



Chapter 4

Practice Test 1

Reading Test

60 MINUTES, 47 QUESTIONS

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

DIRECTIONS

Each passage or pair of passages below is followed by a number of questions. After reading each passage or pair, choose the best answer to each question based on what is stated or implied in the passage or passages and in any accompanying graphics (such as a table or graph).

Questions 1–9 are based on the following passage.

This passage is adapted from E.C. Bentley, *Trent's Last Case*. Originally published in 1913. This novel tells the story of a detective who attempts to solve the murder of a wealthy financier.

Between what matters and what seems to matter, how should the world we know judge wisely?

Line When the scheming, indomitable brain of Sigsbee
5 Manderson was scattered by a shot from an unknown
hand, that world lost nothing worth a single tear. It
gained something memorable in a harsh reminder of
the vanity of such wealth as this dead man had piled
up—without making one loyal friend to mourn him,
10 without doing an act that could help his memory to
the least honour. But when the news of his end came, it
seemed to those living in the great vortices of business
as if the earth, too, shuddered under a blow.

In all the lurid commercial history of his country
there had been no figure that had so imposed itself upon
15 the mind of the trading world. He had a niche apart
in its temples. Financial giants, strong to direct and
augment the forces of capital, and taking an approved
toll in millions for their labour, had existed before; but
in the case of Manderson there had been this singularity,
20 that a pale halo of piratical romance, a thing especially
dear to the hearts of his countrymen, had remained
incongruously about his head through the years when
he stood in every eye as the unquestioned guardian of
stability, the stamper-out of manipulated crises, the foe
25 of the raiding chieftains that infest the borders of Wall
Street.

The fortune left by his grandfather, who had been
one of those chieftains on the smaller scale of his day,
had descended to him with accretion through his father,
30 who during a long life had quietly continued to lend
money and never had margined a stock. Manderson,
who had at no time known what it was to be without
large sums to his hand, should have been altogether
of that newer American plutocracy which is steadied
35 by the tradition and habit of great wealth. But it was
not so. While his nurture and education had taught
him European ideas of a rich man's proper external
circumstance; while they had rooted in him an instinct
for quiet magnificence, the larger costliness which does
40 not shriek of itself with a thousand tongues; there had
been handed on to him nevertheless much of the Forty-
Niner and financial buccaneer, his forbear. During
that first period of his business career which had been
called his early bad manner, he had been little more
45 than a gambler of genius, his hand against every man's—
an infant prodigy—who brought to the enthralling
pursuit of speculation a brain better endowed than any
opposed to it. At St. Helena it was laid down that war
is a beautiful occupation; and so the young Manderson
50 had found the multitudinous and complicated dog-fight
of the Stock Exchange of New York.

Then came his change. At his father's death, when
Manderson was thirty years old, some new revelation
of the power and the glory of the god he served seemed
55 to have come upon him. With the sudden, elastic
adaptability of his nation he turned to steady labour
in his father's banking business, closing his ears to the

CONTINUE

sound of the battles of the Street. In a few years he came to control all the activity of the great firm whose
 60 unimpeached conservatism, safety, and financial weight lifted it like a cliff above the angry sea of the markets. All mistrust founded on the performances of his youth had vanished. He was quite plainly a different man. How the change came about none could with
 65 authority say, but there was a story of certain last words spoken by his father, whom alone he had respected and perhaps loved.

1

The main purpose of the passage is to

- A) discuss the life of a powerful financier and explain the impact of his death.
- B) reveal the motivations behind a sudden change in the life of a tycoon.
- C) outline the reasons that a wealthy businessman made few friends.
- D) argue that prosperity is more likely to result from hard work than from risky speculations.

2

Based on the information in the passage, Manderson was known chiefly for his

- A) sharp business practices and harsh manner toward those he thought inferior.
- B) vast wealth and willingness to lend money at low interest rates.
- C) European habits and unusual good fortune as a gambler.
- D) power and determination to protect the security of the financial sector.

3

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 13–15 (“In all . . . world”)
- B) Lines 23–26 (“he stood . . . Street”)
- C) Lines 27–31 (“The fortune . . . stock”)
- D) Lines 42–45 (“During . . . genius”)

4

The passage suggests which of the following about Manderson’s death?

- A) Its cause was unknown, but news of it spread quickly throughout the financial world.
- B) It served as a reminder that financial prosperity is not more valuable than health.
- C) It had a greater impact on Manderson’s business connections than on his personal connections.
- D) It occurred when Manderson was only thirty years old, at a time when many distrusted him.

5

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 3–5 (“When . . . tear”)
- B) Lines 5–12 (“It gained . . . blow”)
- C) Lines 16–18 (“Financial . . . before”)
- D) Lines 52–55 (“At his . . . him”)

6

As used in line 39, “quiet” most nearly means

- A) silent.
- B) still.
- C) understated.
- D) secluded.

7

In lines 48–51, the reference to St. Helena serves primarily to

- A) introduce a comparison illustrating Manderson’s view of his work.
- B) present a dilemma that perplexed Manderson’s coworkers.
- C) describe a significant event in the history of the Stock Exchange.
- D) suggest a potential career path dismissed by Manderson.

CONTINUE

8

Which choice best describes Manderson’s “change” (line 52)?

- A) Supporter of a business to rival taking over that business
- B) Soldier at St. Helena to powerful business magnate
- C) Disrespectful prodigy to trusted clerk
- D) Clever speculator to steadfast banker

9

As used in line 55, “elastic” most nearly means

- A) rubbery.
- B) flexible.
- C) expandable.
- D) looped.

CONTINUE 

Questions 10–18 are based on the following passage and supplementary material.

This passage is adapted from Linda J. Bilmes, *Putting a dollar value on nature will give governments and businesses more reasons to protect it*. ©2021 by Linda J. Bilmes, Harvard Kennedy School. Originally published on TheConversation.com.

Scientists widely agree that loss of wildlife and the natural environment is an urgent crisis. Some argue that biodiversity loss threatens to become Earth's sixth mass extinction. But unlike efforts to fight climate change—which center on clear, measurable goals to reduce greenhouse gas emissions—there is no globally accepted metric for saving biodiversity. As an expert on budgeting and public finance, I know that governments and private businesses alike pay much more attention to resources when they have a well-defined price tag. I believe that overhauling society's concept of wealth to include “natural capital”—the value nature provides to humans—is a critical step for slowing and reversing the loss of precious ecosystems.

Natural capital can be defined as the world's stocks of natural assets—soil, air, water, grasslands, forests, wetlands, rocks and minerals—and all of its living things, from mammals and fish to plants and microbes. Conservation experts estimate that these resources contribute more than US\$125 trillion to the global economy every year. Humans depend on nature's contributions for survival. For example, forests absorb carbon and filter the water we drink. Wetlands and coral reefs mitigate flooding. Bees and other insects pollinate crops, enabling us to grow food. But human societies don't formally recognize the economic value of these services. This oversight encourages people to recklessly deplete the natural environment.

A recent review of the economics of biodiversity, commissioned by the U.K. government and led by Cambridge University economist Sir Parth Dasgupta, warns that human prosperity is growing at a “devastating cost to nature” and estimates that it would take 1.6 Earths to maintain the world's current living standards. The report calls for the world to treat nature like an asset to be reported in financial statements and national accounts. The Capitals Coalition, a global consortium of 380 initiatives and businesses,

is trying to “change the math.” The organization seeks to persuade at least half of the world's businesses, financial institutions and governments to incorporate natural capital into their decision-making by 2030.

Current accounting methods used by corporations and governments largely ignore what ecosystems and their services contribute to the economy and to human social well-being, jobs and livelihoods. As a consequence, modern societies spend far more on investments that deplete or exploit natural assets than they do to preserve them. Under the current model, short-term economic gains typically win out against longer-term ecological benefits. For example, failing to maintain forests can spark wildfires. And constructing homes on fragile coastal wetlands can erode soil and reduce fish stocks, destroying local communities.

A recent study by the Paulson Institute, a research institute founded by former U.S. Treasury Secretary Henry Paulson, estimated that global investments that degrade nature exceed conservation efforts by \$600 billion to \$824 billion per year.

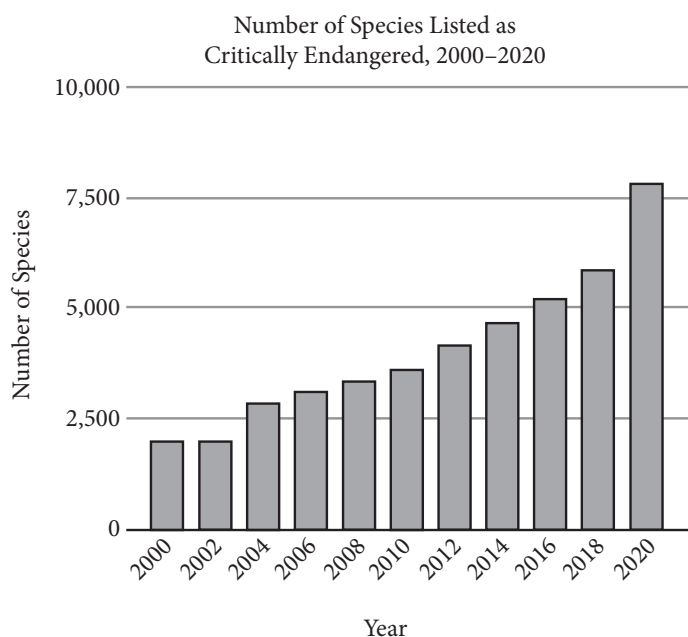
Natural capital accounting would require businesses and governments to calculate how human activity affects nature, much as they assess depreciation of buildings or machinery. Analyzed in this way, nature is a financial asset, and damage to it becomes a liability.

This approach creates incentives to conserve natural resources and restore others that have been degraded or depleted. Global recognition of this issue is growing. In March 2021 the United Nations updated a statistical framework for standardizing ecosystem accounting, which was first published in 2012. These guidelines help countries track changes in ecosystems and their services and provide leaders with a baseline with which to compare their stocks and flows when making policy decisions. Some 90 countries have adopted this System of Environmental Economic Accounting and produced baseline “national capital accounts.” They include European Union members, Australia, Canada, the United Kingdom and more than 40 developing countries. The U.S. is planning to implement this approach but has not done so yet.

CONTINUE

Placing values on natural assets is really no different from government assessments of the benefits of new roads, bridges and other infrastructure.

- People intuitively understand that natural resources are precious. Adopting metrics to measure and track the benefits people receive from wildlife and ecosystems would clarify how human activities affect nature and show how much investment is needed to reverse humanity's current destructive trajectory. Conservation advocates will be much better positioned to protect our planet's resources with a strong balance sheet to back it up.



Source: The IUCN Red List of Threatened Species. Table 2: Changes in numbers of species in the threatened categories (CR, EN, VU) from 1996 to 2021. © International Union for Conservation of Nature and Natural Resources. <https://www.iucnredlist.org/resources/summary-statistics>. Download date: 7/16/21

10

As used in line 5, “center on” most nearly means

- A) gather near.
- B) focus on.
- C) relate to.
- D) touch on.

11

The author indicates that, in comparison to efforts to combat climate change, attempts to preserve biodiversity have tended to be

- A) more successful and less celebrated.
- B) less valuable and more risky.
- C) more diverse and more popular.
- D) less straightforward and harder to measure.

12

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 4–7 (“But unlike . . . biodiversity”)
- B) Lines 19–21 (“Conservation . . . year”)
- C) Lines 63–64 (“Analyzed . . . liability”)
- D) Lines 70–74 (“These . . . decisions”)

CONTINUE

13

The references to the forest, the wetlands, and the bees in lines 22–25 (“For example . . . food”) primarily serve to

- A) bring attention to the problems of relying on nature.
- B) show that nature’s contributions are priceless.
- C) highlight the many ways nature provides value to humans.
- D) describe how to measure the worth of nature’s services.

14

The author suggests that the solution she proposes in the passage is realistic by

- A) warning of the consequences of viewing the natural world as a financial resource.
- B) offering a definition of the term “natural assets” along with examples of these assets.
- C) emphasizing the simplicity of the mathematical framework used for environmental accounting.
- D) comparing government assessment of infrastructure to the potential assessment of nature.

15

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 35–37 (“The report . . . accounts”)
- B) Lines 37–39 (“The Capitals . . . math”)
- C) Lines 68–70 (“In March . . . 2012”)
- D) Lines 81–83 (“Placing . . . infrastructure”)

16

As used in line 87, “affect” most nearly means

- A) habituate.
- B) energize.
- C) impact.
- D) measure.

17

Which statement best summarizes the information presented in the graph?

- A) The list of critically endangered species grew to over 7,500 in 2020.
- B) The number of listed critically endangered species has greatly increased in recent years.
- C) The number of endangered animals has more than doubled since 2010.
- D) A significant amount of habitat destruction has occurred since 2000.

18

According to the graph, which statement is true about the number of critically endangered species listed in 2016?

- A) The number of species listed as critically endangered passed 5,000 for the first time.
- B) The number of species listed as critically endangered peaked that year.
- C) The number of species listed as critically endangered started a new upward trend that year.
- D) The growth in the critically endangered species list was out of proportion to the growth in 2014 and 2018.

CONTINUE

Questions 19–28 are based on the following passage and supplementary material.

This passage is adapted from Rachel Nuwer, “Young Ravens Rival Adult Chimps in a Big Test of General Intelligence.” Reproduced with permission. Copyright © 2020 Scientific American, a Division of Springer Nature America, Inc. All rights reserved.

Scientists and casual observers alike have known for years that ravens and their corvid relatives are extremely smart. But most studies use single experiments that provide a limited view of their overall intelligence. “Quite often, in single tasks, you’re just testing whether the bird can understand that you’re hiding something,” says Simone Pika, a cognitive scientist at Osnabrück University in Germany.

A new study that tries to address that deficit provides some of the best proof yet that ravens, including young birds of just four months of age, have certain types of smarts that are on par with those of adult great apes. The brainy birds performed just as well as chimpanzees and orangutans across a broad array of tasks designed to measure intelligence. “We now have very strong evidence to say that, at least in the tasks we used, ravens are very similar to great apes,” says Pika, lead author of the study. “Across a whole spectrum of cognitive skills, their intelligence is really quite amazing.” The findings, published in *Scientific Reports*, add to a growing body of evidence indicating that impressive cognitive skills are not solely the domain of primates but occur in certain species across the animal kingdom.

In their new work, Pika and her colleagues turned to a large group of tests that study co-author Esther Herrmann of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, originally developed in 2007 to investigate cognitive performance in great apes and human children. Herrmann’s method measures general performance across a range of social and physical tasks rather than just one specific aspect of cognitive reasoning, as most prior approaches did. Herrmann and other scientists have used her now well-established technique to make additional cross-species comparisons in monkeys, dogs and parrots.

Pika, Herrmann and their colleagues adapted and administered the same suite of tests to eight hand-raised ravens. The assays consisted of nine physical categories and six social ones, which were individually comprised of up to four different tasks repeated multiple times each. “We tried to have many tasks in many domains to have a comprehensive understanding of what ravens can do,” Pika says. “It was so much work!”

Physical tests measured the birds’ abilities to track objects in space and to understand numbers. For example, researchers placed a reward under a certain cup and then moved that cup around with several others to see if the ravens could track which one contained the reward. Under the social test umbrella, the researchers measured how well the birds could follow cues given by an experimenter. The human signaled which cup contained a reward by looking or pointing at it, for instance, or showed the ravens how to access a reward and then observed whether they were able to apply what they observed.

The authors repeated the same 33 tasks for each raven at four, eight, 12 and 16 months of age. They were surprised to find that by just four months old, the birds had mastered most tasks—to the point that, almost across the board, the young ravens’ results compared similarly to those of adult chimpanzees and orangutans that Herrmann had previously tested. “We didn’t expect that they’d master these tasks so quickly,” Pika says. She and her colleagues suspect that ravens’ cognitive development must be fast-tracked because they begin interacting more with their ecological and social environment at about four months of age.

In some ways, the findings about raven intelligence are expected, but they are important in terms of validating the birds’ cognitive performance, says Claudia Wascher, a behavioral ecologist at Anglia Ruskin University in England, who was not involved in the research. “Great apes and primates in general have, for quite a long time now, been praised for their ‘extraordinary’ cognitive abilities, but we now find that other taxa, including birds, show similar cognitive performance,” she says.

CONTINUE

Proportion of Correct Performance by Species			
<i>Cognitive Scale</i>	Chimpanzee	Orangutan	Raven
Causality	0.636	0.617	0.543
Quantity	0.676	0.625	0.597
Space	0.664	0.504	0.369
Communication	0.496	0.459	0.512
Social Learning	0.097	0.073	0.046
Theory of Mind	0.365	0.323	0.343

19

This passage is written from the point of view of someone who is

- A) familiar with new research about raven intelligence.
- B) currently involved in conducting animal testing.
- C) a strong proponent of animal rights.
- D) a bystander in the debate over animal intelligence.

20

It is reasonable to infer that the main goal of the researchers conducting the tests described in the passage was to

- A) determine differences between ravens' and great apes' approaches to tasks.
- B) explore possible ways to increase animal intelligence.
- C) gain a better understanding of raven intelligence.
- D) measure the limitations of the testing methods.

21

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 3–5 (“But most . . . intelligence”)
- B) Lines 9–13 (“A new . . . apes”)
- C) Lines 20–24 (“The findings . . . kingdom”)
- D) Lines 52–54 (“Under . . . experimenter”)

22

What main effect does the quotation by Pika in lines 18–20 have on the tone of the passage?

- A) It creates a detached tone, focusing on the birds' performance alone.
- B) It creates a joyful tone, recognizing the human capacity for wonder.
- C) It creates an angry tone, revealing the experimenters' unpreparedness.
- D) It creates a surprised tone, expressing an honest emotional reaction.



23

Based on the passage, what was the original purpose of the tests that Pika gave to the ravens?

- A) To rate intelligence across a range of mammal and bird species
- B) To discover the extent of social intelligence among great apes and human children
- C) To measure the mental abilities of apes and young humans
- D) To isolate and encourage the best examples of animal intelligence

24

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 1–3 (“Scientists . . . smart”)
- B) Lines 25–30 (“In their . . . children”)
- C) Lines 31–34 (“Herrmann’s . . . did”)
- D) Lines 34–37 (“Herrmann . . . parrots”)

25

As used in line 47, “track” most nearly means

- A) run.
- B) push.
- C) package.
- D) follow.

26

As used in line 73, “validating” most nearly means

- A) approving.
- B) stamping.
- C) confirming.
- D) encouraging.

27

What information discussed in paragraph 6 (lines 59–70) is represented by the table?

- A) The information in lines 59–60 (“The authors . . . age”)
- B) The information in lines 60–65 (“They . . . tested”)
- C) The information in lines 65–67 (“We . . . says”)
- D) The information in lines 67–70 (“She . . . age”)

28

Which statement about the animals’ performance on cognitive tests is best supported by the table?

- A) Though ravens scored lower in social learning than did the other species, they scored better in communication than did the other species.
- B) Only one of the species scored higher on tests of quantity than it did on the other tests.
- C) All of the ravens’ test scores exceeded all of the orangutans’ test scores.
- D) The species with the highest test score in causality had the lowest test score in communication.

CONTINUE

Questions 29–38 are based on the following passage.

This passage is adapted from Alexander Hamilton, John Jay, and James Madison, *The Federalist Papers*. Originally published in 1788. In this piece, John Jay discusses maintaining the United States as a single nation or dividing the country into a collection of small independent sovereignties.

To the People of the State of New York:

When the people of America reflect that they are now called upon to decide a question, which, in its
 Line consequences, must prove one of the most important
 5 that ever engaged their attention, the propriety of their taking a very comprehensive, as well as a very serious, view of it, will be evident.

Nothing is more certain than the indispensable necessity of government, and it is equally undeniable,
 10 that whenever and however it is instituted, the people must cede to it some of their natural rights in order to vest it with requisite powers. It is well worthy of consideration therefore, whether it would conduce more to the interest of the people of America that they
 15 should, to all general purposes, be one nation, under one federal government, or that they should divide themselves into separate confederacies, and give to the head of each the same kind of powers which they are advised to place in one national government.

20 It has until lately been a received and uncontradicted opinion that the prosperity of the people of America depended on their continuing firmly united, and the wishes, prayers, and efforts of our best and wisest citizens have been constantly directed to that object.

25 But politicians now appear, who insist that this opinion is erroneous, and that instead of looking for safety and happiness in union, we ought to seek it in a division of the States into distinct confederacies or sovereignties. However extraordinary this new doctrine may appear,
 30 it nevertheless has its advocates; and certain characters who were much opposed to it formerly, are at present of the number. Whatever may be the arguments or inducements which have wrought this change in the sentiments and declarations of these gentlemen, it
 35 certainly would not be wise in the people at large to adopt these new political tenets without being fully convinced that they are founded in truth and sound policy.

It has often given me pleasure to observe that
 40 independent America was not composed of detached and distant territories, but that one connected, fertile, wide-spreading country was the portion of our western

sons of liberty. Providence has in a particular manner blessed it with a variety of soils and productions, and
 45 watered it with innumerable streams, for the delight and accommodation of its inhabitants. A succession of navigable waters forms a kind of chain round its borders, as if to bind it together; while the most noble rivers in the world, running at convenient
 50 distances, present them with highways for the easy communication of friendly aids, and the mutual transportation and exchange of their various commodities. With equal pleasure I have as often taken notice that Providence has been pleased to give this
 55 one connected country to one united people—a people descended from the same ancestors, speaking the same language, professing the same religion, attached to the same principles of government, very similar in their manners and customs, and who, by their
 60 joint counsels, arms, and efforts, fighting side by side throughout a long and bloody war, have nobly established general liberty and independence.

This country and this people seem to have been made for each other, and it appears as if it was the
 65 design of Providence, that an inheritance so proper and convenient for a band of brethren, united to each other by the strongest ties, should never be split into a number of unsocial, jealous, and alien sovereignties.

29

The position that Jay takes in this essay can best be described as that of

- A) an impartial onlooker pointing out both sides of an issue.
- B) a leader arguing for a particular outcome.
- C) an intellectual studying a historical decision.
- D) a spokesperson seeking a reasonable compromise.

30

As used in line 12, “vest” most nearly means

- A) clothe.
- B) abandon.
- C) endow.
- D) belong.

CONTINUE

31

According to Jay, which of the following questions about the American political system arose shortly before the passage was written?

- A) Whether it is truly necessary for the people to give up some of their rights to the government
- B) Whether it is better for America to be governed as one nation or for each state to be governed independently
- C) Whether it is best to give all authority to the federal government or to reserve some powers for the states
- D) Whether the American people should share one common language and religion

32

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 8–12 (“Nothing . . . powers”)
- B) Lines 25–28 (“But politicians . . . sovereignties”)
- C) Lines 43–46 (“Providence . . . inhabitants”)
- D) Lines 53–62 (“With . . . independence”)

33

Jay indicates that those who choose to support dividing the country into separate confederacies

- A) are contradicting the wishes, prayers, and efforts of the majority of its citizens.
- B) value independence over safety and happiness.
- C) should not do so without first examining the issue thoroughly.
- D) are threatening the prosperity of the nation by encouraging political turmoil.

34

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 20–22 (“It has . . . united”)
- B) Lines 29–32 (“However . . . number”)
- C) Lines 32–38 (“Whatever . . . policy”)
- D) Lines 39–43 (“It has . . . liberty”)

35

In lines 39–43, Jay makes a distinction between

- A) self-reliance and liberty.
- B) secluded provinces and a unified domain.
- C) deserted marketplaces and lush farmland.
- D) division and independence.

36

In the context of the passage as a whole, Jay’s references to “innumerable streams” (line 45), “navigable waters” (line 47), and “noble rivers” (line 49) primarily serve to

- A) endorse the protection of natural resources.
- B) inspire an adventurous spirit.
- C) summarize a complicated position.
- D) support an argument through comparison.

37

In saying “with equal pleasure” (line 53), Jay suggests that he

- A) finds the unity among the country’s people as satisfying as the connections in the country’s geography.
- B) would be just as happy to have the states unified as he would to have them divided.
- C) would enjoy meeting new people if he had the opportunity to travel more.
- D) would prefer traveling by water as much as he would prefer traveling by land.

38

The list in lines 55–59 (“a people . . . customs”) primarily serves to

- A) outline a method that Jay has endorsed.
- B) summarize the points that Jay has dismissed.
- C) provide support for a claim Jay has made.
- D) restate the key issues Jay’s audience must settle.

CONTINUE

Questions 39–47 are based on the following passages.

Passage 1 is adapted from “Tardigrades become first animals to survive vacuum of space” by Ed Yong ©2016. Passage 2 is adapted from Susanne Bard, “Tardigrade Protein Protects DNA from Chemical Attack.” Reproduced with permission. Copyright ©2019 Scientific American, a Division of Springer Nature America, Inc. All rights reserved.

Passage 1

In September last year, a team of scientists launched a squad of tiny animals into space aboard a Russian satellite. Once in orbit, the creatures were shunted into ventilated containers that exposed them to the vacuum of space. In this final frontier, they had no air and they were subjected to extreme dehydration, freezing temperatures, weightlessness and lashings of both cosmic and solar radiation. It’s hard to imagine a more inhospitable environment for life but not only did the critters survive, they managed to reproduce on their return to Earth. Meet the planet’s toughest animals—the tardigrades. Tardigrades are small aquatic invertebrates that are also known as “water bears”, after their impossibly cute shuffling walk. They also happen to be nigh-invincible and can tolerate extreme environments that would kill almost any other animal. They can take temperatures close to absolute zero, punishing doses of radiation and prolonged periods of drought. And now, they have become the only animals to have ever survived the raw vacuum of space.

Their stellar adventure began with Ingemar Jonsson from Kristianstad University, who really wanted to test the limits of their resilience. To that end, he launched adults from two species (*Richtersius coronifer* and *Milnesium tardigradum*) into space aboard the FOTON-M3 spacecraft, as part of a mission amusingly known as TARDIS (Tardigrades In Space). The tardigrades spent ten days in low Earth orbit, about 270 km above sea level. The tardigrades were sent into orbit in a dry, dormant state called a “tun” and it’s this desiccated form that is the key to their extraordinary levels of endurance. By replacing almost all of the water in their bodies with a sugar called trehalose, they can escape many of the things that would otherwise kill them. Jonsson says, “Environmental agents that rely on water or the respiratory system don’t work. You can put a dry tardigrade in pure alcohol and expose them to poisonous gases without killing them.”

The ability to dry out completely is an adaptation to the tardigrades’ precarious environment—damp pools or patches of water on moss or lichen that can easily

evaporate. They have evolved to cope with sporadic drought and can stay dormant for years. All it takes to revive them is a drop of water, and that’s exactly what happened when the TARDIS astronauts returned to Earth.

Passage 2

Tardigrades are some of nature’s toughest animals. Also known as water bears, the tiny creatures can withstand extreme conditions, like boiling hot temperatures, long periods of dehydration and even oxygen deprivation.

“One of the really cool things about tardigrades is that you can shoot them into outer space, and they can survive the vacuum and radiation of the low-Earth orbit,” says University of California, San Diego, biochemist Jim Kadonaga. Of course, he says tardigrades didn’t evolve to endure the perils of space travel. “Many tardigrades live in environments that are both wet and dry, like moss. And when it’s wet, they’re active. And when it’s dry, they can go into a desiccated state that’s something like a state of suspended animation.”

Normally, dehydration would make tardigrade DNA susceptible to damage from chemicals called hydroxyl radicals, which form when water molecules split. They also form when DNA is exposed to radiation. But Kadonaga suspected that a protein found only in tardigrades, called Dsup, might protect their DNA under both conditions. (Dsup stands for “damage suppressor protein.”) “And the remarkable thing about this Dsup protein is that when you put it into human cells in the laboratory, it makes those cells more resistant to X-ray radiation.”

Kadonaga’s team, led by then undergraduate student Carolina Chavez, studied how Dsup protects DNA in cells. They found that it binds to chromatin, the compact structure that allows long molecules of DNA to ball up and fit into a tiny cell. The researchers think Dsup acts as a sort of chromatin insulator, shielding DNA from attack by hydroxyl radicals. They conclude that the protein is likely the key to the tardigrade’s extreme hardiness in conditions that would prove lethal to most other organisms.

CONTINUE

Kadonaga says understanding the tardigrade's secret weapon may also inform biotechnology and pharmaceutical research. "And so, now that we
 85 know how Dsup works, we might be able to use that knowledge to make designer versions of Dsup that can be used to potentially make cells more durable or longer-lived."

39

In Passage 1, which choice provides the best support for the author's statement that space is an "inhospitable environment for life"?

- A) Lines 3–5 ("Once . . . space")
- B) Lines 5–8 ("In this . . . radiation")
- C) Lines 18–19 ("And now . . . space")
- D) Lines 26–28 ("The tardinauts . . . level")

40

As used in line 15, "tolerate" most nearly means

- A) permit.
- B) indulge.
- C) endure.
- D) ignore.

41

The author of Passage 1 indicates that tardigrades can survive in hostile environments due to which unique trait?

- A) Shuffling walk
- B) Tolerance for famine
- C) Small size
- D) Ability to replace water with sugar

42

Which choice provides the best evidence for the answer to the previous question?

- A) Lines 1–3 ("In September . . . satellite")
- B) Lines 12–16 ("Tardigrades . . . animal")
- C) Lines 31–34 ("By replacing . . . them")
- D) Lines 42–44 ("All it . . . Earth")

43

As used in line 45, "toughest" most nearly means

- A) most demanding.
- B) most difficult.
- C) most resolute.
- D) most hardy.

44

A student claimed that increasing temperatures caused by climate change would cause tardigrades to go extinct. Would the author of Passage 2 most likely agree with the student's claim?

- A) Yes, because the author states that tardigrades did not evolve to endure space travel and its accompanying dangers.
- B) Yes, because the author states that tardigrade DNA is susceptible to damage from hydroxyl radicals as well as radiation.
- C) No, because the author states that tardigrades can withstand extreme environmental conditions that other organisms cannot.
- D) No, because the author states that tardigrades can be shot into outer space and survive at low-Earth orbit.


 CONTINUE

45

A main purpose of both Passage 1 and Passage 2 is to

- A) examine the methods of testing the resiliency of invertebrates in space.
- B) establish the ideal conditions to ensure invertebrate survival.
- C) describe the high level of resiliency of a particular invertebrate.
- D) refute a hypothesis about invertebrate survival under extreme conditions.

46

Based on the information provided in Passage 2, the “squad of tiny animals” referred to in line 2

- A) can survive at near freezing temperatures.
- B) feed primarily on chromatin.
- C) live only in wet-dry environments.
- D) have damage suppressor proteins.

47

The authors of both passages would most likely agree that water bears

- A) owe their resilience to trehalose.
- B) are not susceptible to hydroxyl radicals.
- C) may benefit biotechnology research.
- D) may live in patches of moss.

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.

Writing and Language Test

35 MINUTES, 44 QUESTIONS

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

DIRECTIONS

Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a “NO CHANGE” option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Questions 1–11 are based on the following passage.

The Nobel Prize and the School of...

The Nobel Prize has been awarded in a variety of categories since 1901. There aren't many **1** exceptions on the list. As one would expect, the early prizes were given mostly to Americans and **2** people who hailed from Europe, but the committee has since become more international. The winners of the prizes have aged alongside increasing life expectancy. In the early days, the average winner of the Nobel Prize in Physics was in **3** their early 50s. Nowadays it's fairly surprising to see a winner in any category who is younger than 60.

1

- A) NO CHANGE
- B) surprises
- C) outliers
- D) abominations

2

- A) NO CHANGE
- B) those of European descent,
- C) people from Europe,
- D) Europeans,

3

- A) NO CHANGE
- B) one's
- C) his or her
- D) they're

CONTINUE

4 The winners in most categories come from the elite research institutions in the United States and abroad: Harvard, MIT, Stanford, Caltech, Cambridge, Columbia, and Berkeley. Not, however, the winners of the Nobel Prize in Literature. These winners share an average age (64) and geographical diversity with those in other 5 categories, though they have not attended the same schools—not by a long shot. Eugene O’Neill, one of the first American laureates, did spend one year at Princeton, but he did not finish, completing the “education” that would inspire his great works while working as a seaman and an active member of the Marine Transport Workers Union. The most 6 recent prize went to Toni Morrison earned her undergraduate degree at Howard University in Washington, D.C.

4

Which choice most effectively establishes the main topic of the paragraph?

- A) Old as they are, nevertheless, winners in all categories tend to be affiliated with the same universities.
- B) One surprise in the list of Nobel Prize winners, however, has to do with the educational backgrounds of some winners.
- C) Most of the best research is done by college students and their professors.
- D) It will shock no one that all Nobel prize winners are highly intelligent in one way or another.

5

- A) NO CHANGE
- B) categories; though
- C) categories however
- D) categories. Though

6

- A) NO CHANGE
- B) choice in literature was Toni Morrison
- C) recent winner, whose name was Toni Morrison,
- D) recent recipient of the prize, Toni Morrison,

CONTINUE

[1] This trend should remind us that creativity can strike anywhere, and one of the Nobel committee's great merits is that that **7** they have been willing to identify great talent outside of the typical places. [2] Work in economics, medicine, or the sciences **8** requires a vibrant, collaborative atmosphere, with the best minds in the field working together toward solutions. [3] The elite universities of the world provide just such an atmosphere. [4] Literary labor requires the mind and circumstances of a great writer, plus a healthy dose of imagination and courage. [5] While the other fields celebrate great **9** accomplishments, discoveries, and new findings, the Nobel Prize in Literature celebrates great individual minds, those that contain all there is to know and more. [6] Work in literature, however, needs no such place. **10**

These trends show that great thinkers and scholars do not live only at the big research universities. Anyone with an open mind can do great things, **11** and it's not unreasonable to expect that you'd find the most open minds at the best schools. The trends among Nobel laureates in literature teach us much the same lesson that literature itself does. There is an endless supply of wonder in our infinitely diverse world, and those with the willingness to see it will always be rewarded.

7

- A) NO CHANGE
- B) we are
- C) it has
- D) they might've

8

- A) NO CHANGE
- B) require
- C) do require
- D) has required

9

- A) NO CHANGE
- B) accomplishments, findings, and new discoveries
- C) accomplishments and finding discoveries
- D) accomplishments and new discoveries

10

For the sake of the logic and coherence of this paragraph, sentence 6 should be placed

- A) where it is now.
- B) after sentence 2.
- C) after sentence 3.
- D) after sentence 4.

11

Which choice would most effectively support the assertion made in this sentence and paragraph as a whole?

- A) NO CHANGE
- B) whether that's in a high-end graduate program, a community college, or the workforce.
- C) although here, too, the Literature laureates are an exception.
- D) but obviously an author of fiction needs to have a very open mind to begin with.



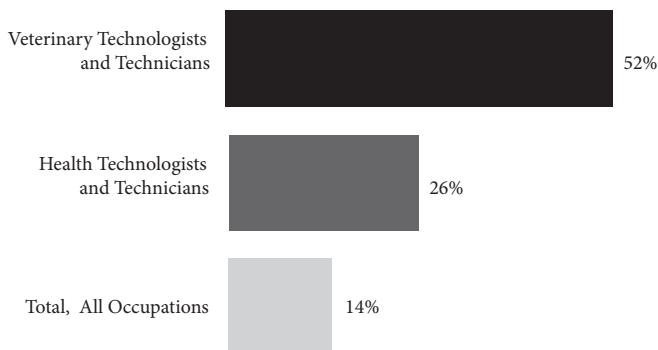
Questions 12–22 are based on the following passage and supplementary material.

I'd Rather Be With An Animal

Many children dream of being veterinarians. Working all day with animals just like one's dog, cat, **12** fish or horse seems, like a dream come true. For some reason, though, kids seem to grow out of this fantasy as they get older, with **13** fewer than 3,000 veterinary-school graduates each year in the United States. It may be time, however, to bring the dream back: the U.S. Bureau of Labor Statistics predicts that, between 2010 and 2020, **14** the U.S. economy will see some slow growth. The need for veterinary technicians is predicted to grow even more quickly, **15** although the data show that other professions will grow even more quickly.

Veterinary Technologists and Technicians

Percent change in employment, projected 2010–20



Note: All Occupations include all occupations in the U.S. Economy.
Source: U.S. Bureau of Labor Statistics, Employment Projections program

12

- A) NO CHANGE
- B) fish, or, horse seems
- C) fish, or horse seems
- D) fish or, horse seems

13

- A) NO CHANGE
- B) less than
- C) fewer then
- D) less then

14

- Which of the following true statements best supports the statement made earlier in this sentence?
- A) NO CHANGE
 - B) many children will be born in the United States.
 - C) some veterinarians will retire.
 - D) the veterinary profession will grow by 36 percent.

15

- Which choice completes the sentence with accurate data based on the graph?
- A) NO CHANGE
 - B) at over three times the rate of all occupations in the United States.
 - C) but being a health technician has equally positive job prospects.
 - D) largely because these positions can be filled by those who have not gone to veterinary school.

CONTINUE

For many years, veterinarians have provided a series of basic services for household **16** pets. From basic check-ups and shots to neutering and defanging. Today, however, pets have a longer life expectancy than in the past, and **17** they are required to perform more and more procedures involving animal cancers, skin abscesses, and torn ligaments and cartilage. Medical expenses are now a significant factor in the cost of pet ownership, and companies offering Veterinary Pet Insurance (VPI) are sprouting up all over the country.

[1] If this seems to resemble medical care for humans, it's not mere coincidence. [2] In fact, the word "owners" may itself be a misnomer: **18** some pets are shared between friends. [3] There are many cultural factors leading to this increase in attention and intimacy. [4] The main one may be that as young men and women are getting married and starting families later in life, they are more likely to own pets as new college graduates and young professionals. [5] For many pet owners, dogs and cats are more "human" than ever before. **19**

16

- A) NO CHANGE
- B) pets—from
- C) pets; from
- D) pets from,

17

- A) NO CHANGE
- B) we
- C) veterinarians
- D) all of them

18

Which choice best emphasizes that many pet owners consider their pets to be more human than animal?

- A) NO CHANGE
- B) every little boy and girl dreams of getting a puppy for Christmas.
- C) many now self-identify as pet "parents."
- D) pets are a great way to teach children about death.

19

For the sake of the cohesion of this paragraph, sentence 5 should be placed

- A) where it is now.
- B) after sentence 1.
- C) after sentence 2.
- D) after sentence 3.



As pets continue to take on a new symbolic importance, the need for veterinary specialization is increasing. There is a huge **20** demand, for instance, for the work of specialists in veterinary dentistry and animal behaviorism as these fields become better understood. In the latter particularly, there is an obvious correlation between the humanity of pets and the perceived complexity of **21** their minds and of the way they think. There have also been significant increases in the very “human” procedures of hip replacements, blood transfusions, and organ transplants.

Veterinary advocates have been quick to point out that increases in animal health correlate directly with increases in human health. Given the increase in people living alone and the decrease in the average number of children per family, an animal’s companionship can provide **22** stuff that is often attributed to the traditional nuclear family. The grandeur of childhood dreams may not be so unreasonable after all: as the veterinary profession grows, veterinary science will increasingly become a part of how we understand the human experience.

20

- A) NO CHANGE
- B) demand for instance
- C) demand for, instance,
- D) demand for instance,

21

- A) NO CHANGE
- B) the way they think about things.
- C) what they mind.
- D) their minds.

22

- A) NO CHANGE
- B) one of the things
- C) all
- D) the stability

CONTINUE 

Questions 23–33 are based on the following passage.

Veterans in School

23 It may seem commonplace today for many people to go to college, this is a relatively recent development. For much of American history, a university education was reserved only for the very wealthy, but all of that changed with the G.I. Bill.

The Servicemen's Readjustment Act, the G.I. Bill's official name, was signed into law in 1944. More than twenty years earlier, **24** after the conclusion of World War I, the veterans of the bloodiest war on record were more or less forgotten by the U.S. government. Many of them were given little more than a \$60 allowance and a train ticket home. While **25** they're was some talk of military bonuses, those bonuses were not easily obtained. As a result, **26** a group of 1932 veterans marched into Washington to achieve its bonus demands. The march ended bitterly: no bonuses were paid, and many protesters were chased off by armed military.

23

- A) NO CHANGE
- B) Because it
- C) While it
- D) Really, it

24

Which of the following true choices provides the information most consistent with the rest of the sentence?

- A) NO CHANGE
- B) so that would be around 1924,
- C) two decades into the twentieth century,
- D) when the G.I. Bill hadn't been written yet,

25

- A) NO CHANGE
- B) it
- C) their
- D) there

26

- A) NO CHANGE
- B) Washington invited the bonus veterans to march in 1932 on it.
- C) in 1932, a group of veterans marched on Washington to demand the bonuses.
- D) a group of veterans planned to march on 1932 bonuses for Washington.

CONTINUE

As World War II neared its end, though, the U.S. government sought to avoid another such standoff. Indeed, for many, the goal was less idealistic: the **27** tremendous unemployment, among World War I veterans, was seen as accelerating the economic collapse of the Great Depression. **28** Hoping to avoid either or both of these catastrophes, Congress passed the Servicemen's Readjustment Act, which included provisions for education, home loans, and unemployment insurance.

27

- A) NO CHANGE
- B) tremendous unemployment among World War I veterans
- C) tremendous, unemployment among, World War I veterans
- D) tremendous unemployment among World War I veterans,

28

Which of the following choices best agrees with the ideas discussed in this paragraph?

- A) NO CHANGE
- B) In 1944, a year before World War II ended officially,
- C) Almost three years after the Japanese attack on Pearl Harbor,
- D) Perhaps for other reasons that historians don't understand,

CONTINUE 

One of the perhaps unintended consequences **29** in university education was a revolution in the United States. In 1947, veterans on the G.I. Bill accounted for 49 percent of college admissions. By 1956, of the 16 million World War II veterans, nearly half had used the G.I. Bill for some kind of training. Therefore, by the early 1960s, college training **30** had changed drastically. For the first time in American history, college was truly democratic: it was not limited to the very wealthy. Instead, **31** college could be a new springboard for the upwardly mobile. Interestingly, in this same span, the least utilized of all benefits was that of unemployment: while veterans came in droves to attend colleges and get help financing their homes, very few used the unemployment subsidy.

32 Some years are better for the G.I. Bill than others. In 2008, for instance, the bill was expanded to include more support for servicemen and women, including the ability to transfer unused benefits to husbands, wives, and children. We may not expect a piece of wartime legislation to have been so **33** good, but the G.I. Bill changed the face of education as we know it, and we feel its effects all around us.

29

The best placement for the underlined portion would be

- A) where it is now.
- B) at the beginning of the sentence (adjusting punctuation and capitalization accordingly).
- C) after the word *was*.
- D) after the word *revolution*.

30

- A) NO CHANGE
- B) changes
- C) changing
- D) would change

31

Which of the following choices best supports the idea presented in the previous sentence?

- A) NO CHANGE
- B) most of the beneficiaries were still pretty wealthy.
- C) the criteria for selection were not based on income.
- D) few could hope to reach the economic status of earlier college graduates.

32

Which of the following best introduces the topic of this paragraph?

- A) NO CHANGE
- B) The benefits of the bill continue to this day.
- C) G.I.s can do many things with their degrees.
- D) The home subsidy is an underappreciated part of the bill.

33

- A) NO CHANGE
- B) educational
- C) influential
- D) intelligent

CONTINUE

Questions 34–44 are based on the following passage and supplementary material.

The Ecological Recovery of Detroit

The borderland between the United States and Canada was **34** hotly contested in its early history. Fighting between the English, the French, the Native Americans, and the newly independent Americans made the region one of the most volatile of the early 1800s. While many humans and animals have influenced the history of the region, one **35** animals influence, the beavers, has been as significant as it is overlooked. Although Michigan eventually became a powerhouse in the later part of the Industrial Revolution, it was initially attractive to settlers who wanted to cash in on the fur trade, and beaver pelts were some of the hottest commodities.

The city of Detroit was founded on *le détroit*, **36** which is where the name obviously comes from. Antoine Laumet de la Mothe, sieur de Cadillac, and his fellow settlers saw this “*détroit*” as the perfect place to build a fort to protect their fur interests. Their plans were successful, and within a very short **37** span. Furs had become the dominant trade items in the region. By the mid-1700s, after the British had seized control of the region, beaver skins had become almost universally accepted as currency, and the Hudson Bay Company issued beaver-shaped tokens that were valued at one skin each.

34

Which of the following most effectively supports the ideas in this paragraph?

- A) NO CHANGE
- B) bitterly cold
- C) primarily enforested
- D) boldly international

35

- A) NO CHANGE
- B) animal influence, the beaver,
- C) animals' influence, the beaver's,
- D) animal's influence, the beaver's,

36

Which of the following true statements best clarifies the information given in the first part of this sentence?

- A) NO CHANGE
- B) the “strait” of the river connecting Lake St. Clair to Lake Erie.
- C) on the borderland between southern Canada and the northern United States.
- D) just across the river from modern-day Windsor, Ontario.

37

- A) NO CHANGE
- B) span; furs
- C) span, furs
- D) span, but furs

CONTINUE

38 Finite resources built the unfortunate universal popularity of it. For instance, beaver skins were popular in the stylish clothes of the day, particularly hats. Although silks had become more popular than animal skins in the early 1800s, by that time the beaver had been hunted to the point that **39** it was nearly eliminated from the region altogether. In addition, the region around Detroit had grown in population, and much of the beaver habitat around the rivers had been replaced by homes and would soon be replaced by factories. **40** Then, in the twentieth century, Detroit became the “Motor City,” the main producer of automobiles in the United States, certainly not a place where wildlife could **41** think about living anymore.

38

- A) NO CHANGE
- B) The unfortunate resources were also universally finite in popularity.
- C) Unfortunately, this universal popularity was built on finite resources.
- D) Universal popularity came with the unfortunate finitude of resources.

39

- A) NO CHANGE
- B) it's
- C) they were
- D) one was

40

The writer is considering deleting the phrase “by factories” from the previous sentence and adjusting the punctuation accordingly. Should the phrase be kept or deleted?

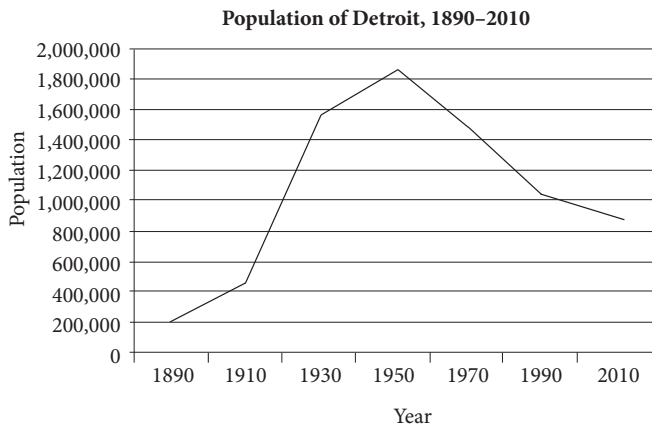
- A) Kept, because it helps to emphasize that the auto industry is largely to blame for the extinction of the beaver.
- B) Kept, because it clarifies what in addition to houses has replaced the beaver habitat.
- C) Deleted, because it repeats information given earlier in the sentence.
- D) Deleted, because it paints an unnecessarily negative portrait of the Industrial Revolution in Detroit.

41

- A) NO CHANGE
- B) migrate to with the seasons.
- C) be enjoyed by all.
- D) continue to thrive.

CONTINUE

Detroit's population peaked in the 1950s, but since the 1960s, the auto industry and population have declined precipitately. **42** Between 1990 and 2010 alone, the population of Detroit was reduced by over half. Large parts of the city are now abandoned, and thousands of abandoned houses and lots are overgrown with nature, earning them the title "urban prairies." Although Detroit **43** may have long been seen as a hotbed of urban blight, it is now becoming a place of new beginnings. Where one might see urban decay, for instance, many have come to see a resurgence of the wilderness, emblemized by, of all things, the return of the beaver. **44** Unlike other cities, parts of Detroit, it seems, may be returning to something like a "natural state." Josh Hartig, with the U.S. Fish and Wildlife Service, has called the renaturalization of the area "one of the most dramatic ecological recovery stories in North America."



42

Which choice completes the sentence with accurate data based on the graph?

- A) NO CHANGE
- B) Throughout the twentieth century,
- C) Between 1890 and 1950,
- D) From 1950 to 2010,

43

- A) NO CHANGE
- B) may of
- C) might of
- D) would have

44

- A) NO CHANGE
- B) As is not the case in other cities,
- C) Dissimilar to some parts,
- D) Different from other cities,

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



Math Test – No Calculator

25 MINUTES, 17 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

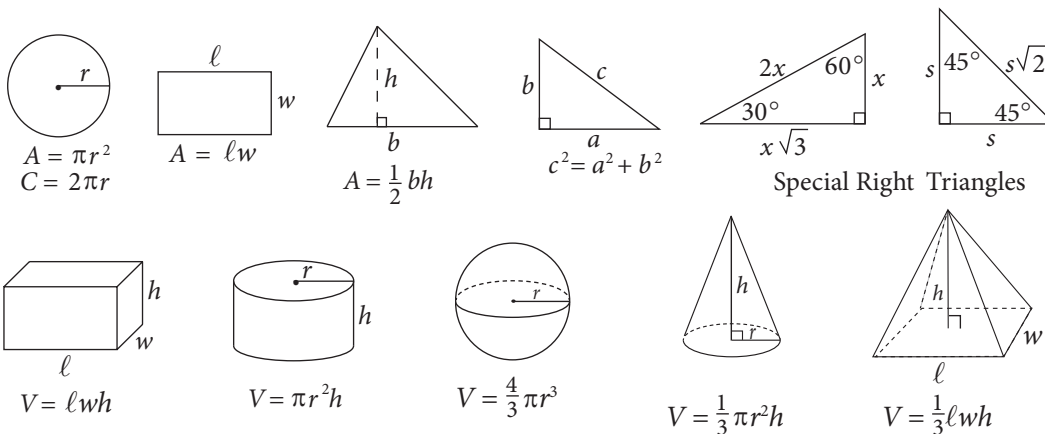
DIRECTIONS

For questions 1–13, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 14–17, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 14 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE



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

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

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

CONTINUE



1

Which of the following are the solutions to the equation $3x^2 - 48 = 0$?

- A) $-\frac{\sqrt{48}}{3}$ and $\frac{\sqrt{48}}{3}$
- B) -4 and 4
- C) $-\sqrt{48}$ and $\sqrt{48}$
- D) -16 and 16

2

At an organic farm, a 2.6 square kilometer plot of soybeans is being harvested. If the farm workers can harvest 23 hectares a day, which of the following functions can be used to estimate how many hectares, $H(d)$, will remain to be harvested after d days?

(Note: 100 hectares = 1 square kilometer)

- A) $H(d) = 2.6 - 0.23d$
- B) $H(d) = 2.6 - 23d$
- C) $H(d) = 260 - 23d$
- D) $H(d) = 2,300 - 260d$

3

$$13 - \frac{3}{4}x = \frac{3}{8}x - 5$$

What is the value of x in the equation above?

- A) 8
- B) 9
- C) 16
- D) $\frac{81}{4}$

4

$$y < \frac{1}{4}(3y - 2)$$

Which of the following values of y would make the above inequality true?

- A) -3
- B) -2
- C) 0
- D) 3

CONTINUE

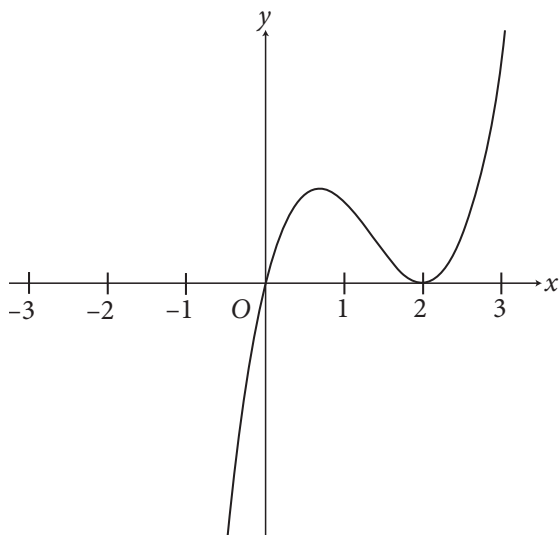


5

Which of the following is equivalent to the expression $ab^2 - 3ab + 2b - 6$?

- A) $(a + 2)(b - 3)$
- B) $(ab + 2)(b - 3)$
- C) $b(a + 3)(b - 3)$
- D) $b(ab - 3a) + 2(b - 6)$

6



The function f is shown in the xy -plane above. Which of the following could be $f(x)$?

- A) $f(x) = x(x + 2)$
- B) $f(x) = x(x - 2)$
- C) $f(x) = x(x + 2)^2$
- D) $f(x) = x(x - 2)^2$

7

Line a is given by the equation $y = 2x - 3$. Which of the following equations represents a line that intersects line a in the xy -plane at the point $\left(\frac{5}{2}, 2\right)$?

- A) $4x - 3y = 4$
- B) $2x + 3y = 5$
- C) $y - 2x = 1$
- D) $y = -\frac{1}{2}x - 3$

8

Which of the following expressions is equivalent to $(x + 2)(x - 5) - 18$?

- A) $(x - 4)(x + 7)$
- B) $x^2 - 3x - 8$
- C) $x^2 - 3x - 25$
- D) $(x - 7)(x + 4)$

CONTINUE



9

$$\frac{1}{\frac{1}{2y} - \frac{1}{y+3}}$$

For all $y > 3$, which of the following is equivalent to the expression above?

- A) $3 - y$
- B) $\frac{2y^2 + 6y}{3 - y}$
- C) $\frac{3 - y}{2y^2 + 6y}$
- D) $2y^2 + 6y$

10

$$h(x) = 9 - |x - 3|$$

In the equation above, $h(n) = h(-3)$. Which of the following could be the value of n ?

- A) -6
- B) 3
- C) 9
- D) 12

11

$$C = 0.08(B - x)$$

A new county regulation requires that a school system spend a certain amount of its discretionary budget each month on curriculum-based activities and a certain percentage of the remainder on after-school clubs. The equation above gives the amount, C dollars, that a school must spend on after-school clubs based on B dollars, the discretionary budget that month, and x dollars, the amount that must be spent on curriculum-based activities. If a school with a monthly discretionary budget of \$9,000 must spend \$320 on after-school clubs, what is the school required to spend on curriculum-based activities?

- A) \$4,000
- B) \$5,000
- C) \$8,000
- D) \$8,680

12

$$P = 2,500 + 135x$$

The population of County Y, in thousands, can be modeled by the above equation, in which x represents the number of years since the 2010 census. What does the number 135 represent in this equation?

- A) Every year the population of County Y increases by 135 people.
- B) Every 135 years that passes, the population of County Y increases by 2,500 people.
- C) Every 135 years that passes, the population of County Y increases by 250,000 people.
- D) Every year the population of County Y increases by 135,000 people.

CONTINUE 



13

$$\frac{\sqrt{x^5}}{\sqrt[4]{x^3}} = x^b$$

If the expression above is true for all values of x where $x > 0$, what is the value of b ?

- A) $\frac{1}{4}$
- B) $\frac{5}{3}$
- C) $\frac{7}{4}$
- D) $\frac{10}{3}$

CONTINUE 



DIRECTIONS

For questions 14–17, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
- Mark no more than one circle in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.

- Mixed numbers** such as $3\frac{1}{2}$ must be grid-

ded as 3.5 or $7/2$. (If

3	1	/	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

 is entered into the grid, it will be interpreted as $\frac{31}{2}$, not as $3\frac{1}{2}$.)

- Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

Answer: $\frac{7}{12}$

Write answer in boxes. →

7	/	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	0	0
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid in result. →

Fraction line

Answer: 2.5

	2	.	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Decimal point

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	6
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Answer: 201 – either position is correct

	2	0	1
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2	0	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

CONTINUE



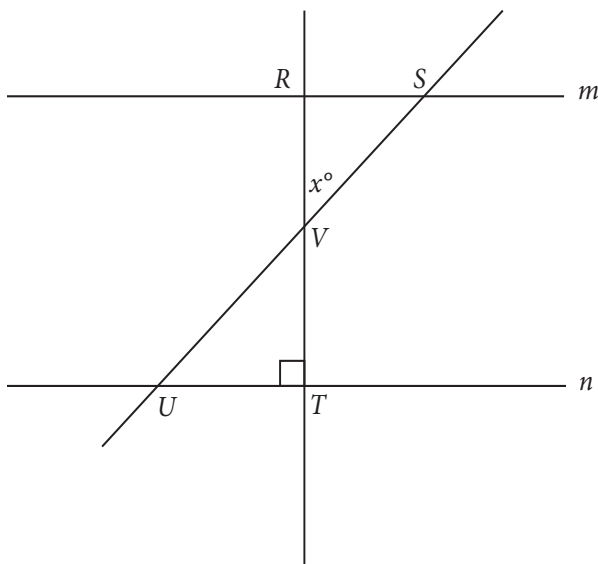
14

$$4s + 2t = 7$$

$$3s - 2t = 14$$

In the system of equations above, what is the value of s ?

15



In the figure above, lines m and n cross the lines containing segments \overline{RT} and \overline{SU} such that angle RSV is congruent to angle TUV . If angle UTV is a right angle, and angle TUV measures 65° , what is the value of x ? (Disregard the degree sign when gridding your answer.)

16

A theater sells student tickets to a play for \$24 and regular admission tickets for \$36. If the theater sells out the 100-seat theater for opening night and has total ticket sales of \$3,144, how many of the tickets sold were student tickets?

17

If $x \neq 0$ and $5x = 7y$, what is the value of $\frac{x - y}{x}$?

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.



Math Test – Calculator

45 MINUTES, 31 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

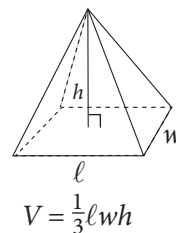
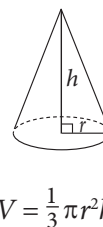
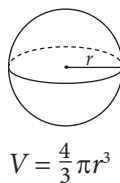
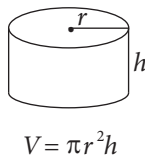
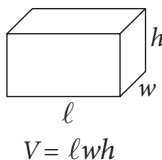
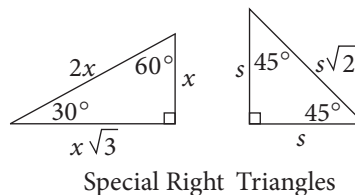
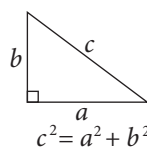
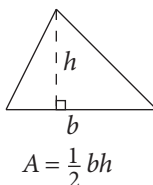
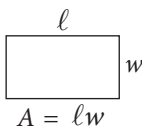
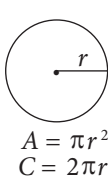
DIRECTIONS

For questions 1–27, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 28–31, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 28 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

1. The use of a calculator **is permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE



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

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

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

CONTINUE



1

Which of the following expressions is equivalent to $2(x - 5) + 3$?

- A) $2x - 7$
- B) $2x - 2$
- C) $5x - 2$
- D) $10x + 3$

2

A small glass tube used in a scientific lab can hold no more than 8.50 milliliters of liquid needed for a certain experiment. Approximately how many teaspoons can the beaker hold? (1 teaspoon \approx 4.93 milliliters)

- A) 1.72
- B) 3.57
- C) 6.78
- D) 41.91

3

Every fifteen minutes, a lab assistant can centrifuge 3 vials of blood. If she continues at this rate, how many vials of blood will she centrifuge in 4 hours?

- A) 12
- B) 20
- C) 32
- D) 48

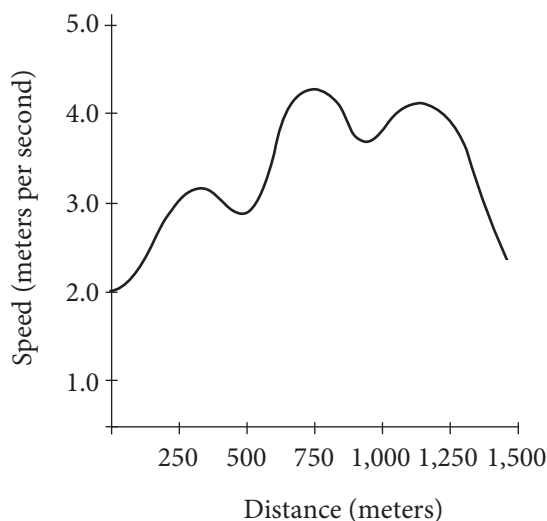
CONTINUE



4

A company that produces sports drinks wants to test the effects of its new electrolyte-infused water on athletic performance. One of the runners in the study drinks a bottle of the company's new water before his 1,500-meter run and keeps track of his speed throughout the run. The figure below graphs his speed, in meters per second, on the y -axis and the distance, in meters, along the x -axis.

Runner's Speed During Study



Based on the graph, which of the following statements is true?

- A) The x -intercept of the graph represents the runner's starting speed.
- B) The runner's slowest speed during his run occurs during the last 250 meters.
- C) The runner increases his speed steadily until he reaches a distance of 1,000 meters.
- D) The runner reaches his fastest speed at a distance of 750 meters.

5

What is the value of $5\left(a - \frac{1}{2}\right)$ if $10a = 13$?

- A) $\frac{13}{5}$
- B) 4
- C) 6
- D) $\frac{13}{2}$

6

$$(x - 3)^2 = 16$$

Which of the following values of x satisfies the equation above?

- A) -7
- B) -1
- C) 3
- D) 4

CONTINUE



Questions 7–9 refer to the following information.

High School Students' Summer Plans

	Male	Female	Total
Travel	15	25	40
Summer Job	17	13	30
Relax	33	21	54
Sports	13	9	22
Volunteer	11	14	25
Other	16	13	29
Total	105	95	200

The table above shows the results of a survey of a random sample of 200 high school students. The students were asked to indicate the option that best represented their summer plans.

7

If one of the females is selected at random, what is the approximate probability that the student indicated volunteering as her summer plans?

- A) 0.07
- B) 0.15
- C) 0.25
- D) 0.56

8

How many males in the survey plan to either work a summer job, relax, or volunteer over the summer?

- A) 15
- B) 41
- C) 48
- D) 61

9

The high school has a total of 1,200 students. Based on the data in the table, what is the predicted number of female students in the entire school who would indicate travel as their summer plans?

- A) 240
- B) 180
- C) 150
- D) 25

CONTINUE



10

Dana buys a shirt, a pair of shoes, and a purse at the store. Her bill is \$81, and the shoes cost 25 percent more than the purse and shirt combined. How much were the shoes?

- A) \$26
- B) \$36
- C) \$45
- D) \$54

Questions 11 and 12 refer to the following information.

The Manor Hill Parent Teacher Association ordered some prizes as a class reward; the bill is shown below.

Quantity	Item	
14	Pendants	
11	T-shirts	
5	Hats	
9	Frisbees	
Shipping:		\$ 15.65
Grand Total:		\$211.30

There is no tax on the order. The shipping charge is calculated as a percent of the order cost. The grand total is the sum of the cost of the order and the shipping charge.

11

What is the percent value used to calculate the shipping charge on the order?

- A) 8%
- B) 10%
- C) 12%
- D) 16%

12

The total cost of the frisbees and hats is \$72, and the cost of two hats and a frisbee is \$14.50. What is the cost of a frisbee?

- A) \$3.22
- B) \$4.50
- C) \$5.50
- D) \$5.78

CONTINUE



13

$$3x + 2y = 4$$

$$y = \frac{2}{3}x - 2$$

The two equations in the system of equations above each form a line when graphed in the xy -plane. Which of the following statements is true regarding these two lines?

- A) The lines are the same line.
- B) The lines are perpendicular.
- C) The lines are parallel.
- D) The lines intersect at $(3, 2)$.

14

Stephen takes out an interest-free loan from his friend. Each month he makes a payment to his friend. The amount of money that Stephen still owes his friend is given by the equation $y = 1,200 - 75m$, in which m is the number of months since the loan was made and y is the money, in dollars, that Stephen still owes. Which of the following best describes the meanings of the constant and coefficient in this equation?

- A) The number 75 is the rate of decrease, in dollars per month, in the amount Stephen owes his friend, which started at \$1,200.
- B) The number 75 is the number of months it will take Stephen to pay off the loan, which was for \$1,200.
- C) The number 75 is the rate of increase, in dollars per month, that Stephen owes his friend for the loan, which started at \$1,200.
- D) The number 75 is the rate of increase, in dollars per month, of Stephen's payments on the loan, which was for \$1,200.

Questions 15 and 16 refer to the following information.

A catering company offers three meal options when it caters weddings. There is no additional charge for guests that indicate a food allergy, and there is no price difference among the meal selections. Children's meals are provided at a discounted price. The company collected data on all the dish selections for the weddings that it catered over the past year.

	Children	Male Adults	Female Adults
Chicken	924	1,143	1,237
Fish	710	2,345	1,892
Vegetarian	241	862	1,451
Total meals	1,875	4,350	4,580
Cost of meals (\$)	24,750	111,447	117,248
Indicated food allergy	134	542	632

15

What is the average cost of a child's meal?

- A) \$26.80
- B) \$23.45
- C) \$13.20
- D) \$7.90

16

Based on the table, what is the approximate probability that a guest will be an adult, if the guest orders the chicken?

- A) 0.28
- B) 0.49
- C) 0.53
- D) 0.72

CONTINUE



17

As an object moves through a fluid, the object experiences a force known as drag. For a given projected object area in meters squared and fluid density in kilograms per meter cubed, drag can be modeled by the equation $R = \frac{1}{2}Cv^2$, where R is drag force in Newtons, C is the coefficient of drag, and v is velocity in meters per second. Which of the following is equivalent to two Newtons? (Assume the object is moving at a constant speed.)

- A) The drag on an object with a coefficient of drag of 1 and a velocity of 2 meters per second
- B) The drag on an object with a coefficient of drag of 2 and a velocity of 1 meter per second
- C) The drag on an object with a coefficient of drag of 2 and a velocity of 2 meters per second
- D) The drag on an object with a coefficient of drag of 4 and a velocity of 0.25 meter per hour

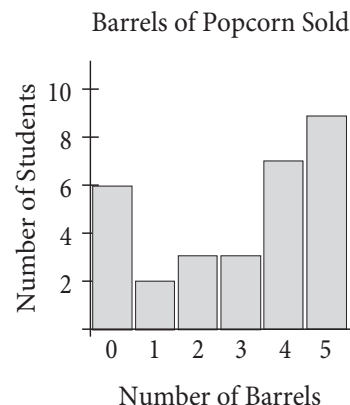
18

A shoe store is having a sale in which a customer receives a 30 percent discount on a second pair of shoes after purchasing the first at regular price. The tax rate of 6 percent is applied to the whole purchase. If s represents the regular price of each pair of shoes at the store, which of the following expressions gives the total amount that a customer would pay for two pairs during this sale?

- A) $1.06(s + 0.7s)$
- B) $1.06(s - 0.3s)$
- C) $1.06s + 0.7s$
- D) $1.7s + 0.06$

19

A high school class is selling barrels of popcorn to raise money. The histogram below shows the number of students that sold each quantity of barrels.



Which of the following is true?

- I. The mode number of barrels sold is equal to the median number of barrels sold.
- II. The median number of barrels sold is equal to the mean number of barrels sold.
- III. The mode number of barrels sold is equal to the range of the number of barrels sold.

- A) I only
- B) III only
- C) I and II only
- D) II and III only

CONTINUE



20

Sam's Sunscreen Shop makes two kinds of sunscreen: Sunscreen A and Sunscreen B. Sunscreen A contains 8% of the active ingredient, and Sunscreen B has 12.5% of the same active ingredient. Sam wants to create a new sunscreen by blending the two sunscreens to make a new product that has a concentration of more than 10% active ingredient. The sunscreen should be in a tube containing at least 12 ounces, but no more than 16 ounces. If a represents the ounces of Sunscreen A in the blend and b represents the ounces of Sunscreen B in the blend, which of the following systems can be used to solve for all the values of a and b that fit these requirements?

- A) $\begin{cases} 6 \leq a \leq 8 \\ 6 \leq b \leq 8 \\ \frac{0.08a + 0.125b}{a + b} > 0.10 \end{cases}$
- B) $\begin{cases} a > 0 \\ b > 0 \\ 0.08a + 0.125b < 0.10 \\ a + b = 12 \end{cases}$
- C) $\begin{cases} a > 0 \\ b > 0 \\ 0.08a + 0.125b > 0.10 \\ 12 \leq a + b \leq 16 \end{cases}$
- D) $\begin{cases} a > 0 \\ b > 0 \\ 0.08a + 0.125b > 0.10(a + b) \\ 12 \leq a + b \leq 16 \end{cases}$

21

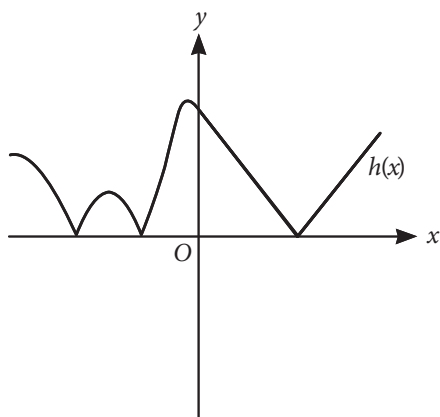
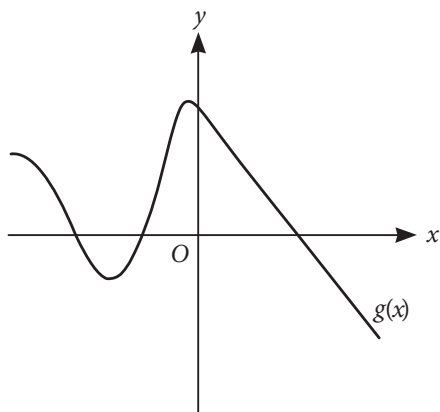
Types of Pets	Percent of pets
Dogs	40%
Cats	25%
Fish	15%
Birds	20%
Total	100%

The table above shows the distribution of pets at a pet shop. How many pets are at the pet shop if there are 36 more dogs than cats?

- A) 240
B) 120
C) 60
D) 48



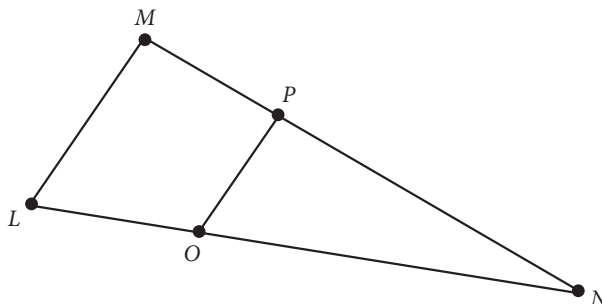
22



The graphs of the functions g and h are shown above. Which of the following defines h in terms of g ?

- A) $h(x) = -g(x)$
- B) $h(x) = |g(x)|$
- C) $h(x) = g(x) + 3$
- D) $h(x) = g(x - 3)$

23



Note: Figure not drawn to scale.

In triangle LMN above, angle NPO is congruent to angle MLN , $NP = 7$, and $LN = 18$. If the length of \overline{MN} is 1 unit less than 3 times the length of \overline{NO} , what is the length of side \overline{NO} ?

- A) 11
- B) 5
- C) $\frac{7}{3}$
- D) $\frac{1}{3}$

24

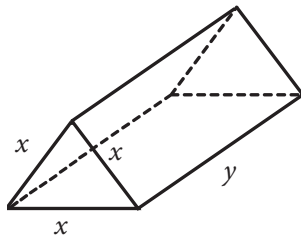
The membership of a sports fan group increases by 10 percent each month during the season. What type of relationship exists between the size of the fan group and the number of months since the start of the season?

- A) Exponential relationship in which higher membership numbers correspond to earlier dates in the season
- B) Linear relationship whose graph has a slope greater than 0
- C) Exponential relationship in which higher membership numbers correspond to later dates in the season
- D) Linear relationship whose graph has a slope less than 0

CONTINUE



25



The total surface area of the triangular prism shown above can be calculated using the following formula, where x is the length of the sides of the triangular ends and y is the length of the rectangular faces.

$$SA = 2\left(\frac{\sqrt{3}}{4}x^2\right) + 3xy$$

What must the expression $\frac{\sqrt{3}}{2}x^2$ represent?

- A) The area of one triangular end
- B) The area of one rectangular face and one triangular end
- C) The sum of the areas of the rectangular faces
- D) The sum of the areas of the triangular ends

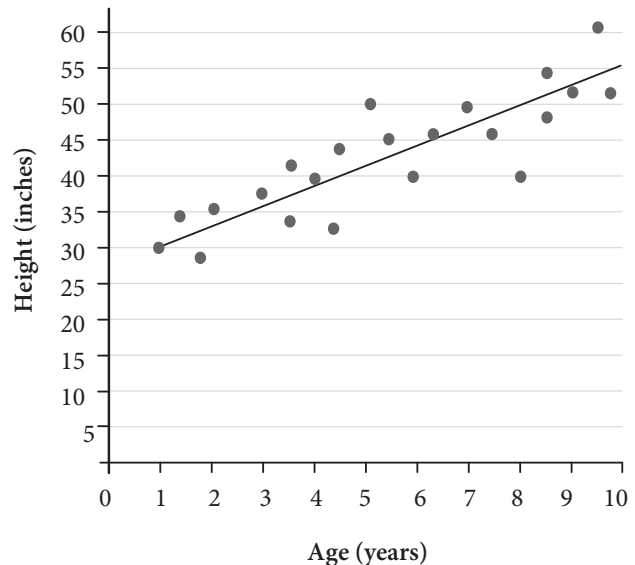
26

$$(3 - y)^2 - (3 - y)$$

Which of the following is an equivalent form of the expression above?

- A) $3 - y$
- B) $y^2 - 7y + 6$
- C) $(3 - y)(2 - y)$
- D) $9 - y^2$

27



A pediatrician's office collects data on the heights of all its patients. The scatterplot above shows the heights of the male patients seen by the office at various ages less than 10 years. A linear model best describes the data, and the line of best fit is shown. For the patient that is exactly 8 years old, which of the following best estimates the percent increase from his actual height to the height that the model predicts?

- A) 20%
- B) 25%
- C) 75%
- D) 80%

CONTINUE



DIRECTIONS

For questions 28–31, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
- Mark no more than one circle in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.

- Mixed numbers** such as $3\frac{1}{2}$ must be grid-ded as 3.5 or $7/2$. (If

3	1	/	2
---	---	---	---

 is entered

into the grid, it will be interpreted as $\frac{31}{2}$,

not as $3\frac{1}{2}$.)

- Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

Answer: $\frac{7}{12}$

Write answer in boxes. →

	7	/	1	2
.
1	1	0	0	0
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Grid in result. →

← Fraction line

Answer: 2.5

	2	.	5
.	.	.	.
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
.	.	.	.
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	6
.	.	.	.
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

.	6	6	7
.	.	.	.
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Answer: 201 – either position is correct

	2	0	1
.	.	.	.
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

2	0	1	
.	.	.	.
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

CONTINUE



28

A certain box has a width that is 2 inches more than its length and a height that is 5 inches less than its length. If each of the two smallest faces of the box has an area of 36 square inches, what is the volume of the box?

29

$$5x - 3y = 7$$

$$2x + y = 5$$

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

Questions 30 and 31 refer to the following information.

In a certain marathon, 45 percent of the runners were men and the rest were women. The official timekeeper determined that 64 percent of the men and 68 percent of the women completed the marathon in under four hours.

30

What percent of the runners who completed the marathon in under four hours were women? (Ignore the percent symbol when entering your answer. For example, if the answer is 35.2%, enter 35.2.)

31

What percent of the runners completed the marathon in under four hours? (Ignore the percent symbol when entering your answer. For example, if the answer is 35.2%, enter 35.2.)

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.

PSAT/NMSQT PRACTICE TEST ANSWER SHEET

EXAMPLES OF
COMPLETE MARK ● **INCOMPLETE MARKS** ○ ⊗ ⊖ ⊕ ⊗ ⊗

It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

■ TEST NUMBER

ENTER TEST NUMBER

For instance, for Practice Test #1, fill in the circle for 0 in the first column and for 1 in the second column.

--	--

- 0 ○ ○
1 ○ ○
2 ○ ○
3 ○ ○
4 ○ ○
5 ○ ○
6 ○ ○
7 ○ ○
8 ○ ○
9 ○ ○

■ SECTION 1

- A B C D
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
28 ○ ○ ○ ○
A B C D
29 ○ ○ ○ ○
A B C D
30 ○ ○ ○ ○
A B C D
31 ○ ○ ○ ○
A B C D
32 ○ ○ ○ ○
A B C D
33 ○ ○ ○ ○
A B C D
34 ○ ○ ○ ○
A B C D
35 ○ ○ ○ ○
A B C D
36 ○ ○ ○ ○

- A B C D
37 ○ ○ ○ ○
A B C D
38 ○ ○ ○ ○
A B C D
39 ○ ○ ○ ○
A B C D
40 ○ ○ ○ ○
A B C D
41 ○ ○ ○ ○
A B C D
42 ○ ○ ○ ○
A B C D
43 ○ ○ ○ ○
A B C D
44 ○ ○ ○ ○
A B C D
45 ○ ○ ○ ○
A B C D
46 ○ ○ ○ ○
A B C D
47 ○ ○ ○ ○

PSAT/NMSQT PRACTICE TEST ANSWER SHEET

EXAMPLES OF
COMPLETE MARK ● **INCOMPLETE MARKS** ○ ⊗ ⊖ ⊕ ⊗ ⊕ ⊗ ⊕

It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

■ SECTION 2

A B C D
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
28 ○ ○ ○ ○
A B C D
29 ○ ○ ○ ○
A B C D
30 ○ ○ ○ ○
A B C D
31 ○ ○ ○ ○
A B C D
32 ○ ○ ○ ○
A B C D
33 ○ ○ ○ ○
A B C D
34 ○ ○ ○ ○
A B C D
35 ○ ○ ○ ○
A B C D
36 ○ ○ ○ ○

A B C D
37 ○ ○ ○ ○
A B C D
38 ○ ○ ○ ○
A B C D
39 ○ ○ ○ ○
A B C D
40 ○ ○ ○ ○
A B C D
41 ○ ○ ○ ○
A B C D
42 ○ ○ ○ ○
A B C D
43 ○ ○ ○ ○
A B C D
44 ○ ○ ○ ○

PSAT/NMSQT PRACTICE TEST ANSWER SHEET

EXAMPLES OF
COMPLETE MARK ● **INCOMPLETE MARKS** ○ ⊗ ⊖ ⊕ ⊗ ⊗ ⊗

It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

■ SECTION 3

A B C D
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 ○ ○ ○ ○

Only answers that are gridded will be scored. You will not receive any credit for anything written in the boxes.

14
[][][][]
/ ○ ○
• ○ ○ ○ ○
0 ○ ○ ○ ○
1 ○ ○ ○ ○
2 ○ ○ ○ ○
3 ○ ○ ○ ○
4 ○ ○ ○ ○
5 ○ ○ ○ ○
6 ○ ○ ○ ○
7 ○ ○ ○ ○
8 ○ ○ ○ ○
9 ○ ○ ○ ○

15
[][][][]
/ ○ ○
• ○ ○ ○ ○
0 ○ ○ ○ ○
1 ○ ○ ○ ○
2 ○ ○ ○ ○
3 ○ ○ ○ ○
4 ○ ○ ○ ○
5 ○ ○ ○ ○
6 ○ ○ ○ ○
7 ○ ○ ○ ○
8 ○ ○ ○ ○
9 ○ ○ ○ ○









16
[][][][]
/ ○ ○
• ○ ○ ○ ○
0 ○ ○ ○ ○
1 ○ ○ ○ ○
2 ○ ○ ○ ○
3 ○ ○ ○ ○
4 ○ ○ ○ ○
5 ○ ○ ○ ○
6 ○ ○ ○ ○
7 ○ ○ ○ ○
8 ○ ○ ○ ○
9 ○ ○ ○ ○

17
[][][][]
/ ○ ○
• ○ ○ ○ ○
0 ○ ○ ○ ○
1 ○ ○ ○ ○
2 ○ ○ ○ ○
3 ○ ○ ○ ○
4 ○ ○ ○ ○
5 ○ ○ ○ ○
6 ○ ○ ○ ○
7 ○ ○ ○ ○
8 ○ ○ ○ ○
9 ○ ○ ○ ○

**NO CALCULATOR
ALLOWED**



PSAT/NMSQT PRACTICE TEST ANSWER SHEET

EXAMPLES OF
COMPLETE MARK  INCOMPLETE MARKS        

It is recommended that you use a No. 2 pencil. It is very important that you fill in the entire circle darkly and completely. If you change your response, erase as completely as possible. Incomplete marks or erasures may affect your score.

SECTION 4

A B C D
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 ☐ ☐ ☐ ☐

Only answers that are gridded will be scored. You will not receive any credit for anything written in the boxes.

28

/
.
0
1
2
3
4
5
6
7
8
9

29

/
.
0
1
2
3
4
5
6
7
8
9

30

/
.
0
1
2
3
4
5
6
7
8
9

31

/
.
0
1
2
3
4
5
6
7
8
9

CALCULATOR
ALLOWED

