

**The SAT<sup>®</sup>**

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# Practice Test #3

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# Reading and Writing

## 27 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

Artist Marilyn Dingle's intricate, coiled baskets are \_\_\_\_\_ sweetgrass and palmetto palm. Following a Gullah technique that originated in West Africa, Dingle skillfully winds a thin palm frond around a bunch of sweetgrass with the help of a "sewing bone" to create the basket's signature look that no factory can reproduce.

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

- A) indicated by
- B) handmade from
- C) represented by
- D) collected with

2

Some researchers believe that the genes that enable groundhogs and certain other mammals to hibernate through the winter by slowing their breathing and heart rates and lowering their body temperature may be \_\_\_\_\_ in humans: present yet having essentially no effect on our bodily processes.

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

- A) decisive
- B) lacking
- C) variable
- D) dormant

3

Diego Velázquez was the leading artist in the court of King Philip IV of Spain during the seventeenth century, but his influence was hardly \_\_\_\_\_. Spain: realist and impressionist painters around the world employed his techniques and echoed elements of his style.

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

- A) derived from
- B) recognized in
- C) confined to
- D) repressed by

1

Although science fiction was dominated mostly by white male authors when Octavia Butler, a Black woman, began writing, she did not view the genre as \_\_\_\_\_. Butler broke into the field with the publication of several short stories and her 1976 novel *Patternmaster*, and she later became the first science fiction writer to win a prestigious MacArthur Fellowship.

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

- A) legitimate
- B) impenetrable
- C) compelling
- D) indecipherable

The following text is adapted from Nathaniel Hawthorne's 1844 short story "Drowne's Wooden Image." Drowne, a young man, is carving a wooden figure to decorate the front of a ship.

Day by day, the work assumed greater precision, and settled its irregular and misty outline into distincter grace and beauty. The general design was now obvious to the common eye.

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

- A) Acquired
- B) Acknowledged
- C) Imitated
- D) Speculated

The following text is from Walt Whitman's 1860 poem "Calamus 24."

I HEAR it is charged against me that I seek to  
destroy institutions;

But really I am neither for nor against institutions  
(What indeed have I in common with them?—  
Or what with the destruction of them?),

Only I will establish in the Mannahatta  
[Manhattan] and in every city of These States,  
inland and seaboard,

And in the fields and woods, and above every  
keel [ship] little or large, that dents the water,

Without edifices, or rules, or trustees,  
or any argument,

The institution of the dear love of comrades.

Which choice best describes the overall structure of the text?

- A) The speaker questions an increasingly prevalent attitude, then summarizes his worldview.
- B) The speaker regrets his isolation from others, then predicts a profound change in society.
- C) The speaker concedes his personal shortcomings, then boasts of his many achievements.
- D) The speaker addresses a criticism leveled against him, then announces a grand ambition of his.

Utah is home to Pando, a colony of about 47,000 quaking aspen trees that all share a single root system. Pando is one of the largest single organisms by mass on Earth, but ecologists are worried that its growth is declining in part because of grazing by animals. The ecologists say that strong fences could prevent deer from eating young trees and help Pando start thriving again.

According to the text, why are ecologists worried about Pando?

- A) It isn't growing at the same rate it used to.
- B) It isn't producing young trees anymore.
- C) It can't grow into new areas because it is blocked by fences.
- D) Its root system can't support many more new trees.

Cats can judge unseen people's positions in space by the sound of their voices and thus react with surprise when the same person calls to them from two different locations in a short span of time. Saho Takagi and colleagues reached this conclusion by measuring cats' levels of surprise based on their ear and head movements while the cats heard recordings of their owners' voices from two speakers spaced far apart. Cats exhibited a low level of surprise when owners' voices were played twice from the same speaker, but they showed a high level of surprise when the voice was played once each from the two different speakers.

According to the text, how did the researchers determine the level of surprise displayed by the cats in the study?

- A) They watched how each cat moved its ears and head.
- B) They examined how each cat reacted to the voice of a stranger.
- C) They studied how each cat physically interacted with its owner.
- D) They tracked how each cat moved around the room.

9

Culinary anthropologist Vertamae Smart-Grosvenor may be known for her decades of work in national public television and radio, but her book *Vibration Cooking: or, the Travel Notes of a Geechee Girl* is likely her most influential project. The 1970 book, whose title refers to Smart-Grosvenor's roots in the Low Country of South Carolina, was unusual for its time. It combined memoir, recipes, travel writing, and social commentary and challenged notions about conventions of food and cooking. Long admired by many, the book and its author have shaped contemporary approaches to writing about cuisine.

Which choice best describes the main idea of the text?

- A) Smart-Grosvenor's unconventional book *Vibration Cooking: or, the Travel Notes of a Geechee Girl* is an important contribution to food writing.
- B) Smart-Grosvenor held many different positions over her life, including reporter and food writer.
- C) Smart-Grosvenor's groundbreaking book *Vibration Cooking: or, the Travel Notes of a Geechee Girl* didn't receive the praise it deserved when it was first published in 1970.
- D) Smart-Grosvenor was a talented chef whose work inspired many people to start cooking for themselves.

10

*O Pioneers!* is a 1913 novel by Willa Cather. In the novel, Cather depicts Alexandra Bergson as a person who takes comfort in understanding the world around her: \_\_\_\_\_

Which quotation from *O Pioneers!* most effectively illustrates the claim?

- A) "She looked fixedly up the bleak street as if she were gathering her strength to face something, as if she were trying with all her might to grasp a situation which, no matter how painful, must be met and dealt with somehow."
- B) "She had never known before how much the country meant to her. The chirping of the insects down in the long grass had been like the sweetest music. She had felt as if her heart were hiding down there, somewhere, with the quail and the plover and all the little wild things that crooned or buzzed in the sun. Under the long shaggy ridges, she felt the future stirring."
- C) "Alexandra drove off alone. The rattle of her wagon was lost in the howling of the wind, but her lantern, held firmly between her feet, made a moving point of light along the highway, going deeper and deeper into the dark country."
- D) "Alexandra drew her shawl closer about her and stood leaning against the frame of the mill, looking at the stars which glittered so keenly through the frosty autumn air. She always loved to watch them, to think of their vastness and distance, and of their ordered march. It fortified her to reflect upon the great operations of nature, and when she thought of the law that lay behind them, she felt a sense of personal security."



11

Several artworks found among the ruins of the ancient Roman city of Pompeii depict a female figure fishing with a cupid nearby. Some scholars have asserted that the figure is the goddess Venus, since she is known to have been linked with cupids in Roman culture, but University of Leicester archaeologist Carla Brain suggests that cupids may have also been associated with fishing generally. The fact that a cupid is shown near the female figure, therefore, \_\_\_\_\_

Which choice most logically completes the text?

- A) is not conclusive evidence that the figure is Venus.
- B) suggests that Venus was often depicted fishing.
- C) eliminates the possibility that the figure is Venus.
- D) would be difficult to account for if the figure is not Venus.

In documents called judicial opinions, judges explain the reasoning behind their legal rulings, and in those explanations they sometimes cite and discuss historical and contemporary philosophers. Legal scholar and philosopher Anita L. Allen argues that while judges are naturally inclined to mention philosophers whose views align with their own positions, the strongest judicial opinions consider and rebut potential objections; discussing philosophers whose views conflict with judges' views could therefore \_\_\_\_\_

Which choice most logically completes the text?

- A) allow judges to craft judicial opinions without needing to consult philosophical works.
- B) help judges improve the arguments they put forward in their judicial opinions.
- C) make judicial opinions more comprehensible to readers without legal or philosophical training.
- D) bring judicial opinions in line with views that are broadly held among philosophers.

13

Many of William Shakespeare's tragedies address broad themes that still appeal to today's audiences. For instance, *Romeo and Juliet*, which is set in the Italy of Shakespeare's time, tackles the themes of parents versus children and love versus hate, and the play continues to be read and produced widely around the world. But understanding Shakespeare's so-called history plays can require a knowledge of several centuries of English history.

Consequently, \_\_\_\_\_

Which choice most logically completes the text?

- A) many theatergoers and readers today are likely to find Shakespeare's history plays less engaging than the tragedies.
- B) some of Shakespeare's tragedies are more relevant to today's audiences than twentieth-century plays.
- C) *Romeo and Juliet* is the most thematically accessible of all Shakespeare's tragedies.
- D) experts in English history tend to prefer Shakespeare's history plays to his other works.

14

In her analysis of Edith Wharton's *The House of Mirth* (1905), scholar Candace Waid observes that the novel depicts the upper classes of New York society as "consumed by the appetite of a soulless \_\_\_\_\_ an apt assessment given that *The House of Mirth* is set during the Gilded Age, a period marked by rapid industrialization, economic greed, and widening wealth disparities.

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

- A) materialism"; and
- B) materialism" and
- C) materialism,"
- D) materialism"

15

Based on genetic evidence, archaeologists have generally agreed that reindeer domestication began in the eleventh century CE. However, since uncovering fragments of a 2,000-year-old reindeer training harness in northern Siberia, \_\_\_\_\_ may have begun much earlier.

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

- A) researcher Robert Losey has argued that domestication
- B) researcher Robert Losey's argument is that domestication
- C) domestication, researcher Robert Losey has argued,
- D) the argument researcher Robert Losey has made is that domestication

16

A conceptual artist and designer embraced by both the art world and the fashion \_\_\_\_\_ Mary Ping was chosen to curate the exhibition *Front Row: Chinese American Designers* for the Museum of Chinese in America.

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

- A) world
- B) world:
- C) world;
- D) world,

17

Professional American football player Fred Cox invented one of the world's most popular toys. In the 1970s, he came up with the idea for the Nerf football, which \_\_\_\_\_ of the harder and heavier regulation football.

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

- A) were a smaller, foam version
- B) are smaller, foam versions
- C) were smaller, foam versions
- D) is a smaller, foam version

18

Beatrix Potter is perhaps best known for writing and illustrating children's books such as *The Tale of Peter Rabbit* (1902), but she also dedicated herself to mycology, the study of \_\_\_\_\_ more than 350 paintings of the fungal species she observed in nature and submitting her research on spore germination to the Linnean Society of London.

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

- A) fungi; producing
- B) fungi. Producing
- C) fungi producing
- D) fungi, producing

19

African American Percy Julian was a scientist and entrepreneur whose work helped people around the world to see. Named in 1999 as one of the greatest achievements by a US chemist in the past hundred years, \_\_\_\_\_ led to the first mass-produced treatment for glaucoma.

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

- A) Julian synthesized the alkaloid physostigmine in 1935; it
- B) in 1935 Julian synthesized the alkaloid physostigmine, which
- C) Julian's 1935 synthesis of the alkaloid physostigmine
- D) the alkaloid physostigmine was synthesized by Julian in 1935 and

20

The first computerized spreadsheet, Dan Bricklin's *VisiCalc*, improved financial recordkeeping not only by providing users with an easy means of adjusting data in spreadsheets but also by automatically updating all calculations that were dependent on these \_\_\_\_\_ to *VisiCalc*'s release, changing a paper spreadsheet often required redoing the entire sheet by hand, a process that could take days.

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

- A) adjustments prior
- B) adjustments, prior
- C) adjustments. Prior
- D) adjustments and prior

21

Neuroscientist Karen Konkoly wanted to determine whether individuals can understand and respond to questions during REM sleep. She first taught volunteers eye movements they would use to respond to basic math problems while asleep (a single left-right eye movement indicated the number one). \_\_\_\_\_ she attached electrodes to the volunteers' faces to record their eye movements during sleep.

Which choice completes the text with the most logical transition?

- A) Specifically,
- B) Next,
- C) For instance,
- D) In sum,

22

Archaeologist Sue Brunning explains why the seventh-century ship burial site at Sutton Hoo in England was likely the tomb of a king. First, the gold artifacts inside the ship suggest that the person buried with them was a wealthy and respected leader. \_\_\_\_\_ the massive effort required to bury the ship would likely only have been undertaken for a king.

Which choice completes the text with the most logical transition?

- A) Instead,
- B) Still,
- C) Specifically,
- D) Second,

23

Every chemical compound has a spectroscopic fingerprint, a pattern of reflected light unique to that compound. \_\_\_\_\_ upon analyzing the light reflected by the bright regions on the surface of the dwarf planet Ceres, Maria Cristina De Sanctis of Rome's National Institute of Astrophysics was able to determine that the regions contain large amounts of the compound sodium carbonate.

Which choice completes the text with the most logical transition?

- A) Regardless,
- B) Meanwhile,
- C) Thus,
- D) In comparison,

24

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

- Severo Ochoa discovered the enzyme PNPase in 1955.
- PNPase is involved in both the creation and degradation of mRNA.
- Ochoa incorrectly hypothesized that PNPase provides the genetic blueprints for mRNA.
- The discovery of PNPase proved critical to deciphering the human genetic code.
- Deciphering the genetic code has led to a better understanding of how genetic variations affect human health.

The student wants to emphasize the significance of Ochoa's discovery. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) Ochoa's 1955 discovery of PNPase proved critical to deciphering the human genetic code, leading to a better understanding of how genetic variations affect human health.
- B) Ochoa first discovered PNPase, an enzyme that he hypothesized contained the genetic blueprints for mRNA, in 1955.
- C) In 1955, Ochoa discovered the PNPase enzyme, which is involved in both the creation and degradation of mRNA.
- D) Though his discovery of PNPase was critical to deciphering the human genetic code, Ochoa incorrectly hypothesized that the enzyme was the source of mRNA's genetic blueprints.

25

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

- Physicist Muluneh Abebe was working on a garment suited for both warm and cold conditions.
- He analyzed the emissivity, or ability to emit heat, of the materials he planned to use.
- Abebe found that reflective metal fibers emitted almost no heat and had an emissivity of 0.02.
- He found that silicon carbide fibers absorbed large amounts of heat and had an emissivity of 0.74.
- The amount of heat a material absorbs is equal to the amount of heat it emits.

The student wants to contrast the emissivity of reflective metal fibers with that of silicon carbide fibers. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) The ability of reflective metal fibers and silicon carbide fibers to emit heat was determined by an analysis of each material's emissivity.
- B) The amount of heat a material absorbs is equal to the amount it emits, as evidenced in Abebe's analyses.
- C) Though the reflective metal fibers and silicon carbide fibers had different rates of emissivity, Abebe planned to use both in a garment.
- D) Whereas the reflective metal fibers had an emissivity of just 0.02, the silicon carbide fibers absorbed large amounts of heat, resulting in an emissivity of 0.74.

26

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

- In the early 1960s, the US had a strict national-origins quota system for immigrants.
- The number of new immigrants allowed from a country each year was based on how many people from that country lived in the US in 1890.
- This system favored immigrants from northern Europe.
- Almost 70% of slots were reserved for immigrants from Great Britain, Ireland, and Germany.
- The 1965 Hart-Celler Act abolished the national-origins quota system.

The student wants to present the significance of the Hart-Celler Act to an audience unfamiliar with the history of US immigration. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) Almost 70% of slots were reserved for immigrants from Great Britain, Ireland, and Germany at the time the Hart-Celler Act was proposed.
- B) Prior to the Hart-Celler Act, new immigration quotas were based on how many people from each country lived in the US in 1890.
- C) The quota system in place in the early 1960s was abolished by the 1965 Hart-Celler Act.
- D) The 1965 Hart-Celler Act abolished the national-origins quota system, which favored immigrants from northern Europe.

27

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

- In 2020, theater students at Radford and Virginia Tech chose an interactive, online format to present a play about woman suffrage activists.
- Their “Women and the Vote” website featured an interactive digital drawing of a Victorian-style house.
- Audiences were asked to focus on a room of their choice and select from that room an artifact related to the suffrage movement.
- One click took them to video clips, songs, artwork, and texts associated with the artifact.
- The play was popular with audiences because the format allowed them to control the experience.

The student wants to explain an advantage of the “Women and the Vote” format. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) “Women and the Vote” featured a drawing of a Victorian-style house with several rooms, each containing suffrage artifacts.
- B) To access video clips, songs, artwork, and texts, audiences had to first click on an artifact.
- C) The “Women and the Vote” format appealed to audiences because it allowed them to control the experience.
- D) Using an interactive format, theater students at Radford and Virginia Tech created “Women and the Vote,” a play about woman suffrage activists.

**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.**

# Reading and Writing

## 27 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

For painter Jacob Lawrence, being \_\_\_\_\_ was an important part of the artistic process. Because he paid close attention to all the details of his Harlem neighborhood, Lawrence's artwork captured nuances in the beauty and vitality of the Black experience during the Harlem Renaissance and the Great Migration.

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

- A) skeptical
- B) observant
- C) critical
- D) confident

2

Particle physicists like Ayana Holloway Arce and Aida El-Khadra spend much of their time \_\_\_\_\_ what is invisible to the naked eye: using sophisticated technology, they closely examine the behavior of subatomic particles, the smallest detectable parts of matter.

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

- A) selecting
- B) inspecting
- C) creating
- D) deciding

3

Beginning in the 1950s, Navajo Nation legislator Annie Dodge Wauneka continuously worked to promote public health; this \_\_\_\_\_ effort involved traveling throughout the vast Navajo homeland and writing a medical dictionary for speakers of *Diné bizaad*, the Navajo language.

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

- A) impartial
- B) offhand
- C) persistent
- D) mandatory

4

The process of mechanically recycling plastics is often considered \_\_\_\_\_ because of the environmental impact and the loss of material quality that often occurs. But chemist Takunda Chazovachii has helped develop a cleaner process of chemical recycling that converts superabsorbent polymers from diapers into a desirable reusable adhesive.

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

- A) resilient
- B) inadequate
- C) dynamic
- D) satisfactory

5

Novelist N. K. Jemisin declines to \_\_\_\_\_ the conventions of the science fiction genre in which she writes, and she has suggested that her readers appreciate her work precisely because of this willingness to thwart expectations and avoid formulaic plots and themes.

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

- A) question
- B) react to
- C) perceive
- D) conform to

6

In 1929 the *Atlantic Monthly* published several articles based on newly discovered letters allegedly exchanged between President Abraham Lincoln and a woman named Ann Rutledge. Historians were unable to \_\_\_\_\_ the authenticity of the letters, however, and quickly dismissed them as a hoax.

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

- A) validate
- B) interpret
- C) relate
- D) accommodate

7

The following text is from Georgia Douglas Johnson's 1922 poem "Benediction."

Go forth, my son,  
Winged by my heart's desire!  
Great reaches, yet unknown,  
Await  
For your possession.  
I may not, if I would,  
Retrace the way with you,  
My pilgrimage is through,  
But life is calling you!

Which choice best states the main purpose of the text?

- A) To express hope that a child will have the same accomplishments as his parent did
- B) To suggest that raising a child involves many struggles
- C) To warn a child that he will face many challenges throughout his life
- D) To encourage a child to embrace the experiences life will offer

8

In 2007, computer scientist Luis von Ahn was working on converting printed books into a digital format. He found that some words were distorted enough that digital scanners couldn't recognize them, but most humans could easily read them. Based on that finding, von Ahn invented a simple security test to keep automated "bots" out of websites. The first version of the reCAPTCHA test asked users to type one known word and one of the many words scanners couldn't recognize. Correct answers proved the users were humans and added data to the book-digitizing project.

Which choice best states the main purpose of the text?

- A) To discuss von Ahn's invention of reCAPTCHA
- B) To explain how digital scanners work
- C) To call attention to von Ahn's book-digitizing project
- D) To indicate how popular reCAPTCHA is

9

**Text 1**

A tiny, unusual fossil in a piece of 99-million-year-old amber is of the extinct species *Oculudentavis khaungraae*. The *O. khaungraae* fossil consists of a rounded skull with a thin snout and a large eye socket. Because these features look like they are avian, or related to birds, researchers initially thought that the fossil might be the smallest avian dinosaur ever found.

**Text 2**

Paleontologists were excited to discover a second small fossil that is similar to the strange *O. khaungraae* fossil but has part of the lower body along with a birdlike skull. Detailed studies of both fossils revealed several traits that are found in lizards but not in dinosaurs or birds. Therefore, paleontologists think the two creatures were probably unusual lizards, even though the skulls looked avian at first.

Based on the texts, what would the paleontologists in Text 2 most likely say about the researchers' initial thought in Text 1?

- A) It is understandable because the fossil does look like it could be related to birds, even though *O. khaungraae* is probably a lizard.
- B) It is confusing because it isn't clear what caused the researchers to think that *O. khaungraae* might be related to birds.
- C) It is flawed because the researchers mistakenly assumed that *O. khaungraae* must be a lizard.
- D) It is reasonable because the *O. khaungraae* skull is about the same size as the skull of the second fossil but is shaped differently.

10

The following text is from Ezra Pound's 1909 poem "Hymn III," based on the work of Marcantonio Flaminio.

As a fragile and lovely flower unfolds its gleaming foliage on the breast of the fostering earth, if the dew and the rain draw it forth;  
So doth my tender mind flourish, if it be fed with the sweet dew of the fostering spirit,  
Lacking this, it beginneth straightway to languish, even as a floweret born upon dry earth, if the dew and the rain tend it not.

Based on the text, in what way is the human mind like a flower?

- A) It becomes increasingly vigorous with the passage of time.
- B) It draws strength from changes in the weather.
- C) It requires proper nourishment in order to thrive.
- D) It perseveres despite challenging circumstances.

11

Maximum Height of Maple Trees  
When Fully Grown

Tree type	Maximum height (feet)	Native to North America
Sugar maple	75	yes
Silver maple	70	yes
Red maple	60	yes
Japanese maple	25	no
Norway maple	50	no

For a school project, a forestry student needs to recommend a maple tree that is native to North America and won't grow more than 60 feet in height. Based on the characteristics of five common maple trees, she has decided to select a \_\_\_\_\_

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

- A) silver maple.
- B) sugar maple.
- C) red maple.
- D) Norway maple.



12

A student is examining a long, challenging poem that was initially published in a quarterly journal without explanatory notes, then later republished in a stand-alone volume containing only that poem and accompanying explanatory notes written by the poet. The student asserts that the explanatory notes were included in the republication primarily as a marketing device to help sell the stand-alone volume.

Which statement, if true, would most directly support the student's claim?

- A) The text of the poem as published in the quarterly journal is not identical to the text of the poem published in the stand-alone volume.
- B) Many critics believe that the poet's explanatory notes remove certain ambiguities of the poem and make it less interesting as a result.
- C) The publishers of the stand-alone volume requested the explanatory notes from the poet in order to make the book attractive to readers who already had a copy of the poem in a journal issue.
- D) Correspondence between the poet and the publisher reveals that the poet's explanatory notes went through several drafts.

13

*The Post Office* is a 1912 play by Rabindranath Tagore, originally written in Bengali. The character Amal is a young boy who imagines that the people he sees passing the window of his home are carefree even when engaged in work or chores, as is evident when he says to the daughter of a flower seller, \_\_\_\_\_

Which quotation from *The Post Office* most effectively illustrates the claim?

- A) "I see, you don't wish to stop; I don't care to stay on here either."
- B) "Oh, flower gathering? That is why your feet seem so glad and your anklets jingle so merrily as you walk."
- C) "I'll pay when I grow up—before I leave to look for work out on the other side of that stream there."
- D) "Wish I could be out too. Then I would pick some flowers for you from the very topmost branches right out of sight."

Characteristics of Five Recently Discovered Gas Exoplanets

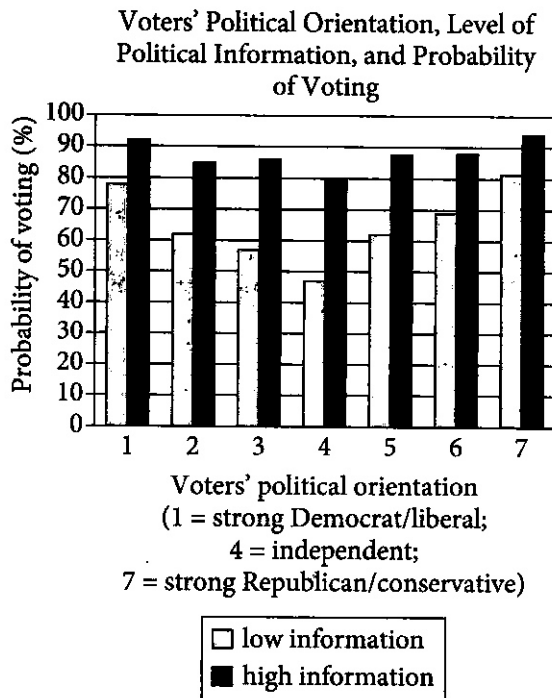
Exoplanet designation	Mass (Jupiters)	Radius (Jupiters)	Orbital period (days)	Distance from the Sun (parsecs)
TOI-640 b	0.88	1.771	5.003	340
TOI-1601 b	0.99	1.239	5.331	336
TOI-628 b	6.33	1.060	3.409	178
TOI-1478 b	0.85	1.060	10.180	153
TOI-1333 b	2.37	1.396	4.720	200

“Hot Jupiters” are gas planets that have a mass of at least 0.25 Jupiters (meaning that their mass is at least 25% of that of Jupiter) and an orbital period of less than 10 days (meaning that they complete one orbit around their star in less than 10 days), while “warm Jupiters” are gas planets that meet the same mass criterion but have orbital periods of more than 10 days. In 2021, Michigan State University astronomer Joseph Rodriguez and colleagues announced the discovery of five new gas exoplanets and asserted that four are hot Jupiters and one is a warm Jupiter.

Which choice best describes data from the table that support Rodriguez and colleagues’ assertion?

- A) None of the planets have an orbital period of more than 10 days, and TOI-628 b has a mass of 6.33 Jupiters.
- B) TOI-1478 b has an orbital period of 153 days, and the masses of all the planets range from 0.85 to 6.33 Jupiters.
- C) All the planets have a radius between 1.060 and 1.771 Jupiters, and only TOI-1333 b has an orbital period of more than 10 days.
- D) Each of the planets has a mass greater than 0.25 Jupiters, and all except for TOI-1478 b have an orbital period of less than 10 days.

15



Economists Kerwin Kofi Charles and Melvin Stephens Jr. investigated a variety of factors that influence voter turnout in the United States. Using survey data that revealed whether respondents voted in national elections and how knowledgeable respondents are about politics, Charles and Stephens claim that the likelihood of voting is driven in part by potential voters' confidence in their assessments of candidates—essentially, the more informed voters are about politics, the more confident they are at evaluating whether candidates share their views, and thus the more likely they are to vote.

Which choice best describes data in the graph that support Charles and Stephens's claim?

- A) At each point on the political orientation scale, high-information voters were more likely than low-information voters to vote.
- B) Only low-information voters who identify as independents had a voting probability below 50%.
- C) The closer that low-information voters are to the ends of the political orientation scale, the more likely they were to vote.
- D) High-information voters were more likely to identify as strong Democrats or strong Republicans than low-information voters were.

16

In the "language nest" model of education, Indigenous children learn the language of their people by using it as the medium of instruction and socialization at pre-K or elementary levels. In their 2016 study of a school in an Anishinaabe community in Ontario, Canada, scholars Lindsay Morcom and Stephanie Roy (who are Anishinaabe themselves) found that the model not only imparted fluency in the Anishinaabe language but also enhanced students' pride in Anishinaabe culture overall. Given these positive effects, Morcom and Roy predict that the model increases the probability that as adults, former students of the school will transmit the language to younger generations in their community.

Which finding, if true, would most strongly support the researchers' prediction?

- A) Anishinaabe adults who didn't attend the school feel roughly the same degree of cultural pride as the former students of the school feel.
- B) After transferring to the school, new students experience an increase in both fluency and academic performance overall.
- C) As adults, former students of the school are just as likely to continue living in their community as individuals who didn't attend the school.
- D) As they complete secondary and higher education, former students of the school experience no loss of fluency or cultural pride.

17

Choctaw/Cherokee artist Jeffrey Gibson turns punching bags used by boxers into art by decorating them with beadwork and elements of Native dressmaking. These elements include leather fringe and jingles, the metal cones that cover the dresses worn in the jingle dance, a women's dance of the Ojibwe people. Thus, Gibson combines an object commonly associated with masculinity (a punching bag) with art forms traditionally practiced by women in most Native communities (beadwork and dressmaking). In this way, he rejects the division of male and female gender roles.

Which choice best describes Gibson's approach to art, as presented in the text?

- A) He draws from traditional Native art forms to create his original works.
- B) He finds inspiration from boxing in designing the dresses he makes.
- C) He rejects expectations about color and pattern when incorporating beadwork.
- D) He has been influenced by Native and non-Native artists equally.

18

For thousands of years, people in the Americas \_\_\_\_\_ the bottle gourd, a large bitter fruit with a thick rind, to make bottles, other types of containers, and even musical instruments. Oddly, there is no evidence that any type of bottle gourd is native to the Western Hemisphere; either the fruit or its seeds must have somehow been carried from Asia or Africa.

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

- A) to use
- B) have used
- C) having used
- D) using

19

The Alvarez theory, developed in 1980 by physicist Luis Walter Alvarez and his geologist son Walter Alvarez, maintained that the secondary effects of an asteroid impact caused many dinosaurs and other animals to die \_\_\_\_\_ it left unexplored the question of whether unrelated volcanic activity might have also contributed to the mass extinctions.

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

- A) out but
- B) out, but
- C) out
- D) out,

20

To survive when water is scarce, embryos inside African turquoise killifish eggs \_\_\_\_\_ a dormant state known as diapause. In this state, embryonic development is paused for as long as two years—longer than the life span of an adult killifish.

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

- A) enter
- B) to enter
- C) having entered
- D) entering

21

In his 1963 exhibition *Exposition of Music—Electronic Television*, Korean American artist Nam June Paik showed how television images could be manipulated to express an artist's perspective. Today, Paik \_\_\_\_\_ considered the first video artist.

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

- A) will be
- B) had been
- C) was
- D) is

22

As British scientist Peter Whibberley has observed, “the Earth is not a very good timekeeper.” Earth’s slightly irregular rotation rate means that measurements of time must be periodically adjusted. Specifically, an extra “leap second” (the 86,401st second of the day) is \_\_\_\_\_ time based on the planet’s rotation lags a full nine-tenths of a second behind time kept by precise atomic clocks.

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

- A) added, whenever
- B) added; whenever
- C) added. Whenever
- D) added whenever

23

Like other amphibians, the wood frog (*Rana sylvatica*) is unable to generate its own heat, so during periods of subfreezing temperatures, it \_\_\_\_\_ by producing large amounts of glucose, a sugar that helps prevent damaging ice from forming inside its cells.

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

- A) had survived
- B) survived
- C) would survive
- D) survives

24

Chimamanda Ngozi Adichie’s 2013 novel *Americanah* chronicles the divergent experiences of Ifemelu and Obinze, a young Nigerian couple, after high school. Ifemelu moves to the United States to attend a prestigious university. \_\_\_\_\_ Obinze travels to London, hoping to start a career there. However, frustrated with the lack of opportunities, he soon returns to Nigeria.

Which choice completes the text with the most logical transition?

- A) Meanwhile,
- B) Nevertheless,
- C) Secondly,
- D) In fact,

25

Before California’s 1911 election to approve a proposition granting women the right to vote, activists across the state sold tea to promote the cause of suffrage. In San Francisco, the Woman’s Suffrage Party sold Equality Tea at local fairs. \_\_\_\_\_ in Los Angeles, activist Nancy Tuttle Craig, who ran one of California’s largest grocery store firms, distributed Votes for Women Tea.

Which choice completes the text with the most logical transition?

- A) For example,
- B) To conclude,
- C) Similarly,
- D) In other words,

26

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

- Some sandstone arches in Utah's Arches National Park have been defaced by tourists' carvings.
- Park rangers can smooth away some carvings using power grinders.
- For deep carvings, power grinding is not always feasible because it can greatly alter or damage the rock.
- Park rangers can use an infilling technique, which involves filling in carvings with ground sandstone and a bonding agent.
- This technique is minimally invasive.

The student wants to explain an advantage of the infilling technique. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) To remove carvings from sandstone arches in Utah's Arches National Park, power grinding is not always feasible.
- B) Filling in carvings with ground sandstone and a bonding agent is less invasive than smoothing them away with a power grinder, which can greatly alter or damage the sandstone arches.
- C) Park rangers can use a power grinding technique to smooth away carvings or fill them in with ground sandstone and a bonding agent.
- D) As methods for removing carvings from sandstone, power grinding and infilling differ in their level of invasiveness.

27

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

- Soo Sunny Park is a Korean American artist who uses light as her primary medium of expression.
- She created her work *Unwoven Light* in 2013.
- *Unwoven Light* featured a chain-link fence fitted with iridescent plexiglass tiles.
- When light passed through the fence, colorful prisms formed.

The student wants to describe *Unwoven Light* to an audience unfamiliar with Soo Sunny Park. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) Park's 2013 installation *Unwoven Light*, which included a chain-link fence and iridescent tiles made from plexiglass, featured light as its primary medium of expression.
- B) Korean American light artist Soo Sunny Park created *Unwoven Light* in 2013.
- C) The chain-link fence in Soo Sunny Park's *Unwoven Light* was fitted with tiles made from iridescent plexiglass.
- D) In *Unwoven Light*, a 2013 work by Korean American artist Soo Sunny Park, light formed colorful prisms as it passed through a fence Park had fitted with iridescent tiles.

**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.**

**Test begins on the next page.**

## Math

## 22 QUESTIONS

## DIRECTIONS

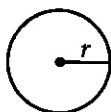
The questions in this section address a number of important math skills.  
Use of a calculator is permitted for all questions.

## NOTES

Unless otherwise indicated:

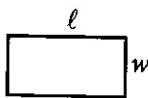
- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function  $f$  is the set of all real numbers  $x$  for which  $f(x)$  is a real number.

## REFERENCE

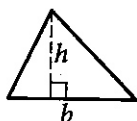


$$A = \pi r^2$$

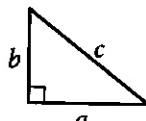
$$C = 2\pi r$$



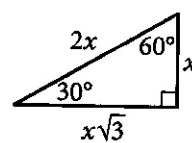
$$A = \ell w$$



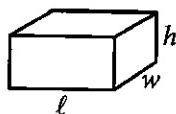
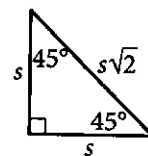
$$A = \frac{1}{2}bh$$



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



Special Right Triangles



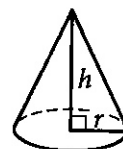
$$V = \ell wh$$



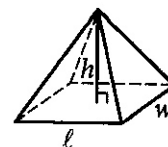
$$V = \pi r^2 h$$



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



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



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

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

The number of radians of arc in a circle is  $2\pi$ .

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



**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 ( $\frac{7}{2}$ ) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1

A bus is traveling at a constant speed along a straight portion of road. The equation  $d = 30t$  gives the distance  $d$ , in feet from a road marker, that the bus will be  $t$  seconds after passing the marker. How many feet from the marker will the bus be 2 seconds after passing the marker?

- A) 30
- B) 32
- C) 60
- D) 90

2

A line in the  $xy$ -plane has a slope of  $\frac{1}{9}$  and passes through the point  $(0, 14)$ . Which equation represents this line?

- A)  $y = -\frac{1}{9}x - 14$
- B)  $y = -\frac{1}{9}x + 14$
- C)  $y = \frac{1}{9}x - 14$
- D)  $y = \frac{1}{9}x + 14$

3

If  $\frac{x}{8} = 5$ , what is the value of  $\frac{8}{x}$ ?

1

Triangles  $ABC$  and  $DEF$  are congruent, where  $A$  corresponds to  $D$ , and  $B$  and  $E$  are right angles. The measure of angle  $A$  is  $18^\circ$ . What is the measure of angle  $F$ ?

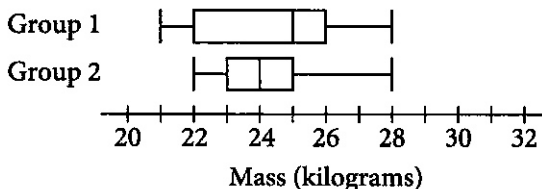
- A)  $18^\circ$
- B)  $72^\circ$
- C)  $90^\circ$
- D)  $162^\circ$

3

Which expression is equivalent to  $(m^4q^4z^{-1})(mq^5z^3)$ , where  $m$ ,  $q$ , and  $z$  are positive?

- A)  $m^4q^{20}z^{-3}$
- B)  $m^5q^9z^2$
- C)  $m^6q^8z^{-1}$
- D)  $m^{20}q^{12}z^{-2}$

6



The box plots summarize the masses, in kilograms, of two groups of gazelles. Based on the box plots, which of the following statements must be true?

- A) The mean mass of group 1 is greater than the mean mass of group 2.
- B) The mean mass of group 1 is less than the mean mass of group 2.
- C) The median mass of group 1 is greater than the median mass of group 2.
- D) The median mass of group 1 is less than the median mass of group 2.

7

$$y = 76$$
$$y = x^2 - 5$$

The graphs of the given equations in the  $xy$ -plane intersect at the point  $(x, y)$ . What is a possible value of  $x$ ?

- A)  $-\frac{76}{5}$
- B)  $-9$
- C)  $5$
- D)  $76$

8

To estimate the proportion of a population that has a certain characteristic, a random sample was selected from the population. Based on the sample, it is estimated that the proportion of the population that has the characteristic is 0.49, with an associated margin of error of 0.04. Based on this estimate and margin of error, which of the following is the most appropriate conclusion about the proportion of the population that has the characteristic?

- A) It is plausible that the proportion is between 0.45 and 0.53.
- B) It is plausible that the proportion is less than 0.45.
- C) The proportion is exactly 0.49.
- D) It is plausible that the proportion is greater than 0.53.

9

$$y = 2x + 10$$
$$y = 2x - 1$$

At how many points do the graphs of the given equations intersect in the  $xy$ -plane?

- A) Zero
- B) Exactly one
- C) Exactly two
- D) Infinitely many

10

In the  $xy$ -plane, the graph of the linear function  $f$  contains the points  $(0, 2)$  and  $(8, 34)$ . Which equation defines  $f$ , where  $y = f(x)$ ?

- A)  $f(x) = 2x + 42$
- B)  $f(x) = 32x + 36$
- C)  $f(x) = 4x + 2$
- D)  $f(x) = 8x + 2$

11

If  $\frac{x}{y} = 4$  and  $\frac{24x}{ny} = 4$ , what is the value of  $n$ ?

12

$$w(t) = 300 - 4t$$

The function  $w$  models the volume of liquid, in milliliters, in a container  $t$  seconds after it begins draining from a hole at the bottom. According to the model, what is the predicted volume, in milliliters, draining from the container each second?

- A) 300
- B) 296
- C) 75
- D) 4

13

Each year, the value of an investment increases by 0.49% of its value the previous year. Which of the following functions best models how the value of the investment changes over time?

- A) Decreasing exponential
- B) Decreasing linear
- C) Increasing exponential
- D) Increasing linear

14

$$\begin{aligned} 24x + y &= 48 \\ 6x + y &= 72 \end{aligned}$$

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

15

$$y = x^2 - 14x + 22$$

The given equation relates the variables  $x$  and  $y$ . For what value of  $x$  does the value of  $y$  reach its minimum?

16

The function  $h$  is defined by  $h(x) = 4x + 28$ . The graph of  $y = h(x)$  in the  $xy$ -plane has an  $x$ -intercept at  $(a, 0)$  and a  $y$ -intercept at  $(0, b)$ , where  $a$  and  $b$  are constants. What is the value of  $a + b$ ?

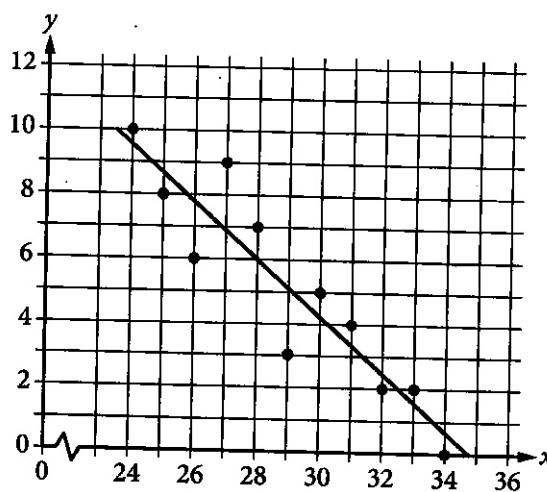
- A) 21
- B) 28
- C) 32
- D) 35

17

Square A has side lengths that are 166 times the side lengths of square B. The area of square A is  $k$  times the area of square B. What is the value of  $k$ ?

18

The scatterplot shows the relationship between two variables,  $x$  and  $y$ . A line of best fit for the data is also shown.



At  $x = 25.5$ , which of the following is closest to the  $y$ -value predicted by the line of best fit?

- A) 6.2
- B) 7.3
- C) 8.2
- D) 9.1

19

The measure of angle  $R$  is  $\frac{2\pi}{3}$  radians. The measure of angle  $T$  is  $\frac{5\pi}{12}$  radians greater than the measure of angle  $R$ . What is the measure of angle  $T$ , in degrees?

- A) 75
- B) 120
- C) 195
- D) 390

20

A scientist initially measures 12,000 bacteria in a growth medium. 4 hours later, the scientist measures 24,000 bacteria. Assuming exponential growth, the formula  $P = C(2)^{rt}$  gives the number of bacteria in the growth medium, where  $r$  and  $C$  are constants and  $P$  is the number of bacteria  $t$  hours after the initial measurement. What is the value of  $r$ ?

- A)  $\frac{1}{12,000}$
- B)  $\frac{1}{4}$
- C) 4
- D) 12,000

21

$$\sqrt{(x-2)^2} = \sqrt{3x+34}$$

What is the smallest solution to the given equation?

22

$$x - 29 = (x - a)(x - 29)$$

Which of the following are solutions to the given equation, where  $a$  is a constant and  $a > 30$ ?

- I.  $a$
  - II.  $a + 1$
  - III. 29
- A) I and II only
  - B) I and III only
  - C) II and III only
  - D) I, II, and III

**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.**

## Math

## 22 QUESTIONS

## DIRECTIONS

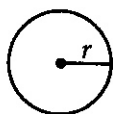
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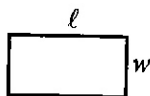
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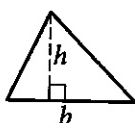


$$A = \pi r^2$$

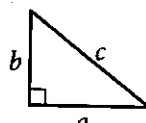
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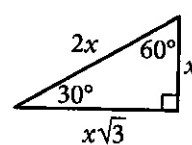
$$A = \ell w$$



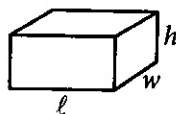
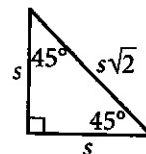
$$A = \frac{1}{2}bh$$



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



Special Right Triangles



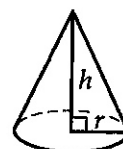
$$V = \ell wh$$



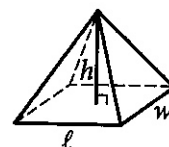
$$V = \pi r^2 h$$



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



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



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

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

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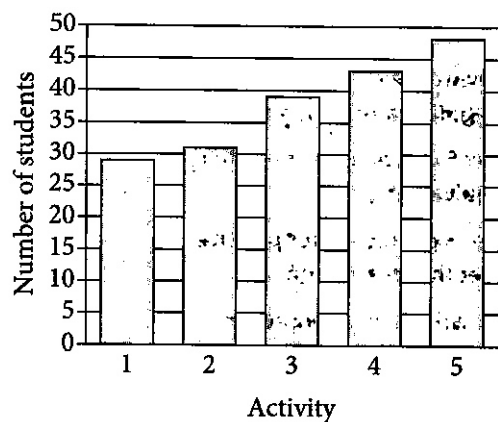
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- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1

What is 10% of 470?

- A) 37
- B) 47
- C) 423
- D) 460

2



A group of students voted on five after-school activities. The bar graph shows the number of students who voted for each of the five activities. How many students chose activity 3?

- A) 25
- B) 39
- C) 48
- D) 50

$$4x + 5 = 165$$

What is the solution to the given equation?

A customer spent \$27 to purchase oranges at \$3 per pound. How many pounds of oranges did the customer purchase?

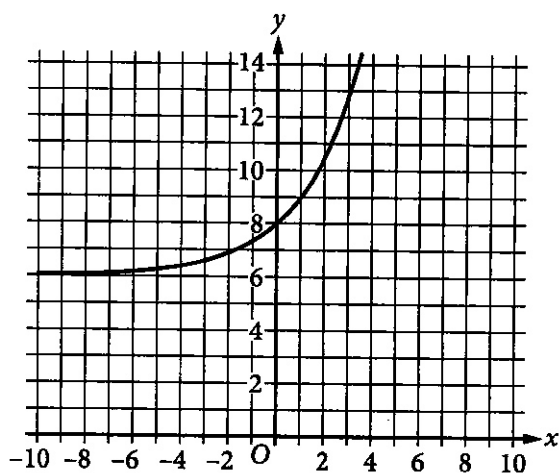
The function  $f$  is defined by  $f(x) = 4x$ . For what value of  $x$  does  $f(x) = 8$ ?

The function  $g$  is defined by  $g(x) = x^2 + 9$ . For which value of  $x$  is  $g(x) = 25$ ?

- A) 4
- B) 5
- C) 9
- D) 13



7



What is the  $y$ -intercept of the graph shown?

- A)  $(-8, 0)$
- B)  $(-6, 0)$
- C)  $(0, 6)$
- D)  $(0, 8)$

8

Sean rents a tent at a cost of \$11 per day plus a onetime insurance fee of \$10. Which equation represents the total cost  $c$ , in dollars, to rent the tent with insurance for  $d$  days?

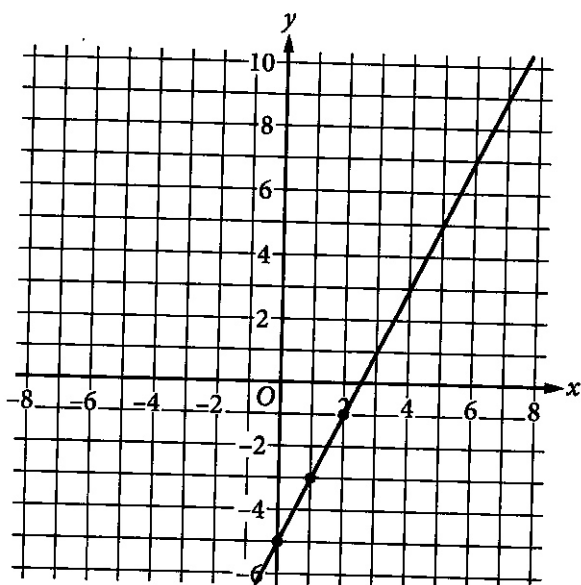
- A)  $c = 11(d + 10)$
- B)  $c = 10(d + 11)$
- C)  $c = 11d + 10$
- D)  $c = 10d + 11$

9

Which expression is equivalent to  $\frac{4}{4x-5} - \frac{1}{x+1}$ ?

- A)  $\frac{1}{(x+1)(4x-5)}$
- B)  $\frac{3}{3x-6}$
- C)  $-\frac{1}{(x+1)(4x-5)}$
- D)  $\frac{9}{(x+1)(4x-5)}$

10



The graph shows the linear relationship between  $x$  and  $y$ . Which table gives three values of  $x$  and their corresponding values of  $y$  for this relationship?

A)

$x$	$y$
0	0
1	-7
2	-9

B)

$x$	$y$
0	0
1	-3
2	-1

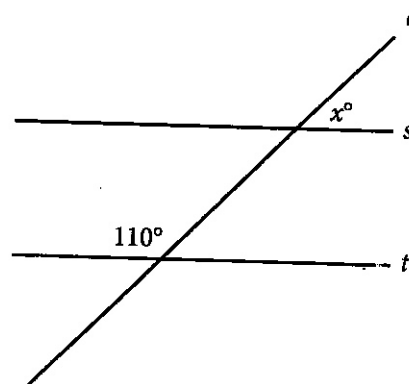
C)

$x$	$y$
0	-5
1	-7
2	-9

D)

$x$	$y$
0	-5
1	-3
2	-1

11



Note: Figure not drawn to scale.

In the figure shown, line  $c$  intersects parallel lines  $s$  and  $t$ . What is the value of  $x$ ?

12

What is the perimeter, in inches, of a rectangle with a length of 4 inches and a width of 9 inches?

- A) 13  
B) 17  
C) 22  
D) 26

13

$$8j = k + 15m$$

The given equation relates the distinct positive numbers  $j$ ,  $k$ , and  $m$ . Which equation correctly expresses  $j$  in terms of  $k$  and  $m$ ?

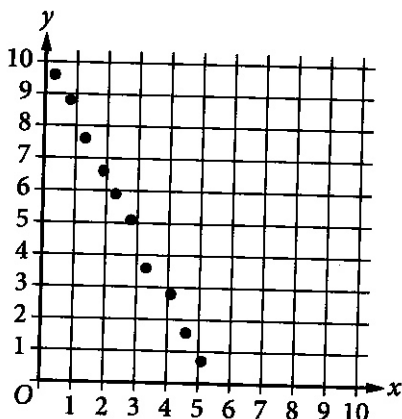
- A)  $j = \frac{k}{8} + 15m$   
B)  $j = k + \frac{15m}{8}$   
C)  $j = 8(k + 15m)$   
D)  $j = \frac{k + 15m}{8}$

11

The point  $(8, 2)$  in the  $xy$ -plane is a solution to which of the following systems of inequalities?

- A)  $x > 0$   
 $y > 0$
- B)  $x > 0$   
 $y < 0$
- C)  $x < 0$   
 $y > 0$
- D)  $x < 0$   
 $y < 0$

15



Which of the following equations is the most appropriate linear model for the data shown in the scatterplot?

- A)  $y = -1.9x - 10.1$
- B)  $y = -1.9x + 10.1$
- C)  $y = 1.9x - 10.1$
- D)  $y = 1.9x + 10.1$

16

A company opens an account with an initial balance of \$36,100.00. The account earns interest, and no additional deposits or withdrawals are made. The account balance is given by an exponential function  $A$ , where  $A(t)$  is the account balance, in dollars,  $t$  years after the account is opened. The account balance after 13 years is \$68,071.93. Which equation could define  $A$ ?

- A)  $A(t) = 36,100.00(1.05)^t$
- B)  $A(t) = 31,971.93(1.05)^t$
- C)  $A(t) = 31,971.93(0.05)^t$
- D)  $A(t) = 36,100.00(0.05)^t$

17

$$2|4 - x| + 3|4 - x| = 25$$

What is the positive solution to the given equation?

18

The expression  $90y^5 - 54y^4$  is equivalent to  $ry^4(15y - 9)$ , where  $r$  is a constant. What is the value of  $r$ ?

19

The area  $A$ , in square centimeters, of a rectangular cutting board can be represented by the expression  $w(w + 9)$ , where  $w$  is the width, in centimeters, of the cutting board. Which expression represents the length, in centimeters, of the cutting board?

- A)  $w(w + 9)$
- B)  $w$
- C)  $9$
- D)  $(w + 9)$

20

$$y > 13x - 18$$

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

A)

$x$	$y$
3	21
5	47
8	86

B)

$x$	$y$
3	26
5	42
8	86

C)

$x$	$y$
3	16
5	42
8	81

D)

$x$	$y$
3	26
5	52
8	91

21

Function  $f$  is defined by  $f(x) = (x + 6)(x + 5)(x + 1)$ . Function  $g$  is defined by  $g(x) = f(x - 1)$ . The graph of  $y = g(x)$  in the  $xy$ -plane has  $x$ -intercepts at  $(a, 0)$ ,  $(b, 0)$ , and  $(c, 0)$ , where  $a$ ,  $b$ , and  $c$  are distinct constants. What is the value of  $a + b + c$ ?

- A) -15  
B) -9  
C) 11  
D) 15

22

A square is inscribed in a circle. The radius of the circle is  $\frac{20\sqrt{2}}{2}$  inches. What is the side length, in inches, of the square?

- A) 20  
B)  $\frac{20\sqrt{2}}{2}$   
C)  $20\sqrt{2}$   
D) 40

# 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.