

Section 1, Module 1: Reading and Writing

SAT Prep Test 3—Reading and Writing

Module 1

Turn to Section 1 of your answer sheet to answer the questions in this section.

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 1919, Rafael Palma delivered an address advocating for women’s suffrage, or right to vote, to the Philippine Senate. Because the debate in the nation around this issue was similar to past debates about women’s education, Palma reminded his audience that any concerns were _____: only positive results had arisen from women’s education, and the same results would come from women’s suffrage.

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

A. required

B. ancient

C. unnecessary

D. curious

2

 Mark for Review

Similar to modern tourism websites, an 1890 publication—E. L. Lomax’s *Oregon, Washington, and Alaska: Sights and Scenes for the Tourist*—relates stories of local folklore to potential visitors. In one section of the publication, Lomax tells the legend of The Dalles, where there lived creatures of such _____ size and strength that a strike of their tails could create chasms in the ground.

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

A. phenomenal

B. conventional

C. feasible

D. steady

3

 Mark for Review

During the late nineteenth century, author Marie Corelli was best known for her use of supernatural and romantic themes in her novels. Despite predictions from critics that Corelli’s reliance on sentimental and unrealistic plots would impact the earning potential of her works, Corelli went on to become one of the most _____ writers of her time.

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

A. unconventional

B. condemned

C. impressionable

D. marketable

4



Mark for Review

The following text is adapted from Susan Glaspell’s 1916 play *Trifles*.

MRS PETERS: But of course you were awful busy, Mrs Hale—your house and your children.

MRS HALE: I could’ve come. I stayed away because it weren’t cheerful—and that’s why I ought to have come. I—I’ve never liked this place. Maybe because it’s down in a hollow and you don’t see the road. I dunno what it is, but it’s a lonesome place and always was.

I wish I had come over to see Minnie Foster sometimes. I can see now—

MRS PETERS: Well, you mustn't reproach yourself, Mrs Hale. Somehow we just don't see how it is with other folks until—something comes up.

As used in the text, what does the word “reproach” most nearly mean?

A. Criticize

B. Humiliate

C. Remind

D. Question

5



Mark for Review

The following text is from the 1899 poem “Sympathy” by Paul Laurence Dunbar, who was a prominent African American poet born in Ohio.

I know why the caged bird sings, ah me,
When his wing is bruised and his bosom sore,—
When he beats his bars and he would be free;
It is not a carol of joy or glee,
But a prayer that he sends from his heart's deep core,
But a plea, that upward to Heaven he flings—
I know why the caged bird sings!

Which choice best states the main purpose of the text?

A. To discount the theory that glee is a less frequently perceived emotion than hopelessness is

B. To convey how the perceptions of people who experience freedom relate to those who experience imprisonment

C. To consider whether actions taken in confined spaces cause more damage than those taken out in the open

D. To contemplate how a type of vocalization associated with positivity can actually represent both despair and longing

6

 Mark for Review

The following text is from the 1849 poem “Self-Dependence” by Matthew Arnold.

Weary of myself, and sick of asking
What I am, and what I ought to be,
At this vessel’s prow I stand, which bears me
Forwards, forwards, o’er the starlit sea.

And a look of passionate desire
O’er the sea and to the stars I send:
“Ye who from my childhood up have calm’d me,
Calm me, ah, compose me to the end!”

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

A. It characterizes the rapidity with which the speaker questions himself.

B. It contrasts the speaker’s feelings with the expectations of those

around him.

C. It highlights the helplessness the speaker feels about the direction of his life.

D. It demonstrates the speaker's optimism that his questions will be eventually answered.

7

 Mark for Review

The following text is adapted from Sir Arthur Conan Doyle's 1905 novel *The Return of Sherlock Holmes*. Sherlock Holmes is a detective who uses his skills of deduction to solve crimes. His friend and partner, John Watson, narrates the novel.

It can be imagined that my close intimacy with Sherlock Holmes had interested me deeply in crime, and that after his disappearance I never failed to read with care the various problems which came before the public. There were points about this strange business which would, I was sure, have specially appealed to him, and the efforts of the police would have been supplemented, or more probably anticipated, by the trained observation and the alert mind of the first criminal agent in Europe. And I even attempted, more than once, for my own private satisfaction, to employ his methods in their solution, though with indifferent success.

Which choice best describes the overall structure of the text?

A. It explains that a character is desperate to solve a problem, and then details how another character solves it.

B. It lists a character's concerns about his public image, and then explains how the character addresses these concerns.

C. It discloses the inspiration behind the actions of a character, and then describes why the character feels this way.

D. It details the speaker's attempt to emulate another character's behavior, and then underscores that the speaker was not as effective as the other character.

8



Mark for Review

The following text is from Emily Dickinson's 1891 poem "Hope."

"Hope" is the thing with feathers –
That perches in the soul –
And sings the tune without the words –
And never stops – at all –

And sweetest – in the Gale – is heard –
And sore must be the storm –
That could abash the little Bird
That kept so many warm –

Which choice best states the main purpose of the text?

A. To recall a particular memory of a young bird safely navigating a storm

B. To emphasize the importance of remaining optimistic in the core of

one's being

C. To bring awareness to life's challenges and the specific methods needed to overcome them

D. To claim that certain music can promote a diverse assortment of positive emotions

9

 Mark for Review

The following is text adapted from Louisa May Alcott's 1868 novel *Little Women*. Meg, the oldest daughter in her family, often helps her mother with caring for her younger sisters.

This idea tickled Jo's fancy and put her in good spirits, but Meg didn't brighten, for her burden, consisting of four spoiled children, seemed heavier than ever. She had not heart enough even to make herself pretty as usual by putting on a blue neck ribbon and dressing her hair in the most becoming way.

Which choice best states the main idea of the text?

A. Meg spends a long time getting ready each day in order to delay her responsibilities.

B. Meg feels quite overwhelmed with the prospect of caring for her sisters.

C. Meg remains calm and collected to help ease her family's burden.

D. Meg is becoming resentful of having to work on her appearance each day.

10



Mark for Review

Because of the widespread belief in the early nineteenth century that it was improper for women to engage in literary careers, Jane Austen published her novels anonymously and did not reveal the secret of her authorship. Only her family members knew what she had written; this remained the case even as her novels gained popularity. The secret was rigorously kept: friends who came to visit and discuss her latest novels did not know they were speaking about them with the woman who had written them.

Which choice best states the main idea of the text?

A. Despite their great success, the novels written by Jane Austen were not attributed to her due to a personal choice based on societal expectations.

B. Publishing anonymous novels like those written by Austen is the most efficient method to avoid judgments based on gender.

C. Although publishing works anonymously and maintaining secrecy such as Austen did can prevent societal criticism, it is unethical.

D. As an author, Austen was routinely encouraged by her friends and family members to take public credit for her works.

11



Mark for Review

“Ulysses” is an 1842 poem by Alfred, Lord Tennyson. In the poem, Tennyson describes a king who proclaims his desire to travel once more, which he expresses to his companions, saying _____

Which quotation from “Ulysses” most effectively illustrates the claim?

A. “Much have I seen and known; cities of men.”

B. “How dull it is to pause, to make an end.”

C. “Some work of noble note, may yet be done.”

D. “Come, my friends, ‘tis not too late to seek a newer world.”

12



Mark for Review

Percentages of Population Working in the Agricultural Sector and Living in Urban Areas for Four Central American Nations

| Nation | Percentage working in the agricultural sector | Percentage living in urban areas |
|-------------|---|----------------------------------|
| Belize | 16.80 | 45.87 |
| Costa Rica | 11.97 | 80.08 |
| El Salvador | 16.29 | 72.75 |
| Panama | 14.41 | 68.06 |

A group of researchers conducted a study of four Central American nations to explore the relationship between the percentage of the population working in the agricultural sector and the percentage of the population living in urban areas. Although the percentages of those living in urban areas varied significantly, the percentages of those working in the agricultural sector did not vary as greatly. The group claimed that, for these four nations, there is not a strong correlation between where people work and where they live.

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

A. For these four nations, Costa Rica and Panama had the lowest percentage of people working in the agricultural sector and the lowest percentage of people living in urban areas.

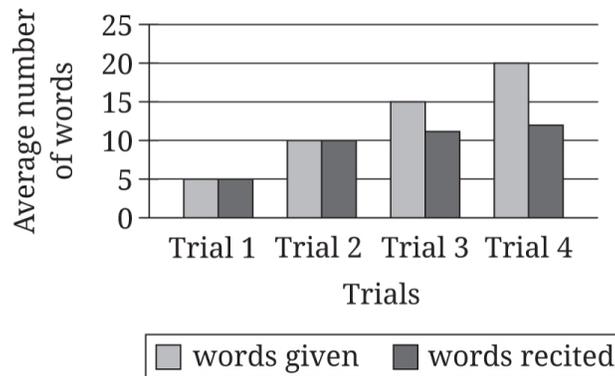
B. For these four nations, the nation with the highest percentage of people in the agricultural sector also had the highest percentage of people in urban areas.

C. Belize demonstrated a similar percentage of people in the agricultural sector to El Salvador's despite having a lower percentage of people in urban areas.

D. El Salvador and Panama had similar percentages of people in the agricultural sector, but Panama had a higher percentage of people in urban areas than El Salvador did.



Words Recited Based on Word Count



To determine how many items a person can hold in their short-term memory, a psychologist gave four subjects word lists in four different trials and asked them to memorize and then recite the words on the list. The list in each trial contained a different number of words. The psychologist concluded that there is a limit to the number of items people can hold in their short-term memory.

Which choice best describes data from the graph that weaken the psychologist's conclusion?

- A. The largest increase in words given to the subjects occurred from Trial 1 to Trial 4.
- B. The number of words recited in Trial 3 was greater than the number of words given in Trial 3.
- C. The words recited by the subjects still increased in Trial 4 despite an increase from Trial 3 in the words given.
- D. The words given and the words recited were the same in Trial 2.

14

 Mark for Review

Although postage for letters in the early United States was expensive and therefore largely limited to the wealthy, politicians such as James Madison believed that money raised by the postal system could be used to benefit the nation as a whole. Madison proposed that a possible application of these funds toward the purpose of benefitting young Americans was the establishment of a newspaper for the general public, which would therefore

Which choice most logically completes the text?

A. decrease the cost of postage for letters that contain only news and information.

B. provide news and information to everyone, especially those in lower classes.

C. transform the common relationship between wealth and the privilege of postage use.

D. encourage members of lower classes considering a post office job to apply for a newspaper position instead.

15

 Mark for Review

Pinpointing the exact cause of chronic fatigue syndrome (CFS) has been difficult due to the absence of conclusive proof for any of the proposed _____ a clear diagnostic test for the condition.

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

A. theories and the lack of

B. theories and the lack of,

C. theories, and the lack of,

D. theories, and, the lack of

16



Mark for Review

Persepolis was an ancient city in the First Persian Empire, located in what is now Iran. Ancient _____ claimed that Alexander the Great had purposely burned down the city's structures after he and his army had conquered Persepolis in 330 BCE.

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

A. historians Diodorus Siculus, and Quintus Rufus

B. historians, Diodorus Siculus and Quintus Rufus,

C. historians, Diodorus Siculus and Quintus Rufus

D. historians Diodorus Siculus and Quintus Rufus

17

 Mark for Review

Homer was an ancient Greek poet who lived during the 8th century BCE, but he is not the world's earliest known author. During the 23rd century BCE in ancient Mesopotamia, Enheduanna, a high priestess, wrote poems and _____ during the 24th century BCE in ancient Egypt, a government official named Ptahhotep wrote aphorisms and maxims intended to guide young people.

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

A. hymns, earlier,

B. hymns earlier,

C. hymns;

D. hymns,

18

 Mark for Review

Although it is often assumed that one of the essential characteristics of mammals is that they give live birth to their young, there are actually two species of egg-laying _____ *Ornithorhynchus anatinus*, more commonly known as the duck-billed platypus, and *Tachyglossus aculeatus*, also called a short-beaked echidna or spiny anteater.

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

A. mammals:

B. mammals.

C. mammals;

D. mammals

19



Mark for Review

In analyzing the designs, career, and legacy of English fashion designer Charles Frederick Worth, _____ have declared him to be the first modern fashion designer.

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

A. the praise from many historians has been for Worth's pioneering work in high-end dressmaking; they

B. many historians have praised Worth as a pioneer of high-end dressmaking and

C. Worth's pioneering work in high-end dressmaking has been praised by many historians, who

D. there are many historians who have praised Worth as a pioneer of high-end dressmaking, and they

20

 Mark for Review

Amazon, one of the largest technology companies in the world, was founded in 1994 as an online bookstore and has gone on to acquire a seller of audiobooks, _____ Twitch, in 2014; and a supermarket chain, Whole Foods Market, in 2017.

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

A. Audible, in 2008, a live streaming platform,

B. Audible; in 2008, a live streaming platform;

C. Audible; in 2008, a live streaming platform,

D. Audible, in 2008; a live streaming platform,

21

 Mark for Review

Scientists have used common materials, including aluminum, sulfur, and salt, to create a new type of battery. Lithium-ion batteries were the most popular battery in the past, but they are becoming harder and more expensive to make due to a shortage of lithium. _____ the new battery

provides many benefits: it is low-cost, it is able to resist failures and fires, and it charges faster than typical batteries do.

Which choice completes the text with the most logical transition?

A. In comparison,

B. What's more,

C. Similarly,

D. In addition,

22

 Mark for Review

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

- Anton Stamitz was a composer.
- He wrote symphonies, string quartets, and concertos.
- A concerto is a musical composition for a soloist and an ensemble.
- Stamitz wrote a concerto for viola, a string instrument, in 1774.
- He wrote a concerto for flute, a woodwind instrument, in 1780.

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

A. The viola is a string instrument, and the flute is a woodwind instrument.

B. The concertos, or musical compositions for a soloist and an ensemble, were both written by Stamitz in the late 1700s.

C. Stamitz wrote numerous concertos, including one for viola and one for flute.

D. While both were written by Stamitz, the 1774 concerto is for viola, and the 1780 concerto is for flute.

23



Mark for Review

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

- The Pyramid of Menkaure is a pyramid in Egypt.
- It is thought to have been built in the 26th century BCE by the ancient Egyptians.
- It is 213 feet tall.
- The Pyramid of the Sun is a pyramid in what is now Mexico.
- It is thought to have been built around 200 CE by the ancient Teotihuacanos.
- It is 216 feet tall.

The student wants to compare the heights of the two pyramids. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. Both the Pyramid of Menkaure, which is located in Egypt, and the Pyramid of the Sun, which is located in what is now Mexico, are examples of ancient pyramids.

B. Some of the world's pyramids, including one that is thought to have been built around 200 CE by the ancient Teotihuacanos, are taller than 200 feet.

C. The Pyramid of Menkaure is 213 feet tall, while the slightly taller Pyramid of the Sun is 216 feet tall.

D. The Pyramid of Menkaure, which is 213 feet tall, is thought to have been built in the 26th century BCE by the ancient Egyptians.

24



Mark for Review

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

- Coral reefs are ocean ecosystems that are held together by a process called net calcification.
- Some coral reefs have exhibited decreased net calcification.
- Carbon dioxide emissions cause the ocean's pH levels to decrease.
- A decrease in the ocean's pH levels results in decreased net calcification.

The student wants to specify the reason that some coral reefs have changed. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. When the ocean's pH levels decrease, there is decreased net calcification.

B. Coral reefs are held together by net calcification, which has decreased in some places.

C. Net calcification holds coral reefs together, and carbon dioxide emissions have reduced the ocean's pH levels.

D. Net calcification has decreased in some coral reefs as a result of a decrease in the ocean's pH levels.

25

 Mark for Review

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

- Each year, trillions of animals migrate by flying through the air.
- Insects, such as mosquitos, butterflies, bees, locusts, and moths, are among the most common migratory animals.
- It has been assumed that insects migrate in a random fashion, being heavily impacted by the changing winds.
- Researchers from the Max Planck Institute of Animal Behavior led a study in which hawkmoths were tagged and monitored as they migrated from Germany to the Alps.
- The study's surprising results demonstrated that the hawkmoths have more sophisticated flight strategies than previously thought.

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

A. It has been assumed that insects migrate in a random fashion, so researchers from the Max Planck Institute of Animal Behavior studied the migratory habits of hawkmoths.

B. Researchers from the Max Planck Institute of Animal Behavior tagged and monitored hawkmoths, which, like mosquitos, butterflies, bees,

and locusts, are migratory animals.

C. Trillions of animals migrate through the air each year; recently, one such animal was tagged and monitored.

D. The study's surprising results demonstrated that rather than migrating in a random fashion, as was previously assumed, hawkmoths exhibit sophisticated flight strategies.

26



Mark for Review

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

- In the 1950s, Indian author Kalki Krishnamurthy published *The Son of Ponni*.
- His epic novel (2,210 pages) tells the story of Prince Arulmozhivarman, an emperor of the Chola Dynasty in India.
- Between 1913 and 1927, French author Marcel Proust published *In Search of Lost Time*.
- In Proust's epic novel (4,215 pages), a narrator reflects on his memories.
- The novel explores the transformation of early 20th-century French society.

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

A. Krishnamurthy's novel is set in India during the Chola Dynasty, while Proust's is set in early 20th-century France.

B. Krishnamurthy, an Indian author, published his novel in the 1950s; Proust, a French author, published his between 1913 and 1927.

C. Although both Krishnamurthy's and Proust's novels tell the life stories of two men, the settings of the two novels are quite different.

D. Krishnamurthy's and Proust's novels are both epic at 2,210 pages and 4,215 pages, respectively.

27



Mark for Review

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

- In the 1890s, newspaper publishers Joseph Pulitzer and William Randolph Hearst were competitors.
- Their newspapers used sensationalist coverage to drive sales.
- One issue that was sensationally covered was the tyrannical manner in which Spain ruled its then colony of Cuba.
- Another issue was the sinking of a US battleship near Cuba, which the newspapers blamed on Spain without evidence.
- The newspapers' coverage persuaded Americans to favor war, and in 1898, the United States declared war on Spain.

The student wants to emphasize the role that journalism played in a declaration of war. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. Persuaded by sensationalist journalism, Americans came to favor war with Spain, and then the United States declared war.

B. The newspaper publishers Joseph Pulitzer and William Randolph Hearst competed with each other using sensationalist coverage.

C. The newspapers run by Joseph Pulitzer and William Randolph Hearst were highly critical of Spain.

D. In 1898, the United States declared war on Spain, which had been blamed for the sinking of a US battleship.

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.

Section 1, Module 2—Easier: Reading and Writing

SAT Prep Test 3—Reading and Writing

Module 2—Easier

Turn to Section 1 of your answer sheet to answer the questions in this section.

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).

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1

 Mark for Review

As the first two people to build a functioning plane, Orville and Wilbur Wright had a _____ impact on the aviation field. With the first successful flight (1903), the Wright brothers' determination and motivation took the aviation era from experimental to more advanced, eventually leading to commercialized flights.

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

A. powerful

B. moderate

C. complicated

D. questionable

2

 Mark for Review

American researcher Percy Julian's _____ his fields of interest—chemistry and entrepreneurship—led him to develop groundbreaking methods for synthesizing important medications and to establish a successful chemical manufacturing company.

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

A. questions about

B. anxiety toward

C. dedication to

D. bewilderment at

3

 Mark for Review

Discovering and distinguishing prehistoric bones is an essential part of gaining insight into past organisms, but this process can be challenging due to a lack of sufficient data and proper funding. Paleontologist Mary Anning

and her team were able to _____ these challenges and, after many years of hard work, made the groundbreaking discovery of the first complete plesiosaur.

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

A. conquer

B. criticize

C. visualize

D. demonstrate

4



Mark for Review

According to American microbiologist Jonas Salk, the appropriate approach to medicine is to take advantage of the processes through which the body _____ itself; while few joined him in this belief at the time, Salk was convinced that injecting an inert virus into the body would cause the body to attack the introduced illness and protect itself against future infections.

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

A. dismantles

B. rehabilitates

C. establishes

D. outgrows

5



Mark for Review

Research conducted by engineer Nils Bohlin suggested that a three-point seatbelt could protect both the upper and lower halves of the torso during a collision. This made it superior to the two-point seat belt, which only covered the bottom portion of the torso and often failed to _____ internal damage when in a collision.

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

A. disrupt

B. analyze

C. prevent

D. benefit

6



Mark for Review

Microbiologist Maurice Hilleman used samples of the mumps virus collected from his daughter to create the mumps vaccine. He used the same

method of weakening the virus before injecting it into a patient as was used to design the measles vaccine, making it _____ other vaccines of the time in its ability to assist the immune system in recognizing the target virus and therefore prevent future outbreaks of the disease.

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

A. reliant on

B. distinct from

C. superior to

D. similar to

7

 Mark for Review

Joseph Lister received the nickname “The Father of Antiseptic Treatment” for his work in solving the issue of infections in wounds by encouraging surgeons to clean their hands and utilize carbolic acid to clean medical equipment before surgeries. Many skeptical surgeons argued that these practices would be _____ since sanitizing prior to medical procedures had traditionally been thought of as unhelpful.

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

A. futile

B. redundant

C. beneficial

D. mandatory

8

 Mark for Review

Text 1

In 1861, Johann Andreas Wagner discovered fossils of the archaeopteryx, the earliest known bird, in Germany. The archaeopteryx had feathers and several bird-like features while also having teeth and a long bony tail like a dinosaur; additionally, the archaeopteryx had a large brain similar to that of a bird. Thus, the discovery of the fossils established a link between birds and dinosaurs.

Text 2

A British team of researchers challenged the link between birds and dinosaurs by questioning the conclusion from the archaeopteryx fossils that the brain of that dinosaur correlates with that of a bird based on size. The team, led by Dr. David Hone, has discovered that bats also have brains similar in size to the archaeopteryx, further questioning if the archaeopteryx was truly a bird or some other flying species. Thus, the archaeopteryx cannot be conclusively determined to be a bird based on the fossils.

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

A. By noting that while there is support for the claim, the findings of Hone’s team provide less conclusive evidence for it than the discovery made by Wagner does.

B. By challenging the claim for being based on a theory that before the development of feathers and bird-like features, the archaeopteryx looked more like a dinosaur.

C. By largely agreeing with the claim but arguing that the link between brain size and species classification it assumes is contradictory to the discovery made by Wagner.

D. By criticizing the claim for assuming that other species besides birds could not also possess large-sized brains.

9



Mark for Review

The following text is adapted from Carolyn Wells’s 1905 novel *Patty in the City*.

The dining-room, too, excited Ethelyn’s admiration. The soft thick carpets, and daintily laid tables, each with its vase of flowers, seemed suddenly to her far more desirable than the well-appointed dining-room in her own home at Villa Rosa.

Ethelyn was of an envious disposition, and though she was indulged and petted by her parents, she always wanted the belongings of someone else. She determined right then and there to coax her father to close up Villa Rosa and come to New York for the winter, though she had little hope that he would do so.

According to the text, what is true about Ethelyn?

A. She aspires to be more like her parents.

B. She desires the possessions and belongings of others.

C. Traveling to places is her preferred pastime.

D. Winter is her preferred time of year.

10



Mark for Review

There are a number of ways insect parasites overtake their hosts. Biologists had believed that parasites attack when their hosts are most vulnerable, during the egg stage. However, Dr. Edward Assmuss and his team believed that many parasites may wait until the insect host is further developed or grown, therefore providing more potential nourishment to the parasite. To prove this hypothesis, the team placed members of a group of parasitic flies known as Phora in an enclosure with honeybees at different stages of life. Some of the honeybees were still in the egg stage, while others were in the larval stage of development, which occurs after the hatching of the egg.

Which detail, if true, would most directly support the team's hypothesis?

A. The Phora attacked all honeybees in the enclosure regardless of developmental stage.

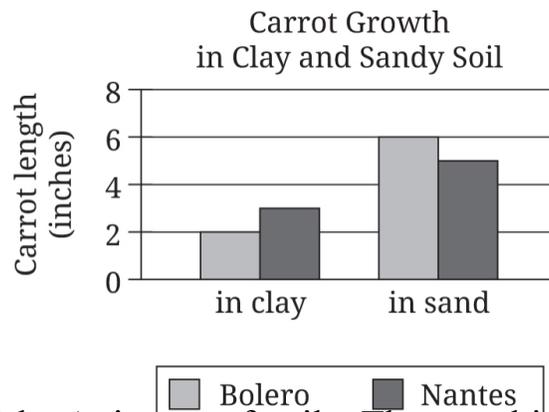
B. The Phora appeared to locate the egg stage honeybees more easily than they did the larval stage honeybees.

C. In general, the Phora attacked the honeybees in the larval stage with much greater frequency than those in the egg stage.

D. In general, the Phora attacked the honeybees in the egg stage much more quickly than those in the larval stage.

11

Mark for Review



Carrots are a part of the Apiaceace family. They are biennial, which means they grow their taproot, or main root, the first year and then flower and go to seed the second year. Because the carrot's taproot is essential to healthy carrot growth, this area needs great attention during the growing process. Carrots that are grown in compact soil often struggle and do not produce a robust taproot. Darian and her colleagues are researching the proper medium for growing carrots and grow two varieties, the Bolero and the Nantes, in both sand and clay. They hypothesize that carrots grown in sand, which is non-compact, will be longer than those that are grown in clay.

Which choice best describes data from the graph that support Darian and her colleagues' hypothesis?

A. The Nantes carrots grew more in clay than did the Bolero carrots, but the Bolero carrots grew more in sand than did the Nantes carrots.

B. The carrots grown in sand reached longer lengths for both the Bolero and Nantes varieties than did the carrots grown in clay.

C. Nantes carrots reached lengths of approximately five inches in clay but only lengths of approximately three inches in sand.

D. Both types of soils failed to produce either Bolero or Nantes carrots exceeding a length of six inches.

12



Mark for Review

“Let America Be America Again” is a poem written in 1939 by Langston Hughes, who is recognized as one of the most famous Black poets, playwrights, novelists, and social activists. This poem conveys Hughes’s conflicting viewpoints on what is promised by the American Dream and what American life really is.

Which quotation from “Let America Be America Again” most effectively illustrates the claim?

A. “Let America be the dream the dreamers dreamed— / Let it be that great strong land of love / Where never kings connive nor tyrants scheme.”

B. “Tangled in that ancient endless chain / Of profit, power, gain, of grab the land! / Of grab the gold! Of grab the ways of satisfying need!”

C. “I am the farmer, bondsman to the soil. / I am the worker sold to the machine. / I am the Negro, servant to you all. / I am the people, humble, hungry, mean.”

D. “The land that never has been yet— / And yet must be—the land where every man is free. / The land that’s mine—the poor man’s, Indian’s, Negro’s, ME.”

13



Mark for Review

Born in the Dominican Republic and fleeing from that country at a young age, writer Julia Alvarez focuses much of her writing on her experience as an immigrant, her bicultural identity, and the role of women in public life. Her novels explore the apathy revolving around the lack of accessible health care in countries with a high rate of poverty, helping readers to become aware of this inequality and seek change to correct it. In an essay, a student states that specific aspects of Alvarez’s work help to introduce this inequality to readers in an accessible way.

Which quotation from a scholarly review of Alvarez’s work best supports the student’s claim?

A. “In Alvarez’s most recent novel, she focuses on a family living in the Dominican Republic who rely on a volunteer organization for health care.”

B. “Alvarez’s novels explore life in the Dominican Republic, namely, how a group of sisters work together to help the citizens escape the rule of the country’s dictator.”

C. “When Alvarez moved to the United States, she was forced to learn a new language and become familiar with new and unfamiliar customs in order to fit in with her community.”

D. “Alvarez’s husband is a doctor who has traveled to many impoverished countries, where he has assisted with the medical treatment of many citizens.”

14

 Mark for Review

The soil is made up of organic compounds, such as nitrogen, carbon, potassium, and magnesium, which are released by decaying vegetable and organic matter and by fertilizers added to the soil. As plants grow, they require these nutrients to prevent disease and pest infestation. Free nitrogen in the soil is inaccessible to plants, as it is an insoluble compound—but organisms such as denitrifying bacteria existing in soil can break down free nitrogen molecules so they can be combined into elements that plants can absorb. Therefore, researchers suggest that to improve plant growth, it would be helpful to _____

Which choice most logically completes the text?

A. ascertain the exact percentage of nitrogen that can be broken down by bacteria in the soil.

B. create new processes for denitrifying the soil to assist plant life.

C. introduce organisms similar to denitrifying bacteria that would convert free nitrogen into soluble elements.

D. reduce the percentages of other elements in the soil so that plants are able to absorb the free nitrogen.

15



Mark for Review

Rote memorization of poetry, or learning a poem through repetition, is a valuable academic exercise because it deepens students' knowledge of the language and structure of a poem. In a survey of high school teachers, most said it was important for their students to study poetry in literature class. However, only about 10% of the teachers were in favor of asking students to utilize rote memorization on a poem. This result suggests that _____

Which choice most logically completes the text?

A. rote memorization of poetry may be more valuable than many teachers believe it to be.

B. rote memorization of poetry can benefit students more than it can benefit teachers.

C. many teachers may not know how to incorporate rote memorization in their classrooms.

D. many teachers assume that rote memorization is only for academics who study poetry as a profession.

16

 Mark for Review

Artist Frances Stark employs carbon paper tracings instead of handwritten text _____ her works of art, often incorporating repetition and visual or mixed-media motifs to represent an emotion or mood in her pieces.

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

A. to create

B. creates

C. created

D. is creating

17

 Mark for Review

Endemic to Antarctica, *Scottnema lindsayae*, a nematode worm species, eats yeast, algae, and bacteria. This species is uniquely adapted to survive in the freezing and arid conditions of the McCurdo Dry Valleys, _____ to persist through the cold winters and complete its 218-day life cycle.

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

A. hibernated

B. hibernates

C. to hibernate

D. hibernating

18



Mark for Review

The dwarf planet 90377 Sedna, composed primarily of water, methane, and nitrogen, orbits the Sun in one of the largest paths in the entire Solar System, such that it _____ a maximum distance greater than 31 times Neptune's maximum distance from the Sun.

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

A. is attaining

B. will attain

C. attains

D. had attained

19



Mark for Review

Artist and filmmaker Wu Tsang explored the ambiguity between life and death in her film *You're Dead to Me* (2013), in which a mourning mother processes the loss of her daughter the night before the holiday Día de los Muertos. Tsang's other work _____ on the stories of marginalized people and the process of performing.

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

A. are

B. were

C. have focused

D. has focused

20



Mark for Review

The Alaska Permanent Fund, established in 1976, consists of over 64 billion dollars generated from profits from the Trans-Alaska Pipeline System, allowing _____ to receive dividends from the oil that may run out for future generations.

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

A. people's descendant's

B. people's descendants

C. peoples descendant's

D. peoples descendants

21



Mark for Review

A symbol of Latvian liberation that _____ in the city of Riga, the Freedom Monument was built in 1935 to honor soldiers who lost their lives during the Latvian War of Independence.

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

A. stand

B. have stood

C. were standing

D. stands

22



Mark for Review

Polk C. Brockman, a furniture store owner, was working for Okeh Records when he traveled to New York City on a business trip and saw video footage of Fiddlin' John Carson performing in Virginia. Brockman

_____ Okeh Records to issue a recording of Carson, which sold out immediately.

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

A. was persuading

B. persuaded

C. persuades

D. had persuaded

23



Mark for Review

The Krakelingen “kringle throw” celebrates the cycle of life in the town of Geraardsbergen, Belgium. This event has historically involved a local official drinking a small fish. By the time animal rights organizations began protesting the practice in 1997, the habit _____ practiced for over 400 years and was considered too important to the festival to eliminate.

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

A. will be

B. has been

C. had been

D. is

24

 Mark for Review

Berenice Alice Abbott was a photographer from the US who captured a wide variety of subjects with her camera. _____ she photographed cultural figures, architectural structures, and scientific discoveries throughout her career. Some of her photos were used in physics textbooks and helped to improve high school physics classes.

Which choice completes the text with the most logical transition?

A. Otherwise,

B. By contrast,

C. For example,

D. For these reasons,

25

 Mark for Review

Named after a commander of the ZANLA guerrilla army in South Africa, Tongo Eisen-Martin is an activist and poet of African American descent. Eisen-Martin first published an award-winning book of poems in 2017. _____ he published a book in 2020 that was named a Best Poetry Book of 2021 by *The New York Times*.

Which choice completes the text with the most logical transition?

A. Then,

B. Despite this,

C. Hence,

D. In comparison,

26



Mark for Review

In 1799, naturalist and explorer Alexander von Humboldt noticed that a star in the night sky seemed to be moving. _____ the star wasn't actually moving. Humboldt was experiencing the autokinetic effect, a visual phenomenon that occurs when a small, stationary point of light in a dark environment, such as a star in the night sky, appears to move.

Which choice completes the text with the most logical transition?

A. For example,

B. Likewise,

C. On the other hand,

D. However,

Nellie Bly was an American investigative journalist well-known for an exposé she wrote after spending 10 days undercover in a mental institution. _____ she set a record for traveling around the world in 72 days, a journey based on the work of Jules Verne.

Which choice completes the text with the most logical transition?

A. As a result,

B. Likewise,

C. Thus,

D. Additionally,

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.

Section 1, Module 2—Harder: Reading and Writing

SAT Prep Test 3—Reading and Writing Module 2—Harder

Turn to Section 1 of your answer sheet to answer the questions in this section.

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

Regarded as a founder of medical microbiology, Louis Pasteur was a researcher at the University of Lille in 1854. There, Pasteur discovered that passing oxygen through a fluid could stop its fermentation, creating an environment that was no longer _____ bacteria growth.

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

A. available for

B. reminiscent of

C. inhospitable to

D. conducive to

2

 Mark for Review

Completed in 1937, *Metamorphosis of Narcissus* was Salvador Dalí's interpretation of the Greek myth of Narcissus. Known for his _____ style, Dalí painted *Metamorphosis* in accordance with the paranoiac critical method, a surrealist technique he created and named himself, in which he worked in a paranoid state to find connections between objects that are not rationally linked.

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

A. unfathomable

B. orthodox

C. eccentric

D. unreliable

3

 Mark for Review

Modern reviews of Mozart's opera *The Marriage of Figaro* typically praise the uprising of the opera's lower class individuals against unfair treatment _____ by the Spanish nobility. Most other operas set during this period

end in tragedy, with the members of the lower class having their desires crushed by the corrupt noblemen and women, though Figaro is a memorable deviation from this norm.

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

A. inflicted

B. interrupted

C. accomplished

D. explained

4



Mark for Review

Throughout her novels, rather than merely _____ the issues surrounding inequality, Toni Morrison uses specific techniques: intricate language, with its ability to describe horrific situations; flashbacks and stories, clearly depicting miscarriages of justice; and vivid imagery, revealing the savagery that one group unleashed upon another.

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

A. substituting

B. confusing

C. supplementing

D. referencing

5

 Mark for Review

Text 1

According to the theory of classical conditioning, humans are controlled by external stimuli within their environment, which trigger responses and then patterns of new, learned behavior in an individual. Some psychologists who champion classical conditioning believe that there is no innate human mind at all and that people’s behaviors are solely a result of the stimuli they experience: different experiences lead to different responses and, ultimately, different personalities.

Text 2

Throughout his career, psychoanalyst Sigmund Freud argued that the decisions humans make are governed by their unconscious mind, which consists of three components—the id, ego, and superego—that each play a significant role in human behavior. Freud’s argument was based on the concept that humans must possess certain instinctual impulses at birth based on observations of young children attempting to learn control over those impulses.

Based on the texts, how would Freud (Text 2) most likely respond to the idea of “classical conditioning” presented in Text 1?

A. By disagreeing with the claim that human beings are shaped only by external stimuli that become learned behavior

B. By admitting that external stimuli play an important part in the development of the subconscious through association

C. By questioning the belief that the development of the id is dependent upon learning from the consequences of a behavior

D. By confirming that the innate human mind does not develop until exposure to external stimuli

6

 Mark for Review

It has been long believed that Earth is the only planet in the solar system with tsunamis—series of waves generated by the displacement of a massive quantity of water such as an ocean or lake—that are often caused by mountain landslides. In an article that aims to broaden our current scope of knowledge regarding tsunamis, scientist Fabio Vittorio De Blasio and colleagues released research describing evidence of a massive landslide, which left a path of destruction so lengthy that it could only have been caused by a massive volume of water, originating on Mars’s Olympus Mons.

According to the text, why was De Blasio and his colleagues’ research on the Olympus Mons landslide significant?

A. The evidence found by De Blasio and colleagues supports the idea of a tsunami occurring somewhere other than the Earth.

B. The evidence found by De Blasio and colleagues suggests that the Earth had larger tsunamis in the past than it does today.

C. The team's research assists researchers in investigating the idea that Mars may be more suitable for human life than was previously believed.

D. The team's research assists geologists in constructing an accurate timeline of topographical changes on Mars.

7

 Mark for Review

The following text is adapted from Carolyn Wells's 1905 novel *Patty in the City*.

The dining-room, too, excited Ethelyn's admiration. The soft thick carpets, and daintily laid tables, each with its vase of flowers, seemed suddenly to her far more desirable than the well-appointed dining-room in her own home at Villa Rosa.

Ethelyn was of an envious disposition, and though she was indulged and petted by her parents, she always wanted the belongings of someone else. She determined right then and there to coax her father to close up Villa Rosa and come to New York for the winter, though she had little hope that he would do so.

According to the text, what is true about Ethelyn?

A. She aspires to be more like her parents.

B. She desires the possessions and belongings of others.

C. Traveling to places is her preferred pastime.

D. Winter is her preferred time of year.

8

 Mark for Review

In 1886 Carlos J. Finlay published experimental evidence positing that yellow fever was transmitted from infected mosquitoes to healthy humans. However, other researchers refused to acknowledge Finlay's theory, until Finlay finally convinced Walter Reed, the head physician of the US Army Yellow Fever board, to investigate further. Reed isolated a group of healthy volunteers who allowed an infected mosquito to bite them and then have their blood drawn, capturing the virus in a test tube. By injecting the drawn blood into other participants, Reed was able to show a successful transmission of Yellow Fever—the first concrete demonstration that the disease originates from infected mosquitoes.

Which choice best states the main idea of the text?

A. It's challenging to determine the exact origins of Yellow Fever due to the disease's fatal nature.

B. Reed's experiment provided firm evidence for a colleague's theory about disease transmission.

C. Reed invented a novel approach for investigating the symptoms of exotic diseases.

D. Bloodwork is the most critical type of analysis needed for curing a patient with Yellow Fever.

The Great Gatsby is a 1925 novel by F. Scott Fitzgerald. In the novel, the narrator describes events surrounding Jay Gatsby and the elite social circles of East and West Egg. The novel contrasts the narrator's morality with the immorality of his social acquaintances, such as when the narrator says

Which quotation from *The Great Gatsby* most effectively illustrates the claim?

A. "Every one suspects himself of at least one of the cardinal virtues, and this is mine: I am one of the few honest people that I have ever known."

B. "And so with the sunshine and the great bursts of leaves growing on the trees, just as things grow in fast movies, I had that familiar conviction that life was beginning over again with the summer."

C. "I was within and without, simultaneously enchanted and repelled by the inexhaustible variety of life."

D. "I am still a little afraid of missing something if I forget that, as my father snobbishly suggested, and I snobbishly repeat, a sense of the fundamental decencies is parcelled out unequally at birth."

Estimates of Greenland Shark Lifespan

| Study | Year | Estimation method | Approximate lifespan (years) |
|---------------------|------|--|------------------------------|
| Fisheries biologist | 1930 | Tagging and measuring growth each year | 400 |
| Christiansen | 2009 | Satellite tagging and measurement of growth | 400 |
| Nielsen et al. | 2016 | Carbon dating and analyzing eye protein | 400–600 |
| Ste-Marie et al. | 2022 | Study of metabolic rate and food consumption | 500 |

The Greenland shark—also known as the gurry shark, grey shark, or the more casual “sleeper shark”—is a large and elusive species found in the Arctic and North Atlantic oceans. Despite difficulties in locating specimens of the Greenland shark to observe, estimates regarding the lifespan of the Greenland shark have been remarkably consistent; cold-water physiologist Michael Oellermann suggests that because of known data from more easily observable but similar shark species, approximations of the Greenland shark’s lifespan will be similar regardless of the research methods chosen to analyze it.

Which choice best describes data from the table that support Oellermann’s suggestion?

- A. The approximate lifespans determined by the Fisheries biologist, Christiansen, and Ste-Marie et al. all fell within the approximated lifespan range determined by Nielsen et al., even though there were differences in the methods used by each of the four groups.

B. The study by the Fisheries biologist used tagging for measurements and produced the lowest approximated lifespan, while the study by Neilsen et al. used carbon dating and produced the highest approximated lifespan.

C. In their study, Ste-Marie et al. used metabolic rate and food consumption to determine the Greenland shark's lifespan approximation to be 500 years.

D. Though the lifespans approximated by the Fisheries biologist and Christiansen were identical to each other, the lifespans approximated by Ste-Marie et al. and Nielsen et al. differed significantly from any other approximation.

11



Mark for Review

Although long associated with bamboo, now their sole food source, panda bears used to have a more varied diet. It is believed that approximately two million years ago, pandas switched to a diet that was exclusively bamboo based, but before then they subsisted on a diet that included both plants and meat. To investigate this further, Fuwen Wei and researchers with the Chinese Academy of Sciences compared ancient panda tooth samples to more modern panda tooth samples. Discovering that the ancient panda tooth samples have a more varied collection of scrapes and scratches on them than modern panda teeth do, Wei hypothesized that a wider variety of scrapes and scratches indicates a wider variety of foods consumed; this, therefore, would mean that ancient pandas did indeed have a more diverse diet than do their modern counterparts.

Which finding, if true, would most directly undermine Wei's hypothesis?

A. Some tooth samples included in the study were determined to be from modern pandas and therefore only had scrapes and scratches consistent with bamboo consumption.

B. Several tooth samples not included in the study suggested that modern panda teeth can show the same variety of scratches and scrapes as ancient ones do, depending on the type of bamboo consumed.

C. Several tooth samples not included in the study suggested that ancient pandas were able to evolve based on food accessibility throughout history.

D. Some tooth samples included in the study were from a species similar to pandas and contained scratches and scrapes consistent with a varied diet.

12



Mark for Review

In the Americas, the *Deinopis spinosa*—or ogre-faced spider—is a unique creature that is best known for its proactive hunting style. Neurobiologist Jay Strafstrom conducted a study to determine how the spider, which does not rely on the vibrations of a web to indicate the presence of prey as other spiders do, uses its organs to detect and jump on its prey; further research indicated that *Deinopis spinosa* must still rely on some type of vibration even if not from a web. Strafstrom and his team hypothesize that the ogre-faced spider not only uses its large eyes to see prey but also relies on auditory vibrations from its legs to hear potential prey, both while on the ground and while airborne.

Which finding, if true, would most directly support Strafstrom's hypothesis?

A. *Deinopis spinosa* is able to capture prey even when blinded due to the large webs it is capable of generating.

B. Other species in the *Deinopis* family struggle to capture prey without a web, even though they have the same eye size and auditory vibration capability in the legs that *Deinopis spinosa* does.

C. Though all members of *Deinopis spinosa* have both large eyes and auditory vibration capability, some individuals rely on webs in particularly dense jungles or forests.

D. Specimens of *Deinopis spinosa* were able to capture prey in a webless enclosure even when specimens of other spider species were unable to do so.

13



Mark for Review

Zebra mussels, an invasive species of mollusks originally from the Black and Caspian Seas, emerged in Lake St. Clair of Michigan in the 1980s and spread through the Great Lakes after being carried over on the bottom of transatlantic cargo ships. Recent investigations comparing the health of numerous bodies of water in North America and Europe, particularly in areas with increased human activities such as recreational boating and water transfers, to the health of relatively untouched aquatic ecosystems revealed increasing ecological damage from zebra mussel colonization in the areas with increased human activity. Thus, researchers can conclude that

Which choice most logically completes the text?

A. the zebra mussels present in North America and Europe have likely evolved more rapidly than those in relatively untouched aquatic ecosystems.

B. the health of human-utilized waterways in North America and Europe was more similar to the health of relatively untouched aquatic ecosystems in the past than it is in the present.

C. the spread of zebra mussels has been facilitated by human activity and has harmed the aquatic ecosystems in which that activity has taken place.

D. aquatic species living in relatively untouched ecosystems have not encountered zebra mussels.

14



Mark for Review

Signed by the United States and the Kingdom of Hawaii in 1875, the Treaty of Reciprocity made the importation of goods from Hawaii into the United States easier by removing import tariffs, which are taxes paid on imports, on Hawaiian goods. It also made the exporting of goods from the United States into Hawaii easier, giving preference to American products in Hawaii. Additionally, the treaty gave the United States sole use of Pearl Harbor in Honolulu, Hawaii, as a repair and fueling station for American ships. Although Hawaii viewed the terms of the Treaty as a sign that the United States was honoring Hawaii's independence, the treaty actually had the effect of _____

Which choice most logically completes the text?

A. facilitating an increase in both American influence in Hawaii's economy and American presence on the Hawaiian islands.

B. dissuading Hawaiian businesses from making new investments in their own economy due to the cheaper opportunities present on the United States mainland.

C. expanding the financial benefits that Hawaii gained by acquiescing to foreign rule.

D. inhibiting the possible trade that can be conducted with other nations that have not signed a similar treaty with Hawaii.

15



Mark for Review

The playwright William Shakespeare is the most famous writer in the English language. Yet for decades many scholars believed that Shakespeare, who only attended school until he was about 15, would not have had the education or the general knowledge of the world necessary to create the works that bear his name. A popular candidate for the “real” author of the plays has for many years been Edward de Vere, the 17th Earl of Oxford. He was an educated, worldly writer who died in 1604. However, because about 14 of Shakespeare's plays are generally thought to have been published after 1605, most scholars now accept that _____

Which choice most logically completes the text?

A. Shakespeare likely wrote 14 of his 15 plays after the year 1605 when his education was completed.

B. it is highly unlikely that de Vere contributed to the development of any of the plays attributed to Shakespeare.

C. the plays attributed to Shakespeare were likely written by an author who was a nobleman, not a commoner.

D. the development of the plays attributed to Shakespeare likely occurred before Shakespeare's education at Oxford.

16

 Mark for Review

In the Mediterranean basin, red flowers may produce UV-red colors as well as patterns _____ pollinators in the Hymenoptera order, which contains bees and wasps.

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

A. to attract

B. are attracting

C. attracted

D. attract

17

 Mark for Review

In 1897, Swedish explorers S. A. Andrée, Knut Fränkel, and Nils Strindberg attempted to reach the North Pole in a hydrogen balloon. Unfortunately, the _____ attempt to complete the journey on foot.

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

A. balloons' failure led to the explorers'

B. balloon's failure led to the explorers'

C. balloon's failure led to the explorers

D. balloons failure led to the explorer's

18

 Mark for Review

Moroccan-French visual artist Bouchra Khalili's works include *The Seaman*, a digital film about the port of _____ a trio of videos about immigrants' experiences in three different cities; and *The Typographer*, a 16mm film about French poet Jean Genet.

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

A. Hamburg; *The Speeches Series*

B. Hamburg, *The Speeches Series*:

C. Hamburg; *The Speeches Series*,

D. Hamburg, *The Speeches Series*,

19



Mark for Review

Part of the US Geological Survey, the Volcano Hazards Program sends notifications about any changes in volcanic activity at the 161 potentially active volcanoes in the US. By disseminating information about volcanic activity, _____

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

A. public safety can be improved and negative effects of eruptions can be minimized by the program.

B. the program's improvement of public safety and minimization of negative effects of eruptions can be attained.

C. the program can improve public safety and minimize negative effects of eruptions.

D. the improvement of public safety and minimization of negative effects of eruptions can be attained by the program.

20

 Mark for Review

In 2014, American artist Paul Chan designed and attached fabric shells to specially modified fans, calling the works *Breathers*. The shells loosely resemble _____ movements purposefully designed to be repetitive as they inflate and deflate.

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

A. people. Their

B. people; their

C. people, their

D. people, and their

21

 Mark for Review

Mexican soprano Enriqueta Legorreta portrayed Sieglinde in Wagner's *Die Walküre* in 1941 and Leonora in Beethoven's *Fidelio* in 1943. Legorreta's career wasn't limited to _____ concerns about the link between pollution and ill health spurred her to advocate for change, eventually leading to her becoming the director of the Ecological Consciousness Association.

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

A. opera however

B. opera, however,

C. opera; however,

D. opera, however;

22



Mark for Review

Unlike those of the white-bodied peppered moth, _____ they allowed the moth to better camouflage in industrial environments with high levels of air pollution.

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

A. the black-bodied peppered moth's colors provided an advantage during the Industrial Revolution:

B. an advantage during the Industrial Revolution was the black-bodied peppered moth's colors:

C. the black-bodied peppered moth has colors that provided an advantage during the Industrial Revolution:

D. the black-bodied peppered moth had an advantage during the Industrial Revolution because of its colors:

23 Mark for Review

A body of water in Antarctica that flows onto an ice-covered surface is occasionally tainted red. _____ local inhabitants assumed the color was due to a species of red algae, but later research identified the cause as a high concentration of iron oxide in the water.

Which choice completes the text with the most logical transition?

A. Initially,

B. Next,

C. After all,

D. Alternatively,

24 Mark for Review

Researchers have successfully created “synthetic” mouse embryos without using any paternal or maternal gametes or structures. The “synthetic” embryos are identical to natural mouse embryos up to about nine days post-fertilization. This discovery opens up many new areas of research for humans. _____ scientists hope to use this technology to create synthetic human embryos for research in the future.

Which choice completes the text with the most logical transition?

A. Regardless,

B. Specifically,

C. Similarly,

D. In short,

25



Mark for Review

Some neurotransmitters are linked to anxiety and depression. Scientists analyzed a particular gene and determined that some people have the amino acid isoleucine at a certain site instead of the amino acid threonine. People with threonine at the site tend to experience anxiety and depression at typical rates. _____ people with isoleucine at the site tend to experience depression and anxiety at a lower rate.

Which choice completes the text with the most logical transition?

A. Similarly,

B. Moreover,

C. Accordingly,

D. On the other hand,

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

- The Banque Misr is a bank in Cairo, Egypt, that was founded in 1920.
- The bank was the first Egyptian-owned bank in the country.
- In 2010, Egyptian artist Hassan Khan created his sculpture *Banque Bannister*.
- The sculpture is a reproduction of the original handrail outside Banque Misr.
- The sculpture is made of brass and appears to float in the air.

The student wants to introduce Hassan Khan's sculpture to an audience already familiar with the Banque Misr. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A. The sculpture created by Hassan Khan in 2010 is made of brass and is a reproduction of a handrail outside of a bank.

B. *Banque Bannister* is a reproduction of a handrail outside Banque Misr, located in Cairo, Egypt, and founded in 1920.

C. The bank Banque Misr, whose handrail was reproduced by Hassan Khan, was founded in 1920.

D. Hassan Khan's *Banque Bannister* is a reproduction of the original handrail outside of Banque Misr.

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

- Before the 1800s, tallgrass prairie covered over 150 million acres of land in the US.
- The expansion of agriculture in the 1800s led to the conversion of the majority of the prairie into farmland.
- Settlers left small areas of the prairie unplowed and generally undisturbed.
- These areas were intended to be used for cemeteries and became known as cemetery prairies.
- Today, cemetery prairies are remnants of the original tallgrass prairie and act as nature preserves.

The student wants to emphasize the reduction in tallgrass prairies in the US and specify why this reduction occurred. Which choice most effectively uses relevant information from the notes to accomplish these goals?

A. As agriculture expanded in the 1800s, settlers left small areas of tallgrass prairie unplowed so they could be used as cemeteries.

B. During the expansion of agriculture in the 1800s, settlers converted the majority of the 150 million acres of tallgrass prairie into farmland.

C. Cemetery prairies are the remnants of the tallgrass prairie that covered over 150 million acres in the US before the 1800s.

D. Cemetery prairies act as nature preserves since these areas were unplowed and undisturbed by settlers.

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.

Section 2, Module 1: Math

SAT Prep Test 3—Math

Module 1

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

The questions in this section address a number of important math skills.

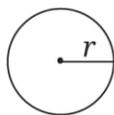
Use of a calculator is permitted for all questions.

NOTES

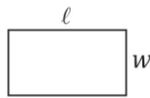
Unless otherwise indicated:

- 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.

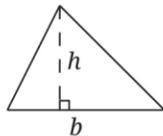
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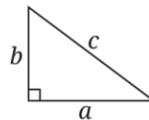
$$A = \pi r^2$$
$$C = 2\pi r$$



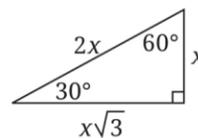
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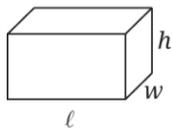
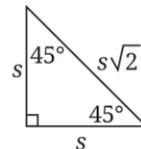
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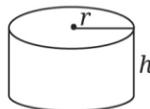
$$c^2 = a^2 + b^2$$



Special Right Triangles



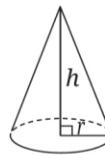
$$V = \ell wh$$



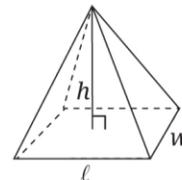
$$V = \pi r^2 h$$



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



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



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

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

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

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

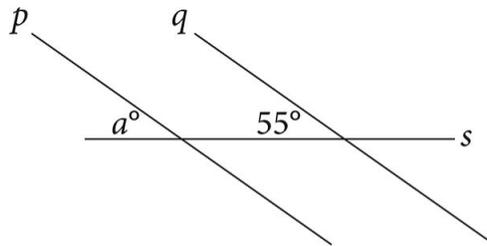
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- Don't enter **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1

Mark for Review



Note: Figure not drawn to scale.

In the figure, line s intersects parallel lines p and q . What is the value of a ?

A. 35

B. 55

C. 125

D. 145

2

Mark for Review

The wait time for each passenger in a group of passengers waiting to board a train is given in the list of numbers shown.

 $9, 12, 8, 3, 9, 13, 11, 15$

What was the mean wait time, in minutes, for the group of passengers?

3

Mark for Review

Which equation has the same solution as the equation $2x - 5 = -15$?

A. $2x = -20$

B. $2x = -10$

C. $2x = 3$

D. $2x = 75$

4

Mark for Review

A rectangular prism has side lengths of 52 centimeters, 52 centimeters, and 45 centimeters. What is the volume, in cubic centimeters, of the rectangular prism?

A. 149

B. 14,768

C. 22,210

D. 121,680

5

 Mark for Review

What is the value of n if 60% of n is 27?

6

 Mark for Review

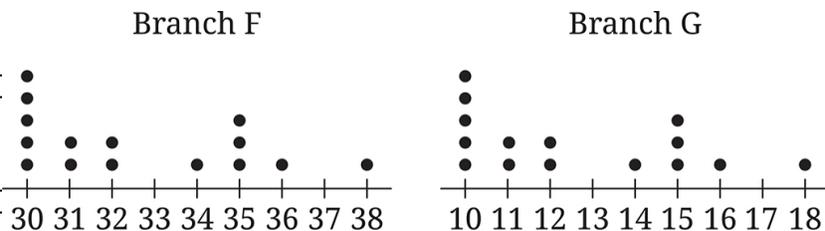
The equation $0.75s + 2.25l = 33$ models the relationship between the number of short tours, s , and the number of long tours, l , that the members of a museum staff lead on a single day. If the members of the museum staff lead 5 short tours on a single day, what is the maximum number of long tours they can lead on that day?

A. 2.25

B. 13

C. 29

D. 33



7

 Mark for Review

What is the negative solution to the equation $5x^2 - 12 = -4x$?

A. -4

B. $-\frac{12}{5}$

C. -2

D. $-\frac{6}{5}$

8

 Mark for Review

The dot plots summarize the number of new employees hired at two branches of a company, branch F and branch G, each year for the past 15 years. Which of the following statements correctly compares the standard deviations of the numbers of new employees hired by the two branches?

A. The standard deviation of the number of new employees hired at branch F is equal to the standard deviation of the number of new

employees hired at branch G.

B. The standard deviation of the number of new employees hired at branch F is less than the standard deviation of the number of new employees hired at branch G.

C. The standard deviation of the number of new employees hired at branch F is greater than the standard deviation of the number of new employees hired at branch G.

D. There is not enough information to compare the standard deviations of the numbers of employees hired at the two branches.

9

 Mark for Review

The value of a laptop computer, purchased for \$429, will decrease for the first three years at an annual rate of 25% of the previous year's value. If $y \leq 3$, which of the following equations models the value, v , in dollars, of the laptop y years after it is purchased?

A. $v = 0.75(429)^y$

B. $v = 1.25(429)^y$

C. $v = 429(0.75)^y$

D. $v = 429(1.25)^y$

10

 Mark for Review

$$f(x) = 8c^x$$

The given equation defines exponential function f , where c is a positive constant. If $f(2) = 1,152$, what is the value of $f(3)$?

11

 Mark for Review

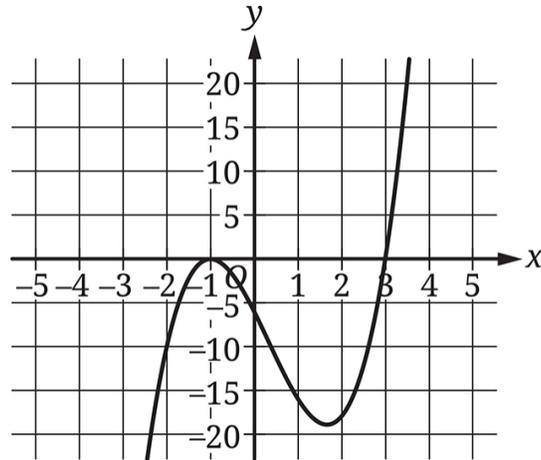
$$y = 4x + 36$$

$$y = -(x + 9)(x + 5)$$

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

12

Mark for Review



For the cubic polynomial function g , the graph of $y = g(x)$ is shown in the xy -plane. How many distinct values of x satisfy the equation $g(x) = 0$?

A. 1

B. 2

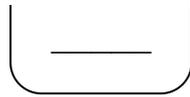
C. 3

D. 4

13

Mark for Review

The population of a town can be represented by the function $p(y) = 29,400(3)^{\frac{y}{60}}$, where y is the number of years after 2020. Based on the function, how many years will it take for the population of the town to triple?



14

 Mark for Review

$$\frac{w}{n} = 5t - 3$$

The given equation relates the positive numbers w , n , and t . Which equation correctly expresses n in terms of w and t ?

A. $n = w - (5t - 3)$

B. $n = \frac{5t - 3}{w}$

C. $n = w(5t - 3)$

D. $n = \frac{w}{5t - 3}$

15

 Mark for Review

In similar triangles QRS and TUV , angles Q and T each measure 90° and angle R corresponds to angle U . The value of $\cos(U)$ is $\frac{93}{485}$. What is the value of $\cos(R)$?

A. $\frac{93}{485}$

B. $\frac{476}{485}$

C. $\frac{485}{476}$

D. $\frac{485}{93}$

16



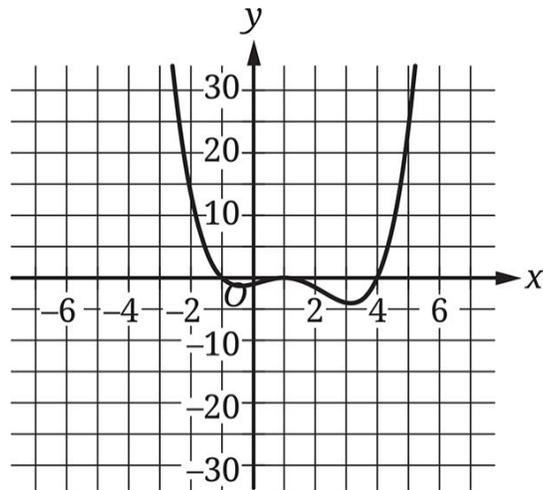
Mark for Review

A circle has center point P . The measure of central angle LPM in the circle is 65° , and the measure of associated minor arc LM is a° . What is the value of a ?

17



Mark for Review



Which equation could represent the graph shown in the xy -plane?

A. $y = \frac{1}{4}(x - 1)(x + 1)(x + 4)$

B. $y = \frac{1}{4}(x + 1)^2(x - 1)(x - 4)$

C. $y = \frac{1}{4}(x - 1)(x - 1)(x + 4)$

D. $y = \frac{1}{4}(x + 1)(x - 1)^2(x - 4)$

18



Mark for Review

Line m is perpendicular to line k , and the equation of line k in the xy -plane is $3y - 9x = 12$. What is the slope of line m ?

19

 Mark for Review

The function g is defined by $g(x) = -3x^2 + 36x - 104$. The function f is defined by $f(x) = g(x - 2)$. At which value of x does $f(x)$ reach its maximum value?

A. 2

B. 4

C. 6

D. 8

20

 Mark for Review

Survey Results

| | |
|-------------|-----|
| Art museum | 441 |
| Planetarium | 189 |

A total of 630 students at a high school were surveyed at random to see if they preferred going to the art museum or the planetarium for a field trip. The table shows the results of the survey. Based on this sample, if the school has a total of 2,520 students, how many more students can be expected to prefer going to the art museum than going to the planetarium?

A. 252

B. 756

C. 1,008

D. 1,764

21

 Mark for Review

The function g is defined as $g(x)$ equals $x\%$ of -53 , when $x > 0$. Which of the following describes this function?

A. Decreasing exponential

B. Decreasing linear

C. Increasing exponential

D. Increasing linear

22

 Mark for Review

$$y = 7x - k$$
$$y = 3x^2 + 37x + 84$$

When graphed in the xy -plane, the given system of equations has exactly one real solution at (x, y) . If k is a constant, what is the value of x ?

A. -9

B. -5

C. 5

D. 9

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.

Section 2, Module 2—Easier: Math

SAT Prep Test 1—Math

Module 2—Easier

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

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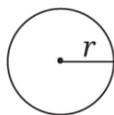
Use of a calculator is permitted for all questions.

NOTES

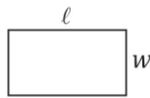
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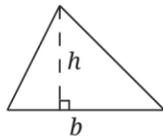
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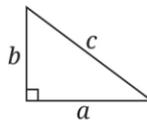
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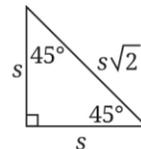
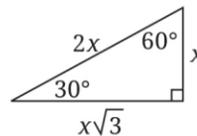
$$A = \ell w$$



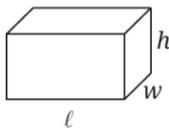
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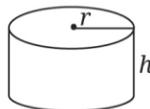
$$c^2 = a^2 + b^2$$



Special Right Triangles



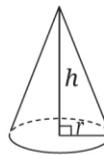
$$V = \ell wh$$



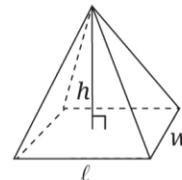
$$V = \pi r^2 h$$



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



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



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

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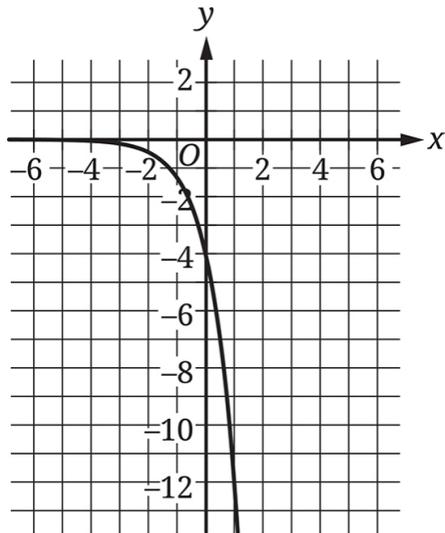
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1

Mark for Review



For the graph shown, what is the y -intercept?

A. $(-4, -4)$ B. $(-4, 0)$ C. $(0, -4)$ D. $(0, 0)$

2

Mark for Review

What is the solution to the equation $w - 19 = 513$?

A. 27

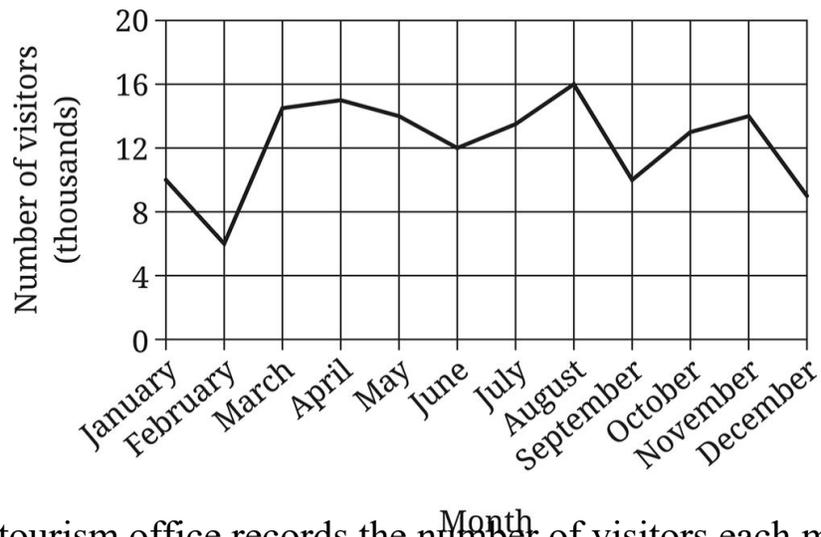
B. 494

C. 532

D. 9,747

3

 Mark for Review



An island's tourism office records the number of visitors each month. The line graph shows the number of visitors, in thousands, each month for the past year. Which month of the year had the least number of visitors?

A. February

B. March

C. August

D. December

4



Mark for Review

$$n = 7m - 2$$

In the given equation, what is the value of n when the value of m is 6?

5



Mark for Review

What is an equivalent distance, in meters, to a distance of 28 kilometers? (1 kilometer = 1,000 meters)

A. 0.028

B. 0.28

C. 2,800

D. 28,000

6

 Mark for Review

If the measure of angle W is $\frac{9\pi}{20}$ radians, what is the measure of angle W in degrees?

7

 Mark for Review

If $|y + 3| = 15$, what is one possible value of y ?

8

 Mark for Review

Giovanni makes homemade candles in tins with an average weight of 4.6 ounces of candle wax per tin. Given this average weight, which of the following functions can Giovanni use to estimate the number of ounces of candle wax, w , that are in t tins?

A. $w(t) = t - 4.6$

$$\text{B. } w(t) = t + 4.6$$

$$\text{C. } w(t) = \frac{t}{4.6}$$

$$\text{D. } w(t) = 4.6t$$

9

 Mark for Review

A local organization rents a classroom for 5 hours at an hourly rate. The organization also pays a one-time booking fee of \$5 in addition to the hourly rate. The total cost of renting the classroom is \$65. What is the rate, in dollars, for renting the classroom for 1 hour?

10

 Mark for Review

$$(6a^2 - 5a + 1) + (-2a^2 - a - 4)$$

Which expression is equivalent to the given expression?

$$\text{A. } 4a^2 - 6a - 3$$

$$\text{B. } 4a^2 - 5a - 3$$

$$C. 8a^2 - 6a + 5$$

$$D. 8a^2 - 5a - 3$$

11



Mark for Review

6 less than 2 times a number z equals -15 . Which equation represents this situation?

$$A. (2)(-6)z = -15$$

$$B. 2z = -15 - 6$$

$$C. 2z - 6 = -15$$

$$D. 6z - 2 = -15$$

12



Mark for Review

$$70b - 7b^2$$

Which expression is equivalent to the given expression?

$$A. b(10 - 7b)$$

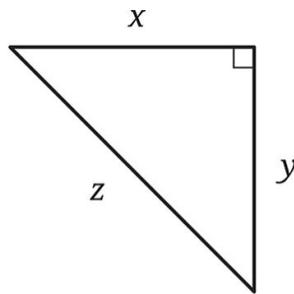
$$B. 7b(10 - b)$$

C. $10b(7 - 7b)$

D. $b^2(10 - 7b)$

13

Mark for Review



Note: Figure not drawn to scale.

If $x = 5$ and $z = 12$ in the right triangle shown, which expression is equivalent to y ?

A. $\sqrt{12^2 - 5^2}$

B. $\sqrt{12 - 5}$

C. $12 - 5$

D. $\sqrt{\frac{12}{5}}$

14

 Mark for Review

$$\begin{aligned} -12 &= x - y \\ 3y &= x \end{aligned}$$

Which point (x, y) is the solution to the given system of equations in the xy -plane?

A. $(-20, -8)$ B. $(-18, -6)$ C. $(-16, -4)$ D. $(-14, -2)$

15

 Mark for Review

| x | $g(x)$ |
|-----|--------|
| 0 | 15 |
| 3 | 21 |
| 6 | 27 |
| 9 | 33 |

The table shows the relationship between corresponding values of x and $g(x)$ for linear function g . Which of the following equations defines $g(x)$?

A. $g(x) = x + 33$

B. $g(x) = 2x + 15$

C. $g(x) = 21x + 15$

D. $g(x) = 33x + 27$

16



Mark for Review

The function f is defined by $f(x) = \frac{1}{4}x^2$. When $f(x)$ equals 36, what is the positive value of x ?

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

B. 12

C. 72

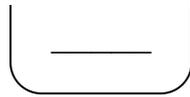
D. 144

17

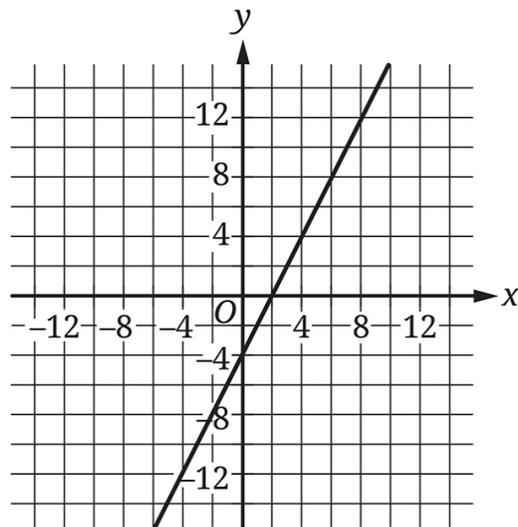


Mark for Review

Rectangle A has a length of 45 inches (in) and a width of 57 in. What is the perimeter, in inches, of rectangle A?



18

 Mark for Review

Which equation could represent the graph shown in the xy -plane?

A. $y = \frac{1}{2}x - 4$

B. $y = 2x + 4$

C. $y = \frac{1}{2}x + 4$

D. $y = 2x - 4$

19

 Mark for Review

An elevator has a maximum weight restriction of 700 kilograms. What is the maximum number of packages that can be transferred on the elevator in a cart if the weight of the cart is 50 kilograms and the weight of each package is 15 kilograms?

A. 42

B. 43

C. 44

D. 46

20

 Mark for Review

The function $g(x) = 9x + 126$ is graphed in the xy -plane. What is the x -coordinate of the x -intercept of the graph of $y = g(x)$?

A. -14

B. -9

C. 9

D. 14

21

 Mark for Review

In triangle PQR , angle P measures 35° and angle Q measures 43° . In triangle LMN , angle M measures 43° and angle N measures 35° . Which additional piece of information is necessary to determine whether triangle PQR and triangle LMN are similar?

A. The lengths of sides PQ and MN

B. The measure of angle L

C. The length of side LM

D. No additional information is necessary.

22

 Mark for Review

A chef separates 160 liters of oil into two containers. The first container holds q liters of oil, and the second container holds r liters of oil, which is 8 less than 5 times q . What is the value of r ?

A. 40

B. 102

C. 132

D. 792

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.

Section 2, Module 2—Harder: Math

SAT Prep Test 3—Math

Module 2—Harder

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

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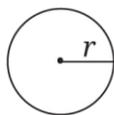
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NOTES

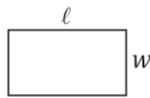
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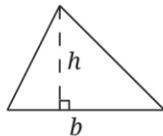
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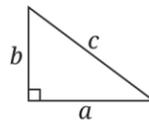
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$$C = 2\pi r$$



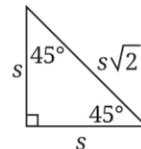
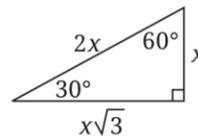
$$A = \ell w$$



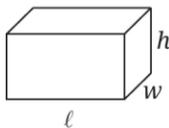
$$A = \frac{1}{2}bh$$



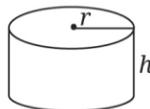
$$c^2 = a^2 + b^2$$



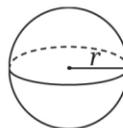
Special Right Triangles



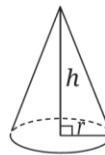
$$V = \ell wh$$



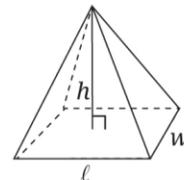
$$V = \pi r^2 h$$



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



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



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

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

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

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

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.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction ($\frac{7}{2}$) or its decimal equivalent (3.5).
- Don't enter **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1

Mark for Review

Which expression is equivalent to $15x^5 + 7x^5$?

A. $8x^5$ B. $8x^{10}$ C. $22x^5$ D. $22x^{10}$ **2**

Mark for Review

How many solutions does the equation $75x = -75x$ have?

A. Exactly one

B. Exactly two

C. Infinitely many

D. Zero

3

Mark for Review

$$\begin{aligned} -5y &= 30 \\ 4x + 5y &= -10 \end{aligned}$$

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

A. -6

B. 2

C. 5

D. 10

4



Mark for Review

$$f(x) = -2.99x + 21$$

The given function models the amount of money $f(x)$, in dollars, that Olivia has remaining in her budget after she rents x movies from a streaming service, where $x \leq 7$. If the function is graphed in the xy -plane, what is the best interpretation of the slope of $y = f(x)$?

A. Olivia had \$2.99 in her budget when she started to rent the movies.

B. Olivia spent \$2.99 to rent each movie.

C. Olivia spent \$21 to rent each movie.

D. Olivia had \$21 in her budget when she started to rent the movies.

5

 Mark for Review

If the measure of angle T is $\frac{49\pi}{60}$ radians, what is the measure of angle T in degrees?

6

 Mark for Review

A community theater's sales department analyzed its records for ticket sales for the past year. According to the records, 19,200 fewer tickets were sold for dramatic performances than for musicals. The sales department determined that 4 times as many tickets were sold for musicals as were sold for dramatic performances. Based on the theater's records, how many tickets were sold for musicals?

A. 4,800

B. 6,400

C. 19,200

D. 25,600

7

 Mark for Review

A right triangle has a hypotenuse with a length of 56 inches and one leg with a length of 16 inches. The length of the other leg, in inches, can be written as $24\sqrt{s}$. If s is an integer, what is the value of s ?

8

 Mark for Review

| Number of years | Accounting | Marketing |
|-----------------|------------|-----------|
| 1 | 19 | 6 |
| 2 | 14 | 5 |
| 3 | 7 | 5 |
| 4 | 8 | 19 |
| 5 | 6 | 19 |

The accounting and marketing departments of a local business consist of 54 employees each. The frequencies of the number of years the employees have worked with the company are shown in the table. Which statement

correctly compares the mean number of years worked by employees for the two departments?

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

B. The means of the number of years for the departments are equal.

C. The mean number of years for the Accounting department is less than the mean number of years for the Marketing department.

D. The mean number of years for the Accounting department is greater than the mean number of years for the Marketing department.

9



Mark for Review

$$y \leq -3x + 5$$

$$y \geq x + 2$$

The given system of inequalities is graphed in the xy -plane. Which ordered pair (x, y) is a solution to the system?

A. $(-6, 0)$

B. $(0, -6)$

C. $(0, 6)$

D. $(6, 0)$

10

 Mark for Review

Antonia spent a total of \$108 at the art supply store. She purchased s small tubes of oil paint and returned l large tubes of oil paint for a refund. Her purchase can be represented by the equation $12s - 24l = 108$. Which of the following is the best interpretation of $24l$ in this context?

A. The number of small tubes Antonia purchased

B. The number of large tubes Antonia returned

C. The total amount of money Antonia spent on purchasing the small tubes

D. The total amount of money Antonia received for returning the large tubes

11

 Mark for Review

What is the product of the solutions to the equation $5x(x - 4) = 3(x - 8) + 6x$?

12



Mark for Review

Triangles ABC and DEF are similar, where A , B , and C correspond to D , E , and F , respectively. If $AC = \frac{1}{3}DF$ and angle B measures 30° , what is the measure of angle E ?

A. 10° B. 30° C. 60° D. 90°

13



Mark for Review

Function C is defined by $C = \frac{5}{9}(R - 0.6) - 273$ and relates a temperature of R on the Rankine scale to a temperature of C degrees Celsius. What is the decrease in temperature in degrees Celsius when the temperature decreases by 8.82 Rankine?

A. -268.43

B. 4.90

C. 126.57

D. 507.88

14

 Mark for Review

| | | |
|-----|---------|------|
| x | $n - 4$ | n |
| y | -5 | 19 |

A certain line in the xy -plane passes through the two points given in the table, where n is a constant. If the x -coordinate of the y -intercept of the line is $n + 8$, what is the y -coordinate of the y -intercept of the line?

15

 Mark for Review

$$g(a) = -\frac{1}{16}(a - 3)^2 + 4$$

Function g is defined by the given equation and represents the height, in feet, of an arrow above the ground, where a is the time, in seconds, after the arrow was released, and $0 \leq a \leq 11$. Given the graph of $y = g(a)$, which statement is the best interpretation of the vertex of the graph?

A. The arrow was 3 feet above the ground when it was first released.

B. The arrow was 4 feet above the ground when it was first released.

C. The arrow's maximum height was 3 feet above the ground.

D. The arrow's maximum height was 4 feet above the ground.

16

 Mark for Review

$$g(x) = 13x + c$$

The given function is graphed in the xy -plane. If the graph intersects the x -axis at $x = 3$, what is the value of c ?

A. -39

B. -13

C. 13

D. 39

17

 Mark for Review

If an island has a land area of approximately 14,217,984 square feet, what is the land area of the island in square miles? (1 mile = 5,280 feet)

A. 0.51

B. 0.7

C. 2,692.8

D. 3,770.67

18

 Mark for Review

$$3x^3 - 63x^2 + 204x$$

One factor of the given expression can be written as $x - k$, where k is a positive constant. What is the greatest possible value of k ?

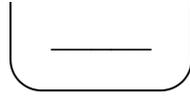
19

 Mark for Review

$$63y - 2.1 = tx$$

$$4x + 55y = 0.3 + 46y$$

In the given system of equations, t is a constant. If the system has infinitely many solutions, what is the value of t ?



20

 Mark for Review

The distance between Alan's home and his work office is m miles. He can drive at an average speed of 38 miles per hour during his commute. Which equation models the time, t , in hours, Alan will take to drive to his work office and back home?

A. $t = 38m$

B. $t = 76m$

C. $t = \frac{m}{19}$

D. $t = \frac{m}{38}$

21

 Mark for Review

Quadratic function h is defined by $h(x) = ax^2 - 2x + c$, where a and c are constants. The graph of $y = h(x)$ in the xy -plane is a parabola that opens downward and has a vertex of (h, k) , where $k > 0$. If $h(1) = h(-13)$, which of the following must be true?

. $-1 < a < 0$

. $c > 0$

A. I only

B. II only

C. I and II

D. Neither I nor II

22



Mark for Review

Which expression represents one possible solution to the equation

$$\frac{9k^2}{\sqrt{9k^2 + x^2}} - 83 = -\frac{x^2}{\sqrt{9k^2 + x^2}}, \text{ where } k \text{ is a positive constant?}$$

A. $3k$

B. $\sqrt{83^2 - 9k^2}$

C. $\sqrt{83^2 + 9k^2}$

D. $83^2 + 9k^2$

STOP

PRACTICE TEST 3—READING AND WRITING EXPLANATIONS

Module 1

1. C

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes the *concerns* of the audience, so look for and highlight clues in the text about a possible concern. The text mentions that *only positive results had arisen from women's education*, so a good word for the blank to enter into the annotation box would be “needless” or “uncalled for.”

- (A) is wrong because *required* is the **Opposite** of “needless.”
- (B) and (D) are wrong because *ancient* and *curious* don't match “needless.”
- (C) is correct because *unnecessary* matches “needless.”

2. A

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes the *size and strength* of the creatures, so look for and highlight clues in the text about the creatures. The text mentions that *a strike of their tails could create chasms on the ground*, so a good word for the blank to enter into the annotation box would be “immense” or “impressive.”

- (A) is correct because *phenomenal* (remarkable) can mean “immense” in this context.

- (B), (C), and (D) are wrong because *conventional*, *feasible* (possible), and *steady* don't match "immense."

3. D

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes Corelli's career as a writer, so look for and highlight clues in the text about her career. The text mentions that *Corelli's reliance on sentimental and unrealistic plots would impact the earning potential of her works*, but the transition word *Despite* creates a contrast, so a good word for the blank to enter into the annotation box would be "high-earning" or "profitable."

- (A) is wrong because it goes **Beyond the Text**—there could be many other writers more *unconventional*, or non-traditional, than Corelli, even if her topic choice did not seem to be popular with critics.
- (B) is wrong because *condemned* is the **Opposite** of the direction the blank should take—the word *Despite* indicates that the blank should be a positive idea, as the clue was a negative one.
- (C) is wrong because *impressionable* doesn't match "high-earning."
- (D) is correct because *marketable* matches "high-earning."

4. A

This is a Vocabulary question, as it asks for what "reproach" *most nearly means*. Treat "reproach" as if it were a blank—the blank describes something Mrs. Peters does not think Mrs. Hale should do to

herself, so look for and highlight clues in the text about Mrs. Hale. The text mentions that Mrs. Hale thinks she *could've come* and wishes she *had come over to see Minnie Foster sometimes*, so Mrs. Hale likely regrets not doing something. Therefore, it's likely that Mrs. Peters is advising Mrs. Hale not to blame herself, so a good word for the blank to enter into the annotation box would be “blame” or “feel guilty.”

- (A) is correct because *Criticize* matches “blame.”
- (B) is wrong because *Humiliate* is **Extreme Language**—it goes too far in meaning beyond “blame.”
- (C) and (D) are wrong because *Remind* and *Question* don't match the tone of “blame”—*Remind* is not negative in tone, and *Question* is not negative enough.

5. D

This is a Purpose question, as it asks for the *main purpose of the text*. Read the text and highlight who or what the text is focusing on. The text focuses on *the caged bird*, stating that the bird's song is not joyous *But a prayer that he sends from his heart's deep core, But a plea, that upward to Heaven he flings*. Therefore, a good main purpose of the text to enter into the annotation box would be “explain true nature of the bird's song.”

- (A), (B), and (C) are wrong because they each go **Beyond the Text** by making an unsupported comparison using some of the ideas in the text—the text does not compare the perceived frequency of glee to that of hopelessness, the perceptions of those with freedom to those without, or the damage caused in confined spaces to damage cause out in the open.

- (D) is correct because it's consistent with the highlighting and annotation—by clarifying that this song is not a carol of joy or glee, the author is implying some people might normally think of songs as gleeful or joyful, yet the caged bird's song is not.

6. C

This is a Purpose question, as it asks for the *function of the underlined portion in the text as a whole*. Read the text and focus on the lines before and after the underlined portion to understand its function. The lines before indicates that the speaker is *weary* of asking *What I am, and what I ought to be*, and the lines after indicate that the author is asking the world to *Calm* him. Since the speaker is worried based on these lines, a good function of the underlined portion to enter into the annotation box would be “explain speaker’s worries.”

- (A) is wrong because it's **Recycled Language**—it misuses the phrase *Forwards, forwards* as words to mean *rapidity*.
- (B) is wrong because it's **Half-Right**—the lines do deal with *the speaker's feelings*, but there is no mention of *the expectations of those around him*.
- (C) is correct because it's consistent with the highlighting and annotation—the speaker is concerned in the text about who he is and where he's going in life.
- (D) is wrong because it's the **Opposite** of the emotions expressed in the text—the speaker has concerns rather than *optimism*.

7. D

This is a Purpose question, as it asks for the *overall structure of the text*. Read the text and highlight the connections between ideas in the text. The first sentence has Watson explaining that *my close intimacy with Sherlock Holmes had interested me deeply in crime*. After explaining how Holmes may have determined certain details regarding a case, Watson states in the last sentence that *I even attempted, more than once...to employ his methods in their solution, though with indifferent success*. Therefore, a good overall structure of the text to enter into the annotation box would be “Watson tries to solve like Holmes—doesn’t work.”

- (A) is wrong because it’s **Extreme Language**—Watson is not described as *desperate*, and it’s not stated that anyone *solves* the crime discussed.
- (B) is wrong because it’s **Recycled Language**—it misuses *public* from the first sentence.
- (C) is wrong because it’s **Half-Right**—the first half of the text does describe why Watson attempted to solve a crime like Holmes, but the second half of the text does not describe why Watson *feels* any particular way.
- (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 text and highlight who or what the text is discussing. The text focuses on *Hope*, stating that *hope perches in the soul, And sings the tune without the words, And never stops—at all*. At the end of the poem, hope is also described as the thing *That kept so many warm*.

Since hope is described as continuous and positive, a good main purpose of the text to enter into the annotation box would be “explain it’s good to stay hopeful.”

- (A) and (D) are wrong because they’re each **Recycled Language**—they misuse either *feathers* and *storm* or *Hope* and *sings* to make statements about a *bird* or *music* that aren’t supported by the text.
- (B) is correct because it’s consistent with the highlighting and annotation.
- (C) is wrong because no specific *challenges* or *specific methods* to overcome those challenges are given in the text.

9. 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 first sentence of the excerpt states that *Meg didn’t brighten, for her burden, consisting of four soiled children, seemed heavier than ever*. Since the other portions of the excerpt show Meg feeling overwhelmed by this burden or contrasting her reaction with Jo’s, the second half of the first sentence serves as the main idea. The correct answer should be as consistent as possible with this portion of the text.

- (A), (C), and (D) are wrong because they’re each **Recycled Language**—(A) and (D) misuse *putting a blue neck ribbon and dressing her hair* to make unsupported statements about Meg getting ready or working on her appearance, and (C) misuses *burden* from the first sentence of the text.
- (B) is correct because it’s consistent with the highlighted portion of the text as well as the background information given in the text

regarding the family.

10. 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 first sentence of the text states that *Because of the widespread belief in the early nineteenth century that it was improper for women to engage in literary careers, Jane Austen published her novels anonymously and did not reveal the secret of her authorship*. Since the other sentences of the text either explain how Austen handled this secret with friends and family, the first sentence serves as the main idea. The correct answer should be as consistent as possible with the first sentence.

- (A) is correct because it's consistent with the highlighted sentence—it paraphrases each idea within that sentence.
- (B) and (C) are wrong because they're each **Extreme Language**—the text does not claim that publishing anonymously is the *most* efficient method to avoid judgments nor that what Austen did is *unethical*, or morally wrong.
- (D) is wrong because it's **Recycled Language**—it misuses *friends* and *family* to make an unsupported statement that they *encouraged* Austen to reveal herself, when the text does not say they did so. In fact, Austen's friends did not know her secret at all, according to the text.

11. D

This is a Claims question, as it asks for which choice *most effectively illustrates the claim*. Look for and highlight the claim in the text, which is that *a king proclaims his desire to travel once more*. The correct answer should address and be consistent with this claim.

- (A), (B), and (C) are wrong because they're not relevant to the claim—none of them express a *desire to travel* and would require outside assumptions to connect them to such a desire.
- (D) is correct because it's consistent with the highlighted claim—*seek a newer world* could be a *desire to travel*.

12. C

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 text and highlight the claim that references the information from the table. The last sentence states that *there is not a strong correlation between where people work and where they live*. The correct answer should offer accurate information from the table in support of this claim.

- (A) is wrong because it's the **Opposite** of the claim—it shows a correlation between percentage of people working in the agricultural sector and the percentage of people living in urban areas, but it should show *no correlation*.
- (B) and (D) are wrong because they're each the **Opposite** of what's shown in the table—the nation with the *highest percentage of people in the agricultural sector*, Belize, does not also have *the highest percentage of people in urban areas*, and Panama does not have a *higher percentage of people in urban areas* than El Salvador does.

- (C) is correct because it's consistent with the claim and table—it shows that the two percentages in the table are not necessarily correlated.

13. C

This is a Charts question, as it asks for *data from the graph that weaken the psychologist's conclusion*. Read the title, key, and variables from the graph. Then, read the text and highlight the conclusion that references the information from the graph. The last sentence states that *The psychologist concluded that there is a limit to the number of items people can hold in their short-term memory*. The correct answer should offer information from the graph that is as contradictory as possible to this conclusion.

- (A) and (D) are wrong because they're consistent with the graph but irrelevant to the claim—the claim focuses on the words people were able to remember and recite, not the words given, and a single trial cannot demonstrate any type of limit or trend.
- (B) is wrong because it's the **Opposite** of what's shown in the graph—*words recited* were lower, not *greater*, than *words given* in Trial 3.
- (C) is correct because while the disparity between words given and words recited increases in Trial 4, the participants are still reciting more words with each trial, which goes against the concept that there is a *limit* on how many words people can recall.

14. 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 text, which is *postage for letters*. Then, highlight the main point made regarding this focus, which is that *James Madison believed that money raised by the postage system could be used to benefit the nation as a whole and this benefit could be a newspaper for the general public*. Therefore, the newspaper is meant to benefit the nation as a whole in some way, not just the wealthy who can afford postage. The correct answer should be as consistent as possible with this conclusion.

- (A) and (D) are wrong because they're **Recycled Language**—they misuse either *postage for letters* and *newspapers* or *postal system* and *newspapers* to create unsupported conclusions.
- (B) is correct because it's consistent with what the highlighted sentences say about how the revenue from postage for letters could be used.
- (C) is wrong because it goes **Beyond the Text**—while Madison's newspaper might be beneficial to some who are not wealthy, it's not supported that it will *transform* the relationship between *wealth* and *postage use* in some way.

15. A

In this Rules question, punctuation is changing in the answer choices. The answers contain commas in several places, so use Process of Elimination to eliminate any answers that don't use commas correctly.

- (A) is correct because no punctuation is needed.
- (B) and (C) are wrong because a comma shouldn't follow a preposition (*of*).

- (D) is wrong because *and* should not be set off with commas.

16. **D**

In this Rules question, punctuation is changing in the answer choices. The sentence states that *Diodorus Siculus and Quintus Rufus claimed that Alexander the Great had purposely burned down the city's structures*. The phrase *Ancient historians* is a title for Siculus and Rufus, so no punctuation should be used. Eliminate answers that use punctuation.

- (A) is wrong because there is no reason to use a comma before *and*.
- (B) and (C) are wrong because a comma isn't used after a title.
- (D) is correct because titles before names have no punctuation.

17. **C**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *During the 23rd century BCE in ancient Mesopotamia, Enheduanna... wrote poems and hymns*, which is an independent clause. The second part of the sentence says *during the 24th century BCE in ancient Egypt, a government official named Ptahhotep wrote aphorisms and maxims...*, which is also an independent clause. Eliminate any answer that can't correctly connect two independent clauses.

- (A), (B), and (D) are wrong because commas alone can't connect two independent clauses.

- (C) is correct because a semicolon can connect two independent clauses.

18. **A**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *Although it is often assumed that one of the essential characteristics of mammals is that they give live birth to their young, there are actually two species of egg-laying mammals*, which is an independent clause. The second part of the sentence states what the two species are. Eliminate any option that doesn't correctly connect the independent clause to the list of the two species.

- (A) is correct because a colon is used when the second part of the sentence elaborates on the first.
- (B) is wrong because the period makes the last part its own sentence, which doesn't work because it's not an independent clause.
- (C) is wrong because a semicolon can only connect two independent clauses, and the part after the semicolon is not an independent clause.
- (D) is wrong because some punctuation is needed to separate the independent clause from the list.

19. **B**

In this Rules question, the subjects of the answers are changing, which suggests it may be testing modifiers. Look for and highlight a

modifying phrase: *In analyzing the designs, career, and legacy of English fashion designer Charles Frederick Worth*. Whoever is *analyzing* these items needs to come immediately after the comma. Eliminate any answer that doesn't start with someone who can analyze something.

- (A) is wrong because *praise* can't analyze something.
- (B) is correct because *historians* can analyze something.
- (C) is wrong because *Worth's pioneering work* can't analyze something.
- (D) is wrong because the people doing the analyzing don't come right after the comma.

20. **D**

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 it is not an independent clause, which suggests that the sentence contains a list separated by semicolons. Use the third example to determine the structure of each item: Description, Comma, Company Name, Comma, Year. Make an annotation of this pattern and eliminate any answer that doesn't follow it.

- (A), (B), and (C) are wrong because they don't have a semicolon after the year that concludes the first item.
- (D) is correct because it follows the pattern of the third item.

21. **A**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *Lithium-ion batteries...are becoming harder and more expensive to make*, and this sentence states that *the new battery provides many benefits*. 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 *In comparison* is an opposite-direction transition.
- (B), (C), and (D) are wrong because they are same-direction transitions.

22. **D**

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

- (A) is wrong because it doesn’t refer to *two concertos*.
- (B) is wrong because the two concertos are mentioned but no *difference* is provided.
- (C) is wrong because although two different instruments are mentioned, they are used as examples of the concertos he wrote rather than to point out a difference in the concertos themselves.
- (D) is correct because it shows a *difference* by stating that the two concertos were written for different instruments.

23. C

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

- (A) is wrong because it doesn't mention the *heights* of the pyramids.
- (B) and (D) are wrong because they don't refer to *two pyramids*.
- (C) is correct because it mentions *two pyramids* and compares their *heights*.

24. D

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *specify the reason that some coral reefs have changed*. Eliminate any answer that doesn't fulfill this purpose.

- (A) is wrong because it doesn't mention *coral reefs*.
- (B) and (C) are wrong because they don't clearly state that *some coral reefs have changed*.
- (D) is correct because *Net calcification has decreased in some coral reefs* indicates that *some coral reefs have changed* and a *decrease in the ocean's pH levels* is stated as the *reason* for this change.

25. D

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

- (A), (B), and (C) are wrong because they don't mention anything about the study that is particularly significant.
- (D) is correct because *surprising results* and the fact that the strategies were different than had been *previously assumed* show the study's *significance*.

26. **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 novels*. Eliminate any answer that doesn't fulfill this purpose.

- (A), (B), and (C) are wrong because they demonstrate a difference, not a *similarity*.
- (D) is correct because it provides a *similarity*, stating that the novels are *both epic*.

27. **A**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *emphasize the role that journalism played in a declaration of war*. Eliminate any answer that doesn't fulfill this purpose.

- (A) is correct because it explains that *sensationalist journalism* led people to *favor war* and then declare war.
- (B) and (C) are wrong because they don't mention *a declaration of war*.
- (D) is wrong because it doesn't mention *journalism*.

Module 2—Easier

1. A

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes the impact that the Wright brothers had on the aviation field, so look for and highlight clues in the text about this impact. The text mentions that the Wrights *took the aviation era from experimental to more advanced*, so a good word for the blank to enter into the annotation box would be “substantial” or “major.”

- (A) is correct because *powerful* matches “substantial.”
- (B) and (C) are wrong because *moderate* and *complicated* don't match “substantial”—*moderate* does not go far enough considering the Wright's contributions.
- (D) is wrong because *questionable* is the **Opposite** of “substantial.”

2. C

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes Percy Julian's fields of

interest, so look for and highlight clues in the text about those fields. The text mentions that Julian’s interests *led him to groundbreaking methods for synthesizing important medications and to establish a successful chemical manufacturing company*, so it’s logical that he spent considerable time pursuing each field. Therefore, a good phrase for the blank to enter into the annotation box would be “devotion to” or “work in.”

- (A) is wrong because *questions about* doesn’t match “devoted to,” even if it’s logical that Julian may have asked questions about these fields at some point.
- (B) and (D) are wrong because *anxiety toward* and *bewilderment at* are negative emotions, which are **Opposite** to the idea of being “devoted to” something.
- (C) is correct because *dedication to* matches “devoted to.”

3. A

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes how Anning and her team dealt with the challenges listed in the first sentence of the text, so look for and highlight clues in the text about Anning and her team’s work. The text mentions that *after many years of hard work*, Anning and her team *made the groundbreaking discovery of the first complete plesiosaur*. Therefore, a good word for the blank to enter into the annotation box would be “overcome” or “work through.”

- (A) is correct because *conquer* matches “overcome.”

- (B), (C), and (D) are wrong because *criticize*, *visualize*, and *demonstrate* don't match "overcome."

4. B

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes what the body does to itself, so look for and highlight clues in the text about this action. The text mentions that the body would *attack the introduced illness and protect itself against future infections*, so a good word for the blank to enter into the annotation box would be "repairs" or "rebuilds."

- (A) is wrong because *dismantles* is the **Opposite** of "repairs."
- (B) is correct because *rehabilitates* matches "repairs."
- (C) and (D) are wrong because *establishes* and *outgrows* don't match "repairs."

5. C

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes how the two-point seatbelt fails in regard to damage, so look for and highlight clues in the text about this interaction. The text mentions that the *three-point seatbelt could protect both the upper and lower halves of the torso during a collision*, and since this is *superior* to the two two-point seatbelt, the two-point seatbelt must not do as good a job at protecting the body. Therefore, a good word for the blank to enter into the annotation box would be "block" or "stop."

- (A) is wrong because while *disrupt*(ing) something can “block” it, a condition such as *internal damage* can’t be disrupted. Only events, activities, or processes can be disrupted.
- (B) is wrong because *analyze* doesn’t match “block.”
- (C) is correct because *prevent* matches “block.”
- (D) is wrong because *benefit* is the **Opposite** of “block.”

6. D

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes the relationship between the mumps vaccine and other vaccines, so look for and highlight clues in the text about this interaction. The text mentions that Hilleman *used the same method of weakening the virus before injecting it into a patient as was used to design the measles vaccine*. Therefore, a good word for the blank to enter into the annotation box would be “like” or “comparable to.”

- (A) and (C) are wrong because they each go **Beyond the Text**—while Hilleman used the same method as other vaccines did, this does not mean his mumps vaccine was actually *reliant on* any of the other vaccines, not does it make his vaccine *superior to* them.
- (B) is wrong because *distinct from* is the **Opposite** of “like.”
- (D) is correct because *similar to* matches “like.”

7. A

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes how the surgeons would characterize the practices from the first sentence, so look for and highlight clues in the text about what the surgeons would say. The text mentions that *sanitizing prior to medical procedures had traditionally been thought of as unhelpful*. Therefore, a good word for the blank to enter into the annotation box would be “unhelpful” or “useless.”

- (A) is correct because *futile* (pointless) matches “unhelpful.”
- (B) is wrong because while *redundant* is negative, the text does not support that any sanitization had been done previously and that Lister’s recommendations of cleaning hands and equipment would repeat something that had already been done.
- (C) and (D) are wrong because *beneficial* and *mandatory* are the **Opposite** attitude that the surgeons took toward Lister’s recommendations, which was that they are “unhelpful.”

8. A

This is a Dual Texts question, which asks for how *the author of Text 2* would *respond to the underlined claim in Text 1*. Read Text 1 and highlight the claim, which is that *the discovery of the fossils established a link between birds and dinosaurs*. Then, read Text 2 and highlight what Text 2 says about the same topic. The author of Text 2 states that *archaeopteryx cannot be conclusively determined to be a bird based on the fossils*. The two authors disagree on their shared topic, so enter “Text 2 disagrees with Text 1” into the annotation box.

- (A) is correct because it's consistent with the relationship between the texts—Text 2 does not completely dispute the underlined claim, it merely thinks the underlined claim is too firm of a conclusion while agreeing that brain size could be part of the argument.
- (B) is wrong because it's **Recycled Language**—it misuses *feathers* and *bird-like features* from Text 1, neither of which are referenced in Text 2.
- (C) is wrong because it's the **Opposite** of the relationship between the texts—Text 2 would not *largely* agree with the claim.
- (D) is wrong because it's **Extreme Language**—Text 2 is not *criticizing* anyone from Text 1, nor does it state that Text 1 is assuming that only birds can possess large-sized brains.

9. B

This is a Retrieval question, as it asks for a detail *according to the text*. Look for and highlight information about Ethelyn. The first sentence of the second part of the text states that she *was of an envious position... she always wanted the belongings of someone else*. The correct answer should be as consistent as possible with this detail.

- (A), (C), and (D) are wrong because they're each **Recycled Language**—they misuse *her father*, *come to New York*, and *winter* to create unsupported conclusions about Ethelyn.
- (B) is correct because it's consistent with the highlighted information about Ethelyn.

10. C

This is a Claims question, as it asks for which detail *would most directly support the team's hypothesis*. Look for and highlight the hypothesis in the text, which is that *many parasites may wait until the host is further developed or grown, therefore providing more potential nourishment to the parasite*. The correct answer should be as consistent as possible with this hypothesis.

- (A), (B), and (D) are wrong because they're each the **Opposite** of the claim—if the Phora attacked *all honeybees* regardless of stage, or were able to *locate the egg stage honeybees more easily* or *attacked the honeybees in egg stage much more quickly*, this would not show that the Phora have a preference for the larval stage honeybees, which are further along in development and should be more of a target according to the hypothesis.
- (C) is correct because it's consistent with the highlighted hypothesis—the Phora attacking the larval stage honeybees *with much greater frequency* than the egg stage honeybees shows a preference for the more developed or grown hosts.

11. B

This is a Charts question, as it asks for *data from the graph that support Darian and her colleagues' hypothesis*. Read the title, key, variables, and units from the graph. Then, read the text and highlight the claim that references the information from the graph. The last sentence states that *They hypothesize that carrots grown in sand, which is non-compact, will be longer than those that are grown in clay*. The correct answer should offer accurate information from the table in support of this claim.

- (A) and (D) are wrong because they're consistent with the graph but irrelevant to the hypothesis—the correct answer should focus on more growth in sand than clay rather than compare the two types of carrots or discuss a specific carrot length.
- (B) is correct because it's consistent with the highlighted hypothesis.
- (C) is wrong because it's the **Opposite** of what's shown in the graph—Nantes carrots reached only three inches in *clay*, not *sand*, and five inches in *sand*, not *clay*.

12. **D**

This is a Claims question, as it asks which choice *most effectively illustrates the claim*. Look for and highlight the claim in the text, which is *Hughes's conflicting viewpoints on what is promised by the American Dream and what American life really is*. 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**—(A) discusses the American Dream, while (B) and (C) seem to express the realities of American life, but none of these three answers do both.
- (D) is correct because *And yet must be—the land where every man is free* could reference the American Dream while *The land that never has been yet* implies that the American Dream has yet to be realized, meaning that the current reality of America is different than it should be.

13. A

This is a Claims question, as it asks which quotation *best supports the student's claim*. Look for and highlight the claim in the text, which is that *specific aspects of Alvarez's work help to introduce this inequality to readers in an accessible way*. Note that the inequality expressed in the text relates to a *lack of accessible health care*. The correct answer should be as consistent as possible with this claim and detail.

- (A) is correct because it's consistent with the highlighted claim—if a family needs to *rely on a volunteer organization for health care*, this means they cannot access health care through regular channels and would be a negative aspect consistent with Alvarez's focus.
- (B) and (C) are wrong because they're each irrelevant to the claim—while each answer references challenges such as facing a *dictator* and dealing with *unfamiliar customs*, neither of these are a *lack of accessible health care*.
- (D) is wrong because it's also irrelevant to the claim—the answer should focus on Alvarez's work, not the work of her husband.

14. C

This is a Conclusions question, as it asks what *most logically completes the text*. Look for and highlight the main focus of the text, which is that *plants* require *nutrients* to grow. Then, highlight the main point made regarding this focus, which is that *organisms such as denitrifying bacteria existing in soil can break down free nitrogen molecules so they can be combined into elements that plants can absorb*. Therefore, to improve plant growth, more organisms like denitrifying bacteria need

to be introduced into the soil to help plants break down nitrogen. The correct answer should be as consistent as possible with this conclusion.

- (A) is wrong because it's **Extreme Language**—it's not stated by the text that an *exact percentage* of nitrogen is required to facilitate plant growth.
- (B) and (D) are wrong because they're each the **Opposite** of the text—the denitrifying bacteria are good for plants, so researchers should not want to *inhibit*, or block, the bacteria's spread. Also, plants are not *able to absorb the free nitrogen*, according to the third sentence of the text.
- (C) is correct because it's consistent with what the highlighted sentences say about how researchers might promote plant growth.

15. A

This is a Conclusions question, as it asks what *most logically completes the text*. Look for and highlight the main focus of the text, which is *rote memorization of poetry*. Then, highlight the main point made regarding this focus, which is that rote memorization is *a valuable academic exercise*, but *only about 10% of the teachers were in favor of asking students* to use it. Therefore, the teachers in the text may not consider rote memorization as valuable as the author of the text does. 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 rote memorization and how the author and teachers view it.

- (B) and (C) are wrong because they each go **Beyond the Text**—no comparison is made as to whom rote memorization benefits more, nor does the text claim that teachers *may not know how* to use rote memorization, only that most teachers wouldn't ask students to use it.
- (D) is wrong because it's **Extreme Language**—the text doesn't state that anyone thinks rote memorization is *only* for academics who study poetry for a living.

16. **A**

In this Rules question, verb forms are changing in the answer choices, so it's testing sentence structure. The phrase before the comma describes how Stark *employs* art techniques for *her works of art*. Eliminate any answer that does not make the phrase clear and correct.

- (A) is correct because it states that Stark *employs carbon paper tracings...to create her works of art*.
- (B), (C), and (D) are wrong because they are in “main verb” form, but the sentence already contains a main verb (*employs*).

17. **D**

In this Rules question, verb forms are changing in the answer choices, so it's testing sentence structure. The sentence already contains an independent clause followed by a comma. Thus, the phrase after the comma must be a phrase that further describes the species. Eliminate any answer that does not correctly form this phrase.

- (A) is wrong because it suggests that the species is *hibernated*, which isn't the correct meaning.
- (B) is wrong because *hibernates* is in the “main verb” form, but there is no subject for this verb.
- (C) is wrong because *to hibernate to persist* does not provide a clear meaning.
- (D) is correct because it correctly describes the species as *hibernating*.

18. C

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *it*, which is singular, so a singular verb is needed. All of the answers work with a singular subject, so look for clues regarding tense. The first part of the sentence uses the present tense verb *orbits*. Highlight that verb and write an annotation that says “present.” Eliminate any answer not in present tense.

- (A) is wrong because it is in present tense but is not consistent with *orbits*.
- (B) is wrong because it's in future tense.
- (C) is correct because it's in present tense and is consistent with *orbits*.
- (D) is wrong because it's in past tense.

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, *work*, which is singular, 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.

20. **B**

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

- (A) and (C) are wrong because *descendants* shouldn't be possessive.
- (B) is correct because *people* is possessive and *descendants* is not.
- (D) is wrong because *people* should have an apostrophe.

21. **D**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *A symbol*, which is singular, 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.

22. **B**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *Brockman*, 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 previous sentence uses past tense verbs: *traveled* and *saw*. Highlight those verbs and write an annotation that says "past." Eliminate any answer not in past tense.

- (A) is wrong because although it is in past tense, this tense indicates a continuing action, whereas the sentence should indicate something that simply happened in the past.
- (B) is correct because it's in past tense.
- (C) is wrong because it's in present tense.
- (D) is wrong because although it is in past tense, this tense suggests something that happened before something else, whereas this event happened after the events of the previous sentence.

23. **C**

In this Rules question, verbs are changing in the answer choices, so it's testing consistency with verbs. Find and highlight the subject, *habit*,

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 part of the sentence refers to what had happened *By...1997*, which suggests past tense, so write an annotation that says “past.” Eliminate any answer not in past tense.

- (A) is wrong because it’s in future tense.
- (B) is wrong because *has* suggests time going up to the present, but the sentence indicates time going up to *1997*.
- (C) is correct because it’s in past tense.
- (D) is wrong because it’s in present tense.

24. C

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *Abbott was a photographer...who captured a wide array of subjects*, and this sentence states that *she photographed cultural figures, architectural structures, and scientific discoveries*. 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 *Otherwise* and *By contrast* are opposite-direction transitions.
- (C) is correct because this sentence is an example of *a wide array of subjects*.
- (D) is wrong because no *reasons* are given in the preceding sentence.

25. A

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that he *first published an award-winning book of poems in 2017*, and this sentence says that *he published a book in 2020*. These ideas represent a sequence of events, so a time-change transition is needed. Make an annotation that says “time change.” Eliminate any answer that doesn’t match.

- (A) is correct because the second sentence is a description of an event that happened after the previous idea.
- (B) and (D) are wrong because *Despite this* and *In comparison* are opposite-direction transitions, but the ideas don’t disagree.
- (C) is wrong because the second idea is not a result of the previous idea.

26. D

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The previous sentence states that *Humboldt noticed that a star in the night sky seemed to be moving*, and this sentence states that *the star wasn’t actually moving*. 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 *For example* and *Likewise* are same-direction transitions.
- (C) is wrong because this sentence is not a comparison to the previous idea.
- (D) is correct because *However* contradicts the previous idea.

27. **D**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *Bly was...well-known for an exposé she wrote after spending 10 days undercover in a mental institution*, and this sentence states that *she set a record for traveling around the world in 72 days*. 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 (C) are wrong because the second idea is not a result of the previous idea.
- (B) is wrong because the two ideas don’t share a clear similarity.
- (D) is correct because this sentence offers a second, or additional, accomplishment by Bly.

Module 2—Harder

1. **D**

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes the environment’s

relationship to bacteria growth, so look for and highlight clues in the text about this relationship. The text mentions that *passing oxygen through a fluid could stop its fermentation*, meaning the environment would no longer assist in the growing of something. Therefore, a good word for the blank to enter into the annotation box would be “helpful to” or “beneficial to.”

- (A) and (B) are wrong because *available for* and *reminiscent of* (similar to) don’t match “helpful for”—something being *available* doesn’t mean it’s actually “helpful.”
- (C) is wrong because *inhospitable to* is the **Opposite** of “helpful to.”
- (D) is correct because *conducive to* (favorable to) matches “helpful to.”

2. C

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes Dalí’s style, so look for and highlight clues in the text about his style. The text mentions that *Dalí painted Metamorphosis in accordance with the paranoiac critical method* and found *connections between objects that are not rationally linked*. This evidence supports that, at minimum, Dalí worked outside of normal logic. Therefore, a good phrase for the blank to enter into the annotation box would be “odd” or “illogical.”

- (A) and (D) are wrong because *unfathomable* (immeasurable) and *unreliable* are **Extreme Language**—it’s not supported in the text that Dalí’s style or talent can’t be understood or measured, nor is it supported that Dalí’s style cannot be relied upon in some way.

- (B) is wrong because *orthodox* (traditional) is the **Opposite** of “odd.”
- (C) is correct because *eccentric* (unusual) matches “odd.”

3. A

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank describes the Spanish nobility’s interaction with unfair treatment, so look for and highlight clues in the text about this interaction. The text mentions that *the members of the lower class have their desires crushed by the corrupt noblemen and women*. Therefore, a good word for the blank to enter into the annotation box would be “caused” or “imposed.”

- (A) is correct because *inflicted* matches “caused.”
- (B) is wrong because *interrupted* is the **Opposite** of “caused.”
- (C) and (D) are wrong because *accomplished* and *explained* don’t match “caused.”

4. D

This is a Vocabulary question, as it asks for a logical and precise word or phrase for the blank. The blank discusses how Morrison handles the issues surrounding inequality, so look for and highlight clues in the text about what Morrison does. The text mentions that Morrison *uses specific techniques such as intricate language, ... flashbacks and stories, ... and vivid imagery*. Since these are very specific and detailed

ways of dealing with inequality, a good word for the blank to enter into the annotation box would be that Morrison is not merely “touching upon” or “mentioning” the issues, she discusses them much more deeply.

- (A), (B), and (C) are wrong because *substituting*, *confusing*, and *supplementing* (adding to) don’t match “touching upon.”
- (D) is correct because *referencing* matches “touching upon.”

5. A

This is a Dual Texts question, which asks for how *Freud (Text 2)* would respond to the idea of “classical conditioning” presented in *Text 1*. Read *Text 1* and highlight the information about classical conditioning, which is that *there is no innate human mind at all and that people’s behaviors are solely a result of the stimuli they experience*. Then, read *Text 2* and highlight what Freud says about the same topic. Freud states that *the decisions humans make are governed by their unconscious mind* and that *humans must possess certain instinctual impulses at birth*. The two authors disagree on how much of the human mind is established at birth, so enter “Freud disagrees—humans are born with instincts” into the annotation box.

- (A) is correct because it’s consistent with the relationship between the texts—Freud believes that human beings are at least partially shaped already at birth, as they have *instinctual impulses*.
- (B) and (D) are wrong because they’re the **Opposite** of the relationship between the texts—Freud disagrees with the ideas of classical conditioning, so he would not admit or confirm them, nor would he agree that *external stimuli* come first.

- (C) is wrong because it's **Recycled Language**—it misuses *learned behavior* from Text 1 and *id* from Text 2 to create an unsupported response from Freud.

6. A

This is a Retrieval question, as it asks for a detail *according to the text*. Look for and highlight information about De Blasio and his colleagues' research. The last sentence of the text states that the massive landslide on Mars *could only have been caused by a massive volume of water*. Since the first sentence of the text explains that such occurrences are characteristics of tsunamis, De Blasio's evidence could support that there was once a tsunami on Mars. The correct answer should be as consistent as possible with this detail.

- (A) is correct because it's consistent with the highlighted information about what caused the massive landslide on Mars, as well as the first sentence of the text.
- (B) is wrong because De Blasio and his colleagues focused on Mars, not Earth.
- (C) is wrong because it goes **Beyond the Text**—while it's probably true in the real world that water on Mars would make it *more suitable for human life*, the text makes no statement regarding human life on Mars.
- (D) is wrong because it also goes **Beyond the Text**—even if it's easy to imagine why De Blasio's research would help geologists with a timeline, the focus of the text is on the presence of tsunamis on other planets than Earth.

7. **B**

This is a Retrieval question, as it asks for a detail *according to the text*. Look for and highlight information about Ethelyn. The first sentence of the second part of the text states that she *was of an envious position... she always wanted the belongings of someone else*. The correct answer should be as consistent as possible with this detail.

- (A), (C), and (D) are wrong because they're each **Recycled Language**—they misuse *her father*, *come to New York*, and *winter* to create unsupported conclusions about Ethelyn.
- (B) is correct because it's consistent with the highlighted information about Ethelyn.

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 second sentence of the text states that *Finlay finally convinced Walter Reed...to investigate further*, and the last sentence of the text states that *Reed was able to show a successful transmission of Yellow Fever*. Since the other sentences offer background information about either Finlay's theory or Reed's testing, these two sentences serve as the main idea. The correct answer should be as consistent as possible with these sentences.

- (A) is wrong because it goes **Beyond the Text**—while Yellow Fever was an extremely fatal disease in the real world, the text

makes no mention of its level of mortality.

- (B) is correct because it's consistent with the highlighted portions of the text.
- (C) and (D) are wrong because they're **Extreme Language**—it's not known that Reed's approach was *novel*, or unique, for its time, nor is it stated that bloodwork is the *most* critical type of analysis needed. Additionally, the text neither discusses symptoms of yellow fever nor its potential cures.

9. A

This is a Claims question, as it asks which choice *most effectively illustrates the claim*. Look for and highlight the claim in the text, which is that *The novel contrasts the narrator's morality with the immorality of his social acquaintances*. The correct answer should address and be consistent with each aspect of this claim.

- (A) is correct because it's consistent with the highlighted claim—by stating that *I am one of the few honest people that I have ever known*, the narrator is both proclaiming his own sense of morality and implying that almost everyone else he knows is not honest, which could be seen as immoral.
- (B) and (C) are wrong because they're not relevant to the claim—while each describes the narrator and his feelings toward life, neither comments on his or anyone else's *morality*.
- (D) is wrong because it's **Half-Right**—it makes mention of *morality* through the word *decencies* but does not establish a

contrast between the narrator's morality and that of the people he knows.

10. A

This is a Charts question, as it asks for *data from the table that support Oellermann's suggestion*. Read the title, variables, and units from the table. Then, read the text and highlight the claim that references the information from the table. The last sentence states that *Oellermann suggests that because of known data...approximations of the Greenland shark's lifespan will be similar regardless of the research methods chosen to analyze it*. The correct answer should offer accurate information from the table in support of this suggestion.

- (A) is correct because it's consistent with the highlighted suggestion—if all four approximations used different methods but fall in the same general range, this would be identical to what Oellermann argued.
- (B) and (D) are wrong because they're **Half-Right**—the correct answer should state that different approximation methods arrived at similar, not different, conclusions regarding lifespan. Note that the first half of (D) does not directly contradict the claim, but the second half of (D) does, as the approximations of shark lifespan are supposed to be similar based on Oellermann's suggestion.
- (C) is wrong because it's irrelevant to the claim—only citing a single study does not allow for a comparison between research methods.

11. **B**

This is a Claims question, as it asks for which finding *would most directly undermine Wei's hypothesis*. Look for and highlight the hypothesis in the text, which is that *a wider variety of scrapes and scratches indicated a wider variety of foods consumed*, which means that *ancient pandas did indeed have a more diverse diet*. The correct answer should be as contradictory as possible to this hypothesis.

- (A) and (C) are wrong because they're each the **Opposite** of the question task—if modern pandas *only had scratches and scrapes consistent with bamboo consumption* or that *ancient pandas evolved based on food accessibility*, this would be consistent with, not *undermine*, Wei's argument that pandas may have eaten a wider variety of foods.
- (B) is correct because it's consistent with the highlighting and question task—it suggests an alternate explanation for the *scratches and scrapes* found by Wei that would contradict the concept that those marks were caused by foods other than bamboo.
- (D) is wrong because it's irrelevant to the claim—it's not known from the text if the *scratches and scrapes* from this other *species* are similar enough to the ones Wei found on ancient panda teeth to draw a conclusion.

12. **D**

This is a Claims question, as it asks which finding *would most directly support Strafstrom's hypothesis*. Look for and highlight the hypothesis in the text, which is that *the ogre-faced spider not only uses its large eyes to see prey but also relies on auditory vibrations from its legs*.

Note that this hypothesis is meant to explain how *Deinopis spinosa* catches prey without a web. The correct answer should be as consistent as possible with this hypothesis.

- (A), (B), and (C) are wrong because they're each the **Opposite** of the question task—all three answers show members of the *Deinopis* family relying on webs or struggling without them, which would weaken, not *support*, the hypothesis regarding how *Deinopis spinosa* catches prey.
- (D) is correct because it's consistent with the highlighting and question task—it reinforces that *Deinopis spinosa* must use something besides a web to capture prey, as it was able to capture prey in a webless enclosure where other spiders were not.

13. C

This is a Conclusions question, as it asks what *most logically completes the text*. Look for and highlight the main focus of the text, which is *zebra mussels*. Then, highlight the main point made regarding this focus, which is that there is *increasing ecological damage from zebra mussels in the areas with increased human activity*. Therefore, human activity has something to do with the spread of zebra mussels and the subsequent damage to aquatic ecosystems. The correct answer should be as consistent as possible with this conclusion.

- (A) is wrong because it's **Recycled Language**—it misuses *North America, Europe, and relatively untouched aquatic ecosystems* to make an unsupported comparison regarding evolutionary speed.
- (B) is wrong because it goes **Beyond the Text**—while it's probably true that waterways in general were healthier in the past, the past

health of any particular waterway is not discussed in the text.

- (C) is correct because it's consistent with what the highlighted sentences say about how zebra mussels spread and the damage they do.
- (D) is wrong because it's **Extreme Language**—ecosystems that have been *untouched* by human activity may be less likely to have zebra mussels, but to say these ecosystems *have not encountered* zebra mussels at all goes too far.

14. A

This is a Conclusions question, as it asks what *most logically completes the text*. Look for and highlight the main focus of the text, which is *the Treaty of Reciprocity*. Then, highlight the main point made regarding this focus, which is that the treaty *made the exporting of goods from the United States into Hawaii easier and gave the United States sole use of Pearl Harbor*. Therefore, while the treaty had some benefits for Hawaiians, it seems to have benefited the United States to a greater degree. 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 how the United States benefited from the Treaty of Reciprocity.
- (B) and (D) are wrong because each goes **Beyond the Text**—while the Treaty made American goods easier to import, the text doesn't state that Hawaiians were dissuaded *from making new investments in their own economy* or that trade could not *be conducted with other nations*.

- (C) is wrong because it's the **Opposite** of what's stated in the text—the Treaty was supposed to be at least partially *honoring Hawaii's independence*, not subjecting the Hawaiians to *foreign rule*.

15. **B**

This is a Conclusions question, as it asks what *most logically completes the text*. Look for and highlight the main focus of the text, which is *Shakespeare* and whether or not he wrote the plays attributed to him. Then, highlight the main point made regarding this focus, which is that a *popular candidate for the "real" author of the plays* was Edward de Vere, *who died in 1604*. Since the text goes on to say that *about 14 of Shakespeare's plays are generally thought to have been published after 1605*, it's unlikely that de Vere could have been the author of those plays. The correct answer should be as consistent as possible with this conclusion.

- (A) is wrong because it's **Recycled Language**—it misuses *14, 15, 1605*, and *education* to create an unsupported conclusion about Shakespeare.
- (B) is correct because it's consistent with what the highlighted sentences say about de Vere's likelihood to be the plays' author.
- (C) is wrong because it's also **Recycled Language**—it misuses *Earl of Oxford* and *only attended school until he was 15* to establish an unsupported comparison between noblemen and commoners.
- (D) is wrong because it's also **Recycled Language**—it misuses *education, Oxford*, and the reference to date to create an

unsupported timeline.

16. **A**

In this Rules question, verb forms are changing in the answer choices, so it's testing sentence structure. The sentence has a subject (*flowers*) and a verb (*produce*), so the verb in this part of the sentence can't be the main verb. Eliminate any answer that isn't in the correct form.

- (A) is correct because it states that red flowers *produce UV-red colors as well as patterns to attract pollinators*, which provides a clear and correct meaning.
- (B), (C), and (D) are wrong because they are in the "main verb" form, but there is no subject for this verb.

17. **B**

In this Rules question, apostrophes with nouns are changing in the answer choices. Determine whether each word possesses anything. The balloon possesses the failure, and the explorers possess the attempt. Eliminate any answer that doesn't match this.

- (A) is wrong because *balloon* should be singular, not plural.
- (B) is correct because *balloon* and *explorers* are possessive.
- (C) is wrong because *explorers* should have an apostrophe.
- (D) is wrong because *balloon* should have an apostrophe.

18. C

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 it is not an independent clause, which suggests that the sentence contains a list separated by semicolons. Use the third example to determine the structure of each item: Video Name, Comma, Description. Make an annotation of this pattern and eliminate any answer that doesn't follow it.

- (A) is wrong because a comma should separate the video name and description of the work.
- (B) and (D) are wrong because they don't have a semicolon after the first item.
- (C) is correct because it follows the pattern of the third item.

19. C

In this Rules question, the subjects of the answers are changing, which suggests it may be testing modifiers. Look for and highlight a modifying phrase: *By disseminating information about volcanic activity*. Whoever or whatever is *disseminating information* needs to come immediately after the comma. Eliminate any answer that doesn't start with something that can disseminate information.

- (A) is wrong because *public safety* can't disseminate information.

- (B) is wrong because *the program's improvement* can't disseminate information.
- (C) is correct because *the program* can disseminate information.
- (D) is wrong because *the improvement* can't disseminate information.

20. **C**

In this Rules question, punctuation is changing in the answer choices. Look for independent clauses. The first part of the sentence says *The shells loosely resemble people*, which is an independent clause. The second part of the sentence says *their movements purposefully designed to be repetitive as they inflate and deflate*, which is a phrase describing the *shells*. Eliminate any option that doesn't correctly connect the independent clause to the describing phrase.

- (A) and (B) are wrong because the second part of the sentence isn't an independent clause, and periods and semicolons can only be used with independent clauses.
- (C) is correct because a comma can be used between an independent clause and a describing phrase.
- (D) is wrong because a comma + FANBOYS (*and*) connects two independent clauses, but the second part isn't an independent clause.

21. **D**

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 *Legorreta's career wasn't limited to opera*. There is an option to add *however* to this independent clause. This statement does contrast with the previous sentence, which describes the roles Legorreta performed in opera, so *however* belongs in the first part of the sentence. Eliminate options with *however* in the second part.

- (A) and (B) are wrong because the sentence contains two independent clauses, which cannot be connected with commas alone or with no punctuation.
- (C) is wrong because it puts *however* with the second independent clause.
- (D) is correct because it puts *however* with the first independent clause and puts a semicolon between the two independent clauses.

22. A

In this Rules question, the subjects of the answers are changing, which suggests it may be testing modifiers. Look for and highlight a modifying phrase: *Unlike those of the white-bodied peppered moth*. Whatever is *unlike those* of white-bodied peppered moths needs to come immediately after the comma. Eliminate any answer that doesn't start with something that can be unlike some aspect of white-bodied peppered moths.

- (A) is correct because *the black-bodied peppered moth's colors* are unlike *those* (colors) of white-bodied peppered moths.

- (B), (C), and (D) are wrong because they don't begin with an aspect of the moth that *those* could refer to.

23. **A**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence says *A body of water in Antarctica...is occasionally tainted red*, and this sentence says *local inhabitants assumed the color was due to a species of red algae, but later research identified the cause as a high concentration of iron oxide in the water*. These ideas represent a time change due to the shift from what was assumed to what was found, so a time-change transition is needed. Make an annotation that says "time change." Eliminate any answer that doesn't match.

- (A) is correct because *Initially* supports the idea in the first part of this sentence preceding the idea in the second part of this sentence.
- (B) and (C) are wrong because the idea in the first part of this sentence did not occur after the idea in the second part of this sentence.
- (D) is wrong because *Alternatively* is an opposite-direction transition, which is not the relationship here.

24. **B**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *This discovery opens up many new areas of research for humans*, and this

sentence describes what scientists *hope* to do *in the future*. 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 *Regardless* is an opposite-direction transition.
- (B) is correct because this sentence specifies one of the areas of future research.
- (C) is wrong because this sentence is elaborating on what was stated in the previous sentence, not providing another, similar idea.
- (D) is wrong because this sentence is not a restatement of the previous idea.

25. **D**

This is a Transitions question, so follow the basic approach. Highlight ideas that relate to each other. The preceding sentence states that *People with threonine at the site tend to experience anxiety and depression at typical rates*, and this sentence states that *people with isoleucine at the site tend to experience depression and anxiety at a lower rate*. These ideas disagree, so an opposite-direction transition is needed. Make an annotation that says “disagree.” Eliminate any answer that doesn’t match.

- (A), (B), and (C) are wrong because they are same-direction transitions.
- (D) is correct because *On the other hand* is an opposite-direction transition.

26. **D**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *introduce Hassan Khan's sculpture to an audience already familiar with the Banque Misr*. Eliminate any answer that doesn't *introduce Hassan Khan's sculpture* in a way that assumes the audience is *familiar with the Banque Misr*.

- (A) is wrong because it doesn't *introduce* the sculpture by name.
- (B) and (C) are wrong because they explain the Banque Misr, but the audience is already familiar with it.
- (D) is correct because it *introduces Hassan Khan's sculpture* and doesn't explain the Banque Misr because the audience is already familiar with it.

27. **B**

This is a Rhetorical Synthesis question, so follow the basic approach. Highlight the goal(s) stated in the question: *emphasize the reduction in tallgrass prairies in the US and specify why this reduction occurred*. Eliminate any answer that doesn't fulfill this purpose.

- (A) and (D) are wrong because they don't mention the *reduction*.
- (B) is correct because *converted the majority* emphasizes the *reduction* and *expansion of agriculture* specifies *why this reduction occurred*.

- (C) is wrong because it doesn't *specify why this reduction occurred*.

PRACTICE TEST 1—MATH EXPLANATIONS

Module 1

1. B

The question asks for a measure on a geometric figure. Use the Geometry Basic Approach. Redraw the figure and labels on the scratch paper. 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 a and the angle labeled 55° are both small angles. Thus, angle a also measures 55° . The correct answer is (B).

2. 10

The question asks for the mean, or average, of a list of numbers. For averages, use the formula $T = AN$, in which T is the *Total*, A is the *Average*, and N is the *Number of things*. There are 8 values in the data set, so $N = 8$. Find the *Total* by adding the 8 integers to get $T = 9 + 12 + 8 + 3 + 9 + 13 + 11 + 15 = 80$. The average formula becomes $80 = (A)(8)$. Divide both sides of the equation by 8 to get $10 = A$.

It is also possible to calculate the mean of a list of numbers using the built-in calculator. Type the word *mean* followed by the list of numbers inside parentheses, and the calculated mean will appear in the lower right corner of the entry field. The calculator shows the mean as 10, which is correct.

Using either of these methods, the correct answer is 10.

3. B

The question asks for the equation that has the same solution as the given equation. The answer choices all have $2x$ on the left side, so isolate that term in the given equation. Add 5 to both sides of the equation to get $2x = -10$. The correct answer is (B).

4. D

The question asks for the volume of a geometric figure. Use the Geometry Basic Approach. Start by drawing a rectangular prism on the scratch paper as best as possible. Next, label the figure with the given information: label the length and width as 52 and the height as 45. Write down the formula for the volume of a rectangular prism, either from memory or after looking it up on the reference sheet. The formula is $V = lwh$. Plug in the values given in the question to get $V = (52)(52)(45)$, which becomes $V = 121,680$. The correct answer is (D).

5. 45

The question asks for a value based on a percent. One method is to use the built-in calculator. Change n to x so the calculator will show a graph. The calculator automatically adds “of” after the percent sign, so translate *is* as equals and enter “ $60\%x = 27$ ” into an entry field. The value of x is shown as a straight vertical line at $x = 45$, so 45 is correct.

Another method is to translate the English to math in Bite-Sized Pieces.

Percent means out of 100, so translate 60% as $\frac{60}{100}$. Translate *of* as times. Translate *is* as equals. The equation becomes $\frac{60}{100}(n) = 27$.

Multiply both sides of the equation by 100 to get $60n = 2,700$. Divide both sides of the equation by 60 to get $n = 45$, which is correct.

Using either of these methods, the correct answer is 45.

6. B

The question asks for a value based on an equation that represents a situation. The question states that the number of short tours, represented by s , is 5, and that the number of long tours is represented by l . Plug $s = 5$ into the equation and solve for l . The equation becomes $0.75(5) + 2.25l = 33$, or $3.75 + 2.25l = 33$. Subtract 3.75 from both sides of the equation to get $2.25l = 29.25$. Divide both sides of the equation by 2.25 to get $l = 13$. The correct answer is (B).

7. C

The question asks for the negative solution to a quadratic equation. One approach is to use the built-in calculator. Enter the expression as written into an entry field. The two vertical bars represent the solutions. Click on the gray dot for the negative solution to see that it is at $(-2, 0)$, which means (C) is correct.

Another approach is to plug in the answers: plug in the value for x from each answer choice one at a time until one of them makes the equation

true. Start with the easier of the middle numbers and try (C). When $x = -2$, the equation becomes $5(-2)^2 - 12 = -4(-2)$. Simplify both sides of the equation to get $5(4) - 12 = 8$, then $20 - 12 = 8$, and finally $8 = 8$. This is true, so -2 is a solution to the equation, and (C) is correct.

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

8. A

The question asks for a comparison of the standard deviations of two data sets. Standard deviation is a measure of the spread of a group of numbers. A group of numbers close together has a small standard deviation, whereas a group of numbers spread out has a large standard deviation. At branch F, the distribution of new employees is the same as at branch G, even though the numbers differ. This can be seen visually by looking at the shapes of the two graphs. To confirm, notice that the numbers in each dot plot increase by increments of 1, each value for branch F is 20 less than its corresponding value at branch G, and the number of dots in each column is the same in both plots. Since the distributions are the same, the standard deviations are equal, and (A) is correct.

It is also possible to answer this question using the built-in calculator, although it will be time consuming and requires careful entry. Type *stdev* followed by the numbers from branch F inside parentheses. Count the dots carefully and enter 30 five times, 31 two times, and so on. Do the same for branch G, and then compare the standard deviations in the lower right corner of the entry fields. They are equal, so the two data sets have equal standard deviations, and (A) is correct.

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

9. C

The question asks for an equation that represents a specific situation. The value of the laptop computer is decreasing by a certain percentage over time, so this question is about exponential decay. Write down the growth and decay formula, which is $final\ amount = (original\ amount)(1 \pm rate)^{number\ of\ changes}$. In this case, v is the *final amount*, and the question states that the *original amount* is \$429. Eliminate (A) and (B) because they do not have \$429 as the original amount in front of the parentheses. Since this situation involves a decrease, the original amount must be multiplied by $(1 - rate)$. The rate given in the question is 25% or 0.25, so the value in parentheses should be $1 - 0.25$, or 0.75. Eliminate (D), which does not have this rate because it adds 0.25 rather than subtracting it. The only remaining answer is (C), and it matches the growth and decay formula. The correct answer is (C).

10. 13824

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. According to the question, $f(2) = 1,152$, so when the input is 2, the output is 1,152. Plug in $f(x) = 1,152$ and $x = 2$, and solve for c . The function becomes $1,152 = 8(c)^2$. Divide both sides of the equation by 8 to get $144 = c^2$. Take the square root of both sides of the equation to get $\pm 12 = c$. The question states that c is a *positive constant*, so $c = 12$. The question asks for the value of $f(3)$, so plug $x = 3$ and $c = 12$ into the function, and solve for $f(3)$. The function becomes $f(3) = 8(12)^3$, then $f(3) = 8(1,728)$, and finally $f(3) = 13,824$. Leave out the comma when entering the answer in the fill-in box. The correct answer is 13824.

11. A

The question asks for the solution to a system of equations. The most efficient method is to enter both equations into the built-in calculator, and then scroll and zoom as needed to find the point of intersection. Click on the gray dot to see that the coordinates of the point are $(-9, 0)$, which is (A).

Another approach is to plug in the answers. Rewrite the answer choices on the scratch paper and label them “ (x, y) .” Start with one of the answers in the middle and try (B). Plug $x = -5$ and $y = -9$ into the first equation to get $-9 = 4(-5) + 36$, which becomes $-9 = -20 + 36$, and then $-9 = 16$. This is not true, so eliminate (B). It may be difficult to determine whether a bigger or smaller number is needed, so pick a direction and try (A) next. Plug $x = -9$ and $y = 0$ into the first equation to get $0 = 4(-9) + 36$, which becomes $0 = -36 + 36$, and then $0 = 0$. This is true, but the point must work in both equations. Plug the same values into the second equation to get $0 = -(-9 + 9)(-9 + 5)$, which becomes $0 = -(0)(-4)$, and then $0 = 0$. The point $(-9, 0)$ makes both equations true, so it is a solution to the system of equations.

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

12. B

The question asks about the graph 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. Together, they represent points on the graph of the function. The question asks for the number of distinct values of x that make $g(x) = 0$. Since $g(x) = y$, $y = 0$, and the question is asking for the x -intercepts. Look at the graph and count how many separate times the graph of the function touches the x -axis. There are two x -intercepts,

at $(-1, 0)$ and $(3, 0)$. The question asks for the distinct values of x , so do not count $(-1, 0)$ twice. The correct answer is (B).

13. **60**

The question asks for the value of a variable based on an equation. The equation is in the form of the formula for exponential growth and decay. When the change is a multiple, that formula is *final amount* = *(original amount)(multiplier)^{number of changes}*. In this case, the *final amount* is $p(y)$, the *original amount* is 29,300, the *multiplier* is 3, and the *number of changes* is $\frac{y}{60}$. Since the multiplier is 3, the population of the town will triple with a single change, so the *number of changes* can be expressed as 1. Write the equation $\frac{y}{60} = 1$, and then multiply both sides of the equation by 60 to get $y = 60$. The correct answer is 60.

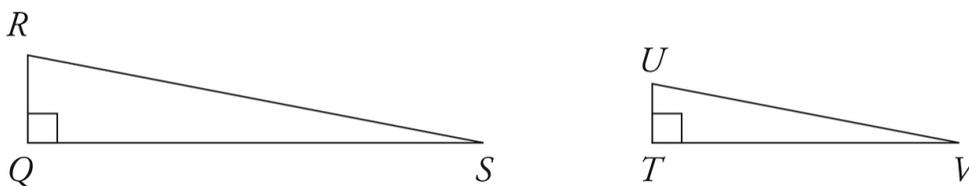
14. **D**

The question asks for an equation in terms of specific variables. There are variables in the answer choices, so plugging in is an option. However, that might get messy with three variables. All of the answer choices have n on the left side of the equation, so the other option is to solve for n . To begin to isolate n , multiply both sides of the equation by

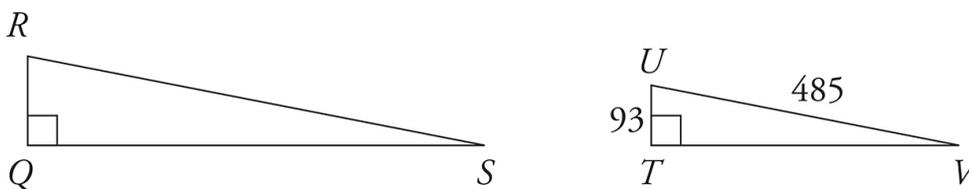
n to get $w = (n)(5t - 3)$. Divide both sides of the equation by $5t - 3$ to get $\frac{w}{5t - 3} = n$. The correct answer is (D).

15. 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:



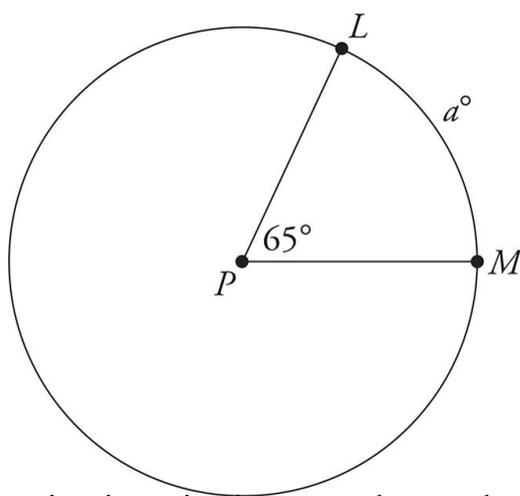
Next, label the figures with the information given. Use SOHCAHTOA to remember the trig functions. The CAH part of the acronym defines the cosine as $\frac{\textit{adjacent}}{\textit{hypotenuse}}$. The question states that $\cos(U) = \frac{93}{485}$, so label the side adjacent to angle U as 93 and label the hypotenuse as 485. The drawing now looks like this:



The question states that the triangles are similar and that angle R corresponds to angle U . Trig functions using proportional sides are equal, so $\cos(R) = \cos(U)$. Since $\cos(U) = \frac{93}{485}$, $\cos(R)$ is also $\frac{93}{485}$. The correct answer is (A).

16. **65**

The question asks for a measure on a geometric figure. Use the Geometry Basic Approach. Start by drawing the figure on the scratch paper, and then label it with the information given. Draw a circle and label the center as P . Label points L and M on the circle, and draw straight lines to connect points L and M with center P . Label angle LPM as 65° , and label minor arc LM as a° . The drawing should look something like this:



When an arc measure is given in degrees, the arc length is the same number of degrees as the central angle that defines it. The correct answer is 65.

17. **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 like the graph in the question. The graph of the equation in (D) matches the graph in the

question, so (D) is correct.

Since the answers are all in factored form, another approach is to use the factors. If a is a solution to a polynomial, $(x - a)$ is a factor. This graph intersects the x -axis at $(-1, 0)$, $(1, 0)$, and $(4, 0)$, so the factors must include $(x + 1)$, $(x - 1)$, and $(x - 4)$. Eliminate (A) and (C), which do not contain all of these factors.

Next, plug in a point that is on the graph but is not on the x -axis. When $x = 5$, $y \approx 25$, so plug those values into the remaining answers. Choice (B) becomes $25 = \frac{1}{4}(5 + 1)^2(5 - 1)(5 - 4)$, and then $25 = \frac{1}{4}(6)^2(4)(1)$. Continue simplifying to get $25 = \frac{1}{4}(36)(4)(1)$, and finally $25 = 36$. This is not true, so eliminate (B). Choice (D) becomes $25 = \frac{1}{4}(5 + 1)(5 - 1)^2(5 - 4)$, and then $25 = \frac{1}{4}(6)(4)^2(1)$. Continue simplifying to get $25 = \frac{1}{4}(6)(16)(1)$, and finally $25 = 24$. The point on the graph is a little lower than 25, so this answer works.

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

18. $-\frac{1}{3}$ or $-.3333$

The question asks for the slope of a line. The question states that *line m is perpendicular to line k*, which means they have slopes that are negative reciprocals of each other. The question gives the equation of line *k*, so find the slope of that line. First, convert the equation of line *k* into slope-intercept form, $y = mx + b$, in which m is the slope and b is the y -intercept. Add $9x$ to both sides of the equation to get $3y = 9x + 12$, and then divide both sides of the equation by 3 to get $y = 3x + 4$. The slope of line *k* is 3.

It is also possible to convert the equation of line *k* into standard form by switching the two terms on the left side of the equation to get $-9x + 3y = 12$. In standard form, $Ax + By = C$, the slope is $-\frac{A}{B}$. In this case, $A = -9$ and $B = 3$, so the slope of line *k* is $-\frac{-9}{3} = 3$.

The negative reciprocal of 3 is $-\frac{1}{3}$, so the slope of line *m* is $-\frac{1}{3}$. The decimal form, $-.3333$, would also be accepted as correct.

Using either form of a linear equation, the correct answer is $-\frac{1}{3}$ or $-.3333$.

19. D

The question asks for a value of x for which a function reaches its maximum. A parabola reaches its minimum or maximum value at its vertex, so find the x -coordinate of the vertex. The question asks about the graph of a function that has been translated, or shifted, from the graph of the function given in the question. Enter both the $g(x)$ equation

and the $f(x)$ equation into the built-in calculator, and then scroll and zoom as needed to see the two parabolas. Either use the color-coding or click on the entry field with the $f(x)$ equation to see that the parabola on the right is the graph of $f(x)$. Click on the gray dot at the vertex to see that the vertex is at $(8, -32)$. The question asks for the value of x , which is 8, so (D) is correct.

Another approach is to find the vertex of function g and then apply the shift. Either use the built-in calculator or know that, when a quadratic is in standard form, which is $ax^2 + bx + c$, the x -coordinate of the vertex (h, k) can be found using the formula $h = -\frac{b}{2a}$. In the $g(x)$ quadratic, $a = -3$ and $b = 36$, so the x -coordinate of the vertex is $-\frac{36}{2(-3)} = 6$. When graphs are translated, subtracting inside the parentheses shifts the graph to the right. Thus, $x - 2$ shifts the graph two units to the right, which shifts the x -coordinate of the vertex from 6 to 8.

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

20. C

The question asks for a value based on data. To find the expected difference between the number of students who prefer the art museum and the number of students who prefer the planetarium, first subtract the survey results to get $441 - 189 = 252$. This is not the final answer because it only represents the difference in a sample of 630 students, not all 2,520 students. Eliminate (A) because it does not answer the final question.

Next, set up a proportion to solve for the difference between preferences among the total number of students. The proportion is $\frac{252}{630} = \frac{x}{2,520}$. Cross-multiply to get $(630)(x) = (252)(2,520)$, or $630x = 635,040$. Divide both sides of the equation by 630 to get $x = 1,008$. The correct answer is (C).

21. **B**

The question asks for a description of a function based on a percent. Compare the answer choices. Two choices say that the function is increasing, and two say it is decreasing. To determine whether the function is increasing or decreasing, one method is to graph it using the built-in calculator. The calculator automatically adds “of” after the percent sign, so translate “equals” as “=” and enter $g(x) = x\%(-53)$. The graph of this function is a line going downward from left to right, so it is decreasing. Eliminate (C) and (D) because they describe an increasing function. Also eliminate (A) because the graph is a straight line, not a curve like the graph of an exponential function would be. This leaves (B) as the correct answer.

Another option is to plug in increasing values for x and compare the corresponding values of $g(x)$. Plug in $x = 1$ to get $g(1) = \frac{1}{100}(-53) = -0.53$. Plug in $x = 2$ to get $g(2) = \frac{2}{100}(-53) = -1.06$. Plug in $x = 3$ to get $g(3) = \frac{3}{100}(-53) = -1.59$. The difference between $g(1)$ and $g(2)$ is $-0.53 - (-1.06) = 0.53$, and the difference between $g(2)$ and $g(3)$ is $-1.06 - (-$

$1.59) = 0.53$. The values of $g(x)$ decrease by the same amount each time, so the function represents a linear decrease.

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

22. B

The question asks for the value of a constant in a system of equations. One method is to use the built-in calculator. Enter each equation into a separate entry field, and then click on the slider for k . Move the slider left and right, and then scroll and zoom as needed to see when the line and the parabola intersect exactly once. This happens when $k = -9$. Read carefully: the question asks for the value of x , not the value of k . Click on the gray dot at the point of intersection to see that the coordinates are $(-5, -26)$. The question asks for the value of x , which is -5 , so (B) is correct.

To solve algebraically, start by finding the value of k . The equations are both equal to y , so set them equal to each other. The new equation becomes $3x^2 + 37x + 84 = 7x - k$. Put the quadratic in standard form by setting one side equal to 0. Subtract $7x$ from both sides of the equation to get $3x^2 + 30x + 84 = -k$, and then add k to both sides of the equation to get $3x^2 + 30x + 84 + k = 0$. The question states that *the given system of equations 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. With the equation in standard form, which is $ax^2 + bx + c$

$= 0$, $a = 3$, $b = 30$, and $c = 84 + k$. Plug these values into the discriminant formula and set it equal to 0 to get $0 = (30)^2 - 4(3)(84 + k)$. Square 30 and distribute the $4(3)$ to get $0 = 900 - 1,008 - 12k$. Simplify further to get $0 = -108 - 12k$, then add 108 to both sides of the equation to get $108 = -12k$. Finally, divide both sides of the equation by -12 to get $-9 = k$. Read carefully: the question asks for the value of x , not the value of k . Plug -9 into the standard form quadratic for constant k to get $3x^2 + 30x + 84 + (-9) = 0$. Simplify the left side of the equation to get $3x^2 + 30x + 75 = 0$. Factor 3 out of the left side of the equation to get $3(x^2 + 10x + 25) = 0$, and then factor the quadratic to get $3(x + 5)(x + 5) = 0$. If $x + 5 = 0$, then $x = -5$, making (B) correct.

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

Module 2— Easier 1. C

The question asks for the y -intercept of a graph. The y -intercept of a graph is defined as the point where the graph crosses the y -axis. This happens when $x = 0$. Find $x = 0$ on the graph and move straight down to see that the graph crosses the y -axis at $y = -4$. Points on a graph are represented as ordered pairs in the form (x, y) , with the x -value first and the y -value second, so the point at the y -intercept is $(0, -4)$. The correct answer is (C).

2. C

The question asks for the solution to an equation. To solve for w , add 19 to both sides of the equation. The equation becomes $w = 532$. The correct answer is (C).

3. **A**

The question asks for a value based on a graph. To find the month in which the island had the least number of visitors, first check the units on each axis of the line graph. The x -axis shows months, and the y -axis shows the number of visitors, in thousands, in ascending order from low to high. Thus, the least number of visitors will be represented by the lowest point on the line graph. Find the lowest point on the graph and look up the month on the x -axis. The graph reaches its lowest point in February. The correct answer is (A).

4. **40**

The question asks for a value based on an equation. Plug $m = 6$ into the equation, and solve for n . The equation becomes $n = 7(6) - 2$. Follow the order of operations on the right side of the equation and multiply first to get $n = 42 - 2$. Next, subtract on the right side of the equation to get $n = 40$. The correct answer is 40.

5. **D**

The question asks for a measurement and gives conflicting units. To convert kilometers to meters, set up a proportion. Be sure to match up units. The question states that $1 \text{ kilometer} = 1,000 \text{ meters}$, so the

proportion is $\frac{1 \text{ kilometer}}{1,000 \text{ meters}} = \frac{28 \text{ kilometers}}{x \text{ meters}}$. To solve for x , cross-

multiply to get $(1,000)(28) = (1)(x)$, which becomes $28,000 = x$. The correct answer is (D).

6. 81

The question asks for the measure of an angle and gives conflicting units. Either write down a conversion between radians and degrees from memory or open the reference sheet, which states that the *number of degrees of arc in a circle is 360* and that the *number of radians of arc in a circle is 2π* . Thus, $360 \text{ degrees} = 2\pi \text{ radians}$. This reduces to $180 \text{ degrees} = \pi \text{ radians}$. Set up a proportion, being sure to match up units.

The proportion is $\frac{180 \text{ degrees}}{\pi \text{ radians}} = \frac{x \text{ degrees}}{\frac{9\pi}{20} \text{ radians}}$. Cross-multiply to get (π)

$(x) = (180)\left(\frac{9\pi}{20}\right)$. Simplify to get $\pi x = 81\pi$, and then divide both sides of

the equation by π to get $x = 81$. The correct answer is 81.

7. 12 or -18

The question asks for a value given an equation with an absolute value. The most efficient method is to use the built-in calculator. Enter the equation as written into an entry field. In the graphing area, the points

where the two horizontal lines cross the y -axis are the values of y . Those points are at $x = -18$ and $x = 12$. The question asks for one possible value of y , so either -18 or 12 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 one value of y , either set $y + 3$ equal to 15 or set $y + 3$ equal to -15 . When $y + 3 = 15$, subtract 3 from both sides of the equation to get $y = 12$. When $y + 3 = -15$, subtract 3 from both sides of the equation to get $y = -18$. The question asks for one possible value of y , so either -18 or 12 will be accepted as correct.

Using either of these methods, the correct answer is 12 or -18 .

8. D

The question asks for a function that models a specific situation. There are variables in the answer choices, so plug in. Make $t = 2$. The question states that Giovanni uses 4.6 ounces of candle wax per tin, so he will use $(4.6)(2) = 9.2$ ounces of candle wax for 2 tins. Plug $t = 2$ and $w(t) = 9.2$ into the answer choices, and eliminate any that don't work. Choice (A) becomes $9.2 = 2 - 4.6$, or $9.2 = -2.6$. This is not true, so eliminate (A). Choice (B) becomes $9.2 = 2 + 4.6$, or $9.2 = 6.6$; eliminate (B). Choice (C) becomes $9.2 = \frac{2}{4.6}$, or $9.2 \approx 0.43$; eliminate (C). Choice (D) becomes $9.2 = 4.6(2)$, or $9.2 = 9.2$. The correct answer is (D).

9. 12

The question asks for a rate given a specific situation. Translate the information in Bite-Sized Pieces. The question states that the *total cost of renting the classroom is \$65*. The question also states that the organization *pays a one-time booking fee of \$5*. Subtract the booking fee from the total cost to get $\$65 - \$5 = \$60$. Since the organization rented the classroom for 5 hours, divide \$60 by 5 to find the rate for one hour: $\frac{\$60}{5} = \12 . The correct answer is 12.

10. A

The question asks for an equivalent form of an expression. Use Bite-Sized Pieces and Process of Elimination to tackle this question. Start by combining the terms that have a^2 . Add the first term of each set of parentheses to get $6a^2 + (-2a^2)$, then $6a^2 - 2a^2$, and finally $4a^2$. Eliminate (C) and (D) because they do not include $4a^2$. Compare the remaining answer choices: (A) and (B) both have the term -3 , so ignore that and work with the a -terms. Add those terms to get $-5a + (-a)$, then $-5a - a$, and finally $-6a$. Eliminate (B) because it does not include $-6a$. The correct answer is (A).

11. C

The question asks for an equation that represents a given situation. Translate the information in Bite-Sized Pieces and eliminate after each piece. Translate *2 times a number z* as $2z$. Eliminate (A) and (D) because they do not contain this term. Choices (B) and (C) correctly translate *6 less than* as -6 and *equals -15* as $= -15$. However, 6 should be subtracted from $2z$, not from -15 , so eliminate (B). The correct answer is (C).

12. **B**

The question asks for an equivalent form of an expression. Both terms contain $7b$, so one approach is to factor out $7b$ to get $7b(10 - b)$. Check that (B) is correct by distributing: $7b(10) = 70b$, and $7b(b) = 7b^2$, so $7b(10 - b)$ is an equivalent form of $70b - 7b^2$, and (B) is correct.

There are variables in the answer choices, so another option is to plug in. Plug in a simple number for b , such as 2. The expression becomes $70(2) - 7(2)^2$. Simplify the expression to get $140 - 7(4)$, then $140 - 28$, and finally 112. This is the target value; write it down and circle it. Now plug $b = 2$ into each answer choice and eliminate any that do not match the target value of 112. Choice (A) becomes $2[10 - 7(2)]$. Simplify to get $2(10 - 14)$, then $2(-4)$, and finally -8 . This does not match the target value, so eliminate (A). Choice (B) becomes $7(2)(10 - 2)$, then $7(2)(8)$, and finally 112. This matches the target value, so keep (B), but check the remaining answers just in case. Choice (C) becomes $10(2)[7 - 7(2)]$. Simplify to get $20(7 - 14)$, then $20(-7)$, and finally -140 ; eliminate (C). Choice (D) becomes $(2)^2[10 - 7(2)]$. Simplify to get $4(10 - 14)$, then $4(-4)$, and finally -16 ; eliminate (D), leaving (B) as correct.

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

13. **A**

The question asks for the length of the third side of a right triangle. The side labeled z is opposite the 90° angle, so it is the hypotenuse. To find the length of the side labeled y , use the Pythagorean Theorem: $a^2 + b^2 = c^2$. Plug in the known values to get $5^2 + b^2 = 12^2$. To find the value of b , first subtract 5^2 from both sides of the equation to get $b^2 = 12^2 - 5^2$. Next, take the square root of both sides of the equation to get $b = \sqrt{12^2 - 5^2}$. The correct answer is (A).

14. **B**

The question asks for the solution to a system of equations. One method is to enter both equations into the built-in calculator, and then scroll and zoom as needed to find the solution. The graph shows one solution at $(-18, -6)$, which is (B).

Another approach is to plug in the answers. Rewrite the answer choices on the scratch paper and label them “ (x, y) .” Start with (A) and plug $x = -20$ and $y = -8$ into the easier second equation. The equation becomes $3(-8) = -20$, or $-24 = -20$. This is not true, so eliminate (A). Try (B) next and plug $x = -18$ and $y = -6$ into the second equation to get $3(-6) = -18$, or $-18 = -18$. This is true, but the solution must work in both equations. Plug the point in (B) into the first equation to get $-12 = -18 - (-6)$, which becomes $-12 = -18 + 6$, and then $-12 = -12$. This is also true, so $(-18, -6)$ is a solution to the system of equations, and (B) is correct.

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

15. **B**

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 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 is likely to make more than one answer work, try the second row of the table and plug $x = 3$ and $g(x) = 21$ into the answer choices. Choice (A) becomes $21 = 3 + 33$, or $21 = 36$. This is not true, so eliminate (A). Choice (B) becomes $21 = 2(3) + 15$, or $21 = 6 + 15$, and then $21 = 21$. This is true, so keep (B) but check the remaining answers with this pair of values. Choice (C) becomes $21 = 21(3) + 15$, or $21 = 63 + 15$, and then $21 = 78$; eliminate (C). The right side of the equation in (D) will be even larger, so it cannot equal 21; eliminate (D). The correct answer is (B).

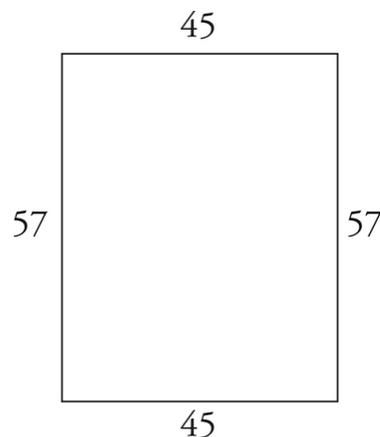
16. **B**

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 36, and the answers have numbers that could represent the positive x -value, so plug in the answers. Rewrite the answer choices on the scratch paper and label them "x." Start with one of the middle numbers and try (B), 12. Plug 12 into the function for x to get $f(12) = \frac{1}{4}(12)^2$, which becomes

$f(12) = \frac{1}{4}(144)$, and then $f(12) = 36$. This matches the output value given in the question, so stop here. The correct answer is (B).

17. 204

The question asks for a measurement of a geometric figure. Use the Geometry Basic Approach. Start by drawing a rectangle on the scratch paper. Next, label the figure with information from the question. In a rectangle, opposite sides are equal, so this rectangle has two sides that are 45 inches long and two sides that are 57 inches long. The drawing should look something like this:



The perimeter of a geometric shape is the sum of the lengths of the sides. Add all four side lengths to get $57 + 45 + 57 + 45 = 204$. The correct answer is 204.

18. D

The question asks for an equation that represents a graph. To find the best equation, compare features of the graph to the answer choices. The

equations in the answer choices are all in the form $y = mx + b$, in which m is the slope and b is the y -intercept. The y -intercept of the graph is at $(0, -4)$, so $b = -4$. Eliminate (B) and (C) because they have the wrong y -intercept. Find the slope by using the formula $slope = \frac{y_2 - y_1}{x_2 - x_1}$. The graph has points at $(4, 4)$ and $(0, -4)$, so plug those values into the slope formula to get $slope = \frac{4 - (-4)}{4 - 0}$, which becomes $slope = \frac{8}{4}$, or $slope = 2$. Eliminate (A) because it has a slope of $\frac{1}{2}$ instead of 2, leaving (D) as correct.

Another option is to enter all four of the equations in the answer choices into the built-in calculator and see which one looks like the graph in the question. The graph of the equation in (D) matches the graph in the question, so (D) is correct.

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

19. **B**

The question asks for the maximum value given a specific situation. Since the question asks for a specific value and the answers contain numbers in order, plug in the answers. Rewrite the answer choices on the scratch paper and label them “number of packages.” Next, pick a value to start with. Since the question asks for the maximum, start with the largest number, 46. If there are 46 packages and each package weighs 15 kilograms, the total weight of the packages is $(46)(15) = 690$ kilograms. Add the weight of the cart for a combined weight of $690 + 50 = 740$ kilograms. This is too big, so eliminate (D). Try (C), and

make the number of packages 44. If there are 44 packages with a weight of 15 kilograms each, the total weight of the packages is $(44)(15) = 660$ kilograms. Add the weight of the cart for a combined weight of $660 + 50 = 710$ kilograms. The combined weight is still greater than 700 pounds, so eliminate (C). The result was close, so (B) is likely correct. To check, make the number of packages 43. If there are 43 packages with a weight of 15 kilograms each, the total weight of the packages is $(43)(15) = 645$ kilograms. Add the weight of the cart for a combined weight of $645 + 50 = 695$ kilograms. This is less than 700, so 43 is the maximum number of packages that can be on the cart without going over the elevator's weight limit. The correct answer is (B).

20. **A**

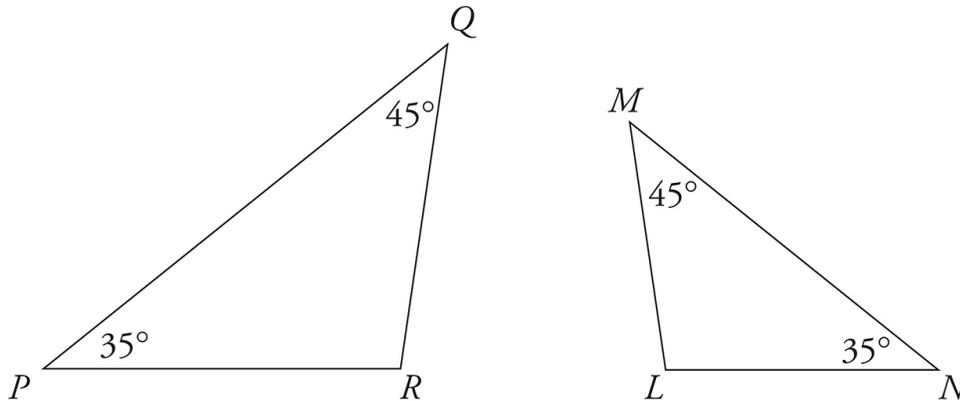
The question asks for the x -intercept of a function. An x -intercept is a point where $y = 0$. One approach is to enter the equation into the built-in calculator, and then scroll and zoom as needed to find the point where the graph intersects the x -axis. The graph shows the x -intercept at $(-14, 0)$, so the x -coordinate is -14 , which is (A).

Because the answers are possible x -coordinates of the x -intercept, another approach is to plug in the answers along with 0 for y . Using (A), for example, plug $x = -14$ and $y = 0$ into the function to get $0 = 9(-14) + 126$, which becomes $0 = -126 + 126$, and then $0 = 0$. This is true, so $(-14, 0)$ is the x -intercept, and (A) is correct.

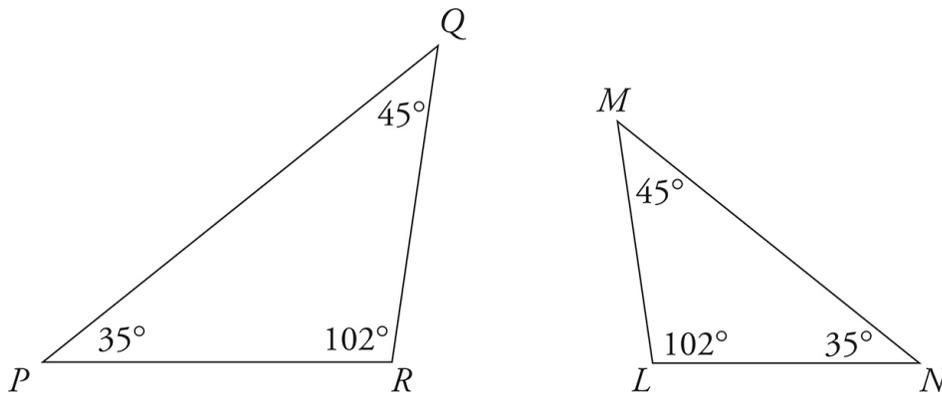
Using either of these methods, the correct answer is (A).

21. **D**

The question asks for information that will determine whether two triangles are similar. Use the Geometry Basic Approach. Start by drawing two triangles on the scratch paper. Next, label the figures with information from the question: label angle P as 35° , angle Q as 43° , angle M as 43° , and angle N as 35° . The drawing should look something like this.



All triangles contain 180° , so the third angle in triangle PQR is $180^\circ - 35^\circ - 43^\circ = 102^\circ$, and the third angle in triangle LMN is $180^\circ - 43^\circ - 35^\circ = 102^\circ$. Label these on the figure, which now looks like this:



Two triangles are similar if they have the same three angle measurements, which these triangles do. Since it is already possible to determine that the two triangles are similar, no additional information is needed. The correct answer is (D).

22. C

The question asks for a value given a 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 “ r .” Next, start with a number in the middle and try (B), 102. The question states that the chef *separates 160 liters of oil into two containers*. If one container holds $r = 102$ liters of oil, the other container holds $q = 160 - 102$, or $q = 58$ liters of oil. The question also states that r is 8 less than 5 times q . If $q = 58$, multiply by 5 to get $(5)(58) = 290$, and then subtract 8 to get $290 - 8 = 282$. The two values of r , 102 and 282, are not equal, so eliminate (B). It may be difficult to determine whether a larger or smaller value is needed, so pick a direction and try (C), 132. If $r = 132$, $q = 160 - 132$, or $q = 28$. Multiply this value for q by 5 to get $(5)(28) = 140$, and then subtract 8 to get $140 - 8 = 132$. The two values of r are the same, 132, so this answer works. The correct answer is (C).

Module 2—Harder

1. C

The question asks for an equivalent form of an expression. Both terms include x^5 multiplied by a coefficient. Add the coefficients to get $15 + 7 = 22$. Thus, $15x^5 + 7x^5 = 22x^5$. The correct answer is (C).

2. A

The question asks for the number of solutions to an equation. Divide both sides of the equation by 75 to get $x = -x$. The only value that makes this true is 0, so the equation has exactly one solution, and (A) is correct.

It is also possible to determine the number of solutions with the built-in calculator. Enter each side of the equation into its own entry field, and then scroll and zoom as needed to see one point of intersection at $(0, 0)$. Thus, there is one solution, and (A) is correct.

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

3. C

The question asks for the x -value of the solution to a system of equations. One method is to enter both equations into the built-in calculator. Scroll and zoom as needed to see the solution marked by a gray dot, and then click on the dot to see that the coordinates of the solution are $(5, -6)$. The question asks for the value of x , which is 5, so (C) is correct.

Since the equations contain the term $5y$ with opposite signs, another method is to stack and add the two equations.

$$\begin{array}{r} -5y = 30 \\ + (4x + 5y = -10) \\ \hline \end{array}$$

Divide both sides of the resulting equation by 4 to get $x = 5$, making (C) correct.

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

4. B

The question asks for the interpretation of a feature of the graph of a function. Start by reading the final question, which asks for the best

interpretation of the slope of the graph. The equation of the function is in slope-intercept form, $y = mx + b$, in which m is the slope. In this case, $m = -2.99$. Eliminate (C) and (D) because 21 is the value of b , not m . The question states that Olivia rents x movies, so x represents the number of movies. Eliminate (A) because it refers to Olivia's budget, not to the number of movies. To check (B), plug in two values for x and see what happens to $f(x)$. If Olivia rents $x = 1$ movie, the function becomes $f(1) = -2.99(1) + 21$, or $f(1) = 18.01$. If Olivia rents $x = 2$ movies, the function becomes $f(2) = -2.99(2) + 21$, or $f(2) = -5.98 + 21$, and then $f(2) = 15.02$. After renting the second movie, her budget decreased by $18.01 - 15.02 = 2.99$, so 2.99 represents the cost per movie. The correct answer is (B).

5. 147

The question asks for the measure of an angle and gives conflicting units. Either write down a conversion between radians and degrees from memory or open the reference sheet, which states that the *number of degrees of arc in a circle is 360* and that the *number of radians of arc in a circle is 2π* . Thus, 360 degrees = 2π radians, which reduces to 180 degrees = π radians. Set up a proportion, being sure to match up units.

The proportion is $\frac{180 \text{ degrees}}{\pi \text{ radians}} = \frac{x \text{ degrees}}{\frac{49\pi}{60} \text{ radians}}$. Cross-multiply to get (π)

$(x) = (180) \left(\frac{49\pi}{60} \right)$. Simplify to get $\pi x = 147\pi$, and then divide both sides of the equation by π to get $x = 147$. The correct answer is 147.

6. D

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 “tickets for musicals.” Next, pick one of the middle numbers and try (B), 6,400. The question states that *19,200 fewer tickets were sold for dramatic performances than for musicals*. If 6,400 tickets were sold for musicals, $6,400 - 19,200 = -12,800$ tickets were sold for dramatic performances. It is not possible for a negative number of tickets to be sold, so eliminate (B). Also eliminate (A) because it will also result in a negative number.

Choice (C) would mean that all of the tickets were sold for musicals and no tickets were sold for dramatic performances, which is unlikely, so try (D) instead. If 25,600 tickets were sold for musicals, $25,600 - 19,200 = 6,400$ tickets were sold for dramatic performances. The question also states that *4 times as many tickets were sold for musicals as were sold for dramatic performances*. If 6,400 tickets were sold for dramatic performances, $(6,400)(4) = 25,600$ tickets were sold for musicals. In both cases, the numbers of tickets sold for both types of performances are the same, so stop here. The correct answer is (D).

7. 5

The question asks for a value based on a geometric figure. Use the Geometry Basic Approach. Begin by drawing a right triangle, and then label one leg as 16 and the hypotenuse as 56. The drawing should look something like this:



To find the length of the other leg, use the Pythagorean Theorem: $a^2 + b^2 = c^2$. The question states that the length of the other leg can be written as $24\sqrt{s}$, so plug in $24\sqrt{s}$ for a and the known values for b and c to get $(24\sqrt{s})^2 + 16^2 = 56^2$. Square all of the terms to get $576s + 256 = 3,136$. Subtract 256 from both sides of the equation to get $576s = 2,880$, and then divide both sides of the equation by 576 to get $s = 5$. The correct answer is 5.

8. C

The question asks for the best comparison of the means, or averages, of two sets of data shown in a frequency table. For averages, use the formula $T = AN$, in which T is the *Total*, A is the *Average*, and N is the *Number of things*. The question states that there are 54 employees in each department, so that is the *Number of things*. Since the *Number of things* is the same, the department with the larger total will have the greater average. Use the frequency table to ballpark the *Total*. A frequency table has two columns: the left-hand column contains the values, and the right-hand column contains the number of times each value occurs, or its frequency. In the Accounting department, for example, 1 occurs 19 times and 5 occurs 6 times. In the Marketing

department, on the other hand, 1 occurs only 6 times and 5 occurs 19 times. The department with a greater number of large values will have a greater total, so estimate that the mean of the Marketing department is greater than that of the Accounting department, which matches (C).

It is also possible to find the *Total* using the frequency table. Multiply each value by the number of times it occurs, and add the results. For the Accounting department, multiply 1×19 , 2×14 , 3×7 , 4×8 , and 5×6 . Add the results to get $19 + 28 + 21 + 32 + 30 = 130$. Plug 130 for the *Total* and 54 for the *Number of things* into the average formula to get $130 = (A)(54)$. Divide both sides of the equation by 54 to get $A \approx 2.41$. The same calculations for values in the Marketing department give a *Total* of 202 and an *Average* of ≈ 3.74 . The average for the Marketing department, 3.74, is greater than the average for the Accounting department, 2.41, so (C) is correct.

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

9. A

The question asks for the point that satisfies a system of inequalities. The answers contain specific points, so one approach is to plug in the answers. Rewrite the answer choices on the scratch paper and label them “(x, y).” Test the ordered pairs in both inequalities, and look for an ordered pair that makes both inequalities true. Start with (A) and plug $x = -6$ and $y = 0$ into the first inequality to get $0 \leq -3(-6) + 5$, which becomes $0 \leq 18 + 5$, and then $0 \leq 23$. This is true, but the point must work in both inequalities. Plug the same values into the second inequality to get $0 \geq -6 + 2$, which becomes $0 \geq -4$. This is also true, which means the point in (A) makes both inequalities true, so (A) is correct.

Another approach is to enter both inequalities into the built-in calculator and see which of the four points in the answer choices is in the area of the intersection of the two graphs in the graphing area. The point $(-6, 0)$ is in the overlapping area that shows the solutions to the system, so (A) is correct.

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

10. **D**

The question asks for the interpretation of a term in context. Start by reading the final question, which asks for the meaning of $24l$. Rewrite the equation on the scratch paper. Then label the parts of the equation with the information given, and eliminate answers that do not match the labels. The question states that s represents the number of small tubes of oil paint, l represents the number of large tubes of oil paint, and 108 is the total amount spent. Thus, $24l$ has something to do with large tubes of oil paint. Eliminate (A) and (C) because they refer to small tubes, not large tubes. Compare the remaining answers: the difference is whether $24l$ is the amount of money received for returning large tubes or the number of large tubes. Eliminate (B) because the number of large tubes is represented by l , not by $24l$. The terms on the left side of the equation combine to equal 108, which is the total amount of money spent, so it is logical that $24l$ is the amount of money Antonia received for returning l large tubes for a refund. The correct answer is (D).

11. $\frac{24}{5}$ or 4.8

The question asks for the product of the solutions to an equation. The most efficient approach is to use the built-in calculator. Enter the equation as written into an entry field. In the graphing area, the points where the two vertical lines cross the x -axis, represented by gray dots, are the solutions. Click on each gray dot and write down the x -values: 1 and 4.8. Multiply the solutions to get $(1)(4.8) = 4.8$.

To solve algebraically, rearrange the equation to make it easier to find the solutions. Distribute on each side of the equation to get $5x^2 - 20x = 3x - 24 + 6x$. Combine the like terms on the right side of the equation to get $5x^2 - 20x = 9x - 24$. Subtract $9x$ from both sides of the equation to get $5x^2 - 29x = -24$, and then add 24 to both sides of the equation to get $5x^2 - 29x + 24 = 0$. When a quadratic is in standard form, which is $ax^2 + bx + c$, the shortcut to find the product of the solutions is $\frac{c}{a}$. In this quadratic, $a = 5$ and $c = 24$. Plug in these values for a and c to get $\frac{24}{5}$. This fraction or the decimal equivalent, 4.8, can be entered in the fill-in box and will be accepted as correct.

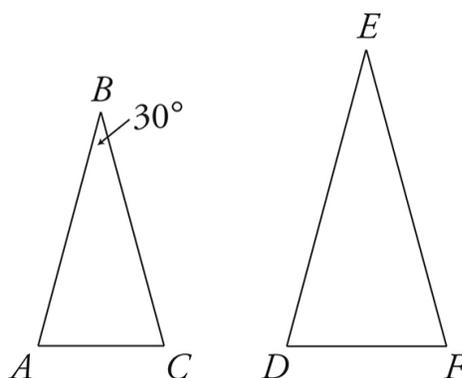
Using either of these methods, the correct answer is $\frac{24}{5}$ or 4.8.

12. **B**

The question asks for the measure of an angle on a geometric figure.

Use the Geometry Basic Approach. Start by drawing two triangles that

are similar to each other, meaning they have the same angle measures and proportional side lengths. Be sure to match up the corresponding vertices that are given in the question. Since $AC = \frac{1}{3}DF$, make triangle ABC smaller than triangle DEF . Label angle B as 30° . The drawing should look something like this:



Since angle B corresponds to angle E , angle E also has a measure of 30° . It doesn't matter that the side lengths are different because the measures of corresponding angles are always equal in similar triangles. The correct answer is (B).

13. **B**

The question asks for a change in value based on a function. In function notation, the number inside the parentheses is the x -value that goes into the function, and the value that comes out of the function is the y -value. Since the question is about the relationship between variables, plug in two different values for the temperature in Rankine, R , to determine the

decrease in degrees Celsius, C . Start by plugging $R = 10$ into the function to get $C = \frac{5}{9}(10 - 0.6) - 273$, which becomes $C = \frac{5}{9}(9.4) - 273$, then $C = 5.\bar{2} - 273$, and finally $C = -267.\bar{7}$. Next, decrease the value of R by 8.82 to get $10 - 8.82 = 1.18$, and plug $R = 1.18$ into the function to get $C = \frac{5}{9}(1.18 - 0.6) - 273$, which becomes $C = \frac{5}{9}(0.58) - 273$, then $C = 0.3\bar{2} - 273$, and finally $C = -272.\bar{6}\bar{7}$. The difference between the two values of C is $-267.\bar{7} - (-272.\bar{6}\bar{7}) = 4.90$. The correct answer is (B).

14. 67

The question asks for the value of a constant in the coordinates of a point on a line. First, find the value of n . The y -intercept is the point at which the line crosses the y -axis; at that point, the value of the x -coordinate is 0. The question states that the x -coordinate of the y -intercept is $n + 8$, so $n + 8 = 0$ and $n = -8$.

Next, determine the values of the points on the line. The table shows that two points on the line are $(n - 4, -5)$ and $(n, 19)$. Plug in -8 for n to get points at $(-12, -5)$ and $(-8, 19)$. 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 $slope = \frac{-5 - 19}{-12 - (-8)}$. Simplify to get $slope = \frac{-24}{-4}$, or $slope = 6$.

Plug the slope and one of the known points into the slope-intercept form of a line, which is $y = mx + b$, and solve for the y -intercept, b . Use the point $(-8, 19)$, and the equation becomes $19 = 6(-8) + b$, or $19 = -$

$48 + b$. Add 48 to both sides of the equation to get $67 = b$. The correct answer is 67.

15. **D**

The question asks for the interpretation of a feature of a graph in context. Start by reading the final question, which asks for the best interpretation of the vertex of the graph. Enter the function into the built-in calculator, and then scroll and zoom as needed to find the vertex. The coordinates of the vertex are (3, 4). The other way to find the vertex is to recognize that the equation is in vertex form, $a(x - h)^2 + k$, in which (h, k) is the vertex. The question states that $y = g(a)$ and that $g(a)$ represents the arrow's height above the ground; therefore, y represents the height above the ground. Eliminate (A) and (C) because they state that the arrow was 3 feet above the ground, which is the x -value of the vertex, not the y -value.

Compare the remaining answer choices. The difference between (B) and (D) is whether the vertex represents the maximum height of the arrow or the height when the arrow was released. When the arrow was released, 0 seconds had elapsed. Time is on the x -axis, so $x = 0$ when the arrow was released. However, the vertex has an x -coordinate of 3, not 0, so eliminate (B). The correct answer is (D).

16. **A**

The question asks for a constant in 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. Together, they represent points on the graph of the function. A graph intersects the x -axis when $y = 0$, and the question

states that *the graph intersects the x-axis at $x = 3$* , so the graph of this function contains the point $(3, 0)$. Plug $x = 3$ and $f(x) = 0$ into the equation to get $0 = 13(3) + c$, which becomes $0 = 39 + c$. Subtract 39 from both sides of the equation to get $-39 = c$. The correct answer is (A).

17. **A**

The question asks for a measurement and gives conflicting units. The question provides the conversion that 1 mile = 5,280 feet but gives the land area of the island in square feet. Because the conversion equation is in linear units, not square units, it is necessary to convert to square miles and square feet. Square both parts of the conversion equation to get $1^2 \text{ mile} = 5,280^2 \text{ feet}$, or 1 square mile = 27,878,400 square feet.

Next, set up a proportion, being sure to match up units. The proportion is $\frac{1 \text{ square mile}}{27,878,400 \text{ square feet}} = \frac{x \text{ square miles}}{14,217,984 \text{ square feet}}$. Cross-multiply to get $(27,878,400)(x) = (1)(14,217,984)$, or $27,878,400x = 14,217,984$.

Divide both sides of the equation by 27,878,400 to get $x = 0.51$.

Therefore, the island measures 0.51 square miles. The correct answer is (A).

18. **17**

The question asks for a constant in a factor of a polynomial. To begin factoring the expression, factor $3x$ out of the entire expression to get $3x(x^2 - 21x + 68)$. Now factor the quadratic part of the expression. Find two numbers that multiply to 68 and add to -21 . These are -17 and -4 . Thus, the full expression factors into $3x(x - 17)(x - 4)$. The two possible values for k in the binomial $(x - k)$ are 17 and 4. The question asks for the greatest possible value of k , which is 17. The correct answer is 17.

19. **-28**

The question asks for a value in a system of equations. One method is to use the built-in calculator. Enter each equation into an entry field, and then select the slider for t . A system of linear equations in two variables has infinitely many solutions when the equations graph the same line. Move the slider left and right—clicking on the “ $t = 0$ ” equation to expand the range as needed—until the same line is graphed twice. This happens when $t = -28$.

To solve algebraically, recall that a system of linear equations in two variables has infinitely many solutions when the equations represent the same line. For this to happen, the coefficients on both variables have to be the same and the constants need to be the same. Start by rearranging the two equations so they are in the same form. Subtract tx from both sides of the first equation to get $-tx + 63y - 2.1 = 0$. Add 2.1 to both sides of the equation to get $-tx + 63y = 2.1$. The equation is now in standard form, which is $Ax + By = C$. To get the second equation in standard form, subtract $46y$ from both sides of the equation to get $4x + 9y = 0.3$. Write the two equations above each other to see how the terms match up:

$$-tx + 63y = 2.1$$

$$4x + 9y = 0.3$$

Now that the two equations are in the same form, manipulate the second equation so that the coefficients on the y terms are the same. Multiply the entire second equation by 7 to get $28x + 63y = 2.1$. Rewrite the equations to see that the y -terms and the constants are now the same.

$$\begin{aligned} -tx + 63y &= 2.1 \\ 28x + 63y &= 2.1 \end{aligned}$$

In order for the system of equations to have infinitely many solutions, the coefficients on the x terms must also be the same. Thus, $-tx = 28x$. Divide both sides of the equation by $-x$ to get $t = -28$. When $t = -28$, the two equations are identical, so they are the same line, and the system of equations has infinitely many solutions.

Using either of these methods, the correct answer is -28 .

20. C

The question asks for an equation that models a specific situation.

There are variables in the answer choices, so plug in. Choose a number that works well with the conditions of the question: since Alan's average speed is 38 miles per hour, make m , the distance from his home to his work office, equal to 76 miles. The question states that Alan drives *to his work office and back home*, so the total distance is $76 + 76$

= 152 miles. To find t , the number of hours it will take to drive both directions, set up a proportion, being sure to match units. The proportion is $\frac{38 \text{ miles}}{1 \text{ hour}} = \frac{152 \text{ miles}}{t \text{ hours}}$. Cross-multiply to get $(38)(t) = (1)(152)$, or $38t = 152$. Divide both sides of the equation by 38 to get $t = 4$. Thus, when $m = 76$, $t = 4$.

Now plug $m = 76$ and $t = 4$ into the answer choices and eliminate any that don't work. Choice (A) becomes $4 = 38(76)$, or $4 = 2,888$. This is not true, so eliminate (A). Choice (B) becomes $4 = 76(76)$, or $4 = 5,776$; eliminate (B). Choice (C) becomes $4 = \frac{76}{19}$, or $4 = 4$. This is true, so keep (C), but check (D) just in case. Choice (D) becomes $4 = \frac{76}{38}$, or $4 = 2$; eliminate (D). The correct answer is (C).

21. A

The question asks for a true statement about a function. The question states that the graph of function h is a parabola that opens downward and has a vertex of (h, k) . When a quadratic is in standard form, $ax^2 + bx + c$, the sign of a indicates which way the parabola opens. When a is positive, the parabola opens upward, and when a is negative, the parabola opens downward. Since this parabola opens downward, a must be negative. However, a could be between 0 and -1 or less than -1 , so this is not enough information to determine whether statement (I) must be true.

The question also states that $h(1) = h(-13)$, so plug $x = 1$ and $x = -13$ into the $h(x)$ equation and set the two results equal to each other: $a(1)^2 - 2(1) + c = a(-13)^2 - 2(-13) + c$. Simplify both sides of the equation to get $a - 2 + c = 169a + 26 + c$. Subtract c from both sides of the equation to get $a - 2 = 169a + 26$. Subtract a from both sides of the equation to get $-2 = 168a + 26$, and then subtract 26 from both sides of the equation to get $-28 = 168a$. Divide both sides of the equation by 168 to get $\frac{-28}{168} = a$, which reduces to $-\frac{1}{6} = a$. This value of a is greater than -1 and less than 0, so statement (I) is true. Eliminate (B) and (D) because they do not include (I) as a true statement.

To check statement (II), plug in a value to determine whether that condition must be true. Try to prove the statement false by plugging in a negative value, such as $c = -1$. Plug $c = -1$ and $a = -\frac{1}{6}$ into the quadratic to get $-\frac{1}{6}x^2 - 2x + (-1)$. Enter this into the built-in calculator to see the graph of the function. The graph shows a parabola that opens downward and has a vertex of $(-6, 5)$. The question states that the parabola opens downward and that k , the y -coordinate of the vertex, is greater than 0, both of which are true for at least one negative value of c . This means that c does not have to be greater than 0, so statement (II)

is not always true. Eliminate (C) because it includes (II) as a statement that must be true. The correct answer is (A).

22. **B**

The question asks for a solution to a given equation. The constant k is in the answer choices, so plug in a value for k . Make $k = 2$. The

expression becomes $\frac{9(2)^2}{\sqrt{9(2)^2 + x^2}} - 83 = -\left(\frac{x^2}{\sqrt{9(2)^2 + x^2}}\right)$. Enter this

equation into the built-in calculator to graph the solutions. Type “sqrt” and the calculator will insert the square root symbol. Scroll and zoom as needed to see that the graph shows two solutions at slightly greater than -83 and slightly less than 83 . These are the approximate target values; write them down and circle them.

Now plug $k = 2$ into the answer choices and eliminate any that do not match either of the target values. Choice (A) becomes $3(2) = 6$. This is not close to -83 or 83 , so eliminate (A). Choice (B) becomes $\sqrt{83^2 - 9(2)^2} = \sqrt{6,889 - 36}$. Use a calculator to get a result of ≈ 82.78 . This is slightly less than 83 , so keep (B) but check the remaining answers just in case. Choice (C) becomes $\sqrt{83^2 + 9(2)^2} = \sqrt{6,889 + 36}$. Use a calculator to get a result of ≈ 83.21 . This is close, but the positive solution on the graph is less than 83 , not greater than 83 , so eliminate (C). Choice (D) becomes $83^2 + 9(2)^2 = 6,880 + 36 = 6,925$, which is much too large; eliminate (D). Only (B) is left, and it is correct.

To solve algebraically, first add 83 to both sides of the equation to get

$\frac{9k^2}{\sqrt{9k^2 + x^2}} = 83 - \frac{x^2}{\sqrt{9k^2 + x^2}}$, and then add $\frac{x^2}{\sqrt{9k^2 + x^2}}$ to both sides of the equation to get $\frac{9k^2}{\sqrt{9k^2 + x^2}} + \frac{x^2}{\sqrt{9k^2 + x^2}} = 83$. Both fractions on the

left side of the equation have the same denominator, so add the

numerators to get $\frac{9k^2 + x^2}{\sqrt{9k^2 + x^2}} = 83$. Square both sides of the equation to get $\frac{(9k^2 + x^2)(9k^2 + x^2)}{9k^2 + x^2} = 83^2$. One of the binomials on the left side of

the equation cancels, leaving $9k^2 + x^2 = 83^2$. Now solve for x . Subtract

$9k^2$ from both sides of the equation to get $x^2 = 83^2 - 9k^2$. Take the

square root of both sides of the equation to get $x = \sqrt{83^2 - 9k^2}$, which

is (B).

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