

# Reading and Writing Module 1

27 QUESTIONS

1

The recovery program led by Marisel López-Flores has dramatically increased the population size of the endangered *Amazona vittata*, the endemic parrot of Puerto Rico. Given that *A. vittata* corresponds in physiology, behavior, and ecology to endangered *Amazona* species elsewhere in the Caribbean, the conservation approach developed by López-Flores may be \_\_\_\_\_ across the genus.

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

- A) redeemable
- B) observable
- C) replicable
- D) comprehensible

2

Although oil shocks --- such as the 145% rise in oil prices between February 2007 and June 2008 --- can strongly affect individual consumers, Gbadebo Oladosu and colleagues have shown that at the level of national economies, their effects are often quite \_\_\_\_\_. The effect of recent oil shocks on the gross domestic product of India, for example, was only slightly greater than zero.

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

- A) subdued
- B) persistent
- C) beneficial
- D) variable

3

Steiger Butte Drum, a family ensemble from the Klamath Tribes of the Pacific Northwest, collaborated with composer Michael Gordon to create *Natural History*, a work featuring traditional drumming and vocals alongside an orchestra and chorus. Steiger Butte Drum's participation is \_\_\_\_\_ to the piece: members not only contributed to its composition but also must be included in all performances.

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

- A) analogous
- B) tangential
- C) subsequent
- D) integral

4

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

5

Vertical gene transfer involves the transmission of genetic material from a parent to offspring, horizontal gene transfer, on the other hand, involves the exchange of genetic material between organisms not in a parent-offspring relationship. While horizontal gene transfer is common among prokaryotes --- single-celled organisms, such as the bacteria *Brevundimonas diminuta* and *Lactobacillus curvatus* --- it has rarely been observed among eukaryotes (multicellular organisms). However, new studies suggest that horizontal gene transfer is more common in eukaryotes than originally thought.

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

- A) It argues that two biological phenomena are more similar than they may initially appear to be.
- B) It proposes a direction for future research into a biological phenomenon.
- C) It explains why a common perception of a biological process is flawed.
- D) It explains a biological process by contrasting it with a somewhat similar process.

6

Some researchers posit that the species inhabiting the South Pacific Island of Grande Terre belong to clades that predate the island's split from remnants of the former supercontinent Gondwana around 80 million years ago. A study conducted by Yohan Pillon et al. found, however, that the crown age (the age of the most recent common ancestor of all living and extinct species in the clade) of the clade of Geissois trees on Grande Terre is 7.3 million years; Pillon et al. further found that the crown age of the clade of Geissois trees in the South Pacific generally is also approximately 7.3 million years.

Which choice best describes the overall structure of the text?

- A) It presents a possibility that some researchers have raised, then describes a study that clarifies their reasons for doing so.

- B) It describes an idea that some researchers have put forward, then presents study results that are incompatible with that idea.
- C) It identifies a discrepancy between a hypothesis some researchers have proposed and related research findings, then explains that discrepancy.
- D) It explains a view some researchers have advanced, then discusses study results that led them to reconsider that view.

7

Text 1

In a seminal 1979 study, Daniel Kahneman and Amos Tversky presented students and college faculty from Israel, Sweden, and the United States with hypothetical questions involving financial decisions. Finding that participants' responses indicated that losses have a greater psychological impact than equivalent gains do, the researchers formulated the concept of loss aversion, which has since informed research in fields ranging from behavioral economics to law.

Text 2

Fieke Harinck et al. conducted an experiment in which Dutch study participants were exposed to financial choices that involved potential losses of either relatively minor sums of money, such as 2 euros (low-stakes contexts), or more substantial sums, such as 50 euros (high-stakes contexts). The researchers concluded that only the latter contexts were associated with loss aversion.

Based on the texts, how would Harinck et al, (Text 2) most likely respond to Kahneman and Tversky's finding (Text 1)?

- A) By observing that researchers' ability to assess feelings about financial decisions is contingent on gathering adequate data about gains and losses
- B) By contending that the attitude toward financial losses that Kahneman and Tversky observed is contingent on the magnitude of outcomes
- C) By disputing Kahneman and Tversky's claim that a tendency to place excessive emphasis on financial losses accounts for the loss aversion observed in fields such as behavioral economics and law
- D) By agreeing that experimental results support the idea that some people tend to be more cognizant of financial losses than of gains

8

The following text is from Ralph Waldo Emerson's 1841 essay "The Method of Nature."

The scholars are the priests of that thought which establishes the foundations of the earth. No matter what is their special work or profession, they stand for the spiritual interest of the world, and it is a common calamity if they neglect their post in a country where the material interest is so predominant as it is in America.

Which choice best states the main idea of the text?

- A) The habit of intellectuals of privileging ideas over material things invariably leads to tragedy.
- B) Scholars have played an important role in society for a much longer time than have those people who are mainly concerned with financial gain.
- C) In a country whose citizens are largely preoccupied with tangible gains, it is crucial that some people work to foster and preserve ideas.

- D) Those Americans who have some military experience will be the ones most likely to have a thorough understanding of the world.

9

LaRose is a 2016 novel by Ojibwe writer Louise Erdrich. It explores how historical events affect families on a reservation in rural North Dakota. LaRose is typical of Erdrich's work. Her writing usually focuses on portrayals of everyday life in Ojibwe communities. Yet some of her novels have fantastical plots and take place outside Ojibwe communities. For example, her 2017 novel Future Home of the Living God is essentially science fiction, and the otherworldly events in its plot are set in urban Minneapolis.

According to the text, what is one way that Future Home of the Living God differs from most of Erdrich's work?

- A) It contains very little dialogue.
- B) Its main characters are Ojibwe.
- C) It has been adapted into a movie.
- D) It isn't set in a rural Ojibwe community.

10

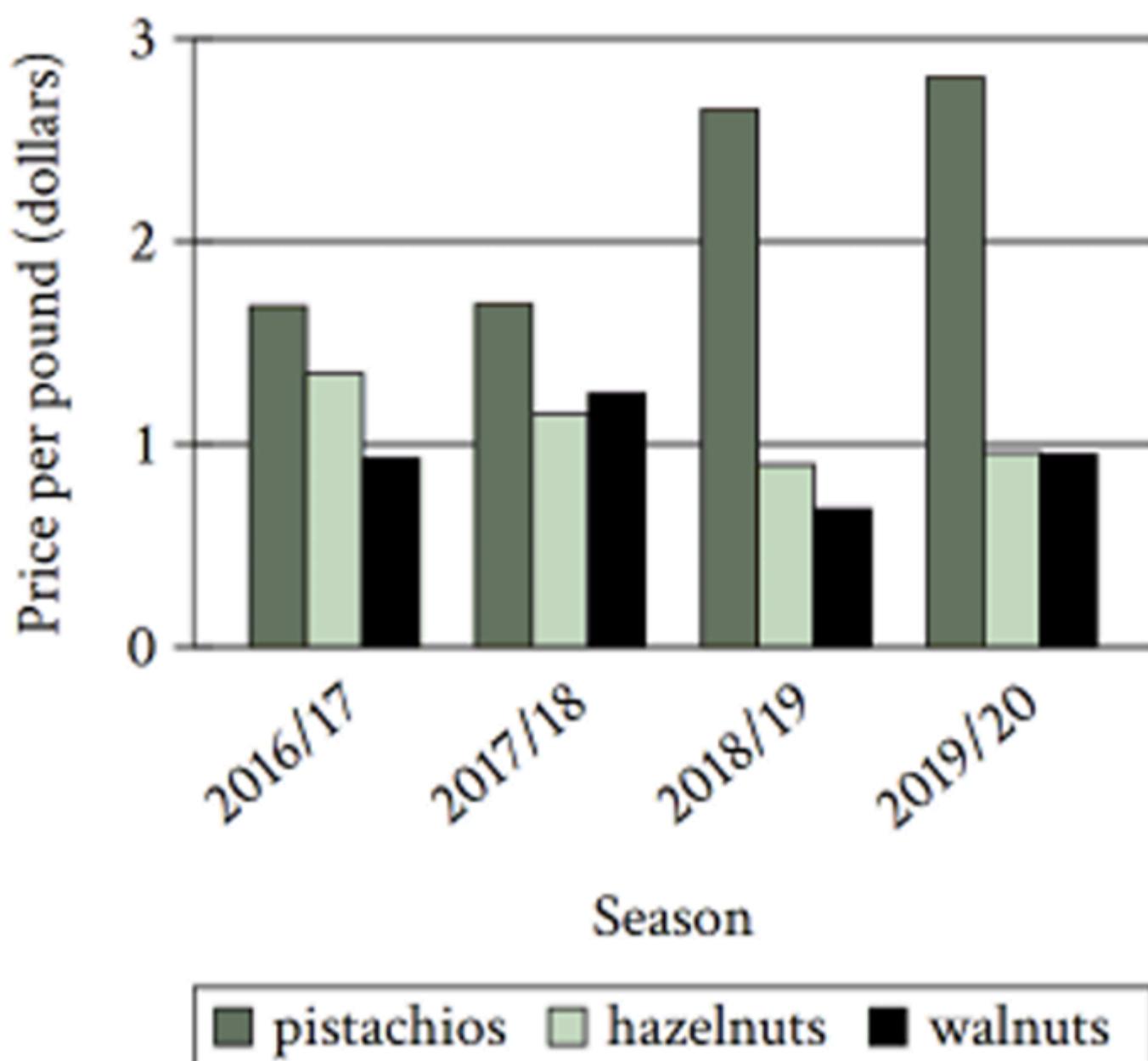
Lin-Manuel Miranda's 2015 hip hop musical Hamilton depicts historical political figure Alexander Hamilton as a self-made man who, through sheer determination, transcends his humble origins to become a key participant in the founding of the United States. This depiction of Hamilton establishes him as a compelling and well-defined protagonist but obscures other facets of the historical person's views, namely his elitism and mistrust of the democratic politics of some of his contemporaries. In effect, the musical's portrayal of Hamilton fails to convey the ideological complexity that a more nuanced portrayal might have suggested.

The text most strongly suggests that particular aspects of Hamilton's political beliefs may have been omitted from the musical in part to achieve which effect?

- A) To create an unambiguous thematic presentation of Hamilton's life
- B) To suggest why certain contributions by Hamilton to US history have been overlooked
- C) To challenge the prevailing historical consensus about Hamilton
- D) To encourage modern audiences to emulate Hamilton's politics

11

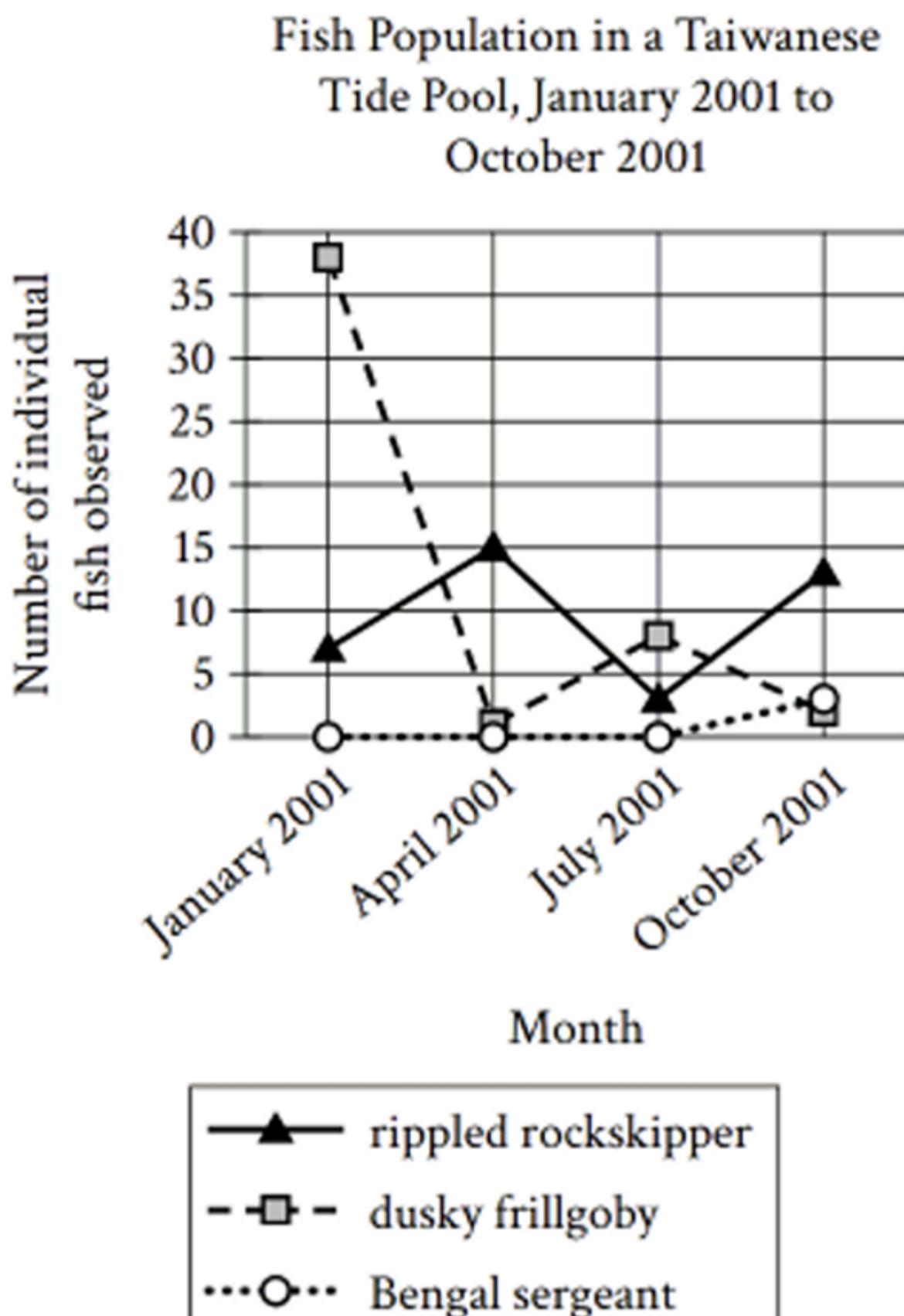
Prices of Nuts Sold by Growers  
in the United States,  
2016/17 to 2019/20 Seasons



The Us Department of Agriculture's Fruit and Tree Nuts Outlook is a document that covers a variety of subjects, from the increasing availability of fresh fruit to the forecast for yields of apple crops. A student studying agricultural economics is consulting a graph in the document that shows the prices for which several types of nuts have been sold by growers in the United States over four growing seasons from 2016 to 2020. The student wishes to determine in which season walnuts reached their lowest price. Consulting the graph, the student finds that this season was the \_\_\_\_\_

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

- A) 2017/18 season.
- B) 2018/19 season.
- C) 2016/17 season.
- D) 2019/20 season.



Lin-Tai Ho and colleagues counted fish in a tide pool in Taiwan at several times during the year and found that some species had a significantly higher maximum population count than others. For example, the highest count for the dusky frillgoby was 38 individuals in January of 2001, whereas the highest count for the Bengal sergeant was \_\_\_\_\_.

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

- A) 13 individuals in October of 2001.
- B) 48 individuals in January of 2001.
- C) 3 individuals in October of 2001.
- D) 15 individuals in April of 2001.

13

Declining fishing technology costs and overexploitation of near-shore fishing grounds have made isolated oceanic reefs, which often lack regulatory protections, increasingly attractive to commercial and sport fishers. A team led by Octavio Aburto-Oropeza surveyed the biomass density and species composition of two isolated reefs: Alacranes, a protected (fishing prohibited) reef 135 kilometers from the Yucatan Peninsula, and Bajos del Norte, an unprotected reef 25 kilometers further out to

sea. Species at the highest level of the trophic pyramid constituted 34% of the biomass at Alacranes and 10% of the biomass at Bajos del Norte. Aburto-Oropeza and colleagues attribute this difference to the two reefs' difference in regulatory status.

Which finding, if true, would most directly support Aburto-Oropeza and colleagues' explanation?

- A) Total biomass at Alacranes is much greater than total biomass at Bajos del Norte, though the reefs' biomass densities are similar
- B) It is somewhat more expensive for commercial and sport fishers to reach Bajos del Norte than it is to reach Alacranes.
- C) Some of the species that compose the highest trophic level at Bajos del Norte are not found at Alacranes.
- D) Commercial and sport fishers tend to disproportionately remove species at the highest trophic level.

14

Researchers Eugeni Vidal-Tortosa and Robin Lovelace looked at the relationship between street lighting in a city and people's willingness to ride a bicycle. Their results suggest that poor street lighting can deter new or inexperienced cyclists from riding in a city but has little effect on experienced cyclists. Therefore, increasing the number of streetlights in a city could potentially \_\_\_\_\_

Which choice most logically completes the text?

- A) decrease the number of new or inexperienced cyclists riding in the city.
- B) increase the number of experienced cyclists riding in the city.
- C) increase the number of new or inexperienced cyclists riding in the city.
- D) decrease the number of experienced cyclists riding in the city.

15

Research into whether floating mats of macroalgae affect the prevalence of microphytobenthos (MPB) --- benthic, or bottom-dwelling, microalgae --- has produced varying results: Amber Hardison and colleagues determined that macroalgae do not impact MPB, whereas Kristina Sundbäck and colleagues observed that benthic chlorophyll concentrations (a common measure of MPB biomass) decreased in the presence of macroalgae. Hypothesizing that macroalgal mats have a negative effect on MPB biomass, Alice F. Besterman and Michael L. Pace surveyed mudflats in Curlew Bay and other coastal sites in Virginia. Because Besterman and Pace did not find a significant correlation between benthic chlorophyll concentrations and the abundance of macroalgal mats, it can be concluded that \_\_\_\_\_

Which choice most logically completes the text?

- A) rather than inhibiting chlorophyll production in MPB, as they had hypothesized, macroalgal mats may positively affect chlorophyll production.
- B) their hypothesis about the relationship between macroalgae and MPB was not supported and their finding was instead consistent with that of Hardison and colleagues.
- C) differences between their study design and that of Sundbäck and colleagues likely explain the discrepancy in the two studies' findings about the responses of MPB to macroalgal mats.
- D) although this finding was consistent with that of Sundbäck and colleagues, trends in MPB biomass are likely not a result of stresses caused by macroalgae.

16

Many ranching terms come from Spanish. For example, the word "stockade" (a fence) \_\_\_\_\_ from the Spanish word estacada, and "cinch" (a belt) derives from cincho. This is because the first Anglo, African, and Native American cattle ranchers in the southwestern US learned the trade from Spanish-speaking Mexican vaqueros, or cowboys.

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

- A) were deriving
- B) derive
- C) derives
- D) have derived

17

A voluntary workforce established to make improvements to public lands, parks, and forests across the US, the Civilian Conservation Corps (CCC) --- though widely popular --- was not without its critics. For Aldo Leopold, the CCC was implicated in what \_\_\_\_\_ "Idle CCC camps," he wrote, "presented a widespread temptation to build new and often needless roads."

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

- A) did he view as unnecessary development?
- B) he viewed as unnecessary development?
- C) he viewed as unnecessary development.
- D) did he view as unnecessary development,

18

Though it was designated as mission \_\_\_\_\_ mission was actually the forty-second flight under NASA's Space Shuttle Program.

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

- A) STS-43. The
- B) STS-43, and the
- C) STS-43, the
- D) STS-43 the

19

The epic poem The Poem of the Cid dates back to the 12th century. Originally \_\_\_\_\_ in Old Spanish, it has since been translated into other languages.

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

- A) written
- B) is written
- C) was written
- D) had been written

20

Trade with neighboring civilizations contributed to the success of the Sasanian Empire, which reigned in Mesopotamia from around 224 CE to 651 CE. By supplying silk, textiles, and leather to societies that lacked these valuable \_\_\_\_\_ Sasanian Empire grew not only in wealth but also in power and influence.

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

- A) items, the
- B) items. The
- C) items; the
- D) items the

21

In his 2023 collection *The Diaspora Sonnets*, Filipino American poet Oliver de la Paz leverages the sonnet form's "diamond-like quality of precision," as he describes it. The poems often adhere scrupulously to the form's centuries-old conventions, such as its characteristic fourteen-line length. In the twelve-line poem "Diaspora Sonnet at the Feeders Before the Freeze," \_\_\_\_\_ de la Paz playfully subverts sonnet conventions, the poem's truncated length conveying a sense of abruptness.

Which choice completes the text with the most logical transition?

- A) fittingly,
- B) by contrast,
- C) similarly,
- D) for example,

22

- A wind farm uses turbines to convert wind into electrical power.
- Offshore wind farms tend to produce more electricity than farms on land (onshore).
- Offshore wind farms tend to be more expensive to build and maintain than onshore ones.
- Lake Bonney Wind Farm is an onshore wind farm in Millicent, Australia.

Which choice most effectively uses information from the given sentences to explain the advantages of onshore wind farms over offshore ones?

- A) Like other wind farms, Lake Bonney Wind Farm in Millicent, Australia, uses turbines to turn wind power into electricity.
- B) Whether onshore or offshore, wind farms harness the power of wind to generate electricity.
- C) Millicent, Australia, is home to Lake Bonney Wind Farm.
- D) Though they don't produce as much electricity as offshore wind farms, onshore farms are usually cheaper to build and maintain.

23

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) The Woman in White, a mystery novel, first appeared in a London literary magazine.
- 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) Collins's novel The Woman in White was published in forty weekly installments between November 1859 and August 1860.
- D) 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.

24

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

- The dinosaur ant is an insect species.
- It was believed to be extinct until a living dinosaur ant was identified in Australia in 1977.
- Mount Diablo buckwheat is a plant species.
- It was believed to be extinct until a living Mount Diablo buckwheat was identified in the United States in 2005.
- They are considered Lazarus species.

"Lazarus species" is a term for living species of organisms that were once believed to be extinct.

The student wants to specify when the dinosaur ant was identified. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) An example of a Lazarus species was found in 2005.
- B) A living dinosaur ant, once believed to be extinct, was identified in 1977.
- C) Previously believed to be extinct, a living dinosaur ant was identified in Australia.
- D) Identified in the United States, a living Mount Diablo buckwheat was found in 2005.

25

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

- The Mohs scale of mineral hardness is a ten-point scale that orders minerals by hardness based on their ability to scratch other minerals.
- Minerals with larger numbers are harder than minerals with smaller numbers and can leave visible scratches on them.
- Minerals with smaller numbers are softer than minerals with larger numbers and cannot leave visible scratches on them.
- The mineral apatite has a Mohs scale number of 5.
- The mineral quartz has a Mohs scale number of 7.
- The mineral diamond has a Mohs scale number of 10.

The student wants to emphasize quartz's Mohs scale number. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) Quartz, apatite, and diamond can be ordered by their ability to leave visible scratches on other minerals.
- B) Diamond, which has a Mohs scale number of 10, can scratch both apatite and quartz.
- C) Quartz has a Mohs scale number of 7, which means that it is harder than apatite (5) but softer than diamond (10).
- D) In the Mohs scale of mineral hardness, diamond (10) is ranked higher than apatite (5).

26

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

- Stop motion animation (SMA) is a filmmaking technique that involves manipulating characters (puppets, clay figures, etc.) by hand in minute increments.
- Each change in position is meticulously captured in a series of images that, when played back, give the illusion of motion.
- Producer Travis Knight: "It's a process that dates back to the dawn of cinema, with a charm and a warmth and a beauty that other forms of animation...do not have. And because you effectively get one opportunity to get it right, every shot is a high-wire act."
- Knight: SMA is "raw and it's imperfect. It's also undeniably human."

The student wants to emphasize the aesthetic qualities of SMA by quoting Knight. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) As Knight says, "you effectively get one opportunity to get it right" when meticulously capturing the series of images that, when played back, give it the illusion of motion.
- B) With its puppets and clay figures, stop motion animation, Knight says, "dates back to the dawn of cinema."
- C) The handmade, "imperfect" look of stop motion animation, says Knight, lends this "undeniably human" technique a "charm and a warmth and a beauty."
- D) Stop motion animation is imperfect, making every shot "a high-wire act," Knight says.

27

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

- An isthmus is a strip of land that connects two larger pieces of land across an expanse of water.
- It is also known as a land bridge.
- The Isthmus of Catalina Island is located in the United States.
- It connects the northwestern part of Santa Catalina Island to the main part of the island.

The student wants to provide a specific example of an isthmus. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) One example of an isthmus is the Isthmus of Catalina Island in the United States.
- B) An isthmus, also known as a land bridge, is a strip of land that connects two larger pieces of land across an expanse of water.
- C) In the United States, the northwestern part of Santa Catalina Island is connected to the main part of the island.

- D) There is a land bridge in the United States.

# Reading and Writing Module 2

27 QUESTIONS

1

Lady Grant and colleagues \_\_\_\_ pots of sterilized soil with slurries of live microbes collected from soil in five sites across Colorado, including areas of sagebrush and ponderosa pine forest. Grant and team then grew mustard plants in the pots to see if the different microbial slurries affected levels of spicy glucosinolates like butenyl in the plants' seeds.

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

- A) precluded
- B) estimated
- C) sanitized
- D) populated

2

The collectibles market is one of the most difficult segments of the consumer economy to \_\_\_\_\_. Few economists would have predicted, for example, that the prices of collectible stuffed toys called Beanie Babies would soar in the late 1990s, but soar they did.

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

- A) forecast
- B) exchange
- C) monitor
- D) avoid

3

Derived from research conducted with factory workers from 1924 to 1933, the Hawthorne effect suggests that participants' awareness that they are being studied alters their behavior and influences study outcomes. Since then, several researchers have claimed to invalidate this phenomenon, positing that the Hawthorne effect cannot be \_\_\_\_\_ because attempts to detect it invariably involve faulty research methods.

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

- A) substantiated
- B) hypothesized
- C) rectified
- D) inculcated

4

Paleontologists think that Buitreraptor, Saltasaurus, and other long-extinct theropods and sauropods may have breathed using air sacs connected to tubelike extensions inside the animals' bones. Such structures are found in modern birds, which is why some paleontologists treat the respiratory systems of birds as \_\_\_\_ those of Buitreraptor, Saltasaurus, and other theropods and sauropods.

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

- A) harbingers of
- B) emissaries for
- C) subordinates of
- D) proxies for

5

Some social scientists argue that while a belief in the importance of individual autonomy is key to democracy, the public's understanding of economics is also central to its subsequent comprehension of a state's politics, and if an electorate is to function, economic issues cannot remain the domain only of experts. Economics is too \_\_\_\_ to leave to economists alone.

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

- A) complex
- B) respectable
- C) accessible
- D) critical

6

The following text is from Jerome K. Jerome's 1889 novel *Three Men in a Boat (To Say Nothing of the Dog)*. The narrator and two friends are taking a boat down the River Thames in England.

In a boat, I have always noticed that it is the fixed idea of each member of the crew that he is doing everything. Harris's notion was, that it was he alone who had been working, and that both George and I had been imposing upon him. George, on the other hand, ridiculed the idea of Harris's having done anything more than eat and sleep, and had a cast-iron opinion that it was he --- George himself --- who had done all the labour worth speaking of.

Which choice best describes the main purpose of the text?

- A) To give an overview of a particular situation that the narrator finds puzzling
- B) To discuss how the narrator and his friends each contributed to resolving a conflict
- C) To convey the narrator's confidence that he understands the role expected of him in a group
- D) To present the narrator's generalization along with supporting examples from a specific situation

7

Advancements like the emergence of wheel-fashioned ceramics in the eastern Mediterranean circa 4500 BCE are overemphasized in innovation studies, contributing to the idea that technological change always brings greater complexity. Research by Nathaniel Erb-Satullo reveals an important exception: gold metallurgy flourished in the Caucasus in the Bronze Age, but a steep drop during that time (circa 1500 BCE) in objects featuring gold granulation (in which tiny gold spheres are applied to a gold surface to create textured designs) and other sophisticated goldsmithing techniques suggests that simpler processes supplanted advanced methods.

Which choice best describes the overall structure of the text?

- A) It summarizes the findings of several studies into the origins of a particular invention and then presents additional evidence from a more recent study that contradicts those findings.
- B) It details the near-consensus among researchers in a particular field of study regarding how technology evolves and then indicates the controversial nature of a study challenging that broadly accepted view,
- C) It explains that a particular interpretation of technological development has been perpetuated in an academic field and then provides a counterexample demonstrating that the interpretation isn't always accurate.
- D) It advances a claim made by researchers in one academic field about the nature of technological change and then critiques a contrasting claim presented by a researcher from a related academic field.

8

In their study of the steering muscles regulating sclerites (minute hardened structures) in the *Drosophila* (fruit fly) wing hinge, Johan M. Melis et al. used machine learning to devise a convolutional neural network (CNN) model capable of predicting the pattern of wing motion produced by the maximum activity of the muscles. The CNN model's output aligned with results of prior studies by other researchers measuring muscle activity patterns directly --- one of several indications, said Melis et al., that the model accurately represents important biomechanical processes underlying wing motion.

Which choice best states the main purpose of the text?

- A) To present evidence from Melis et al.'s study in support of the efficacy of their CNN model
- B) To provide an overview of how Melis et al. honed the accuracy of their CNN model
- C) To compare results obtained by Melis et al. using their CNN model to prior results obtained from other researchers' models
- D) To account for Melis et al.'s reliance in their study on a CNN model in lieu of direct measurement

9

The following text is from Julia Alvarez's 2000 novel *In the Name of Salomé*. The narrator and her sister, daughters of a famous poet, are being tutored by Alejandro Román.

Our tutor, Alejandro Román, brought his younger brother, Miguel, to class one day. By now I was eighteen and had learned everything Alejandro had to teach me, so I was glad for a new face. Miguel was an aspiring poet, and he had heard from his brother that the Urena girls were none other than the daughters of Nicolás Ureña, and they were smart as clockwork. Miguel was hoping not only to meet us but to make the acquaintance of the poet himself at Mamá's house.

Based on the text, why does Miguel accompany his brother to the sisters' house one day?

- A) Miguel has learned all he can from his brother and hopes that the sisters will be able to give him additional guidance.
- B) Miguel has not received formal instruction in poetry and wants to ask the sisters' famous father to be his mentor.
- C) Miguel aspires to present his poems to the sisters and ask for their opinion on his writing.
- D) Miguel anticipates having the opportunity to be introduced to both the sisters and their father.

10

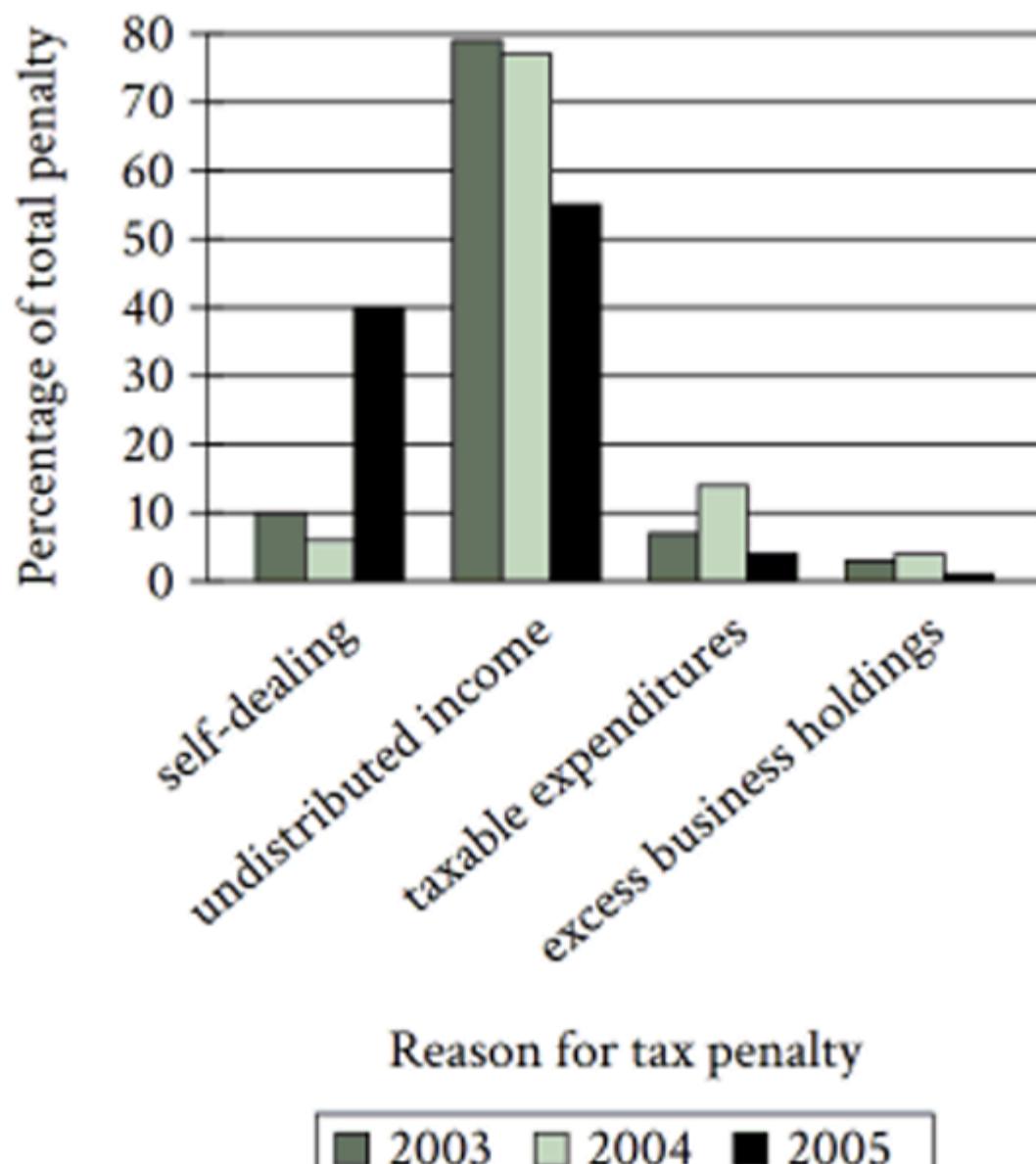
Motivated to sell as many paintings as possible, Alfred Hair, an influential figure among the landscape artists known as the Florida Highwaymen, pioneered "fast painting," which in part involved swift applications of paint. That many of Hair's acolytes, including Rodney Demps, imitated the technique accounts in part for the impressionistic qualities that are now synonymous with the group's shared aesthetic. But not all Highwaymen fully embraced this approach; for instance, though Roy McLendon was also prolific, his paintings were executed with greater attention to detail.

What does the text most strongly suggest about paintings by Demps?

- A) Demps's reliance on the technique of fast painting likely accounts for his works being more aesthetically interesting than works by McLendon are.
- B) Although it is evident that Demps adopted some of Hair's preferred techniques, Demps's works are less derivative of works by Hair than is typically acknowledged.
- C) The lack of precision with which they were executed suggests that they are inferior to works by either Hair or McLendon.
- D) Because of the manner in which they were created, they likely have visual qualities that are regarded as more typical of Florida Highwaymen paintings than the qualities in works by McLendon are.

11

**Tax Penalties Assessed on Private Foundations That Filed Form 4720, by Reason, 2003–2005**



While US public charities, like Commonfund, must file Form 990 yearly with the IRS, private foundations, such as the David and Lucile Packard Foundation, must file a different form, 990-PF. In addition, foundations that engage in certain prohibited activities must also file Form 4720 and pay a

penalty tax on the money involved. Private foundations are prohibited from holding excess interests in a business enterprise, "self-dealing"(conducting activities that benefit foundation insiders), making taxable expenditures such as outlays for lobbying, and failing to cross a required threshold in making charitable distributions from income. Out of the organizations that filed Form 990-PF in the years 2003-2005, \_\_\_\_\_

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

- A) a smaller percentage of those that also filed Form 4720 did so because they engaged in self-dealing than the percentage of those that filed Form 4720 because they did not meet the minimum charitable distribution requirement.
- B) those that also filed Form 4720 paid a larger penalty for failing to meet a minimum charitable distribution requirement than those organizations that filed Form 990 but also fled Form 4720 for the same reason.
- C) those that were also required to filed Form 4720 because they had excess holdings in a business enterprise paid, on average, a larger penalty than those organizations that fled Form 4720 because they made taxable expenditures.
- D) those that also filed Form 4720 collectively paid larger penalties for failing to meet the minimum charitable distribution requirement than for other reasons.

12

Blandine Courel and her colleagues analyzed pottery fragments from thirty-five sites across the Volga and Don river basins to determine whether the ways in which hunter-gatherer societies used pottery in these regions around 6,500-8,000 years ago were influenced primarily by local food availability or primarily by cultural factors. Analysis of organic residues on the pottery fragments showed different prevailing uses for pottery in these locations --- cooking and storing terrestrial animal protein at Volga sites and cooking and storing aquatic animal protein at Don sites --- which Courel and colleagues attribute to cultural differences.

Assuming that the Volga and Don basins supported similarly sized hunter-gatherer populations 6,500-8,000 years ago, which finding, if true, would most directly support Courel and colleagues' explanation?

- A) Across the Volga and Don basins, people had broadly similar access to the same terrestrial and aquatic animal resources.
- B) In both the Volga and Don basins, most of the sites from which pottery has been recovered appear to have been seasonal fishing and hunting encampments rather than year-round settlements.
- C) There were many more bodies of water in a comparably sized area in the Don basin than in the Volga basin.
- D) The people of the Volga basin acquired the techniques used to create pottery for cooking and storing food from the people of the Don basin.

13

To boost the performance of oil-absorbing resins, which are used to remove oil and other organic compounds from wastewater, one team of materials researchers created a resin with a novel --- albeit very expensive --- monomer (a molecule that can chemically bond with analogous molecules to form polymers) synthesized from  $\beta$ -cyclodextrin. Other researchers have produced resins consisting of various much cheaper, commercially available methacrylate monomers, including one derived from benzyl methacrylate (BZMA). Testing all these resins' capacity to absorb toluene and

trichloromethane, two organic compounds, a scientist concluded that when practical considerations were taken into account, the BZMA-derived resin showed the greatest potential for use in wastewater cleanup.

Which finding, if true, would most directly support the scientist's conclusion?

- A) For both toluene and trichloromethane, the BZMA-derived resin exhibited only modestly lower absorption capacity than the resin synthesized from  $\beta$ -cyclodextrin but higher absorption capacity than other resins consisting of commercially available methacrylate monomers.
- B) Relative to the resin synthesized from  $\beta$ -cyclodextrin and to other resins consisting of commercially available methacrylate monomers, the BZMA derived resin exhibited superior absorption capacity for toluene but not for trichloromethane.
- C) For both toluene and trichloromethane, the BZMA-derived resin exhibited similar absorption capacity as other resins consisting of commercially available methacrylate monomers and a slightly higher absorption capacity than the resin synthesized from  $\beta$ -cyclodextrin.
- D) Whereas the resin synthesized from  $\beta$ -cyclodextrin exhibited the highest absorption capacity for toluene, the BZMA-derived resin and other resins consisting of commercially available methacrylate monomers exhibited the highest absorption capacity for trichloromethane.

14

Northeastern North Carolina's Camden County is among the most rural counties in the United States: the US Census Bureau classified it as 99.596 rural in 2010. Researchers often struggle to recruit residents of counties like Camden for inclusion in studies. Melissa Valerio and colleagues tested whether an approach called snowball sampling improves recruitment. Working in two rural counties, they recruited a few people (known as "seeds") with the characteristics desired for a proposed study and asked them to recruit additional participants from their social networks. Though the seeds were given minimal guidance, many more people they recruited had the desired characteristics for the study than would be expected by chance alone, most likely because \_\_\_\_\_

Which choice most logically completes the text?

- A) most seeds' social networks include some people who do not know one another and who share few characteristics.
- B) the seeds' social networks include a high proportion of people who share characteristics with the seeds.
- C) the seeds' social networks tend to be somewhat smaller than the networks of people who do not live in rural areas.
- D) the characteristics that made the seeds desirable for inclusion in the proposed study may be unknown to some members of the seeds" social networks.

15

In classical Greek and Roman mythology, female characters are typically cast as either villains lacking in psychological depth or passive victims who are marginal to these stories which usually focus on the exploits of male characters. Recently, a subgenre has emerged in which writers reimagine these stories from the perspectives of their female characters, giving them agency and complex motivations. Purists argue that such efforts represent a distinctively modern tendency to impose our own values on past civilizations, obscuring those civilizations' beliefs. Defenders of the subgenre counter that reimaginings of the myths for new cultural contexts are almost as old as the myths themselves, suggesting that \_\_\_\_\_

Which choice most logically completes the text?

- A) bringing female perspectives to the forefront is not indicative of a novel attitude regarding fidelity to Greek and Roman myths' ideologies.
- B) purists are overlooking a long tradition of adapting Greek and Roman myths to focus on female characters.
- C) the complex motivations given to female characters in modern retellings of Greek and Roman myths reflect a recent shift toward psychological depth in fictional representation.
- D) modern writers foregrounding of female characters is chiefly motivated by a desire to counterbalance the primacy of male perspectives among earlier adaptations of Greek and Roman myths

16

The world's many geothermal power plants leverage an array of \_\_\_\_\_ the Sarulla plant uses a flash steam system that transforms high-temperature geothermal fluid into steam; in Iceland, the Reykjanes plant's dry steam system pumps superheated steam from a reservoir; and in the US, the McGinness Hills plant's binary cycle system uses lower-temperature geothermal fluid in conjunction with a secondary fluid.

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

- A) technologies, in Indonesia,
- B) technologies: in Indonesia,
- C) technologies in Indonesia:
- D) technologies in Indonesia;

17

When a given term --- "self-fulfilling prophecies" and "role models" are two well-known examples --- is generally accepted and frequently used, \_\_\_\_\_ susceptible to obliteration by incorporation (OBI). In cases of OBI, widely used terms are rarely, if at all, attributed to the individuals who coined them.

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

- A) this often becomes
- B) it often becomes
- C) they often become
- D) these often become

18

In pre-Columbian Mesoamerica, obsidian was used as a commodity currency. By using specific goods like obsidian as common units of exchange, commodity currency economies streamline trade, which is why they often replaced barter economies. Barter economies eschew \_\_\_\_\_ that requires what economist W.S. Jevons deems a "double coincidence of wants" --- in other words, each trading party must want precisely what the other has.

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

- A) currency, in favor of a direct trade system
- B) currency in favor of a direct trade system
- C) currency, in favor of a direct trade system,
- D) currency --- in favor of a direct trade system

19

In their attempt to create a quantum random number generator, K. Muhammed shaf et al. used a continuous-wave diode laser to fire photons at a periodically-poled potassium titanyl phosphate (PPKTP) nonlinear crystal. A plano-convex lens \_\_\_\_\_ the laser on the center of the 10-millimeter-long crystal ensured a spot size (a measure of the beam's diameter) of 85 micrometers.

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

- A) focused
- B) focuses
- C) focus
- D) focusing

20

For her installation *The Last Cruze*, photographer LaToya Ruby Frazier traveled to Lordstown, Ohio, where she documented the lives of workers at the local automobile plant. In the installation, text culled from a series of in-depth interviews with employees and their families \_\_\_\_\_ sixty-seven gelatin silver prints, highlighting the collaborative, documentary nature of Frazier's work.

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

- A) punctuating
- B) are punctuated by
- C) punctuate
- D) punctuates

21

A single specimen of *T. iota*, collected at a depth of 1,684 fathoms (3,080 meters) in the South Pacific, and a single specimen of *p obliquiloculata*, collected at a depth of 260 fathoms (475 meters) in the South Atlantic, have been preserved as exemplars of their respective \_\_\_\_\_ former in a repository at Washington, DC's Museum of Natural History and the latter in a repository at London's Natural History Museum.

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

- A) species, the
- B) species, and the
- C) species. The
- D) species; the

22

In a given rock formation, Visean rock from 346.7 million years ago might directly abut Selandian rock from 61.6 million years ago, with millions of years of material missing in between. \_\_\_\_\_ time did not stand still during these intervening years; the unaccounted-for sedimentary material was likely removed from the stratigraphic record via erosion and weathering.

Which choice completes the text with the most logical transition?

- A) In particular,
- B) On the contrary,

C) Of course,

D) As a result,

23

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

Which choice completes the text with the most logical transition?

A) Regardless,

B) By contrast,

C) Accordingly,

D) In addition,

24

Long thought to be sessile (immobile), adult Chelonibia testudinaria, barnacles that adhere to sea turtle shells, have been observed to shift slightly in position over time --- a phenomenon that has been attributed to the barnacles' passive displacement by watercurrents. \_\_\_\_\_ a research team found that adult C. testudinaria moved toward the heads of their sea turtle hosts and thus against the prevailing water flow, behavior consistent with self-initiated locomotion.

Which choice completes the text with the most logical transition?

A) Confirming this hypothesis,

B) Contrary to this phenomenon,

C) Drawing a similar conclusion,

D) Undermining this explanation,

25

In Annie Dillard's *pilgrim at Tinker Creek* --- where, early on, the author marvels at a single goldfish's delicate fins but later winces when imagining a horde of goldfish laying and eating their own eggs --- Dillard struggles to reconcile the complicated juxtapositions of the natural world. \_\_\_\_\_ nature's mesmerizing intricacy and pitiless harshness prove inextricably linked for Dillard, like "two branches of the same creek."

Which choice completes the text with the most logical transition?

A) Ultimately,

B) To that end,

C) Moreover,

D) Hence,

26

- Silent films can be valuable historical documents of their time.
- Ninety percent of silent films made before 1930 are now lost.
- A film is considered lost when no remaining copies are known to exist.
- Director Paul Fejos's 1928 silent film *The Last Moment* is lost.

- Director Oscar Micheaux's 1920 silent film *Within Our Gates* is archived at the UCLA Film & Television Archive in Los Angeles, California.

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

- A) While Paul Fejos's *The Last Moment* is considered lost to history, Oscar Micheaux's film *Within Our Gates* is archived at the UCLA Film & Television Archive in Los Angeles, California.
- B) Paul Fejos's *The Last Moment* (1928) and Oscar Micheaux's *Within Our Gates* (1920) are just two examples of silent films from the 1920s.
- C) Oscar Micheaux's film *Within Our Gates* can be found at the UCLA Film & Television Archive in Los Angeles, California.
- D) Paul Fejos's 1928 film *The Last Moment* is among the many lost films of the era.

27

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

- Founded in 2011, Thync is a neurotechnology company that develops neuromodulation technologies.
- Neuromodulation technologies use neural interfaces to stimulate nervous system structures and influence neural activity.
- Founded in 2009, BrainGate is a neurotechnology company that develops neuroprostheses.
- Neuroprostheses act as replacement brain functions to restore the user's lost sensory, motor, or neural functions.
- Founded in 2015, Neurable is a neurotechnology company that develops brain-computer interfaces (BCIs).
- BCIs interpret and execute brain signals to allow users to control external software or hardware with their thoughts.

The student wants to contrast the type of neurotechnology Thync develops with the type of neurotechnology BrainGate develops. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- A) Founded in 2011, Thync develops technology for stimulating nervous system structures, which, unlike BrainGate and Neurable, is categorized as a neuroprosthetic.
- B) Unlike BrainGate, which develops neurotechnology, Thync develops neuromodulation technologies.
- C) Neuromodulation technologies influence neural activity, but they don't restore sensory, motor or neural functions as neuroprostheses do.
- D) Neuromodulation technologies use neural interfaces to stimulate nervous system structures and influence neural activity, whereas neuroprostheses allow users to control external software or hardware with their thoughts

# Math Module 1

22 QUESTIONS

1

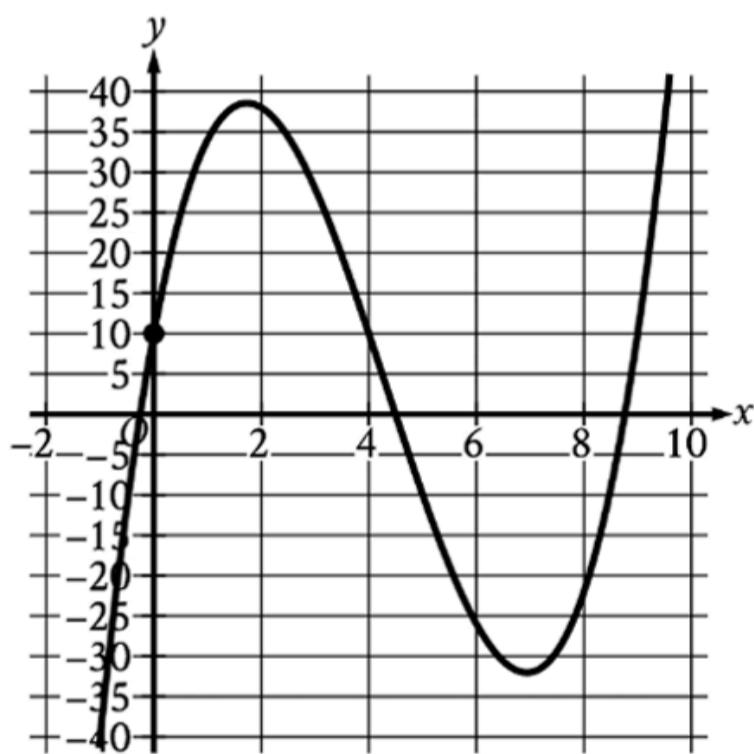
What value of  $p$  satisfies the equation  $6p+30=150$ ?

- A) 20
- B) 30
- C) 114
- D) 150

2

A customer spent \$12 to purchase oranges at \$3 per pound. How many pounds of oranges did the customer purchase?

3



←

←

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

4

A biodegradable object with a mass of 36 grams started to decompose after being discarded. Each month after the object started to decompose, the remaining mass of the object was approximately 70% of the mass of the preceding month. Which function  $f$  gives the approximate remaining mass, in grams, of the object  $a$  months after the object started to decompose?

- A)

$f(x) = 36 \cdot (0.3)^x$

B)  $f(x) = 36 \cdot (0.7)^x$

C)  $f(x) = 36 \cdot (1.3)^x$

D)  $f(x) = 36 \cdot (1.7)^x$

5

Which expression is equivalent to  $(8yz)(y)(3z)$ ?

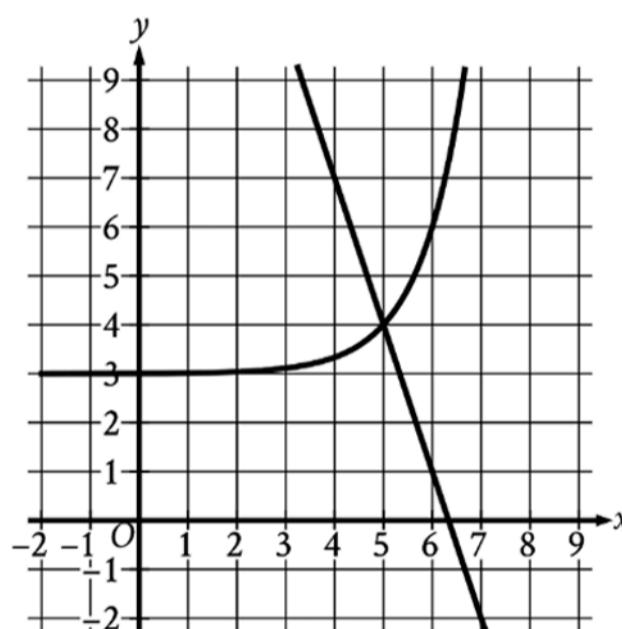
A)  $24y^2z^2$

B)  $24y^2z$

C)  $24yz$

D)  $16yz$

6



←

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

A)  $(5, 4)$

B)  $(3, 0)$

C)  $(0, 5)$

D)  $(0, 0)$

7

The function  $f$  is defined by  $f(x) = x^2 + 86$ . What is the value of  $f(x)$  when  $x = 10$ ?

←

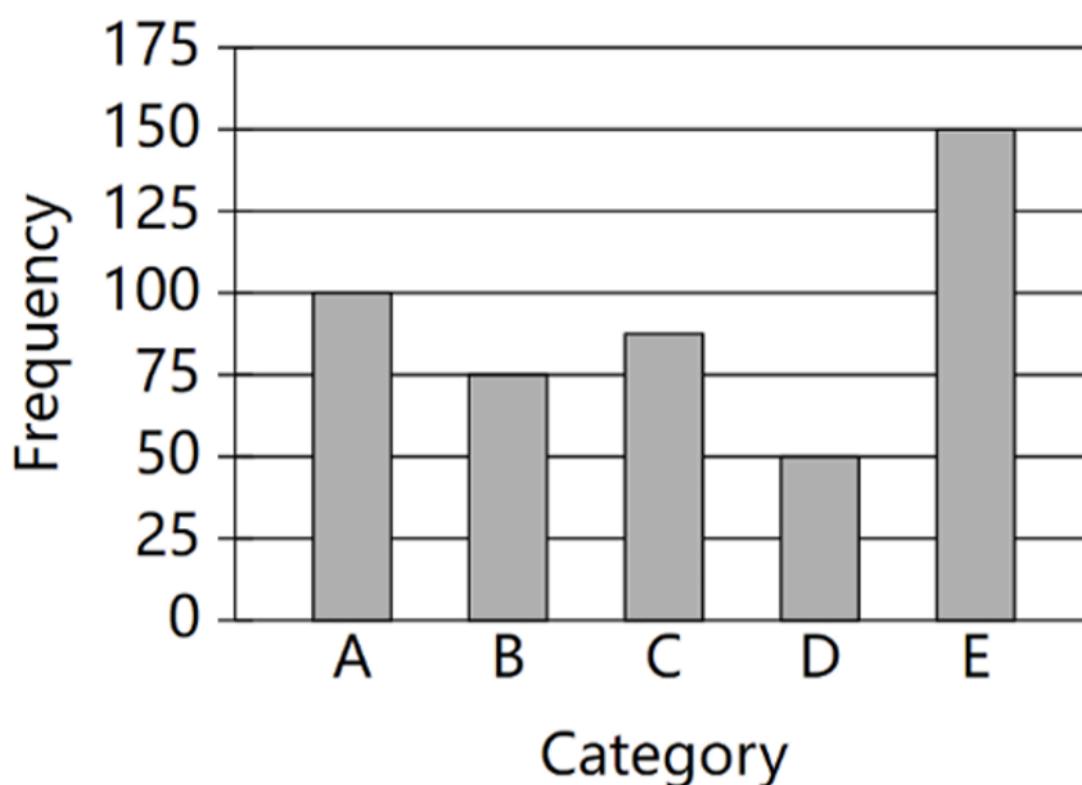
A) -186

B) -14

C) 14

D) 186

8



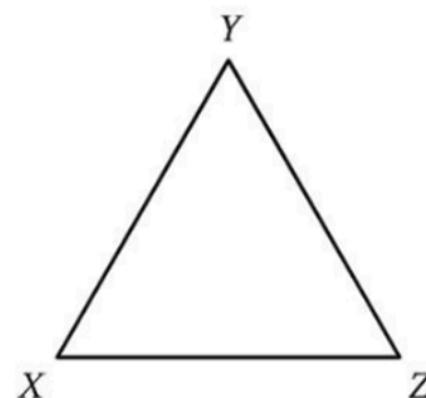
In the bar graph, which category has a frequency that is  $\frac{1}{3}$  the frequency of category E? ↵  
↵

- A) Category A
- B) Category B
- C) Category C
- D) Category D

9

Each side of a triangle has a length of 27. What is the perimeter of this triangle?

10



Note: Figure not drawn to scale. ↵

In triangle XYZ shown, segments XY and YZ each have length 128 millimeters. Which statement is sufficient to prove that all three angles in the triangle have equal measure? ↵  
↵

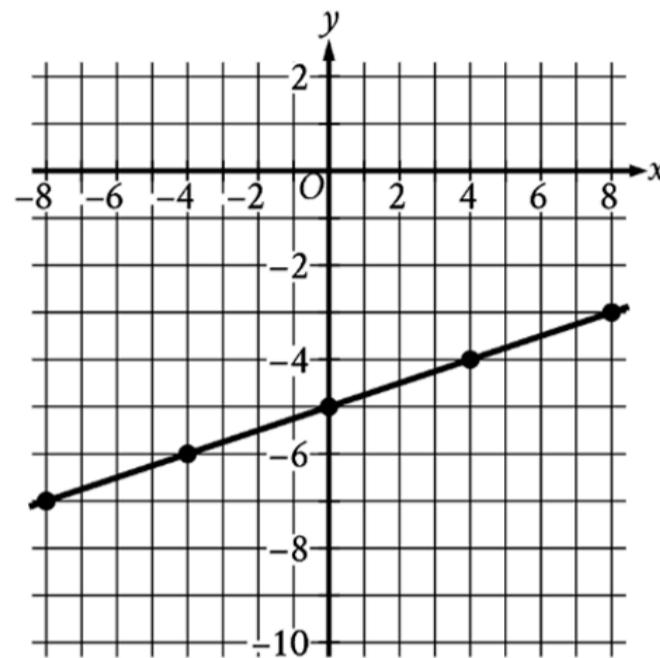
- A) Segment XZ has length 64 millimeters.
- B) Segment XZ has length 128 millimeters.
- C) Segment XZ has length 256 millimeters
- D) Segment XZ has length 384 millimeters.

11

$$f(r) = 15 + 3r$$

The function  $f$  represents the total cost, in dollars, of attending a carnival when  $r$  rides are ridden. How many rides can be ridden for a total cost of \$51?

12



↙

The graph of the linear function  $f$  is shown, where  $y = f(x)$ . What is the slope of the graph of  $f$ ? ↵  
↙

- A) - 5
- B) - 1/4
- C) 1/4
- D) 5

13

Which measure, in radians, is equivalent to  $(36 \cdot 180)^\circ$ ?

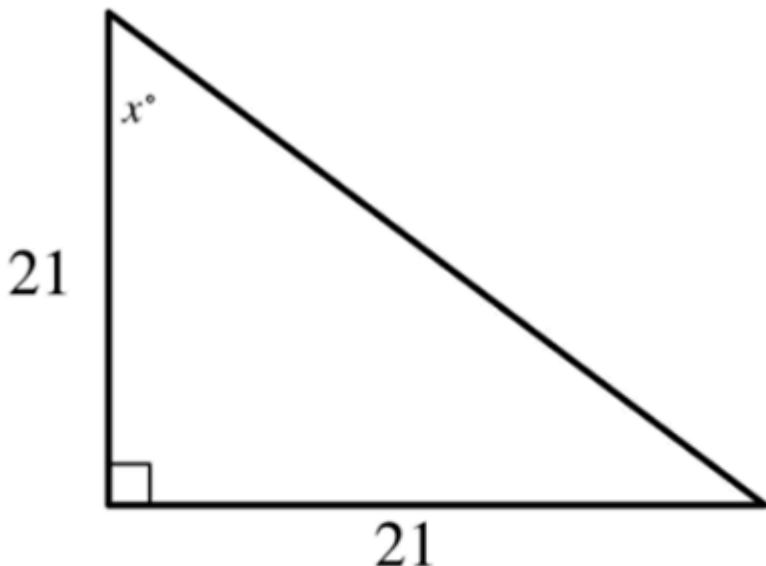
- A)  $36\pi$
- B)  $\pi + 36$
- C)  $-\pi / 36$
- D)  $\pi - 36$

14

In an experiment, two solutions are combined such that the volume of the mixture increases at a constant rate of 2.6 milliliters per minute. Which of the following describes the total volume of the mixture as a function of time?

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

15



Note: Figure not drawn to scale.

↙

↙

In the triangle shown, what is the value of  $x$ ? ↗

↗

- A) 21
- B) 42
- C) 45
- D) 69

16

A snack company advertises that bags of pretzels produced by the company weigh, on average, 1 pound each. To test this, Sam selected at random 25 bags of pretzels produced by the company and weighed each bag. Based on his measurements, Sam estimated that for all bags of pretzels produced by the company, the average weight per bag is 1.02 pounds, with a margin of error of 0.03 pounds. For all bags of pretzels produced by the company, which of the following is the most appropriate conclusion about the average weight  $w$ , in pounds, per bag?

- A)  $w = 1.02$
- B)  $0.99 \leq w \leq 1.02$
- C)  $0.99 \leq w \leq 1.05$
- D)  $1.02 \leq w \leq 1.05$

17

A rectangle has width  $w$  and length  $l$ . If the perimeter of the rectangle is greater than 45, which of the following inequalities must be true?

- A)  $w + l < 45$
- B)  $2w + 2l < 45$
- C)  $w + l > 45$
- D)  $2w + 2l > 45$

18

A rectangle has a length of  $x$  units and a width of  $(x - 12)$  units. If the rectangle has an area of 133 square units, what is the value of  $x$ ?

- A) 7
- B) 19
- C) 26
- D) 133

19

Which expression is equivalent to  $(66y)^{1/2}$ , where  $y > 1$ ?  
.

- A)  $66\sqrt{y}$
- B)  $\sqrt{66}y$
- C)  $\sqrt{66y}$
- D)  $\sqrt{(66y)^2}$

20

A piece of string with a length of 76 inches is cut into two parts. One part has a length of  $x$  inches, and the other part has a length of  $y$  inches. The value of  $x$  is 6 more than 4 times the value of  $y$ . What is the value of  $x$ ?

21

If  $x = \sqrt[2n]{7x^n + 30}$

where  $n$  is a positive integer constant, what is the value of  $x^n$ ?  
.

22

The function  $f$  is defined by  $f(x) = (x - 2)(x - 9)(x + 4)$ . In the  $xy$ -plane, the graph of  $y = h(x)$  is the result of translating the graph of  $y = f(x)$  up 7 units. What is the  $y$ -coordinate of the  $y$ -intercept of the graph of  $y = h(x)$ ?

- A) 0
- B) 7
- C) 72
- D) 79

## Math Module 2

22 QUESTIONS

Which expression is equivalent to  $(8x^2 + 5x + 9) - (8x^2 + 3)$ ? ←

- A) 6
- B) 12
- C)  $5x + 6$
- D)  $5x + 12$

2

$$W(x) = 4x + 60$$

The function  $W$  gives the total time, in minutes, it takes for a gardener to water  $x$  plants and mow the grass. According to the function, how long does it take the gardener to mow the grass, in minutes?

- A) 4
- B) 15
- C) 60
- D) 240

3

The function  $f(x) = 55.20 - 0.16x$  gives the estimated surface water temperature  $f(x)$ , in degrees Celsius, of Lake Superior on the  $x$ th day of the year, where  $220 \leq x \leq 360$ . Based on the model, what is the estimated surface water temperature, in degrees Celsius, of Lake Superior on the 298th day of the year?

- A) 55.20
- B) 7.52
- C) -0.16
- D) -47.68

4

A company has a customer loyalty program. In January 2018, there were 300 customers enrolled in the loyalty program. For the next 24 months after January 2018, the total number of customers enrolled in the loyalty program each month was 2% greater than the total number enrolled the previous month. Which equation gives the total number of customers,  $c$ , enrolled in the company's loyalty program  $m$  months after January 2018, where  $m \leq 24$ ?

- A)  $c = 300 (0.02)^m$  ←
- B)  $c = 300 (1.02)^m$  ←
- C)  $c = 300 (1.2)^m$  ←
- D)  $c = 300 (2)^m$  ←

5

$$6x + 4 > y$$

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

A)

$x$	$y$
0	5
1	11
2	17

B)

$x$	$y$
0	4
1	12
2	18

C)

$x$	$y$
0	4
1	8
2	14

D)

$x$	$y$
0	3
1	9
2	15

6

A machine fills bags with approximately 15 ounces of sugar. To test the accuracy of the filing process, 343 bags of sugar were selected at random and weighed. Based on the sample, it is estimated that the average weight of all bags of sugar filled by the machine in an 8-hour period is 14.88 ounces, with an associated margin of error of 0.19 ounce. Which of the following is the best interpretation of this estimate?

- A) Plausible values for the average weight of all bags of sugar filled by the machine are between 14.69 ounces and 15.07ounces.
- B) Plausible values for the average weight of all bags of sugar filled by the machine are less than 14.69 ounces or greater than 15.07 ounces.
- C) The average weight of all bags of sugar filled by the machine is greater than 14.99 ounces
- D) The average weight of all bags of sugar filled by the machine is less than 14.99 ounces.

7

A container is in the shape of a right rectangular prism that is 2.0 centimeters (cm) wide, 19.0 cm long, and 25.0 cm tall. which of the following is closest to the number of fluid ounces that are required to completely fill the container? (Use 1.0 cubic centimeter = 0.034 fluid ounces)

- A) 32
- B) 900
- C) 1,000
- D) 28,000

8

In the  $xy$ -plane, line I passes through the point  $(0, 0)$  and is parallel to the line represented by the equation  $y = 6x + 3$ . If line I also passes through the point  $(8, d)$ , what is the value of  $d$ ?

9

$$x(x+6) - 112 = 3x(x - 8)$$

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

- A) 2

- B) 8
- C) 14
- D) 15

10

Data set A consists of 10 positive integers less than 60. The list gives 9 of the integers from data set A.

$$42, 46, 44, 42, 38, 39, 40, 47, 40$$

The mean of these 9 integers is 42. If the mean of data set A is an integer that is greater than 42, what is the value of the largest integer from data set A?

- A) 43
- B) 47
- C) 52
- D) 59

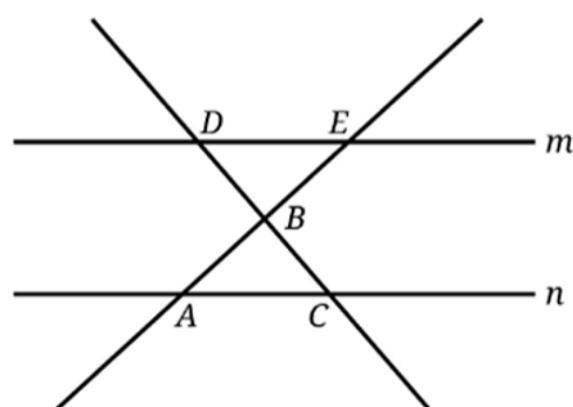
11

$$x^2 - 40x + c = 0 \leftarrow$$

In the given equation, c is a constant. The equation has no real solutions if  $c > n$ . What is the least possible value of n?  $\leftarrow$

- A) -400
- B) -40
- C) 40
- D) 400

12



Note: Figure not drawn to scale.

$\leftarrow$

$\leftarrow$   
In the figure, line m is parallel to line n, and lines AE and CD intersect at point B. Which additional piece of information is sufficient to prove that triangle ABC is congruent to triangle EBD?  $\leftarrow$   
 $\leftarrow$

- A) AB = 16 and DB = 16.
- B) AB = 16 and EB = 16.
- C) Triangles ABC and EBD are isosceles.
- D) No additional information is necessary to determine that the two triangles are congruent.

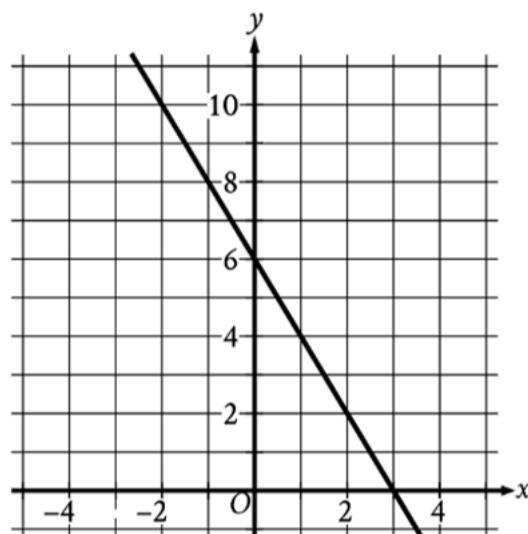
13

$$f(x) = 25 \cdot (1.20)^{x/4} \leftarrow$$

For the given function  $f$ , the value of  $f(a)$  increases by  $p\%$  for every increase of  $x$  by 8. What is the value of  $p$ ?  $\leftarrow$

- A) 20
- B) 31
- C) 40
- D) 44

14



$\leftarrow$

The graph of the linear function  $y = f(x) + 17$  is shown. If  $c$  and  $d$  are positive constants, which equation could define  $f$ ?  $\leftarrow$

- A)  $f(x) = -d - cx$
- B)  $f(x) = d + cx$
- C)  $f(x) = d - cx$
- D)  $f(x) = -d + cx$

15

A right square pyramid has a surface area of  $100 + 20\sqrt{146}$  square inches, which includes a base area of 100 square inches. What is the height, in inches, of this pyramid?  $\leftarrow$

$\leftarrow$

16

A circle in the  $xy$ -plane has its center at  $(-2, 2)$ . Line  $t$  is tangent to this circle at the point  $(7, -5)$ . Which of the following points also lies on line  $t$ ?

- A)  $(0, 9/7)$
- B)  $(5, 11)$
- C)  $(14, 4)$
- D)  $(16, 2)$

17

Which of the following expressions has a factor of  $x + 2b$ , where  $b$  is a positive integer constant?

- A)  $2x^2 + 9x + 18b \leftarrow$

B)  $2x^2 + 19x + 18$

C)  $2x^2 + 20x + 18$

D)  $2x^2 + 29x + 18$

18

A rectangular region of land is divided into 88 square lots of equal area A, in square units. The length of the region is 5.5 times the width of the region. If the length of the region is  $x\sqrt{A}$  units, what is the value of x?

←

19

$x$	$y$
25	-11
27	9
29	-11

←

The table shows three values of x and their corresponding values of y, where  $y = f(x) + 4$  and f is a quadratic function. What is the y-coordinate of the y-intercept of the graph of  $y = f(x)$  in the xy-plane?

←

20

Which of the following lists represents a data set with the smallest standard deviation?

A) 74, 75, 77, 79, 80

B) 75, 75, 77, 79, 79

C) 75, 76, 77, 78, 79

D) 76, 77, 77, 77, 78

21

Which expression is NOT a factor of  $7,290x^4 - 56,250$ ?

←

A)  $9x^2 + 25$

B)  $3x^2 - 5$

C)  $3x+5$

While the mass of an object is the same everywhere, the weight of an object is not the same on different planets. An object has a weight of 70.00 pounds on Earth and a weight of 74.62 pounds on Saturn. The object's weight on Jupiter is 252.8% of its weight on Earth. If the object's weight on Saturn is  $x\%$  of its weight on Jupiter, which of the following is closest to the value of  $x$ ?

- A) 42.17
- B) 69.76
- C) 176.96
- D) 269.48

## Reading and Writing Module 1 Answers

- 1. C
- 2. A
- 3. D
- 4. C
- 5. D
- 6. B
- 7. B
- 8. C
- 9. D
- 10. A
- 11. B
- 12. C
- 13. D
- 14. C
- 15. B
- 16. C
- 17. C
- 18. C
- 19. A
- 20. A
- 21. B
- 22. D
- 23. B
- 24. B
- 25. C
- 26. C
- 27. A

## Reading and Writing Module 2 Answers

1. D

2. A

3. A

4. D

5. D

6. D

7. C

8. A

9. D

10. D

11. D

12. A

13. A

14. B

15. B

16. B

17. B

18. B

19. D

20. D

21. A

22. C

23. C

24. D

25. A

26. A

27. C

## Math Module 1 Answers

1. A

2. 4

3. 10

4. B

5. A

6. A

7. D

8. D

9. 81

10. B

11. 12

12. C

13. A

14. A

15. C

16. C

17. D

- 18. B
- 19. C
- 20. 62
- 21. 10
- 22. D

## Math Module 2 Answers

- 1. C
- 2. C
- 3. B
- 4. B
- 5. D
- 6. A
- 7. A
- 8. 48
- 9. D
- 10. C
- 11. D
- 12. B
- 13. D
- 14. A
- 15. 11
- 16. C
- 17. D
- 18. 22
- 19. -3640
- 20. D
- 21. B
- 22. A