CollegeBoard SAT®

AUGUST 28, 2021
US
version 1.0

The SAT®

Test Book

IMPORTANT REMINDERS

1

A No. 2 pencil is required for the test. Do not use a mechanical pencil or pen.

2

Sharing any questions with anyone is a violation of Test Security and Fairness policies and may result in your scores being canceled.

Test begins on the next page.

Reading Test

65 MINUTES, 52 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 1-10 are based on the following passage.

This passage is adapted from Seth Kantner, *Ordinary Wolves*. ©2004 by Seth Kantner. The narrator, a teenaged boy, lives in remote northern Alaska.

Spring was my favorite time of year, and it took extra energy to stay in a bad mood. The sun came home to the Arctic and shone tirelessly on the shimmering world of snow. Midwinter diminished into memory and the Darkness of next winter seemed inconceivable. Warm smells rose from the black soil of exposed cutbanks; birds shrieked and carelessly tossed leftover seeds down out of the birches. It was a season of adventure calling from the melting-out mountains, of geese honking after a continent-crossing journey, of caribou herds parading thousands long on their way north to the calving grounds, sap running and every arctic plant set to burst into frenzied procreation. Spring was the land smiling, and I couldn't imagine my life without that smile.

But I was sixteen and stunningly lonesome. My siblings Iris and Jerry were gone. Iris's last correspondence-school course lay behind her. She waited only for paperwork to be officially free. The Rural Student Vocational Program had sent a plane ticket for her to travel to Fairbanks, to apprentice for two weeks, as a teacher. A year ago Jerry had moved there; he lived with a girlfriend named Callie. To me it seemed ironically unfair—since I was eight and first read about Frank, the elder Hardy Boy, *I* had wanted a girlfriend named Callie. Jerry had probably found the only one in Alaska.

For weeks the April sun lengthened and then Iris returned—transformed—a joyous goddess with black hair curled in a "permanent" that apparently wasn't, but would last long enough. Her cheeks were flushed, her eyes a happier blue than ever, with three-hundred-and-sixty-seven-dollar contact lenses focusing them. For the first time in more than a decade she could see needles on the spruce. I greeted her the way I had greeted sixteen, with a practiced impassive shrug and a safe smile. Her face glowed with jubilation and the wonder of the Outside; mine was dark and hard with snow tan and a grip on leaking uncertainty.

"Fairbanks has eight-story skyscrapers at the university," she exclaimed.

We were out near the middle of the river chipping a new water hole in the ice. The water in the old one near shore had grown brown with tundra water eddying up from the mouth of Jesus Creek. The ice froze all the way down to the sand in places and we hoped we weren't working over one of those places. A moose stood in the willows, below the dog yard, breaking down branches, chewing the tips, leaving carnage. Iris wore an aqua nylon jacket she'd bought in Fairbanks and she looked as pretty as Dawna Wolfglove.

CONTINUE

"One night we borrowed a master key from a junior. We sneaked up on the roof and dropped the ice cubes out of our root beers. Down on the concrete. My friend Robin found a five-dollar bill in the elevator."

I rested while my father Abe shoveled the loose ice out of the four-foot-deep hole. The moose plodded out on the river, crossing toward the far shore. Two more moose stood over there on the bank, long-legged, big ears up, and watchful.

"Oh," she saw my expression, "a master key opens any door at the university."

"Yeah? What's an ice *cube*?"

"They make ice in freezers, to put in soda pop, Cutuk. They sell it, too, in bags."

Store-bought *ice*? I remembered the sweet powerful taste of pop. Tommy Feathers had stopped for coffee when he was hunting wolverine. He tossed a bulged red and white can on the chopping block. "You'll have tat one springtime," he joked. We had sat around inside waiting for it to thaw. We could have bought pops in Takunak but according to Abe, pop cost money, wasted aluminum, and was bad for our teeth. Nothing for something. Why not drink water? Now Iris was describing the high school friends and fun we'd always worried we missed out on, and I wondered why I hadn't bought myself a few Cokes.

Abe clattered the shovel around the ice walls of the water hole. He flung a last shovelful. "Go 'head." Under his heavy mustache he had the faint curl to his lip that a person wouldn't notice unless they knew him well. I wasn't sure if his aversion was to the tall buildings, ice cubes, or this change in Iris.

I picked up the *tuuq* and checked for fresh rock nicks in the sharpened steel bar bolted to the end of the pole. I drove it down into the dark ice at the bottom of the hole, superstitious and reckless, promising if the chisel punched through it meant luck, meant I would never give up on the land, on my dog team, on a life where water came from holes in the ice. The chips remained powder dry in the shaft.

1

The main purpose of the first paragraph is to

A) demonstrate the appeal of a season by making a series of comparisons.

B) evoke a vivid impression of a particular setting with striking sensory imagery.

C) describe the ways in which certain aspects of daily life alter throughout the year.

D) emphasize the symbolic importance of the dangers present in the natural world.

2

As used in line 4, "diminished" most nearly means

A) decreased.

B) slackened.

C) lowered.

D) receded.

3

A main idea emphasized in the passage is that

A) tension between two radically different ways of life.

B) contrasting cultural ideals of the past and the present.

C) inevitability of a rift between children and parents.

D) necessity of preserving the beauty of the wilderness.

CONTINUE

4

It can reasonably be inferred from the passage that spending time in Fairbanks changed Iris by making her noticeably more

A) radiant and optimistic in her general outlook on life.

B) serious and determined when focusing on her studies.

C) perceptive and honest when comparing herself to others.

D) dreamy and distracted when contemplating her future.

5

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

A) Lines 18-20 ("Iris's . . . free")

B) Lines 21-23 ("The Rural . . . teacher")

C) Lines 32-35 ("Her cheeks . . . them")

D) Lines 52-54 ("Iris . . . Wolfglove")

6

The descriptions in lines 38-41 ("Her face . . . uncertainty") have the main effect of

A) highlighting differences between the siblings' feelings about the future.

B) reinforcing the worry that the narrator feels about his sister's immaturity.

C) predicting challenges that the narrator will face as Iris readjusts to her home.

D) identifying the source of the narrator's difficulties in earning his father's approval.

7

In the context of the passage, the sentence "Store-bought *ice*?" (line 70) primarily serves to

A) convey the tone of resentment the narrator adopts toward Iris's preference for novel adventures.

B) highlight a contrast between what people outside the narrator's community do and what the narrator is used to.

C) depict an object that had importance to the narrator and his siblings in their childhood.

D) provide an example of the strange but intriguing events experienced by the narrator.

8

It can reasonably be inferred from the passage that the narrator views his present circumstances with

A) determination, because his upbringing has given him the confidence to survive challenging conditions.

B) contentment, because he realizes that life outside of his hometown is too unfamiliar to appeal to him.

C) impatience, because he is eager for opportunities to surpass his siblings' accomplishments.

D) dissatisfaction, because his siblings have had experiences that he wishes for himself.

CONTINUE

9

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

A) Lines 23-25 ("A year . . . Callie")
B) Lines 29-32 ("For weeks . . . enough")
C) Lines 79-82 ("Now . . . Cokes")
D) Lines 91-96 ("I drove . . . ice")

10

The narrator indicates that a faint curl to his father's lip (lines 85-86) generally reflects Abe's feelings of

A) disapproval of something heard or seen.
B) concern about a challenging problem.
C) defensiveness over a perceived criticism.
D) amusement regarding a personal interaction.

CONTINUE

Questions 11-21 are based on the following passage and supplementary material.

This passage is adapted from "Paying Do-Gooders Makes Them Less Persuasive." ©2016 by Association for Psychological Science.

People who receive a financial incentive to raise money for a charity they care about are actually less effective in soliciting donations, even when potential donors have no idea that incentives were involved, according to new findings. The research suggests that incentives may have this effect because they result in the fundraisers coming off as less sincere to the people they're trying to persuade.

"We show that incentives make persuaders less effective at communicating sincere concern for a charitable cause, which means the incentive is having harmful effects on the very activity it was designed to improve," says psychological scientist and study author Alixandra Barasch of the Stern School of Business at New York University. "This is important because it helps us understand the costs and benefits of incentives in the context of philanthropy."

Although financial incentives can provide motivation to perform a task well, Barasch and colleagues Jonathan Z. Berman (London Business School) and Deborah A. Small (the Wharton School at the University of Pennsylvania) wondered whether paying people to advocate for a cause that they were already motivated to support might have unintended negative consequences.

In one study, the researchers recruited 36 "persuaders" at a community event intended to raise money for an organization supporting medical research and awareness. The persuaders were asked to make a video pitch for the organization, doing their best to persuade potential donors to contribute. Some of the persuaders were offered a personal incentive: For every $10 donated in response to their video, they would receive $1.

Later, 243 participants were randomly assigned to watch one of the video pitches. In addition to the standard $10 participation fee, they received an extra $3 that they could keep for themselves or donate to the cause promoted in the video.

The data showed that participants donated less of their extra cash in response to pitches from persuaders who had received an incentive compared to pitches from persuaders who hadn't been incentivized. This occurred despite the fact that the participants had no idea that the persuaders might have received incentives.

A second study, in which college students made video pitches for community-service organizations, showed similar results. Again, persuaders who received an incentive were less effective in soliciting donations; moreover, participants rated the videos of incentivized persuaders as less sincere.

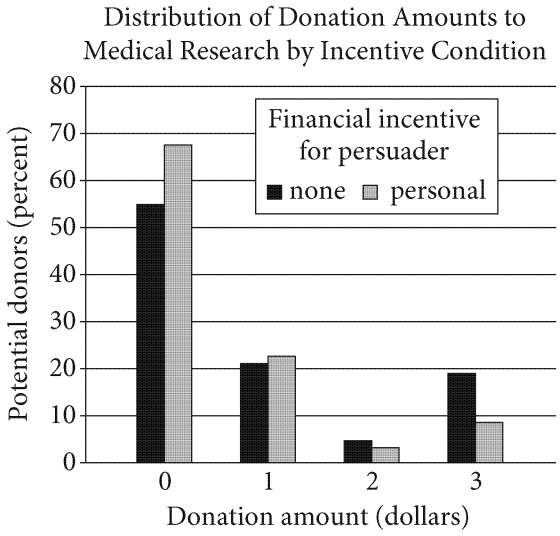
The researchers hypothesized that the inherent conflict between benefits to others, or altruism, and benefits to the self might inhibit persuaders from behaving in a sincere manner. Additional data from a follow-up study supported this idea: Persuaders who were given a charitable incentive—any money raised from their pitch would be matched by the researchers—seemed to be just as effective in raising funds as those who received no incentive. In this case, the incentive didn't benefit the persuaders personally, and so it didn't inhibit them from being sincere.

Together, the findings underscore the notion that incentives compromise persuaders' ability to convey sincerity. Barasch and colleagues are currently planning follow-up studies to examine the cues—both verbal and nonverbal—that might convey sincerity.

Even if incentives do have a negative effect on sincerity, the researchers note that there may be other reasons to use incentives in the context of fundraising campaigns:

"Incentives may engage people who would otherwise not help at all, and they may help recruit better talent within a competitive landscape," says Barasch.

CONTINUE



Adapted from Alixandra Barasch, Jonathan Z. Berman, and Deborah A. Small, "When Payment Undermines the Pitch: On the Persuasiveness of Pure Motives in Fund-Raising." ©2016 by Alixandra Barasch, Jonathan Z. Berman, and Deborah A. Small.

11

One important function of the second paragraph (lines 9-17) is to

A) establish the implications of the findings detailed in the passage.

B) characterize the study's conclusions identified in the passage as controversial.

C) clarify how the methods discussed in the passage build on previous research.

D) explain how the lead researcher described in the passage formulated her hypothesis.

12

As used in line 12, "designed" most nearly means

A) measured.

B) illustrated.

C) intended.

D) coordinated.

13

The main purpose of the passage is to

A) explain scientific investigations into why incentives function differently in the context of fund-raising than in other contexts.

B) present experiments that establish the role that incentives play in enhancing fund-raising efforts.

C) describe studies designed to settle an ongoing debate about which kinds of incentives best motivate people to serve as advocates.

D) discuss research that suggests that incentives can negatively affect people's success in advocating for a charitable cause.

14

Based on the passage, one likely reason Barasch's team recruited persuaders at a medical research fund-raiser was that the team assumed that attendees of the event

A) had varying levels of expertise concerning medical research.

B) were predisposed to care about the importance of raising money for medical research.

C) had personal contacts with a history of donating to charitable causes.

D) were sufficiently outgoing to advocate effectively for a charitable cause.

15

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

A) Lines 9-15 ("We show . . . University")

B) Lines 18-25 ("Although . . . consequences")

C) Lines 26-29 ("In one . . . awareness")

D) Lines 29-31 ("The persuaders . . . contribute")

CONTINUE

16

Based on the passage, which condition must have been met in order for the findings of the second study to have validated those of the first study?

A) The financial incentive used in the second study was the same as that used in the first study.

B) The video pitches used in the second study were each of the same length as those in the first study.

C) The persuaders were able to negotiate the amount of money they received for each successful donation.

D) The participants were unaware that some persuaders were being compensated for their efforts.

17

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

A) Lines 32-34 ("Some . . . receive $1")

B) Lines 36-39 ("In addition . . . video")

C) Lines 44-46 ("This . . . incentives")

D) Lines 47-49 ("A second . . . results")

18

The sentence in lines 61-64 ("in this . . . sincere") mainly serves to

A) clarify the design of the study discussed in the paragraph.

B) explain a finding presented earlier in the paragraph.

C) contradict an assumption made by the researchers earlier in the passage.

D) provide the basis for the research team's plans for additional studies.

19

As used in line 66, "compromise" most nearly means

A) impair.

B) expose.

C) settle.

D) concede.

20

According to the graph, the smallest percentage of potential donors donated

A) $0.

B) $1.

C) $2.

D) $3.

21

Which statement about the ability of the persuaders to raise funds is supported by the graph?

A) Persuaders who were given a personal incentive were consistently more effective in soliciting donations than persuaders who were not given a personal incentive.

B) Persuaders who were given a personal incentive got fewer donations than those who were not given an incentive, but the donations they did get were of higher value.

C) Each group of persuaders convinced more than 20% of potential donors to give $3.

D) Neither group of persuaders was able to convince a majority of potential donors to donate.

CONTINUE

Questions 22-31 are based on the following passage and supplementary material.

This passage and accompanying figure are adapted from Robin Dunbar, *Human Evolution: Our Brains and Behavior*. ©2016 by Robin Dunbar.

In relatively open habitats, the body of a quadrupedal animal absorbs more sunlight than a bipedal one because standing upright means that only the top of the head and the shoulders are exposed to the sun, especially during the middle period of the day when the sun is overhead and at its hottest. A quadruped will thus overheat more quickly than a biped. The brain has very narrow tolerances temperature-wise: raising the temperature of the brain by more than 1°C may result in heatstroke and, within a relatively short period of time, brain cells may start to die. By minimizing the amount of radiant heat absorbed by the body from the sun during the middle of the day, a bipedal animal might be able to remain active longer when the sun is at its hottest.

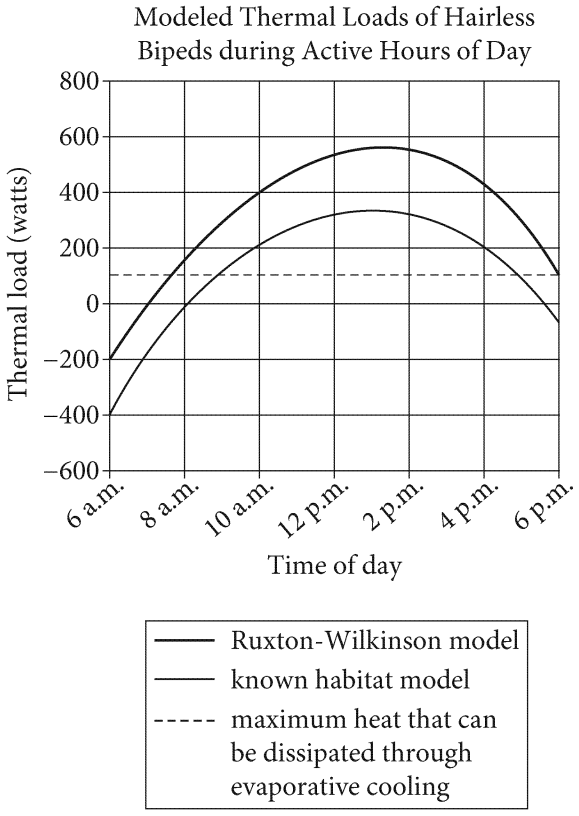
Modern humans have two features that are not only unique among the primates but also seem to be directly related to this heat-load problem, namely the loss of fur over most of the body (other than the head and, to a much lesser extent, shoulders—the areas of the body most exposed to the sun at midday) and a greatly increased capacity for sweating (we have many times the number of eccrine sweat glands in the skin then all other primates except for baboons, the only other terrestrial open country species). Physiological models developed by Peter Wheeler suggest that reduced exposure to direct sunlight combined with evaporative cooling through sweating would have enabled a naked bipedal hominin both to remain active longer than a quadrupedal one and/or to travel twice as far on a litre of water. The key point here is that sweat evaporating off fur just cools the tips of the hair and not the skin underneath; to benefit from evaporative cooling of sweat, the animal has to be naked.

Wheeler's thermal load model has recently been challenged. The biologists Graeme Ruxton and David Wilkinson pointed out that walking itself generates heat, and this internally created heat needs to be added to that produced by sunlight striking the body. With this additional internal source of heat, they argued, bipedalism gives only a small advantage, and the main gain would come from hair loss and sweating. A hairy australopithecine[1] (whether bipedal or quadrupedal) would have been unable to survive in open habitats because the combined thermal load would have been more than it could dissipate; even a hairless animal would be unable to lose heat fast enough to offset overheating when active during the middle of the day. Under the Ruxton-Wilkinson model, heat load would exceed the heat that could be dissipated from roughly 7:30 a.m. until 6 p.m. This implies that, on their own, the thermal benefits would not have been sufficient to favour the evolution of bipedalism. However, if bipedalism had evolved for some other reason, then hairlessness might still have developed for cooling. Although they offer no suggestions as to why bipedalism might have evolved, the Ruxton-Wilkinson correction needs to be taken seriously, since it potentially undermines a widely accepted explanation for the benefits of bipedalism.

As it happens, both the original Wheeler and the Ruxton-Wilkinson versions of this model make an unrealistic assumption that no one seems to have noticed: they assume a maximum air temperature at ground level of 40°C, a value that is certainly appropriate at sea level but is far too high for any of the habitats actually occupied by australopithecines —most of which were at altitudes above 1,000 meters, where maximum temperatures will typically be much lower. These lower temperatures would have significantly reduced the thermal load, especially during the middle of the day.

[1] an extinct group of early hominin species ancestral to modern humans

CONTINUE



22

The main purpose of the passage is to

A) present hypotheses about the origin of bipedalism and argue that bipedalism's thermal benefits have been neglected by those hypotheses.

B) describe conflicting models of the thermal benefits of bipedalism and offer a way to resolve the differences between those models.

C) discuss attempts to assess the thermal benefits of bipedalism and point out an overlooked consideration relevant to those attempts.

D) summarize the thermal benefits of bipedalism and highlight an additional factor that underscores the importance of those benefits.

23

It can reasonably be inferred from the passage that the extent to which bipedalism would be thermally beneficial for an animal depends partly on the

A) typical size of the animal's habitat.

B) normal brain temperature of the animal.

C) length of time the animal can remain active without drinking.

D) amount of direct sunlight the animal's environment receives.

24

As used in line 8, "narrow" most nearly means

A) limited.

B) cramped.

C) petty.

D) exclusive.

25

The author mentions the habitat of baboons in line 26 ("the only . . . species") most likely to

A) question the conventional view of a region.

B) illustrate the predominance of a characteristic.

C) emphasize a consequence of a behavior.

D) suggest a potential explanation for a trait.

26

Which choice best states the different meanings of "developed" as used in lines 27 and 58, respectively?

A) Put forth; emerged

B) Elaborated on; enlarged

C) Matured; occurred

D) Transformed; strengthened

CONTINUE

27

Information in the passage best supports which statement about sweating in humans and baboons?

A) Although humans and baboons both can cool themselves through sweating, humans must consume more water than baboons must consume to get the same cooling benefit.

B) Although humans and baboons both have abundant eccrine sweat glands, humans can receive a greater cooling benefit from sweating than can baboons.

C) Although humans and baboons both sweat more than do other primates, they also generate more heat when walking than do other primates.

D) Although humans and baboons both possess eccrine sweat glands, those found in humans can secrete proportionally more sweat than can those found in baboons.

28

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

A) Lines 27-32 ("Physiological . . . water")

B) Lines 32-36 ("The key . . . naked")

C) Lines 37-38 ("Wheeler's . . . challenged")

D) Lines 42-45 ("With . . . sweating")

29

Which choice best supports the idea that the author believes that bipedal hominins could have been active during some of the period when Ruxton and Wilkinson claimed that hominins would overheat?

A) Lines 51-54 ("Under . . . 6 p.m.")

B) Lines 56-58 ("However . . . cooling")

C) Lines 59-63 ("Although . . . of bipedalism")

D) Lines 73-75 ("These . . . the day")

30

As depicted in the graph, the known habitat model predicts that the thermal load of a hairless biped would be 200 watts at which times?

A) 6 a.m. and 6 p.m.

B) 8 a.m. and 5 p.m.

C) 10 a.m. and 4 p.m.

D) 12 p.m. and 2 p.m.

31

According to the passage, Ruxton and Wilkinson identified which problem with Wheeler's model?

A) Wheeler's model misrepresented the thermal load experienced by bipedal hominins because it assumed a maximum air temperature that was unrealistically low.

B) Wheeler's model exaggerated the portion of thermal load attributable to hominin activity because it did not allow for the possibility that hominins rested during the hottest part of the day.

C) Wheeler's model undervalued the thermal benefits experienced by bipedal hominins because it did not incorporate benefits from hair loss and sweating.

D) Wheeler's model overestimated the thermal benefits of bipedalism to hominins because it failed to account for the increase in thermal load caused by activity.

CONTINUE

Questions 32-41 are based on the following passage.

This passage is adapted from a speech delivered in 1976 by Eleanor Holmes Norton, "In Pursuit of Equality in Academe: New Themes and Dissonant Chords." ©1976 by the American Association for Higher Education and Jossey-Bass Inc. Norton, a civil rights activist, was elected to the US Congress in 1990 as a representative of the District of Columbia.

Historians may differ as to when to date the beginnings of the American obsession with equality, but the antislavery controversy of the Missouri Compromise surely marks a point when slavery, and thus equality, became truly national concerns tied to the destiny of the nation itself. At least since 1820, then, I think it fair to say that Americans have been locked in an unparalleled and unceasing struggle with themselves over the meaning and the virtue of equality.

For no other people has equality required such sustained attention for so long a time. Nowhere else in the world has the struggle over this single question been so intense, so dynamic, so costly. Over a period of 150 years it included not only the perplexing and omnipresent struggle of black men and women. For mounted on the same canvas are the collages of others, including the women's suffrage movement, the women's equality movement of today, and the largely successful struggle of European immigrants for inclusion on terms of equality and mobility. The very diversity of the actors who have played out equality themes in America has contributed to the preoccupation of Americans with this subject.

The American experience with equality has been both tortured and exhilarating. At the most promising end of the scale, successive waves of poor immigrants—most entering as illiterate peasants—found spectacular economic success in one or two generations, a phenomenal mobility unprecedented in world history. Somewhere in between are white women who, with the right to vote, won a new sense of themselves after a long struggle. While their transformation in equality terms is incomplete and disappointing, no one can doubt what the past fifty years have done to make the American women more equal, both in her home and in her transformed role as member of the workforce. . . . [T]he national experience with black people has been a unique tragedy, characterized first by sustained oppression and then by slow progress. Still, the past two decades have raised uncommon hopes and produced unprecedented gains. At the very least, black people have come up from psychological depths to which it would seem impossible to return.

Because Americans have had more diverse and concentrated experience with the dynamics of equality than any other people in the world, they have had the opportunity to disproportionately influence the very meaning of the word.

Examples of American leadership on matters of equality, leadership often carved out of painful experience, are legion. The choice of Martin Luther King, Jr., for world recognition as recipient of the Nobel Peace Prize in 1964 did not come because of his leadership of an indigenous freedom movement in the United States. King's world status derives from the same process that made world and not merely national leaders of Gandhi and Lenin. All staged essentially national movements with such universal force and applicability that they moved men and women across the face of the earth. King made the idea of racial equality plainer to millions than it had ever been before, just as Gandhi moved peasants everywhere to demand freedom from colonialism.

One could cite other examples of American pace-setting in defining equality. For example, the women's movement appears better developed in this country than in most others. Although France has a new cabinet post for the *condition féminine*, the country's notions of feminism are underdeveloped and there is no strong activist movement. Russian and other East European women have won significant access to male jobs but very little change in sex roles. By contrast, American women, with historically better developed concepts of equality to work with, are pursuing change in magnificent proportions from carefully circumscribed issues such as equal employment and universal child care to weighty philosophical issues whose resolution could virtually redefine womanhood and remake entire areas of human experience.

CONTINUE

32

To advance her claims about the development of equality in the United States, Norton most extensively uses

A) generalizations about the circumstances of particular groups of Americans.
B) comparisons of American political leaders with leaders from other countries.
C) predictions about the rising political power of previously marginalized Americans.
D) quotations from prominent Americans associated with equality movements.

33

In the first paragraph, Norton refers to controversy surrounding the Missouri Compromise primarily to

A) introduce a historical event that the rest of the passage will explore in detail.
B) allude to a debate among historians that is relevant in nonacademic circles.
C) provide an example of an injustice condemned by the international community.
D) demonstrate the long-standing prominence of a particular issue in American public life.

34

The use of parallel phrases in line 14 ("so intense . . . costly") primarily serves to

A) emphasize how an underrepresented group had difficulty documenting its history.
B) underscore the profound ramifications of a social phenomenon.
C) allude symbolically to the dramatic strategies employed by activists fighting for equality.
D) stress the urgency of a warning in the hope that listeners will take it seriously.

35

In the passage, Norton most strongly suggests that Americans in general value efforts to improve equality because it

A) was a prominent idea in many leaders' philosophical platforms.
B) has strong political roots that still influence government decisions.
C) resonates with many different communities.
D) motivated the founding of the country itself.

36

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

A) Lines 6-10 ("At least . . . equality")
B) Lines 14-16 ("Over . . . women")
C) Lines 21-24 ("The very . . . subject")
D) Lines 25-26 ("The American . . . exhilarating")

37

The passage indicates that for African Americans the period from the 1950s to the 1970s differed from earlier eras because of a new

A) sense of optimism about change.
B) feeling of unity across social groups.
C) appreciation of outstanding leaders.
D) desire to pursue legislative reforms.

CONTINUE

38

The central claim in the fifth paragraph (lines 51-65) is that

A) an activist should follow the policies established for social reform by Gandhi and Lenin.

B) every nation needs its own figurehead in its efforts toward racial and economic equality.

C) Martin Luther King, Jr., had an unparalleled ability to mobilize people with his vision of a just world.

D) a national movement can embody an ideal with international appeal.

39

The passage most strongly suggests that American women are better positioned to promote gender equality than are women in certain other countries because

A) equality in other countries is framed as an economic issue rather than a political one.

B) other countries impose equality on citizens rather than allow it to grow organically.

C) the United States has a rich tradition of equality on which women can draw.

D) activist movements in the United States have strong government support.

40

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

A) Lines 66-69 ("One . . . others")

B) Lines 69-72 ("Although . . . movement")

C) Lines 72-75 ("Russian . . . roles")

D) Lines 75-82 ("By contrast . . . experience")

41

As used in line 61 and line 64, "moved" most nearly means

A) relocated.

B) inspired.

C) proposed.

D) directed.

CONTINUE

Questions 42-52 are based on the following passages.

Passage 1 is adapted from Chris Cesare, "Rosetta Sniffs Oxygen around Comet 67P." ©2015 by Macmillan Publishers Limited, part of Springer Nature. Passage 2 is adapted from Ashley Yeager, "Oxygen on Comet 67P Might Not Be Ancient After All." ©2017 by Society for Science & the Public.

Passage 1

Scientists have detected molecules of oxygen in the hazy halo of comet 67P/Churyumov–Gerasimenko—an unexpected discovery that may challenge theories about the formation of the Solar System. The detection, made by an instrument on board the European Space Agency's Rosetta spacecraft, was reported in *Nature*.

"As soon as we got close enough to the comet, we actually found it right away," says André Bieler, a physicist at the University of Michigan in Ann Arbor and lead author of the paper. Bieler says that he was surprised by both the presence and abundance of molecular oxygen (O_2) because it is usually quick to react with other chemicals.

From September 2014 to March 2015, as 67P made its way closer to the Sun, Bieler and his colleagues used a mass spectrometer on Rosetta to sniff the molecules swirling around the comet and identify their chemical composition. They found on average that O_2 makes up 3.8% of the cloud relative to the most abundant substance, water.

It was not immediately clear where the oxygen came from. The team discovered that water and oxygen were often found together—an indication that similar processes released both molecules. But Bieler and his colleagues ruled out many scenarios in which oxygen arises as a by-product when energetic particles such as photons and electrons split apart water.

Instead, the researchers argue that the oxygen is a remnant from when 67P formed billions of years ago, a process that may have trapped the gas in small grains of ice and rock that coalesced to create the comet's solid core.

But many models of the early Solar System rule this out because most oxygen tends to pair off with hydrogen. Given this affinity, it is tricky to adjust models of the early Solar System to allow for the survival of gaseous O_2, says Mike A'Hearn, an astronomer at the University of Maryland in College Park. But he adds that it may be possible with the right chemical abundances and temperature conditions.

Bieler acknowledges that more experiments will be needed to determine what the detection of oxygen really means. "We think this result is of interest beyond the cometary community because it forces us to rethink all of these models," he says.

Passage 2

"Molecular oxygen is very hard to find out there in the universe," says Caltech chemical engineer Konstantinos Giapis. When the Rosetta spacecraft detected oxygen around comet 67P, astronomers argued it must be primordial, trapped in water ice as the comet formed roughly 4.6 billion years ago. Intrigued by the result, Giapis and Caltech colleague Yunxi Yao wanted to see if an alternative way to create O_2 existed. Drawing on their work with fast-moving charged particles and materials such as silicon, they performed experiments that showed that charged water particles could slam into rust or sand grains and generate O_2.

Something similar could happen on comet 67P, they suggest. As the sun evaporates water from the comet's surface, ultraviolet light could strip an electron from the water, giving it a positive charge. Then, fast-moving particles in the solar wind could shoot the ionized water back toward the comet's surface, where it could collide with rust or sand particles. Atoms of oxygen from the water could pair with atoms of oxygen from the rust or sand, creating O_2.

The idea is plausible, says Paul Goldsmith, an astrophysicist at NASA's Jet Propulsion Laboratory in Pasadena, California. He helped discover O_2 in the Orion nebula and says the reaction might happen in places where young stars are forming and in other regions of space.

Rosetta mission scientist Kathrin Altwegg of the University of Bern in Switzerland calls the result interesting, but is skeptical it can explain comet 67P's oxygen abundance. As the comet gets closer to the sun, a protective bubble develops around 67P, data from the mission showed; that bubble would prevent solar wind particles or other ionized particles from

CONTINUE

reaching the comet's surface, Altwegg says. Also, the ratio of oxygen to un-ionized water also stays constant over time. It should be more variable if this chemical reaction were generating oxygen on the comet, she says.

Goldsmith, however, suggests researchers keep an open mind and design missions with instruments to test whether this newly detected reaction does, in fact, generate oxygen in space.

42

As used in line 44, "acknowledges" most nearly means

A) certifies.
B) defends.
C) yields.
D) recognizes.

43

Passage 2 most strongly suggests that Giapis and Yao speculate that the molecular oxygen surrounding comet 67P formed well after the comet did because

A) sand particles on the comet's surface could only have accumulated after ice and rock coalesced to create the comet's core.
B) a reaction that generates oxygen could occur as comet 67P nears the Sun.
C) primordial oxygen is still trapped in water ice at the comet's core.
D) the abundance of oxygen in the comet's cloud is far greater than the abundance of the water found with it.

44

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

A) Lines 51-55 ("When . . . ago")
B) Lines 55-57 ("Intrigued . . . existed")
C) Lines 62-66 ("Something . . . charge")
D) Lines 72-74 ("The idea . . . California")

45

Over the course of Passage 1, the author's main focus shifts from

A) describing the aims of a space agency's mission to detailing the results of that mission.
B) presenting a scientific finding to discussing how scientists attempted to account for that finding.
C) citing a widely held assumption to identifying evidence that undermines that assumption.
D) introducing a scientific hypothesis to describing an experiment designed to test that hypothesis.

46

In Passage 2, the author's use of the words "shoot" (line 67) and "collide" (line 68) has the main effect of

A) underscoring the damage to the comet's surface caused by the solar wind.
B) conveying the idea that speed and force contribute to the process that generates O_2.
C) highlighting a contrast between the reaction of ionized water to rust and the reaction of ionized water to sand.
D) creating a vivid sense of how Giapis and Yao's experiments unfolded.

CONTINUE

47

According to Altwegg in Passage 2, the protective bubble that forms around comet 67P would prevent the

A) formation of fast-moving particles in the solar wind.

B) evaporation of water from the comet's surface.

C) ionization of water by ultraviolet light.

D) contact of ionized water with rust or sand particles.

48

Which hypothetical discovery about another comet would provide the strongest support for the conclusion that the process described by Giapis and Yao (Passage 2) had occurred on that comet?

A) The abundance of molecular oxygen surrounding the comet was similar to the abundance of molecular oxygen on comet 67P.

B) Powerful solar wind occurred in the region where the comet was located.

C) The ratio of molecular oxygen relative to water molecules in the comet was shown to have fluctuated significantly over time.

D) Newly designed instruments revealed that the comet had high concentrations of rust and sand particles.

49

Based on Passage 1, which choice best helps to explain Giapis's remark in lines 49-50 of Passage 2 ("Molecular . . . universe")?

A) Molecular oxygen is hard to find in space because instruments are not typically sensitive enough to detect its presence.

B) Molecular oxygen in space is difficult to retrieve because it is buried deep within the cores of comets and other bodies.

C) Molecular oxygen is not often found in space because energetic particles rarely split apart water molecules.

D) Molecular oxygen in space is rare because oxygen atoms usually react with other substances rather than combining with each other.

50

Based on Passage 1, Bieler's team would likely view the explanation provided by Giapis and Yao in Passage 2 for the presence of molecular oxygen on comet 67P as

A) unexpected, because their work relied on an understanding that the splitting apart of water molecules could not plausibly account for the phenomenon.

B) flawed, because it assumes that oxygen makes up a larger proportion of the substances in the comet's atmosphere than it actually does.

C) nuanced, because it determines the relative chemical abundances necessary for the formation of molecular oxygen on comet 67P.

D) groundbreaking, because it provides the most persuasive model of the early solar system to date.

CONTINUE

51

Which choice from Passage 1 provides the best evidence for the answer to the previous question?

A) Lines 19-21 ("They . . . water")

B) Lines 25-29 ("But Bieler . . . water")

C) Lines 35-37 ("But many . . . hydrogen")

D) Lines 41-43 ("But he . . . conditions")

52

Based on Passage 2, Giapis and Yao would be most likely to disagree with which claim made by Bieler in Passage 1?

A) Existing models of the early solar system will need to be modified to account for the presence of O_2 on comet 67P.

B) The discovery of O_2 on comet 67P is relevant to scientists whose research does not focus on comets specifically.

C) Concentrations of O_2 on comet 67P were relatively easy to detect once the team's equipment was close to the comet.

D) The discovery of water molecules in close proximity to oxygen molecules on comet 67P is significant.

STOP

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

No Test Material On This Page

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.

Dorothy Porter Wesley's Stewardship of History

From 1 it's beginnings as a small liberal arts college in 1867, Howard University in Washington, DC, has become one of the most respected research institutions in the United States. 2 Therefore, a cornerstone of Howard's reputation is the Moorland-Spingarn Research

1

A) NO CHANGE
B) its
C) there
D) they're

2

A) NO CHANGE
B) Next,
C) Otherwise,
D) DELETE the underlined portion, adjusting the capitalization as needed.

CONTINUE

Center (MSRC). Part of the university's library, the MSRC 3 is still working toward expanding the online catalogue to include materials obtained before 2003. However, it would not be what it is today without the four-decades-long dedication of Dorothy Porter Wesley, the curator of the MSRC's predecessor, the Moorland Foundation.

One of Wesley's main goals as curator 4 were to make the holdings of the Moorland Foundation accessible to students and scholars. When she began to develop the foundation's collection in 1930, she found that many of the items she would add to it were difficult to locate in Howard's library. The Dewey Decimal System—which 5 US libraries have used since the nineteenth century to catalogue their contents—did not have accurate categories to track Howard's diverse holdings of African and African American texts and

3

Which choice best supports the information provided earlier in the paragraph and sets up the passage's main discussion?

A) NO CHANGE
B) acquired rare books dating all the way back to the sixteenth century from two prominent bibliophiles.
C) contains more than two hundred thousand works on African and African American history and culture.
D) prohibits the use of cameras or scanners and allows reproduction of materials only by permission.

4

A) NO CHANGE
B) are
C) have been
D) was

5

Which choice provides the most relevant detail?

A) NO CHANGE
B) places natural science and mathematics in the 500–519 range—
C) is sometimes supplemented by numbers from the Cutter-Sanborn Tables—
D) is named after American librarian Melvil Dewey, who created it for Amherst College—

CONTINUE

artifacts. Wesley expanded those categories so that library patrons 6 retrieve items more efficiently. Among the most significant holdings that Wesley organized were 7 philanthropist Dr. Jesse E. Moorland's 1914 donation of three thousand items documenting African American history and experience and newspapers, pamphlets, and letters bequeathed by abolitionist Lewis Tappan.

Recognizing the importance of maintaining an archive of these and other historical artifacts for study, Wesley continuously expanded the collection. She wrote to universities, individual collectors, and government agencies to request materials, at times 8 on occasion buying items using her own money. In 1946, 9 Wesley acquired the contents of the private library belonging to Arthur Spingarn. Spingarn was a social activist, and the acquisition enlarged the Moorland Foundation's geographic and linguistic scope. Spingarn's collection contained works by native African writers and writers of African descent from Haiti, Cuba, and South America who were largely unknown to American scholars. Spingarn's materials also consisted of works written in African languages such as Swahili and Xhosa.

6

A) NO CHANGE
B) could retrieve
C) will retrieve
D) have retrieved

7

A) NO CHANGE
B) philanthropist, Dr. Jesse E. Moorland's 1914 donation
C) philanthropist Dr. Jesse E. Moorland's 1914 donation,
D) philanthropist, Dr. Jesse E. Moorland's 1914 donation,

8

A) NO CHANGE
B) occasionally buying items with
C) buying items with
D) buying items sometimes using

9

Which choice most effectively combines the sentences at the underlined portion?

A) acquiring the private library contents of a social activist named Arthur Spingarn, Wesley helped enlarge
B) Wesley acquired the contents of social activist Arthur Spingarn's private library, thus enlarging
C) in acquiring the contents of the private library of Arthur Spingarn, a social activist, Wesley was helping enlarge
D) Wesley's acquisition of a private library's contents, which belonged to social activist Arthur Spingarn, led to the enlargement of

CONTINUE

10 With the addition of the Spingarn collection, Wesley helped make the Moorland Foundation the largest research center in the United States at the time for the study of materials documenting African and African American life and history. To these works she added her own scholarship, 11 it includes bibliographies of African American literature that continue to serve as vital research tools. Today, scholars from around the world are drawn to the MSRC and the wealth of information that Wesley preserved there.

10

Which choice provides the most effective transition from the previous paragraph?

A) NO CHANGE
B) By adapting the Dewey Decimal System,
C) Aware that Spingarn was both a lawyer and a historian,
D) Earning honorary PhD degrees from Susquehanna University, Syracuse University, and Radcliffe College,

11

A) NO CHANGE
B) which includes
C) to be including
D) and including

CONTINUE

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

A Flexible Approach to Flight

[1] Since the Wright brothers' first flight, aviators have faced the engineering challenge of controlling roll, which is used to turn an aircraft and is experienced by 12 passengers as a tilting to the left or the right. [2] Today, pilots initiate roll by raising or lowering ailerons, the hinged surfaces on the trailing edge of each wing. [3] Instead, the brothers devised a system of 13 pulley's and cable's to create "wing warping," a reshaping of the wing inspired by Wilbur Wright's twisting of a cardboard box. [4] Recently, a team of engineers from MIT and NASA demonstrated a shape-changing wing that initiates roll by twisting along its entire span. [5] Their design uses innovative materials and structural design to create improved performance and efficiency along with significant cost savings. 14

12

A) NO CHANGE
B) passengers as:
C) passengers, as
D) passengers—as

13

A) NO CHANGE
B) pulleys and cables
C) pulleys' and cables'
D) pulleys and cable's

14

The writer wants to add the following sentence to this paragraph.

> The 1903 Wright Flyer did not have ailerons, however.

The best placement for the sentence is

A) before sentence 1.
B) after sentence 1.
C) after sentence 2.
D) after sentence 3.

CONTINUE

The flexible wing relies on what its designers call a "digital cellular composite system." A strong and stiff but lightweight material, carbon fiber–reinforced polymer, is shaped into tiny components that **15** combine to form intricate lattice-like geometric structures composed of flat surfaces. These structures include cuboct cells, which are tightly interwoven assemblies highly resistant to **16** either bending and twisting, and Kelvin cells, which are simpler arrangements that bend and twist more

15

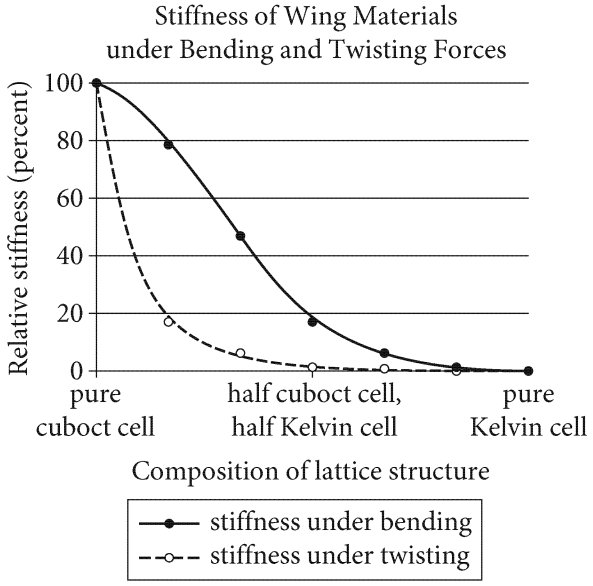
A) NO CHANGE
B) combine together and thus form
C) combine, joining to form
D) combine to form and make up

16

A) NO CHANGE
B) both bending or
C) bending nor
D) both bending and

CONTINUE

easily. The researchers found that by combining cuboct cells with Kelvin cells in different proportions, they could **17** create consistent levels of stiffness regardless of the type of force applied. For instance, the material that was made of half cuboct cells and half Kelvin cells showed **18** more than 80 percent of the resistance to bending and almost none of the resistance to twisting that characterized the pure cuboct design. Using these geometric patterns in different arrangements allows the engineers to fine-tune the reshaping of the wing—to bend and twist it in different ways at different points along its length—with the power of two small servo motors in the wingtips. The team tested the morphing wing in a wind **19** tunnel and finding that it achieved aerodynamic qualities equal to **20** that of rigid-wing aircraft at a fraction of the weight.



Adapted from Benjamin Jenett et al., "Digital Morphing Wing: Active Wing Shaping Concept Using Composite Lattice-Based Cellular Structures." ©2017 by Benjamin Jenett et al.

17

Which choice provides an accurate interpretation of the data in the graph?

A) NO CHANGE
B) achieve different levels of stiffness in response to different types of force.
C) force materials made entirely of cuboct cells to become very conducive to twisting.
D) bend materials made only of cuboct cells more than they could bend materials made only of Kelvin cells.

18

Which choice presents accurate information from the graph?

A) NO CHANGE
B) exactly 40 percent
C) less than 20 percent
D) exactly 5 percent

19

A) NO CHANGE
B) tunnel they found
C) tunnel and found
D) tunnel, found

20

A) NO CHANGE
B) the one of
C) those of
D) DELETE the underlined portion.

CONTINUE

21 Another benefit of the flexible wing is that many of its components can be taken apart and recycled. These advantages will be multiplied through savings in construction and 22 repair. One example of the savings is how the engineers are already working on miniature robots that construct the cells piece by piece, which means that internal repairs can be made without replacing an entire structure. If further testing confirms these results and the design can be scaled up to full-sized planes, flexible winds will carry the air travelers of the future.

21

Which choice provides the most effective transition from the previous paragraph?

A) NO CHANGE

B) This project was supported by the Defense Advanced Research Projects Agency, which funds many kinds of cutting-edge technologies.

C) Such technology may eventually be used in robotic limbs, which could be constructed to bend with much more flexibility.

D) Lower weight in the airframe translates into greater fuel efficiency, thus lowering fuel costs and making air travel more sustainable.

22

Which choice most effectively combines the sentences at the underlined portion?

A) repair, with such savings being how the engineers

B) repair, but the engineers, nonetheless,

C) repair; the engineers are an example of savings because the engineers

D) repair: the engineers

CONTINUE

Questions 23-33 are based on the following passage.

A Natural Success

In 2013, entrepreneur Jess Edelstein began experimenting in her kitchen with mixtures of baking soda, coconut oil, charcoal, and other ingredients. Her goal was to 23 whip up a new natural deodorant that was both more effective and gentler on skin than the products available in stores. Once she had developed a product that seemed promising, Edelstein asked her friend Sarah Ribner to test it. Ribner was impressed with the product and thought it had 24 potential. The two women deciding to become business partners. 25 Edelstein's success in convincing Ribner to join her in her company, PiperWai, illustrates many of the problems and opportunities facing small-business entrepreneurs.

23

A) NO CHANGE
B) craft
C) throw together
D) adroitly configure

24

A) NO CHANGE
B) potential, the two women decided
C) potential; with the two women deciding
D) potential, and the two women decided

25

Which choice most effectively sets up the main discussion of the passage?

A) NO CHANGE
B) Edelstein and Ribner's experiences in building their company, PiperWai, illustrate
C) Edelstein and Ribner's decisions about which natural ingredients to use in products made by their company, PiperWai, illustrate
D) Edelstein and Ribner's choice to ask their family and friends to test the products made by their company, PiperWai, illustrates

CONTINUE

Edelstein and Ribner had already succeeded in the first step in starting a 26 business, finding: a hole in the consumer market and filling it with an effective product. However, like all new business owners, they needed money to take the next step. 27 To help informing PiperWai's financial decisions, Ribner drew on the skills and knowledge she had gained from her university business classes. The partners used money from a small loan and a contest prize to fund the beginning production phase. To keep production costs low, they prepared every batch of deodorant by hand in a community kitchen and packed and 28 shipped their products from Edelstein's apartment.

26

A) NO CHANGE
B) business, finding a hole—
C) business; finding a hole
D) business: finding a hole

27

A) NO CHANGE
B) To help the informing of
C) To help inform
D) Helping to inform with

28

A) NO CHANGE
B) to ship
C) shipping
D) they shipped

CONTINUE

[1] After about six months of consistent growth, Edelstein and Ribner experienced a paradox familiar to many small-business entrepreneurs: their small-scale production process was not sufficient to meet customer demand, but they couldn't make enough money using their current process to pay for the upgrade they needed. [2] Crowdfunding on Indiegogo earned Edelstein and Ribner the money to produce their deodorant in a factory and a coveted invitation to appear on the entrepreneurship-themed television program *Shark Tank*. [3] The attention their company gained from their 2015 *Shark Tank* appearance allowed Edelstein and Ribner to place their product in hundreds of stores across the United States and Canada. 29

29

The writer wants to add the following sentence to the paragraph.

> The entrepreneurs turned to a popular online platform for business start-ups, Indiegogo.

The best placement for the sentence is

A) before sentence 1.
B) after sentence 1.
C) after sentence 2.
D) after sentence 3.

CONTINUE

The small-business entrepreneurs had entered a new stage 30 and phase in the growth and increase of their business: 31 it wasn't so small anymore. Although she welcomed the opportunity, Ribner discovered that "scaling quickly, after *Shark Tank*, came with a lot of downfalls." The partners struggled to find manufacturing facilities and distributors that could make and deliver enough deodorant. By 2017, however, 32 they had been largely overcome, and PiperWai was focused on a new strategy of "consistent, cautious growth"—a strategy favored not by start-ups but by mature companies. 33 PiperWai has even partnered with several charities.

30

A) NO CHANGE
B) in the growth and increase
C) that was a phase in the growth
D) in the growth

31

Which choice most effectively sets up the main idea of the paragraph?

A) NO CHANGE
B) they were finally making enough money to pay themselves a salary.
C) they had added six employees to keep up with the demand.
D) it generated substantial revenue for its charity partners.

32

A) NO CHANGE
B) the facilities and distributors
C) it
D) the challenges

33

Which choice most effectively concludes the passage?

A) NO CHANGE
B) PiperWai had succeeded.
C) Furthermore, Edelstein and Ribner have remained close friends throughout their journey through small-business entrepreneurship.
D) Thus, the profitability of natural cosmetics should be further investigated.

CONTINUE

Questions 34-44 are based on the following passage.

Bringing the Humanities to the Public

Transamerican Literary Relations and the Nineteenth-Century Public Sphere. For most readers, this title of a recent volume of literary scholarship won't do much to clarify the author's topic. It may be tempting to fault the author for choosing an arcane title, but 34 <u>they</u> are not meant to be widely accessible; rather, they are aimed at other academics in the author's field. Given its specialization, most humanities scholarship does not, in fact, reach the "public sphere," where it might enlighten many nonacademics. 35 <u>As part of a recent movement,</u> some scholars are working to make humanities expertise meaningful for the general public through initiatives known as the "public humanities."

34

A) NO CHANGE
B) these
C) such books
D) the readers

35

Which choice provides the most effective transition from the previous sentence to the information that follows?

A) NO CHANGE
B) In spite of a number of critics,
C) Together with related organizations,
D) To counteract this insularity,

CONTINUE

Public humanities programs often focus on relating humanities scholarship, which includes the study of literature, history, and the arts, to everyday life. Many universities have public humanities departments, such as Brown University's John Nicholas Brown Center for Public Humanities and Cultural Heritage. Some initiatives funded by the department bring scholars directly into contact with the local community, such as a 2011 project in which a professor worked with an oral historian and students to document stories of the surrounding city from residents. Public humanities programs can also 36 include projects that combine academic objectives with service to the community. For instance, several professors from the University of Virginia 37 exhibit *BackStory*, a podcast freely available throughout much of the world that addresses topics of general interest through an academic lens. One 2018 episode featured an interview with a professor of hip-hop 38 aesthetics; jazz, and African American and Haitian 39 history. It was about parallels between the hit film *Black Panther* and the Haitian Revolution.

36

Which choice most effectively sets up the information that follows in the paragraph?

A) NO CHANGE
B) extend far beyond a university setting.
C) open new avenues of research for academics.
D) draw criticism from scholars for a variety of reasons.

37

A) NO CHANGE
B) yield
C) produce
D) display

38

A) NO CHANGE
B) aesthetics, jazz; and,
C) aesthetics, jazz, and
D) aesthetics jazz and,

39

Which choice most effectively combines the sentences at the underlined portion?

A) history about
B) history; the interview was about
C) history that consisted of a discussion on
D) history, and he talked about

CONTINUE

[1] For example, most episodes of *BackStory* include a call-in segment during which hosts and listeners can exchange ideas. [2] Public humanities projects have been challenged by scholar Mary 40 Mullen, for preserving "existing hierarchies of cultural authority." [3] Mullen's concern is that public humanities efforts can disempower the public by elevating academics as experts, thereby undermining the professed commitment of these efforts to democratize humanities scholarship. [4] However, Mullen's criticism 41 has been neglecting the channels offered by programs such as *BackStory* for academics and the general public to engage with each other as equals. 42

40

A) NO CHANGE
B) Mullen; for preserving
C) Mullen for preserving,
D) Mullen for preserving

41

A) NO CHANGE
B) neglects
C) had neglected
D) will neglect

42

To make this paragraph most logical, sentence 1 should be placed

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

CONTINUE

Mullen's argument is not entirely without 43 merit, public humanities programs can indeed 44 introduce diverse perspectives into the fields of the humanities. At their best, though, these programs can foster meaningful exchange between scholars and the general public. For this reason, they should be celebrated.

43

A) NO CHANGE
B) merit
C) merit; as
D) merit, as

44

Which choice provides the most effective support for the claim about Mullen's argument earlier in the sentence?

A) NO CHANGE
B) increase public engagement with the academic work of scholars.
C) reinforce the authority of the academics who lead them.
D) generate enthusiasm and monetary support for important projects.

STOP

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

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

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

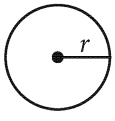
DIRECTIONS

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding bubble on your answer sheet. **For questions 16-20**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

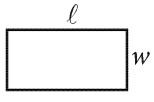
NOTES

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.

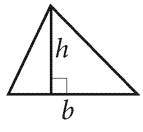
REFERENCE



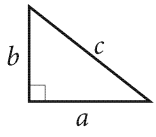
$A = \pi r^2$
$C = 2\pi r$



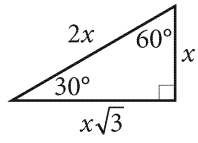
$A = \ell w$

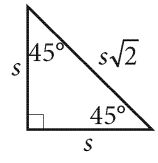


$A = \frac{1}{2}bh$

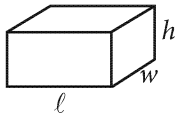


$c^2 = a^2 + b^2$

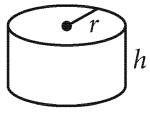




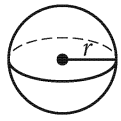
Special Right Triangles



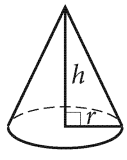
$V = \ell wh$



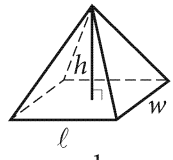
$V = \pi r^2 h$



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



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



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

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.

CONTINUE

1

In $\triangle LMN$, the measure of angle L is 20° and the length of $\overline{LM}$ is 7. The length of each side of $\triangle L'M'N'$ is the product of 5 and the length of the corresponding side of $\triangle LMN$, where L corresponds to L' and M corresponds to M'. What is the measure of angle L' ?

A) 5°

B) 7°

C) 20°

D) 100°

2

The surface area of a cube is given by the equation $A = 6n^2$, where n is the length of an edge of the cube. Which equation correctly gives n in terms of A ?

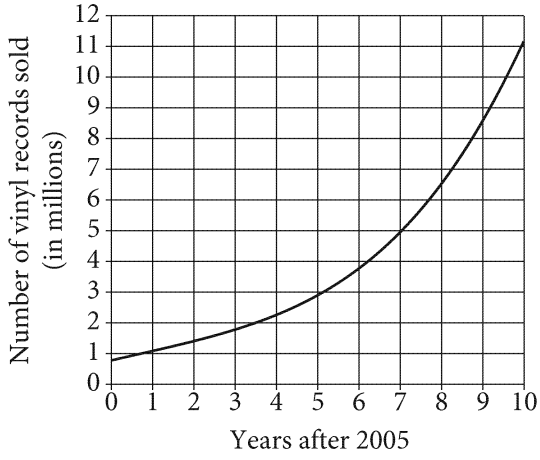
A) $n = 6A^2$

B) $n = \sqrt{6A}$

C) $n = \sqrt{\frac{A}{6}}$

D) $n = \left(\frac{A}{6}\right)^2$

3



The curve shown models the number of vinyl records, in millions, sold in each year from 2005 to 2015 in the United States. For what year does the model estimate that the number of vinyl records sold was 5 million?

A) 2011

B) 2012

C) 2013

D) 2014

CONTINUE

4

A weather monitoring station is located at sea level. At a given time, the air temperature is 15 degrees Celsius (°C) at the station. For every 1-kilometer (km) increase in the elevation above the station, the air temperature decreases by 6.5°C. Which equation describes this situation, where x is the elevation, in km, above the station and y is the air temperature, in °C?

A) $y = 6.5 - 15x$

B) $y = 6.5 + 15x$

C) $y = 15 - 6.5x$

D) $y = 15 + 6.5x$

5

Kiera bought 2 bags of caramel candy and several bags of peanut butter candy. Each bag cost $2.75, including tax, and she paid a total of $13.75. The equation $2.75(x + 2) = 13.75$ represents this situation. What is the best interpretation of $(x + 2)$ in this context?

A) The price, in dollars, of one bag of candy

B) The total number of bags of candy Kiera bought

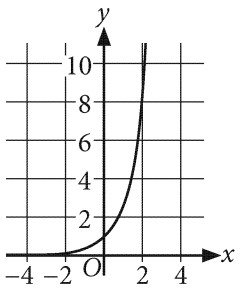
C) The total price, in dollars, of all the bags of candy

D) The number of bags of peanut butter candy Kiera bought

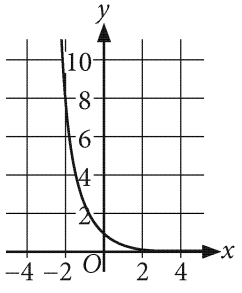
6

The function f is defined by $f(x) = -3^x$. Which of the following is the graph of $y = f(x)$ in the xy-plane?

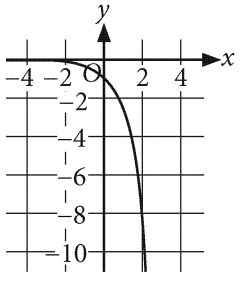
A)



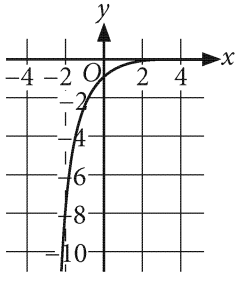
B)



C)



D)



CONTINUE

7

$$|x - 3| = x - 3$$

Which value is a solution to the given equation?

A) -3

B) -1

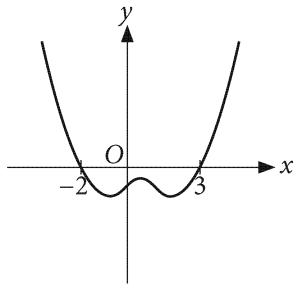
C) 1

D) 3

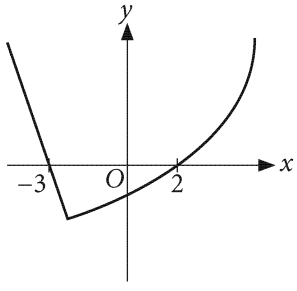
8

For the function f, the equation $f(x) = 0$ has solutions -2, 0, and 3. Which of the following could be the graph of $y = f(x)$ in the xy-plane?

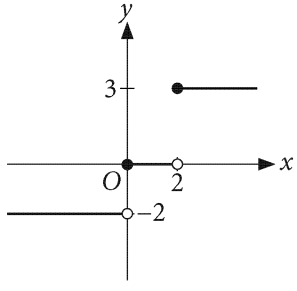
A)



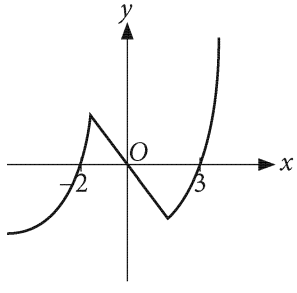
B)



C)



D)



CONTINUE

9

$$x = y + 6$$
$$2x + 3y = 12$$

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

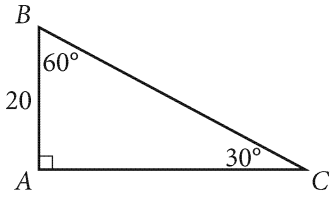
A) 6

B) $\frac{12}{5}$

C) 0

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

10



What is the length of line segment BC in the triangle shown?

A) 10

B) $10\sqrt{3}$

C) $20\sqrt{3}$

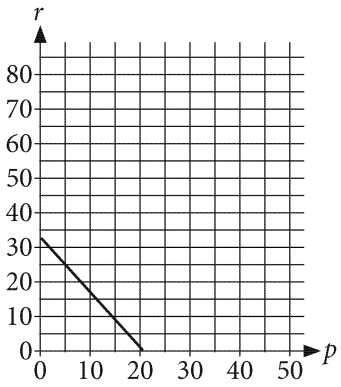
D) 40

CONTINUE

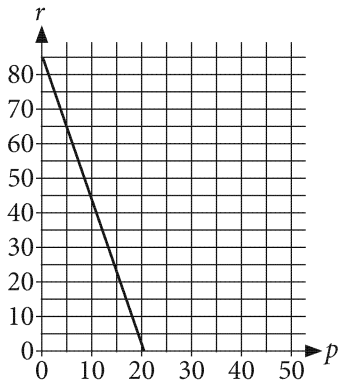
11

The equation $2.49p + 3.99r = 84.75$ can be used to represent the relationship between p pounds of peanuts and r pounds of raisins that can be purchased for a total of \$84.75. Which of the following graphs best represents the relationship between the number of pounds of peanuts and the number of pounds of raisins in this context?

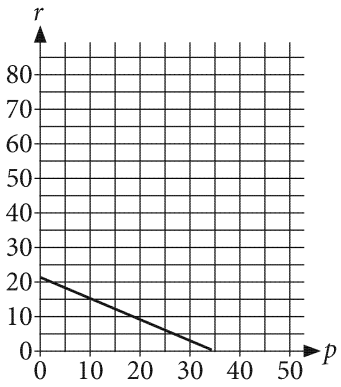
A)



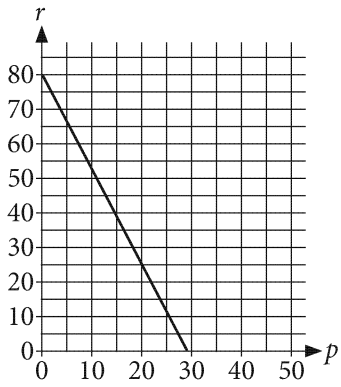
B)



C)



D)



CONTINUE

12

$$(6x^4 + 5x^3) - (4x^3 + 3x^2) - (2x^2 + x)$$

If the given expression is rewritten in the form $6x^4 + x^3 + ax^2 - x$, where a is a constant, what is the value of a ?

A) 5
B) 1
C) −1
D) −5

13

The function g is defined by $g(n) = \dfrac{-3n}{5}$. For what value of n does $g(n) = -36$?

A) 60
B) 21.6
C) −21.6
D) −60

14

Which of the following is equivalent to $\sqrt{x^2 + 6x + 9}$ for all positive values of x ?

A) $x + 3$
B) $7x + 9$
C) $x + \sqrt{6x} + 3$
D) $x + \sqrt{3x} + 4.5$

15

$$x + 6y = 8$$
$$x + ny = 12$$

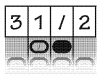
In the given system of equations, n is a constant. The system has no solution. What is the value of n ?

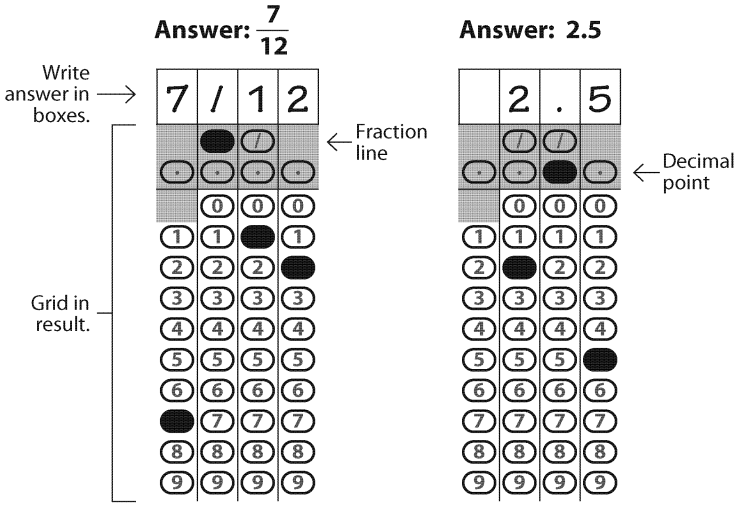
A) 2
B) 6
C) 9
D) 10

CONTINUE

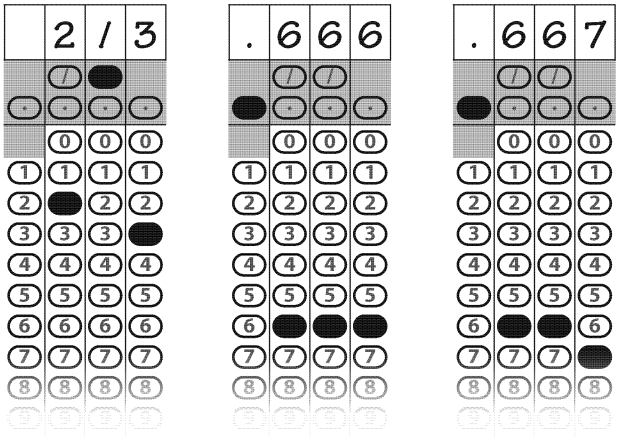
DIRECTIONS

For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

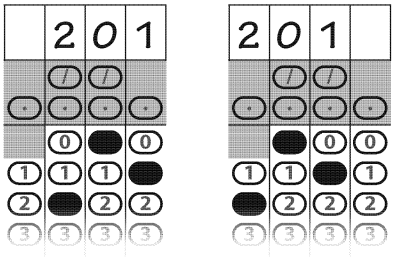
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
2. Mark no more than one bubble in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **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.



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



Answer: 201 – either position is correct



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

CONTINUE

16

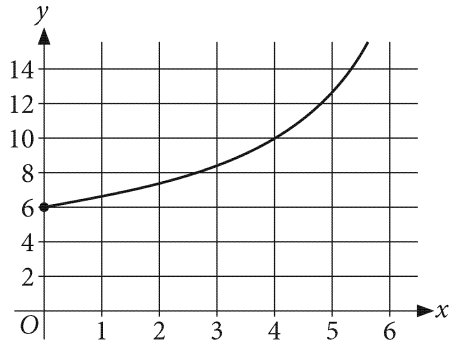
The graph of $4x - 5y = -20$ in the xy-plane is a line. What is the slope of the line?

17

$$x + \frac{10x}{4} = 7$$

What is the solution to the given equation?

18



The graph of the exponential equation $y = (1.495)^x + k$ is shown in the xy-plane, where k is a constant. What is the value of k ?

CONTINUE

19

$$x^2 + y^2 + 6x + 2y - 6 = 0$$

In the xy-plane, the graph of the given equation is a circle. What is the length of the radius of the circle?

20

$$x^2 - 2x - 10 = 0$$

A positive value x that satisfies the equation above can be written in the form $x = a + a\sqrt{c}$, where a and c are integers. What is the value of c ?

STOP

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

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

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

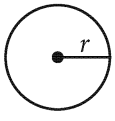
DIRECTIONS

For questions 1-30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding bubble on your answer sheet. **For questions 31-38**, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

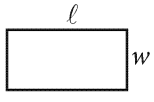
NOTES

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.

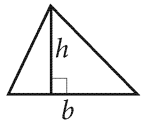
REFERENCE



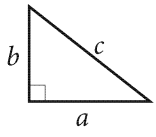
$A = \pi r^2$
$C = 2\pi r$



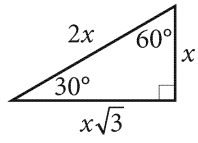
$A = \ell w$

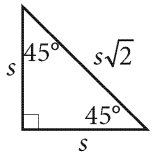


$A = \frac{1}{2}bh$

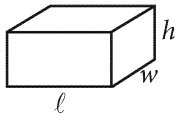


$c^2 = a^2 + b^2$

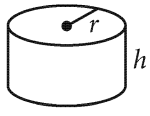




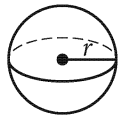
Special Right Triangles



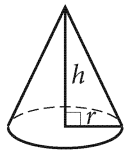
$V = \ell wh$



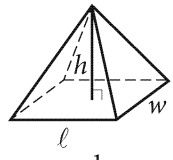
$V = \pi r^2 h$



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



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



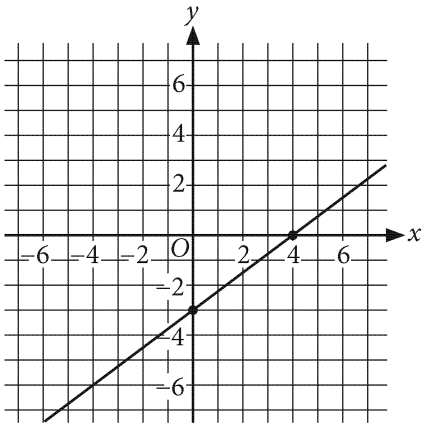
$V = \frac{1}{3}\ell wh$

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.

CONTINUE

1

The graph of the linear function f is shown, where $y = f(x)$. Which equation defines f ?



A) $f(x) = 0.75x - 3$

B) $f(x) = 0.75x + 3$

C) $f(x) = 1.33x - 3$

D) $f(x) = 1.33x + 3$

2

During a certain chemical reaction, nitrogen combines with other reactants to form ammonia. The function $f(x) = 2x$ describes the relationship between the amount x, in moles, of nitrogen used and the number of moles of ammonia produced, $f(x)$. What is the interpretation of $f(3) = 6$?

A) Three moles of nitrogen are used to produce one mole of ammonia.

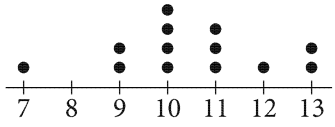
B) Three moles of nitrogen are used to produce six moles of ammonia.

C) Three moles of ammonia are produced from six moles of nitrogen.

D) Three moles of ammonia are produced from three moles of nitrogen.

3

The dot plot shows the number of eggs in each of 13 wood duck nests.



Number of eggs per nest

How many of these nests had exactly 11 eggs?

A) 1

B) 2

C) 3

D) 4

CONTINUE

4

For a linear function f, the graph of $y = f(x)$ in the xy-plane has a slope of 5 and passes through the point (0, 2). Which equation defines f ?

A) $f(x) = 2x - 5$

B) $f(x) = 2x + 5$

C) $f(x) = 5x - 2$

D) $f(x) = 5x + 2$

5

The value of y is proportional to the value of x, where $x > 0$ and $y > 0$. If y increases by a factor of 5, which of the following is the factor by which x increases?

A) $\frac{1}{25}$

B) $\frac{1}{5}$

C) 5

D) 25

6

For acute angles A and B, $\sin A = \cos B$. The measure of angle A is 36°. What is the measure of angle B ?

A) 72°

B) 54°

C) 36°

D) 18°

7

On a map drawn to scale, the distance between Ashland and Bristol is 4 inches and the distance between Ashland and Clinton is 12 inches. The actual distance between Ashland and Bristol is x miles. What expression represents the actual distance, in miles, between Ashland and Clinton, in terms of x ?

A) $3x$

B) $8x$

C) $9x$

D) $12x$

CONTINUE

8

The table shows the number of drawings by drawing type exhibited by students in two different art classes.

Class	Drawing Type			
	Landscape	Portrait	Still life	Total
A	4	8	6	18
B	7	5	10	22
Total	11	13	16	40

If a landscape drawing is selected at random, which of the following is closest to the probability that the selected drawing is from class A?

A) 0.10
B) 0.22
C) 0.36
D) 0.63

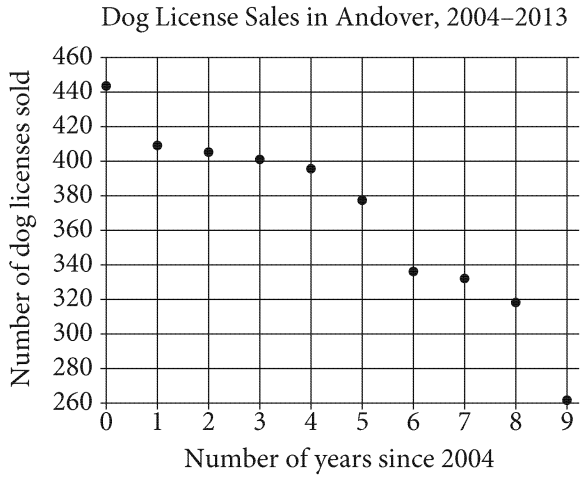
9

What is 120% of 260 ?

A) 2.2
B) 31.2
C) 217
D) 312

10

The scatterplot shows the number of dog licenses sold in Andover each year from 2004 through 2013.



Which value is closest to the average rate of change in the number of dog licenses sold per year from 2004 through 2013?

A) −40
B) −20
C) 20
D) 40

11

The length of the Great Trail in Canada is 24,000 kilometers. Which of the following is the closest approximation to the length of this trail, in miles? (Use 1 kilometer = 0.62 mile.)

A) 62,000
B) 39,000
C) 18,000
D) 15,000

CONTINUE

12

The graph of $y = f(x)$ in the xy-plane is a line with a slope of 9. What is the slope of the graph of $y = f(x) + 3$?

A) 3

B) 9

C) 12

D) 27

13

Of the 100 different species of plants sold in a nursery, 60 species are perennials. Of the 60 species of perennials, 40 species grow best in direct sun. If one of the species of plants sold in the nursery is selected at random, what is the probability of selecting a perennial that does not grow best in direct sun?

A) $\frac{20}{100}$

B) $\frac{20}{60}$

C) $\frac{40}{100}$

D) $\frac{40}{60}$

14

$$x + 2y = 6$$

In the xy-plane, line ℓ is the graph of the given equation. Which of the following is an equation of the line parallel to line ℓ that contains the point $(1, -2)$?

A) $x + 2y = -3$

B) $x + 2y = 5$

C) $2x - y = -4$

D) $2x - y = 4$

15

For a set of 35 integers, the mean is greater than the median. Which of the following CANNOT be true about the integers?

A) They are all even.

B) They are all odd.

C) They are all different.

D) They are consecutive.

CONTINUE

16

The distance between a certain point on the Eurasian tectonic plate and a certain point on the North American tectonic plate can be modeled by a linear function of time. Which of the following could describe how the predicted distance between these two points changes?

A) Each year, the predicted distance is 3% greater than the previous year's predicted distance.

B) Each year, the predicted distance is 3 centimeters greater than the previous year's predicted distance.

C) Each year, the predicted distance is $\frac{1}{3}$ of the previous year's predicted distance.

D) Each year, the predicted distance is 3 times as great as the previous year's predicted distance.

17

Data set A consists of positive values, with no two values the same. Data set B is formed by removing the largest value from data set A. Which of the following statements must be true?

I. The mean of data set B is smaller than the mean of data set A.

II. The range of data set B is smaller than the range of data set A.

A) I only

B) II only

C) I and II

D) Neither I nor II

18

Earth's atmospheric pressure, in pounds per square foot $\left(\frac{\text{lbs}}{\text{ft}^2}\right)$, at altitudes from 36,150 feet (ft) to 82,345 ft is described by a model. The model indicates a pressure of 471 $\frac{\text{lbs}}{\text{ft}^2}$ at an altitude of 36,150 ft and a 1% decrease in pressure for every 200 ft increase in altitude. Which function defines this model, where $P(x)$ represents the atmospheric pressure, in $\frac{\text{lbs}}{\text{ft}^2}$, at an altitude of x ft above 36,150 ft?

A) $P(x) = 471(0.99)^{\frac{x}{200}}$

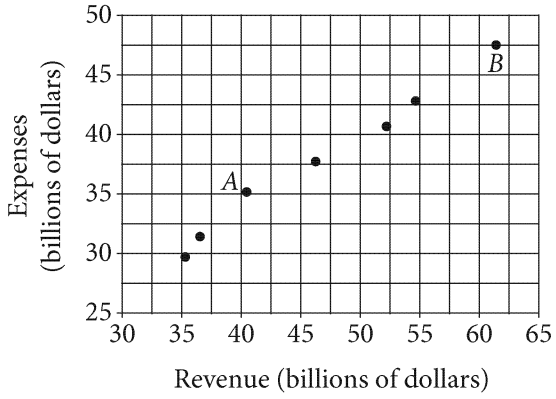
B) $P(x) = 471(1.01)^{\frac{x}{200}}$

C) $P(x) = (0.99)^{\frac{x+471}{200}}$

D) $P(x) = (1.01)^{\frac{x+471}{200}}$

CONTINUE

Questions 19 and 20 refer to the following information.



The scatterplot shows the combined revenue and combined expenses, in billions of dollars, of the US Class I railroads for each of the seven years from 2002 through 2008. The data points for two of the years are labeled *A* and *B*.

19

Which of the following is closest to the percent increase in expenses from the year that corresponds to data point *A* to the year that corresponds to data point *B* ?

A) 12%

B) 26%

C) 36%

D) 49%

20

A line of best fit for the data has slope 0.645. Which of the following is the best interpretation of the slope in this context?

A) Revenue is predicted to decrease by \$1 billion for every \$0.645 billion increase in expenses.

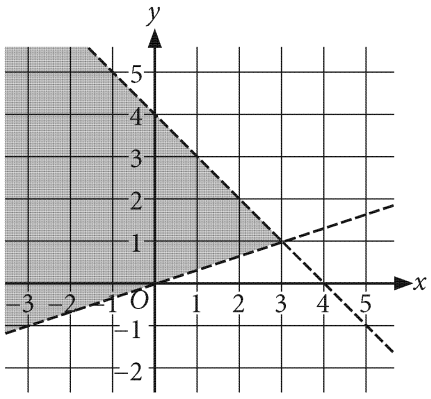
B) Expenses are predicted to increase by \$1 billion for every \$0.645 billion increase in revenue.

C) Revenue is predicted to decrease by \$0.645 billion for every \$1 billion increase in expenses.

D) Expenses are predicted to increase by \$0.645 billion for every \$1 billion increase in revenue.

CONTINUE

21



The shaded region shown in the xy-plane represents the solutions to which of the following systems of inequalities?

A) $x + y < 4$
$3y > x$

B) $x + y < 4$
$3y < x$

C) $x + y > 4$
$3y > x$

D) $x + y > 4$
$3y < x$

22

$$x^2 + 4x + c = 0$$

In the quadratic equation above, c is a constant. For which of the following values of c does the equation have two different integer solutions?

A) 3

B) 4

C) 5

D) 6

23

The expression $x^2 + 6x + 13$ can be written in the form $a^2 + b^2$, where a is an expression and b is a constant. Which of the following gives an expression for a and the value of b ?

A) $a = x + 3, b = 2$

B) $a = x + 3, b = 4$

C) $a = x + 6, b = 2$

D) $a = x + 6, b = 4$

24

The graph of the equation $y = 2(x + r)^2 - s$ in the xy-plane is a parabola, where r and s are constants. What is the vertex of this parabola?

A) $(-2r, -s)$

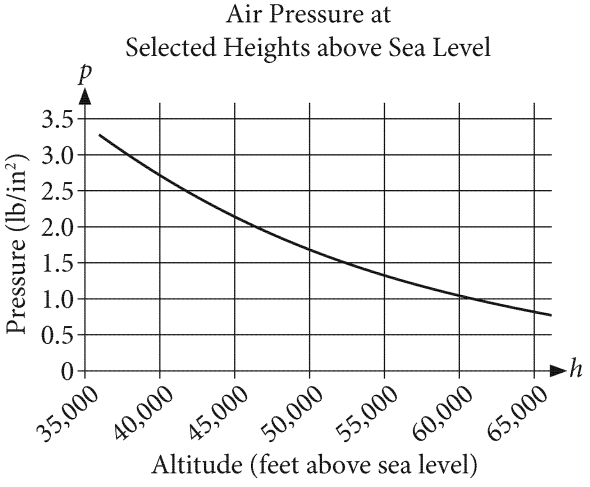
B) $(-r, -s)$

C) $(r, -s)$

D) $(2r, -s)$

CONTINUE

25



An equation of the graph shown is $p = 18.5\left(\frac{1}{2}\right)^{\frac{h}{c}}$, where c is a constant. Which of the following is closest to the value of c ?

A) 4,000

B) 8,500

C) 14,500

D) 23,000

26

The volume of cube A is v cubic units. The edge length of cube B is two times the edge length of cube A. Which expression represents the volume of cube B in terms of v ?

A) $2v$

B) $4v$

C) $8v$

D) $12v$

27

$$x(x + 6) - k(x + 6) = 0$$

In the given equation, k is a positive constant. In terms of k, which of the following must be a solution to the equation?

A) $k - 6$

B) $k + 6$

C) $-k$

D) k

28

$$4x - 5 = kx - 5$$

The given equation, where k is a constant, has exactly one solution. Which of the following could NOT be the value of k ?

A) 0

B) 3

C) 4

D) 5

CONTINUE

Questions 29 and 30 refer to the following information.

Type A: $f(x) = 10 + 8x$

Type B: $g(x) = 17 + 7x$

Two types of generators each require a fixed amount of fuel to start. After starting, each generator produces a constant amount of energy per ounce of fuel used. The functions f and g above represent the amount of fuel, in ounces, that each type of generator requires to produce x units of energy when started once.

29

A type A generator was used to produce n units of energy, and a type B generator was used to produce k units of energy. Each generator was started once, and a combined total of 100 ounces of fuel was used. Which of the following equations represents the relationship between n and k ?

A) $8n + 7k = 100$

B) $8n + 7k = 73$

C) $8n + 7k = 127$

D) $\frac{8n}{100} = \frac{7k}{100} + 7$

30

A type A and a type B generator were started and operated until they ran out of fuel. The two generators combined used 216 ounces of fuel to produce 25 units of energy. How many more units of energy were produced by the type A generator than by the type B generator?

A) 0.2

B) 3.0

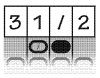
C) 11.0

D) 12.6

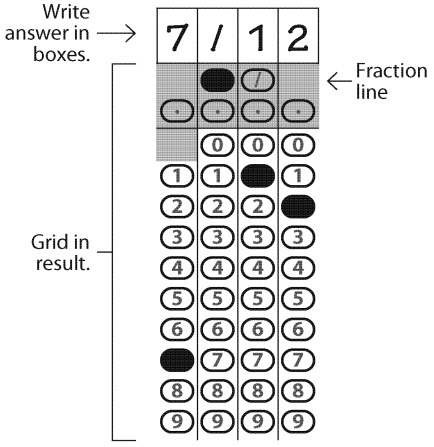
CONTINUE

DIRECTIONS

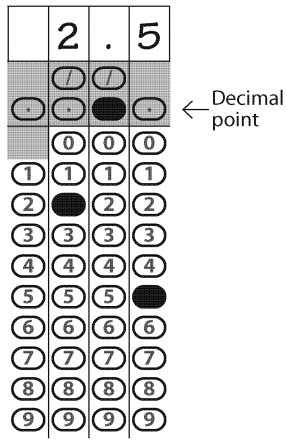
For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

1. 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 bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
2. Mark no more than one bubble in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **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.

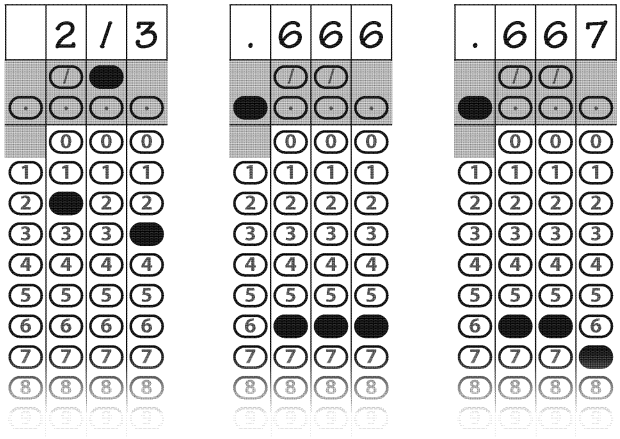
Answer: $\frac{7}{12}$



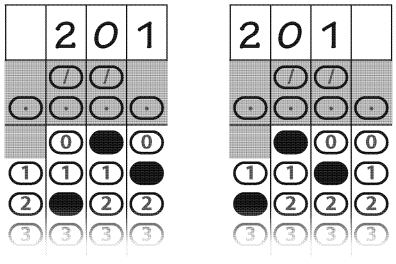
Answer: 2.5



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



Answer: 201 – either position is correct



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

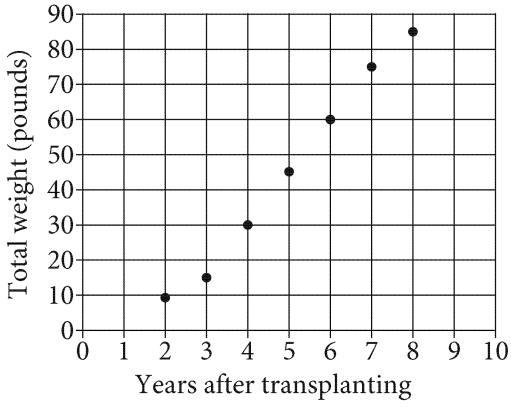
CONTINUE

31

For the function g defined by $g(x) = 3(6)^x$, what is the value of $g(4)$?

32

A botanist recorded the total weight, in pounds, of apples that grew on one dwarf apple tree each year after it was transplanted.



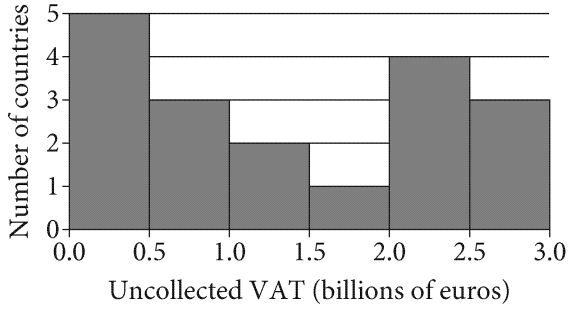
What was the total weight, in pounds, of apples that grew on the tree the 4th year after it was transplanted?

33

A Wisconsin government regulation for certain wildlife areas states that the optimal number of deer per square mile during the winter is at least 10. According to this regulation, what is the minimum optimal number of deer per 2 square miles?

34

Uncollected Value-Added Tax (VAT) for 18 European Union Countries in 2014



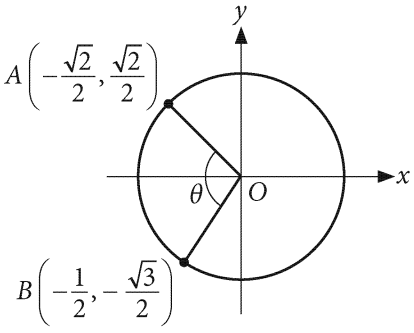
The histogram summarizes the distribution of uncollected value-added tax (VAT), in billions of euros, for 18 European Union countries in 2014. The first bar represents all values less than 0.5 billion euros. The second bar represents all values of at least 0.5 billion euros but less than 1.0 billion euros, and so on. How many of the countries had less than 2.0 billion euros in uncollected VAT?

CONTINUE

35

The expression $1.70x$ represents the result of increasing the quantity x by $p\%$. What is the value of p ?

36



In the figure shown, points A and B lie on a circle in the xy-plane with radius 1, where O is the center of the circle. The measure, in radians, of angle AOB is θ. If $\theta = \frac{n\pi}{12}$, what is the value of n ?

37

$$5(x + c) = 4(x + c) + 5 + c$$

In the equation above, c is a constant. What value of x satisfies the equation?

38

$$a + b = 12$$
$$2(a - b) = 20$$

The solution to the given system of equations is (a, b). What is the value of a ?

STOP

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

August 28, 2021 US

ANSWER KEY

Reading Test Answers

1 B	12 C	23 D	34 B	45 B
2 D	13 D	24 A	35 C	46 B
3 A	14 B	25 D	36 C	47 D
4 A	15 B	26 A	37 A	48 C
5 C	16 D	27 B	38 D	49 D
6 A	17 C	28 B	39 C	50 A
7 B	18 B	29 D	40 D	51 B
8 D	19 A	30 C	41 B	52 A
9 C	20 C	31 D	42 D	
10 A	21 D	32 A	43 B	
11 A	22 C	33 D	44 C	

READING TEST RAW SCORE (NUMBER OF CORRECT ANSWERS)

Writing and Language Test Answers

1 B	12 A	23 B	34 C
2 D	13 B	24 D	35 D
3 C	14 C	25 B	36 B
4 D	15 A	26 D	37 C
5 A	16 D	27 C	38 C
6 B	17 B	28 A	39 A
7 A	18 C	29 B	40 D
8 C	19 C	30 D	41 B
9 B	20 C	31 A	42 D
10 A	21 A	32 D	43 D
11 B	22 D	33 B	44 C

WRITING AND LANGUAGE TEST RAW SCORE (NUMBER OF CORRECT ANSWERS)

Math Test – No Calculator Answers

1 C	11 C
2 C	12 D
3 B	13 A
4 C	14 A
5 B	15 B
6 C	16 4/5, .8
7 D	17 2
8 D	18 5
9 A	19 4
10 D	20 11

MATH TEST – NO CALCULATOR RAW SCORE (NUMBER OF CORRECT ANSWERS)

Math Test – Calculator Answers

1 A	11 D	21 A	31 3888
2 B	12 B	22 A	32 30
3 C	13 A	23 A	33 20
4 D	14 A	24 B	34 11
5 C	15 D	25 C	35 70
6 B	16 B	26 C	36 7
7 A	17 C	27 D	37 5
8 C	18 A	28 C	38 11
9 D	19 C	29 B	
10 B	20 D	30 B	

MATH TEST – CALCULATOR RAW SCORE (NUMBER OF CORRECT ANSWERS)