SAT Prep Test 5—Reading and Writing
Module 1

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 the section are multiple-choice with four answer choices. Each question has a single best answer.

1 Mark for Review

Despite initial skepticism regarding the feasibility of growing crops on the tops of buildings, Dr. Dickson Despommier has remained _____ in his promotion of vertical farming. In no small part due to Dr. Despommier's persistence and dedication to the cause, cities all over the United States have embraced rooftop gardening as a means of providing fresh produce to urban areas and promoting sustainable agriculture.

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

A. menacing

B. subdued

C. resolute

D. misunderstood

2 Mark for Review

The fishermen of the coastal village of Kerala, India, _____ traditional fishing methods with modern technology; for example, the fishermen use motorized boats and GPS tracking to increase the efficiency and speed of fishing expeditions while applying age-old knowledge of tides, weathers patterns, and fish migratory patterns that have supported fishing success for centuries.

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

A. belittle

B. contemplate

C. integrate

D. replace

3 Mark for Review

Spanning three different storylines set hundreds of years apart, Anthony Doerr's 2021 novel *Cloud Cuckoo Land* depicts the impact of a single story on the lives of three different protagonists living in different time periods.

Because the three characters' lives at the center of the story are so _____, each with truncated yet rich and unique life experiences and histories, the reader could not be faulted for wishing each character had been given his or her own novel.

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

A. meaningless

B. dynamic

C. benign

D. shattered

4 Mark for Review

A study conducted by Monica Gagliano and colleagues found that plants that were exposed to stressors, such as drought or intense heat, were more likely to survive future stressors compared to plants that were not previously exposed to these conditions. This evidence of plant memory challenges the common perception of plants as _____ organisms that simply respond to their environment.

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

A. courageous

B. assertive

C. passive

D. adaptable

5 Mark for Review

In a 2020 study, Stanford University professor Nicholas Bloom and colleagues were able to demonstrate that working from home can actually increase productivity and work satisfaction, as well as reduce employee turnover rates. Based on this research, many economists have _____ the commonly held belief that remote work leads to decreased productivity.

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

A. muddied

B. questioned

C. usurped

D. articulated

6 Mark for Review

The following text is adapted from Laurence Housman's 1916 play, *Bird in Hand*. Professor Braintree, a famous scientist, is examining a series of letters in his study when he is greeted by his secretary, Miss Tuckey.

MISS TUCKEY: Good-morning, Sir.

PROFESSOR: Miss Tuckey, there is something broken over there, will you please see it removed? And will you kindly make a note to write to Messrs. Spink and Wedge, and say that these new glasses don't suit me —I find them very trying to the—to the eyes. And I must ask you to fetch those proofs which came yesterday. I tried to catch you just now, but you had gone.

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

A. taxing

B. attempting

C. soothing

D. sampling

7 Mark for Review

In 2018, a team of researchers led by Edward Boyden of the Massachusetts Institute of Technology developed a new type of probe that could help researchers better understand the brain. The probe, called "neural dust," is a tiny, wireless sensor that can be implanted directly into the brain to monitor electrical signals. Because the dust is biocompatible, it does not damage brain tissue, and because it is wireless, it can be used to monitor the brain over long periods of time without the need for bulky external equipment.

According to the text, why would neural dust help researchers more than other types of probes?

A. Because other probes are too small to find once implanted in the brain

B. Because neural dust can be placed more advantageously than other probes

C. Because neural dust reduces the amount of monitoring time needed to complete a brain tissue scan

D. Because the electrical current carried by neural dust is less than that of other probes

8 Mark for Review

In Māori culture, the Tohunga are revered figures who hold knowledge and wisdom about the history and traditions of their people. They act as healers, navigators, and spiritual leaders, and are responsible for passing on their knowledge to future generations. While modernization has impacted the role of the Tohunga in contemporary society, they remain a crucial source of guidance and guardians of cultural heritage.

What choice best states the main idea of the text?

A. Contemporary society has less need for the Tohunga.

B. Despite shifts to their societal function, the Tohunga remain vital to preserving their communities' shared knowledge and traditions.

C. Although the Tohunga embrace many aspects of society, few welcome technological advancements.

D. Tohunga traditions are passed down from generation to generation.

9 Mark for Review

The following text is excerpted from Sir Arthur Conan Doyle's 1891 novel *The White Company*. Alleyne is a young monk traveling north from his abbey in Beaulieu, England.

> The youth had now journeyed considerably beyond the furthest domains of the Abbey. He was the more surprised therefore when, on coming round a turn in the path, he perceived a man clad in the familiar garb of the order, and seated in a clump of heather by the roadside. Alleyne had known every brother well, but this was a face which was new to him—a face which was very red and puffed, working this way and that, as though the man were sore perplexed in his mind.

Which choice best states the main idea of the text?

A. Alleyne is less familiar with the man than he is with other members of his order.

B. Alleyne has become more suspicious of others since his encounter with the man.

C. Alleyne only trusts men who wear the familiar garb of the order.

D. Alleyne is perplexed by the behavior of some members of the order.

10 Mark for Review

The Joy Luck Club is a 1989 novel by Amy Tan. In the novel, Tan suggests that upon smelling fragrant aromas, she felt an intuitive and sometimes unexpected sense of cultural recognition: _____

Which quotation from *The Joy Luck Club* most effectively illustrates the claim?

A. "We had a feast of warm pork with lettuce, dumplings, tender fish still tasting of lake weeds, red-bean soup with long dumplings, warm sesame-seed cake dotted with watermelon seeds."

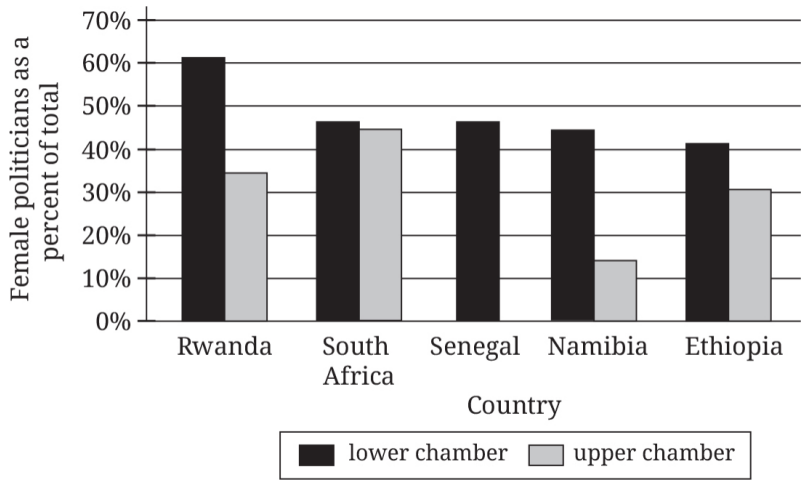
B. "There is so much about my mother I do not understand. And though the food I cook now is not the same as my mother's, when I cook it, when I taste it, I feel a powerful connection to her."

C. "Ever since I was a child, the smell of that dish stirred me strangely. It carried the flavors of my ancestors, the love and traditions that went into making it."

D. "Suyaun began to talk about Chinese people who eat dumplings on the last day of the old year and the first day of the new year. She said dumplings were like hopes – little pieces of filling wrapped up in a dough, with the corners twisted tight."

11 Mark for Review

Percentage of Women Serving in Upper and Lower Chamber of Parliament in Five African Countries



The Inter-Parliamentary Union monitors the percentage of women elected to serve in national parliaments around the world in order to report on the gap between the number of men and women serving in politics. In Africa, the top five countries with the highest number of female politicians are Rwanda, South Africa, Senegal (which only has a lower chamber), Namibia and Ethiopia. In some cases, the percentage of women serving in parliaments was found to be especially prominent; for instance, _____

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

A. a relatively equal percentage of women served in the lower chambers of Rwanda, Senegal, Namibia, and Ethiopia.

B. most of the members of both chambers of parliament in Ethiopia are women.

C. approximately equal percentages of women served in the upper and lower chambers in South Africa.

D. most of the people serving in the lower chamber of parliament in Rwanda are women.

12 Mark for Review

Literary critics have argued that Mary Shelley's novel *Frankenstein* was deeply influenced by her marriage to Percy Shelley, who was known for his radical and progressive views, including his ideas about the potential of science and technology, the nature of life and the social implications of scientific advancements. Indeed, Percy's beliefs may have inspired Mary's exploration of consequences and ethical dilemmas in *Frankenstein,* but *Frankenstein* stands on its own as a work of literary genius. Thus, those who ascribe Percy's influence as the primary motivation for *Frankenstein*

_____

What choice most logically completes the text?

A. tend to view the writings of Percy and Mary Shelley through too personal of a lens.

B. neglect the influence of many other individuals on Mary Shelley's writings.

C. risk oversimplifying the motivating factors for Mary Shelley's novel.

D. may make incorrect assumptions about Percy and Mary Shelley's relationship.

13 Mark for Review

The purpose of Stonehenge, a famous prehistoric monument, has long been debated by archaeologists. Some historians propose it was an astronomical observatory, but there is no conclusive evidence of this assertion. While certain stone alignments within the structure coincide with celestial events associated with astronomy, Stonehenge's design and construction span different time periods, suggesting shifting scientific, religious, ceremonial, and social functions depending on the era. Our understanding of the true purpose of Stonehenge remains an enigmatic puzzle, suggesting that

_____

Which choice most logically completes the text?

A. Stonehenge likely would not have been used for such diverse purposes had it existed in a less central location.

B. alterations to structural design affect different types of monuments in different ways.

C. the development of Stonehenge over multiple eras makes its original function a point of contention for archaeologists and historians.

D. the design of Stonehenge made it more useful for religious and ceremonial purposes than for astronomy.

14 Mark for Review

Lisa Fenk and her team at The Rockefeller University used a combination of approaches to understand more precisely how fruit _____ allow for

the tracking of visual patterns.

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

A. flies retinal movements

B. flies' retinal movement's

C. flies' retinal movements

D. fly's retinal movements'

15 Mark for Review

Using commonplace items such as wooden furniture and clothing, Doris _____ created her art installations *Unland: The Orphan's Tunic* and *La Casa Viuda*, memory sculptures that capture the history of her home country Colombia as well as her own personal experiences.

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

A. Salcedo:

B. Salcedo—

C. Salcedo

D. Salcedo,

16 Mark for Review

The National Day of Listening, started by the national oral history project StoryCorps in 2008, is a day encouraging Americans to record the stories of their loved _____ people interested in participating can access resources and recommendations about the interview process through the StoryCorps website or app.

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

A. ones,

B. ones;

C. ones

D. ones and

17 Mark for Review

In 1839, English artist Frederick Catherwood joined an expedition to Central America, where he saw over forty sites full of _____ creating detailed drawings and paintings of the ruins, Catherwood helped to reintroduce the Mayan civilization to the Western world.

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

A. ruins by

B. ruins, by

C. ruins. By

D. ruins and by

18 Mark for Review

Paleontologist Keyron Hickman-Lewis's analysis of 3.48-billion-year-old rocks, which contain the oldest evidence of life on Earth, from the Dresser Formation in Western Australia _____ scientists analyze rocks that the *Perseverance* rover is collecting on Mars.

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

A. will help

B. to have helped

C. to help

D. helping

19 Mark for Review

During Japan's Heian period (794–1185), the Heian Palace was located in Heian-kyō, the capital during those years. Within the palace _____ several administration buildings and the living quarters of the emperor.

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

A. has been

B. is

C. was

D. were

20 Mark for Review

In 1956, American physicists Clyde L. Cowan and Frederick Reines determined that _____ exist by observing the neutrinos' interactions with protons in water.

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

A. neutrinos—subatomic particles that have no electric charge, very small mass, and a spin of one-half—

B. neutrinos, subatomic particles that have: no electric charge, very small mass, and a spin of one-half,

C. neutrinos—subatomic particles—that have no electric charge, very small mass, and a spin of one-half,

D. neutrinos, subatomic particles that have no electric charge, very small mass, and a spin of one-half

21 Mark for Review

In 1967, the US Supreme Court ruled that American citizens could not be relieved of their citizenship without their consent in the case *Afroyim v. Rusk.* This case overruled another important case, *Perez v. Brownell*, which mandated the loss of citizenship after voting in an election in another country. _____ *Perez v. Brownell* prompted a discussion about voluntary versus involuntary choices; according to the ruling, citizenship could not be removed for unintentional actions.

Which choice completes the text with the most logical transition?

A. Actually,

B. Nevertheless,

C. Additionally,

D. For instance,

22 Mark for Review

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

- Megalodons were ancient sharks that lived between 23 million and 2.6 million years ago.
- In a 2022 study, paleobiologist Catalina Pimiento and colleagues analyzed fossil evidence of the megalodon.
- They hoped to learn more about the megalodon's life, as little is known because very few fossils of the species are available.
- They used rare megalodon fossils and scans of modern great white sharks to create a 3D model of the megalodon, which revealed the shark to be around 50 feet long.
- They also found that the megalodon could swim faster than a great white shark, could travel across multiple oceans, and could have consumed an orca in five bites.

The student wants to present the study and its findings. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. In a 2022 study, Catalina Pimiento and colleagues used both records of ancient fossils and scans of modern sharks to determine that the megalodon was around 50 feet long, could travel across multiple oceans, and could consume an orca.

B. In 2022, Catalina Pimiento and colleagues studied rare megalodon fossils as well as scans of contemporary great white sharks in order to learn more about the megalodon's life.

C. Megalodon fossils and scans of modern great white sharks were the focus of a 2022 study.

D. In a 2022 study, Catalina Pimiento and colleagues analyzed fossils of the megalodon, an ancient shark that lived up to 23 million years ago.

23 Mark for Review

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

- Franz Joseph Haydn was an Austrian-born classical composer of symphonies and concertos.
- In 1798, he completed the composition *The Creation*, which depicts biblical stories from the Book of Genesis.
- A prominent feature of the composition is that different choral soloists represent Adam and Eve.
- Another prominent feature is tone painting, a technique by which music depicts narrative elements.

The student wants to introduce the composition *The Creation* to an audience already familiar with Franz Joseph Haydn. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. *The Creation* was not the only piece written by Austrian-born composer Franz Joseph Haydn.

B. Franz Joseph Haydn employed the use of both soloists and tone paintings in his work.

C. In addition to his composition *The Creation*, which was completed in 1798, Austrian-born composer Franz Joseph Haydn produced other symphonies and concertos.

D. Franz Joseph Haydn's *The Creation* retells biblical stories from the Book of Genesis with choral soloists and tone painting to convey the story.

24 Mark for Review

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

- There are 118 elements on the periodic table.
- Six elements are classified as the alkaline earth metals.
- One of those elements is beryllium.
- Its chemical symbol is Be.
- Another of those elements is strontium.
- Its chemical symbol is Sr.

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

A. Beryllium (Be) and strontium (Sr) are different elements.

B. Among the 118 elements on the periodic table is strontium, which is an alkaline earth metal.

C. Beryllium's chemical symbol is Be, while strontium's chemical symbol is Sr.

D. Both beryllium and strontium are classified as alkaline earth metals.

25 Mark for Review

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

- Maya Deren was a Ukrainian-born American filmmaker.

- The 1943 experimental short film *Meshes of the Afternoon* was one of her most acclaimed films.
- The film was completely silent and featured no music until 1959, when a score was added.
- The film repeatedly features various shots of the same few objects, including a knife, a key, a flower, and a record spinning on a turntable.
- The film depicts the same events several times from different points of view.

The student wants to introduce Maya Deren and her film *Meshes of the Afternoon* to a new audience. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. *Meshes of the Afternoon* was a highly acclaimed experimental short directed by a Ukrainian-born American filmmaker.

B. In 1943, American filmmaker Maya Deren released one of her most acclaimed films, *Meshes of the Afternoon*, an experimental silent film that features repeated shots of the same objects as well as repeated events shot from different points of view.

C. Maya Deren directed *Meshes of the Afternoon* in 1943.

D.a *Meshes of the Afternoon*, an acclaimed experimental film, was completely silent and featured repeated shots of a knife, a key, a flower, and a spinning record.

26 Mark for Review

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

- Agnès Varda was a Belgian-born French director.
- In 2015, she was the first woman to receive an honorary Palme d'Or, the highest prize awarded by the Cannes Film Festival.
- Her film *Cléo from 5 to 7,* one of her most acclaimed and notable works, shows two hours in the life of a pop singer.
- The film mixes documentary and fiction elements, and its events are depicted in real time.

The student wants to introduce *Cléo from 5 to 7* to an audience unfamiliar with the film and its director. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. *Cléo from 5 to 7* is a film that mixes documentary with fiction elements and depicts two hours in the life of a pop singer.

B. Agnès Varda, who directed *Cléo from 5 to 7* and received an honorary Palme d'Or at the Cannes Film Festival, was born in Belgium and then moved to France.

C. Agnès Varda's film *Cléo from 5 to 7* is highly acclaimed for its portrayal of two hours in the life of a pop singer.

D. A highly acclaimed film that mixes elements of documentary and fiction, *Cléo from 5 to 7* was directed by Agnès Varda, the first woman to receive an honorary Palme d'Or at the Cannes Film Festival.

27 Mark for Review

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

- In 2022, Ruth Peters and colleagues in Australia and the UK studied the relationship between blood pressure and risk of dementia in older age.
- They found that a decrease in blood pressure was correlated with a decrease in dementia risk.
- When systolic blood pressure was 100 millimeters of mercury (mmHg), the risk of dementia was 0.02.
- When systolic blood pressure was 140 mmHg, the risk of dementia was 0.03.
- When systolic blood pressure was 180 mmHg, the risk of dementia was 0.04.

The student wants to summarize the study. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. Ruth Peters's 2022 study concerning the relationship between blood pressure and risk of dementia found that as blood pressure increased, the risk of dementia increased.

B. For a 2022 study, researchers from Australia and the UK gathered data on the blood pressure and risk of dementia in older-age subjects.

C. Ruth Peters and her colleagues sought to understand the relationship between blood pressure and risk of dementia, so they conducted a study.

D. Knowing that there was a link between blood pressure and dementia risk, Ruth Peters measured people's risk of dementia, which was as high as 0.04 in some cases.

YIELD

Once you've finished (or run out of time for) this section, use the answer key to determine how many questions you got right. If you got fewer than 15 questions right, move on to Module 2—Easier, otherwise move on to Module 2—Harder.

SAT Prep Test 5—Reading and Writing
Module 2—Easier

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 the section are multiple-choice with four answer choices. Each question has a single best answer.

1 Mark for Review

The electric vehicle market experienced a surge in popularity in the 2010s, with sales increasing from just a few thousand at the start of the decade to more than two million by the end of the decade. As more countries implement policies to reduce carbon emissions, experts _____ that electric vehicle sales will continue to eclipse previous records each year.

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

A. project

B. guarantee

C. reject

D. deny

2 Mark for Review

According to psychologists, mindfulness—the simple practice of being present and fully engaged in the moment—can improve physical and cognitive function. The _____ of mindfulness have been found to lead to improvements in overall well-being.

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

A. benefits

B. drawbacks

C. basics

D. physics

3 Mark for Review

Astrophysicist Kip Thorne received the Nobel Prize in Physics for his work to detect ripples in space-time, confirming one of the last major predictions of Albert Einstein's general theory of relativity. This discovery both _____ our understanding of the universe and provided astronomers with a firmer ground upon which to make further inquiries.

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

A. confused

B. clarified

C. revolutionized

D. belittled

4 Mark for Review

The Navajo Nation, a sovereign Native American territory occupying parts of Arizona, Utah, and New Mexico, has its own judicial system. The judicial branch consists of different courts, with judges appointed by the Nation president and confirmed by the Navajo Nation Council, and is responsible for protecting the civil rights of Navajo citizens and _____ the established principles of the constitution.

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

A. copying

B. maintaining

C. determining

D. dismissing

5 Mark for Review

In 2019, an international team of scientists led by Victor Vescovo _____ four new species of gelatinous animals in the Mariana Trench, the deepest point in the world's oceans. This finding gave marine biologists further information regarding the diversity of animals that live and thrive in the extreme ocean depths.

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

A. reintroduced

B. discounted

C. discovered

D. explored

6 Mark for Review

Psychologist Kurt Gray led a 2019 study demonstrating that human emotions are often _____ animals by the humans observing them. The findings from this study suggest that humans can empathize with a broader diversity of creatures than previously believed.

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

A. conflated with

B. demanded of

C. united with

D. attributed to

7 Mark for Review

Female emperor penguins do not care for their own eggs. Instead, after the female lays her egg, she transfers the egg to the male's care. The male emperor penguin uses a fold of skin called a brood pouch to balance the egg on his feet and keep it warm. During the two-month window in which the male penguin cares for the egg amidst often harsh conditions, the female penguin sets out to feed and replenish her energy reserves, thus enabling her to return to the colony and care for the chick once it hatches.

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

A. It explains how female penguins are able to leave their egg and restore their energy to care for their young.

B. It introduces a physical feature of male penguins alluded to earlier in the text.

C. It describes the harsh conditions under which the male penguin cares for the egg.

D. It offers information about how male penguins carry out the function described in the text.

8 Mark for Review

The following text is adapted from Susan Glaspell's 1917 short story "A Jury of Her Peers." The women in the story, Mrs. Peters and Mrs. Hale, discover an important clue about a murder case with which they have become involved.

> And then again the eyes of the two women met—this time clung together in a look of dawning comprehension, of growing horror. Mrs. Peters looked from the dead bird to the broken door of the cage. Again their eyes met. And just then there was a sound at the outside door. Mrs. Hale slipped the box under the quilt pieces in the basket, and sank into the chair before it. Mrs. Peters stood holding to the table. The county attorney and the sheriff came in from outside.

Which choices best states the main purpose of the text?

A. To describe the features of the quilt that set it apart from other quilts

B. To detail the women's sudden realization and reaction to that realization

C. To demonstrate the women's dislike toward the county attorney

D. To indicate which possession the women most strongly cherish

9 Mark for Review

Text 1

It can be argued that there is a sharp disparity between traditional music composition and the use of computer-based technology to compose music. Computer-based programs remove the requirement for certain musical compositional skills, and the program offers shortcuts and features that can help a computer-based "composer" resolve issues within the composition instantaneously.

Text 2

While composing music digitally may seem as if it only requires a few clicks of the mouse, it does not require fewer skills than does traditional music composition. Computer-based composers must know both the foundations of music theory and the intricacies of the programs that they use to create their works. Rather than merely booting up a computer, these composers almost always build their melodies as a traditional composition first, and then transpose the work onto the computer for further editing—in the end, their final products require just as much experimentation as traditional compositions.

Based on the texts, how would the author of Text 2 most likely respond to the claims of the author of Text 1?

A. By conceding that computer-based composers don't spend time learning the foundations of music theory

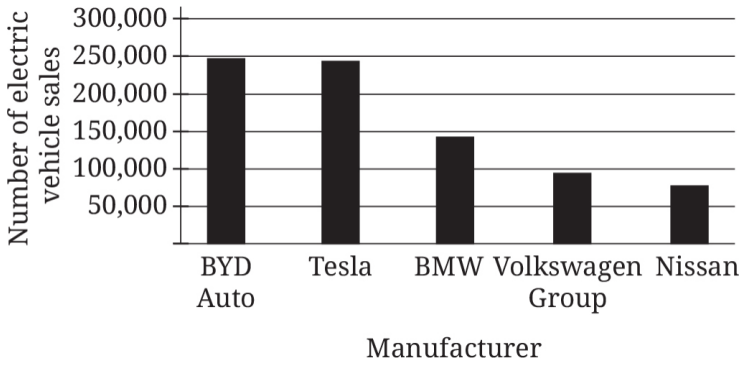
B. By emphasizing that the performance of a musical work is more important than the vehicle used for its creation

C. By clarifying that it is much easier to produce notes using a traditional instrument than it is using a mouse

D. By stating that computer-based compositions still require some traditional skills even if the medium of creation is less traditional

10 Mark for Review

Electric Car Sales by Manufacturer in 2018



Electric cars are vehicles powered by electricity stored in onboard batteries and offer a clean and efficient alternative to traditional internal combustion engine vehicles. Electric vehicle sales are still a small percentage of total vehicle sales, but each of the five major electric car manufacturers posted strong numbers in 2018. For example, _____

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

A. BYD Auto had more than 250,000 electric vehicle sales.

B. Nissan had between 50,000 and 100,000 electric vehicle sales.

C. Tesla had fewer than 200,000 electric vehicle sales.

D. BMW and Volkswagen Group each had between 100,000 and 150,000 electric vehicle sales.

11 Mark for Review

"The Set of China" is an 1835 short story by Eliza Leslie. In the story, the narrator describes Mr. Gummage as being an art teacher who actively encourages his students to improve upon the fundamentals that he teaches:

_____

Which quotation from "The Set of China" most effectively illustrates the claim?

A. "Mr. Gummage immediately supplied her with two bristle brushes, and sundry little shallow earthen cups, each containing a modicum of some sort of body color, massicot, flake-white, etc., prepared by himself and charged at a quarter of a dollar apiece, and which he told her she would want when she came to do landscapes and figures."

B. "All the dark shadows in every part of the picture were done with a mixture of Persian blue and bistre, and of these two colors there was consequently a vast consumption in Mr. Gummage's school."

C. "Mr. Gummage's style was to put in the sky, water and distances with opaque paints, and the most prominent objects with transparent colors. This was probably the reason that his foregrounds seemed always to be sunk in his backgrounds."

D. “The model was scarcely considered as a guide, for he continually told his pupils that they must try to excel it; and he helped them to do so by making all his skies deep red fire at the bottom, and dark blue smoke at the top; and exactly reversing the colors on the water, by putting red at the top and the blue at the bottom.”

12 Mark for Review

“Stopping by Woods on a Snowy Evening” is a 1923 poem by Robert Frost, which presents a frozen lake on a winter evening while the snow falls. Frost describes his prioritization of personal obligations over admiring the beauty of the winter scene, writing: _____

Which quotation from “Stopping by Woods on a Snowy Evening” most effectively illustrates the claim?

A. “He will not see me stopping here / To watch his woods fill up with snow”

B. “The woods are lovely, dark and deep / But I have promises to keep”

C. “The only other sound’s the sweep / Of easy wind and downy flake”

D. “Between the woods and frozen lake / The darkest evening of the year”

13 Mark for Review

Number of Citations of Eight Plant Species in Low and High Vegetation Areas

Plant species	Number of citations in Area I	Number of citations in Area II
C. pyramidale	35	46
S. tuberosa	27	45
C. blanctenianus	31	43
M. glaziovi	11	43
Z. joazeiro	30	43
M. urundeuva	27	41
M. tenuiflora	4	40
S. obtusifolium	32	38

Sonaly Silva da Cunha et. al examined two Brazilian semiarid areas to investigate which plant species were collected by agro-pastoralists (people who live in communities centered around livestock and agriculture) during their foraging expeditions. The researchers predicted that if vegetation were uniform across both areas examined, the average number of citations per species would be 30. The agro-pastoralists cited the number of each of eight species found in an area with low vegetation cover (Area I) and an area with high vegetation cover (Area II). Based on these results, the researchers claim that agro-pastoralists living in Area II were able to gather significant quantities of all eight species due to the area's high vegetation cover.

Which choice best describes data from the table that support the researchers' claim?

A. For all of the different plant species, the number of citations from Area II was higher than the researchers' predicted average.

B. For all eight plant species, there were fewer than 50 citations from Area II.

C. The plant species with the lowest number of citations in Area II was *C. pyramidale*.

D. For *M. glaziovi* and *M. tenuiflora,* the number of citations from Area I was significantly higher than the researchers' predicted average.

14 Mark for Review

"Hieroglyphics" is a 1902 essay by Arthur Machen, a Welsh author and critic. In the essay, Machen addresses the reader as if the two were having a conversation, during which Machen challenges a comparison regarding literary quality that he believes the reader has made: _____

Which quotation from "Hieroglyphics" most effectively illustrates the claim?

A. "There is no more madness in *that* notion than in the other one—that one has only to print an amusing, interesting, life-like, or pathetic tale to make it into fine literature."

B. "I am afraid, that in your heart of hearts, you still believe that the 'Odyssey' is fine literature, and that 'Pride and Prejudice' is fine literature, though the 'Odyssey' is 'better' than 'Pride and Prejudice.' It is that 'better' that I want to get out of your head, that monstrous

fallacy of comparing Westminster Abbey with the charming old houses in Queen Square."

C. "Did any cook ever think that he could change a turkey into a bird of paradise by careful attention to the *farse* and the sauce? The farmer might as well expect to breed early phœnixes for Leadenhall Market by the simple process of lighting a bonfire in the farmyard. The young ducks would jump into the blaze, and the transformation would be the work of a second!"

D. "At least I hope you would see, though, as I told you a few weeks ago, I doubt very much whether many people realise the distinction between the 'Odyssey' and a political pamphlet. The general opinion, I expect, is that both belong to the same class, though the Greek poem is much more 'important' than the pamphlet."

15 Mark for Review

The Inca Empire existed from the thirteenth to sixteenth century in what is now the Andes Mountains in South America. The high altitude and harsh, dry climate kept the Incans relatively safe from external threats but made farming challenging. So, they created a system of terraces that allowed them to grow crops on the mountainside and practiced preserving their crops by "freeze-drying" the crops in the cold, overnight temperatures. These methods worked well enough to produce enough crops to not only support a large population but also _____

Which choice most logically completes the text?

A. to store crops despite adverse conditions.

B. to harvest crops during all times of year.

C. to prolong the life spans of its citizens.

D. to protect their crops from snow and freezing temperatures.

16 Mark for Review

In a study of the relationship between sleep and memory consolidation—the process by which memories are embedded in our subconscious after initial acquisition—neuroscientist Matthew Walker and his team measured the brain activity of sleeping participants. They discovered that memory consolidation happens during deep sleep as the brain replays memories and stores them more effectively. They also found that the amount and quality of sleep are vital to memory consolidation. Consequently, an increased amount of high-quality sleep is likely to _____

Which choice most logically completes the text?

A. decrease an individual's ability to access the subconscious mind.

B. decrease an individual's ability to achieve deep sleep.

C. increase an individual's ability to recognize connections between similar memories.

D. increase an individual's ability to better retain memories.

17 Mark for Review

Using different parts of his body and incorporating sound effects into his final pieces, sculptor and performance artist Kevin Beasley creates his sculptures _____ found materials (such as clothes) and casting materials (such as resin and foam).

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

A. with:

B. with

C. with,

D. with—

18 Mark for Review

Abuwtiyuw was an Egyptian royal hunting dog that lived in the Sixth Dynasty and is thought to have been one of the first domesticated animals. A stone depicting gifts donated for the dog's funeral was discovered in 1935, and researchers _____ that these gifts provide evidence that Abuwtiyuw was mummified.

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

A. to believe

B. believing

C. believe

D. having believed

19 Mark for Review

Journalist Rob Capriccioso founded the publication *Indigenous Wire* to combat the lack of Indigenous representation in the media. He aims to write hard-hitting articles that share the _____ in an authentic and realistic way.

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

A. experiences' of Native American tribe member's

B. experience's of Native American tribe members

C. experience's of Native American tribe members'

D. experiences of Native American tribe members

20 Mark for Review

Artificial organic dyes, such as phthalocyanines, are used in a wide range of industries, but they are often made using solvents that are harmful to the

environment. A team at Aalto University _____ a better method: using solid-state synthesis to minimize the use of dangerous solvents.

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

A. to recommend

B. recommends

C. recommending

D. having recommended

21 Mark for Review

Comets, objects made of ice and dust that orbit the Sun, can be visible to the naked eye. Some comets, such as Halley's Comet, can be seen more than once in a _____ others, such as Comet Shoemaker-Levy 9, are visible only once.

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

A. lifetime, while

B. lifetime: while

C. lifetime. While

D. lifetime; while

22 Mark for Review

The Myriad year clock, one of the Japanese clocks known as *wadokei*, is a universal clock powered by elastic energy. Once the spring inside of it is fully wound, the clock can power _____ for one year without needing another winding.

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

A. themselves

B. it

C. itself

D. them

23 Mark for Review

May Berenbaum of the University of Illinois's Department of Entomology _____ a research seminar on chemical ecology when she developed an interest in honey and its role in the lives of bees. She later proved that honey contains chemical compounds that help bees resist illness and live longer.

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

A. was attending

B. attends

C. has been attending

D. will attend

24 Mark for Review

Sheela Gowda is an Indian artist who creates pieces focused on processes, such as people working everyday jobs. Trained as a painter at the Royal College of Art in London, Gowda expanded into sculpting methods in response to India's shifting political dynamics. She has portrayed Indian political themes in her work. _____ Gowda has incorporated themes of dangerous labor practices and the unfair treatment of women into her pieces.

Which choice completes the text with the most logical transition?

A. Regardless,

B. In contrast,

C. Indeed,

D. In addition,

25 Mark for Review

Autism is often associated with unique speech patterns, and some of these patterns can be identified reliably throughout different languages. In a study, speech rhythm, or the volume and timing of speech, could identify participants with autism reliably across English- and Cantonese-speaking groups. _____ speech intonation, or the variation of the pitch of speech, could only reliably identify participants with autism in the English-speaking group.

Which choice completes the text with the most logical transition?

A. In addition,

B. For example,

C. By contrast,

D. Still,

26 Mark for Review

There have been numerous attempts to allow greater input by America voters with regard to participating in a war. A failed amendment to the Constitution was proposed in 1916 that would have mandated a public referendum to declare war, with anyone voting “yes” being required to enlist and serve. _____ another proposal was made in 1935 and again in 1940 to require a public vote to declare war unless the country had been attacked first.

Which choice completes the text with the most logical transition?

A. Specifically,

B. Similarly,

C. For instance,

D. In sum,

27 Mark for Review

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

- Terrance Hayes is an American poet.
- He created the "golden shovel" poetic form in which the last word of each line in the poem forms part or all of an existing poem.
- He was inspired by the work of poet Gwendolyn Brooks.
- His poem "The Golden Shovel" uses the words from Brooks's poem "We Real Cool."
- The "golden shovel" form was named after "The Golden Shovel," the first to use this form.

The student wants to provide an explanation and example of a "golden shovel" poem. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. The title of the poem "The Golden Shovel" is also the name of the poetic form poet Terrance Hayes created.

B. Terrance Hayes, who wrote “The Golden Shovel,” created the “golden shovel” poetic form.

C. Terrance Hayes created the “golden shovel” poetic form, inspired by the work of poet Gwendolyn Brooks, in which the last word of each line forms part or all of an existing poem, as seen in his poem “The Golden Shovel.”

D. The “golden shovel” poetic form, created by American poet Terrance Hayes, was inspired by the work of poet Gwendolyn Brooks.

S T O P

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.

SAT Prep Test 5—Reading and Writing
Module 2—Harder

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 the section are multiple-choice with four answer choices. Each question has a single best answer.

1 Mark for Review

In studying the ability to discern differences in pitch in music, psychologist Diana Deutsch found that native speakers of tonal languages, such as Mandarin or Cantonese, are more apt to recognize pitch differences than native speakers of non-tonal languages, such as English or French, as tonal languages _____ words and phrases using pitch changes, giving speakers of these languages heightened sensitivity.

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

A. enunciate

B. suggest

C. define

D. camouflage

2 Mark for Review

Groundbreaking research conducted by James Peebles and his team is motivated by their belief that though the importance of the properties of dark matter are widely accepted, there is an _____ the influence of dark matter on the universe that continues to elude the scientific community.

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

A. acknowledgment of

B. argument about

C. understanding of

D. allegiance to

3 Mark for Review

Whether the success of a business venture, such as a startup or an established company, can be sustained long-term or is merely temporary is closely related to the concept of credibility and therefore necessitates a

comprehensive understanding of the elements that contribute to a business's ability to _____ trust among its potential consumers.

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

A. invalidate

B. fortify

C. demarcate

D. foster

4 Mark for Review

Psychologist Angela Duckworth's studies found that individuals who possess high levels of perseverance are more likely to _____ their long-term objectives. Through her work, Duckworth found that the ability to sustain high levels of effort is as important as talent or intelligence in determining success.

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

A. neglect

B. analyze

C. recall

D. attain

5 Mark for Review

The following text is translated from "When Father Brought Home the Lamp," an 1883 short story by Finnish author Juhani Aho. The narrator's father has just decided he will set out on a journey the next morning to acquire a lamp, an item no other family in the village owns.

> And that same evening father brought in from the storehouse the big travelling chest in which grandfather, in his time, had stowed his provisions when he came from Uleaborg, and bade mother fill it with hay and lay a little cotton-wool in the middle of it. We children asked why they put nothing in the box but hay and a little wool in the middle, but she bade us hold our tongues, the whole lot of us. Father was in a better humor, and explained that he was going to bring a lamp from the storekeeper, and that it was of glass, and might be broken to bits if he stumbled or if the sledge bumped too much.

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

A. It describes a point of curiosity regarding an object that the children would like explained.

B. It demonstrates the conflicting emotions displayed by various members of the family.

C. It clarifies the loving relationship between the children and their mother.

D. It examines how the inquisitive nature of children can be encouraged by a parent.

6 Mark for Review

The following text is from Jane Austen's 1813 novel *Pride and Prejudice*. The narrator is describing Elizabeth's feelings toward Mr. Darcy.

> She began now to comprehend that he was exactly the man who, in disposition and talents, would most suit her. His understanding and temper, though unlike her own, would have answered all her wishes. It was an union that must have been to the advantage of both; by her ease and liveliness, his mind might have been softened, his manners improved; and from his judgement, information, and knowledge of the world, she must have received benefit of greater importance.

Which choice best states the main purpose of the text?

A. To describe Elizabeth's determination to find a suitable romantic partner

B. To highlight the benefits of having differing qualities from one's partner

C. To emphasize Elizabeth's desires in a romantic relationship

D. To demonstrate that Elizabeth finds her current relationship both enriching and confusing

7 Mark for Review

Novelist Wright Morris, who was also a photographer, complemented his written works with photographs that encapsulated the worlds and characters he created. In his novel *The Home Place* (1948), Morris included a series of photographs throughout the narrative. The images bring to life the people and places Morris described in the text, enhancing the reader's immersion in the story. In that novel, Morris provides perspective on the themes of family, memory, and rural America–ideas that are all reinforced by the imagery contained within the novel.

Which choice best describes the overall structure of the text?

A. It details the photographs that make up *The Home Place*, then explains how they relate to Morris's convictions.

B. It makes a claim about Morris, then offers an example that supports that claim.

C. It describes Morris's impact on the art of storytelling, then discusses Morris's impact on other storytellers.

D. It notes an artist's unique style, then offers a counterexample of that style.

8 Mark for Review

Research conducted by neuroscientist Dr. Lisa Feldman Barrett suggests that emotions are based on the way that the brain interprets sensory inputs. Over a period of sixty days in 2004, Barrett and her team asked study

participants to self-report their emotional experiences by ranking to what extent they felt base emotions such as anger, anxiety, and happiness. Researchers found that individuals who reported emotional states that accurately correlated with existing data concerning emotional state and heartbeat rhythm typically had lower levels of depression and anxiety compared to those who are less able to report specific emotional states.

Which choice best states the function of the underlined sentence in the overall structure of the text?

A. To highlight an obstacle the researchers had to overcome to conduct its study

B. To summarize the findings of a research study

C. To offer a concrete example that contextualizes the study's findings

D. To partially explain the method used in a research study

9 Mark for Review

Text 1

Many physicists believe in determinism, which states that reality is strictly physical and everything that happens results from physical forces. But if determinism is taken as fact and not theory, the choices we make become not our own decisions. Some psychologists have offered a somewhat comforting response to this hypothetical loss of free will: if we accept the concept that things are as they must be, we can reduce anxiety in our daily lives.

Text 2

When the philosophy of determinism was first standardized in the twentieth century, it was readily accepted by many within the scientific community. However, science journalist John Horgan argues that the human mind operates differently than the simplified way that scientists prefer their theories. Horgan has compared determinism to a rigid track laid down at the beginning of time but states that the human brain is too complex to accept that it cannot alter that track.

Based on the texts, what would the author of Text 2 most likely say about Text 1's characterization of the psychologists' response regarding determinism?

A. It is overly critical given the complexity of the human brain referenced by Horgan.

B. It is logical given that Horgan has offered a comparison that may help individuals accept the theory.

C. It is overly positive given the comments made about the complexity of the human brain by Horgan.

D. It is surprising given that Horgan's comments were readily accepted by the scientific community.

10 Mark for Review

Credited Literary Contributions of Zora Neale Hurston, Nella Larsen, Jessie Redmon Fauset, and Anita Loos

Individual	Years active	Number of credited works published
Zora Neale Hurston	1921–1960	4 novels, 60 short stories, 4 plays
Nella Larsen	1928–1929	2 novels, 5 short stories
Jessie Redmon Fauset	1921–1945	4 novels, 100–200 works as editor
Anita Loos	1910–1970	10 novels, 100–200 short stories, 60 screenplays

Some historians studying African American women literary figures have focused on the early- to mid-1900s, when authors such as Zora Neale Hurston, Nella Larsen, Jessie Redmon Fauset, and Anita Loos were involved in one way or another with numerous literary works. Unfortunately, poor record keeping from this era makes it likely that the numbers of these four authors' contributions to literary canon should not be considered comprehensive; it's entirely possible, for example, that

_____

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

A. Zora Neale Hurston wrote exactly 60 short stories and four novels.

B. Nella Larsen wrote significantly fewer short stories than Zora Neale Hurston, who is credited with 60.

C. Jessie Redmon Fauset's four credited novels include those written after 1945.

D. Anita Loos wrote more than 60 screenplays and Nella Larsen wrote more than five short stories.

11 Mark for Review

Researchers Mary Johnson, John Davis, and Robert Smith have studied the effects of exercise on cognitive function in elderly individuals. To effectively conduct these studies, the researchers separated participants aged 65 and older into two groups: one group engaged in a regular exercise program, while the other group remained sedentary. After six months, the exercise group showed significant improvements in memory, attention, and overall cognitive performance compared to the sedentary group. Johnson, Davis, and Smith concluded that regular exercise can have a positive impact on cognitive abilities in older adults.

Which finding, if true, would most directly support Johnson, Davis, and Smith's conclusion?

A. During periods of activity, elderly adults tend to get more sunshine and fresh air, both of which have a direct correlation to overall cognitive performance.

B. Overall cognitive performance is easier to ascertain in elderly populations that are physically active than in those that are not.

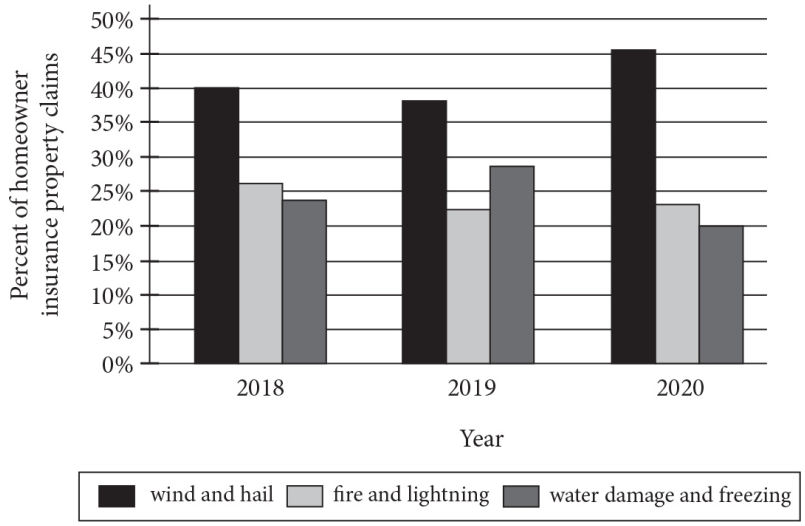
C. Cognitive performance in both active and sedentary elderly populations have been found to normalize and be hardly discernible after 12 months of observation.

D. Active elderly populations have been shown to slow, and sometimes reverse, the effects of aging on cognitive ability, while sedentary

elderly populations tend to experience the cognitive effects of aging more rapidly.

12 Mark for Review

Homeowner Insurance Property Damage Claims



Considering all homeowner's insurance property claims, the Insurance Information Institute assessed the leading causes for property damage claims over a three-year period. According to its report, the Institute determined that the percentage by which different factors caused claims largely fluctuated over the period studied.

Which choice best describes data from the graph that support the Insurance Information Institute's conclusion?

A. The percentage contribution of water damage and freezing to homeowner's insurance property claims changed every year.

B. The percentage of homeowner's insurance property claims caused by fire and lightning remained unchanged during the three-year period.

C. The percentage of homeowner's insurance property claims caused by wind and hail was highest in 2019.

D. The percentage of homeowner's insurance property claims caused by wind and hail was higher than the percentage for fire and lightning or water damage and freezing in each year.

13 Mark for Review

If *FoxA*, the primary gene that enables some insects to regenerate limbs or even entire bodies, also exists in humans, some biologists have posited that humans may also have the ability to regenerate limbs naturally if stimulated correctly. This concept is also bolstered by evidence that the supplemental genes that interact with *FoxA* during the regeneration process are also found in humans.

Which finding, if true, would most directly weaken the biologists' claim?

A. The process for determining the genetic makeup of insects is determined to be more effective when used to analyze other types of living organisms.

B. The genetic makeup of most animal species contains *FoxA*, but when analyzed they contain numerous other genes also found in insects.

C. A genetically similar species to human beings is revealed to have the same ratio of *FoxA* in its genetic sequence as do insects.

D. A new study finds that only some of the supplemental genes necessary for aiding *FoxA* in the regeneration process are found in humans.

14 Mark for Review

While studying art history, Neil MacGregor developed a belief that despite museums' displays of objects from different civilizations, the power of objects to tell stories had not been fully explored. According to a museum expert, during his career as an influential art historian and curator, MacGregor sought to address this issue, not by organizing displays limited to a single culture as was the industry standard, but by presenting the objects as pieces of a larger story, so that people from diverse ethnicities might find the exhibit more accessible.

Which finding, if true, would most directly support the museum expert's claim?

A. MacGregor organized the exhibition *Living with Gods: People, Places, and Worlds Beyond* not to emphasize a particular religious belief but to demonstrate the diverse spiritual and religious beliefs.

B. MacGregor curated *Shakespeare: Staging the World* in collaboration with the Royal Shakespeare Company, which explored the historical context during which Shakespeare's plays were written.

C. As director and curator for the British museum, MacGregor curated *A History of the World In 100 Objects*, which allowed visitors from around the world to explore human history through objects from the museum's collection.

D. MacGregor's work as curator of the 2015 exhibition *Australia* explored themes such as indigenous heritage, colonization, and environmental challenges in the context of contemporary Australian society.

15 Mark for Review

A central challenge when studying the impact of leadership positions on everyday behavior is establishing a suitable control group. Any study aiming to investigate the impact of leadership positions on everyday behavior needs to compare individuals in positions of leadership to those who are not but who otherwise possess similar characteristics. Because it is often hard to anticipate who will rise to leadership positions, researchers

_____

Which choice most logically completes the text?

A. will find it challenging to execute an accurate comparative analysis.

B. struggle to find reputable data about the changes in behavior in those who currently hold leadership positions.

C. can only conduct valid studies on individuals who have recently left leadership positions.

D. should select a large control group of diverse people.

16 Mark for Review

Transcribed in the sixteenth century in Classical Quiché by an unknown Mayan scribe, *Popol Vuh* is one of the most significant surviving sources of ancient Mayan culture. The text reflects pre-colonial Mayan beliefs about cosmology, religion, and morality. Nonetheless, some of the passages in *Popol Vuh* included Catholic and European influence, which suggests that the Mayans may have had interactions with those religious and regional groups. Consequently, scholars contend that _____

Which choice most logically completes the text?

A. any references to beliefs that influenced cultural aspects of the Mayan civilization found in the text should be considered distinct from the original Mayan belief.

B. while most of ancient Mayan culture and traditions predates colonialization, some elements of culture were shaped after contact with European and Catholic ideals.

C. although the scribe who transcribed *Popol Vuh* was fluent in Classical Quiché, they also had a functional knowledge of European languages.

D. before colonization, Mayan beliefs about cosmology, religion, and morality were unique to the civilization.

17 Mark for Review

Directed by filmmaker Tony Silver, *Style Wars*, a documentary about New York City street artists, _____ contrasting views on graffiti, including those of the artists themselves, who explain their motivations for creating art that is illegal.

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

A. present

B. have presented

C. are presenting

D. presents

18 Mark for Review

Unlike all other waterfowl, the black-headed duck does not build a _____ it deposits its eggs into other birds' nests, where they are incubated along with the parents' own eggs. According to biologist John Eadie, the duck's choice of coots for their host nests may be in response to the presence of egg-eating predators, since coots vigorously defend their clutches against predation.

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

A. nest; instead,

B. nest, instead;

C. nest instead,

D. nest, instead,

19 Mark for Review

Chemist Stephanie Kwolek _____ tire materials for the DuPont chemical company when she unexpectedly found a new polymer with fibers that aligned themselves parallel to each other, making this polymer exceptionally strong; later trademarked as Kevlar, her discovery is now used in products from phones to body armor.

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

A. will research

B. was researching

C. has been researching

D. researches

20 Mark for Review

Located on the eastern slopes of the Andes Mountains, the Yungas cloud forests of Bolivia are home to many endemic plants and animals. Herpetologist Teresa Camacho Badani led an expedition into the Yungas to collect specimens of an endangered species of _____ known only from a single individual found in 2009 and nicknamed Romeo, the Sehuencas water frog (*Telmatobius yucarare*) is now being bred in captivity in an effort to restore the population.

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

A. amphibian previously

B. amphibian but previously

C. amphibian. Previously

D. amphibian, previously

21 Mark for Review

In 2022, a helicopter landed in Palm Springs, California, after completing a pioneering 24-mile _____ by a rechargeable battery and carrying a 50-pound weight (which was added in order to simulate the weight of a transport care system for organ transplants), the fully electric helicopter was copiloted by Martine Rothblatt and Ric Webb.

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

A. flight, powered

B. flight and powered

C. flight powered

D. flight. Powered

22 Mark for Review

The *Voyager 2* spacecraft was launched by NASA in 1977 in order to take close-up pictures of Uranus and _____ find the furthest extent of the Solar System; and collect data about the interstellar space beyond the Solar System.

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

A. Neptune, the previously unexplored outer planets;

B. Neptune the previously unexplored outer planets,

C. Neptune, the previously unexplored outer planets,

D. Neptune; the previously unexplored outer planets,

23 Mark for Review

Ethiopian American artist Julie Mehretu paints by projecting a visual image such as an architectural blueprint or a photograph from a newspaper article onto a canvas and then converting the projection into abstract forms, working in a style that art _____ "a complex dance between abstraction and representation."

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

A. journalist Maximiliáno Durón, calls,

B. journalist Maximiliáno Durón calls

C. journalist, Maximiliáno Durón, calls

D. journalist, Maximiliáno Durón, calls,

24 Mark for Review

While a local legend credits French cheesemaker Marie Harel with the invention of Camembert cheese, she likely learned the technique from a priest, Abbot Charles-Jean Bonvoust, who passed along the recipe while in hiding during the French Revolution. _____ Harel will likely continue to receive recognition for the cheese, as her descendants created a large-scale cheese factory to mass-produce the variety to share with the rest of the world.

Which choice completes the text with the most logical transition?

A. Nevertheless

B. Furthermore,

C. Indeed,

D. Consequently,

25 Mark for Review

The Chicxulub crater, located in Mexico, was discovered by Antonio Camargo and Glen Penfield and is believed to be the result of a meteorite impact. Many researchers have found evidence to support the hypothesis that the impact caused the Cretaceous-Paleogene extinction event. _____ the surrounding areas contain shocked quartz that is only formed through high pressure and tektites that are often ejected from meteorites.

Which choice completes the text with the most logical transition?

A. As a result,

B. However,

C. In other words,

D. Specifically,

26 Mark for Review

Fingerprinting is often used to settle fraud cases, but a suspect could claim that he or she handled a piece of paper before the fraudulent material was printed on it. By placing a layer of gelatin over a fingerprint and reacting it in a vacuum chamber, the fingerprint will appear "masked" if it was placed before anything was printed on the paper. _____ using this new technique, court cases will have more reliable evidence regarding a suspect's knowledge of the fraud that was committed.

Which choice completes the text with the most logical transition?

A. Nevertheless,

B. Thus,

C. Similarly,

D. However,

27 Mark for Review

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

- Researchers have been investigating the effects of sports-related concussions on the brain.
- Biomarkers in the blood indicative of tissue injury were found in participants two weeks following their last injuries.
- Extensive white matter damage deeper in the brain was found in participants six months following their last injuries.
- Many participants had more than one sports-related concussion.

The student wants to make and support a generalization about sports-related concussions. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. There are short- and long-term consequences of a sports-related concussion on the brain: two weeks following injury there are biomarkers in the blood indicative of tissue injury, while six months following injury there is damage to the white matter deeper in the brain.

B. There are many effects of sports-related concussions on the brain, especially in participants with more than one sports-related concussion.

C. One example of a long-term consequence of sports-related concussions is the damage to white matter deeper in the brain found in participants six months following their last injury.

D. Many participants had more than one sports-related concussion, and blood biomarkers showed signs of tissue injury two weeks following their sports-related concussions.

S T O P

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.

SAT Prep Test 5—Math
Module 1

DIRECTIONS

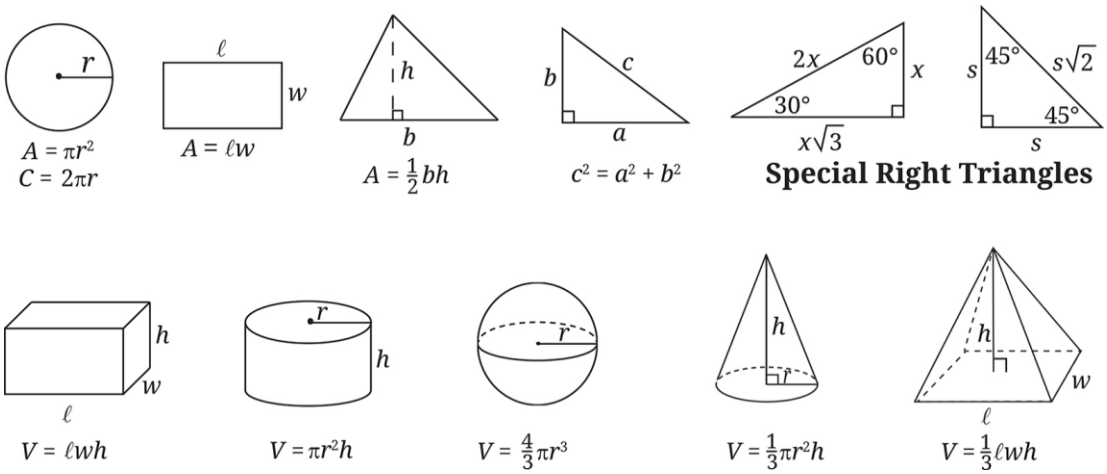
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

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



The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

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

For student-produced response questions, solve each problem and write your answer along with the question number on scratch paper 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.
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- Don't enter **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1 Mark for Review

Data set S: 2, 3, 8, 8, 11, 24
Data set T: 3, 8, 8, 11, 24

The values in data sets S and T are given. Which of the following is a true statement comparing the means of the two data sets?

A. There is not enough information to compare the means.

B. The means of data set S and data set T are equal.

C. The mean of data set S is less than the mean of data set T.

D. The mean of data set S is greater than the mean of data set T.

2 Mark for Review

If $x = 8$, what is the value of $30 - x$?

A. 14

B. 22

C. 30

D. 38

3 Mark for Review

The valve of a water tank remained open for 44 seconds. The water tank contained 7,854 liters of water before the valve was opened and 1,192 liters of water once the valve was closed. Approximately how many liters of water, on average, drained from the tank each second while the valve was open?

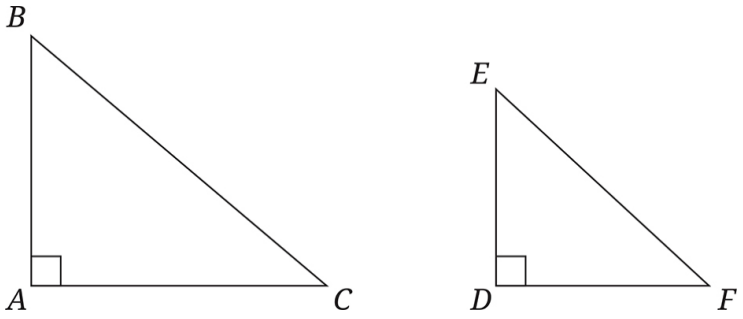
A. 27

B. 151

C. 206

D. 6,662

4 Mark for Review



Note: Figures not drawn to scale.

Similar right triangles *ABC* and *DEF* are shown, where *B* corresponds to *E*. If the measure of angle *E* is 52°, what is the measure of angle *C*?

A. 38°

B. 52°

C. 128°

D. 142°

5 Mark for Review

Last week, a softball equipment company made $26,000 from the sale of equally-priced bats and equally-priced gloves. When b is the number of bats sold and g is the number of gloves sold, the equation $500b + 300g = 26{,}000$ represents this situation. The sales price of each glove is how many dollars less than the sales price of each bat?

6 Mark for Review

$$8x - y = -17$$
$$-7x = 14$$

The given system of equations has one solution at (x, y). What is the value of $x - y$?

A. –31

B. –3

C. 3

D. 31

7 Mark for Review

The function $f(d) = 750d + 12{,}000$ models the amount of money, in dollars, that an arts organization has in its account d days after starting a fundraising campaign. Based on this model, how much money, in dollars, did the organization have in its account before starting the fundraising campaign?

A. 16

B. 750

C. 11,250

D. 12,000

8 Mark for Review

Equilateral triangle T has a perimeter that is one-third the perimeter of equilateral triangle S. If one side of triangle S is 9 inches long, what is the length, in inches, of one side of triangle T?

A. 3

B. 9

C. 12

D. 27

9 Mark for Review

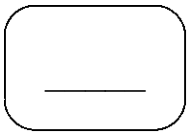
If $|7x + 14| = 49$, what is one possible value of $x + 2$?

_____

10 Mark for Review

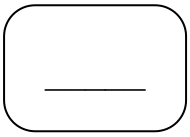
x	$g(x)$
–30	–116
–24	–86
–18	–56
–12	–26
–6	4

Five values of x and their corresponding values of $g(x)$are shown in the table. The relationship between x and $g(x)$ is linear. If the function g is defined by $g(x) = kx + 34$, what is the value of the constant k?



11 Mark for Review

The expression $(-3x^4 + 13) + (-8x^4 - 9)$ is equivalent to $cx^4 + 4$, where c is a constant. What is the value of c?



12 Mark for Review

$$\frac{22m}{n} = \frac{2}{3s}$$

The given equation relates the numbers m, n, and s, where n is not equal to 0 and $s > 1$. Which equation correctly expresses m in terms of n and s?

A. $m = 2n - 66s$

B. $m = 66ns$

C. $m = \frac{3ns}{44}$

D. $m = \frac{2n}{66s}$

13 Mark for Review

A certain ant colony contains 96,000 ants. A disease infects the colony, causing the number of ants to decrease by one-half every 4 days. How many ants remained in the colony 20 days after the infection started?

A. 3,000

B. 4,800

C. 6,000

D. 24,000

14 Mark for Review

$$x < 53$$
$$x - 7y < 16$$

When the given system of inequalities is graphed in the xy-plane, one of the solutions is $(39, y)$. Which of the following could be the value of y?

A. –4

B. –3

C. 3

D. 4

15 Mark for Review

$$\sqrt[9]{s^5 t^5}$$

If s and t are positive, which of the following expressions is equivalent to the given expression?

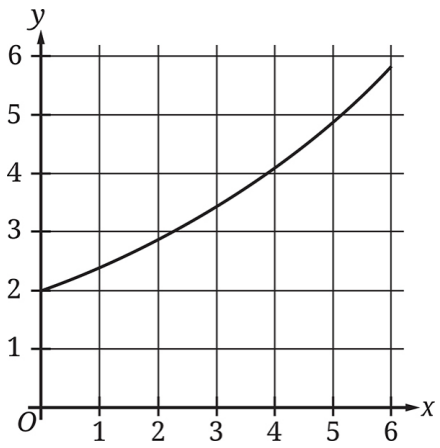
A. $(st)^{\frac{5}{9}}$

B. $(st)^{\frac{9}{5}}$

C. $(st)^{14}$

D. $(st)^{45}$

16 Mark for Review



A certain collector's item increased in value every month for the first six months after it was purchased. The graph shows the value, y, in hundreds of dollars, of the item x months after it was purchased, where $0 \leq x \leq 6$. Which of the following is the best interpretation of the y-intercept of the graph in this context?

A. The value of the item when it was purchased was \$2.

B. The value of the item increased by \$200 over the first six months after it was purchased.

C. The value of the item when it was purchased was \$200.

D. The value of the item six months after it was purchased was \$2,000.

17 Mark for Review

Which of the following systems of linear equations has exactly one real solution?

A. $y = 2$

$y = 4$

B. $y = 2x$
$y = 2x - 4$

C. $y = 4x - 4$
$y = 4x + 4$

D. $y = 4x - 2$
$y = 8x - 4$

18 Mark for Review

The nth term of a sequence is represented by s, and each term after the first term is one-half of the preceding term. If the first term of the sequence is 56, which of the following equations expresses s in terms of n?

A. $s = \frac{1}{2}(56^{n-1})$

B. $s = \frac{1}{2}(56^{n})$

C. $s = 56\left(\frac{1}{2}\right)^{n-1}$

D. $s = 56\left(\frac{1}{2}\right)^{n}$

19 Mark for Review

In 2023, a certain streaming service decreased its number of movies available by 9% from the number of movies available in 2022. If the number of movies available in 2023 was m times the number of movies

available in 2022, what is the value of m?

A. 0.09

B. 0.91

C. 1.09

D. 1.91

20 Mark for Review

The maximum value of q is 14 more than 7 times the value of r. Which inequality represents the relationship between q and r?

A. $q \leq 7r + 14$

B. $q \leq 14r + 7$

C. $q \geq 7r + 14$

D. $q \geq 14r + 7$

21 Mark for Review

The equation $5x + 3y = -8$ represents line l. Line m is obtained by shifting line l up 2 units in the xy-plane. The x-intercept of the graph of line m is (a, b). What is the value of a?

22 Mark for Review

$AB = 42$
$BC = 56$
$CA = 70$

Right triangle ABC is similar to triangle DEF, where A corresponds to D and B corresponds to E. The lengths of the sides of triangle ABC are given. What is the value of cos D?

A. $\frac{3}{5}$

B. $\frac{3}{4}$

C. $\frac{4}{5}$

D. $\frac{4}{3}$

YIELD

Once you've finished (or run out of time for) this section, use the answer key to determine how many questions you got right. If you got fewer than 14 questions right, move on to Module 2—Easier, otherwise move on to Module 2—Harder.

SAT Prep Test 5—Math
Module 2—Easier

DIRECTIONS

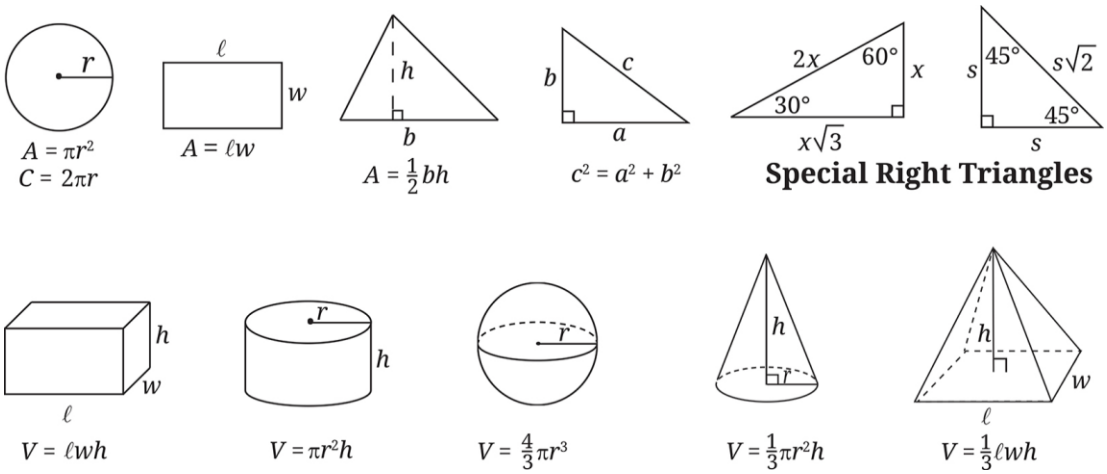
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

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



The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

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

For student-produced response questions, solve each problem and write your answer along with the question number on scratch paper 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.
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- Don't enter **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1 Mark for Review

An automobile factory makes 1,200 vehicles in 1 day. If the factory operates continuously for 1 week at this rate, how many vehicles will it make?

2 Mark for Review

If $10a = 30$, what is the value of $9a$?

A. 27

B. 40

C. 270

D. 360

3 Mark for Review

Talula baked 340 cookies and gave 20% of them to her neighbors. How many of the cookies did Talula give to her neighbors?

A. 14

B. 34

C. 54

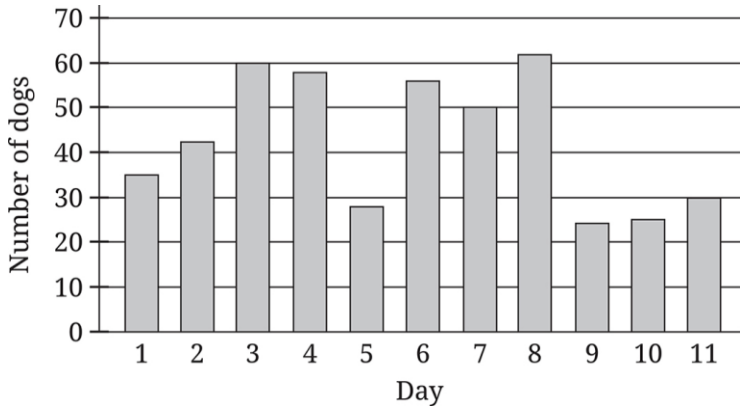
D. 68

4 Mark for Review

$$h(x) = 11x - 5$$

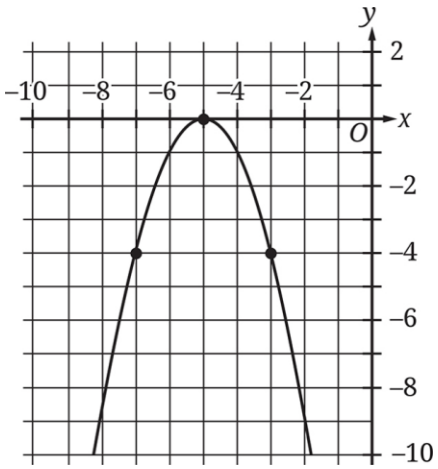
The function h is defined by the given equation. When $x = 6$, what is the value of $h(x)$?

5 Mark for Review



The distribution of 469 dogs that visited a dog park over an 11-day period is shown in the bar graph. How many dogs visited this dog park on day 7?

6 Mark for Review



The graph shown intercepts the x-axis at $(x, 0)$. What is the value of x?

7 Mark for Review

Which of the following expressions is equivalent to $14a + 7ab^2$?

A. $2a(7 + 7b^2)$

B. $7a(2 + b^2)$

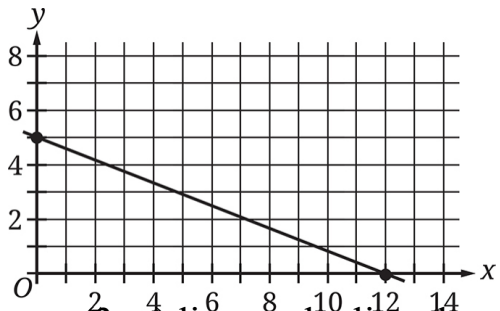
C. $7a(a + 14b)$

D. $7b(2ab)$

8 Mark for Review

Rectangle A has a length of 80 and a width of 24. What is the perimeter of rectangle A?

9 Mark for Review



The point with coordinates $(3, n)$ lies on the line shown. What is the value of n?

A. $\frac{13}{4}$

B. $\frac{15}{4}$

C. $\frac{19}{5}$

D. $\frac{24}{7}$

10 Mark for Review

A magician has a hat with 18 cards inside. The face of each card has a number from 1 to 18 written on it, with a different number on each card. If the magician takes out a single card, what is the probability that the number written on it is not 6?

A. $\frac{1}{18}$

B. $\frac{6}{18}$

C. $\frac{12}{18}$

D. $\frac{17}{18}$

11 Mark for Review

The function g is defined by $g(x) = -2x^2$. What is the value of $g(3)$?

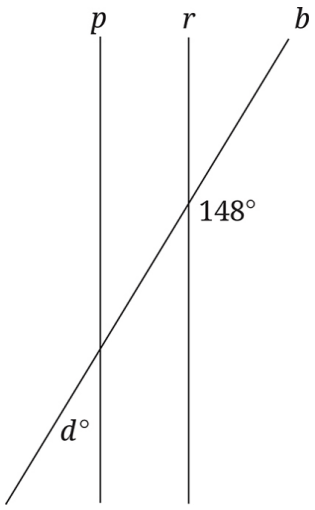
A. –18

B. –12

C. –10

D. –6

12 Mark for Review



Note: Figure not drawn to scale.

In the figure shown, line b intersects parallel lines p and r. What is the value of d?

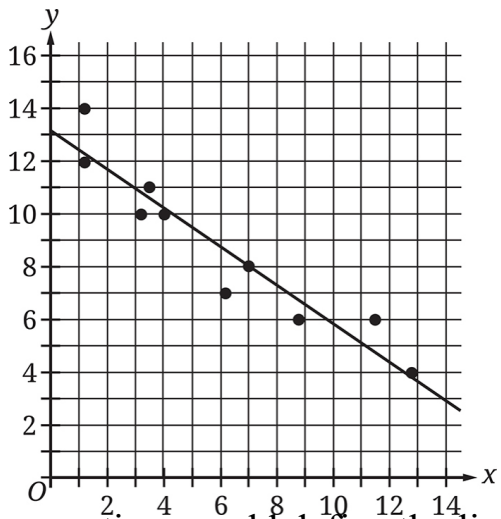
A. 16

B. 32

C. 74

D. 148

13 Mark for Review



Which of the following equations could define the line of best fit for the scatterplot shown?

A. $y = -13 - 0.7x$

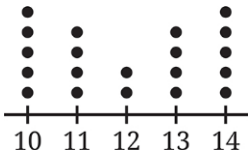
B. $y = -13 + 0.7x$

C. $y = 13 - 0.7x$

D. $y = 13 + 0.7x$

14 Mark for Review

Data Set R



There are 20 values in data set R, represented by the dot plot shown. Data set S is created by subtracting 8 from each of the values in data set R. Which of the following correctly compares the ranges and the means of data sets R and S?

A. The range of data set S is less than the range of data set R, and the mean of data set S is equal to the mean of data set R.

B. The range of data set S is less than the range of data set R, and the mean of data set S is less than the mean of data set R.

C. The range of data set S is equal to the range of data set R, and the mean of data set S is equal to the mean of data set R.

D. The range of data set S is equal to the range of data set R, and the mean of data set S is less than the mean of data set R.

15 Mark for Review

During a video game session, a player scored a total of 1,000 points for c cooperative missions and s solo missions. The equation $20c + 25s = 1{,}000$ represents this situation. Which of the following is the best interpretation of the number 25 in this context?

A. The player completed 25 cooperative missions during this session.

B. The player scored 25 points for each cooperative mission during this session.

C. The player completed 25 solo missions during this session.

D. The player scored 25 points for each solo mission during this session.

16 Mark for Review

$$g(x) = \frac{\sqrt{x}}{2}$$

The function g is defined by the given equation. If $g(x) = 5$, what is the value of x?

A. 10

B. 25

C. 50

D. 100

17 Mark for Review

$$y = x^2 - 7$$
$$x = -7$$

When graphed in the *xy*-plane, the given equations intersect at the point (*x*, *y*). What is the value of *y*?

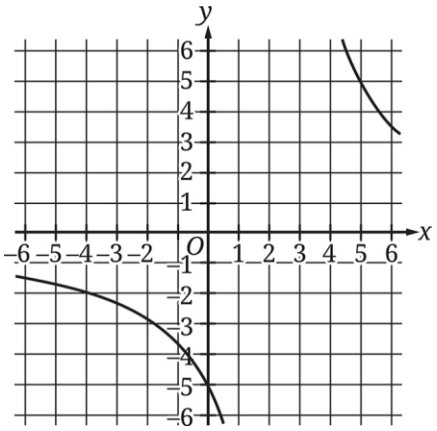
A. –21

B. –7

C. 42

D. 49

18 Mark for Review



A partial graph of $y = f(x)$ in the *xy*-plane is shown. Which of the following is the value of $f(0)$?

A. –5

B. $-\frac{1}{4}$

C. 0

D. 5

19 Mark for Review

Which of the following equations defines a line in the *xy*-plane that has a slope of $\frac{1}{6}$ and passes through the point (12, –7)?

A. $y = \frac{x}{6} - 9$

B. $y = \frac{x}{6} - 7$

C. $y = -9x + \frac{1}{6}$

D. $y = 12x - 7$

20 Mark for Review

How many distinct real solutions does the equation $4x^2 - 8x - 5 = 0$ have?

A. Exactly one

B. Exactly two

C. Infinitely many

D. Zero

21 Mark for Review

A jar contains a total of 37 red and blue tokens used to play a game. The mass of one red token is 90 grams, and the mass of one blue token is 120 grams. If the combined mass of the tokens is 3,810 grams, how many of the tokens in the jar are blue?

A. 5

B. 16

C. 21

D. 32

22 Mark for Review

Circle R is defined by the equation $(x + 3)^2 + y^2 = 64$. If circle S is the result of shifting the graph of circle R to the right 7 units in the xy-plane, what is the equation of circle S?

A. $(x + 3)^2 + (y - 7)^2 = 64$

B. $(x + 3)^2 + (y + 7)^2 = 64$

C. $(x - 4)^2 + y^2 = 64$

D. $(x + 10)^2 + y^2 = 64$

S T O P

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.

SAT Prep Test 5—Math
Module 2—Harder

DIRECTIONS

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

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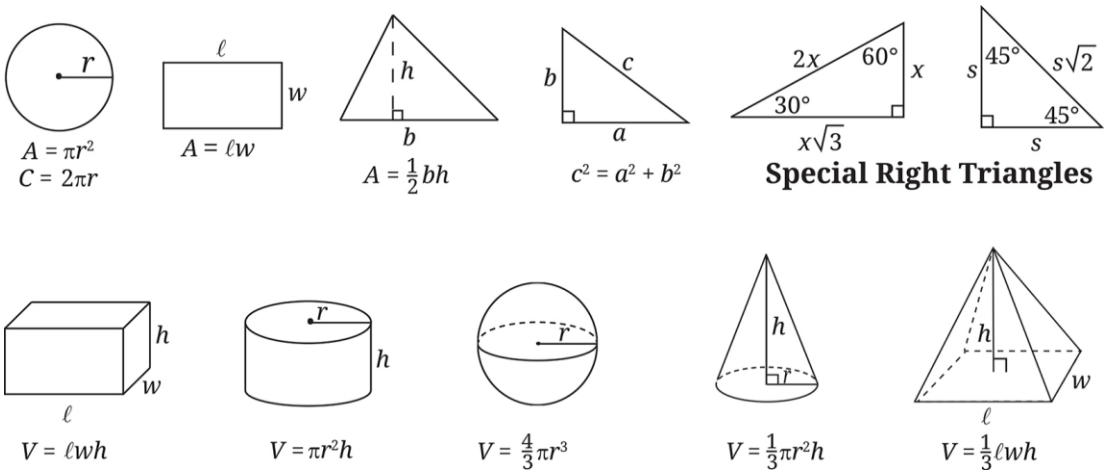
REFERENCE



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1 Mark for Review

A fruit stand sells a total of 200 apples and bananas. The apples are sold in bags of 4 apples per bag, and the bananas are sold in bunches of 6 bananas each. Which of the following equations best represents the number of bags of apples, a, and bunches of bananas, b, that could be sold at the fruit stand?

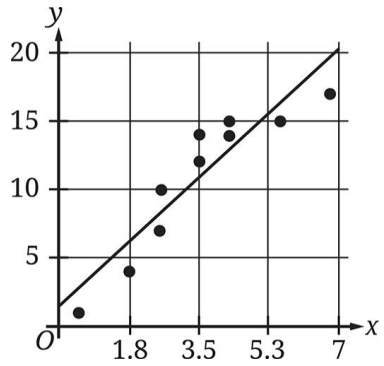
A. $(a + b)(4 + 6) = 200$

B. $(4 + a)(6 + b) = 200$

C. $4a + 6b = 200$

D. $6a + 4b = 200$

2 Mark for Review



The relationship between two variables, x and y, is shown on the scatterplot, and a line of best fit is also shown. Which of the following equations best represents the line of best fit?

A. $y = -1.5 - 2.7x$

B. $y = -1.5 + 2.7x$

C. $y = 1.5 - 2.7x$

D. $y = 1.5 + 2.7x$

3 Mark for Review

A random sample of the 120 members of a cycling club was given a survey. The survey asked the cycling club members whether they plan to compete in an upcoming race. Of those surveyed, 45% responded that they do not plan to compete in the upcoming race. Which of the following is the best estimate of the total number of cycling club members who do not plan to compete in the upcoming race, based on the survey?

A. 45

B. 54

C. 66

D. 120

4 Mark for Review

x	$g(x)$
–1	–11
0	–5
1	–7
2	–17

The table shows four values of x and their corresponding values of $g(x)$ for the quadratic function g. Which of the following equations defines function g?

A. $g(x) = -x^2 - 4x - 5$

B. $g(x) = -5x^2 + 3x - 5$

C. $g(x) = -4x^2 + 2x - 5$

D. $g(x) = -2x^2 + 4x - 5$

5 Mark for Review

$$f(x) = \frac{x - 12}{8}$$

The given equation defines function f. If c is a constant, for which value of c does $f(c) = 20$?

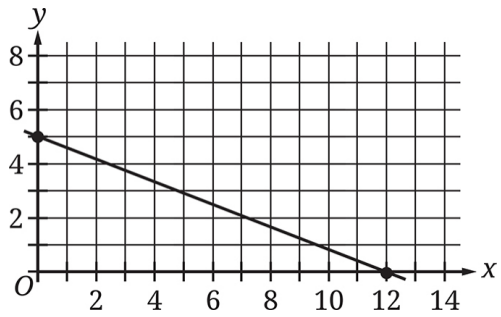
A. 1

B. 20

C. 148

D. 172

6 Mark for Review



The point with coordinates (3, n) lies on the line shown. What is the value of n?

A. $\frac{13}{4}$

B. $\frac{15}{4}$

C. $\frac{19}{5}$

D. $\frac{24}{7}$

7 Mark for Review

Line l is graphed in the xy-plane and is defined by $7 + 4y = -16x$. If line m is parallel to line l, what is the slope of line m?

A. –4

B. $-\frac{1}{4}$

C. $\frac{1}{4}$

D. 4

8 Mark for Review

A concrete block in the shape of a rectangular solid has a mass of 1,690 kilograms. The block has a length of 1.1 meters, a width of 0.8 meters, and a height of 0.8 meters. To the nearest whole number, what is the density, in kilograms per cubic meter, of the concrete block?

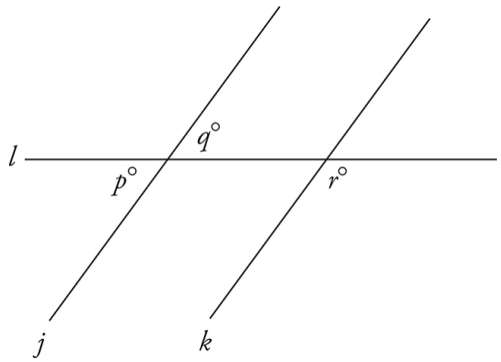
A. 1,082

B. 1,190

C. 2,401

D. 2,641

9 Mark for Review



Note: Figure not drawn to scale.

In the figure shown, line l intersects parallel lines j and k. If $q = 10c - 11$ and $r = 15c + 41$, what is the value of p?

A. 6

B. 49

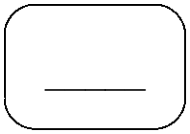
C. 115

D. 131

10 Mark for Review

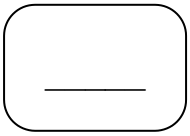
$$-7(px + q) = \frac{42}{23}x + \frac{35}{9}$$

The given equation, where p and q are constants, has infinitely many solutions. If $p < 0$, what is the value of q?



11 Mark for Review

During the last business quarter, the number of unique visitors to a small e-commerce website decreased by 25% from its previous average of 620 unique visitors each day. At the start of the upcoming quarter, the website will launch a promotion, and the resulting number of unique visitors per day is projected to be 180% of the number of visitors last quarter. What is the projected average number of unique visitors per day the website will receive during its promotion?



12 Mark for Review

The amount, in micrograms, of a certain radioactive isotope h hours after its initial creation is modeled by the function $M(h) = 302(0.87)^{\left(\frac{4}{5}\right)h}$. According

to the model, the amount of the isotope is predicted to decrease by d% every 75 minutes. What is the value of d?

A. 0.87

B. 13

C. 16.25

D. 87

13 Mark for Review

Packages in a warehouse are split into two groups. Group X contains 40 packages, and group Y contains 110 packages. If the mean mass of the packages in group X is 24 kilograms (kg), and the mean mass of the packages in group Y is 9 kg, what is the mean mass, in kg, of all 150 packages?

14 Mark for Review

$$11x^2 - kx + 63$$

The given expression, where k is a constant, can be rewritten as $(px - q)(x - r)$, where p, q, and r are integer constants. Which of the following must be an integer?

A. $\frac{63}{r}$

B. $\frac{63}{p}$

C. $\frac{k}{r}$

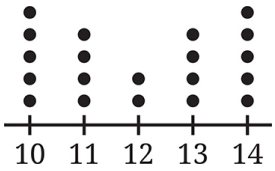
D. $\frac{k}{p}$

15 Mark for Review

The equation $3x^2 - 36x + k = 0$ has exactly one real solution. If k and m are integer constants, and $k < m$, what is the least possible value of m?

16 Mark for Review

Data Set R



There are 20 values in data set R, represented by the dot plot shown. Data set S is created by subtracting 8 from each of the values in data set R. Which of the following correctly compares the ranges and the means of data sets R and S?

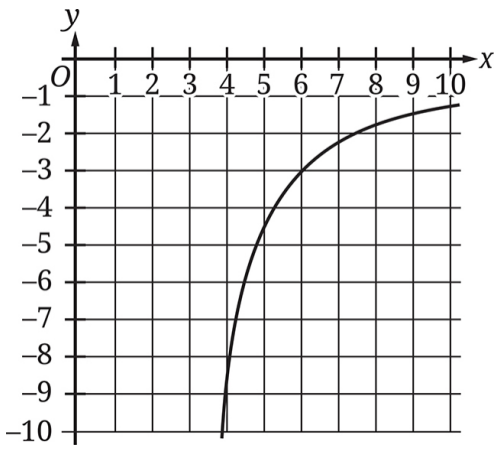
A. The range of data set S is less than the range of data set R, and the mean of data set S is equal to the mean of data set R.

B. The range of data set S is less than the range of data set R, and the mean of data set S is less than the mean of data set R.

C. The range of data set S is equal to the range of data set R, and the mean of data set S is equal to the mean of data set R.

D. The range of data set S is equal to the range of data set R, and the mean of data set S is less than the mean of data set R.

17 Mark for Review



The function g is defined by the equation $g(x) = \frac{c}{x - d}$, where c and d are constants. The partial graph of $y = g(x)$ is shown. Which equation could define function h if $h(x) = g(x - 3)$?

A. $h(x) = -\frac{9}{x - 6}$

B. $h(x) = -\frac{9}{x - 3}$

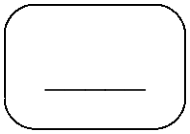
C. $h(x) = \frac{-9}{x}$

D. $h(x) = \frac{-9(x - 3)}{x - 3}$

18 Mark for Review

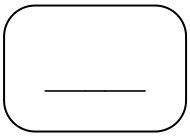
$$y = x^2 - 6x - c$$
$$y = 3.5$$

If the given system of equations has exactly one real solution, and c is a negative constant, what is the value of c?



19 Mark for Review

A circle with the equation $x^2 - \frac{1}{2}x + y^2 - \frac{1}{2}y = \frac{7}{8}$ is graphed in the xy-plane. What is the length of the radius of this circle?



20 Mark for Review

In the equation $18x^2 - (18n - m)x - mn = 0$, m and n are positive constants. If the product of the solutions to the given equation is kmn, where k is a constant, what is the value of k?

A. -18

B. $-\frac{1}{18}$

C. $\frac{1}{9}$

D. 1

21 Mark for Review

The equation of a parabola is written in the form $y = ax^2 + bx + c$, where a, b, and c are constants. When graphed in the xy-plane, the parabola has vertex (–1, 4) and does not intersect the x-axis. Which of the following could be the value of $a – b – c$?

A. –5

B. –4

C. 0

D. 4

22 Mark for Review

A rectangular prism has a height of 50 centimeters (cm). The base of the prism is a square and the surface area of the prism is S cm^2. If the prism is divided into two identical rectangular prisms by making a cut parallel to the

square base, each resulting prism has a surface area of $\frac{31}{56}S$ cm^2. What is the side length, in cm, of each square base?

A. 5

B. 6

C. 12

D. 24

S T O P

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.

Practice Test 5: Answers and Explanations

Reading and Writing

Module 1

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

Module 2 (Easier)

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

Module 2 (Harder)

1. A

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

Math

Module 1

1. C
2. B

3. B
4. A
5. 200
6. B
7. D
8. A
9. 7 or –7
10. 5
11. –11
12. D
13. A
14. D
15. A
16. C
17. D
18. C
19. B
20. A
21. –0.4 or –2/5
22. A

Module 2 (Easier)

1. 8400
2. A
3. D
4. 61
5. 50
6. –5
7. B
8. 208
9. B
10. D
11. A

12. B
13. C
14. D
15. D
16. D
17. C
18. A
19. A
20. B
21. B
22. C

Module 2 (Harder)

1. C
2. D
3. B
4. C
5. D
6. B
7. A
8. C
9. B
10. –35/63, –5/9, –0.555, –0.556, –.5555, or –.5556
11. 837
12. B
13. 13
14. A
15. 109
16. D
17. A
18. –50/4 or –12.5
19. 1
20. B

21. A
22. C

PRACTICE TEST 5—READING AND WRITING EXPLANATIONS

Module 1

1. **C**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes Despommier's attitude toward his promotion of vertical farming, so look for and highlight clues in the passage about this attitude. The passage mentions *Despommier's persistence and dedication to the cause*, so a good word to enter into the annotation box would be "determined" or "steadfast."

   - (A), (B), and (D) are wrong because *menacing, subdued*, and *misunderstood* are the **Opposite** tone of "determined," which is positive.
   - (C) is correct because *resolute* (firm) matches "determined."

2. **C**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes what action the fishermen take toward traditional fishing methods and modern technology, so look for and highlight clues in the passage where both of these ideas show up. The passage states that the fishermen *use motorized boats and GPS tracking…while still applying age-old knowledge of tides, weather patterns, and fish migratory patterns*, so a good phrase to enter into the annotation box would be "use together" or "use both."

- (A) and (D) are wrong because *belittle* (put down or criticize) and *replace* are the **Opposite** tone and meaning, respectively, of using the traditional fishing methods and modern technology "together."

- (B) is wrong because *contemplate* (think about) doesn't match "use together."

- (C) is correct because *integrate* matches "use together."

3. **B**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes the character's lives, so look for and highlight clues in the passage about their lives. The passage states that each character's story has *truncated yet rich and unique life experiences and histories*, so a good word to enter into the annotation box would be "active" or "interesting."

   - (A) and (D) are wrong because *meaningless* and *shattered* are the **Opposite** tone of "active," which is positive.

   - (B) is correct because *dynamic* matches "active."

   - (C) is wrong because *benign* (nonthreatening) doesn't match "active."

4. **C**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes the organisms, or plants, so look for and highlight clues in the passage about the plants. The passage states that the common perception is that

plants *simply respond to their environment*, so a good phrase to enter into the annotation box would be "not active" or "idle."

- (A), (B), and (D) are wrong because *courageous* (brave), *assertive* (confident), and *adaptable* don't match "not active."
- (C) is correct because *passive* matches "not active."

5. **B**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes what economists say regarding a commonly held belief, so look for and highlight clues in the passage about this belief. The passage states that *working from home can actually increase productivity and work satisfaction*, which goes against the *commonly held belief that remote work leads to decreased productivity*. Based on this interaction, a good word to enter into the annotation box would be "challenged" or "argued against."

- (A) and (D) are wrong because *muddied* (confused) and *articulated* (expressed) don't match "challenged."
- (B) is correct because *questioned* matches "challenged."
- (C) is wrong because *usurped* (taken over) is the **Opposite** of what happens in the passage—the economists have not taken over the belief as their own; they have a problem with the belief.

6. **A**

This is a Vocabulary question, as it asks for what "trying" *most nearly* means in the text. Treat "trying" as if it were a missing or unknown word in the passage. This word describes the effect that the professor's glasses have on his eyes, so look for and highlight clues in the passage about those glasses. The professor states that *these new glasses don't suit me*, so a good word to enter into the annotation box would be "tiring" or "bothersome."

- (A) is correct because *taxing* (exhausting) matches "tiring."
- (B) and (D) are wrong because *attempting* and *sampling* go **Beyond the Text**—each is a common definition for *trying* that does not mean "tiring."
- (C) is wrong because *soothing* is the **Opposite** tone of "tiring," which is negative.

7. **B**

This is a Retrieval question, as it asks for a detail *according to the text*. Look for and highlight information in the passage regarding why neural dust would *help researchers more than other types of probes*. The passage states that *Because the dust is biocompatible, it does not damage brain tissue*, and *because it is wireless, it can be used to monitor the brain…without the need for bulky external equipment*. The correct answer should be as consistent as possible with these statements.

- (A) and (D) are wrong because neither the size of *other probes* nor *electrical current* is discussed in the passage, only the size of *neural dust*.

- (B) is correct because it's consistent with the advantages of neural dust stated in the passage.

- (C) is wrong because it's **Recycled Language**—*monitoring*, *time*, and *brain tissue* are misused from different parts of the passage.

8. **B**

   This is a Main Idea question, as it asks for the *main idea of the text*. Look for and highlight information that can help understand the main idea. The last sentence of the passage states that *While modernization has impacted the role of the Tohunga…they remain a crucial source of guidance and guardians of cultural heritage*. Since the other sentences expand upon these roles, the last sentence serves as a main idea. The correct answer should be as consistent as possible with the last sentence.

   - (A), (C), and (D) are wrong because they each go **Beyond the Text**—the passage doesn't state how *contemporary society* feels about the Tohunga, what the Tohunga think about *technological advancements*, or that *Tohunga traditions are passed down from to generation*. Each of these is a logical but unsupported assumption.

   - (B) is correct because it's consistent with the main idea of the passage—it paraphrases everything that's said in the last sentence of the passage.

9. **A**

   This is a Main Idea question, as it asks for the *main idea of the text*. Look for and highlight information that can help understand the main idea. The last sentence of the passage states that *Alleyne had known*

every brother well, but this was a face that was new to him. Since the other sentences expand upon Alleyne's knowledge of the order or the surprise the new face poses, the last sentence serves as a main idea. The correct answer should be as consistent as possible with the last sentence.

- (A) is correct because it's consistent with the main idea of the passage—it paraphrases everything that is said in the last sentence of the passage.
- (B) is wrong because it goes **Beyond the Text**—the passage does not explain if Alleyne became *more* or less *suspicious* of others in the future because of his encounter with the stranger.
- (C) is wrong because it's **Extreme Language**—it's not stated that Alleyne *only* trusts men who wear the order's outfit.
- (D) is wrong because it's **Recycled Language**—*perplexed* and *the order* are misused from different parts of the passage.

10. **C**

This is a Claims question, as it asks which choice *most effectively illustrates the claim*. Look for and highlight the claim in the passage, which is that *Tan suggests that upon smelling fragrant aromas, she felt an intuitive and sometimes unexpected sense of cultural recognition*. The correct answer should address and be consistent with each aspect of this claim.

- (A), (B), and (D) are wrong because they're each **Half-Right**—while each answer makes some reference to the character's food or culture, none of them discuss any *aromas*, or smells.

- (C) is correct because it's consistent with the claim—it references both *aromas* and the *sense of cultural recognition*.

11. **D**

This is a Charts question, as it asks for *data from the graph* that will *complete the example*. Read the title, key, and variables from the bar graph. Then, read the passage and highlight the claim or argument that references the information from the graph. The last sentence states that *the percentage of women serving in parliaments was found to be especially prominent*. The correct answer should offer accurate information from the graph evidence in support of this claim.

- (A) and (B) are wrong because they're the **Opposite** of the information presented in the graph—the percentage of women that serve in the lower chambers of Rwanda, Senegal, Namibia, and Ethiopia are not *relatively equal*, and neither of the two chambers in Ethiopia contain more than 50% women.

- (C) is wrong because it's **Half-Right**—it's consistent with the graph but irrelevant to the claim, as neither chamber in South Africa has a percentage of women at or above 50%, which would be better support of the percentage of women being *prominent*, or notable.

- (D) is correct because it's consistent with the graph and the claim —since women make up the majority of seats in the lower chamber of Rwanda, that would be an instance of the percentage of women in a parliament being *especially prominent*.

12. **C**

This is a Conclusions question, as it asks for what *most logically completes the text*. Look for and highlight the main focus of the passage, which is that *Mary Shelley's novel Frankenstein was deeply influenced by her marriage to Percy Shelley*. Then, highlight the main point made regarding this focus, which is that *Percy's beliefs may have inspired Mary's exploration…but Frankenstein stands on its own as a work of literary genius*. Therefore, *those who ascribe Percy's influence as the primary motivation for Frankenstein* may be focusing too narrowly only one of the novel's influences. The correct answer should be as consistent as possible with this conclusion.

- (A) is wrong because it's **Extreme Language**—the passage doesn't state that anyone is viewing the Shelley's relationship through *too personal* of a lens.

- (B) is wrong because no *other individuals* are implied by the passage to have influenced Frankenstein.

- (C) is correct because it's consistent with the point made in the second sentence that *Frankenstein stands on its own* despite Percy's influence, which implies there was more to the creation of the novel than just Percy's influence.

- (D) is wrong because it goes **Beyond the Text**—the view *those* from the last sentence would take is only toward *Frankenstein*'s creation, not *Percy and Mary Shelley's relationship* as a whole.

13. **C**

This is a Conclusions question, as it asks for what *most logically completes the text*. Look for and highlight the main focus of the passage, which is that *The purpose of Stonehenge…has long been debated by archaeologists*. Then, highlight the main point made

regarding this focus, which is *Stonehenge's design and construction span different time periods, suggesting shifting scientific*, *religious*, *ceremonial*, and *social functions depending on the era*. Therefore, the debate regarding Stonehenge's original purpose has yet to be resolved. The correct answer should be as consistent as possible with this conclusion.

- (A) and (B) are wrong because they each go **Beyond the Text** for being too specific or too broad of a conclusion—it's not stated in the passage whether Stonehenge exists in a *central location* or not, and only Stonehenge is discussed, not *different types of monuments*.

- (C) is correct because it's consistent with what the highlighted sentences say about the purpose of Stonehenge.

- (D) is wrong because it's **Recycled Language**—the passage mentions *religious* and *ceremonial* purposes as well as *astronomy*, but it never compares which of these purposes is more useful.

14. **C**

In this Rules question, apostrophes with nouns are changing in the answer choices. Determine whether each word possesses anything. The flies possess the movements, but the movements don't possess anything. Eliminate any answer that doesn't match this.

- (A) is wrong because *flies* should have an apostrophe.

- (B) and (D) are wrong because *movements* shouldn't be possessive.

- (C) is correct because *flies* is possessive and *movements* is not.

15. **C**

In this Rules question, punctuation is changing in the answer choices. The main meaning of the sentence is *Doris Salcedo created her art installations*. The answer choice comes between the subject and the verb, and there is no other punctuation. A single punctuation mark can't separate a subject and a verb, so eliminate answers with punctuation.

- (A), (B), and (D) are wrong because a single punctuation mark can't come between a subject and a verb.
- (C) is correct because no punctuation should be used here.

16. **B**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *The National Day of Listening…is a day encouraging Americans to record the stories of their loved ones*, which is an independent clause. The second part says *people interested in participating can access resources and recommendations about the interview process through the StoryCorps website or app*, which is also an independent clause. Eliminate any answer that can't correctly connect two independent clauses.

- (A) is wrong because a comma without a coordinating conjunction (FANBOYS) can't connect two independent clauses.
- (B) is correct because a semicolon can connect two independent clauses.
- (C) is wrong because some type of punctuation is needed in order to connect two independent clauses.

- (D) is wrong because a coordinating conjunction (*and*) without a comma can't link two independent clauses.

17. **C**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *Frederick Catherwood joined an expedition to Central America, where he saw over forty sites full of ruins*, which is an independent clause. The second part says *by creating detailed drawings and paintings of the ruins, Catherwood helped to reintroduce the Mayan civilization to the Western world*, which is also an independent clause. Eliminate any answer that can't correctly connect two independent clauses.

- (A) is wrong because some type of punctuation is needed in order to connect two independent clauses.

- (B) is wrong because a comma without a coordinating conjunction (FANBOYS) can't connect two independent clauses.

- (C) is correct because the period makes each independent clause its own sentence, which is fine.

- (D) is wrong because a coordinating conjunction (*and*) without a comma can't link two independent clauses.

18. **A**

In this Rules question, verb forms are changing in the answer choices, so it's testing sentence structure. The subject of the sentence is *analysis*, and there is no main verb, so the answer must provide the main verb. Eliminate any answer that isn't in the correct form to be the main verb.

- (A) is correct because it's in the right form to be the main verb.
- (B) and (C) are wrong because a "to" verb can't be the main verb in a sentence.
- (D) is wrong because an *-ing* verb can't be the main verb in a sentence.

19. **D**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *buildings and the living quarters*, which is plural, so a plural verb is needed. Write an annotation saying "plural." Eliminate any answer that is not plural.

- (A), (B), and (C) are wrong because they are singular.
- (D) is correct because it's plural.

20. **A**

In this Rules question, punctuation is changing in the answer choices. The main meaning of the sentence is *American physicists determined that neutrinos…exist*. The phrase *subatomic particles that have no electric charge, very small mass, and a spin of one-half* is Extra Information. It should therefore be set off with matching punctuation before and after. Eliminate answers that do not have matching punctuation before and after the Extra Information.

- (A) is correct because it uses a long dash before and after the Extra Information.

- (B) is wrong because there is no reason to use a colon after *have*.
- (C) and (D) are wrong because they don't use matching punctuation both before and after the Extra Information.

21. **C**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *This case overruled another important case…which mandated the loss of citizenship,* and this sentence gives additional information about the *important case* from the previous sentence. These ideas agree, so a same-direction transition is needed. Make an annotation that says "agree." Eliminate any answer that doesn't match.

- (A) and (B) are wrong because they are opposite-direction transitions.
- (C) is correct because this sentence provides additional information on the implications of the case.
- (D) is wrong because this sentence isn't an example.

22. **A**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *present the study and its findings.* Eliminate any answer that doesn't fulfill this purpose.

- (A) is correct because it describes the study and reveals what the scientists determined (the *findings*).

- (B), (C), and (D) are wrong because they don't present the *findings* of the study.

23. **D**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *introduce the composition The Creation to an audience already familiar with Franz Joseph Haydn.* Eliminate any answer that doesn't *introduce the composition The Creation* in a way that assumes the audience is *familiar with Franz Joseph Haydn*.

- (A), (B), and (C) are wrong because they don't *introduce the composition*.

- (D) is correct because it introduces *the composition The Creation* and doesn't explain the background of Haydn since the audience is familiar with him.

24. **D**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *emphasize a similarity between the two elements.* Eliminate any answer that doesn't fulfill this purpose.

- (A) and (C) are wrong because they don't mention a *similarity*.

- (B) is wrong because it only mentions strontium.

- (D) is correct because the word *Both* helps to show a *similarity*.

25. **B**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *introduce Maya Deren and her film Meshes of the Afternoon to a new audience.* Eliminate any answer that doesn't fulfill this purpose.

- (A), (C), and (D) are wrong because they don't *introduce Maya Deren*.
- (B) is correct because it explains who Deren was and describes the film.

26. **D**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *introduce Cléo from 5 to 7 to an audience unfamiliar with the film and its director.* Eliminate any answer that doesn't fulfill this purpose.

- (A) and (C) are wrong because they don't describe the director, and the audience is unfamiliar with her.
- (B) is wrong because it doesn't *introduce* the film, such as by providing information about it.
- (D) is correct because it describes the film and its director.

27. **A**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *summarize the study.* Eliminate any answer that doesn't fulfill this purpose.

- (A) is correct because it provides a summary of the study.
- (B) and (C) are wrong because they include only a few details rather than *summarize the study*.
- (D) is wrong because it mentions a specific finding but doesn't *summarize the study*.

Module 2—Easier

1. **A**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes what experts think about electric vehicle sales, so look for and highlight clues in the passage about electric vehicle sales. The passage mentions that the market *surged in popularity*, and sales increased *from just a few thousand at the start of the decade to more than two million by the end of the decade*. Since the passage does not give any information that suggests this trend will change, a good word to enter into the annotation box would be "predict" or "assume" that sales will continue to increase.

   - (A) is correct because *project* matches "predict."
   - (B) is wrong because *guarantee* is **Extreme Language**—the experts do not say a continued increase will definitely happen.
   - (C) and (D) are wrong because *reject* and *deny* are the **Opposite** of "predict."

2. **A**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes a characteristic of mindfulness, so look for and highlight clues in the passage about mindfulness. The passage mentions mindfulness *can improve physical and cognitive function* and *lead to improvements in overall well-being*, so a good word to enter into the annotation box would be "advantages" or "positives."

- (A) is correct because *benefits* match "advantages."
- (B) is wrong because *drawbacks* are the **Opposite** of "advantages."
- (C) is wrong because *basics* don't match "advantages."
- (D) is wrong because *physics* is **Recycled Language**—it misuses *physical* from the passage.

3. **B**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes how a discovery affected our understanding of the universe, so look for and highlight clues in the passage about the discovery. The passage mentions that Thorne's work confirms one of Einstein's predictions and that it *provided astronomers with a firmer ground*, so a good word to enter into the annotation box would be "improved" or "made clearer."

- (A) and (D) are wrong because *confused* and *belittled* (put down or insulted) are the **Opposite** tone of "improved," which is positive.
- (B) is correct because *clarified* matches "improved" or "made clearer."

- (C) is wrong because *revolutionized* is **Extreme Language**—Thorne's work confirmed something that was already predicted rather than completely changing how we understand the universe.

4. **B**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes the interaction between the Navajo Nation Council and established principles of the constitution, so look for and highlight clues in the passage about the Council's role. The passage mentions that the Council *is responsible for protecting the civil rights of Navajo citizens*, so a good word to enter into the annotation box would be "protecting" or "upholding."

   - (A) is wrong because *copying* doesn't match "protecting."
   - (B) is correct because *maintaining* matches "protecting" or "upholding."
   - (C) is wrong because *determining* goes **Beyond the Text**—the passage doesn't support that the Council creates or establishes the principles of the constitution, just that it protects what's already there.
   - (D) is wrong because *dismissing* is the **Opposite** tone of "protecting," which is positive.

5. **C**

   This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes the

interaction between Vescovo and the four new species of gelatinous animals, so look for and highlight clues in the passage about this interaction. The passage mentions that Vescovo's work was a *finding*, so a good word to enter into the annotation box would be "found" or "documented."

- (A) is wrong because *reintroduced* doesn't match "found."
- (B) is wrong because *discounted* (disregarded) is the **Opposite** of "found."
- (C) is correct because *discovered* matches "found."
- (D) is wrong because exploring something might lead to a finding or discovery but would not be a finding or discovery itself.

6. **D**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing phrase describes how human emotions might be applied to animals by humans, so look for and highlight clues in the passage about this interaction. The passage mentions that *humans can empathize with a broader diversity of creatures than previously believed*. Since empathy deals with sharing feelings, a good word to enter into the annotation box would be "given to" or "assigned."

- (A) and (C) are wrong because *conflated with* (combined into) and *united with* don't match "given to."
- (B) is wrong because *demanded of* is **Extreme Language**—the passage doesn't state that humans require or force animals to have human emotions.

- (D) is correct because *attributed to* matches "given to."

7. **D**

   This is a Purpose question, as it asks for the *function of the underlined sentence in the text as a whole*. Read the passage and focus on the sentences before and after the underlined sentence to understand its function. The sentence before states that the female emperor penguin *transfers the egg to the male's care*, and the sentence after continues to explain the male's care of the egg. Therefore, a good function of the underlined sentence to enter into the annotation box would be "explain how male cares for egg."

   - (A) and (C) are wrong because they're both **Right Answer, Wrong Question**—these answers describe the information in the last sentence of the passage rather than the underlined sentence.

   - (B) is wrong because the *physical feature of male penguins* is only first introduced in the underlined sentence, not *earlier in the text*.

   - (D) is correct because it's consistent with the highlighting and annotation.

8. **B**

   This is a Purpose question, as it asks for the *main purpose of the text*. Read the passage and highlight who or what the passage is focusing on. The passage focuses on *Mrs. Hale and Mrs. Peters* as well as their actions after their eyes met in a look of *dawning comprehension*. Therefore, a good main purpose of the passage to enter into the annotation box would be "describe what women did figuring something out."

- (A) and (D) are wrong because they each focus on the quilt or a possession, neither of which is the focus of the passage.
- (B) is correct because it's consistent with the highlighting and annotation.
- (C) is wrong because it goes **Beyond the Text**—the passage does not offer what the women think of the county attorney.

9. **D**

This is a Dual Texts question, which asks how *the author of Text 2* would *respond to the claims of the author of Text 1*. Read Text 1 and highlight the author's claim, which is that *computer-based programs remove the requirement for certain musical compositional skills*. Then, read Text 2 and highlight what Text 2 says about the same topic. The author of Text 2 states that *Computer-based composers must know both the foundations of music theory and the intricacies of the programs that they use to create their works.* The two authors disagree on their shared topic, so enter "Text 2 disagrees with Text 1" into the annotation box.

- (A) is wrong because it's the **Opposite** of Text 2's point—the author of Text 2 states that computer-based composers do indeed need to know *the foundations of music theory*.
- (B) is wrong because neither author discusses *performances* or calls those performances *more important*.
- (C) is wrong because it's **Extreme Language**—while the author of Text 2 implies that computer-based composition is not easy, it's never supported that making music with a traditional instrument is *much easier*.

- (D) is correct because it's consistent with the relationship between the passages.

10. **B**

    This is a Charts question, as it asks for *data from the graph* that will *complete the text*. Read the title, key, and variables from the bar graph. Then, read the passage and highlight the claim or argument that references the information from the graph. The end of the second sentence states that *each of the five major electric car manufacturers posted strong numbers in 2018*. The correct answer should offer accurate information from the graph in support of this claim.

    - (A), (C), and (D) are wrong because they're the **Opposite** of the information in the graph—the numbers in these answers are inconsistent with the values for BYD Auto, Tesla, and Volkswagen.

    - (B) is correct because it's consistent with the graph.

11. **D**

    This is a Claims question, as it asks which choice *most effectively illustrates the claim*. Look for and highlight the claim in the passage, which is that Mr. Gummage is an *art teacher who actively encourages his students to improve upon the fundamentals that he teaches*. The correct answer should address and be consistent with each aspect of this claim.

    - (A), (B), and (C) are wrong because they're each **Half-Right**—each of these answers expresses some aspect of Mr. Gummage's art style or teaching style, but none of them show him actively encouraging *his students to improve upon the fundamentals*.

- (D) is correct because it states that Mr. Gummage's model was merely *a guide* and that he *continually told his pupils that they must try to excel it, and he helped them to do so*. All of this is consistent with the highlighted claim.

12. **B**

This is a Claims question, as it asks which choice *most effectively illustrates the claim*. Look for and highlight the claim in the passage, which is that *Frost describes his prioritization of personal obligations over admiring the beauty of the winter scene*. The correct answer should address and be consistent with each aspect of this claim.

- (A), (C), and (D) are wrong because they're each **Half-Right**—each answer describes an aspect of the winter scene but does not state that the speaker is prioritizing his *personal obligations* over any of the scene's aspects.

- (B) is correct because it's consistent with the claim—it references the beauty of the winter scene, but then clarifies that Frost is focused on the promises he has to keep instead.

13. **A**

This is a Charts question, as it asks for *data from the table that support the researchers' claim*. Read the title and variables from the table. Then, read the passage and highlight the claim that references the information from the table. The last sentence states that *the researchers claim that agro-pastoralists living in Area I were able to gather significant quantities of all eight species due to the area's high*

vegetation cover. The correct answer should offer accurate information from the table in support of this claim.

- (A) is correct because it's consistent with the table and highlighting—note that the predicted average in the text was 30, and all citations from Area II are above this number.

- (B) is wrong because it's **Half-Right**—it's consistent with the table, but stating that *there were fewer* citations is the **Opposite** of the claim's point regarding the collection of *significant quantities*, which suggests the correct answer should be discussing the numbers as higher or greater than something, not lower or fewer.

- (C) and (D) are wrong because they're the **Opposite** of the information given in the table—*C. pyramidale* had the highest number of citations from Area II, not the *lowest*, and *M. glaziovi* and *M. tenuiflora*'s citations from Area I were much lower than the predicted average of 30, not *significantly higher*.

14. **B**

This is a Claims question, as it asks which choice *most effectively illustrates the claim*. Look for and highlight the claim in the passage, which is that *Machen challenges a comparison regarding literary quality that he believes the reader has made*. The correct answer should address and be consistent with each aspect of this claim.

- (A) and (D) are wrong because they're **Half-Right**—both answers reference a comparison, but neither answer has Machen indicating that he believes the reader has made the comparison. Machen himself makes or addresses the comparisons in these answers without indicating the reader makes them as well.

- (B) is correct because it's consistent with the claim—it both references a comparison and has Machen specifically addressing *you*, the reader, as having made the comparison.

- (C) is wrong because the *cook* and the *farmer* in this answer are not directly compared, nor does Machen state that the reader makes any comparison.

15. **A**

This is a Conclusions question, as it asks for what *most logically completes the text*. Look for and highlight the main focus of the passage, which is the *Inca Empire* and the challenges that they faced *farming*. Then, highlight the main point made regarding this focus, which is that *they created a system of terraces that allowed them to grow crops…and practiced preserving their crops*. Since the last sentence already references the first part of this evidence, growing crops, the most likely conclusion is that the second half of the last sentence will talk about *preserving* crops. The correct answer should be as consistent as possible with this conclusion.

- (A) is correct because it's consistent with what the highlighted sentences say about growing and preserving crops.

- (B) is wrong because *all* is **Extreme Language**—it's not stated by the passage during which periods the Incas harvested crops.

- (C) is wrong because it goes **Beyond the Text**—while it's logical that consistent food sources prolong life spans, there is no evidence for such a connection in the passage.

- (D) is wrong because it's **Recycled Language**—it misuses *freeze* and the concept of *cold* from the third sentence of the passage.

16. **D**

This is a Conclusions question, as it asks for what *most logically completes the text*. Look for and highlight the main focus of the passage, which is *the relationship between sleep and memory consolidation*. Then, highlight the main point made regarding this focus, which is that *memory consolidation happens during deep sleep as the brain replays memories and stores them more effectively* and that the *amount and quality of sleep are vital to memory consolidation*. Therefore, the conclusion to the passage should focus on this positive connection between quality and amount of deep sleep and memory consolidation. The correct answer should be as consistent as possible with this conclusion.

- (A) and (B) are wrong because they're each the **Opposite** of the relationship between sleep and memory consolidation stated in the passage—increased sleep should not produce any decreases, or drawbacks.

- (C) is wrong because it's **Half-Right**—while there should be an increase, the passage does not discuss any *connections* between similar memories, just the embedding and storage of memories.

- (D) is correct because it's consistent with what the highlighted sentences say about memory consolidation.

17. **B**

In this Rules question, punctuation is changing in the answer choices. The punctuation appears after the preposition *with*, but there shouldn't

be punctuation after a preposition, so eliminate answers with punctuation.

- (A), (C), and (D) are wrong because a preposition shouldn't be followed by punctuation.
- (B) is correct because no punctuation should be used here.

18. **C**

In this Rules question, verb forms are changing in the answer choices, so it's testing sentence structure. The subject of the sentence is *researchers*, and there is no main verb, so the answer must provide the main verb. Eliminate any answer that isn't in the correct form to be the main verb.

- (A) is wrong because a "to" verb can't be the main verb in a sentence.
- (B) and (D) are wrong because an *-ing* verb can't be the main verb in a sentence.
- (C) is correct because it's in the right form to be the main verb.

19. **D**

In this Rules question, apostrophes with nouns are changing in the answer choices. Determine whether each word possesses anything. The members possess the experiences, but the experiences don't possess anything. Eliminate any answer that doesn't match this.

- (A), (B), and (C) are wrong because *experiences* shouldn't be possessive.

- (D) is correct because *experiences* isn't possessive, and *members* shouldn't be possessive either because the word *of* already shows possession.

20. **B**

In this Rules question, verb forms are changing in the answer choices, so it's testing sentence structure. The subject of the sentence is *team*, and there is no main verb, so the answer must provide the main verb. Eliminate any answer that isn't in the correct form to be the main verb.

- (A) is wrong because a "to" verb can't be the main verb in a sentence.

- (B) is correct because it's in the right form to be the main verb.

- (C) and (D) are wrong because an -*ing* verb can't be the main verb in a sentence.

21. **A**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *Some comets, such as Halley's Comet, can be seen more than once in a lifetime*, which is an independent clause. The second part of the sentence says *while others, such as Comet Shoemaker-Levy 9, are visible only once,* which is a dependent clause. Eliminate any option that doesn't correctly connect an independent + a dependent clause.

- (A) is correct because independent + dependent can be connected with a comma.

- (B), (C), and (D) are wrong because independent + dependent cannot be connected with punctuation other than a comma.

22. **C**

In this Rules question, pronouns are changing in the answer choices, so it's testing consistency with pronouns. Find and highlight the word the pronoun refers back to, *the clock,* which is singular, so a singular pronoun is needed. Write an annotation saying "singular." Eliminate any answer that isn't singular or doesn't clearly refer back to *the clock*.

- (A) and (D) are wrong because they are plural.

- (B) is wrong because the word *it* suggests something other than the *clock* being powered, but it's not clear what that would be.

- (C) is correct because *itself* is singular and is consistent with *the clock.*

23. **A**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *May Berenbaum*, which is singular, so a singular verb is needed. All of the answers work with a singular subject, so look for a clue regarding tense. This sentence uses the past tense verb *developed*. Highlight that verb and write an annotation that says "past." Eliminate any answer not in past tense.

- (A) is correct because it's in past tense, and this specific tense correctly suggests that her interest developed during the seminar.
- (B) is wrong because it's in present tense.
- (C) is wrong because it's not in past tense.
- (D) is wrong because it's in future tense.

24. **D**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence says *She has portrayed Indian political themes in her work,* and this sentence provides some additional things Gowda *has incorporated.* These ideas agree, so a same-direction transition is needed. Make an annotation that says "agree." Eliminate any answer that doesn't match.

- (A) and (B) are wrong because they are opposite-direction transitions.
- (C) is wrong because *Indeed* would reinforce the previous idea, but this sentence instead includes some additional aspects of Gowda's work.
- (D) is correct because this sentence provides additional information about Gowda's art.

25. **C**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The previous sentence states that *speech*

rhythm…could identify participants with autism reliably across English- and Cantonese-speaking groups, and this sentence states that *speech intonation…could only reliably identify participants with autism in the English-speaking group.* These ideas disagree, so an opposite-direction transition is needed. Make an annotation that says "disagree." Eliminate any answer that doesn't match.

- (A) and (B) are wrong because they are same-direction transitions.
- (C) is correct because *By contrast* is an opposite-direction transition.
- (D) is wrong because while *Still* is an opposite-direction transition, it doesn't draw a contrast between two things as is needed here.

26. **B**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence says *A failed amendment…was proposed in 1916 that would have mandated a public referendum to declare war,* and this sentence states that *another proposal was made in 1935 and again in 1940 to require a public vote to declare war.* These ideas agree, so a same-direction transition is needed. Make an annotation that says "agree." Eliminate any answer that doesn't match.

- (A) is wrong because this sentence isn't making the previous information more specific.
- (B) is correct because this sentence provides a similar proposal from other years.

- (C) is wrong because this sentence isn't an example of something that came before.

- (D) is wrong because this sentence isn't a conclusion based on the previous sentence.

27. **C**

    This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *provide an explanation and example of a "golden shovel" poem*. Eliminate any answer that doesn't fulfill this purpose.

    - (A), (B), and (D) are wrong because they don't *provide an explanation* of what this type of poem is.

    - (C) is correct because it explains what the *poetic form* is and provides an *example*.

Module 2—Harder

1. **A**

    This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes how tonal languages interact with words and phrases using pitch changes, so look for and highlight clues in the passage about this interaction. The passage mentions that *native speakers of tonal languages…are more apt to recognize pitch differences*, which suggests that these native speakers might interact often with pitch differences in some way. Based on this context, a good word to enter into the annotation box would be "pronounce" or "say."

- (A) is correct because *enunciate* matches "pronounce."
- (B) and (D) are wrong because *suggest* and *camouflage* (disguise) don't match "pronounce."
- (C) is wrong because it goes **Beyond the Text**—changing the pitch of words or phrases does not affect the way that the tonal languages define those words or phrases, and no definitions or meanings of words are discussed in the passage.

2. **C**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing phrase describes an aspect of the influence of dark matter, so look for and highlight clues in the passage about dark matter. The passage mentions that *the importance of the properties of dark matter are widely accepted*, but the presence of the word *though* indicates a contrast. Therefore, the thing that *continues to elude the scientific community* should relate to knowledge about dark matter, so a good word to enter into the annotation box would be "knowledge" or "comprehension."

- (A), (B), and (D) are wrong because *acknowledgment of*, *argument about*, and *allegiance to* (loyalty) don't match "knowledge."
- (C) is correct because *understanding of* matches "knowledge."

3. **D**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes what a business must do regarding trust, so look for and highlight clues in the

passage about businesses and trust. The passage mentions that *the success of a business venture…is closely related to the concept of credibility*, so a good word to enter into the annotation box would be that business needs to "generate" or "build" trust.

- (A) is wrong because *invalidate* (cancel) is the **Opposite** of what business must do regarding trust.
- (B) and (C) are wrong because *fortify* (strengthen) and *demarcate* (define) don't match "generate." The passage does not support that trust is already present, as these are only *potential* customers, not existing ones.
- (D) is correct because *foster* (grow) matches "build."

4. **D**

This is a Vocabulary question, as it asks for a logical and precise word or phrase to complete the text. The missing word describes what certain individuals are likely to do regarding long-term objectives, so look for and highlight clues in the passage about these individuals. The passage mentions that these individuals have *high levels of perseverance* and have *the ability to sustain high levels of effort*. Since perseverance and effort are connected with *determining success*, a good word to enter into the annotation box would be "achieve" or "complete."

- (A) is wrong because *neglect* is the **Opposite** of "achieve."
- (B) and (C) are wrong because *analyze* and *recall* (remember) don't match "achieve."
- (D) is correct because *attain* (accomplish) matches "achieve."

5. **A**

This is a Purpose question, as it asks for the *function of the underlined sentence in the text as a whole*. Read the passage and focus on the sentences before and after the underlined sentence to understand its function. The sentence before describes the contents of *the big traveling chest*, and the sentence after references the father's explanation as to why the chest contains what it does. Therefore, a good function of the underlined sentence to enter into the annotation box would be "explain what children ask about chest."

- (A) is correct because it's consistent with the highlighting and annotation.

- (B) and (C) are wrong because they go **Beyond the Text**—each answer makes an assumption about the relationship between the children and their mother that isn't supported by the underlined sentence, in which the mother only tells the children to be quiet so the father can explain.

- (D) is wrong because it's the **Opposite** of what happens in the passage—the mother does not encourage the children to be *inquisitive*, or ask questions; she tells them to be quiet.

6. **B**

This is a Purpose question, as it asks for the *main purpose of the text*. Read the passage and highlight who or what the passage is focusing on. The passage focuses on *Elizabeth's feelings toward Mr. Darcy*, which are that *It was an union that must have been to the advantage of both*. Therefore, a good main purpose of the passage to enter into the annotation box would be "explain that they benefit from each other."

- (A) and (C) are wrong because they go **Beyond the Text**—while it's likely that Elizabeth has *determination* and *desires* toward romance, the passage is about one specific relationship rather than a general pursuit and does not state what Elizabeth's desires actually are.

- (B) is correct because it's consistent with the highlighting and annotation.

- (D) is wrong because it's **Half-Right**—nothing in the passage supports that Elizabeth finds her current relationship *confusing*.

7. **B**

This is a Purpose question, as it asks for the *overall structure of the text*. Read the passage and highlight the connections between ideas in the passage. The first sentence describes the work of *Novelist Wright Morris* and how he *complemented his written works with photographs*. The next three sentences offer a specific example in the novel *The Home Place* and its *perspective on the themes of family*, *memory*, and *rural America*. Therefore, a good overall structure of the passage to enter into the annotation box would be "introduce Morris's work and give an example."

- (A) is wrong because it's **Half-Right**—the first half of the answer is accurate, but the passage does not discuss Morris's specific *convictions*, or beliefs, only the themes present in his photographs.

- (B) is correct because it's consistent with the highlighting and annotation.

- (C) is wrong because while the passage does discuss Morris's storytelling, it never discusses any *other storytellers*.

- (D) is wrong because it's **Extreme Language**—Morris's style is never described as *unique*, nor is a *counterexample* offered, just an example.

8. **D**

This is a Purpose question, as it asks for the *function of the underlined sentence in the text as a whole*. Read the passage and focus on the sentences before and after the underlined sentence to understand its function. The sentence before states that *emotions are based on the way the brain interprets sensory inputs*, and the sentence after states that individuals who reported their emotions accurately (according to previous data) *had lower levels of depression and anxiety*. Since the sentence before describes a theory and the sentence after describes the results of an experiment meant to test that theory, a good function of the underlined sentence to enter into the annotation box would be "explain setup of experiment."

- (A) and (C) are wrong because the highlighted sentence does not offer an *obstacle* or a *concrete example* related to the study.

- (B) is wrong because it's a **Right Answer, Wrong Question trap**—this answer describes the information in the last sentence of the passage rather than the underlined sentence.

- (D) is correct because it's consistent with the highlighting and annotation.

9. **C**

This is a Dual Texts question, which asks for what *the author of Text 2* would *say about Text 1's characterization of the psychologists'*

response regarding determinism. Read Text 1 and highlight the author's characterization of the psychologists' response, which is that it's a *somewhat comforting response to this hypothetical loss of free will*. Then, read Text 2 and highlight what Text 2 says about the same topic. The author of Text 2 states that *the human brain is too complex to accept that it cannot alter that track.* The two authors disagree on a human's willingness to accept or be comfortable with determinism, so enter "Text 2 disagrees with Text 1" into the annotation box.

- (A) is wrong because it's the **Opposite** of Text 1's characterization of the response—Text 1 considers the response *somewhat comforting*, not *overly critical*.

- (B) is wrong because it's the **Opposite** of the relationship between the passages—the two authors disagree, and the author of Text 2 believes the human brain would not accept determinism rather than considering it *logical*.

- (C) is correct because it's consistent with the relationship between the passages—the author of Text 2 does not believe that the human brain will find the concept of determinism comforting at all, or even accept it.

- (D) is wrong because it's **Recycled Language**—it's the theory of determinism that was *readily accepted* by many according to the author of Text 2, not *Horgan's comments*.

10. **D**

This is a Charts question, as it asks for *data from the table* that will *complete the example*. Read the title and variables from the table. Then, read the passage and highlight the claim or argument that references the information from the table. The end of the second sentence states that

poor record keeping from this era makes it likely that the numbers… should not be considered comprehensive. In other words, the authors in the table may have produced more work than the numbers listed. The correct answer should offer accurate information from the graph in support of this claim.

- (A) and (B) are wrong because they're **Half-Right**—they're consistent with the table but the **Opposite** of the claim, which states that the real totals may be greater than they appear.

- (C) is wrong because it's the **Opposite** of what's shown in the table—the claim only indicates that the number of contributions may be wrong, not that any of the authors worked *after* the years listed in the figure.

- (D) is correct because it's consistent with the claim, which states that the authors may have contributed more works than what is shown in the table.

11. **D**

This is a Claims question, as it asks which finding *would most directly support Johnson*, *Davis*, *and Smith's conclusion*. Look for and highlight the conclusion in the passage, which is that *regular exercise can have a positive impact on cognitive abilities in older adults*. The correct answer should be as consistent as possible with this conclusion.

- (A) is wrong because it goes **Beyond the Text**—while this may be true, the passage's conclusion is only in regard to exercise, not environmental factors such as *sunshine and fresh air* that may result from exercising outdoors.

- (B) is wrong because the conclusion is not about which group it is *easier* to get data for, but about the positive impact of exercise on cognitive abilities.

- (C) is wrong because it's the **Opposite** of the conclusion—if both active and sedentary populations have the same cognitive performance after 12 months, this would weaken the claim that exercise has a *positive impact on cognitive abilities*.

- (D) is correct because it's consistent with the highlighted conclusion—slowing and reversing the effects of aging among active elderly populations would be a *positive impact on cognitive abilities*.

12. **A**

This is a Charts question, as it asks for *data from the graph that support the Insurance Information Institute's conclusion*. Read the title, key, and variables from the table. Then, read the passage and highlight the conclusion that references the information from the table. The last sentence states that *the percentage by which different factors caused claims largely fluctuated over the period studied*. The correct answer should offer accurate information from the table in support of this claim.

- (A) is correct because it's consistent with the graph and conclusion —it shows a variable that has *fluctuated* for all three years.

- (B) and (D) are wrong because they're the **Opposite** of the graph or conclusion—the percentage of claims caused by fire and lightning damage did not *remain unchanged* during the period, and (D) points out a consistent trend (that wind and hail was always highest), while the conclusion refers to a fluctuation.

- (C) is wrong because it's not relevant to the conclusion—focusing on a single year (2019) cannot illustrate a fluctuation, which requires at least two different years to be compared.

13. **D**

This is a Claims question, as it asks which choice *would most directly weaken the biologists' claim*. Look for and highlight the claim in the passage, which is that *humans may also have the ability to regenerate limbs naturally*. Note that the reason biologists believe humans could do so is that humans have *FoxA* as well as the *supplemental genes that interact with FoxA* to cause regeneration to occur. The correct answer should be as inconsistent as possible with the claim or the evidence, while still staying on the topic of the passage.

- (A) is wrong because it's not relevant to the claim—the focus of the claim is not on which group of organisms a process is *more effective* for, but if humans have the necessary genes for regeneration.

- (B) and (C) are wrong because they're the **Opposite** of what the question asks—each would strengthen, not weaken, the claim by displaying similarities in the genetic makeup of animals and humans to that of insects.

- (D) is correct because it would weaken the claim by suggesting that humans have *only a few of the supplemental genes necessary* for regeneration, not all of them.

14. **C**

This is a Claims question, as it asks which choice *would most directly support the museum expert's claim*. Look for and highlight the claim in the passage, which is that *MacGregor sought to address* the *issue…by presenting the objects as pieces of a larger story, so that people from diverse ethnicities might find the exhibit more accessible*. The correct answer should be as consistent as possible with this claim.

- (A) is wrong because it's **Recycled Language**—the word "diverse" is meant to apply to *ethnicities* rather than *spiritual and religious beliefs*, and the passage does not connect ethnicity to spiritual or religious beliefs, even if such connections may exist in the real world.

- (B) is wrong because it's not relevant to the claim—there is no connection made in the passage between the works of Shakespeare and *diverse ethnicities*.

- (C) is correct because it's consistent with each aspect of the highlighted claim.

- (D) is wrong because it goes **Beyond the Text** with too specific of a focus—the answer only focuses on Australia and therefore does not address *diverse ethnicities*.

15. **A**

This is a Conclusions question, as it asks for what *most logically completes the text*. Look for and highlight the main focus of the passage, which is the *impact of leadership positions on everyday behavior*. Then, highlight the main point made regarding this focus, which is that *it is often hard to anticipate who will rise to leadership positions*. Therefore, the conclusion of the passage should discuss how

it's difficult to investigate the impact of leadership positions. The correct answer should be as consistent as possible with this conclusion.

- (A) is correct because it's consistent with what the highlighted sentences say about the challenges researchers will face.
- (B) is wrong because it's the **Opposite** of the challenges the passage indicates that researchers will face—the issue will be finding data on those who may become leaders, not data on those who *currently hold leadership positions*.
- (C) is wrong because it's **Extreme Language**—the passage never states that *only* those who recently left leadership positions can be studied.
- (D) is wrong because it goes **Beyond the Text**—while studies always want large control groups, the focus in the passage is on the challenges researchers face, not a general principle of conducting studies.

16. **B**

This is a Conclusions question, as it asks for what *most logically completes the text*. Look for and highlight the main focus of the passage, which is that the *Popol Vuh is one of the most significant surviving sources of ancient Mayan culture*. Then, highlight the main point made regarding this focus, which is that while *Popol Vuh* reflects *pre-colonial Mayan beliefs*, some of its passages include *Catholic and European influence*. Therefore, the conclusion to the passage should address these differing aspects of the *Popol Vuh*. The correct answer should be as consistent as possible with this conclusion.

- (A) is wrong because it's the **Opposite** of what's stated in the passage—the *Popol Vuh* contains many of the early Mayan beliefs, so it's text should not be considered *distinct* from the original Mayan belief.

- (B) is correct because it's consistent with what the highlighted sentences say about the *Popol Vuh*.

- (C) is wrong because it's **Recycled Language**—*European* is misused from the second half of the passage.

- (D) is wrong because it's **Extreme Language**—it's not stated whether the Mayan beliefs were *unique* to the civilization or shared by other civilizations.

17. **D**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *Style Wars*, which is singular, as it is *a documentary*, so a singular verb is needed. Write an annotation saying "singular." Eliminate any answer that is not singular.

- (A), (B), and (C) are wrong because they are plural.

- (D) is correct because it's singular.

18. **A**

In this Rules question, punctuation with a transition is changing in the answer choices. Look for independent clauses. The first part of the sentence says *Unlike all other waterfowl, the black-headed duck does*

not build a nest. There is an option to add *instead* to this independent clause, but it's not contrasting with the previous idea as nothing came before. Eliminate options with *instead* in the first part.

- (A) is correct because it puts *instead* with the second independent clause and puts a semicolon between the independent clauses.
- (B) is wrong because it puts *instead* with the first independent clause.
- (C) and (D) are wrong because the sentence contains two independent clauses, which cannot be connected with commas alone.

19. **B**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *Stephanie Kwolek*, which is singular, so a singular verb is needed. All of the answers work with a singular subject, so look for a clue regarding tense. The same sentence uses past tense verbs: *found* and *aligned*. Highlight those verbs and write an annotation that says "past." Eliminate any answer not in past tense.

- (A) is wrong because it's in future tense.
- (B) is correct because it's in past tense and correctly suggests that Kwolek found the polymer while in the process of doing the research.
- (C) is wrong because it's not in past tense.
- (D) is wrong because it's in present tense.

20. **C**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *Herpetologist Teresa Camacho Badani led an expedition…to collect specimens of an endangered species of amphibian*, which is an independent clause. The second part says *previously known only from a single individual…the Sehuencas water frog…is now being bred in captivity in an effort to restore the population*, which is also an independent clause. Eliminate any answer that can't correctly connect two independent clauses.

- (A) is wrong because some type of punctuation is needed in order to connect two independent clauses.
- (B) is wrong because a coordinating conjunction (*but*) without a comma can't connect two independent clauses.
- (C) is correct because the period makes each independent clause its own sentence, which is fine.
- (D) is wrong because a comma without a coordinating conjunction (FANBOYS) can't connect two independent clauses.

21. **D**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence states that *a helicopter landed…after completing a pioneering 24-mile flight,* which is an independent clause. The second part says *powered by a rechargeable battery and carrying a 50-pound weight…the fully*

electric helicopter was copiloted by Martine Rothblatt and Ric Webb, which is also an independent clause. Eliminate any answer that can't correctly connect two independent clauses.

- (A) is wrong because a comma without a coordinating conjunction (FANBOYS) can't connect two independent clauses.
- (B) is wrong because a coordinating conjunction (*and*) without a comma can't connect two independent clauses.
- (C) is wrong because some type of punctuation is needed in order to connect two independent clauses.
- (D) is correct because the period makes each independent clause its own sentence, which is fine.

22. **A**

In this Rules question, commas and semicolons are changing in the answer choices. The sentence already contains a semicolon near the end, and the part after this semicolon is not an independent clause, which suggests that the sentence contains a list separated by semicolons. Check the verb at the beginning of each item to see where the semicolons should be placed. The list consists of 1) *take close-up pictures of Uranus and Neptune, the previously unexplored outer planets,* 2) *find the furthest extent of the Solar System*, and 3) *collect data about the interstellar space beyond the Solar System.* Eliminate any answer that doesn't put semicolons between the list items.

- (A) is correct because it has a semicolon after the first item.
- (B) and (C) are wrong because they don't have a semicolon after the first item, which ends with *planets.*

- (D) is wrong because it puts the semicolon after *Neptune*, separating it from *the previously unexplored outer planets*, a description that refers to *Uranus and Neptune*.

23. **B**

In this Rules question, punctuation is changing in the answer choices. The punctuation appears near the word *journalist* and the person's name. The word *journalist* is a title for Maximiliáno Durón, so no punctuation should be used. Eliminate answers that use punctuation.

- (A) is wrong because a comma shouldn't be used between the subject *Maximiliáno Durón* and its verb *calls*.
- (B) is correct because titles before names have no punctuation.
- (C) and (D) are wrong because a comma isn't used after a title.

24. **A**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The first sentence states that *local legend credits Marie Harel with the invention of Camembert cheese,* though *she likely learned the technique from a priest*, and this sentence states that *Harel will likely continue to receive recognition for the cheese*. These ideas disagree, so an opposite-direction transition is needed. Make an annotation that says "disagree." Eliminate any answer that doesn't match.

- (A) is correct because *Nevertheless* is an opposite-direction transition and correctly implies that despite the fact that Harel may

not have completely invented the cheese, she will still be recognized for it.

- (B), (C), and (D) are wrong because they are same-direction transitions.

25. **D**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *researchers have found evidence* for the meteorite theory, and this sentence explains that the *shocked quartz* and *tektites* in the areas provide evidence. These ideas agree, so a same-direction transition is needed. Make an annotation that says "agree." Eliminate any answer that doesn't match.

- (A) is wrong because the evidence isn't a result of a hypothesis; a hypothesis is based on evidence.
- (B) is wrong because it's an opposite-direction transition.
- (C) is wrong because this sentence isn't a restatement of the preceding sentence.
- (D) is correct because this sentence specifies what kind of *evidence* has been found.

26. **B**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence describes a new fingerprinting technique, and this sentence states that it can provide

more reliable evidence for *court cases*. These ideas agree, so a same-direction transition is needed. Make an annotation that says "agree." Eliminate any answer that doesn't match.

- (A) and (D) are wrong because they are opposite-direction transitions.
- (B) is correct because this sentence draws a conclusion from the evidence in the previous sentences.
- (C) is wrong because this sentence does not describe a separate thing that is similar to something that was previously described.

27. **A**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *make and support a generalization about sports-related concussions*. Eliminate any answer that doesn't fulfill this purpose.

- (A) is correct because *short- and long-term consequences* is a generalization (a broader look at something), and the information after the colon supports this generalization.
- (B) is wrong because it makes a *generalization* but doesn't *support* it.
- (C) and (D) are wrong because they give specific details instead of a *generalization*.

PRACTICE TEST 3—MATH EXPLANATIONS

Module 1

1. **C**

   The question asks for a comparison of the means, or averages, of two data sets. One method is to use the built-in calculator. Type the word *mean* followed by the list of numbers in parentheses, and the calculated mean will appear in the lower right corner of the entry field. Enter the values from data set S, and the mean is 9.3. Enter the values from data set T, and the mean is 10.8. The mean of data set T is greater, so (C) is correct.

   Another approach is to ballpark. Both data sets contain the numbers 3, 8, 8, 11, and 24. Data set S contains an additional, smaller number, so its mean will be less, which makes (C) correct.

   Using either of these methods, the correct answer is (C).

2. **B**

   The question asks for the value of an expression. Plug in 8 for x in the expression $30 - x$ to get $30 - 8$. Simplify the expression to get $30 - 8 = 22$. The correct answer is (B).

3. **B**

   The question asks for a value given a specific situation. Since the question includes the word *average*, use the formula $T = AN$, where T is the *Total*, A is the *Average*, and N is the *Number of things*. To find the number of liters of water that drained from the tank, subtract the remaining liters of water from the initial liters of water to get 7,854 –

1,192 = 6,662 liters of water. Since the question states that 1,192 liters of water remained after the *valve remained open for 44 seconds*, the *Number of things* is 44. The average formula becomes 6,662 = (*A*)(44). Divide both sides of the equation by 44 to get 151.4 ≈ *A*. The correct answer is (B).

4. **A**

The question asks for the value of the measure of an angle on a geometric figure. Use the Geometry Basic Approach. Start by redrawing the figures on the scratch paper. The question states that the triangles are similar and that *B* corresponds to *E*, and the figure shows that both *A* and *D* are right angles, so *C* must correspond to *F*. Since angle *E* has a measure of 52°, angle *B* also has a measure of 52°. Label this information on the figures. All triangles contain 180°, so the third angle in each triangle has a measure of 180° – 90° – 52° = 38°. Label angles *C* and *F* as 38°. The question asks for the measure of angle *C*, which is 38°. The correct answer is (A).

5. **200**

The question asks for a value given a specific situation. Translate the information in bite-sized pieces. One piece of information states that *b is the number of bats sold and g is the number of gloves sold*, and another piece states that the *company made $26,000 from the sale of equally-priced bats and equally-priced gloves*. Since the sum of 500*b* and 300*g* equals the total money made from selling the two types of softball equipment, 500 and 300 must be the cost per bat and the cost per glove, respectively. To find how much less the price of a glove is than the price of a bat, subtract 300 from 500: 500 – 300 = 200. Each glove costs $200 less than each bat. The correct answer is 200.

6. **B**

The question asks for the value of an expression given a system of equations. When an SAT question asks for the value of an expression, there is usually a straightforward way to solve for the expression without needing to completely isolate either variable. Try stacking and adding the two equations.

$$\begin{array}{r} 8x - y = -17 \\ +\ (-7x \quad = \quad 14) \\ \hline x - y = \quad -3 \end{array}$$

The question asks for the value of $x - y$, so stop here and pick (B).

Another method is to use the built-in calculator. Enter each equation into a separate entry field, and then scroll and zoom as needed to see that the lines intersect at (–2, 1). Thus, $x = -2$, $y = 1$, and $x - y = -2 - 1$, or $x - y = -3$, and (B) is correct.

Using either of these methods, the correct answer is (B).

7. **D**

The question asks for a value based on a function. The question states that d represents the number of days after starting a fundraising campaign and $f(d)$ represents the amount of money in the account d days after starting the campaign. Plug in $d = 0$ to determine how many dollars were in the account before the campaign started. The function becomes $f(0) = 750(0) + 12{,}000$, then $f(0) = 0 + 12{,}000$, and finally $f(0) = 12{,}000$. There were \$12,000 in the account before the fundraising campaign started. The correct answer is (D).

8. **A**

The question asks for a value given a relationship between two geometric figures. Use the Geometry Basic Approach. Start by drawing two equilateral triangles of different sizes, and then label the figure with the given information. The question states that *one side of triangle S is 9 inches long*, so label this on the figure. The perimeter of a geometric shape is the sum of the lengths of its sides, and all three sides in an equilateral triangle are equal, so the perimeter of triangle S is 9 + 9 + 9 = 27 inches. The question states that *equilateral triangle T has a perimeter that is one-third the perimeter of equilateral triangle S*, so the perimeter of triangle T is $\frac{1}{3}(27) = 9$ inches. Triangle T has three equal sides, so one side of triangle T is $\frac{9}{3} = 3$ inches long. The correct answer is (A).

9. **7 or –7**

The question asks for a possible value of an expression given an equation with an absolute value. The most efficient method is to use the built-in calculator. Enter the equation as written, and then scroll and zoom as needed to see that the two values of x are indicated by vertical lines at $x = -9$ and $x = 5$. Read carefully: the question asks for one

possible value of $x + 2$. If $x = -9$, $x + 2 = -7$. If $x = 5$, $x + 2 = 7$. Either –7 or 7 will be accepted as correct.

To solve algebraically, recall that with an absolute value, the value inside the absolute value bars can be either positive or negative, so this equation has two possible solutions. To find the solutions, either set $7x + 14$ equal to 49 or set $7x + 14$ equal to –49. The question asks for the value of $x + 2$, which is equivalent to dividing $7x + 14$ by 7. When $7x + 14 = 49$, divide both sides of the equation by 7 to get $x + 2 = 7$. When $7x + 14 = -49$, divide both sides of the equation by 7 to get $x + 2 = -7$. Either 7 or –7 is a possible value of $x + 2$ and will be accepted as correct.

Using either of these methods, the correct answer is 7 or –7.

10. **5**

The question asks for the value of a constant in a function that represents values given in a table. In function notation, the number inside the parentheses is the x-value that goes into the function, or the input, and the value that comes out of the function is the y-value, or the output. The table includes five input values and five output values, all of which must work in the equation $g(x) = kx + 34$. Pick any pair of values from the table and plug them into the given equation to solve for k. Plug in $x = -6$ and $g(x) = 4$ to keep the numbers small. The equation of function g becomes $4 = k(-6) + 34$, or $4 = -6k + 34$. Add $6k$ to both sides of the equation to get $6k + 4 = 34$, and then subtract 4 from both sides of the equation to get $6k = 30$. Divide both sides of the equation by 6 to get $k = 5$. The correct answer is 5.

11. **–11**

The question asks for a constant in an equivalent expression. The question asks for the value of c, which is multiplied by x^4, so focus on the terms with x^4. Rewrite the first expression with only those terms to get $-3x^4 + (-8x^4)$, which becomes $-11x^4$. Set this equal to the term with x^4 in the second expression to get $-11x^4 = cx^4$, and then divide both sides of this equation by x^4 to get $-11 = c$. The correct answer is –11.

12. **D**

The question asks for an equation in terms of a specific variable. The question asks about the relationship among variables and there are variables in the answer choices, so one option is to plug in. However, that might get messy with three variables. All of the answer choices have m by itself, so the other option is to solve for m. To isolate m, first cross-multiply to get $(n)(2) = (22m)(3s)$, or $2n = 66ms$. Divide both sides of the resulting equation by $66s$ to get $\frac{2n}{66s} = m$. The correct answer is (D).

13. **A**

The question asks for a value based on a specific situation. The number of ants is decreasing by a multiple over time, so this question is about exponential decay. Write down the growth and decay formula. When

the change is a multiple, the formula is *final amount* = (*original amount*)(*multiplier*)$^{number\ of\ changes}$. In this case, the *original amount* is 96,000. The question states that the number of ants decreases *by one-half every 4 days*, so the *multiplier* is $\frac{1}{2}$. The question asks for the number of ants *20 days after the infection started*, so the *number of changes* is $\frac{20}{4} = 5$. The formula becomes *final amount* = $96{,}000\left(\frac{1}{2}\right)^5$, or *final amount* = $96{,}000\left(\frac{1}{32}\right)$, and finally *final amount* = 3,000. The correct answer is (A).

14. **D**

The question asks for the *y*-value of a point that satisfies a system of inequalities. The answers contain specific values, so plug in the answers. Rewrite the answer choices on the scratch paper and label them as "*y*." Start with one of the middle numbers and try (C), 3. The question provides an *x*-value of 39, which is possible based on the first inequality, so plug $x = 39$ and $y = 3$ into the second inequality. The second inequality becomes $39 - 7(3) < 16$, then $39 - 21 < 16$, and finally $18 < 16$. This is not true, so eliminate (C). The value on the left side of the inequality was close to being less than 16, so try (D), 4, next. Plug $x = 39$ and $y = 4$ into the second inequality to get $39 - 7(4) < 16$, which becomes $39 - 28 < 16$, and then $11 < 16$. This is true, so stop here. The correct answer is (D).

15. **A**

The question asks for an equivalent form of an expression. Although there are variables in the answer choices, plugging in on this question would be difficult given all the exponents. Instead, use Bite-Sized Pieces and Process of Elimination to tackle this question. Start by rewriting the expression with fractional exponents. In a fractional exponent, the numerator is the power and the denominator is the root. Taking the 9th root of a value raised to the 5th power can be written using the fractional exponent $\frac{5}{9}$. The expression becomes $s^{\frac{5}{9}}t^{\frac{5}{9}}$, which can also be written as $(st)^{\frac{5}{9}}$. The correct answer is (A).

16. **C**

The question asks for the interpretation of a feature of a graph. Start by reading the final question, which asks for the best interpretation of the *y*-intercept. The *y*-intercept is the *y*-value when $x = 0$. The question states that the graph represents the value *of the item x months after it was purchased*, so the *y*-value when $x = 0$ is the value at the time the item was purchased. Eliminate (B) because it is about a range of months instead of the initial value, and eliminate (D) because it is about the value of the item six months after it was purchased instead of at the time it was purchased. Compare the remaining answer choices. The difference between (A) and (C) is whether the value is \$2 or \$200. Check the units of the *y*-axis. The question states that *y* is the value of the item *in hundreds of dollars*, so 2 on the *y*-axis means the initial value was \$200. The correct answer is (C).

17. **D**

The question asks for a system of equations with exactly one real solution. The most efficient method is to enter each pair of equations into the built-in calculator and eliminate answers that result in a graph that does not have exactly one solution. The equations in (A) graph two horizontal lines, which are parallel and have no solutions; eliminate (A). The equations in (B) graph two parallel lines, which have no solutions; eliminate (B). The equations in (C) also graph two parallel lines; eliminate (C). The equations in (D) graph lines that intersect once; keep (D). The correct answer is (D).

18. **C**

The question asks for an equation in terms of specific variables. The question asks about the relationship between variables and there are variables in the answer choices, so plug in. The question states that n represents the number of the term of the sequence and that the first term of the sequence is 56. Thus, when $n = 1$, $s = 56$. Plug these values into the answer choices and eliminate any that are not true. Choice (A) becomes $56 = \frac{1}{2}(56)^{1-1}$, or $56 = \frac{1}{2}(56)^0$. Any number raised to the power of zero is 1, so this becomes $56 = \frac{1}{2}(1)$, or $56 = \frac{1}{2}$. This is not true, so eliminate (A). Choice (B) becomes $56 = \frac{1}{2}(56)^1$, or $56 = 28$; eliminate (B). Choice (C) becomes $56 = 56\left(\frac{1}{2}\right)^{1-1^2}$, or $56 = 56\left(\frac{1}{2}\right)^0$. This

becomes 56 = 56(1), or 56 = 56. This is true, so keep (C), but check (D) just in case. Choice (D) becomes $56 = 56\left(\frac{1}{2}\right)^1$, or 56 = 28; eliminate (D), The correct answer is (C).

19. **B**

The question asks for the value of a constant that represents a decrease. The question is about the relationship between values, so plug in. Plug in 100 for the number of movies available in 2022 because 100 works well with percentages. *Percent* means out of 100, so translate 9% as $\frac{9}{100}$. Because the number of movies available decreased by 9% from the starting number of 100, take 9% of 100 and subtract it from 100. The result is $100 - \frac{9}{100}(100) = 100 - 9 = 91$. Thus, the streaming service had 91 movies available in 2023. This is the target value; circle it. Because the number of movies decreased from 100 to 91, (B) is a likely answer. To test it, plug in 0.91 for *m*. The question states that *the number of movies available in 2023 was m times the number of movies available in 2022*, so multiply the number of movies available in 2022, 100, by 0.91 to get (100)(0.91) = 91. This matches the target value for the number of movies available in 2023, so stop here. The correct answer is (B).

20. **A**

The question asks for an inequality that represents the relationship between two values. Translate the information in bite-sized pieces and eliminate after each piece. Translate *the maximum value of q* as q is less than or equal to, or $q \leq$. Eliminate (C) and (D) because the inequality sign is the wrong direction. Translate *7 times the value of r* as $7r$. Eliminate (B) because it does not include this term. Choice (A) also correctly translates *14 more than* as + 14. The correct answer is (A).

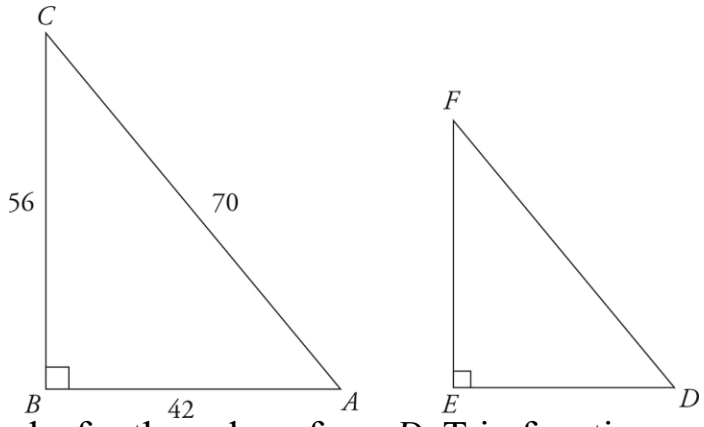
21. **–0.4 or –2/5**

The question asks for the x-coordinate of the x-intercept of a graph that is a translation of another graph. When a graph is translated, or shifted, up or down, the y-value changes. Start by isolating y. Subtract $5x$ from both sides of the equation to get $3y = -5x - 8$. Divide both sides of the equation by 3 to get $y = -\frac{5}{3}x - \frac{8}{3}$. To translate this graph up 2 units, add 2 to the y-value. The equation of the new graph is $y = -\frac{5}{3}x - \frac{8}{3} + 2$. At this point, the best option is to enter this equation into the built-in calculator, and then scroll and zoom as needed to see a gray dot at the x-intercept. Click on the dot to see that the coordinates of the point are (–0.4, 0). The question asks for the x-coordinate of the x-intercept, which is –0.4. It is also possible to solve algebraically by making $y = 0$

in the equation of the new graph and solving for x. This might lead to the decimal form –0.4 or to the fractional form $-\frac{2}{5}$, both of which will be accepted as correct. The correct answer is –0.4 or –2/5.

22. **A**

The question asks for the value of a trigonometric function. Use the Geometry Basic Approach. Start by drawing two right triangles that are similar to each other, meaning they have the same proportions but are different sizes. Be certain to match up the corresponding angles that are given in the question, and put the longest side opposite the right angle. The drawing should look something like this:



The question asks for the value of cos D. Trig functions are proportions, and angle A corresponds to angle D, so cos A = cos D. Use SOHCAHTOA to remember the trig functions, and find cos A. The CAH part of the acronym defines cosine as $\frac{\text{adjacent}}{\text{hypotenuse}}$. The side adjacent to angle A is 42, and the hypotenuse is 70, so cos $A = \frac{42}{70}$.

Since cos D = cos A, cos D is also $\frac{42}{70}$. Reduce the fraction by dividing both the numerator and the denominator by 14 to get cos $D = \frac{3}{5}$. The correct answer is (A).

Module 2—

Easier 1. 8400

The question asks for a value given a rate. Begin by reading the question to find information about the rate. The question states that the factory *makes 1,200 vehicles in 1 day*, but asks for the number of vehicles in 1 week. There are 7 days in 1 week, so set up a proportion, being sure to match up the units. The proportion is $\frac{1{,}200 \text{ vehicles}}{1 \text{ day}} = \frac{x \text{ vehicles}}{7 \text{ days}}$. Cross-multiply to get (1)(x) = (1,200)(7), which becomes x = 8,400. Leave out the comma when entering the answer in the fill-in box. The correct answer is 8400.

2. **A**

The question asks for the value of an expression based on an equation. There isn't a straightforward way to get from 10a to 9a, so start by isolating a. Divide both sides of the equation by 10 to get a = 3. Next, substitute 3 for a in the expression 9a to get 9(3) = 27. The correct answer is (A).

3. **D**

The question asks for a value based on a percent. Translate the English to math in bite-sized pieces. The question states that Talula *baked 340 cookies and gave 20% of them to her neighbors*. *Percent* means out of

100, so translate 20% as $\frac{20}{100}$. Translate *of* as times. Thus, 20% of 340 becomes $\frac{20}{100}(340) = 68$ cookies that Talula gave to her neighbors, making (D) correct.

It is also possible to answer this question using the built-in calculator. The calculator automatically adds "of" after the percent sign, so find 20% of 340 by entering "20%" and then "340" into an entry field. The result shown in the lower right of the entry field is 68, making (D) correct.

Using either of these methods, the correct answer is (D).

4. **61**

The question asks for the value of a function. In function notation, the number inside the parentheses is the x-value that goes into the function, or the input, and the value that comes out of the function is the y-value, or the output. The question provides an input value, so plug $x = 6$ into the function to get $h(6) = 11(6) – 5$. Simplify to get $h(6) = 66 – 5$, and then $h(6) = 61$. The correct answer is 61.

5. **50**

The question asks for a value based on a graph. First, check the units on each axis of the bar graph. *Days* are on the x-axis, and *number of dogs* is on the y-axis. The question asks about day 7, so find 7 on the x-axis. Look at the top of the bar for day 7, and then look left to the y-axis, using the mouse pointer or the edge of the scratch paper as a ruler. The top of the bar for day 7 is at 50. Thus, 50 dogs visited the dog park on day 7. The correct answer is 50.

6. **–5**

The question asks for a value based on a graph. Specifically, the question asks for the value of x at the x-intercept on the graph of a parabola. This is the point at which $y = 0$ and the graph intersects the x-axis. Look on the graph for the point on the parabola at which the y-coordinate equals 0 and the graph touches the x-axis. This point is 5 units to the left of the origin (0, 0), so the coordinates are (–5, 0), and the x-value is –5. The correct answer is –5.

7. **B**

The question asks for an equivalent form of an expression. Both terms contain a multiple of 7 and a, so one approach is to factor out $7a$ to get $7a(2 + b^2)$. Check that (B) is correct by distributing $7a$: $7a(2) = 14a$ and $7a(b^2) = 7ab^2$, so $7a(2 + b^2)$ is an equivalent form of $14a + 7ab^2$, and (B) is correct.

There are variables in the answer choices, so another option is to plug in. Plug in simple numbers, such as $a = 3$ and $b = 2$. The expression becomes $14(3) + 7(3)(2)^2$. Simplify the expression to get $42 + 21(4)$, then $42 + 84$, and finally 126. This is the target value; write it down and circle it. Next, plug $a = 3$ and $b = 2$ into each answer choice and

eliminate any that do not match the target value of 126. Choice (A) becomes $2(3)[7 + 7(2)^2]$, and then $6[7 + 7(4)]$. Continue simplifying to get $6(7 + 28)$, then $6(35)$, and finally 210. This does not match the target value, so eliminate (A). Choice (B) becomes $7(3)[2 + (2)^2]$, and then $21(2 + 4)$. Continue simplifying to get $21(6)$, and then 126. This matches the target value, so keep (B), but check the remaining answers just in case. Choice (C) becomes $7(3)[3 + 14(2)]$, and then $21(3 + 28)$. Continue simplifying to get $21(31)$, and then 651; eliminate (C). Choice (D) becomes $7(2)[2(3)(2)]$, then $14(12)$, and finally 168; eliminate (D), leaving (B) as correct.

Using either of these methods, the correct answer is (B).

8. **208**

The question asks for a measurement of a geometric figure. Use the Geometry Basic Approach. Start by drawing a rectangle on the scratch paper, and then label the figure with the given information. Label one pair of opposite sides as 80 and the other pair of opposite sides as 24. The perimeter of a geometric shape is the sum of the lengths of the sides. Add all four side lengths to get $80 + 24 + 80 + 24 = 208$. The correct answer is 208.

9. **B**

The question asks for the value of a constant in the coordinates of a point on a line. One method is to use the built-in calculator. Click the + button in the upper left, and then select Table. Two points are marked on the graph, at (0, 5) and (12, 0), so enter those into the table. Click

and hold the circle icon in the table, and then click on the toggle next to Lines. The graphing area now shows the same line segment as the graph in the question. The question asks for the *y*-value when the *x*-value is 3, so scroll and zoom as needed to see that there is a point at (3, 3.75). Check each answer choice in a calculator to see that $\frac{15}{4}$ is equal to 3.75, making (B) correct.

Another approach is to first see if any answers can be eliminated by ballparking. Find 3 on the *x*-axis, and then move up from there to the line, using the mouse pointer or scratch paper as a ruler. Move left from there to the *y*-axis to see that the *y*-value is between 3 and 4. Check all four answer choices on a calculator: they are all between 3 and 4, so nothing can be eliminated. Instead, use the two points shown on the graph to find the slope of the line. The points are (0, 5) and (12, 0). Use those two points to calculate the slope of the line using the formula $slope = \frac{y_2 - y_1}{x_2 - x_1}$. The formula becomes $slope = \frac{5 - 0}{0 - 12}$, or $slope = -\frac{5}{12}$. Use the slope formula again, this time with one of the known points and the point that includes *n*. Use the points (3, *n*) and (12, 0), and the

formula becomes $slope = \frac{n-0}{3-12}$, or $slope = -\frac{n}{9}$. Set this equal to the slope from the first two points to get $-\frac{n}{9} = -\frac{5}{12}$. Cross-multiply to get $(n)(12) = (-9)(-5)$, or $12n = 45$. Divide both sides of this equation by 12 to get $n = \frac{45}{12}$. Reduce the fraction by dividing both the numerator and the denominator by 3 to get $n = \frac{15}{4}$, so (B) is correct.

Using either of these methods, the correct answer is (B).

10. **D**

The question asks for a probability based on a situation. Probability is defined as $\frac{\text{number of outcomes that give you what you want}}{\text{total number of possible outcomes}}$. Read carefully to find the numbers that make up the probability. The question states that there are *18 cards*, so that is the total number of possible outcomes. Each card has a different number, so out of the 18 cards, 1 of them has a 6 written on it. Thus, there are 18 – 1 = 17 cards that do <u>not</u> have a 6 written on them, and the number of outcomes that give you what you want is 17. Therefore, the probability that a single card does <u>not</u> have a 6 written on it in $\frac{17}{18}$. The correct answer is (D).

11. **A**

The question asks for the value of a function. In function notation, the number inside the parentheses is the x-value that goes into the function, or the input, and the value that comes out of the function is the y-value, or the output. The question provides an input value, so plug $x = 3$ into the function to get $g(3) = -2(3)^2$. Simplify to get $g(3) = -2(9)$, and then $g(3) = -18$. The correct answer is (A).

12. **B**

The question asks for the value of an angle on a figure. Use the Geometry Basic Approach. Redraw the figure on the scratch paper, and add the labels. When a line intersects two parallel lines, two kinds of angles are created: big and small. All small angles have the same measure, all big angles have the same measure, and any small angle plus any big angle = 180°. The angle marked $d°$ is a small angle, and the angle marked 148° is a big angle. Thus, $d + 148 = 180$. Subtract 148 from both sides of the equation to get $d = 32$. The correct answer is (B).

13. **C**

The question asks for an equation that represents a graph. One approach is to enter the equation from each answer choice into the built-in calculator and see which graph looks most like the line of best fit of the scatterplot. The graph of the equation in (C) matches the graph in the question, so (C) is correct.

Another approach is to compare features of the graph to the answer choices. The equations in the answer choices are all close to the form $y = mx + b$, in which m is the slope and b is the y-intercept, except the mx and b terms are reversed. The y-intercept is the y-coordinate of the point where $x = 0$, which is between 12 and 14 on this graph. Eliminate

(A) and (B) because they have negative *y*-intercepts. Compare the remaining answer choices. The difference between (C) and (D) is the sign of the slope. The line of best fit descends from left to right, so it has a negative slope. Eliminate (D) because it has a positive slope, leaving (C) as correct.

Using either of these methods, the correct answer is (C).

14. **D**

The question asks which answer correctly compares the data represented by a dot plot to the data from a related data set. Range is easy to calculate, if necessary, so start there. Subtracting 8 from each value will not change the range because the greatest value and the least value will both decrease by 8, which means the difference between them will be the same in data set S as it is in data set R. Eliminate (A) and (B) because they say that the ranges are different, not equal. Mean is a measure of center, and the center will change when the values change. Subtracting 8 from every value will make the mean less, so the mean of data set S is less than the mean of data set R. Eliminate (C) because it says that the two means are equal. The correct answer is (D).

15. **D**

The question asks for the interpretation of a number in context. Start by reading the final question, which asks for the meaning of the number 25. Then label the parts of the equation with the information given. The question states that *c* represents cooperative missions and *s* represents solo missions. The number 25 is multiplied by *s*, so it must have something to do with solo missions. Eliminate (A) and (B) because they are about cooperative missions, not solo missions. Since *s* already

represents the number of solo missions, 25 cannot represent the same thing; eliminate (C), so (D) must be correct. The question also states that 1,000 is the total points scored, so it makes sense that the two coefficients on the left side of the equation represent numbers of points per mission. Because 25 is multiplied by *s*, it represents the number of points per solo mission. The correct answer is (D).

16. **D**

The question asks for the value of a function. In function notation, the number inside the parentheses is the *x*-value that goes into the function, or the input, and the value that comes out of the function is the *y*-value, or the output. The question provides an output value of 5, and the answers have numbers that could represent the *x*-value, so plug in the answers. Start with one of the middle numbers and try (B), 25. Plug 25 into the function for *x* to get $g(25) = \frac{\sqrt{25}}{2}$, which becomes $g(25) = \frac{5}{2}$, and then $g(25) = 2.5$. This does not match the output value given in the question, so eliminate (B). The result was too small, so also eliminate (A). Another perfect square is likely to result in an integer output, so try (D), 100, next. Plug 100 into the function for *x* to get $g(100) = \frac{\sqrt{100}}{2}$, which becomes $g(100) = \frac{10}{2}$, and then $g(100) = 5$. This matches the output value given in the question, so stop here. The correct answer is (D).

17. **C**

The question asks for the value of the y-coordinate of the point of intersection of a system of equations. The second equation gives the value of x, so plug in –7 for x in the first equation to get $y = (-7)^2 - 7$. Simplify the right side of the equation—keeping in mind that a negative number squared becomes positive—to get $y = 49 - 7$, and then $y = 42$, making (C) correct.

Another method is to enter both equations into the built-in calculator, and then scroll and zoom as needed to see the point of intersection. Click on the gray dot to see that the coordinates are (–7, 42). The question asks for the value of y, which is 42, so (C) is correct.

Using either of these methods, correct answer is (C).

18. **A**

The question asks for the value of a function. In function notation, $f(x) = y$. The question asks for the value of $f(0)$, which means $x = 0$ and the question is asking for the y-intercept. Find $x = 0$ on the graph and move straight down to see that the graph crosses the y-axis at (0, –5). The correct answer is (A).

19. **A**

The question asks for the equation of a line. One method is to enter each equation from the answer choices into the built-in calculator, and then eliminate answers that do not result in a line with a positive slope that passes through the point (12, –7). The lines graphed by the

equations in (B), (C), and (D) do not include the correct point, so eliminate them and pick (A).

Another method is to recognize that all of the answer choices are linear equations in slope-intercept form, $y = mx + b$, where m is the slope and b is the y-intercept. The question states that the graph *has a slope of* $\frac{1}{6}$. Therefore, $m = \frac{1}{6}$. Eliminate (C) and (D) because they have the wrong slope. The question also states that the line *passes through the point* (12, –7), so plug $x = 12$ and $y = -7$ into the remaining two answer choices. Choice (A) becomes $-7 = \frac{12}{6} - 9$, then $-7 = 2 - 9$, and finally $-7 = -7$. This is true, so keep (A), but check (B) just in case. Choice (B) becomes $-7 = \frac{12}{6} - 7$, then $-7 = 2 - 7$, and finally $-7 = -5$. This is not true; eliminate (B) and pick (A).

Using either of these methods, the correct answer is (A).

20. **B**

The question asks for the number of solutions to a quadratic equation. The most efficient method is to use the built-in calculator. Enter the equation without the "= 0" part to see a parabola, and then scroll and zoom to see how many times, if any, the parabola intersects the x-axis. There are two points of intersection, at (–0.5, 0) and (2.5, 0), so there are exactly two real solutions, and the answer is (B).

To determine the number of solutions algebraically, use the discriminant. The discriminant is the part of the quadratic formula

under the square root sign and is written as $D = b^2 - 4ac$. When the discriminant is positive, the quadratic has exactly two real solutions; when the discriminant is 0, the quadratic has exactly one real solution; and when the discriminant is negative, the quadratic has no real solutions. The quadratic is given in standard form, $ax^2 + bx + c = 0$, so $a = 4$, $b = -8$, and $c = -5$. The discriminant is $D = (-8)^2 - 4(4)(-5)$, which becomes $D = 64 + 80$, and then $D = 144$. This is positive, so there are exactly two real solutions, and (B) is correct.

Using either of these methods, the correct answer is (B).

21. **B**

The question asks for a value given a specific situation. Since the question asks for a specific value and the answers contain numbers in increasing order, plug in the answers. Rewrite the answer choices on the scratch paper and label them as "# of blue tokens." Next, start with a number in the middle and try (B), 16. The question states that the *jar contains a total of 37 red and blue tokens*. If there are 16 blue tokens, there are 37 – 16 = 21 red tokens. The question also states that *the mass of one red token is 90 grams*, so 21 red tokens have a mass of (21)(90) = 1,890 grams. The question also states that *the mass of one blue token is 120 grams*, so 16 blue tokens have a mass of (16)(120) = 1,920 grams. Add the total grams of the red and blue tokens to get 1,890 + 1,920 = 3,810 grams. This matches the combined mass given in the question, so stop here. The correct answer is (B).

22. **C**

The question asks for the equation of a circle that has been shifted in the *xy*-plane. One method is to use the built-in calculator. First, enter

the equation from the question to see the original circle. Next, enter the equation from each answer choice until one graphs a circle that is 7 units to the right of the original circle. Change signs and numbers as needed to avoid having to type all four equations from scratch. The circle graphed by the equation in (C) is 7 units to the right of the original circle, so (C) is correct.

Another method is to apply the rules of translating graphs. The equation of a circle in standard form is $(x - h)^2 + (y - k)^2 = r^2$, where (h, k) is the center and r is the radius. Shifting a circle to the right 7 units does not change the radius, and all the equations in the answer choices are equal to 64, so focus on the center. Shifting a circle left or right does not change the y-value. Eliminate (A) and (B) because the $(y - k)^2$ portion of the equation is different. To move a circle left or right, change the x-value. In circle R, $(x - h) = (x + 3)$, so $-h = 3$ and $h = -3$. Since the x-value of the center of circle R is -3, the x-coordinate of the center of circle S, which is shifted to the right 7 units, is $-3 + 7 = 4$. Thus, the value of h in circle S is 4. The term $(x - 4)^2$ must appear in the correct answer, so eliminate (D), leaving (C) as correct.

Using either of these methods, the correct answer is (C).

Module 2—Harder

1. **C**

The question asks for an equation that represents a specific situation. Translate the information in bite-sized pieces and eliminate after each piece. One piece of information says that *apples are sold in bags of 4 apples per bag, and bananas are sold in bunches of 6 bananas each*. Since the number of bags of apples is represented by a and the number of bunches of bananas is represented by b, the correct equation must include the terms $4a$ and $6b$. Eliminate (B) and (D) because they do not contain these terms. When (A) is expanded, it includes those two terms

but also includes $6a$ and $4b$, which do not match the information in the question; eliminate (A). The correct answer is (C).

2. **D**

The question asks for an equation that represents a graph. One approach is to enter the equation from each answer choice into the built-in calculator and see which graph looks most like the line of best fit of the scatterplot. The graph of the equation in (D) matches the graph in the question, so (D) is correct.

Another approach is to compare features of the graph to the answer choices. The equations in the answer choices are all close to the form $y = mx + b$, in which m is the slope and b is the y-intercept, except the mx and b terms are reversed. The y-intercept is the y-coordinate of the point where $x = 0$, which is between 1 and 2 on this graph. Eliminate (A) and (B) because they have negative y-intercepts. Compare the remaining answer choices. The difference between (C) and (D) is the sign of the slope. The line of best fit goes up from left to right, so it has a positive slope. Eliminate (C) because it has a negative slope, leaving (D) as correct.

Using either of these methods, the correct answer is (D).

3. **B**

The question asks for a value based on survey data. Since 45% of the respondents do not plan to compete in the upcoming race, apply that percentage to all 120 members of the cycling club. *Percent* means out

of 100, so translate 45% as $\frac{45}{100}$. Taking the percent of a number translates to multiplication, so 45% of 120 becomes $\frac{45}{100}(120)$, and then 54. Thus, 54 members of the cycling club do not plan to compete in the upcoming race. The correct answer is (B).

4. **C**

The question asks for the function that represents values given in a table. In function notation, the number inside the parentheses is the *x*-value that goes into the function, or the input, and the value that comes out of the function is the *y*-value, or the output. The table includes four pairs of input and output values, and the correct equation must work for every pair of values. Plug in values from the table and eliminate functions that don't work. Because 0 and 1 are likely to make more than one answer work, try the first row of the table and plug $x = -1$ and $f(x) = -11$ into the answer choices. Choice (A) becomes $-11 = -(-1)^2 - 4(-1) - 5$. Simplify to get $-11 = -1 + 4 - 5$, and then $-11 = -2$. This is not true, so eliminate (A). Choice (B) becomes $-11 = -5(-1)^2 + 3(-1) - 5$. Simplify to get $-11 = -5 - 3 - 5$, and then $-11 = -13$; eliminate (B). Choice (C) becomes $-11 = -4(-1)^2 + 2(-1) - 5$. Simplify to get $-11 = -4 - 2 - 5$, and then $-11 = -11$. This is true, so keep (C), but check (D) just in case. Choice (D) becomes $-11 = -2(-1)^2 + 4(-1) - 5$. Simplify to get $-11 = -2 - 4 - 5$, and then $-11 = -11$. This is also true, so try another pair of values.

Try the last row of the table and plug $x = 2$ and $f(x) = -17$ into the remaining answer choices. Choice (C) becomes $-17 = -4(2)^2 + 2(2) - 5$. Simplify to get $-17 = -4(4) + 4 - 5$, then $-17 = -16 + 4 - 5$, and finally $-17 = -17$. Keep (C) and check (D). Choice (D) becomes $-17 =$

$-2(2)^2 + 4(2) - 5$. Simplify to get $-17 = -2(4) + 8 - 5$, then $-17 = -8 + 8 - 5$, and finally $-17 = -5$; eliminate (D). The correct answer is (C).

5. **D**

The question asks for a value given a function. In function notation, the number inside the parentheses is the *x*-value that goes into the function, or the input, and the value that comes out of the function is the *y*-value, or the output. The question provides an output value of 20, and the answers have numbers that could represent the input value, so plug in the answers. Rewrite the answers on the scratch paper and label them as "*c*." Start with one of the middle numbers and try (B), 20. Plug 20 into the function for *x* to get $f(20) = \frac{20 - 12}{8}$, which becomes $f(20) = \frac{8}{8}$, and then $f(20) = 1$. This does not match the output value of 20 given in the question, so eliminate (B). The result was too small, so also eliminate (A), and try (C), 148, next. Plug 148 into the function for *x* to get $f(148) = \frac{148 - 12}{8}$, which becomes $f(148) = \frac{136}{8}$, and then $f(148) = 17$. Eliminate (C). Only (D) remains, so it must be correct. The output value for (C) was closer to 20 but still too small, so it makes sense that a larger number is needed. The correct answer is (D).

6. **B**

The question asks for the value of a constant in the coordinates of a point on a line. One method is to use the built-in calculator. Click the + button in the upper left, and then select Table. Two points are marked on the graph, at (0, 5) and (12, 0), so enter those into the table. Click and hold the circle icon in the table, and then click on the toggle next to Lines. The graphing area now shows the same line segment as the graph in the question. The question asks for the *y*-value when the *x*-value is 3, so scroll and zoom as needed to see that there is a point at (3, 3.75). Check each answer choice in a calculator to see that $\frac{15}{4}$ is equal to 3.75, making (B) correct.

Another approach is to first see if any answers can be eliminated by ballparking. Find 3 on the *x*-axis, and then move up from there to the line, using the mouse pointer or scratch paper as a ruler. Move left from there to the *y*-axis to see that the *y*-value is between 3 and 4. Check all four answer choices on a calculator: they are all between 3 and 4, so nothing can be eliminated. Instead, use the two points shown on the graph to find the slope of the line. The points are (0, 5) and (12, 0). Use those two points to calculate the slope of the line using the formula

$slope = \frac{y_2 - y_1}{x_2 - x_1}$. The formula becomes $slope = \frac{5 - 0}{0 - 12}$, or $slope = -\frac{5}{12}$.

Use the slope formula again, this time with one of the known points and the point that includes n. Use the points $(3, n)$ and $(12, 0)$, and the formula becomes $slope = \frac{n - 0}{3 - 12}$, or $slope = -\frac{n}{9}$. Set this equal to the slope from the first two points to get $-\frac{n}{9} = -\frac{5}{12}$. Cross-multiply to get $(n)(12) = (-9)(-5)$, or $12n = 45$. Divide both sides of this equation by 12 to get $n = \frac{45}{12}$. Reduce the fraction by dividing both the numerator and the denominator by 3 to get $n = \frac{15}{4}$, so (B) is correct.

Using either of these methods, the correct answer is (B).

7. **A**

The question asks for the slope of a line. The question states that line m is parallel to line l, which means they have equal slopes. The question gives the equation of line l, so find the slope of that line. First, convert the equation of line l into slope-intercept form, $y = mx + b$, in which m is the slope and b is the y-intercept. Subtract 7 from both sides of the equation to get $4y = -16x - 7$. Divide both sides of the equation by 4 to get $y = -4x - \frac{7}{4}$. The slope of line l is thus –4. It is also possible to

convert the equation of line l into standard form by adding $16x$ to both sides of the equation and subtracting 7 from both sides of the equation to get $16x + 4y = -7$. In standard form, $Ax + By = C$, the slope is $-\frac{A}{B}$. In this case, $A = 16$ and $B = 4$, so the slope of line l is $-\frac{16}{4} = -4$. Using either form of a linear equation, the slope of line l is -4. Since line m is parallel and has the same slope, the slope of line m is also -4. The correct answer is (A).

8. **C**

The question asks for the density of a rectangular solid. Use the Geometry Basic Approach. Start by drawing a rectangular solid on the scratch paper as best as possible, and then label the length, width, and height as 1.1, 0.8, and 0.8, respectively. Other information about the concrete block is given, so use the units to determine what to do next. The question asks for the density in kilograms per cubic meter, and the question gives the mass in kilograms, so look for a way to find a value in cubic meters. Since the side lengths are in meters, the volume will be in cubic meters. Write down the formula for the volume of a rectangular solid or prism, either from memory or after looking it up on the reference sheet. The formula is $V = lwh$. Plug in the side lengths

given in the question to get $V = (1.1)(0.8)(0.8)$, or $V = 0.704$ cubic meters. The mass in kilograms divided by the volume in cubic meters equals the density in kilograms per cubic meter. This happens to be the formula for density, which can be written as $D = \frac{m}{V}$ Plug in the known values to get $D = \frac{1{,}690}{0.704}$ Divide the fraction on the right side of the equation to get $D \approx 2{,}400.57$. The nearest whole number is 2,401. The correct answer is (C).

9. **B**

The question asks for the value of an angle on a figure. Use the Geometry Basic Approach. Redraw the figure on the scratch paper, and add the labels. When a line intersects two parallel lines, two kinds of angles are created: big and small. All small angles have the same measure, all big angles have the same measure, and any small angle plus any big angle = 180°. Angle q is a small angle, and angle r is a big angle, so they add up to 180. Since $q = 10c - 11$ and $r = 15c + 41$, add those expressions together and set them equal to 180. The equation becomes $(10c - 11) + (15c + 41) = 180$. Combine like terms on the left side of the equation to get $25c + 30 = 180$. Subtract 30 from both sides of the equation to get $25c = 150$. Divide both sides of the equation by 25 to get $c = 6$. Read carefully: the question asks for the value of p, which is a small angle. Plug $c = 6$ into the equation for the other small angle, q, to get $q = 10(6) - 11$, which becomes $q = 60 - 11$, and then $q = 49$. Because p and q are both small angles, p is also 49. The correct answer is (B).

10. **–35/63, –5/9, –0.555 –0.556, –.5555, or –.5556**

The question asks for the value of a constant in an equation. A linear equation has infinitely many solutions when the x-terms are the same and the constants are the same. The question asks for the value of q, which is not part of an x-term, so focus on the constants and ignore the x-terms. Distribute on the left side of the equation to get $-7q = \frac{35}{9}$. Divide both sides of this equation by –7 to get $q = \frac{35}{(9)(-7)}$, or $q = -\frac{35}{63}$. When the answer is negative, there is space in the fill-in box for six characters, including the negative sign. This fraction fits, so there is no need to reduce it, although the reduced form will also be accepted as correct. Decimal forms, such as –0.555 or –.5556, will also be accepted. The correct answer is $-\frac{35}{63}$ or an equivalent form.

11. **837**

The question asks for a new value after two changes to an initial value. Start by finding the number of unique visitors after the initial 25% decrease. Translate 25% as $\frac{25}{100}$ and multiply by the previous average of 620 unique visitors each day to get $\frac{25}{100}(620) = 155$. The number of unique visitors decreased by 25%, so the new number is 620 – 155 = 465 unique visitors each day. Next, find 180% of this new number.

Translate 180% as $\frac{180}{100}$ and multiply it by 465 to get $\frac{180}{100}(465) = 837$ unique visitors each day during the promotion. The correct answer is 837.

12. **B**

The question asks for the value of a percent decrease given a function that represents a specific situation. The value of the function is decreasing by a certain percent, so this question is about exponential decay. Write down the growth and decay formula: *final amount* = (*original amount*)$(1 \pm rate)^{number\ of\ changes}$. The *number of changes* is given in terms of hours, but the question asks about the increase *every 75 minutes.* There are 60 minutes in 1 hour, so set up a proportion: $\frac{60 \text{ minutes}}{1 \text{ hour}} = \frac{75 \text{ minutes}}{h \text{ hours}}$. Cross-multiply to get (1)(75) = (60)(*h*), or 75 = 60*h*. Divide both sides of the equation by 60 to get $\frac{75}{60} = h$. Reduce the fraction to get $\frac{5}{4} = h$. Now, plug in $\frac{5}{4}$ for *h* in the function to get $M(h) = 302(0.87)^{\left(\frac{4}{5}\right)\left(\frac{5}{4}\right)}$, which becomes $M(h) = 302(0.87)^1$. The amount of the isotope is decreasing once, so 0.87 = 1 – *rate*. Add *rate* to both sides of the equation to get *rate* + 0.87 = 1, and then subtract 0.87 from both sides of the equation to get *rate* = 0.13. The question asks for *d*%,

which is the rate as a percentage, so multiply 0.13 by 100 to get 13%.

The correct answer is (B).

13. **13**

The question asks for the mean, or average, of a data set. For averages, use the formula $T = AN$, in which T is the *Total*, A is the *Average*, and N is the *Number of things*. First, apply this formula to group X, in which there are 40 packages with a mean, or average, mass of 24 kg. In group X, $N = 40$ and $A = 24$. The average formula becomes $T = (40)(24)$, or $T = 960$ kg. Now do the same for group Y, in which there are 110 packages with a mean, or average, mass of 9 kg. In group Y, $N = 110$ and $A = 9$. The average formula becomes $T = (110)(9)$, or $T = 990$ kg. Now calculate the mean mass of all 150 packages. The number of packages combined is given as 150, and the total of the masses of all of the packages is 960 + 990 = 1,950 kg. Therefore, $N = 150$ and $T = 1{,}950$. The average formula becomes $1{,}950 = (A)(150)$. Divide both sides of the equation by 150 to get $13 = A$. The correct answer is 13.

14. **A**

The question asks for an expression that must be an integer. The question provides a quadratic in both standard form, which is $ax^2 + bx + c$, and factored form, which is $a(x - m)(x - n)$. Use FOIL to expand the factored form quadratic into standard form: $(px - q)(x - r) = px^2 - prx - qx + qr$. Combine the middle terms to get $px^2 - (pr + q)x + qr$. Now set this equal to the standard form expression, $11x^2 - kx + 63$, and match up terms. It might make things clearer to write the two expressions above each other:

$$11x^2 - kx + 63$$
$$px^2 - (pr + q)x + qr$$

Therefore, $p = 11$, $(pr + q) = k$, and $qr = 63$. Examine the answer choices to see if any answers can be eliminated quickly. Eliminate (B) because $p = 11$ and $\frac{63}{11}$ is not an integer. Since $qr = 63$, $q = \frac{63}{r}$. The question states that q is an integer, so any value that is equivalent to q will also be an integer. Thus, $\frac{63}{r}$ must be an integer. The correct answer is (A).

15. **109**

The question asks for the least possible value of a constant related to a quadratic equation. To determine when the given quadratic has exactly one real solution, enter the equation into the built-in calculator, and then select the slider tool for k. Moving the slider to the right moves the vertex closer to the x-axis, so click on the slider tool to extend the range, and then keep sliding to the right until the vertex is on the x-axis, meaning there is one real solution. This happens when $k = 108$. Since m is an integer greater than k, the least possible value of m is 109. The correct answer is 109.

16. **D**

The question asks which answer correctly compares the data represented by a dot plot to the data from a related data set. Range is easy to calculate, if necessary, so start there. Subtracting 8 from each

value will not change the range because the greatest value and the least value will both decrease by 8, which means the difference between them will be the same in data set S as it is in data set R. Eliminate (A) and (B) because they say that the ranges are different, not equal. Mean is a measure of center, and the center will change when the values change. Subtracting 8 from every value will make the mean less, so the mean of data set S is less than the mean of data set R. Eliminate (C) because it says that the two means are equal. The correct answer is (D).

17. **A**

The question asks for the equation that defines a function. The question asks about function h, which is translated, or shifted, from the graph of function h. When a graph is translated, subtracting inside the parentheses shifts the graph to the right. Since $h(x) = g(x - 3)$, the graph of function h is shifted 3 units to the right of the graph of function g. The graph of function g contains a point at (6, –3), so the graph of function h must include a point 3 units to the right at (9, –3). In function notation, $h(x) = y$, so $x = 9$ and $h(x) = -3$. Plug these values into the answer choices and eliminate any answer that doesn't work. Choice (A) becomes $-3 = \frac{-9}{9 - 6}$, then $-3 = \frac{-9}{3}$, and finally $-3 = -3$. This is true, so keep (A), but check the remaining answers just in case. Choice (B) becomes $-3 = \frac{-9}{9 - 3}$, then $-3 = \frac{-9}{6}$, and finally $-3 = -\frac{3}{2}$. This is not true, so eliminate (B). Choice (C) becomes $-3 = \frac{-9}{9}$, or $-3 =$

–1; eliminate (C). Choice (D) becomes $-3 = \frac{-9(9-3)}{9-3}$, then $-3 = \frac{-9(6)}{6}$, and finally –3 = –9; eliminate (D). The correct answer is (A).

18. **$-\frac{50}{4}$ or –12.5**

The question asks for the value of a constant in a system of equations. One method is to use the built-in calculator, although it takes careful work. Enter each equation into a separate entry field, and then select the slider for *c*. Move the slider left and right, clicking on the "*c* =" equation to expand the range as needed, until the graphs intersect at one point. Click on one of the equations to see a gray dot at the point of intersection to confirm that there is exactly one real solution. This happens when *c* = –12.5. The question asks for the value of *c*, so –12.5 is correct.

To solve algebraically, recognize that the equations are both equal to *y*, so set them equal to each other. The new equation becomes $x^2 - 6x - c = 3.5$. Put the quadratic in standard form, which is $ax^2 + bx + c = 0$, by setting one side equal to 0. Subtract 3.5 from both sides of the equation to get $x^2 - 6x - c - 3.5 = 0$. The question states that *the system has exactly one real solution*, so use the discriminant. The discriminant is the part of the quadratic formula under the square root sign, and it can be written as $D = b^2 - 4ac$. When the discriminant is positive, the quadratic has exactly two real solutions; when the discriminant is 0, the quadratic has exactly one real solution; and when the discriminant is negative, the quadratic has no real solutions. In this case, the quadratic has exactly one real solution, so the discriminant must equal 0.

In this equation, the constant c is part of the c term in the discriminant, so be careful not to confuse the constant c in the original equation with the c in the discriminant. With the equation in standard form, $a = 1$, $b = -6$, and $c = -c - 3.5$. Plug these values into the discriminant formula and set it equal to 0 to get $(-6)^2 - 4(1)(-c - 3.5) = 0$. Simplify the left side of the equation to get $36 + 4c + 14 = 0$, and then $50 + 4c = 0$. Subtract 50 from both sides of the equation to get $4c = -50$, and then divide both sides of the equation by 4 to get $c = -\frac{50}{4}$. This fraction fits in the fill-in box, so there is no need to reduce it, although the reduced form, $-\frac{25}{2}$, will also be accepted as correct. The decimal form, –12.5, will also be accepted.

Using either of these methods, the correct answer is –12.5 or an equivalent form.

19. **1**

The question asks for the radius of a circle given the equation of the graph in the xy-plane. The equation of a circle in standard form is $(x - h)^2 + (y - k)^2 = r^2$, where (h, k) is the center and r is the radius. However, the equation of this circle is not in standard form, so look for another way to find the radius. One method is to complete the square for both terms in order to put the equation in standard form. A much simpler approach is to enter the equation into the built-in calculator. Zoom in to see that there are several gray dots on the graph, which can be seen if they disappear by clicking on the equation or on the circle

itself. Four of the gray dots are where the circle intercepts the x- and y-axes. Click on the other two dots, which are at the top and bottom of the circle and form the diameter. The points are (0.25, –0.75) and (0.25, 1.25). They have the same x-coordinate, so the distance between the two points, or the diameter, is the difference between the y-coordinates: $1.25 - (-0.75) = 2$. Read carefully: the diameter of the circle is 2, but the question asks for the radius. The radius of a circle is half of the diameter, so the radius is 1. The correct answer is 1.

20. **B**

The question asks for the value of a constant that is part of the product of the solutions to a quadratic equation. It takes a lot of algebra to answer this question, but a shortcut is to recall that, when a quadratic is in standard form, $ax^2 + bx + c$, the product of the solutions is $\frac{c}{a}$. In the given quadratic, $a = 18$ and $c = -mn$, so the product of the solutions is $\frac{-mn}{18}$. The question states that the product of the solutions is kmn, so set the two ways to represent the product of the solutions equal to each other to get $\frac{-mn}{18} = kmn$. Multiply both sides of the equation by 18 to get $-mn = 18kmn$, and then divide both sides of the equation by mn to get $-1 = 18k$. Finally, divide both sides of the equation by 18 to get $-\frac{1}{18} = k$. The correct answer is (B).

21. **A**

The question asks for the value of an expression with three constants in a quadratic equation. The question states that the vertex of the parabola is at (–1, 4), and that the parabola does not intersect the x-axis. Since the y-coordinate of the vertex is positive and the parabola does not intersect the x-axis, the parabola must open upwards. The vertex of a parabola is expressed as (h, k). Use this information to rewrite the parabola in vertex form, which is $y = a(x - h)^2 + k$. Plug in the values for h and k from the vertex to get $y = a(x + 1)^2 + 4$. Expand $(x + 1)^2$ using FOIL to get $y = a(x^2 + 2x + 1) + 4$. Next, distribute the a to get $y = ax^2 + 2ax + a + 4$. Finally, since this vertex form of the parabola is equal to the given standard form of the same parabola, set them equal to each other: $ax^2 + 2ax + a + 4 = ax^2 + bx + c$. Write the two equations above each other to see the matching terms more clearly:

$$ax^2 + 2ax + a + 4$$
$$ax^2 + bx + c$$

Given this, the ax^2 terms cancel, $2a = b$ and $a + 4 = c$. Thus, $a - b - c$ becomes $a - 2a - (a + 4)$. Combine like terms to get $-2a - 4$.

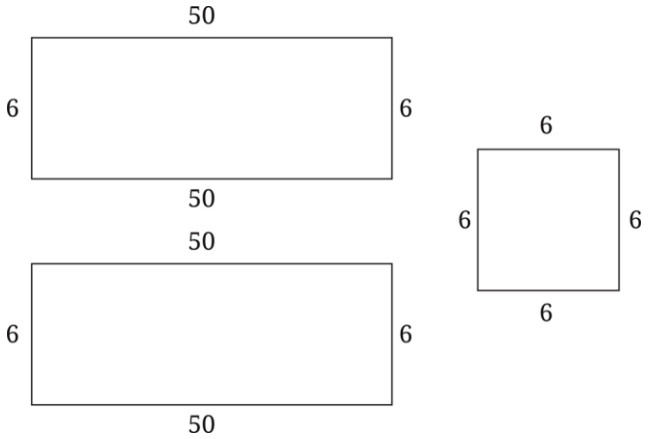
Since the parabola opens upwards, the value of a must be positive. Since the question asks for a specific value and the answers contain numbers in increasing order, plug in the answers. Rewrite the answer choices on the scratch paper and label them as "$-2a - 4$." Next, start with a number in the middle and try (B), –4. The equation becomes $-2a - 4 = -4$. Add $2a$ to both sides of the equation to get $-4 = 2a - 4$, and then add 4 to both sides of the equation to get $0 = 2a$. Finally, divide both sides of the equation by 2 to get $0 = a$. This is not positive, so

eliminate (B). The result was close to being a negative number, so try (A), –5, next. The equation becomes $-2a - 4 = -5$. Add $2a$ to both sides of the equation to get $-4 = 2a - 5$, and then add 5 to both sides of the equation to get $1 = 2a$. Finally, divide both sides of the equation by 2 to get $\frac{1}{2} = a$. This is positive, so stop here. The correct answer is (A).

22. **C**

The question asks for a measurement of a geometric figure. Use the Geometry Basic Approach. Because the surface area of a 3-dimensional figure is the sum of the areas of its faces, draw three rectangles of different sizes to represent the faces of the rectangular solid. Label the height of 50 on two of the rectangles. Since the question asks for a specific value and the answers contain numbers in increasing order, plug in the answers. Rewrite the answer choices on the scratch paper and label them as "*side length of base*." Next, start with a number in the middle and try (B), 6. Label the remaining sides lengths of the rectangles as 6.

The figures should now look something like this:



Use the formula for the area of a rectangle, $A = lw$, to find the area of each face. One 6×50 face has an area of 300, and one 6×6 face has an area of 36. There are 4 faces with an area of 300 and 2 faces with an area of 36 for a surface area of $(4)(300) + (2)(36) = 1{,}200 + 72 = 1{,}272$. Thus, $S = 1{,}272$.

If the two prisms were cut into two identical prisms parallel to the square base, the resulting shapes would each be a shorter rectangular prism with a height of $\frac{50}{2} = 25$ and a square base with a side length of 6. Perform the same calculations to find the surface area of one of the smaller prisms. One 6×25 face has an area of 150, and one 6×6 face has an area of 36. There are 4 faces with an area of 150 and 2 faces with an area of 36 for a surface area of $(4)(150) + (2)(36) = 600 + 72 = 672$. The question states that *each resulting prism has a surface area of* $\frac{31}{56}S$, so plug in 1,272 for S. The result is $\frac{31}{56}(1{,}272) \approx 704$. This does not match the surface area of one of the smaller prisms, so eliminate (B).

It might be difficult to determine whether a larger or smaller number is needed, so pick a direction and try (C), 12. The dimensions of the original single prism are now $50 \times 12 \times 12$. There are four faces with an area of $(50)(12) = 600$ and two faces with an area of $(12)(12) = 144$ for a surface area of $(4)(600) + (2)(144) = 2{,}400 + 288 = 2{,}688$. The dimensions of one of the smaller prisms are now $25 \times 12 \times 12$. There are four faces with an area of $(25)(12) = 300$ and two faces with an area

of (12)(12) = 144 for a surface area of (4)(300) + (2)(144) = 1,200 + 188 = 1,488. Plug in 2,688 for *S* to get $\frac{31}{56}$ (2,688) = 1,488. This is the surface area of one of the smaller prisms, so stop here. The correct answer is (C).