



SAT Practice Test 5

Four modules, 98 questions, 2 hours 14 minutes plus a 10-minute break

Section	Questions	Time
Reading and Writing, Module 1	27 questions	32 minutes
Reading and Writing, Module 2	27 questions	32 minutes
Math, Module 1	22 questions	35 minutes
Math, Module 2	22 questions	35 minutes

1. Time each module on its own, and take the 10-minute break after Reading and Writing Module 2.
2. Mark answers on the answer sheet near the back. Work in the margins of the questions as much as you like.
3. Check your answers with the answer key, then read the explanations for every question you missed or guessed.
4. To take this test on screen or mark it up with a pen on a tablet, go to **marginsat.com**.

The questions in this section address a range of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s).

All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

- 1** The new footbridge’s design is deliberately _____: its cables and deck are painted the same gray-green as the surrounding forest, so that from the river below it nearly disappears.

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

- (A) ornate
- (B) inconspicuous
- (C) temporary
- (D) symmetrical

- 2** Microbiologist Teresa Okoye’s findings _____ the long-standing view that the bacteria are harmless: she showed that in large numbers they release a toxin that damages the gills of farmed salmon.

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

- (A) reinforce
- (B) clarify
- (C) anticipate
- (D) challenge

- 3** The following text is from a novel. Teodoro is learning to play the cello from his aunt.

His aunt listened to the scale without comment. Then she took the bow from him and played it herself, slowly, letting each note settle before she moved to the next, and when she handed the bow back he understood that she had not been correcting his fingers at all.

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

- (A) pay off
- (B) move into
- (C) come to rest
- (D) make a decision

- 4** The senator’s response to the report was _____: she neither endorsed nor criticized its findings, saying only that her office would need more time to review them.

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

- (A) noncommittal
- (B) dismissive
- (C) enthusiastic
- (D) belated

5 Glass frogs of Central America are nearly transparent, and while they sleep they become two to three times more transparent than when they are active. Red blood cells strongly absorb light, so biologists wondered where the frogs' blood goes. Using an imaging technique that tracks blood cells without harming the animal, researchers found that a sleeping frog packs nearly 90 percent of its red blood cells into its liver. How the frogs avoid dangerous clotting with so many cells crowded together remains unknown.

Which choice best describes the overall structure of the text?

- (A) It describes a puzzling feature of an animal, explains what researchers discovered about it, and notes a question that remains open.
- (B) It presents two competing explanations for a feature of an animal, then explains which one the evidence favors.
- (C) It describes an experiment that failed to answer a question and proposes a new method for answering it.
- (D) It introduces an animal, compares it with a related species, and summarizes the animal's evolutionary history.

6 Many cities plant street trees to shade and cool their neighborhoods. Planners in Melbourne, Australia, went a step further: they gave each of the city's tens of thousands of trees an identification number and an email address so that residents could report damaged branches or disease. To the planners' surprise, residents also used the addresses to write letters to their favorite trees, thanking them for their shade or simply saying hello.

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

- (A) It explains how street trees cool city neighborhoods.
- (B) It describes a practical measure whose unexpected use is reported in the next sentence.
- (C) It provides evidence that Melbourne has more street trees than most other cities.
- (D) It criticizes the planners for spending money on an unnecessary program.

7 Text 1

Many music teachers argue that children should learn to read musical notation before they learn to play by ear. Notation, they point out, opens up centuries of written repertoire, and students who first learn by ear may come to rely on it and struggle to read music later.

Text 2

Music education researcher Ola Brekke followed two groups of young violin students for two years. One group learned songs by ear first and began reading notation after six months; the other began with notation. By the end of the study, the two groups read music equally accurately, and the ear-first group improvised with noticeably more confidence.

Based on the texts, how would Brekke (Text 2) most likely respond to the concern raised by the music teachers in Text 1?

- (A) By arguing that reading notation is less important than the teachers suggest
- (B) By agreeing that ear-first students struggle to read music but noting that they improvise better
- (C) By pointing out that, in her study, learning by ear first did not leave students worse at reading music
- (D) By suggesting that the teachers have underestimated how much written repertoire exists

8

Bowhead whales can live for more than 200 years. Biologists long assumed that a large, long-lived animal should be especially prone to cancer, since more cells dividing over more years means more chances for harmful mutations. Yet bowheads rarely develop cancer. Biologist Yusuf Demir found that bowhead cells repair broken DNA unusually accurately, which suggests that the whales' defense lies less in destroying damaged cells than in fixing the damage before it leads to disease.

Which choice best states the main idea of the text?

- (A) Demir's research suggests that bowhead whales avoid cancer largely by accurately repairing DNA damage.
- (B) Biologists have shown that large animals are no more likely than small animals to develop cancer.
- (C) Bowhead whales live longer than any other mammal because they rarely develop cancer.
- (D) Bowhead whale cells destroy damaged cells more efficiently than the cells of other animals do.

- 9 The town of Kiruna, in northern Sweden, sits above one of the world's largest underground iron ore mines. Because mining beneath the town has caused the ground to crack and shift, the town center is being relocated about three kilometers to the east. A few buildings, including a wooden church built in 1912, have been lifted whole and carried to the new site on enormous trailers; most of the others are being torn down and rebuilt.

According to the text, why is Kiruna's town center being relocated?

- (A) Mining beneath the town has caused the ground to crack and shift.
- (B) Many of the town's buildings were too old to be repaired.
- (C) The iron ore mine beneath the town has closed.
- (D) A new mine is being dug to the east of the town.

- 10 Historian Grace Liu argues that the popularity of public libraries in small American towns in the late nineteenth century owed less to a desire for self-education than to a demand for novels.

Which finding, if true, would most directly support Liu's argument?

- (A) The number of public libraries in small towns more than doubled between 1875 and 1900.
- (B) Many small-town libraries hosted public lectures on science and history.
- (C) Circulation records from several small-town libraries show that novels made up about three-quarters of all books borrowed, while instructional works made up less than a tenth.
- (D) Librarians in several towns wrote that patrons should read more serious books.

- 11 In a play, the character Mara reveals that she resents her brother's success even as she praises him.

Which quotation from the play most effectively illustrates the claim?

- (A) "He worked harder than any of us. I watched him study at the kitchen table every night for four years."
- (B) "Of course I'm proud of him. Everyone is proud of him. I hear about it at the grocery store, at the dentist, from strangers who have never met either of us."
- (C) "I moved back to this town because the rent was cheap and I missed the river."
- (D) "The last time he visited, he brought flowers for Mother and stayed for an hour."

12

Percentage of vocabulary words recalled

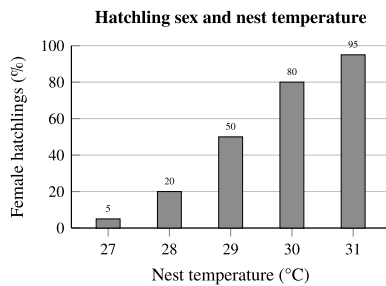
Study method	After 1 day	After 1 week
Rereading	62	34
Highlighting	58	30
Self-testing	66	55

Students studied lists of unfamiliar words using one of three methods and were tested after one day and after one week. The researchers concluded that the advantage of self-testing over rereading grows as time passes.

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

- (A) Self-testing produced the highest recall of the three methods both after one day and after one week.
- (B) Recall declined from one day to one week for all three methods.
- (C) Highlighting produced the lowest recall of the three methods at both times.
- (D) Self-testing led rereading by 4 percentage points after one day (66 vs 62) but by 21 points after one week (55 vs 34).

13



In sea turtles, the temperature of the sand around a nest determines the sex of the hatchlings. At one nesting beach, average nest temperatures have risen from about 29°C to about 30°C over recent decades, and researchers predict a sharp rise in the share of female hatchlings: _____

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

- (A) at 27°C, only about 5% of hatchlings were female.
- (B) at 29°C, about half of hatchlings were female, but at 30°C about 80% were.
- (C) at 30°C, about 20% of hatchlings were female.
- (D) at 31°C, nearly all hatchlings were female.

14

Most wild bananas are full of hard seeds. The bananas sold in grocery stores, by contrast, are seedless, so they cannot be grown from seed; new plants are grown instead from shoots cut from existing plants. As a result, nearly all the plants of a given commercial variety are genetically identical. A disease that can infect one plant of such a variety is therefore likely to _____

Which choice most logically completes the text?

- (A) be able to infect most other plants of the same variety.
- (B) be easily cured by planting new shoots.
- (C) spread only through the seeds of wild bananas.
- (D) leave wild bananas unharmed.

15

In many unrelated languages, the everyday word for “mother” begins with an *m* sound, as in *mama*, and the word for “father” often begins with *p*, *b*, *t*, or *d*. One explanation is that these are among the first consonants infants produce, and parents tend to take an infant’s early babbling as referring to them. If this explanation is correct, words for “mother” and “father” would be expected to _____

Which choice most logically completes the text?

- (A) be identical in every language.
- (B) resemble infants’ early sounds more often than words for other relatives do.
- (C) be among the last words that children learn to say.
- (D) have been borrowed by most languages from a single ancient language.

16

The James Webb Space Telescope, which orbits the Sun about 1.5 million kilometers from Earth and observes mainly in infrared light, _____ images of galaxies that formed less than 400 million years after the big bang.

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

- (A) capturing
- (B) having captured
- (C) to capture
- (D) has captured

17

The novel _____ was rejected by eleven publishers before a small press in Minneapolis accepted it.

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

- (A) that she considers her best,
- (B) —that she considers her best—
- (C) that she considers her best
- (D) , that she considers her best,

- 18** Each of the forty volunteers who counted birds along the river _____ a different stretch of the shoreline.

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

- (A) were assigned
- (B) was assigned
- (C) are assigned
- (D) have been assigned

- 19** Every spring, the town's two _____ compete to see whose float will win the parade's top prize.

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

- (A) high school's
- (B) high schools'
- (C) high schools
- (D) high schools's

- 20** In 1971 the United States Congress passed a law _____ wild horses and burros living on public lands.

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

- (A) protects
- (B) and protects
- (C) it protected
- (D) protecting

- 21** The first expedition failed to reach the cave's lowest _____ the second, equipped with better ropes and lights, mapped it completely.

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

- (A) chamber; but,
- (B) chamber but,
- (C) chamber,
- (D) chamber, but

- 22** By the time a vaccine became widely available in 1955, polio _____ thousands of American children every year for decades.

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

- (A) had paralyzed
- (B) paralyzes
- (C) will paralyze
- (D) is paralyzing

- 23** The first transatlantic telegraph cable, completed in 1858, carried messages for only about three weeks before it failed. _____ a more durable cable laid in 1866 operated for years and cut the time for news to cross between Europe and North America from about ten days to a matter of minutes.

Which choice completes the text with the most logical transition?

- (A) Similarly,
- (B) Therefore,
- (C) For example,
- (D) By contrast,

- 24** Mosquitoes locate people partly by detecting the carbon dioxide in exhaled breath, which they can sense from many meters away. Once a mosquito is within about a meter of a person, _____ carbon dioxide matters less: the insect relies instead on body heat and skin odors to choose where to land.

Which choice completes the text with the most logical transition?

- (A) therefore,
- (B) for example,
- (C) however,
- (D) moreover,

25

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

- Deception Pass Bridge connects Whidbey Island and Fidalgo Island in Washington State.
- It was completed in 1935.
- The bridge spans a narrow channel where tidal currents can exceed 8 knots.
- Deception Pass State Park, which surrounds the bridge, is one of Washington's most visited state parks.

The student wants to introduce Deception Pass Bridge to an audience unfamiliar with it. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Deception Pass State Park is one of Washington's most visited state parks.
- (B) Tidal currents in the narrow channel beneath the bridge can exceed 8 knots.
- (C) Deception Pass Bridge, completed in 1935, connects Whidbey Island and Fidalgo Island in Washington State, spanning a narrow channel with powerful tidal currents.
- (D) The bridge was completed in 1935, and the state park around it is very popular.

26

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

- Mercury and Venus are the two planets closest to the Sun.
- Neither Mercury nor Venus has a moon.
- Mercury has almost no atmosphere.
- Venus has a thick atmosphere made mostly of carbon dioxide.

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

- (A) Unlike Venus, Mercury has no moon.
- (B) Mercury has almost no atmosphere, whereas Venus has a thick atmosphere made mostly of carbon dioxide.
- (C) Mercury and Venus, the two planets closest to the Sun, both lack moons.
- (D) Venus has a thick atmosphere made mostly of carbon dioxide.

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

- The Atacama Desert in northern Chile is one of the driest places on Earth.
- Several major astronomical observatories are located there.
- Water vapor in the air absorbs some of the infrared light that many telescopes are designed to detect.
- The Atacama's high altitude and frequent clear skies also benefit astronomers.

The student wants to explain why the Atacama's dryness benefits astronomers. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Because the Atacama's dry air holds little water vapor, which absorbs infrared light, telescopes there can detect more of that light.
- (B) The Atacama's high altitude and frequent clear skies benefit astronomers.
- (C) Several major astronomical observatories are located in the Atacama Desert, one of the driest places on Earth.
- (D) Because water vapor helps telescopes detect infrared light, observatories have been built in the Atacama Desert.

STOP. This is the end of Reading and Writing, Module 1.

The questions in this section address a range of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s).

All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

- 1** Scholars once regarded the poet's letters as merely _____ to her poems, useful mainly for dating when each poem was written; more recent critics, however, read the letters as literary works in their own right.

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

- (A) ancillary
- (B) superior
- (C) antithetical
- (D) identical

- 2** The documentary's portrait of the celebrated chef is far from _____: it lingers on her temper, her failed restaurants, and her quarrels with former partners as much as on her triumphs.

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

- (A) critical
- (B) hagiographic
- (C) balanced
- (D) fragmentary

- 3** The following text is from a novel. Lucia is reading a letter from her sister, with whom she has not spoken in eleven years.

The letter was cordial, even warm, and Lucia read it three times looking for the barb. She found none. That, she decided at last, was the barb: after eleven years of silence, her sister had written as though nothing needed to be _____

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

- (A) acknowledged.
- (B) concealed.
- (C) celebrated.
- (D) repeated.

- 4** Rather than _____ the review committee's objections, the engineer's revised proposal confronts each one, devoting a full section to every concern the committee raised.

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

- (A) sidestep
- (B) document
- (C) echo
- (D) anticipate

- 5 In the 1950s, many economists predicted that automation would soon leave large numbers of workers permanently unemployed. Employment in manufacturing did eventually fall, but total employment kept rising as new kinds of jobs appeared. Economist Liesel Varga argues that this history should make today's forecasters cautious, though not complacent: past patterns, she notes, do not guarantee that new jobs will appear as quickly in the future.

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

- (A) It presents an outcome that only partly matched an earlier prediction.
- (B) It provides evidence that the economists' prediction was entirely correct.
- (C) It states the conclusion that Varga draws about today's forecasts.
- (D) It explains why automation has had no effect on employment.

- 6 The following text is from a poem.

My uncle read the water like a page:
the darker seams where currents crossed, the
gulls
that sat too long on pilings. He'd turn home
an hour before the forecast caught the wind,
and never once explained how he could tell.

Which choice best describes the overall purpose of the text?

- (A) To explain how currents and the behavior of gulls can be used to predict storms
- (B) To criticize the uncle for ignoring official weather forecasts
- (C) To convey that the uncle's skill rested on knowledge he never put into words
- (D) To express the speaker's fear of being caught at sea in bad weather

7 **Text 1**

Some ecologists argue that the return of wolves to Yellowstone National Park in 1995 set off a "trophic cascade." By hunting elk and making them wary of lingering along streams, wolves reduced the browsing that had stripped willows and aspens, allowing the trees to recover.

Text 2

Other ecologists note that willow recovery in Yellowstone has been patchy, and that elk numbers also fell after 1995 because of human hunting outside the park, drought, and growing populations of bears and cougars. Wolves, they argue, played a role, but the cascade story gives them credit that belongs to several causes at once.

Based on the texts, how would the ecologists in Text 2 most likely respond to the argument in Text 1?

- (A) By denying that wolves had any effect on elk or on the park's trees
- (B) By agreeing that wolves contributed to the decline in browsing while arguing that other factors also reduced elk numbers
- (C) By claiming that willows and aspens have fully recovered throughout the park
- (D) By arguing that the number of elk in the park increased after wolves returned

8 Field guides long described song as something male songbirds do and females rarely do. Ornithologist Ruth Mbeki surveyed published descriptions of more than 1,000 songbird species and found that females sing in roughly 70 percent of them. Mapping song onto the songbird family tree, she concluded that the common ancestor of today's songbirds probably had singing females, and that female song was later lost in some lineages, many of them in the temperate regions of Europe and North America where most early ornithologists worked.

Which choice best states the main idea of the text?

- (A) Mbeki found that female songbirds sing more often than males in most species.
- (B) Mbeki's research suggests that female song is widespread and ancient among songbirds, and that its supposed rarity may reflect where early researchers happened to study birds.
- (C) Mbeki concluded that female song evolved recently in temperate songbird species.
- (D) Mbeki argues that early ornithologists deliberately ignored female song.

9 The following text is from a novel. Mr. Haldane, a retired surveyor, is showing his granddaughter an old map.

"This road," he said, tracing a thin line with his fingernail, "was never built. They surveyed it in 1948 and drew it in, and then the money went somewhere else." He tapped a cluster of small squares beside the line. "And this town grew up waiting for it. A gas station, a diner, a motel. Thirty years of people betting on a road that only ever existed here," he said, and tapped the paper again.

According to the text, why did the town grow up where it did?

- (A) A road completed in 1948 brought travelers through the area.
- (B) Mr. Haldane chose the site while surveying the road.
- (C) The money planned for the road was spent building the town instead.
- (D) People expected a planned road that was never built to pass beside it.

10 Psychologist Tomoko Sato claims that people remember written information better when it is printed in a hard-to-read font, because the difficulty makes them process the text more carefully.

Which finding, if true, would most directly weaken Sato's claim?

- (A) Participants spent more time reading passages printed in a hard-to-read font than passages printed in a clear font.
- (B) Students who studied from handouts printed in a hard-to-read font scored higher on a later quiz than students who studied from clear handouts.
- (C) In a study with 1,200 participants, recall was no better for text printed in a hard-to-read font than for text in a clear font, even though participants read the hard-to-read text more slowly.
- (D) Most participants said they preferred reading text printed in a clear font.

11

Throughout the novel, the narrator suggests that her grandfather's gruffness concealed deep affection.

Which quotation from the novel most effectively illustrates the claim?

- (A) "He never said goodbye when we left, only 'Drive carefully,' but my mother told me he stood at the window until our car was out of sight."
- (B) "He corrected my grammar at every meal and told me that my handwriting looked like a spider had walked through ink."
- (C) "Every birthday he sent a card signed 'With all my love,' and he called to sing to me, badly, over the phone."
- (D) "He had worked for forty years at the same lumber mill and kept every pay stub in a shoebox."

12

Plover nests that hatched (%)

Beach	Low-storm years	High-storm years
Fenced	78	41
Unfenced	52	37

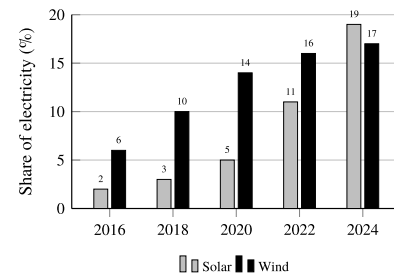
Fences on nesting beaches keep people and dogs away from plover nests, but they do nothing to stop storm waves. Biologists therefore argue that the benefit of fencing shrinks in stormy years.

Which choice best describes data from the table that support the biologists' argument?

- (A) In low-storm years, 26 percentage points more nests hatched on fenced beaches than on unfenced ones (78% vs 52%), but in high-storm years the difference was only 4 points (41% vs 37%).
- (B) On both kinds of beaches, a lower percentage of nests hatched in high-storm years than in low-storm years.
- (C) Fenced beaches had a higher percentage of nests hatch than unfenced beaches in both low-storm and high-storm years.
- (D) Unfenced beaches saw a larger drop in hatching from low-storm to high-storm years than fenced beaches did.

13

Solar and wind in a region's electricity



An energy analyst notes that solar power, after growing slowly for years, overtook wind power as a source of the region's electricity once solar's growth accelerated after 2020.

Which choice most effectively uses data from the graph to support the analyst's claim?

- (A) From 2016 to 2020, wind's share of the region's electricity grew from 6% to 14%, while solar's grew from 2% to 5%.
- (B) Wind's share of the region's electricity grew in every period shown, reaching 17% in 2024.
- (C) From 2020 to 2024, solar's share rose from 5% to 19% while wind's rose from 14% to 17%, so by 2024 solar supplied a larger share than wind.
- (D) Solar's share of the region's electricity was 11% in 2022.

- 14** On one of the Galápagos Islands, a severe drought killed most of the plants that produce small, soft seeds, leaving mainly plants with large, hard seeds. In the generation of medium ground finches hatched after the drought, average beak depth was greater than before. Years later, a series of wet seasons brought back the plants with small seeds, and over the following generations average beak depth in the population declined. These observations suggest that _____

Which choice most logically completes the text?

- (A) individual finches grow deeper beaks during droughts and shallower beaks during wet periods.
- (B) the average beak depth of the population shifts with the kinds of seeds that are available.
- (C) medium ground finches prefer small, soft seeds to large, hard ones.
- (D) the drought killed mainly the finches with the deepest beaks.

- 15** After a city lowered the speed limit on its residential streets from 30 to 20 miles per hour, crashes on those streets fell by 25 percent over the next two years. During the same two years, however, crashes on the city's main roads, where the speed limit did not change, fell by about 20 percent. These findings suggest that _____

Which choice most logically completes the text?

- (A) lowering the speed limit had no effect on crashes on residential streets.
- (B) main roads became less safe than residential streets during the two years.
- (C) much of the decline in crashes on residential streets may have resulted from something other than the lower speed limit.
- (D) the city should lower the speed limit on its main roads as well.

- 16** The Svalbard reindeer, a small subspecies that lives on a remote Norwegian archipelago and _____ shorter legs and a stockier build than other reindeer, can lose up to 40 percent of its body weight over a single winter.

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

- (A) having
- (B) to have
- (C) had
- (D) has

- 17** The architect wanted the museum's galleries to feel like a series of open-air courtyards, _____ skylights in every room and planting trees just outside the tall windows.

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

- (A) she installed
- (B) installed
- (C) and installing
- (D) installing

- 18** The report's three authors—an economist, a historian, and a _____ agree that the town's rapid growth depended on the arrival of the railroad.

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

- (A) geographer,
- (B) geographer;
- (C) geographer—
- (D) geographer

- 19** A flock of starlings, sometimes numbering in the hundreds of thousands, _____ across the evening sky in coordinated waves known as murmurations.

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

- (A) move
- (B) moves
- (C) are moving
- (D) have moved

- 20** Several animals can survive being frozen _____ among them the wood frog, the woolly bear caterpillar of the Arctic, and some species of nematode.

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

- (A) solid;
- (B) solid,
- (C) solid.
- (D) solid

- 21** Published in 1998, the two _____ discovery was confirmed by a team in Japan the following year.

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

- (A) physicist's
- (B) physicists
- (C) physicists'
- (D) physicists's

- 22** The museum's newest _____ a 2,000-year-old dugout canoe recovered from a lakebed—needed nearly five years of slow, controlled drying before it could be put on display.

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

- (A) acquisition,
- (B) acquisition;
- (C) acquisition
- (D) acquisition—

- 23** Electric bicycles cost considerably more to buy than conventional bicycles. _____ commuters who use them in place of a car often recover the added cost within two years through savings on fuel and parking.

Which choice completes the text with the most logical transition?

- (A) Accordingly,
- (B) Similarly,
- (C) In other words,
- (D) Even so,

- 24** The researchers' computer model predicts how a wildfire will spread. _____ it estimates the direction and speed of the fire's front hour by hour, using data on wind, the slope of the land, and the moisture of the vegetation.

Which choice completes the text with the most logical transition?

- (A) Specifically,
- (B) Nevertheless,
- (C) In contrast,
- (D) Consequently,

25

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

- Both the Great Wall of China and Hadrian's Wall in Britain were built in part to control movement across a frontier.
- Construction of Hadrian's Wall began in 122 CE, and the wall stretches about 117 kilometers.
- The Great Wall's many sections, built over the course of many centuries, total more than 20,000 kilometers.
- Hadrian's Wall included small forts spaced about one Roman mile apart.

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

- (A) Like the Great Wall of China, Hadrian's Wall was built in part to control movement across a frontier.
- (B) The Great Wall was built over the course of many centuries, while construction of Hadrian's Wall began in 122 CE.
- (C) Although both walls helped control movement across a frontier, Hadrian's Wall included small forts spaced about one Roman mile apart.
- (D) Hadrian's Wall stretches about 117 kilometers, while the Great Wall's sections total more than 20,000 kilometers.

26

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

- In a 2019 study, researchers turned in more than 17,000 "lost" wallets at banks, museums, and other public places in 40 countries.
- Each wallet held a business card and a key; some also held about 13 US dollars' worth of local currency.
- In most countries, wallets with money were more likely to be returned than wallets without money.
- Most economists surveyed before the study predicted that wallets with money would be returned less often.

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

- (A) Surprisingly, the researchers turned in more than 17,000 wallets at banks, museums, and other public places.
- (B) Contrary to what most surveyed economists predicted, wallets containing money were more likely to be returned than wallets without money in most of the countries studied.
- (C) As most surveyed economists expected, wallets without money were returned more often than wallets with money.
- (D) In a 2019 study, some wallets held about 13 US dollars' worth of local currency, a business card, and a key.

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

- Phenology is the study of the timing of recurring natural events.
- Examples include when trees leaf out, when flowers bloom, and when birds migrate.
- Records kept by Henry David Thoreau in Concord, Massachusetts, in the 1850s show many plants flowering more than a week later than the same species flowered there in the 2000s.
- Scientists use such records to study how climate change is shifting these events.

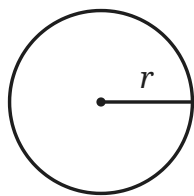
The student wants to use an example to explain what phenology is. Which choice most effectively uses relevant information from the notes to accomplish this goal?

- (A) Phenology is the study of the timing of recurring natural events, such as when trees leaf out, flowers bloom, and birds migrate.
- (B) Thoreau's 1850s records show many plants in Concord flowering more than a week later than the same species did there in the 2000s.
- (C) Phenology, the study of the timing of recurring natural events, includes questions like when flowers bloom: Thoreau's records from the 1850s, for instance, show many Concord plants flowering more than a week later than the same species did in the 2000s.
- (D) Thoreau's records from the 1850s show many Concord plants flowering more than a week earlier than they did in the 2000s, an example of phenology.

STOP. This is the end of Reading and Writing, Module 2.

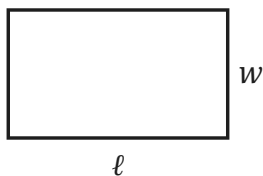
Math Reference Sheet

Use it during both Math modules

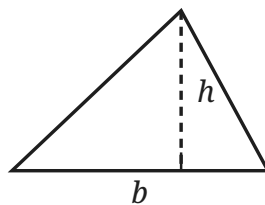


$$A = \pi r^2$$

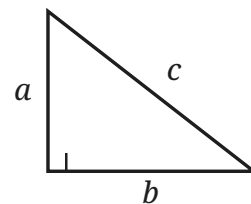
$$C = 2\pi r$$



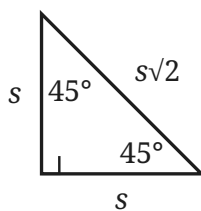
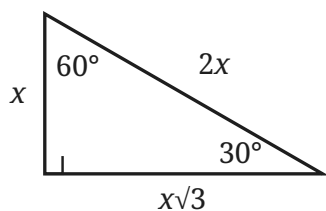
$$A = \ell w$$



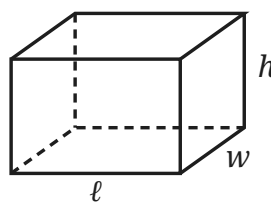
$$A = \frac{1}{2}bh$$



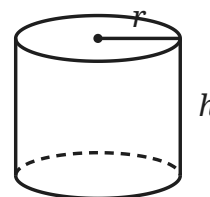
$$c^2 = a^2 + b^2$$



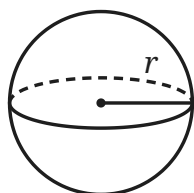
Special Right Triangles



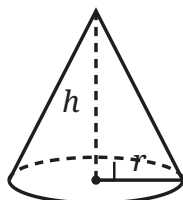
$$V = \ell wh$$



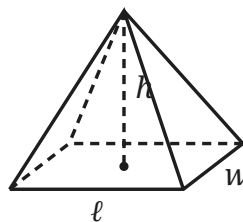
$$V = \pi r^2 h$$



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



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



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

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

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

Use of a calculator is permitted for all questions. A reference sheet, calculator, and these directions can be accessed throughout the test.

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.

For **multiple-choice questions**, solve each problem and choose the correct answer from the choices provided. Each multiple-choice question has a single correct answer.

For **student-produced response questions**, solve each problem and enter your answer as described below.

- If you find more than one correct answer, enter only one of them.
- A positive answer can be up to 5 characters long; a negative answer can be up to 6, counting the negative sign.
- If a fraction doesn't fit, enter its decimal equivalent instead.
- If a decimal doesn't fit, truncate or round it at the fourth digit.
- Enter a mixed number such as $3\frac{1}{2}$ as an improper fraction ($7/2$) or as a decimal (3.5).
- Leave out symbols such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	31/2 3 1/2
$\frac{2}{3}$	2/3 .6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	-1/3 -.3333 -0.333	-.33 -0.33

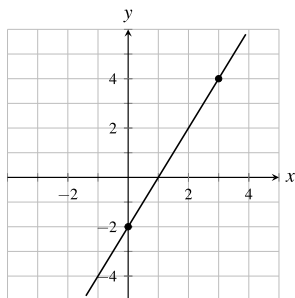
1 If $7 - 2x = 19$, what is the value of x ?

- (A) -13
- (B) -6
- (C) 6
- (D) 13

2 A town's population grew from 12,500 to 14,000. By what percent did the population increase?

- (A) 10.7%
- (B) 15%
- (C) 1.5%
- (D) 12%

- 3 Which equation defines the line shown in the xy -plane?



- (A) $y = 2x - 2$
 (B) $y = -2x + 2$
 (C) $y = \frac{1}{2}x - 2$
 (D) $y = 2x + 4$

- 4 In triangle PQR , $PQ = PR$, and the measure of angle P is 52° . What is the measure, in degrees, of an exterior angle of the triangle at vertex Q ?

Your answer

- 5 A sample contains 800 milligrams of a substance whose half-life is 6 hours. Which function gives the amount of the substance, in milligrams, remaining after t hours?

- (A) $A(t) = 800\left(\frac{1}{2}\right)^{6t}$
 (B) $A(t) = 800(0.94)^t$
 (C) $A(t) = 800\left(\frac{1}{2}\right)^{t/6}$
 (D) $A(t) = 400^{t/6}$

6

$$y = 3x - 7$$

$$2x + y = 18$$

If (x, y) is the solution to the system of equations, what is the value of xy ?

Your answer

- 7 The frequency table shows the number of pets owned by each of 25 people. What is the median number of pets owned?

Number of pets	Frequency
0	6
1	9
2	5
3	3
4	2

- (A) 1
 (B) 1.44
 (C) 2
 (D) 9

- 8 What is the sum of the solutions to the equation $2x^2 + 8x - 42 = 0$?

Your answer

- 9 A tutor charges \$45 per session and has \$120 in expenses each month. What is the least number of sessions the tutor must teach in a month to earn a profit of at least \$1,000 that month?

- (A) 22
 (B) 24
 (C) 25
 (D) 27

- 10 At the same time of day, a person who is 6 feet tall casts a shadow 4 feet long, and a tree casts a shadow 30 feet long. How tall, in feet, is the tree?

- (A) 20
 (B) 36
 (C) 180
 (D) 45

- 11 A car uses 1 gallon of gasoline for every 32 miles it travels. How many gallons will the car use to travel 256 kilometers? (Use 1 mile = 1.6 kilometers.)

Your answer

- 12** The function g is defined by $g(x) = 3x^2 - 2$. If $g(a) = 25$ and $a > 0$, what is the value of a ?

(A) 3
(B) 9
(C) 27
(D) 73

- 13** The graph of $2x + 5y = 40$ in the xy -plane crosses the x -axis at $(a, 0)$ and the y -axis at $(0, b)$. What is the value of $a + b$?

(A) 12
(B) 28
(C) 60
(D) 160

- 14** Which expression is equivalent to $4x^2 - 25y^2$?

(A) $(2x - 5y)^2$
(B) $(4x - 5y)(x + 5y)$
(C) $(4x - 25y)(x + y)$
(D) $(2x - 5y)(2x + 5y)$

- 15** The table summarizes the responses of 200 adults to two survey questions. Of the people who exercise regularly, what fraction prefer to exercise in the morning?

	Exercises regularly	Does not	Total
Prefers morning	48	32	80
Prefers evening	42	78	120
Total	90	110	200

(A) $\frac{6}{25}$
(B) $\frac{3}{5}$
(C) $\frac{8}{15}$
(D) $\frac{9}{20}$

- 16** For $x > 0$, which expression is equivalent to $\sqrt{x^3} \cdot x^{1/2}$?

(A) $x^{3/4}$
(B) x^2
(C) x
(D) $x^{5/2}$

- 17** A right triangle has legs of length 7 and 24. What is the cosine of the smallest angle in the triangle?

(A) $\frac{7}{25}$
(B) $\frac{24}{25}$
(C) $\frac{7}{24}$
(D) $\frac{24}{7}$

- 18** The function f is defined by $f(x) = 2(x + 1)^2 - 8$. What is the sum of the x -intercepts of the graph of $y = f(x)$ in the xy -plane?

(A) -2
(B) 2
(C) -8
(D) 4

- 19** A gym membership costs \$60 to join plus \$35 per month. Maria has paid a total of \$480 for her membership. For how many months has she been a member?

(A) 13.7
(B) 420
(C) 15
(D) 12

- 20** A circle has radius 10. A sector of the circle has a central angle of $\frac{2\pi}{5}$ radians. The area of the sector is $k\pi$. What is the value of k ?

Your answer

- 21 In the equation $kx^2 + 6x + 3 = 0$, k is a nonzero constant. If the equation has exactly one real solution, what is the value of k ?

Your answer

- 22 In the xy -plane, the vertex of the graph of $y = x^2 - 6x + c$, where c is a constant, lies on the line $y = 2x - 1$. What is the value of c ?

- (A) 5
- (B) 9
- (C) 14
- (D) 23

STOP. This is the end of Math, Module 1.

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

Use of a calculator is permitted for all questions. A reference sheet, calculator, and these directions can be accessed throughout the test.

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.

For **multiple-choice questions**, solve each problem and choose the correct answer from the choices provided. Each multiple-choice question has a single correct answer.

For **student-produced response questions**, solve each problem and enter your answer as described below.

- If you find more than one correct answer, enter only one of them.
- A positive answer can be up to 5 characters long; a negative answer can be up to 6, counting the negative sign.
- If a fraction doesn't fit, enter its decimal equivalent instead.
- If a decimal doesn't fit, truncate or round it at the fourth digit.
- Enter a mixed number such as $3\frac{1}{2}$ as an improper fraction ($7/2$) or as a decimal (3.5).
- Leave out symbols such as a percent sign, comma, or dollar sign.

Examples

Answer	Acceptable ways to enter answer	Unacceptable: will NOT receive credit
3.5	3.5 3.50 7/2	31/2 3 1/2
$\frac{2}{3}$	2/3 .6666 .6667 0.666 0.667	0.66 .66 0.67 .67
$-\frac{1}{3}$	-1/3 -.3333 -0.333	-.33 -0.33

- 1**

$$3a + 4b = 17$$

$$a - 2b = 4$$

If (a, b) satisfies the system of equations, what is the value of $2a + 6b$?

Your answer

2

A line in the xy -plane passes through the points $(-4, 9)$ and $(2, -3)$. At which point does the line cross the x -axis?

Ⓐ $(\frac{1}{2}, 0)$

Ⓑ $(1, 0)$

Ⓒ $(-\frac{1}{2}, 0)$

Ⓓ $(0, 1)$

- 3 If $x > 0$ and $x^2 - 5x = 14$, what is the value of x^2 ?

(A) 7
(B) 14
(C) 49
(D) 4

- 4 In the xy -plane, the graph of $x^2 + y^2 + 10x - 4y = k$, where k is a constant, is a circle with radius 7. What is the value of k ?

(A) 7
(B) 20
(C) 29
(D) 49

- 5 A solid metal sphere has a radius of 3 centimeters and a mass of 950 grams. What is the density of the metal, in grams per cubic centimeter, to the nearest tenth?

Your answer

- 6 The polynomial $p(x) = (x - 3)(x^2 + bx + 4)$, where b is a constant, leaves a remainder of -24 when divided by $x + 1$. What is the value of b ?

(A) -1
(B) 1
(C) 11
(D) -11

7

$$y = kx + 3$$

$$4x - 2y = 7$$

In the system of equations, k is a constant. For what value of k does the system have no solution?

(A) -2
(B) $\frac{1}{2}$
(C) 2
(D) 4

- 8 Data set B is formed by adding 5 to every value in data set A . Which statement about the standard deviations of the two data sets is true?

(A) The standard deviation of B is 5 greater than that of A .
(B) The standard deviation of B is equal to that of A .
(C) The standard deviation of B is 5 times that of A .
(D) The relationship cannot be determined without the data values.

- 9 In right triangle ABC , angle C is a right angle, and $\overline{CD}$ is the altitude from C to hypotenuse $\overline{AB}$. If $AD = 4$ and $DB = 9$, what is the area of triangle ABC ?

(A) 36
(B) 39
(C) 52
(D) 78

- 10 The number of users of an app is modeled by $N(t) = 2,000 \cdot 3^{t/4}$, where t is the number of months since launch. By what factor does the number of users increase every 8 months?

(A) 3
(B) 6
(C) 24
(D) 9

- 11 How many integers x satisfy both $|x - 4| \leq 7$ and $x \geq 0$?

Your answer

- 12** A class has 12 juniors, whose mean test score was 84, and 8 seniors, whose mean test score was 79. After one senior's test was regraded, the mean score of the whole class became 82.5. By how many points did that senior's score increase?

(A) 0.5
(B) 4
(C) 12.5
(D) 10

- 13** In the xy -plane, the graphs of $y = x^2$ and $y = 6x - 8$ intersect at two points. What is the sum of the y -coordinates of these two points?

Your answer

- 14** If $\sin(x^\circ) = \cos((2x - 30)^\circ)$ and $0 < x < 90$, what is the value of x ?

(A) 20
(B) 30
(C) 60
(D) 40

- 15** The function f is defined by $f(x) = 3^x$. The graph of $y = g(x)$ is the graph of $y = f(x)$ shifted 2 units to the left and 4 units down. What is the value of $g(0)$?

(A) 5
(B) 13
(C) $-\frac{35}{9}$
(D) $\frac{1}{9}$

- 16** A rideshare company charges \$3.50 per trip plus \$1.75 per mile. A taxi charges \$2.25 per mile with no per-trip charge. For trips longer than how many miles is the taxi more expensive than the rideshare?

(A) 1.6
(B) 2
(C) 7
(D) 14

- 17** A town's population of 4,000 decreased by 15% in one year and then increased by 15% the next year. What was the population at the end of the second year?

Your answer

- 18** Which expression is equivalent to $\frac{1}{x-2} - \frac{1}{x+2}$ for $x \neq 2$ and $x \neq -2$?

(A) $\frac{4}{x^2 - 4}$
(B) 0
(C) $\frac{-4}{x^2 - 4}$
(D) $\frac{2x}{x^2 - 4}$

- 19** A cylinder has radius r and height h . A cone has the same radius r and height $3h$. What is the ratio of the volume of the cone to the volume of the cylinder?

(A) $\frac{1}{3}$
(B) 1
(C) 3
(D) 9

- 20** The function f is defined by $f(x) = -x^2 + 8x + c$, where c is a constant. The maximum value of f is 21. What is the value of $f(1)$?

Your answer

- 21** What is the area of a regular hexagon with side length 6?

(A) $36\sqrt{3}$
(B) $72\sqrt{3}$
(C) $54\sqrt{3}$
(D) 108

- 22 The function f is defined by $f(x) = x^2 - 2bx + 3b - 4$, where b is a positive constant. If the minimum value of f is -4 , what is the value of b ?

- (A) 1
- (B) 2
- (C) 4
- (D) 3

STOP. This is the end of Math, Module 2.

Answer Sheet

Fill in one bubble per question. Write grid-in answers in the boxes.

Reading and Writing, Module 1

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

Math, Module 1

- | | |
|-------------------------|-------------------------|
| 1 (A) (B) (C) (D) | 2 (A) (B) (C) (D) |
| 3 (A) (B) (C) (D) | 4 <input type="text"/> |
| 5 (A) (B) (C) (D) | 6 <input type="text"/> |
| 7 (A) (B) (C) (D) | 8 <input type="text"/> |
| 9 (A) (B) (C) (D) | 10 (A) (B) (C) (D) |
| 11 <input type="text"/> | 12 (A) (B) (C) (D) |
| 13 (A) (B) (C) (D) | 14 (A) (B) (C) (D) |
| 15 (A) (B) (C) (D) | 16 (A) (B) (C) (D) |
| 17 (A) (B) (C) (D) | 18 (A) (B) (C) (D) |
| 19 (A) (B) (C) (D) | 20 <input type="text"/> |
| 21 <input type="text"/> | 22 (A) (B) (C) (D) |

Reading and Writing, Module 2

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

Math, Module 2

- | | |
|-------------------------|-------------------------|
| 1 <input type="text"/> | 2 (A) (B) (C) (D) |
| 3 (A) (B) (C) (D) | 4 (A) (B) (C) (D) |
| 5 <input type="text"/> | 6 (A) (B) (C) (D) |
| 7 (A) (B) (C) (D) | 8 (A) (B) (C) (D) |
| 9 (A) (B) (C) (D) | 10 (A) (B) (C) (D) |
| 11 <input type="text"/> | 12 (A) (B) (C) (D) |
| 13 <input type="text"/> | 14 (A) (B) (C) (D) |
| 15 (A) (B) (C) (D) | 16 (A) (B) (C) (D) |
| 17 <input type="text"/> | 18 (A) (B) (C) (D) |
| 19 (A) (B) (C) (D) | 20 <input type="text"/> |
| 21 (A) (B) (C) (D) | 22 (A) (B) (C) (D) |

Answer Key

Count your correct answers in each module

Reading and Writing, Module 1

1	B	Words in Context
2	D	Words in Context
3	C	Words in Context
4	A	Words in Context
5	A	Text Structure and Purpose
6	B	Text Structure and Purpose
7	C	Cross-Text Connections
8	A	Central Ideas and Details
9	A	Central Ideas and Details
10	C	Command of Evidence (Textual)
11	B	Command of Evidence (Textual)
12	D	Command of Evidence (Quantitative)
13	B	Command of Evidence (Quantitative)
14	A	Inferences
15	B	Inferences
16	D	Form, Structure, and Sense
17	C	Boundaries
18	B	Form, Structure, and Sense
19	C	Form, Structure, and Sense
20	D	Form, Structure, and Sense
21	D	Boundaries
22	A	Form, Structure, and Sense
23	D	Transitions
24	C	Transitions
25	C	Rhetorical Synthesis
26	B	Rhetorical Synthesis
27	A	Rhetorical Synthesis

Math, Module 1

1	B	Linear equations in one variable
2	D	Percentages
3	A	Linear functions (graphs)
4	116	Lines, angles, and triangles
5	C	Nonlinear functions (exponential)
6	40	Systems of linear equations
7	A	One-variable data (frequency tables)
8	-4	Nonlinear equations (quadratic)
9	C	Linear inequalities

Reading and Writing, Module 2

1	A	Words in Context
2	B	Words in Context
3	A	Words in Context
4	A	Words in Context
5	A	Text Structure and Purpose
6	C	Text Structure and Purpose
7	B	Cross-Text Connections
8	B	Central Ideas and Details
9	D	Central Ideas and Details
10	C	Command of Evidence (Textual)
11	A	Command of Evidence (Textual)
12	A	Command of Evidence (Quantitative)
13	C	Command of Evidence (Quantitative)
14	B	Inferences
15	C	Inferences
16	D	Form, Structure, and Sense
17	D	Form, Structure, and Sense
18	C	Boundaries
19	B	Form, Structure, and Sense
20	B	Boundaries
21	C	Form, Structure, and Sense
22	D	Boundaries
23	D	Transitions
24	A	Transitions
25	D	Rhetorical Synthesis
26	B	Rhetorical Synthesis
27	C	Rhetorical Synthesis

Math, Module 2

1	13	Systems of linear equations
2	A	Linear functions
3	C	Nonlinear equations (quadratic)
4	B	Circles
5	8.4	Rates and units (density)
6	A	Polynomials (remainder theorem)
7	C	Systems of linear equations (no solution)
8	B	One-variable data (spread)
9	B	Right triangles (similarity)

10	D	Similar triangles
11	5	Rates and units
12	A	Function notation
13	B	Linear equations in two variables
14	D	Equivalent expressions
15	C	Probability and conditional probability
16	B	Exponents and radicals
17	B	Right triangle trigonometry
18	A	Nonlinear functions (quadratic)
19	D	Linear equations in one variable
20	20	Circles (sectors)
21	3	Nonlinear equations: discriminant
22	C	Nonlinear functions (quadratic)

10	D	Nonlinear functions (exponential)
11	12	Absolute value inequalities
12	D	One-variable data (mean)
13	20	Nonlinear systems
14	D	Trigonometry (complementary angles)
15	A	Function transformations
16	C	Linear inequalities
17	3910	Percentages
18	A	Rational expressions
19	B	Volume
20	12	Nonlinear functions (quadratic)
21	C	Area of polygons
22	D	Nonlinear functions (quadratic)

Estimate your Reading and Writing score

Add your correct answers from both Reading and Writing modules (out of 54).

Raw	Score	Raw	Score
0	200	28	520
1	220	29	520
2	240	30	530
3	250	31	540
4	270	32	550
5	290	33	560
6	300	34	570
7	320	35	580
8	340	36	580
9	350	37	590
10	360	38	600
11	370	39	610
12	380	40	620
13	390	41	630
14	400	42	640
15	410	43	650
16	420	44	660
17	420	45	680
18	430	46	690
19	440	47	700
20	450	48	710
21	460	49	730
22	470	50	740
23	480	51	760
24	480	52	770
25	490	53	780
26	500	54	800
27	510		

Estimate your Math score

Add your correct answers from both Math modules (out of 44). Add the two section scores for your total.

Raw	Score	Raw	Score
0	200	23	540
1	220	24	550
2	240	25	560
3	260	26	570
4	280	27	580
5	310	28	590
6	330	29	600
7	350	30	610
8	370	31	620
9	390	32	640
10	400	33	650
11	410	34	660
12	430	35	680
13	440	36	690
14	450	37	700
15	460	38	710
16	470	39	730
17	480	40	740
18	490	41	760
19	500	42	770
20	510	43	790
21	520	44	800
22	530		

Reading and Writing, Module 1

1. B. A bridge painted to blend into the forest so it “nearly disappears” is meant not to be noticed: *inconspicuous*. *Ornate* is the opposite. Nothing concerns how long it will stand (*temporary*) or its shape (*symmetrical*).

2. D. A toxin that damages gills contradicts “harmless,” so the findings *challenge* the view. *Reinforce* reverses the relationship. *Clarify* is too mild for evidence that overturns a view.

3. C. She lets each note *settle* before the next, letting the sound finish and come to rest. “Pay off” (settle a debt), “move into” (settle a region), and “make a decision” (settle a question) are other senses of the word that don’t apply to a musical note.

4. A. Neither endorsing nor criticizing, and deferring judgment, is *noncommittal*. *Dismissive* would require rejecting or brushing off the findings, which she doesn’t do. *Enthusiastic* contradicts “neither endorsed.”

5. A. Puzzle (where does the blood go while the frogs sleep?), discovery (90 percent in the liver), open question (how they avoid clotting). B invents two competing explanations; C invents a failed experiment; D invents a comparison species.

6. B. The underlined portion describes the email system and its intended purpose (reporting problems); the next sentence reports the surprise use (letters to trees). It doesn’t explain cooling (A), compare cities (C), or criticize anyone (D).

7. C. The teachers worry that ear-first students will struggle to read. Brekke found equal reading accuracy after two years, so that worry didn’t come true in her study. B contradicts that finding. A goes beyond her: she never downplays notation. D isn’t addressed.

8. A. The text sets up a puzzle (long-lived but cancer-resistant) and gives Demir’s answer (accurate DNA repair). D reverses his conclusion: the defense lies *less* in destroying damaged cells. C invents a “longest-lived” claim and a causal link. B generalizes far past one species.

9. A. The second sentence gives the reason: the ground is cracking because of the mining. B misreads why buildings are rebuilt rather than moved. C contradicts the ongoing mining. D invents a new mine; the town moves *east*, but nothing says a mine is there.

10. C. Liu compares two motives, so support should compare what patrons actually borrowed. C does: novels dwarfed instructional books. A shows popularity without explaining it. B points toward self-education, which cuts against her. D hints at fiction reading but is only librarians’ opinion, much weaker than borrowing records.

11. B. B opens with praise (“proud of him”) and then lets weariness at hearing about him everywhere show through: praise and resentment together. A is praise only. C and D say nothing about his success.

12. D. “Advantage grows” means the *gap* between self-testing and rereading widens. D computes both gaps: 4 points, then 21. A shows self-testing winning but not the gap growing. B and C don’t compare self-testing with rereading.

13. B. The prediction concerns the beach’s actual change, from 29°C to 30°C. B gives the female share at both: 50% rising to 80%. A and D describe temperatures outside that range. C misreads the graph (20% is the value at 28°C).

14. A. Genetically identical plants share the same vulnerabilities, so a disease that infects one can probably infect the rest. C contradicts the seedless setup. B ignores that new shoots are clones, just as vulnerable. D draws a conclusion about wild bananas the text doesn’t support.

15. B. If parents shape these words around babbling, the words should look like early infant sounds more than ordinary kinship words do. A overstates (“identical in every language”). C contradicts the idea that these come from the earliest sounds. D offers a different explanation, borrowing, rather than following from this one.

16. D. Subject: *The James Webb Space Telescope*. The “which” clause has its own verbs (orbits, observes), but the main clause still needs one. Only *has captured* is finite.

17. C. “That she considers her best” identifies which novel (she has others), so it’s essential, and essential clauses take no commas or dashes. A puts a comma between the subject and its verb. B and D set the clause off as if it were nonessential, which “that” clauses never are.

18. B. The subject is *each*, which is singular; “of the forty volunteers who counted birds along the river” is a modifier. A, C, and D are plural, matching “volunteers.”

19. C. The schools don’t possess anything here; they’re the subject of “compete,” so the plain plural *high schools* is right. A and B are possessives. D isn’t a standard form.

20. D. The sentence already has its subject and verb (*Congress passed*). The blank begins a phrase describing the law, which needs the nonfinite *protecting*. A, B, and C add finite verbs that can't attach: A has no subject; C creates a second clause with no connector; B shifts to present tense for a 1971 event.

21. D. Two complete clauses joined by "but" need a comma before the conjunction. A puts a semicolon before "but" and a comma after it, which is incorrect. C is a comma splice. B misplaces the comma after "but."

22. A. "By the time" plus a past event (1955) calls for an action completed before that point: the past perfect *had paralyzed*. B and D are present tense and C is future, which don't fit a historical period.

23. D. A cable that failed in weeks is set against one that worked for years: *by contrast*. "Similarly" implies the cables performed alike. "Therefore" makes the 1866 success a consequence of the 1858 failure, which the text doesn't claim.

24. C. At a distance carbon dioxide guides the mosquito; up close it "matters less." That shift is a contrast: *however*. "Moreover" would add a further point in the same direction, and "therefore" would make the close-range change a result of the long-range sensing.

25. C. An introduction tells an unfamiliar reader what the thing is and where. C names the bridge, its location, what it connects, and its setting. A and B describe the park and the currents without introducing the bridge. D says "the bridge" as if the reader already knew which one.

26. B. B contrasts the atmospheres directly. A uses "unlike" for a feature the planets share (neither has a moon), so its content contradicts the notes. C is a similarity. D describes only Venus.

27. A. A links dryness to less water vapor to more infrared light reaching telescopes, which is the explanation the goal asks for. B gives other benefits, not dryness. C states facts without explaining. D reverses the role of water vapor.

Reading and Writing, Module 2

1. A. "Merely," plus "useful mainly for dating" the poems, casts the letters as secondary aids: *ancillary*. "Superior" reverses the ranking. "Antithetical" (opposed) and "identical" don't describe a supporting role.

2. B. The film gives her flaws as much time as her triumphs, so it is *not* an idealizing tribute: far from *hagiographic*. "Far from critical" and "far from balanced" flip the meaning, since dwelling on flaws is critical, and equal time for flaws and triumphs is balanced.

3. A. The sting is the letter's silence about the eleven-year rift: the sister writes as if nothing needed to be *acknowledged*. "Concealed" reverses it: the problem is that the rift goes unmentioned, not that something is hidden on purpose. "Celebrated" and "repeated" don't capture the omission.

4. A. "Rather than" sets up the opposite of confronting: avoiding, or *sidestepping*. "Document" isn't opposite to confronting (a section per concern documents them). "Anticipate" doesn't fit objections already raised.

5. A. Manufacturing jobs fell (as predicted) but total employment rose (not as predicted): a partial match. B ignores the second half. C is the job of the *next* sentence. D contradicts "employment in manufacturing did eventually fall."

6. C. The poem shows the uncle reading signs better than the forecast and ends on the fact that he "never once explained how he could tell." A is the trap: the poem lists signs but doesn't explain how they predict anything. B misreads him: he outperforms the forecast rather than ignoring it. D has no support.

7. B. Text 2 grants wolves "played a role" but credits several causes. A overstates their skepticism. C contradicts "patchy." D contradicts "elk numbers also fell."

8. B. B combines Mbeki's two findings (widespread, ancestral) with the implication about temperate-zone bias. A changes "females sing" into "females sing more than males." C reverses the history: song was *lost* in some temperate lineages. D adds intent that the text never claims.

9. D. The town "grew up waiting for" the road, a road that "was never built" and "only ever existed here" on the map. A contradicts "never built." C misreads "the money went somewhere else." Nothing says Mr. Haldane chose the site (B).

10. C. C shows the slower, more effortful reading happened, yet memory didn't improve, which breaks the claimed link. A fits Sato's mechanism. B supports her claim directly. D is about preference, not memory.

11. A. A has both layers: a curt "Drive carefully" on the surface and, underneath, standing at the window until the car disappears. B is gruffness without hidden affection. C is affection shown openly, so nothing is concealed. D shows neither.

12. A. "The benefit shrinks" means the fenced-minus-unfenced gap gets smaller in stormy years. A shows it: 26 points, then 4. C shows a benefit but not its shrinking. B is about storms, not fencing. D is false: fenced beaches dropped 37 points and unfenced only 15.

13. C. The claim has a period (after 2020) and an outcome (solar passes wind). C covers both. A is accurate but describes the *earlier* period, when wind was ahead. B and D give one source each without the comparison.

14. B. Beak depth rose after the drought favored big, hard seeds and fell when small seeds returned, so the population tracks the food supply. A is the trap: the changes appear across *generations*, in a population average, not in individual birds' beaks. C isn't addressed. D reverses the result (deeper beaks became more common).

15. C. Crashes fell nearly as much on roads without a new limit, so a citywide factor probably drove most of the drop on residential streets too; the limit's own effect may be small. A goes too far: a 25% vs 20% gap leaves room for some effect. B isn't supported. D is a recommendation, not an inference from these numbers.

16. D. The blank is paired by "and" with "lives" inside the relative clause "that lives ... and _____," so it needs the same form: present-tense, finite *has*. A and B are nonfinite and break the parallel. C shifts to past tense.

17. D. The main clause is complete ("The architect wanted ..."). The phrase after the comma describes how she pursued that goal, parallel with "planting," so it takes the -ing form *installing*. A makes a comma splice. B leaves a finite verb with no subject. C adds an "and" that has no first item to join.

18. C. A dash opens the list that interrupts the subject ("The report's three authors"), so a dash must close it before the verb "agree." A comma or semicolon can't close a dash-opened interruption, and no punctuation leaves it open.

19. B. The subject is *flock*, a singular noun, so the verb is *moves*. "Starlings" and "hundreds of thousands" are modifiers. A, C, and D are plural.

20. B. "Among them ..." is a phrase, not a complete sentence, so it attaches to the main clause with a comma. A semicolon (A) or period (C) would leave the phrase stranded as a fragment. D runs "solid among them" together.

21. C. The discovery belongs to the two physicists, so the plural possessive *physicists'* is needed. A is singular possessive. B is a plural without possession. D isn't a standard form.

22. D. The description of the canoe closes with a dash before "needed," so it must open with a dash too. A comma (A) can't pair with a closing dash; a semicolon (B) would cut the subject off from its verb; no punctuation (C) leaves the interruption unopened.

23. D. The first sentence names a drawback (a higher price); the second pushes back against it (the bikes pay for themselves). Granting a point and then countering it calls for *even so*. "Accordingly" treats the savings as following from the high price. "In other words" treats the second sentence as a restatement.

24. A. The second sentence spells out the first in more detail: *specifically*. "Consequently" wrongly makes the hour-by-hour estimate a result of the prediction, when it *is* the prediction. "Nevertheless" and "in contrast" imply opposition.

25. D. Only D compares the lengths. A is a similarity. B contrasts the walls' construction histories rather than their lengths. C's "although" signals a contrast, but its content is a detail about forts.

26. B. The unexpected part is that money made return *more* likely, against what most economists predicted. B says exactly that. C reverses the result. A attaches "surprisingly" to the method. D describes the setup.

27. C. The goal needs a definition plus an example. C gives both, with Thoreau's records as the example. A defines with a list of event types but no specific example. B gives the example without saying what phenology is. D flips the direction of the change (later in the 1850s, not earlier).

Math, Module 1

1. B. $-2x = 12$, so $x = -6$. Choice C drops the negative sign when dividing.

2. D. Increase $\div$ original: $\frac{1,500}{12,500} = 0.12$, or 12%. Choice A divides by the new population instead.

3. A. The line crosses the y -axis at $(0, -2)$ and passes through $(3, 4)$, so the slope is $\frac{4 - (-2)}{3 - 0} = 2$: $y = 2x - 2$. Choice C inverts the slope.

4. 116. The base angles are equal: $\frac{180 - 52}{2} = 64^\circ$. The exterior angle at Q is $180 - 64 = 116^\circ$. Giving 64 answers with the interior angle.

5. C. The amount halves once every 6 hours, so after t hours it has halved $\frac{t}{6}$ times: $800 \left(\frac{1}{2}\right)^{t/6}$. Choice A halves it six times per hour. Choice B treats "6" as a 6% hourly loss.

6. 40. Substitute: $2x + 3x - 7 = 18$, so $x = 5$ and $y = 8$. The product is 40.

7. A. Listing the 25 values in order, the median is the 13th. The first 6 are 0 and the next 9 are 1 (positions 7 to 15), so the 13th value is 1. Choice B is the mean ($36/25$). Choice D is the largest frequency, not a data value.

8. -4. Divide by 2: $x^2 + 4x - 21 = (x + 7)(x - 3) = 0$, so $x = -7$ or $x = 3$, which sum to -4 . (The sum of the roots is also $-\frac{b}{a} = -\frac{8}{2}$.)

- 9. C.** $45s - 120 \geq 1,000$ gives $s \geq \frac{1,120}{45} \approx 24.9$, so the least whole number is 25. Choice A ignores the expenses; choice B rounds down, which falls short.
- 10. D.** The triangles are similar: $\frac{6}{4} = \frac{h}{30}$, so $h = 45$. Choice A flips the ratio ($\frac{4}{6} \times 30$).
- 11. 5.** $256 \div 1.6 = 160$ miles, and $160 \div 32 = 5$ gallons. Dividing 256 by 32 without converting gives 8.
- 12. A.** $3a^2 - 2 = 25$ gives $a^2 = 9$, so $a = 3$ (positive). Choice B stops at a^2 . Choice D computes $g(5)$.
- 13. B.** Set $y = 0$: $a = 20$. Set $x = 0$: $b = 8$. So $a + b = 28$.
- 14. D.** It's a difference of squares: $(2x)^2 - (5y)^2 = (2x - 5y)(2x + 5y)$. Choice A expands to $4x^2 - 20xy + 25y^2$.
- 15. C.** The group is "people who exercise regularly": 90 people. Of those, 48 prefer mornings: $\frac{48}{90} = \frac{8}{15}$. Choice A uses all 200 people; choice B uses all morning people ($48/80$).

Math, Module 2

- 1. 13.** Subtract the second equation from the first: $(3a - a) + (4b + 2b) = 17 - 4$, so $2a + 6b = 13$.
- 2. A.** Slope: $\frac{-3 - 9}{2 + 4} = -2$. Then $y = -2(x + 4) + 9 = -2x + 1$. Setting $y = 0$ gives $x = \frac{1}{2}$. Choice D is the y -intercept.
- 3. C.** $x^2 - 5x - 14 = (x - 7)(x + 2) = 0$, and $x > 0$ gives $x = 7$, so $x^2 = 49$. Choice A is x .
- 4. B.** Complete the squares: $(x + 5)^2 + (y - 2)^2 = k + 25 + 4 = k + 29$. The radius is 7, so $k + 29 = 49$ and $k = 20$. Choice D is r^2 , which forgets the constants added while completing the square.
- 5. 8.4.** Volume: $\frac{4}{3}\pi(3^3) = 36\pi \approx 113.1$ cubic centimeters. Density: $950 \div 113.1 \approx 8.4$.
- 6. A.** Remainder theorem: $p(-1) = -24$. $p(-1) = (-4)(1 - b + 4) = -4(5 - b)$, so $5 - b = 6$ and $b = -1$. Choice C comes from a sign slip ($5 - b = -6$), and choice B from dropping the negative on b .
- 7. C.** Rewrite the second equation: $y = 2x - \frac{7}{2}$. Parallel, distinct lines need the same slope and different intercepts: $k = 2$ (and $3 \neq -\frac{7}{2}$). Choice D reads the x -coefficient before solving for y .
- 8. B.** Adding the same number to every value shifts the data without changing how spread out it is, so the standard deviation stays the same. (The mean and median each increase by 5.) Choice A applies the shift to the spread.

- 16. B.** $\sqrt{x^3} = x^{3/2}$, and $x^{3/2} \cdot x^{1/2} = x^2$. Choice A multiplies the exponents instead of adding them.
- 17. B.** The hypotenuse is 25. The smallest angle is opposite the shortest side (7), so its adjacent leg is 24: $\cos = \frac{24}{25}$. Choice A is that angle's sine.
- 18. A.** $2(x + 1)^2 = 8$ gives $(x + 1)^2 = 4$, so $x = 1$ or $x = -3$, which sum to -2 . (They are symmetric about the axis $x = -1$.) Choice B uses the axis $x = 1$, a sign slip.
- 19. D.** $60 + 35m = 480$ gives $35m = 420$ and $m = 12$. Choice B is the amount paid in monthly fees, not the number of months. Choice A ignores the joining fee.
- 20. 20.** Sector area: $\frac{1}{2}r^2\theta = \frac{1}{2}(100)\left(\frac{2\pi}{5}\right) = 20\pi$, so $k = 20$.
- 21. 3.** Discriminant zero: $36 - 4(k)(3) = 0$, so $k = 3$.
- 22. C.** The vertex has $x = 3$. On the line, $y = 2(3) - 1 = 5$. So $9 - 18 + c = 5$ and $c = 14$. Choice A is the vertex's y -coordinate, not c .

- 9. B.** The altitude to the hypotenuse is the geometric mean of the two segments: $CD = \sqrt{4 \cdot 9} = 6$. The hypotenuse is 13, so the area is $\frac{1}{2}(13)(6) = 39$. Choice D forgets the $\frac{1}{2}$.
- 10. D.** $\frac{N(t+8)}{N(t)} = 3^{8/4} = 3^2 = 9$. Choice A is the factor every 4 months. Choice B multiplies instead of compounding.
- 11. 12.** $|x - 4| \leq 7$ means $-3 \leq x \leq 11$. With $x \geq 0$, the integers are 0, 1, ..., 11: 12 of them. Forgetting to count 0 gives 11.
- 12. D.** Original total: $12(84) + 8(79) = 1,640$, a mean of 82. New total: $20(82.5) = 1,650$. The increase is 10 points. Choice A is the change in the class mean, not in the score.
- 13. 20.** $x^2 = 6x - 8$ gives $(x - 2)(x - 4) = 0$, so the points are (2, 4) and (4, 16). The y -coordinates sum to 20. Adding the x -coordinates gives 6.
- 14. D.** $\sin A = \cos B$ when $A + B = 90$: $x + 2x - 30 = 90$, so $x = 40$. Setting $x = 2x - 30$ (as if sine and cosine of the same angle were equal) gives 30.
- 15. A.** Shifting left 2 replaces x with $x + 2$; down 4 subtracts 4: $g(x) = 3^{x+2} - 4$, so $g(0) = 9 - 4 = 5$. Choice C shifts right instead ($3^{-2} - 4$). Choice B shifts up.
- 16. C.** The taxi costs more when $2.25m > 3.50 + 1.75m$, so $0.50m > 3.50$ and $m > 7$. Choice B divides 3.50 by 1.75, ignoring the taxi's rate.

17. 3910. $4,000(0.85)(1.15) = 3,910$. A 15% increase on a smaller number doesn't restore the loss, so the answer isn't 4,000.

18. A. Common denominator: $\frac{(x+2) - (x-2)}{(x-2)(x+2)} = \frac{4}{x^2-4}$.

Choice C subtracts in the wrong order; choice D adds the fractions instead.

19. B. Cone: $\frac{1}{3}\pi r^2(3h) = \pi r^2h$, which equals the cylinder's volume, so the ratio is 1. Choice A forgets that the cone is three times as tall.

20. 12. The vertex is at $x = 4$: $f(4) = -16 + 32 + c = 21$, so $c = 5$. Then $f(1) = -1 + 8 + 5 = 12$.

21. C. A regular hexagon is six equilateral triangles: $6 \cdot \frac{\sqrt{3}}{4}(6^2) = 54\sqrt{3}$.

22. D. The vertex is at $x = b$: $f(b) = b^2 - 2b^2 + 3b - 4 = -b^2 + 3b - 4$. Setting it to -4 : $b^2 - 3b = 0$, so $b = 3$ (positive). Choice A sets the vertex's x -coordinate to 1 without using the minimum.