from molten rock that cooled deep within Earth's crust, whereas Crater Lake National Park's igneous rock formed from molten rock that cooled after it exited Earth's crust.

C) Acadia National Park and Crater Lake National Park both contain igneous rock, which is formed when molten rock cools.

D) Two types of igneous rock, which is formed when molten rock cools, are intrusive igneous rock and extrusive igneous rock, both of which can be found in national parks.

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CONTINUE

32

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

- Capillary action is a process that allows liquids to flow upward against the force of gravity.
- It occurs in extremely narrow spaces where surface forces are stronger than gravitational forces.
- It is an important biological process in trees and human bodies.
- Science writer Serena Alagappan writes, "Capillary action…is crucial to the sound functioning of our bodies and our environment. Surely it is something to marvel at."

The student wants to quote Alagappan to emphasize the biological importance of capillary action. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Occurring in trees and human bodies alike, capillary action is a process that allows liquids to flow upward.

B) A process that allows liquids to flow upward, capillary action is, as Serena Alagappan writes, "crucial to the sound functioning of our bodies and our environment."

C) "Surely it is something to marvel at," Serena Alagappan writes about the process.

D) Serena Alagappan writes about the "marvel" of capillary action, a process that occurs in extremely narrow spaces where surface forces are stronger than gravitational forces.

33

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

- Ike Taiga (1723–1776) was a Japanese painter.
- Li Bai (701–762) was a Chinese poet.
- Taiga created the artwork titled *Landscape and Couplet of Chinese Verse*.
- The artwork is made up of two scrolls.
- Scroll 1 features a painting of a lone figure walking among tall, narrow mountains.
- Scroll 2 features a poem from Li Bai that is about being in nature.

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

A) One of the two scrolls that make up *Landscape and Couplet of Chinese Verse* features mountains, and one features a portrait of poet Li Bai.

B) Made up of two scrolls that each depict nature, *Landscape and Couplet of Chinese Verse* was created by Li Bai.

C) In *Landscape and Couplet of Chinese Verse*, one scroll features a painting, while the other scroll features a poem.

D) Ike Taiga created *Landscape and Couplet of Chinese Verse*, which is made up of two scrolls that each depict nature.

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

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

In Peru, young Quechua and Aymara artists are _____ a new music genre. Two Indigenous artists creating this new sound are Cay Sur and Renata Flores, who rap in the Quechua language and blend hip-hop rhythms with traditional Andean instruments and themes.

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

A) developing
B) repeating
C) correcting
D) remembering

2

Building additional road capacity may seem like an obvious solution to traffic congestion, but numerous studies have cast doubt on the _____ of that approach. Not only does additional road capacity often fail to relieve congestion, but it can also make traffic worse by encouraging more people to drive.

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

A) aesthetics
B) popularity
C) efficacy
D) originality

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CONTINUE

3

In some of his sculptures, Allan Houser uses abstract geometric shapes to depict his subjects rather than portraying them in realistic detail. For instance, his 1989 work *Embrace* is highly abstract and therefore differs strikingly from some of his other pieces in which the viewer can easily _____ familiar objects.

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

A) reveal
B) remember
C) ignore
D) identify

4

Native Hawaiian fiber artist Marques Hanalei Marzan creates art using the techniques of lauhala weaving. Lauhala weaving is a traditional Hawaiian art form that uses leaves of the hala tree. Often, Marzan doesn't have a specific _____ what the final product will look like when he starts a new piece. Instead, he makes up his designs as he weaves, allowing inspiration to take him in unexpected directions.

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

A) intention for
B) acceptance of
C) admiration for
D) imitation of

5

Geomagnetic storms can disturb Earth's ionosphere, causing the models underlying the Global Positioning System (GPS) to produce inaccurate calculations. This illustrates the effect that space weather events can have on the _____ of GPS and other systems that are dependent on satellite navigation.

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

A) extent
B) complexity
C) reliability
D) significance

6

Saturn is the first planet in our solar system to be discovered to have more than 100 moons orbiting around it. A team of astronomers using the Canada-France-Hawaii Telescope (CFHT) in Hawaii detected 62 undiscovered moons that were previously too small or too dim to see. Saturn now outranks Jupiter as the planet in our solar system with the most observed moons.

Which choice best states the main purpose of the text?

A) To explain how the CFHT works
B) To note a new finding about the number of Saturn's moons
C) To discuss the history of Hawaii
D) To describe the atmospheric conditions of Jupiter

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CONTINUE

7

The following text is adapted from Susan Glaspell's 1917 play *The People*. Oscar, a writer at a newspaper called *The People*, is writing at a table when a woman enters the office to speak to the editor.

THE WOMAN: This *is* the office of *The People*?

OSCAR: Um-hum.

THE WOMAN: (*Excitedly.*) I came to see the author of those wonderful words.

OSCAR: (*Rising.*) Which wonderful words?

THE WOMAN: About moving toward the beautiful distances.

OSCAR: (*Loses interest and returns to his writing.*) Oh. Those are Mr. Wills' wonderful words.

THE WOMAN: Could I see him?

OSCAR: He isn't here yet. He's just back from California. Won't be at the office till a little later.

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

A) To show Oscar's brief hope that the woman is fond of his writing
B) To indicate that Oscar had been expecting the woman to come to the office
C) To suggest that Oscar is annoyed that the woman's visit has interrupted his work
D) To depict Oscar as a polite and professional representative of the newspaper

8

Researchers examining data from the New Horizons space probe, which passed Pluto in 2015, were puzzled by a 27-mile-long crater on Pluto's icy surface. Although Pluto is mostly covered in frozen methane and nitrogen, the surface near the crater seemed to show the presence of water ice and ammonia—both of which are associated with eruptions from ice volcanoes. Additionally, the shape and appearance of the crater did not suggest that it was formed by impact. Based on this evidence, scientist Dale Cruikshank and his team hypothesized that the crater was likely once a massive ice volcano.

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

A) It identifies a misconception that the researchers had about the crater when they were first studying the data.
B) It introduces previous findings that suggested a research method for Cruikshank and his team.
C) It implies that the research team eliminated an alternative explanation for the crater based on available evidence.
D) It emphasizes the importance of the New Horizons space probe to researchers.

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CONTINUE

9

Text 1
Customers, whether due to brand loyalty or convenience, may be uninterested in searching for less expensive options when repeating a purchase. This tendency, known as consumer inertia, can be advantageous to companies. Setting low initial prices (in the form of an introductory offer, for example) to attract customers and then raising those prices once consumer inertia is likely to have set in can be a successful strategy for increasing revenue.

Text 2
A research team from the University of Chicago claims that introductory offers for subscription-based services like newspapers can backfire if the initial reduced pricing is followed by an automatic renewal of the service at a higher price. They found that pricing strategies that capitalize on consumer inertia by locking customers into a recurring membership may result in fewer subscribers than introductory offers ending with a cancellation of the service.

Which choice best describes a difference in how the author of Text 1 and the author of Text 2 view consumer inertia?

A) The author of Text 1 asserts that introductory offers are most effective at eliciting consumer inertia, whereas the author of Text 2 concludes that automatic renewal services are more likely to cultivate consumer inertia.

B) The author of Text 1 proposes that consumer inertia can be found in the behaviors of all types of consumers, whereas the author of Text 2 claims that consumer inertia is only present in some product markets.

C) The author of Text 1 emphasizes that business strategies that take advantage of consumer inertia may be beneficial to companies, whereas the author of Text 2 warns against a particular method of exploiting consumer inertia.

D) The author of Text 1 argues that brand loyalty is the primary source of consumer inertia, whereas the author of Text 2 demonstrates that the causes of consumer inertia are likely too complex to be identifiable.

10

The following text is from a translation of María Dueñas's 2009 novel *The Time in Between*. The narrator has just rented an apartment and is entering it for the first time.

> Over the years there have been many times when my destiny has delivered me unexpected moments, unforeseen twists and turns that I've had to handle on the fly as they appeared. Occasionally I was ready for them; very often I wasn't. Never, however, was I so aware of entering a new stage as I was that afternoon in October when I finally dared to cross the threshold and my steps sounded hollowly in the unfurnished apartment. Behind me was a complicated past, and in front of me, like an omen, I could see a space opening out, a great empty space that time would take care of filling up.

©2009 by María Dueñas. Translation ©2011 by Daniel Hahn.

Which choice best states the main idea of the text?

A) The narrator feels optimistic about the future success of a new business.

B) The narrator has always had a plan for how to handle big moments in her life.

C) The narrator recognizes that a particular moment marks a major shift in her life.

D) The narrator wants to express her gratitude for the people who have helped her.

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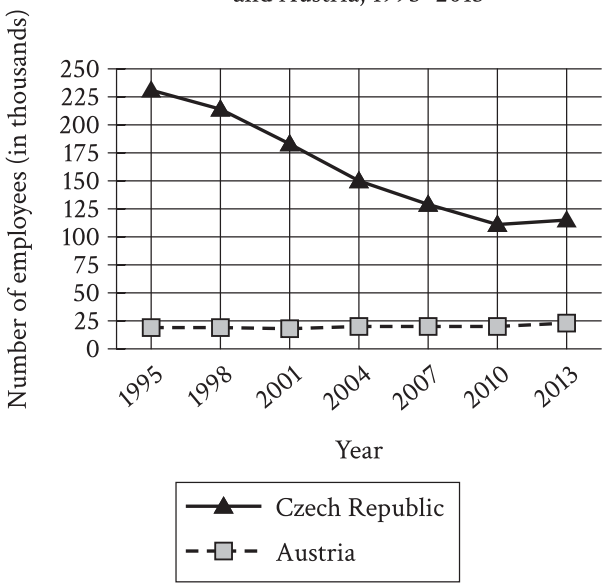
11

Employment in Agriculture, Hunting, and Forestry in the Czech Republic and Austria, 1995–2013



A student is using the graph for a class presentation on historic employment trends in the agriculture, hunting, and forestry sectors in two European countries. The student notes that from 1995 to 2007 _____

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

A) the number of employees working in these sectors decreased in the Czech Republic while remaining relatively steady in Austria.

B) the number of employees working in these sectors increased in the Czech Republic.

C) the majority of employees in Austria were working in these sectors.

D) employment in these sectors remained stable in both Austria and the Czech Republic.

12

Known as the "mother of modern weaving," Dorothy Liebes was an influential designer and textile weaver of the mid-twentieth century. Some people have claimed that Liebes's use of bold colors, textured fabrics, and metallic threads resulted in some of the most influential designs of the time.

Which quotation from a biography of Liebes would best illustrate the underlined claim?

A) "Liebes started her career by making handwoven textiles. She later partnered with a cloth manufacturer and used power looms to adapt her handwoven styles for mass production at lower costs."

B) "After working as an art teacher for many years, Liebes opened a design studio in California. The studio was so successful that she eventually opened a second studio in New York."

C) "In addition to selling her fabrics, Liebes worked on many textile collaborations with architects, fashion designers, and film producers."

D) "Liebes was known for unexpected color and fabric combinations that resulted in designs so striking and sought-after that they became known as the 'Liebes Look.'"

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CONTINUE

13

"The Selfish Giant" is an 1888 short story by Oscar Wilde. In the story, a group of children play in a local garden after school. The children appreciate the garden because it allows them to experience nature.

Which quotation from "The Selfish Giant" most effectively illustrates the underlined claim?

A) "'My own garden is my own garden,' said the Giant; 'any one can understand that, and I will allow nobody to play in it but myself.' So he built a high wall all round it, and put up a notice-board."

B) "The birds sat on the trees and sang so sweetly that the children used to stop their games in order to listen to them. 'How happy we are here!' they cried to each other."

C) "The poor children had now nowhere to play. They tried to play on the road, but the road was very dusty and full of hard stones, and they did not like it."

D) "Then the Spring came, and all over the country there were little blossoms and little birds. Only in the garden of the Selfish Giant it was still winter."

14

To help combat the growing rate of microplastic pollution, a team of researchers developed a synthetic sponge that can soak up microplastic particles from liquid. The sponge, composed mainly of starch and gelatin, does this by trapping the tiny particles within its pores. Guoqing Wang, one of the researchers, says that the formula for the sponge can be adjusted to best suit the size of particle the sponge is intended to trap, making it versatile in its potential applications. Chemist Christian Adlhart, however, claims that this sponge would be difficult to mass-produce.

Which finding, if true, would most directly support Adlhart's claim?

A) Textiles are one of the largest sources of microplastic pollution in our oceans.

B) The sponge created by Wang and his team has a relatively light weight for its volume, making it potentially easy to ship to different locations.

C) The absorption capabilities of the sponge created by Wang and his team varied depending on the liquid solution used in the team's experiments.

D) The worldwide supply of starch and gelatin is in high demand from the food industry, so those substances would be difficult to source in significant quantities.

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CONTINUE

15

Average Monetized Productivity Loss at Two Points After Programs Began, in Australian Dollars

Type of training	12 weeks	12 months
EET	268	171
EHP	282	436

Michelle Pereira et al. hypothesized that introducing health improvements into workplaces would increase productivity by reducing absenteeism (sick employees not working) and presenteeism (sick workers working less productively due to illness). Pereira's team enrolled groups of Australian workers in two programs: one that gave employees exercise training (EET) and one that enrolled employees in health promotion seminars (EHP). They then calculated the productivity loss of those groups at 12 weeks and 12 months after the programs began (based on the 28 days preceding each point). They concluded that exercise training was more effective at restraining productivity loss than health promotion seminars were, though this result took time to become apparent.

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

A) Productivity loss was largely due to absenteeism for the EHP group at 12 months after the program began, while productivity loss was largely due to presenteeism for the EET group at 12 months after the program began.

B) Productivity loss was consistently higher for the EHP group than for the EET group over the twelve months that it was measured, though the size of the difference between the two decreased over that time.

C) Productivity loss for the EET group barely decreased between 12 weeks and 12 months after the program began, while productivity loss for the EHP group significantly increased during the same time period.

D) Productivity loss was fairly similar for the EET and EHP groups 12 weeks after each program began, but at 12 months afterward it had significantly increased for the EHP group and significantly decreased for the EET group.

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CONTINUE

16

Organic Compounds Detected in Sequential Extracts from A0106

Solvent (sequence #)	Alkanes	Dimethyl sulfides	Naphthalene
Hexane (1)	present	absent	absent
Dichloromethane only (2)	present	absent	present
Methanol only (3)	absent	present	present
Dichloromethane and methanol (4)	present	absent	present

After sample A0106 was retrieved from the asteroid Ryugu, a portion of it was subjected to an extraction protocol in which small amounts of pulverized material were rinsed, sequentially, with hexane, dichloromethane, methanol, and finally a mixture of dichloromethane and methanol. Each rinse created a separate extract suitable for spectral analysis. Based on the table, both alkane and dimethyl sulfide compounds must have been present in the pulverized sample before the methanol-only extraction, because _____

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

A) the second extract in the sequence contains alkanes but no dimethyl sulfides.

B) the fourth extract in the sequence contains alkanes but no dimethyl sulfides.

C) the third extract in the sequence contains dimethyl sulfides and the fourth contains alkanes.

D) three of the four extracts contain alkanes but only one of the four contains dimethyl sulfides.

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CONTINUE

17

Electricity Capacity Trends (in megawatts) for Four Renewable Technologies in Indonesia (2017–2020)

Energy	2017	2018	2019	2020
Geothermal	1,808	1,948	2,131	2,131
Renewable hydropower	5,703	5,773	5,976	6,141
Solar	97.4	65.5	155	185.3
Wind	1.5	143.5	154.3	154.3

Indonesia is trying to increase its electricity capacity (the maximum amount of electricity that can be generated) for renewable energy in order to reduce dependence on fossil fuels, which can be costly financially and environmentally. From 2017 to 2020, Indonesia's use of four renewable technologies has trended upward, but not uniformly: the electricity capacity of solar power fell from 97.4 megawatts in 2017 to 65.5 megawatts in 2018, and the electricity capacity of _____

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

A) both wind and solar never surpassed that of renewable hydropower throughout the four-year period.
B) both geothermal and wind neither increased nor decreased from 2019 to 2020.
C) renewable hydropower was much higher than that of solar for all four years.
D) wind was much lower in 2017 than it was in 2018, 2019, or 2020.

18

Coffee farming around the world has changed greatly over time. Originally, coffee plants grew in the shade of tropical forests. Today coffee is often grown without shade cover. This is because full-sun coffee farms can produce more coffee beans. But the lack of trees on such farms means a lack of spaces for many species of birds to roost. Therefore, compared with full-sun coffee farms, shaded farms tend to _____

Which choice most logically completes the text?

A) have better soil quality.
B) be home to a more diverse range of birds.
C) have fewer problems with insects and other pests.
D) experience generally milder weather conditions.

19

Shirley "Cha Cha" Muldowney is famous in the world of automotive sports. She was the first person to win the Top Fuel championship, the most prestigious title in drag racing, three _____ in a row.

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

A) times:
B) times
C) times;
D) times,

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CONTINUE

20

Kwesi Joseph is an urban garden specialist in New York City. Working with local communities and schools, Joseph uses his expertise to help people _____ healthier gardens.

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

A) grow
B) grow,
C) grow;
D) grow:

21

Most people are familiar with the song "Happy Birthday" because _____ Few, however, may know the song's origin. The tune began as "Good Morning to All," a song written by sisters Mildred and Patty Hill in the early 1890s.

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

A) it is the most frequently sung song in the English language?
B) it is the most frequently sung song in the English language.
C) is it the most frequently sung song in the English language?
D) is it the most frequently sung song in the English language.

22

Pavlova, a cream-topped dessert cake with a marshmallow center, is a source of controversy. Sweet tooths around the world agree pavlova is delicious, so why _____ The answer is that two countries—New Zealand and Australia—both claim to be pavlova's country of origin.

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

A) it is considered controversial?
B) is it considered controversial.
C) it is considered controversial.
D) is it considered controversial?

23

The Okavango Delta is a vital water source and hub for biodiversity in southern Africa. Koketso Mookodi, a director of the National Geographic Okavango Wilderness Project (NGOWP) in Botswana, helps educate the public about _____ important place.

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

A) those
B) both
C) these
D) this

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CONTINUE

24

Contrasting a high saturation color palette against dark paper and stoneware, Atlanta-based artist Jiha Moon creates fused pieces, wherein Korean folk art, Western contemporary art, and global popular culture mix. New York's Derek Eller Gallery _____ her work in a solo exhibition that ran in early 2022.

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

A) will feature
B) features
C) featured
D) has been featured

25

When _____ founded in 1846, the small town of Elkader, Iowa, was named after the Emir Abdelkader. The town's residents wished to honor Abdelkader, a famous Algerian resistance fighter and human rights advocate who fought against the French colonial rule of Algiers.

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

A) he was
B) they were
C) it was
D) these were

26

The International Wheelchair Basketball Federation (IWBF) is one of many sports organizations that collect and analyze data on player performance. Coaches in the IWBF _____ these data to help them develop game strategies that have a high probability of success.

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

A) use
B) uses
C) is using
D) has used

27

When languages are no longer spoken, they are considered extinct. _____ the Umbrian language went extinct around the first century BCE, though it was once widely spoken in parts of central Italy.

Which choice completes the text with the most logical transition?

A) Admittedly,
B) Therefore,
C) For example,
D) In conclusion,

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CONTINUE

28

Using LiDAR (Light Detection and Ranging) technology, Tulane University archaeologists scanned and mapped the ancient Maya city of Tikal, which lies deep in the Guatemalan rainforest. Some of Tikal's old stones are intertwined with the roots of surrounding trees, rendering parts of the complex physically inaccessible to researchers. _____ the LiDAR's penetrating light waves were the only way to reveal some previously unknown aspects of the Maya city.

Which choice completes the text with the most logical transition?

A) Afterward,
B) Similarly,
C) Specifically,
D) Hence,

29

According to the free electron model, metals, such as copper and silver, do not maintain bonds by sharing and exchanging electrons. _____ metals are held together by a system of valence electrons that travel freely, interacting with the ions but not with each other. This framework for understanding the subatomic relationships within metals can be used to help explain heat and electrical conductivity.

Which choice completes the text with the most logical transition?

A) Likewise,
B) Accordingly,
C) Rather,
D) For example,

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CONTINUE

30

In the early 1900s, sculptor and collector Gertrude Whitney was one of the foremost champions of avant-garde art, helping many US avant-garde artists gain publicity and exposure. _____ Whitney offered to donate more than 500 avant-garde works to be displayed at a leading New York museum, but the museum said no—so she opened her own, the Whitney Museum of American Art.

Which choice completes the text with the most logical transition?

A) In other words,
B) In contrast,
C) Granted,
D) To this end,

31

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

- In 2010, several enormous whale bones were found in a desert in Peru.
- A team led by Dr. Mario Urbina reconstructed the skeleton and named the whale "Perucetus."
- Urbina's team estimated that Perucetus had weighed 200 tons.
- In 2024, Dr. Nicholas Pyenson analyzed Urbina's team's estimate and claimed that it didn't "make any sense."
- Pyenson estimated that Perucetus had weighed 60 to 70 tons.

The student wants to contrast the two estimates of Perucetus's weight. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) In 2024, Pyenson claimed that Urbina's team's 2010 estimate—that Perucetus weighed only 60 to 70 tons—didn't "make any sense."
B) Pyenson estimated that Perucetus had weighed 60 to 70 tons, much less than Urbina's team's original estimate of 200 tons.
C) In 2010 and 2024, Perucetus's weight was estimated based on the whale's bones.
D) Enormous whale bones found in a desert in Peru in 2010 were later estimated to weigh 200 tons.

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CONTINUE

32

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

- Soap forms as the result of a chemical reaction between fats and either sodium or potassium hydroxide.
- One end of a soap molecule is hydrophobic (water repelling), and one end is hydrophilic (water attracting).
- The hydrophobic ends of soap molecules adhere to hydrophobic surface contaminants, such as dirt and oils.
- The soap molecules form circular structures (micelles) around contaminants.
- The hydrophilic ends of the molecules encase the micelles in water, lifting the micelles and contaminants off surfaces.

The student wants to explain how soap removes a surface contaminant. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Dirt, an example of a hydrophobic surface contaminant, can be removed from a surface by soap, which forms as the result of a chemical reaction between fats and either sodium or potassium hydroxide.

B) Micelles are circular structures created when soap molecules attach themselves to dirt or oils.

C) To remove dirt from a surface, soap molecules form a circular structure, or micelle, around the contaminant; next, the molecules encase the micelle in water, lifting it—and the dirt—off the surface.

D) Surface contaminants like dirt and oils are hydrophobic, not hydrophilic—meaning they repel water rather than attract it.

33

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

- Kumiko is a Japanese woodworking technique in which thin strips of wood are interlaced to create latticed panels that incorporate intricate patterns.
- These wooden strips are fit together without the use of nails or other fasteners.
- Many of the geometric patterns used in kumiko designs are inspired by elements from nature.
- The overlapping hexagons of the kikko pattern resemble a tortoise's shell.
- The curved fan shapes of the seigaiha pattern resemble ocean waves.

The student wants to make and support a claim about the inspiration for kumiko patterns. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) Often resembling elements from nature, kumiko patterns are formed by fitting thin strips of wood together without the use of nails.

B) Like the seigaiha pattern's curved fan shapes, which resemble ocean waves, many of the geometric patterns used in kumiko designs are inspired by elements from nature.

C) The tortoiseshell-like overlapping hexagons of the kikko pattern are inspired by wooden strips from nature.

D) The kumiko woodworking technique is used to create latticed panels with geometric designs, like overlapping hexagons, out of thin strips of wood.

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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Math

27 QUESTIONS

DIRECTIONS

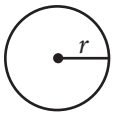
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

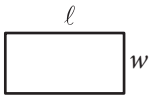
Unless otherwise indicated:

- 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.

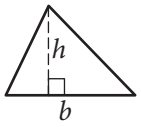
REFERENCE



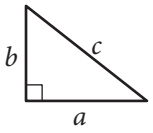
$A = \pi r^2$
$C = 2\pi r$



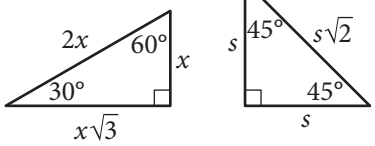
$A = \ell w$



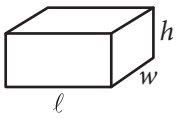
$A = \frac{1}{2}bh$



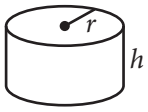
$c^2 = a^2 + b^2$



Special Right Triangles

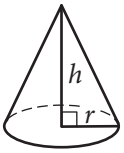


$V = \ell wh$

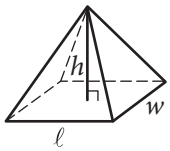


$V = \pi r^2 h$

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



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



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

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

A vehicle travels 9 feet per second. How far, in feet, does the vehicle travel in 7 seconds?

A) −9
B) −2
C) 7
D) 63

2

Square X has a side length of 24 centimeters. The perimeter of square Y is 2 times the perimeter of square X. What is the length, in centimeters, of one side of square Y?

A) 48
B) 26
C) 22
D) 12

3

There are 45 business owners in a certain shopping mall. 100% of these business owners attended the first owners' meeting of the year. How many of these business owners attended the meeting?

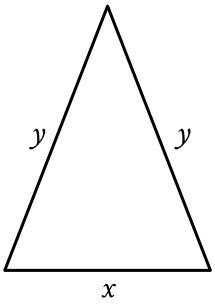
A) 0
B) 45
C) 450
D) 4,500

4

Which expression is equivalent to $10x + 2x + 10y + 7y + 3$?

A) $32xy$
B) $29xy + 3$
C) $20x + 9y + 3$
D) $12x + 17y + 3$

5



Note: Figure not drawn to scale.

The triangle shown has one side with a length of x inches and two sides each with a length of y inches. The perimeter of the triangle is 23 inches. Which equation represents this situation?

A) $x + y = 23$
B) $x + 2y = 23$
C) $2x + y = 23$
D) $2x + 2y = 23$

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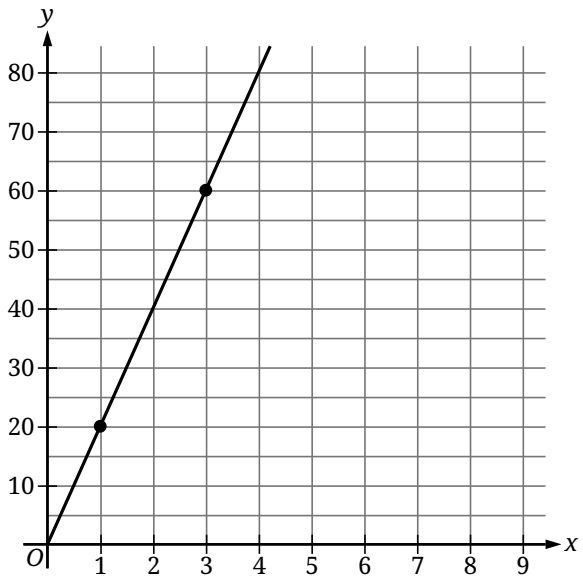
CONTINUE

6

$1.3x = 1{,}300$

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

7



The graph shows the relationship between two variables, x and y. If the value of x is 1, what is the value of y, to the nearest integer?

8

The function f is defined by $f(x) = \frac{1}{7}x - 7$. What is the value of $f(70)$?

A) 3
B) 4
C) 9
D) 17

9

Data set A: 8, 8, 8, 9, 9, 10, 11, 11, 12, 12, 12

Data set B: 8, 9, 9, 10, 10, 10, 10, 10, 11, 11, 12

Data set A and data set B each have 11 values. Which of the following statements best compares the median of data set A and the median of data set B?

A) The median of data set A is greater than the median of data set B.
B) The median of data set A is less than the median of data set B.
C) The medians of data sets A and B are equal.
D) There is not enough information to compare the medians.

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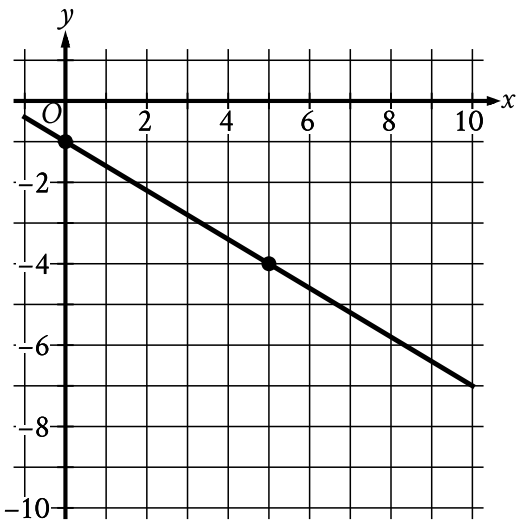
10



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

A) $f(x) = \frac{3}{5}x - 1$

B) $f(x) = \frac{5}{3}x - 1$

C) $f(x) = -\frac{3}{5}x - 1$

D) $f(x) = -\frac{5}{3}x - 1$

11

Which expression is equivalent to $114t^3 - 26t^2u$?

A) $2t(57t^2 - 13u)$

B) $2t^2(57t - 13u)$

C) $2tu(57t^2 - 13)$

D) $2t^2u(57t - 13)$

12

To win a skills challenge, a competitor needs to score at least 90 total points from two rounds. Completed tasks in the first round are worth 5 points each, and completed tasks in the second round are worth 6 points each. Which inequality models this situation, where x is the number of completed tasks in the first round and y is the number of completed tasks in the second round?

A) $x + y \leq 90$

B) $5x + 6y \geq 90$

C) $6x + y \geq 90$

D) $6x + 5y \leq 90$

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CONTINUE

13

$$3x + 8y = 68$$

$$y = 7$$

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

14

A total of 50 people joined a gym during a promotion and were given a free T-shirt in a choice of 4 colors. The table shows the number of people who chose each color of T-shirt.

Color of T-shirt	Number of people
White	14
Red	24
Blue	3
Green	9
Total	50

If one of these people is selected at random, what is the probability of selecting a person who chose a green T-shirt? (Express your answer as a decimal or fraction, not as a percent.)

15

In $\triangle DEF$, the measure of $\angle D$ is 163°. Which of the following could be the measure, in degrees, of $\angle E$?

A) 16

B) 18

C) 90

D) 164

16

A plant's stem will grow at a constant rate from a length of 3 inches to a length of 7 inches. The equation $0.6t + 3 = 7$ describes this situation, where t is the number of weeks it will take for the plant's stem to reach a length of 7 inches. Which of the following is the best interpretation of 0.6 in this context?

A) The time, in weeks, it will take the plant's stem to grow 1 inch

B) The length, in inches, the plant's stem will grow each week

C) The time, in weeks, it will take the plant's stem to reach a length of 7 inches

D) The length, in inches, the plant's stem will grow in 7 weeks

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CONTINUE

17

A right square pyramid has a base with side lengths of 13 centimeters. The height of the pyramid is 15 centimeters. What is the volume, in cubic centimeters, of this pyramid?

A) 65
B) 130
C) 845
D) 2,535

18

A company takes out a loan where a bank starts adding interest to the balance of the loan 1 year after the loan is taken out. The function $f(x) = 53{,}000(1.02)^{x-1}$ gives the balance of the loan $f(x)$, in dollars, x years after the loan is taken out, where $x \geq 1$, if no payments are made to the loan. What is the best interpretation of 53,000 in this context?

A) The balance of the loan, in dollars, 1 year after the loan is taken out
B) 2% less than the balance of the loan, in dollars, 1 year after the loan is taken out
C) The balance of the loan, in dollars, 1 year after the bank starts adding interest to the loan
D) 2% more than the balance of the loan, in dollars, 1 year after the bank starts adding interest to the loan

19

$$g(x) = \frac{1}{8}(3)^x$$

If the given function g is graphed in the xy-plane, where $y = g(x)$, what is the y-intercept of the graph?

A) $(0, 0)$
B) $\left(0, \frac{1}{8}\right)$
C) $\left(0, \frac{3}{8}\right)$
D) $(0, 3)$

20

A polar bear weighs 94 stones. What is the weight of the polar bear, in **kilograms**? (Use 1 stone = 14 pounds and 1 kilogram = 2.2 pounds.)

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CONTINUE

21

A researcher is investigating the properties of 175 chemical compounds by finding the boiling point of each chemical compound. The mean boiling point of all 175 chemical compounds is 184 degrees Celsius. The researcher classifies each of these chemical compounds as either Type A or Type B. Of the 175 chemical compounds, 50 were classified as Type A, and these 50 chemical compounds have a mean boiling point of 339 degrees Celsius. The remaining 125 chemical compounds were classified as Type B. What is the mean boiling point, in degrees Celsius, of the 125 chemical compounds classified as Type B?

22

The gas mileage of a certain car is 25 miles per gallon when driven on the highway. If the car begins with 15 gallons of gas in the tank, which function predicts the amount of gas remaining in the tank, $f(d)$, after the car is driven d miles on the highway?

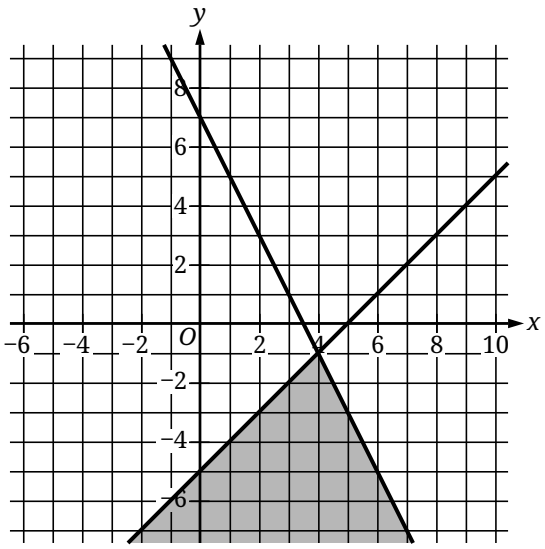
A) $f(d) = \frac{d}{25} - 15$

B) $f(d) = d - 15$

C) $f(d) = 15 - \frac{d}{25}$

D) $f(d) = 15 - d$

23



The graphs of $y = -2x + 7$ and $y = x - 5$ are shown. Point P (not shown) has coordinates $(4, -5)$ and lies in the shaded region. The coordinates of P satisfy which of the following inequalities?

I. $y < -2x + 7$

II. $y > x - 5$

A) I only

B) II only

C) I and II

D) Neither I nor II

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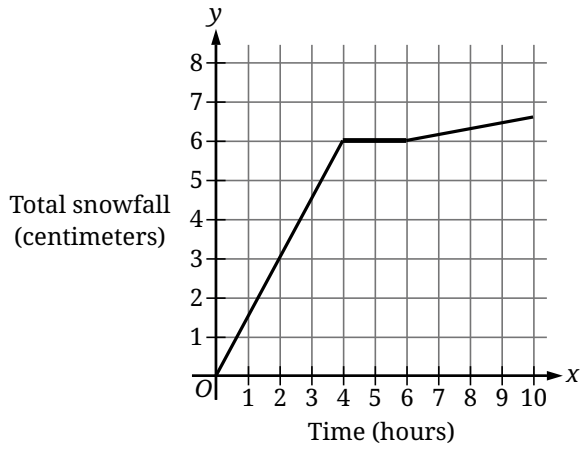
CONTINUE

24

In the xy-plane, line k passes through the points $(5, 0)$ and $(0, 7)$. Which of the following is an equation of line k?

A) $7x + 5y = 35$
B) $5x + 7y = 35$
C) $7x - 5y = 35$
D) $5x - 7y = 35$

25



The graph shows the total amount of snowfall y, in centimeters, from the start of a 10-hour period in Anchorage, Alaska, where x is the number of hours after the start of the period. Which of the following statements about the snowfall during this time period is true?

A) The rate of snowfall was 6 centimeters per hour between $x = 4$ and $x = 6$.
B) The rate of snowfall was the greatest between $x = 6$ and $x = 10$.
C) The rate of snowfall increased between $x = 0$ and $x = 4$.
D) The rate of snowfall was 0 centimeters per hour between $x = 4$ and $x = 6$.

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CONTINUE

26

A square drawing has a side length of 45 inches, and 1 inch on the drawing represents an actual measurement of 13 feet. A smaller version of the same drawing is printed as a square with the side length 85% shorter than the side length of the previous drawing. On the smaller drawing, which of the following is closest to the actual measurement, in feet, represented by 1 inch?

A) 1.95

B) 7.03

C) 38.25

D) 86.67

27

A right rectangular prism has a height of 29 units and a volume of 5,568 cubic units. The length of the base of the prism is 75% of the width of the base of the prism. What is the perimeter of the base of the prism, in units?

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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Math

27 QUESTIONS

DIRECTIONS

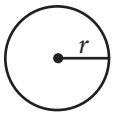
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

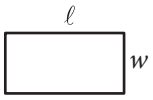
Unless otherwise indicated:

- 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.

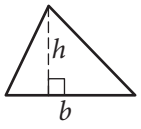
REFERENCE



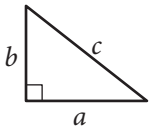
$A = \pi r^2$
$C = 2\pi r$



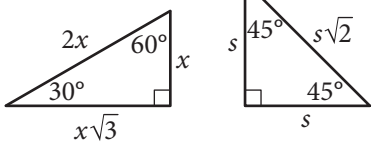
$A = \ell w$



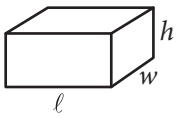
$A = \frac{1}{2}bh$



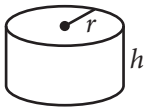
$c^2 = a^2 + b^2$



Special Right Triangles

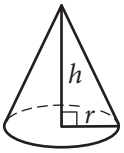


$V = \ell wh$

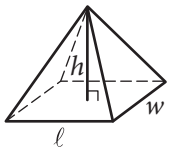


$V = \pi r^2 h$

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



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



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

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

If $8x = 320$, what is the value of $4x$?

A) 640
B) 320
C) 316
D) 160

2

To earn a certificate of completion for a training program, participants are required to complete at least 120 training hours. If a participant has completed 44 training hours, what is the minimum number of additional training hours the participant is required to complete to earn the certificate of completion?

A) 20
B) 76
C) 120
D) 164

3

What length, in meters, is equivalent to a length of 130 decimeters? (1 meter = 10 decimeters)

A) 1.3
B) 13
C) 130
D) 1,300

4

A lab technician combines 30 grams of compound A, 40 grams of compound B, and x grams of compound C. The resulting mixture has a mass of 130 grams. What is the value of x?

A) 10
B) 30
C) 40
D) 60

5

If x is a positive integer, the expression $0.24x$ represents what percent of x?

A) 176
B) 124
C) 76
D) 24

6

The perimeter of a square is 388 centimeters. What is the side length, in centimeters, of this square?

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CONTINUE

7

The function g is defined by $g(x) = \sqrt{(3x - 9)(3x + 9)} + 4$. What is the value of $g(3)$?

8

$$x + y = 50$$

Each member of a 50-member sports team uses either field A or field B at a practice. The given equation represents the possible combinations of the number of members who use field A, x, and the number of members who use field B, y, for this practice. If at this practice 24 members use field A, how many members use field B?

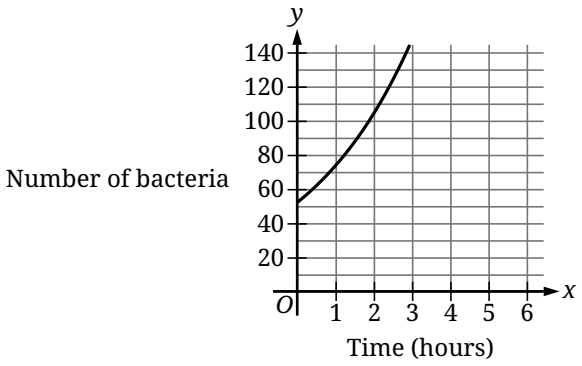
A) 24

B) 25

C) 26

D) 50

9



Under certain conditions, the number of bacteria in a population doubles every 2 hours. The graph models the number of bacteria, y, in the population x hours after an initial observation. Based on the graph, what is the estimated number of bacteria in the population 2 hours after the initial observation?

A) 52

B) 73

C) 104

D) 208

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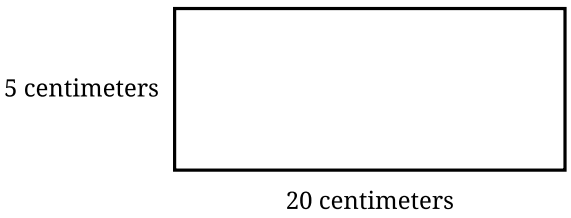
CONTINUE

10



Note: Figure not drawn to scale.

What is the area, in square centimeters, of the rectangle shown?

A) 5
B) 15
C) 25
D) 100

11

Hexagon G and hexagon H are similar. The length of each side of hexagon G is 2.8 times the length of its corresponding side in hexagon H. If the length of one side of hexagon H is h, which expression represents the length of its corresponding side in hexagon G?

A) $\frac{h}{2.8}$

B) $\frac{2.8}{h}$

C) $2.8h$

D) $2.8 + h$

12

The equation $d = 29w + 100$ gives the total amount of money, d, in dollars, that Lorie has in a piggy bank w weeks after she starts to save. What is the total amount of money, in dollars, Lorie has in the piggy bank 10 weeks after she starts to save?

A) 340
B) 390
C) 440
D) 490

13

The graph of $9x + y = 14$ in the xy-plane is a line. What is the slope of the line?

14

$$18.5x + 29.25y = 154$$

A contractor ordered sand and landscaping pebbles, which cost a total of \$154, for a project. The given equation represents the relationship between the number of cubic yards of sand, x, and the number of tons of landscaping pebbles, y, the contractor ordered. How much more, in dollars, did a ton of landscaping pebbles cost the contractor than a cubic yard of sand?

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CONTINUE

15

Laura spent \$58 at a bake sale and bought a total of 21 baked goods. She bought t tarts for \$4 each and m muffins for \$2 each. Which system of equations represents this situation?

A) $t + m = 21$
$2t + 4m = 58$

B) $t + m = 21$
$4t + 2m = 58$

C) $t + m = 58$
$2t + 4m = 21$

D) $t + m = 58$
$4t + 2m = 21$

16

The length of a crystal formation was estimated to be 270 centimeters at the beginning of a study. The length of this crystal formation was estimated to increase at a rate of 9 centimeters per year. What was the estimated length, in centimeters, of this crystal formation 10 years after the study began?

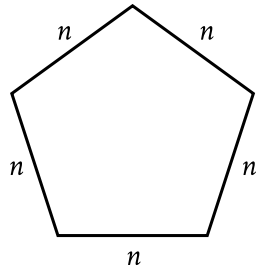
A) 90

B) 279

C) 360

D) 2,700

17



The perimeter of the pentagon is 80 feet, and each side has length n feet. Which equation gives the perimeter in terms of n?

A) $80 = \frac{n}{5}$

B) $80 = 5n$

C) $80 = n - 5$

D) $80 = n + 5$

18

The lengths of the legs of a right triangle are 6 and 9. The length of the hypotenuse is c. Which expression represents the value of c^2?

A) $6^2 + 9^2$

B) $9^2 - 6^2$

C) $6^2 - 9^2$

D) $(6^2) \cdot (9^2)$

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CONTINUE

19

For the linear function g, the graph of $y = g(x)$ in the xy-plane has a slope of 37 and passes through the point $(0, 6)$. Which of the following equations defines g?

A) $g(x) = \frac{37}{6}x$

B) $g(x) = 6x + \frac{37}{6}$

C) $g(x) = 37x + 6$

D) $g(x) = 37x + 37$

20

$$\frac{x}{2} + 9(y - 11) = 25$$

$$\frac{x}{7} - 9(y - 11) = 47$$

The solution to the given system of equations is (x, y). What is the value of $9x$?

21

A meteorologist created a data set by recording the daily low temperature, to the nearest integer, for each of the 31 days in January 2024 in a town in Ohio. The frequency table summarizes this data set.

Daily low temperature (degrees Fahrenheit)	Frequency
−5 to 4	1
5 to 14	4
15 to 24	4
25 to 34	7
35 to 44	10
45 to 54	4
55 to 64	1

Based on the frequency table, what could be the median of the recorded daily low temperatures, in degrees Fahrenheit?

22

If the equations $-10x + y = 19$ and $10x + y = 19$ are graphed in the xy-plane, at what point (x, y) do the graphs intersect?

A) $(0, 19)$
B) $(0, 10)$
C) $(10, 0)$
D) $(19, 0)$

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CONTINUE

23

$$12r + 13s = t$$

The given equation relates the numbers r, s, and t. Which equation correctly expresses s in terms of r and t?

A) $s = \dfrac{t - 12r}{13}$

B) $s = \dfrac{1}{13}t - 12r$

C) $s = \dfrac{12r - t}{13}$

D) $s = 13t - 12r$

24

$$x^2 - 2x = 38$$

What is one of the solutions to the given equation?

A) $\sqrt{38}$

B) $1 + \sqrt{39}$

C) 39

D) $38 + \sqrt{2}$

25

A sphere has a radius of 3 inches and a density of 76 ounces per cubic inch. What is the mass, in ounces, of the sphere?

A) $\dfrac{9\pi}{19}$

B) $\dfrac{19\pi}{9}$

C) 228π

D) $2{,}736\pi$

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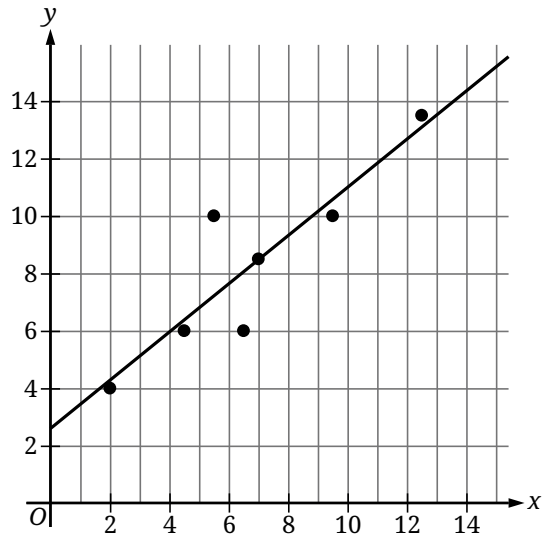
26



The scatterplot shows the relationship between two variables, x and y, for the 7 data points in data set W. A line of best fit for data set W is also shown. This line can be represented by an equation in the form $y = a + cx$, where a and c are constants. Data set V consists of all the data points in data set W as well as the point (14, 8). A line of best fit for data set V can be represented by the equation $y = j + kx$, where j and k are constants. Assuming the lines of best fit are calculated the same way, which of the following statements must be true?

I. $a > j$

II. $c > k$

A) I only
B) II only
C) I and II
D) Neither I nor II

27

$$\frac{7}{9}x^2 - \left(\frac{7}{9}r + s\right)x + rs = 0$$

In the given equation, r and s are positive constants. The product of the solutions to the given equation is rst, where t is a constant. What is the value of t?

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

PSAT™ 8/9

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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