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 Cristina Garcia, *Dreaming in Cuban*. ©1992 by Cristina Garcia. At her mother's request, Pilar, an art student and punk rock fan, has painted a picture of the Statue of Liberty for the opening of her mother's bakery.

I keep getting the feeling that Mom is going to spy on my work. After all, her record doesn't exactly inspire confidence. So, before I leave my studio, I set
Line up a booby trap—two tight rows of paint cans on the
5 floor just inside the door. Mom would trip on them if she managed to open the latch and come creeping around late at night. It would serve her right, too, show her that she can't go breaking her promises and invading my privacy any time she pleases.

10 I'm usually a heavy sleeper but these last nights every little noise makes me jump out of bed. I'd swear I heard her footsteps, or someone picking the lock on my studio. But when I get up to investigate, I always find my mother sound asleep,
15 looking innocent the way chronically guilty people do sometimes. In the mornings, my paint cans remain undisturbed and there are no suspicious stains on any of Mom's clothing in the hamper. Jesus, I must really be getting paranoid.

20 My boyfriend Max helps me set the painting up in the bakery the night before the grand opening, and we drape it with sewn-together sheets. My mother, surprisingly, still hasn't even tried to get a glimpse of the work. I can tell she's proud of the blind faith she's
25 placed in me. She's positively aglow in her magnanimity. When I come home that night, Mom shows me the full-page ad she took out in the *Brooklyn Express*.

YANKEE DOODLE BAKERY
invites
OUR FRIENDS AND NEIGHBORS
to the
GRAND OPENING
of
OUR SECOND STORE
and the
UNVEILING
of a
MAJOR NEW WORK OF ART
for the
200th BIRTHDAY OF AMERICA
SUNDAY, 12 NOON
(free food and drinks)

Free food and drinks! This is more serious than I
30 thought. Mom doesn't give anything away if she can help it.

Now I can't sleep all night thinking maybe this time I've gone too far. After all, Mom didn't seem to have any ulterior motives, at least none that I can

CONTINUE

figure. For once, I think she genuinely wanted to give me a break. I try to calm down by reminding myself that *she* was the one that cornered me into doing this painting. What did she expect?

At five in the morning, I go to my parents' room. I want to warn her: "Look, I wanted to do it straight but I couldn't, I just couldn't. Do you understand?"

She shifts in her sleep, her plump body curling forward. I reach out to touch her but quickly pull back my hand.

"What's wrong? What's the matter?" Mom is suddenly awake, sitting upright.

"Nothing, Mom. I only wanted . . . I couldn't sleep."

"You're just nervous, Pilar."

"Yeah, well."

"Don't worry, *mi cielo*." Mom takes my hand and pats it gently. "Go back to bed."

The next morning, the bakery is hung with flags and streamers and a Dixieland band is playing "When the Saints Go Marching In." Mom is in her new red, white, and blue[1] two-piece suit, a matching handbag stiff on her elbow. She's giving away apple tartlets and brownies and cup after cup of coffee.

"Yes, my daughter created it," I hear her boast, trilling her "r" 's, clipping her vowels even more precisely than usual, as if her accent were partly responsible for the painting. "She is an *artista*. A very brilliant *artista*." Mom is pointing in my direction and I feel the sweat collecting at the small of my back. Someone from the *Brooklyn Express* snaps my picture.

At noon, Mom gingerly balances atop a stepladder on her tiny, size-four feet. The drum rolls endlessly as she pulls on the sheet. There's a stark silence as Liberty, in her full punk glory, glares down at the audience. For a brief moment, I imagine the sound of applause, of people calling my name. But my thoughts stop when I hear the hateful buzzing. It's as if the swarm of stick figures have come alive in their background, threatening to fly off the canvas and nest in our hair. The blood has drained from my mother's face and her lips are moving as if she wants to say something but can't form the words. She stands there, immobile, clutching the sheet against her silk blouse, when someone yells in raucous Brooklynese, "Gaaahbage! Whadda piece of gaaahbage!" A lumpish man charges Liberty with a pocketknife, repeating his words like a war cry.

Before anyone can react, Mom swings her new handbag and clubs the guy cold inches from the painting. Then, as if in slow motion, she tumbles forward, a thrashing avalanche of patriotism and motherhood, crushing three spectators and a table of apple tartlets.

And I, I love my mother very much at that moment.

[1] The colors of the American flag

1

Which choice best describes the overall structure of the passage?

A) Amusing events become serious and lead to a painful disclosure.

B) Unspoken resentment between two characters escalates into a heated argument.

C) A misunderstanding develops into a serious rift that is comically resolved.

D) Suspense about a revelation builds to a surprising climax.

2

Which choice best supports the idea that Pilar's fear that her mother will secretly look at her painting is based on prior experience?

A) Lines 1-2 ("I keep . . . work")

B) Lines 2-3 ("After . . . confidence")

C) Lines 3-5 ("So, before . . . door")

D) Lines 5-7 ("Mom . . . night")

CONTINUE

3

The main purpose of the second paragraph (lines 10-19) is to

A) reveal that Pilar's attempts to keep her painting a secret have taken precedence over actually completing the painting.

B) contrast Pilar's usual openness about her artwork with her fear of showing anyone her painting.

C) show how protective Pilar is of her privacy and suggest that her protectiveness may be damaging her relationship with her mother.

D) illustrate Pilar's anxieties about her mother's spying and her awareness that those anxieties may be unfounded.

4

Based on the passage, which choice best describes how Pilar manages her feelings the night before her painting is unveiled?

A) She reassures herself that there is no evidence that her mother dislikes the painting and that her mother has consistently been supportive of her art.

B) She visits her mother's room in the middle of the night and explains what ideas she was trying to communicate through her painting.

C) She attempts to convince herself that if her mother is upset about the painting, that would be her mother's fault, since she did not want to do the painting in the first place.

D) She imagines different reactions her mother might have to the painting, then reminds herself that her mother's reaction is less important to her artistic career than the public's reaction is.

5

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

A) Lines 32-35 ("Now . . . figure")

B) Lines 36-38 ("I try . . . expect")

C) Lines 39-42 ("At five . . . understand")

D) Lines 48-51 ("Nothing . . . well")

6

In the context of the passage, when Pilar uses the word "straight" (line 41), she most likely intends it to mean

A) continuously.

B) conventionally.

C) sequentially.

D) evenly.

CONTINUE

7

In the scene of the bakery opening, there is a contrast between

A) the festive atmosphere inside the bakery and Pilar's somber demeanor toward the guests.

B) Pilar's professed feelings about the United States and the critical attitude present in her painting.

C) Pilar's mother's outward display of patriotism and Pilar's radical rendition of the Statue of Liberty.

D) the attention that the crowd pays to Pilar's mother and the crowd's indifference to Pilar's painting.

8

According to the passage, what does Pilar notice about her mother's manner of speaking at the bakery opening?

A) She exaggerates her natural accent.

B) She overuses American slang.

C) She talks at a needlessly high volume.

D) She confuses common English words.

9

In lines 74-77, the use of the words "buzzing," "swarm," and "nest" helps to

A) dramatize Pilar's awareness of impending crisis.

B) reveal Pilar's susceptibility to irrational thoughts.

C) stress Pilar's hostility toward her mother.

D) convey the depth of Pilar's artistic insecurity.

10

Which choice best describes Pilar's mother's reaction to the unveiling of the painting, as presented in the passage?

A) Although she maintains outward composure, Pilar's mother dislikes the painting and only defends it because she thinks Pilar expects her to.

B) Although she is initially horrified by the painting, Pilar's mother gradually comes to admire it and stops the crowd from defacing it.

C) Although she is shocked and distressed by the painting, Pilar's mother instinctively protects it since it is her daughter's work.

D) Although she seems pleased, Pilar's mother actually disapproves of the painting and worries that it will harm her business.

CONTINUE

Questions 11-21 are based on the following passages.

Passage 1 is adapted from Albert Einstein, "Albert Einstein Warns of Dangers in Nuclear Arms Race." ©1950 by NBCUniversal Media, LLC. Passage 2 is adapted from Ronald Reagan, "Address to the Nation on Defense and National Security." Originally delivered in 1983. The USA and the USSR (the Soviet Union) engaged in a nuclear arms race from the late 1940s through the 1980s.

Passage 1

The idea of achieving security through national armament is, at the present state of military technique, a disastrous illusion. On the part of the U.S.A. this illusion has been particularly fostered by the fact that this country succeeded first in producing an atomic bomb. The belief seemed to prevail that in the end it would be possible to achieve decisive military superiority. In this way, any potential opponent would be intimidated, and security, so ardently desired by all of us, brought to us and all of humanity. The maxim which we have been following during these last five years has been, in short: security through superior military power, whatever the cost.

Is there any way out of this impasse created by man himself? All of us, and particularly those who are responsible for the attitude of the U.S.A. and the U.S.S.R., should realize that we may have vanquished an external enemy, but have been incapable of getting rid of the mentality created by the war [World War II]. It is impossible to achieve peace as long as every single action is taken with a possible future conflict in view. The leading point of view of all political action should therefore be: what can we do to bring about a peaceful coexistence and even loyal cooperation of the nations? The first problem is to do away with mutual fear and distrust. Solemn renunciation of violence (not only with respect to means of mass destruction) is undoubtedly necessary. Such renunciation, however, can be effective only if at the same time a supranational judicial and executive body is set up empowered to decide questions of immediate concern to the security of the nations. Even a declaration of the nations to collaborate loyally in the realization of such a "restricted world government" would considerably reduce the imminent danger of war.

In the last analysis, every kind of peaceful cooperation among men is primarily based on mutual trust and only secondly on institutions such as courts of justice and police. This holds for nations as well as for individuals. And the basis of trust is loyal give and take.

Passage 2

Since the dawn of the atomic age, we've sought to reduce the risk of war by maintaining a strong deterrent and by seeking genuine arms control. "Deterrence" means simply this: making sure any adversary who thinks about attacking the United States, or our allies, or our vital interests, concludes that the risks to him outweigh any potential gains. Once he understands that, he won't attack. We maintain the peace through our strength; weakness only invites aggression.

This strategy of deterrence has not changed. It still works. But what it takes to maintain deterrence has changed. It took one kind of military force to deter an attack when we had far more nuclear weapons than any other power; it takes another kind now that the Soviets, for example, have enough accurate and powerful nuclear weapons to destroy virtually all of our missiles on the ground. Now, this is not to say that the Soviet Union is planning to make war on us. Nor do I believe a war is inevitable—quite the contrary. But what must be recognized is that our security is based on being prepared to meet all threats.

There was a time when we depended on coastal forts and artillery batteries, because, with the weaponry of that day, any attack would have had to come by sea. Well, this is a different world, and our defenses must be based on recognition and awareness of the weaponry possessed by other nations in the nuclear age.

We can't afford to believe that we will never be threatened. There have been two world wars in my lifetime. We didn't start them and, indeed, did everything we could to avoid being drawn into them. But we were ill-prepared for both. Had we been better prepared, peace might have been preserved.

I know that all of you want peace, and so do I. I know too that many of you seriously believe that a nuclear freeze would further the cause of peace. But a freeze now would make us less, not more, secure and would raise, not reduce, the risks of war. It would be largely unverifiable and would seriously undercut our negotiations on arms reduction. It would reward

CONTINUE

the Soviets for their massive military buildup while preventing us from modernizing our aging and increasingly vulnerable forces. With their present margin of superiority, why should they agree to arms reductions knowing that we were prohibited from catching up?

11

As used in line 7, "decisive" most nearly means

A) immediate.
B) obstinate.
C) definitive.
D) indispensable.

12

Which sentence from Passage 1 provides the best evidence that Einstein believes that the defense philosophies of the USA and the USSR have led to an untenable situation?

A) Lines 11-14 ("The maxim . . . cost")
B) Lines 21-23 ("It is . . . in view")
C) Lines 23-26 ("The leading . . . nations")
D) Lines 26-27 ("The first . . . distrust")

13

It can reasonably be inferred from Passage 1 that Einstein would most likely agree with which assessment of the prevailing view about military preparedness?

A) It serves as a necessary transition from a militaristic past to a potentially peaceful future.
B) It demonstrates that nations may emerge from military conflict victorious yet struggle with that conflict's legacy for years to come.
C) It constitutes an irrational reaction to the pace at which military technology advances.
D) It has focused on formal relationships between governments at the expense of informal methods of diplomacy.

14

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

A) Lines 3-6 ("On the . . . bomb")
B) Lines 16-20 ("All of . . . war")
C) Lines 27-30 ("Solemn . . . necessary")
D) Lines 38-41 ("In the . . . police")

15

In Passage 1, Einstein argues that world peace will be achieved only if formal renunciations of violence are reinforced by the

A) creation of institutions possessing the authority to promote peace.
B) immediate destruction of all stockpiles of weapons of mass destruction.
C) widespread recognition that all cultures have an essentially pacifist worldview.
D) transitioning of nuclear technology from military to peaceful uses.

16

As used in line 49, "vital" most nearly means

A) invigorating.
B) physical.
C) essential.
D) animated.

CONTINUE

17

By referring to "coastal forts and artillery batteries" (lines 67-68), Reagan makes the point that

A) self-defense has not always been effective in preventing invasions by hostile foreign powers.

B) the defenses employed in a given era must be effective against that era's pressing military threats.

C) warfare is no more dangerous today than it was in previous periods of national history.

D) the most advanced weapons of the contemporary period will someday be regarded as antiques.

18

In Passage 2, Reagan speculates that had the United States employed deterrence in the first half of the twentieth century,

A) the United States might have acquired more powerful allies.

B) armed conflict would eventually have been seen as barbaric.

C) the United States might have been spared involvement in two world wars.

D) the Soviet Union would not have amassed nuclear arms.

19

It can be inferred from Passage 2 that Reagan would most likely argue that what Einstein calls "a disastrous illusion" (line 3) is a strategy that

A) promises to make the United States the world's dominant superpower.

B) discourages nations hostile to the United States from acting on aggressive intentions.

C) represents the only effective defense against unpredictable foreign leaders.

D) induces potential enemies to underestimate the power of the United States.

20

Based on Passage 2, how would Reagan most likely view the belief discussed by Einstein in lines 6-11 ("The belief . . . humanity")?

A) It has been advantageous to the United States in the past and remains relevant to this day.

B) It was held by all responsible leaders in the aftermath of the war.

C) It was professed by many but was not always consistently acted on.

D) It was founded on faith and therefore cannot be confirmed by supporting evidence.

21

Based on Passage 2, how would Reagan most likely have responded to Einstein's prescription for peace in lines 38-43?

A) He would have objected that nations cannot be expected to behave morally when their leaders act primarily out of self-interest.

B) He would have argued that institutions that aim to uphold the peace must ultimately be responsive to popular opinion.

C) He would have suggested that cooperation between nations is most effective when all parties share a common set of values.

D) He would have insisted that trust must be confirmed by objective evidence that other nations are upholding their obligations.

CONTINUE

Questions 22-32 are based on the following passage and supplementary material.

This passage is adapted from R. Ford Denison, *Darwinian Agriculture: How Understanding Evolution Can Improve Agriculture*. ©2015 by Princeton University Press.

Experiments with wild plant species often seem to show greater productivity from mixtures of species, relative to the average of those species grown separately. One such experiment has been directed for many years here in Minnesota. The higher-diversity treatments have indeed been more productive. However, as I will explain, it's not clear how well these results apply to other ecosystems, natural or agricultural.

Plots were seeded in 1994 with different numbers of wild prairie species per plot. By 1997, the eight-species plots had more than twice the growth of the average one-species plot. But averaging across all one-species plots may not be the best measure of monoculture's potential. An experienced farmer would choose the best monoculture crops, not average ones. How did the high-diversity prairie plots compare with the best one-species plots? In 1997, only 10 percent of two-species plots had more growth than the best one-species plots, and plots with even more species did no better. Over several years, however, the performance of the more-diverse plots apparently improved. When results for 1999 and 2000 were averaged, almost half of the sixteen-species plots had more growth than even the best single-species plot.

I visited Cedar Creek, the site of this famous experiment. The more-diverse plots certainly had more growth per plot, but what struck me was the surprisingly large amount of bare soil in the one-species plots. The only data I found published on this were from 1996, when one-species plots had only 1/3 plant cover. Low plant cover provides a simple explanation for why the one-species plots had such poor productivity: much of the sunlight potentially available to drive photosynthesis was hitting soil rather than leaves. Few farm fields—even few natural areas, aside from deserts—have so much bare soil by the middle of the growing season. Before applying results from Cedar Creek to agriculture, or to other natural areas, we need to know why the monoculture plots had such poor cover. Why didn't resident plants in the monoculture plots spread by runners or seeds into the bare areas?

Plots with a lot of bare soil might, perhaps, have had plenty of roots underground, consuming resources that seedlings would need to get established. But actually, less-diverse plots had less root mass and more soil nitrate than more-diverse plots, so seedlings should have done at least as well as in more-diverse plots. Seedlings did germinate in the one-species plots. In fact, seedling biomass there was about ten times as great as in sixteen-species plots, but they apparently didn't grow into adults. Why not?

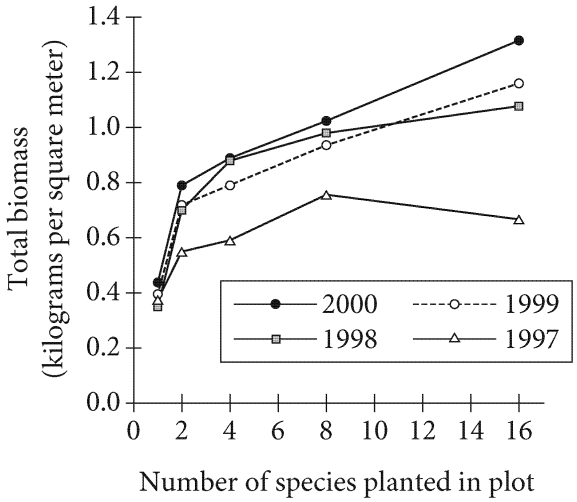
One possible explanation is that plots were weeded three or four times a year, to remove seedlings not belonging in a plot. Weeders attempted to minimize disturbance by pulling weeds while still small, but could outnumbered resident-species seedlings have been accidentally damaged or removed along with the invaders? I also wonder whether weeders might miss nonresident species more easily in a diverse plot than in a single-species plot. In a single-species plot, it may be more obvious which seedlings don't belong there, so they are more likely to be removed. It's interesting that a somewhat similar experiment nearby found "idiosyncratic" (that is, inconsistent) effects of species diversity on seed production, with diversity increasing seed production by some prairie species but decreasing seed production by others.

Whatever the reason for the low plant cover in single-species plots at Cedar Creek, we know that agricultural monocultures usually achieve complete cover. Therefore, the poor performance of the one-species plots at Cedar Creek is probably not representative of most agricultural monocultures.

CONTINUE

Figure 1

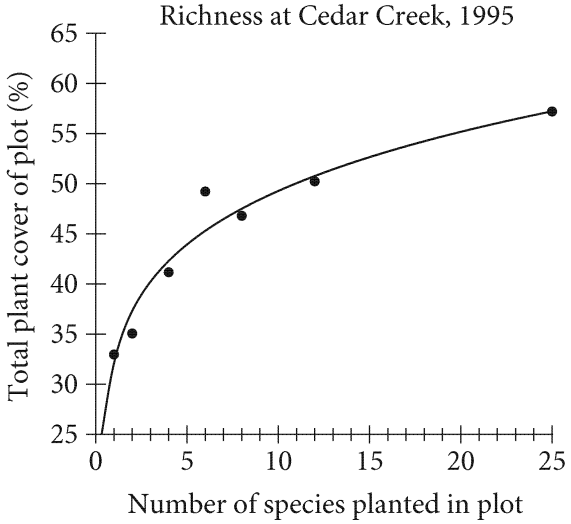
Total Biomass by Species Richness at Cedar Creek, 1997–2000



Adapted from David Tilman et al., "Diversity and Productivity in a Long-Term Grassland Experiment." ©2001 by American Association for the Advancement of Science.

Figure 2

Percent of Plant Cover by Species Richness at Cedar Creek, 1995



Adapted from David Tilman, David Wedin, and Johannes Knops, "Productivity and Sustainability Influenced by Biodiversity in Grassland Ecosystems." ©1996 by Springer Nature.

22

Over the course of the passage, the main focus shifts from a discussion of

A) the relationship between diversity and productivity for a particular plant species to an account of the most extensive study of that relationship.

B) a theory about plant diversification to a description of one practical application of that theory.

C) an experiment about how plant diversity affects productivity to a consideration of a puzzling feature of that experiment.

D) the results of an experiment on plant diversity to an explanation of the reason for those results.

23

Which choice provides the best evidence for the idea that there may have been a flaw in the execution of the experiment at Cedar Creek?

A) Lines 1-4 ("Experiments . . . separately")

B) Lines 13-17 ("But averaging . . . ones")

C) Lines 31-33 ("The only . . . cover")

D) Lines 62-65 ("I also . . . plot")

24

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

A) informed.

B) conducted.

C) targeted.

D) settled.

CONTINUE

25

As used in line 36, "drive" most nearly means

A) maneuver.
B) transport.
C) impress.
D) stimulate.

26

The questions in lines 42-44, 54-55, and 60-62 serve mainly to

A) identify remaining uncertainties regarding the research at Cedar Creek.
B) point out various weaknesses in the overall design of the experiment at Cedar Creek.
C) emphasize the complexity of the experiment conducted at Cedar Creek.
D) highlight reasons why the Cedar Creek study was unsuccessful in achieving its stated objectives.

27

Which statement about seedlings in the Cedar Creek plots is best supported by the passage?

A) Seedlings in high-diversity plots were more negatively affected by existing root systems than were seedlings in single-species plots.
B) Seedlings in high-diversity plots were more likely to be disturbed by weeding activities than they were in single-species plots.
C) Fewer seedlings in single-species plots reached maturity than expected, given germination rates of those seedlings.
D) More seedlings in high-diversity plots germinated than did seedlings in single-species plots.

28

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

A) Lines 48-51 ("But actually . . . plots")
B) Lines 51-54 ("Seedlings . . . adults")
C) Lines 56-58 ("One . . . plot")
D) Lines 65-67 ("In a . . . removed")

29

The passage indicates that when weeding the experimental plots, the weeders tried to

A) remove the invaders before they grew too large.
B) avoid bringing invaders into plots inadvertently.
C) leave patches of exposed soil undisturbed.
D) target only the most aggressive invader species.

30

The last paragraph of the passage primarily serves to

A) cast doubt on the idea that the Cedar Creek results provide a basis for general conclusions about monoculture farming.
B) introduce a new interpretation of the low plant cover experienced by some of the Cedar Creek plots.
C) explain some of the important differences between the Cedar Creek single-species plots and agricultural monoculture.
D) question the accuracy of the results obtained at Cedar Creek pertaining to single-species plots.

CONTINUE

31

According to the data in figure 1, in what year was the total biomass of a plot with 16 species at least 1.2 kilograms per square meter?

A) 1997

B) 1998

C) 1999

D) 2000

32

The data in figure 2 best support which claim made in the passage?

A) Less-diverse plots had less root mass than more-diverse plots had.

B) Underground root systems may have consumed resources that seedlings needed to become established.

C) There was a surprising amount of bare soil in the single-species plots.

D) Weed removal was considerably easier in single-species plots than it was in more-diverse plots.

CONTINUE

Questions 33-42 are based on the following passage and supplementary material.

This passage is adapted from Anne Pycha, "'R' is for Red: Common Words Share Similar Sounds in Many Languages." ©2016 by Scientific American, a division of Nature America, Inc.

Since the 1900s, linguists have argued that associations between speech sounds and meanings are purely arbitrary. Yet a new study calls this into question.

Together with his colleagues, Damián Blasi of the University of Zurich analyzed lists of words from 4,298 different languages. In doing so, they discovered that unrelated languages often use the same sounds to refer to the same meaning. For example, the consonant *r* is often used in words for *red*—think of French *rouge*, Spanish *rojo*, and German *rot*, but also Turkish *krmz*, Hungarian *piros*, and Maori *kura*.

The idea is not new. Previous studies have suggested that sound-meaning associations may not be entirely arbitrary, but these studies were limited by small sample sizes (200 languages or fewer) and highly restricted lists of words (such as animals only). Blasi's study, published in *Proceedings of the National Academy of Sciences USA*, is notable because it included almost two thirds of the world's languages and used lists of diverse words, including pronouns, body parts, verbs, natural phenomena, and adjectives—such as *we*, *tongue*, *drink*, *star* and *small*, respectively.

The scope of the study is unprecedented, says Stanka Fitneva, associate professor of psychology at Queen's University in Canada, who was not involved in the research. And Gary Lupyan, associate professor of psychology at the University of Wisconsin, adds, "Only through this type of large-scale analysis can worldwide patterns be discovered."

The method involved two key parts. The first step was to estimate how frequently the word for a given concept uses a particular sound by assigning binary values of 0 or 1 to associations in individual languages. For example, in English, the word for *red* uses the consonant *r* and therefore is scored a 1, while in Japanese, *aka* does not contain *r* and therefore receives a 0. Aggregating these numbers across the thousands of languages studied yields the overall probability that any word for *red* in any language will contain *r*—in this case, 0.35.

On its own, however, this calculation is not enough. There are thousands of words that use *r*—*road*, *mural*, and *waiter*, to name only a few English examples. So how do we know that the association between *red* and *r* is special? To address this question, the authors performed a second step, this time calculating the probability that any randomly selected word uses *r*. By comparing the two probabilities, they were able to show that across languages, *r* is more than twice as likely to occur in words for *red* than in other words. With this method, the researchers reported 74 robust associations between word sounds and meanings, including *l* and *leaf*, *l* and *tongue* (English is among the exceptions), and *n* and *nose*.

One limitation of the study is the relatively small number of meanings that were included in the analysis, points out Eric Holman, professor emeritus of psychology at the University of California, Los Angeles. Despite the diversity of meanings, the typical word list contained only 28 to 40 items. Another limitation concerns the transcription system, which collapsed certain distinctions (such as that between plain and nasal vowels, which are found in French words like *non*) that are known to play an important role in many languages.

The study raises some big-picture questions. Why, for example, should it be the case that culturally and geographically diverse groups of humans link the same sounds with the same meanings? Blasi and colleagues used statistical analyses to rule out the possibility that people happened to borrow words like *red* from neighboring languages, or that such words descended from the same ancient protolanguage. So the answer to this question remains elusive.

CONTINUE

Association between Sound and Words for the Same Concept across Languages

Concept	Sound symbol	
	Positive association	Negative association
Ash	u	–
Bone	k	y
Dog	s	t
Horn	k r	–
Leaf	b p l	–
Nose	u n	a
Red	r	–
Round	r	–
Sand	s	–
Water	–	t
We	n	p l s

Adapted from Damián. E. Blasi et al., "Sound-Meaning Association Biases Evidenced across Thousands of Languages." ©2016 by Damián E. Blasi et al.

33

As used in line 9, "refer to" most nearly means

A) quote.
B) indicate.
C) look at.
D) send to.

34

The author includes the list of words for "red" (lines 11-13) primarily to

A) emphasize the array of languages that Blasi analyzed.
B) identify the various types of words that Blasi studied.
C) exemplify the grammatical pattern that Blasi tried to explain.
D) illustrate the linguistic correlation that Blasi uncovered.

35

According to the passage, Blasi's research differed from previous research on the same subject in that it

A) incorporated extinct languages.
B) concentrated on fewer languages.
C) included more types of words.
D) excluded words coined recently.

36

Based on the passage, what could Blasi do to address a weakness that has been identified in his study?

A) Use a transcription system that is less sensitive to variations in pronunciation
B) Explain why some languages are exceptions to the observed associations
C) Include languages from a more geographically diverse range of cultures
D) Examine a more extensive list of words

37

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

A) Lines 44-45 ("On its . . . enough")
B) Lines 54-58 ("With . . . *nose*")
C) Lines 59-63 ("One . . . Los Angeles")
D) Lines 65-69 ("Another . . . languages")

CONTINUE

38

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

A) overlooked.
B) exhausted.
C) destroyed.
D) declined.

39

Which choice best supports the idea that Blasi anticipated and excluded one potential explanation for his findings?

A) Line 70 ("The study . . . questions")
B) Lines 71-74 ("Why . . . meanings")
C) Lines 74-78 ("Blasi . . . protolanguage")
D) Lines 78-79 ("So the . . . elusive")

40

According to the table, the "p" sound symbol is

A) less likely to appear in words for "leaf" than in other words.
B) less likely to appear in words for "we" than in other words.
C) more likely to appear in words for "we" than are the "l" or "s" sound symbols.
D) more likely to appear in words for "nose" than in other words.

41

Which statement about the concepts presented in the table is best supported by the data shown?

A) Nearly every concept exhibits negative associations with certain sound symbols.
B) Positive associations between sound symbols and concepts are more common than negative ones.
C) Concepts tend to have negative associations with vowel sound symbols more frequently than with consonant sound symbols.
D) No sound symbol has a positive association with one concept and a negative association with another concept.

42

Based on the table, English is an exception to the negative association observed between a sound symbol and which concept?

A) "Bone"
B) "Dog"
C) "Water"
D) "We"

CONTINUE

Questions 43-52 are based on the following passage.

This passage is adapted from Doug Macdougall, *Nature's Clocks: How Scientists Measure the Age of Almost Everything*. ©2008 by The Regents of the University of California. Metamorphic rocks are formed from sedimentary or igneous rocks exposed to heat and pressure.

What are currently claimed to be the earliest signs of life—and this is still a controversial claim—are found in ancient rocks from western Greenland. The evidence is not in the form of recognizable fossils, but rather in the properties of small blebs of graphite—pure carbon—that occur in metamorphic rocks and are thought to have a biological origin. The Greenland rocks are so old that over their long history they have been buried, heated, folded, and recrystallized almost beyond recognition, so much so that it has been difficult to determine whether they were originally sedimentary (formed from material deposited on Earth's surface or underwater) or igneous rocks (formed from cooling magma or lava). But recent detailed investigations by a team from the University of California and the University of Colorado have demonstrated that the Greenland rocks were almost certainly precipitated chemically from an ancient ocean. That at least allows the possibility that the graphite is carbon from once-living organisms that lived in the sea.

Carbon is one of the most abundant elements in the universe and is essential for all living things. Ordinary carbon is made up of two stable isotopes, carbon-12 and carbon-13; the numbers designating the isotopes are a measure of their mass, so carbon-12 is the "lighter" of the two isotopes. During biological processes such as photosynthesis, when living organisms take carbon from the environment to make the various components of their cells, they preferentially take up the lighter isotope because carbon-12 has slightly weaker chemical bonds than carbon-13, and it therefore reacts more readily. Thus biological carbon is always "light," enriched in carbon-12, an isotopic fingerprint that can be used to distinguish whether a particular sample is biological in origin. Even severe metamorphism that converts organic remains into graphite doesn't affect this signature. Just such a process apparently produced the Greenland graphite, because it carries the isotopic fingerprint of biological carbon: it is enriched in carbon-12.

The results for the Greenland samples are not in question: they indeed signify a biological origin. But some researchers have voiced doubts about whether this signature is original or was modified later (for example, by addition of organic carbon long after the rocks formed). There are passionate advocates on both sides of this controversy, but, as in all scientific debates, the matter will eventually be settled through continued research and collection of evidence. If for the moment we accept that the biological fingerprint is original, we can ask when the organisms that were eventually turned into graphite actually lived. In other words, what is the age of the original sedimentary rocks?

That question has now been answered definitively. The same team that confirmed the sedimentary origin of the graphite-containing rocks also identified bands of igneous rocks that cut across—and are therefore younger than—the sedimentary units. Zircon crystals extracted from these igneous rocks have been dated to 3.825 billion years. The graphite-bearing sediments must be older, although it is not possible to say exactly how much older.

If the Greenland graphite really did originate as biological carbon, life existed in the Earth's oceans before 3.8 billion years ago, only some 700 million years after the Earth formed. In some ways, this is not so surprising. All the necessary conditions have been in place from very early in our planet's history. We are the right distance from our principal source of energy, the sun, and the Earth hosts all the necessary chemical elements and compounds.

43

The primary purpose of the passage is to

A) describe research that clarified the source of organic matter in ancient Greenland rocks.

B) outline a method for determining whether metamorphic rocks were originally sedimentary or igneous.

C) discuss findings that may indicate the time by which life had appeared on Earth.

D) resolve a controversy about the dating of crystals in bands of igneous rocks from Greenland.

CONTINUE

44

The passage most strongly suggests that determining whether the Greenland rocks began as sedimentary or igneous rocks was significant because doing so

A) revealed a maximum possible age for the rocks.

B) showed the chemical composition of the ocean at the time the rocks formed.

C) established whether material within the rocks could be organic in origin.

D) suggested a likely source of the heat that led to the rocks becoming metamorphic.

45

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

A) Lines 4-7 ("The evidence . . . origin")

B) Lines 8-14 ("The Greenland . . . lava")

C) Lines 15-19 ("But recent . . . ocean")

D) Lines 19-21 ("That . . . sea")

46

Which concern does the author most directly address by including detailed information about carbon and its stable isotopes?

A) The soundness of the assumption that carbon was present in the ancient ocean

B) The validity of the isotopic fingerprint from which the researchers inferred the graphite's source

C) The integrity of the process the researchers used to extract graphite samples from the rocks

D) The precision of the researchers' measurements of carbon-12 in the rocks

47

As used in line 50, "settled" most nearly means

A) resolved.

B) arranged.

C) paid.

D) established.

48

The sentence in lines 51-54 ("If for . . . lived") primarily serves which function in the development of the passage?

A) It indicates that the author is withholding judgment on a controversy in order to consider the merits of both views.

B) It signals that the author is assuming the truth of a contested position in order to address a related question.

C) It acknowledges and rebuts a potential objection to an important assumption made by the author.

D) It explains the author's reasoning for advocating for one side in an ongoing debate.

49

Based on the passage, the main usefulness of dating the zircon crystals extracted from the igneous rock was to enable the researchers to

A) rule out the possibility that the carbon entered the sedimentary units in the Greenland rocks at some point after they formed.

B) establish a minimum age for the sedimentary units in the Greenland rocks.

C) prove that the Greenland graphite originated as biological carbon.

D) corroborate findings that suggest that Earth's oceans contained biological carbon 3.8 billion years ago.

CONTINUE

50

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

A) Lines 58-62 ("The same . . . units")
B) Lines 62-66 ("Zircon . . . much older")
C) Lines 67-71 ("If the . . . surprising")
D) Lines 71-75 ("All the . . . compounds")

51

The last paragraph of the passage serves mainly to

A) offer a revised version of a hypothesis presented earlier in the passage.
B) defend the integrity of the study results described throughout the passage.
C) acknowledge the possibility of an alternate interpretation of the research results described in the passage.
D) consider one implication of the scientific findings described earlier in the passage.

52

As used in line 71, "conditions" most nearly means

A) phases.
B) complications.
C) limitations.
D) factors.

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.

A Dizzying World Tour

During the 1950s, the US government wanted to establish friendly relations with the many new nations then declaring independence. 1 Seeking to present these countries with a fresh image of the United States, the Eisenhower administration put its support behind jazz 2 ambassadors; musicians tasked with representing American artistic originality to foreign audiences. One of

1

A) NO CHANGE
B) It sought to present these countries with a fresh image of the United States,
C) Seeking to present these countries with a fresh image of the United States and
D) It was seeking to present these countries with a fresh image of the United States,

2

A) NO CHANGE
B) ambassadors: musicians
C) ambassadors. Musicians
D) ambassadors musicians

CONTINUE

these was bebop jazz trumpeter and bandleader Dizzy Gillespie, 3 whose signature instrument was a trumpet with the bell bent at an upward angle.

While the United States had sent out musical delegations 4 before, but previous efforts had relied on classical musicians trained in European styles—suggesting to some that the United States produced no music truly its own. 5 To correct that perception, Representative Adam Clayton Powell Jr. argued to the State Department that future delegations should instead feature uniquely American creations such as folk music, spirituals, and especially jazz. Powell nominated Gillespie, known for his innovative playing and cordial manner, for the mission. The State Department agreed and, in spring of 1956, 6 dispatched Gillespie and a group of bandmates, sending them on tour.

3

Which choice establishes the main topic of the passage?

A) NO CHANGE
B) whose successors in the program included Louis Armstrong and Duke Ellington.
C) who would showcase the power of jazz to bring together listeners around the world.
D) who would run as an independent US presidential candidate in the 1964 election.

4

A) NO CHANGE
B) before,
C) before; however,
D) before and

5

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

A) NO CHANGE
B) In spite of these claims,
C) Accepting this to be true,
D) To maintain the status quo,

6

A) NO CHANGE
B) in sending Gillespie and a group of bandmates on tour, dispatched them.
C) sent Gillespie and a group of bandmates on tour.
D) sent Gillespie and a group of bandmates.

CONTINUE

The band would be put to the test at the tour's first stop in Abadan, Iran, 7 where the climate is hot and arid. The crowd's response to the band was tentative at first. 8 Before too much time had passed, however, the listeners were clapping along. Then they were cheering and whistling. The *Pittsburgh Courier* reported that "by intermission the theatre was as hot as any American spot where Dizzy performed for long-standing fans."

7

Which choice provides a relevant detail that supports the point made in the paragraph?

A) NO CHANGE
B) which is located approximately 33 miles from the Persian Gulf.
C) the birthplace of Persian pop singer Farzin.
D) where few were familiar with jazz.

8

Which choice most effectively combines the underlined sentences?

A) Before long, however, the listeners were clapping along, then cheering and whistling.
B) Then, the listeners were clapping along; then, they cheered and whistled.
C) Not too much time had passed before the listeners were clapping along; in addition, they could eventually be heard cheering and whistling.
D) Listeners were clapping along, however, and then cheering and whistling, all before too much time had passed.

CONTINUE

As the tour wound its way from Iran through South Asia and the Middle East, Gillespie won local affection by focusing on ordinary people. During the band's stay in Karachi, Pakistan, for instance, when drummer Charlie Persip was **9** unable for performing due to illness, Gillespie selected a local percussionist to replace him, to the delight of concertgoers. A few weeks later, at a concert reserved for invited guests in Ankara, Turkey, Gillespie noticed a group of young people waiting outside and would not begin until the American official in charge of the venue allowed them to enter.

In less than two months, Gillespie and his band visited ten cities across seven countries; they would also tour Latin America later that summer. For two decades afterward, the program would continue, sending numerous other jazz artists in **10** Gillespies footsteps' to play before enthusiastic crowds and to collaborate with foreign musicians. The cultural cross-pollination and good feeling achieved by the **11** tours led one Pakistani editorial to declare that all diplomacy ought to be translated into a score for jazz trumpet.

9

A) NO CHANGE
B) not able for performing
C) unable to perform
D) not able so as to perform

10

A) NO CHANGE
B) Gillespie's footstep's
C) Gillespies' footsteps
D) Gillespie's footsteps

11

Which choice provides the most appropriate conclusion to the passage?

A) NO CHANGE
B) tours were just a few highlights of Gillespie's long career as a jazz musician and bandleader.
C) tours, however, did little to prevent future tensions between the United States and other nations.
D) tours remind many Americans to revisit their favorite Dizzy Gillespie tunes.

CONTINUE

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

Robots Create Jobs

— 1 —

Since 1998, about 220,000 professional-service robots have been put to work in various industries, and robot sales across the globe are expected to grow significantly in the coming years. Robots 12 <u>were now</u> used for everything from assembling electronic gaming systems to painting cars to disinfecting hospital rooms. Though robots have been at work for a while, some studies are showing 13 <u>a mind-blowing</u> benefit: using robots can actually help companies create new jobs.

12

A) NO CHANGE
B) are now
C) had now been
D) were now being

13

A) NO CHANGE
B) an unexpected
C) a shocking
D) a jaw-dropping

CONTINUE

— 2 —

One industry that has experienced job creation from the use of robots is manufacturing. Using robots has helped many manufacturers run more efficient factories and lower the costs of making products. This in turn has allowed such companies to expand their businesses, which has created more jobs. When Wing Enterprises Inc., a ladder manufacturer in Springville, Utah, began using welding robots to keep up with growing demand for its 14 products, it saw an increase in productivity of 30 percent. These gains helped Wing build a new, larger facility—and expand from 20 to 400 employees. Another company, Crown Equipment, a manufacturer of electric forklifts in Greencastle, Indiana, bought three robot systems to produce specialized parts the company had not previously been able to make. Crown needed extra 15 employees to help meet the accompanying increase in its orders. Because of this increase, it expanded from 200 to 335 employees.

14

A) NO CHANGE
B) products. It
C) products, and then it
D) products; subsequently, it

15

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

A) employees, who were needed to help meet the accompanying increase in its orders, and expanded
B) employees to help meet the accompanying increase in its orders, so it expanded
C) employees and expanded to help meet the accompanying increase in its orders
D) employees; help was needed to meet the accompanying increase in its orders, so it expanded

CONTINUE

— 3 —

According to a study by the International Federation of Robotics (IFR), aside from jobs in the manufacture and operation of robots, 16 those amount to about 300,000 total, numerous nonrobotics industries have

16

A) NO CHANGE
B) they amount
C) it amounts
D) which amount

CONTINUE

experienced direct benefits. The automotive industry, for example, has seen a large increase in 17 jobs, conservative estimates by the IFR suggest that as many as 18 5 percent of jobs, totaling up to 150,000, in the industry have been created as a result of the use of robots. In the electrical and electronics industry, too, there have been 19 more than 15 million jobs created by the use of robots. Even in industries in which the percentage of jobs created by robots is relatively small—less than 1 percent in chemicals, pharmaceuticals, and plastics, for example—the actual number of jobs created may be as high as 150,000.

Jobs Created by Directly by the Use of Robots

Industry	Total estimated employment	Estimated percentage of jobs created by the use of robots	Total estimated number of jobs created by the use of robots
Robotics manufacturing and operation	300,000	100%	300,000
Food and drink	15–20 million	< 1%	50,000–100,000
Chemicals, pharmaceuticals, and plastics	8–10 million	< 1%	100,000–150,000
Foundries	1.5–2 million	1–2%	15,000–40,000
Electrical and electronics	12–15 million	5–10%	700,000–1.2 million
Automotive	10–12 million	10–15%	1–1.5 million

Adapted from Peter Gorle and Andrew Clive, "Positive Impact of Industrial Robots on Employment." ©2013 by Metra Martech Limited.

17

A) NO CHANGE
B) jobs, so
C) jobs:
D) jobs: and

18

Which choice uses accurate information from the table to most effectively support the point made in the sentence?

A) NO CHANGE
B) 2 percent of jobs, totaling up to 100,000,
C) 10 percent of jobs, totaling up to 1 million,
D) 15 percent of jobs, totaling up to 1.5 million,

19

Which choice provides accurate information from the table?

A) NO CHANGE
B) between 100,000 and 150,000
C) between 700,000 and 1.2 million
D) up to 2 million

CONTINUE

— 4 —

While it is true that some jobs in certain industries have been lost to robots, in many others there has been marked job creation. 20 Indeed, companies across the 21 nation, have benefited from the use of robots. Because of the potential of robots to increase productivity in many industries, experts in robotics and business expect that robots will continue to create jobs in the future.

Question 22 asks about the previous passage as a whole.

20

A) NO CHANGE
B) Meanwhile,
C) However,
D) Nevertheless,

21

A) NO CHANGE
B) nation have benefited,
C) nation: have benefited
D) nation have benefited

Think about the previous passage as a whole as you answer question 22.

22

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

> Many other industries have seen similar gains from the use of robots.

The best placement for the sentence is at the beginning of

A) paragraph 1.
B) paragraph 2.
C) paragraph 3.
D) paragraph 4.

CONTINUE

Questions 23-33 are based on the following passage.

Reproducing Results

Scientific discoveries are often built on 23 vast amounts of complicated data that are 24 based from even more complicated methods. Scientists submit their work to their peers for review before their findings can be published in scientific journals. Although peer review helps prevent bad science from reaching the masses, it doesn't ensure that the exact details of an experimental method are fully described. Lack of clarity 25 opposes efforts to conduct replication studies—studies that provide a means of validating published experimental results and exploring new scientific avenues with proven methods. Because such efforts are critical to ensuring the validity of scientific research, they should be supported by more organizations.

23

Which choice most closely matches the style and tone of the passage?

A) NO CHANGE
B) titanic aggregates
C) humongous masses
D) gargantuan quantities

24

A) NO CHANGE
B) on a basis of
C) based on
D) in basis of

25

A) NO CHANGE
B) subdues
C) hampers
D) resists

CONTINUE

Scientific journals and funding agencies have traditionally emphasized and rewarded groundbreaking studies. 26 Sometimes a major finding, such as a potential new treatment for a disease, draws positive attention to the study and its publisher. However, stressing innovative studies sometimes 27 have had the unintended consequence of reducing incentives for scientists to repeat other researchers' experiments. Scientists are willing to undertake replication studies, but they require institutional support to do so. The results of a questionnaire on reproducibility published by the science journal *Nature* indicate that almost 80 percent of the respondents endorsed increasing incentives (such as funding) as a reproducibility-enhancing practice. 28 This suggests that if replication studies were easier to fund and publish, more scientists might undertake them.

26

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

A) NO CHANGE
B) The reason for this is clear:
C) Though it seems counterintuitive,
D) Many consumers study developments in the sciences:

27

A) NO CHANGE
B) have
C) has
D) are having

28

Which choice provides the most effective conclusion to the paragraph?

A) NO CHANGE
B) This questionnaire was advertised on websites associated with *Nature* and emailed to the journal's subscribers.
C) Regardless, a majority of the respondents to the questionnaire indicated that they trust most published scientific literature.
D) Scientists interested in conducting reproducibility studies may hesitate to reach out to the original researchers for fear of appearing incompetent.

CONTINUE

Additionally, all procedures used in original studies should consistently be made accessible so that scientists can authenticate one another's conclusions. 29 Similarly, authentication efforts in the fine arts benefit from the accessibility of key documents such as ownership records. In a 2017 article, "A Manifesto for Reproducible 30 Science" Marcus R. Munafò of the University of Bristol, United Kingdom, and his coauthors 31 site research that found that 40 percent of published psychology reports failed to mention one or more of the experimental conditions of the experiments. As the

29

The writer is considering deleting the underlined sentence. Should the sentence be kept or deleted?

A) Kept, because it establishes an important comparison between authentication procedures in the arts and those in the sciences.

B) Kept, because it offers evidence that supports the paragraph's claim about the need for accessibility.

C) Deleted, because it fails to include a relevant example of how ownership records have aided in authentication efforts.

D) Deleted, because it gives information about the world of fine arts that is only loosely related to the discussion in the passage.

30

A) NO CHANGE

B) Science,"

C) Science"—

D) Science";

31

A) NO CHANGE

B) has cited

C) cite

D) has sited

CONTINUE

authors note, 32 not all studies may merit replication; it is therefore crucial that research institutions and publishers develop comprehensive standards for sharing experimental designs and results.

Confirming the validity of experimental 33 results, is critical to the progress of science. Granted, scientific organizations do have limited resources, and an increased emphasis on replicating past findings should not come at the expense of important, cutting-edge research. But if studies are replicated effectively, reproducibility will promote rather than hinder scientific endeavors, differentiating promising opportunities from unproductive dead ends.

32

Which choice most effectively sets up the claim made in the next part of the sentence?

A) NO CHANGE
B) the ability to discover unexpected patterns in data is an important aspect of creativity in the sciences;
C) proposing a solution to a problem such as this does not ensure that the solution will be successful;
D) this lack of clarity discourages scientists from conducting replication studies;

33

A) NO CHANGE
B) results is critical
C) results is critical,
D) results, is critical—

CONTINUE

Questions 34-44 are based on the following passage.

Katherine Dunham: Anthropologist, Dancer, Innovator

Imagine the spine as a pole. From that pole, flexible yet firm, extend the shoulders—dropped, to elongate the 34 bodies line's—and the limbs, isolated in movement from each other and the torso so the whole body can move to multiple rhythms at once. This polyrhythmic movement is a defining feature of the choreography of Katherine Dunham. By establishing it and other characteristics of Afro-Caribbean dance in the repertoire of modern dance in the United States, Dunham 35 succeeded where others before her had failed.

34

A) NO CHANGE
B) body's line's—
C) bodies lines'—
D) body's lines—

35

The writer wants the sentence to reflect the main idea of the passage. Which choice best accomplishes this goal?

A) NO CHANGE
B) exemplified the creativity that an interdisciplinary education can inspire.
C) broke new ground and created a lasting influence.
D) taught dancers to move in ways that many found to be challenging and unfamiliar.

CONTINUE

Dunham's revolutionary choreography 36 had a genesis. It was in her studies in cultural anthropology and dance. 37 As an anthropology student at the University of Chicago, Dunham had become interested in Afro-Caribbean cultures. At the same time, as a young dancer, she was eager to explore styles of movement outside the tradition of classical ballet in which she had

36

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

A) had, in her studies, its genesis
B) had its genesis in her studies
C) had its genesis; it was her studies—
D) had, in addition to her studies, its genesis

37

At this point, the writer is considering adding the following sentence.

> At the time of her studies, anthropology was a relatively young discipline, its modern form having only begun to emerge during the second half of the nineteenth century.

Should the writer make this addition here?

A) Yes, because it provides relevant information about Dunham's chosen profession.
B) Yes, because it indicates that Dunham took a calculated risk in choosing to study anthropology.
C) No, because it blurs the paragraph's focus on the development of Dunham's style of choreography.
D) No, because it repeats information from elsewhere in the passage about the era in which Dunham was studying.

CONTINUE

trained. 38 This led her to the Caribbean, where, from 1935 to 1936, she lived in several nations (Jamaica, Trinidad, Martinique, and Haiti), learning about their dances by immersing 39 themselves in their societies and customs. Such customs included religious rituals, where ceremonial drumming might underscore complex and ecstatic movement, as well as everyday aspects of life, such as villagers' journeys to and from the markets in Haiti, which were, Dunham wrote, "always shaped rhythmically and always, even if watched from a distance, in some sort of choreography."

38

A) NO CHANGE
B) Those
C) The interest is what
D) These interests

39

A) NO CHANGE
B) herself
C) oneself
D) itself

CONTINUE

Dunham's fieldwork resulted in several books and laid the foundation for decades of her own 40 choreography. Which changed the shape of modern dance by broadening its cultural basis. In the early twentieth century, dance as a serious art form had primarily reflected European influences. Ballet had its roots in court dances of the Renaissance, and early practitioners of modern dance had been inspired by such sources as paintings on ancient Greek vases. 41 In contrast, Dunham's choreography, while incorporating some elements of European 42 dance, (such as the dropped shoulders of ballet), privileged Afro-Caribbean influences (such as polyrhythmic movement).

40

A) NO CHANGE
B) choreography, which
C) choreography: which
D) choreography; which

41

A) NO CHANGE
B) Therefore,
C) Additionally,
D) In other words,

42

A) NO CHANGE
B) dance (such as the dropped shoulders of ballet)
C) dance, (such as the dropped shoulders of ballet)
D) dance (such as the dropped shoulders of ballet),

CONTINUE

[1] Among those indebted to Dunham was 43 celebrated modern dancer and choreographer Alvin Ailey. [2] When it premiered in 1987, Alvin Ailey American Dance Theater's *The Magic of Katherine Dunham* met with wide acclaim, introducing Dunham to a new generation of audiences and ensuring her legacy as one of modern dance's great innovators. [3] A young Ailey had seen Dunham and her company perform in 1943. [4] Decades later, after founding his own company, Ailey produced a program of Dunham's works that had not been staged in many years. 44

43

Which choice is most consistent with the paragraph's characterization of work produced by Ailey?

A) NO CHANGE
B) mythic
C) infamous
D) visible

44

To make this paragraph most logical, sentence 2 should be placed

A) where it is now.
B) before sentence 1.
C) after sentence 3.
D) after sentence 4.

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.

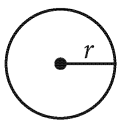
DIRECTIONS

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.

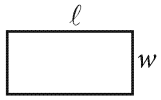
NOTES

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.

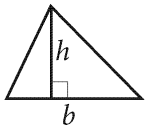
REFERENCE



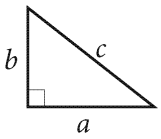
$A = \pi r^2$
$C = 2\pi r$



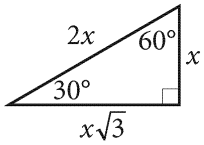
$A = \ell w$

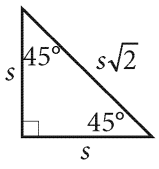


$A = \frac{1}{2}bh$

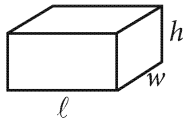


$c^2 = a^2 + b^2$

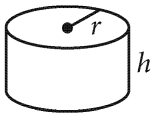




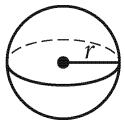
Special Right Triangles



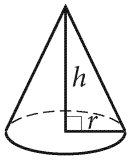
$V = \ell wh$



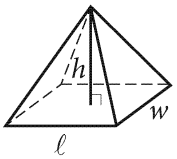
$V = \pi r^2 h$



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



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



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

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.

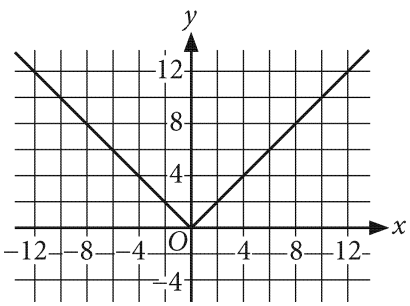
CONTINUE

1

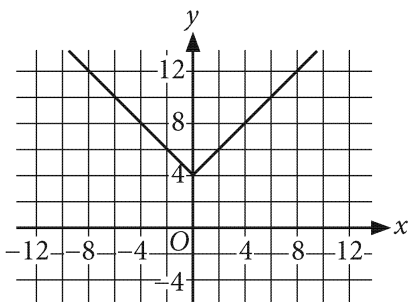
x	y
−8	8
−4	4
0	0
4	4
8	8

The table shown includes some values of x and their corresponding values of y. Which of the following graphs in the xy-plane could represent the relationship between x and y ?

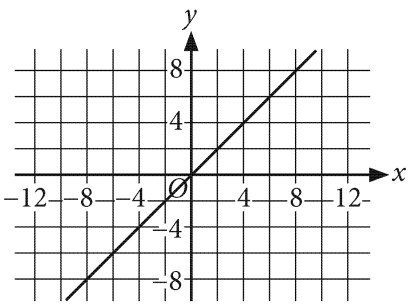
A)



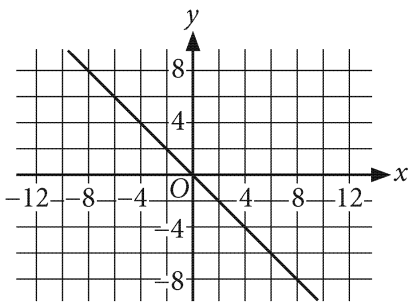
B)



C)



D)



CONTINUE

2

$$2x + 1 = 1 - 4x$$

What is the solution to the given equation?

A) $-\frac{1}{4}$

B) 0

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

D) $\frac{1}{2}$

3

Which of the following is equivalent to $(x + 5)(x + 1)$?

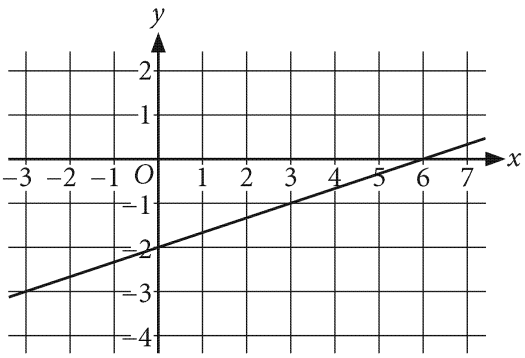
A) $x^2 + 5x + 1$

B) $x^2 + 5x + 5$

C) $x^2 + 6x + 5$

D) $x^2 + 6x + 6$

4



Which of the following is an equation of the graph shown?

A) $y = \frac{1}{3}x + 6$

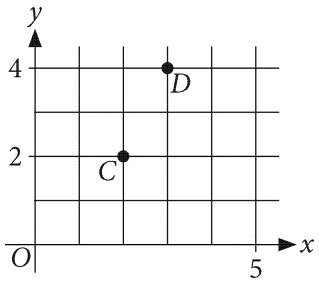
B) $y = \frac{1}{3}x - 2$

C) $y = 3x + 6$

D) $y = 3x - 2$

CONTINUE

5



In the xy-plane above, the equation of the line (not shown) that contains points C and D can be written in the form $y = mx + b$, where m and b are constants. What is the value of m ?

A) -2

B) $\frac{1}{2}$

C) 1

D) 2

6

A bicyclist's average speed was 0.25 kilometer per minute. The bicyclist traveled d kilometers in t minutes. Which of the following represents d in terms of t ?

A) $d = \frac{0.25}{t}$

B) $d = \frac{t}{0.25}$

C) $d = 0.25t$

D) $d = t + 0.25$

7

$$f(x) = (2x - 3)(x + 4)(x - 4)$$

The function f is defined above. In the xy-plane, how many of the x-intercepts of the graph of $y = f(x)$ have positive x-coordinates?

A) None

B) One

C) Two

D) Three

CONTINUE

8

$$12x + 10 = px + 10$$

In the given equation, p is a constant. If the equation has exactly one solution, which of the following could NOT be a value of p ?

A) 10

B) 11

C) 12

D) 13

9

The function $P(x) = 685(1.128)^x$ models the population of gray seal pups each year from 1967 through 1997 on Sable Island, Nova Scotia, where x is the number of years after 1967. Which of the following is the best interpretation of $P(10) = 2{,}284$ in this context?

A) The number of gray seal pups is estimated to be 2,284 in 1977.

B) The number of gray seal pups is estimated to be 10 greater in 1977 than in 1967.

C) The number of gray seal pups is estimated to be 10 times greater in 1977 than in 1967.

D) The number of gray seal pups is estimated to increase by 2,284 every 10 years between 1967 and 1997.

10

$$y = 100(0.5)^{\frac{x}{13}}$$

The given equation models the relationship between the predicted value y, in dollars, of a certain piece of technology and the time x, in weeks, since it was purchased. Assuming there are 52 weeks in a year, which of the following equations models the relationship between the predicted value, y, of the technology and the time t, in number of years, since it was purchased?

A) $y = 100(0.5)^{4t}$

B) $y = 100(0.5)^{13t}$

C) $y = 100(2)^{\frac{t}{13}}$

D) $y = 100(8)^{\frac{t}{13}}$

CONTINUE

11

Anna is driving her car away from her house at a constant rate along a straight road. She passes the library and continues at the same rate. Her distance $d(x)$, in miles, from her house x minutes after she passes the library is given by the function $d(x) = 0.5x + 1.5$. What is the meaning of the y-intercept of the graph of $y = d(x)$ in the xy-plane?

A) Anna's distance, in miles, from her house 0.5 minutes after passing the library

B) Anna's distance, in miles, from her house 1.5 minutes after passing the library

C) The number of minutes it took Anna to drive from her house to the library

D) The distance, in miles, from Anna's house to the library

12

How many real solutions does the equation $(x - 3)(x^2 - 5x + 8) = 0$ have?

A) One

B) Two

C) Three

D) Four

13

The point (a, b) in the xy-plane is a solution of $y > 2x - 12$. If a and b are integers and $b < 0$, what is the greatest possible value of a ?

A) 4

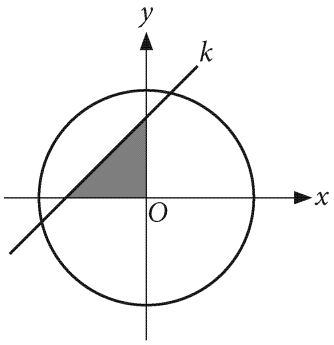
B) 5

C) 6

D) 7

CONTINUE

14



In the xy-plane, line k has an x-intercept of $(-3, 0)$ and a y-intercept of $(0, 3)$, and the circle with center O has radius 4. What fraction of the area of the circle is shaded?

A) $\frac{3}{16\pi}$

B) $\frac{9}{32\pi}$

C) $\frac{9}{16\pi}$

D) $\frac{3}{4\pi}$

15

$$\frac{x^2 + x}{x + 3}$$

The expression above can be rewritten in the form $A + \frac{6}{x + 3}$, where A is a polynomial. Which of the following represents A ?

A) $x - 2$

B) $x + 2$

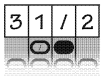
C) $x^2 + x$

D) $x^2 + x - 6$

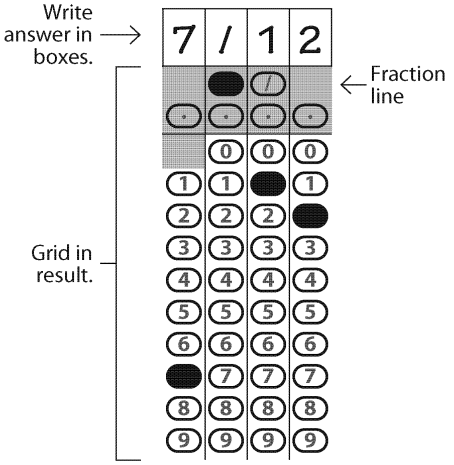
CONTINUE

DIRECTIONS

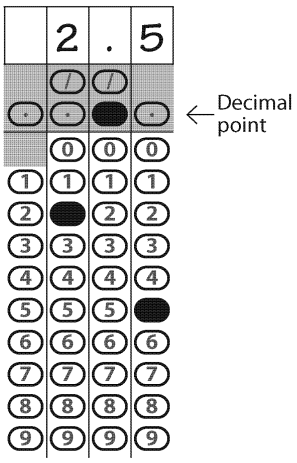
For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

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.

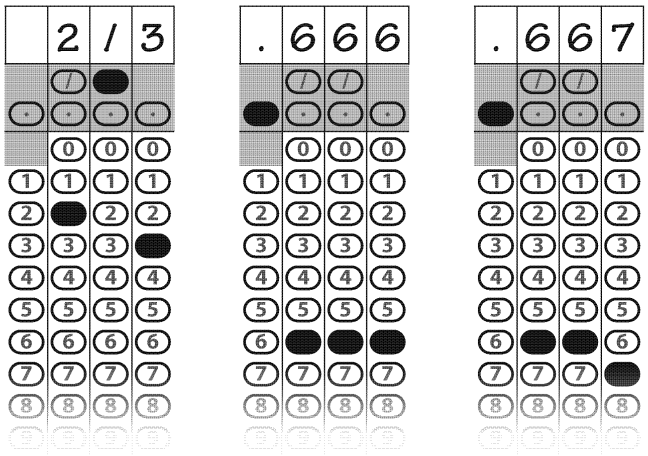
Answer: $\frac{7}{12}$ are:



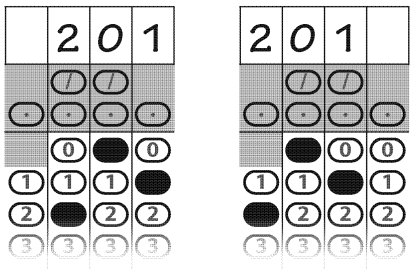
Answer: 2.5



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

16

$$y = 10$$
$$y = x + 4$$

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

17

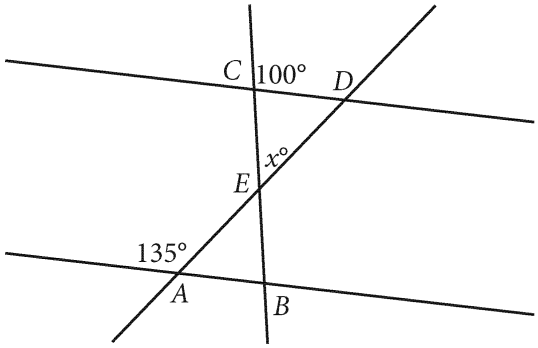
What value of z satisfies the equation $2 = \sqrt{5 - \frac{4}{z}}$?

18

A right triangle has sides of length 7, 24, and 25. What is the area of the triangle?

CONTINUE

19



In the figure shown, $\overline{AB} \parallel \overline{CD}$ and $\overline{AD}$ intersects $\overline{BC}$ at point E. What is the value of x ?

20

$$8x^2 - 14x + 3 = 0$$

What is a solution to the given equation?

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.

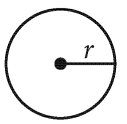
DIRECTIONS

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 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

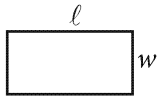
NOTES

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.

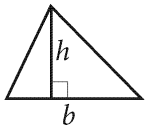
REFERENCE



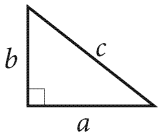
$A = \pi r^2$
$C = 2\pi r$



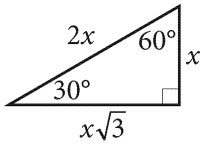
$A = \ell w$

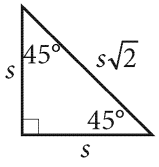


$A = \frac{1}{2}bh$

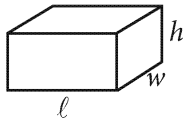


$c^2 = a^2 + b^2$

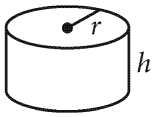




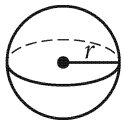
Special Right Triangles



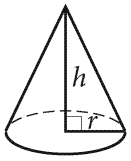
$V = \ell wh$



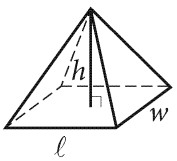
$V = \pi r^2 h$



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



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



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

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

What is 10% of 45 ?

A) 4.5

B) 10

C) 35

D) 49.5

2

If $8p + 16 = 32 + 16$, what is the value of p ?

A) 2

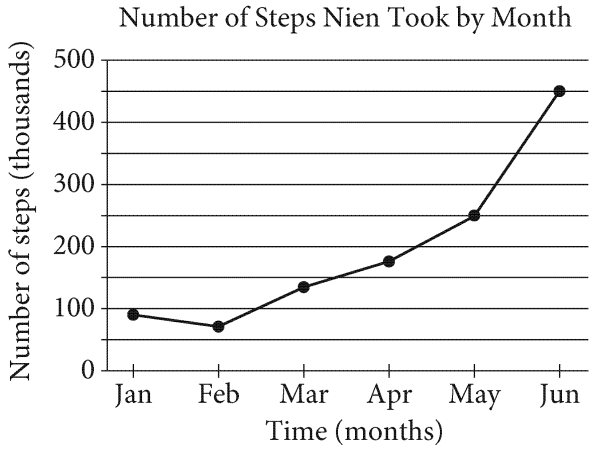
B) 4

C) 8

D) 16

3

Nien records the number of steps he takes walking or running. The line graph shows the total number of steps, in thousands, Nien took each month during the first six months of the year.



Which of the following is closest to the number of steps, in thousands, Nien took in May?

A) 50

B) 100

C) 250

D) 450

CONTINUE

4

The daily total revenue S, in dollars, for an ice-cream parlor in the month of July can be estimated from the daily high temperature T, in degrees Fahrenheit, using the equation $S = 17T - 700$. If the high temperature is 90 degrees Fahrenheit on a particular day, what is the best estimate of the total revenue for the parlor on that day?

A) $660

B) $740

C) $830

D) $880

5

Element	Atomic weight
Helium	4.003
Neon	20.18
Argon	39.95
Krypton	83.80
Xenon	131.3

The table gives the atomic weights of five elements. What fraction of these elements has an atomic weight that is greater than 100 ?

A) 0

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

C) $\frac{2}{5}$

D) $\frac{3}{5}$

6

The number 42 is 15% of x. What is the value of x ?

A) 6.3

B) 48.3

C) 280

D) 630

CONTINUE

Questions 7 and 8 refer to the following information.

$$c(t) = 52 - 14t$$

The Norfolk and Western Class A locomotive is a steam locomotive that was built in the late 1930s and burns coal to produce steam to operate. When the Class A locomotive is filled to its maximum capacity with coal, the amount of coal $c(t)$, in thousands of pounds, that remains in the locomotive t hours after it operates at its maximum speed (not including breaks) can be modeled by the function shown.

7

The Class A locomotive begins a 2-hour trip with the maximum amount of coal, and it operates at its maximum speed for the entire trip. What is the predicted amount of coal, in thousands of pounds, remaining in the locomotive at the end of the trip?

A) 52

B) 28

C) 24

D) 14

8

Which of the following is the best interpretation of the number 14 in this context?

A) The approximate time, in hours, that it takes the Class A locomotive to burn 52 thousand pounds of coal while operating at its maximum speed

B) The approximate amount of coal, in thousands of pounds, that remains in the locomotive after 1 hour

C) The approximate maximum amount of coal, in thousands of pounds, that the Class A locomotive can hold

D) The approximate rate, in thousands of pounds per hour, at which the coal in the Class A locomotive burns while operating at its maximum speed

CONTINUE

9

At a postal facility, the cost, in dollars, of mailing a package weighing p ounces is given by the function $f(p) = 0.20p + k$, where k is a constant. If the cost of mailing a package that weighs 12 ounces is \$3.32, then according to the function, how many ounces does a package weigh that costs \$4.12 to mail?

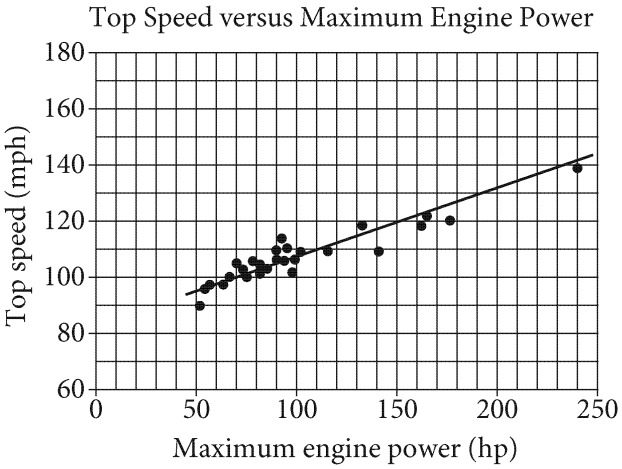
A) 16
B) 18
C) 20
D) 22

10

The ratio between a certain object's momentum and its velocity is p to v, where p and v are constants. If the object's velocity is $4v$, what is the object's momentum in terms of p ?

A) $2p$
B) $4p$
C) $8p$
D) $16p$

Questions 11 and 12 refer to the following information.



A consumer advocacy group tested 27 cars. The scatterplot shows the maximum engine power x, in horsepower (hp), and the top speed y, in miles per hour (mph), for each of the 27 cars. A line of best fit for the data is also shown.

11

Based on the line of best fit, which of the following is closest to the predicted top speed, in mph, of a car with a maximum engine power of 230 hp?

A) 120
B) 130
C) 140
D) 150

CONTINUE

12

Which of the following could be the equation of the line of best fit shown?

A) $y = 82 + 0.25x$

B) $y = 86 + 2.5x$

C) $y = 85 + 4x$

D) $y = 89 + 25x$

13

$$\frac{8}{x^2} = 32$$

Which of the following is a value of x that satisfies the given equation?

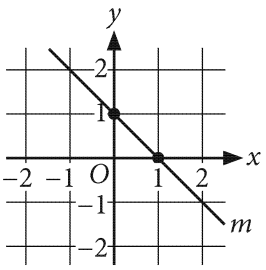
A) $-\frac{1}{4}$

B) $-\frac{1}{16}$

C) $\frac{1}{8}$

D) $\frac{1}{2}$

14



Line m is shown in the xy-plane. Line k (not shown) is perpendicular to line m and also passes through $(1, 0)$. Which of the following is the slope of line k ?

A) -2

B) -1

C) 1

D) 2

15

A rectangle has width w and length ℓ. If the perimeter of the rectangle is greater than 25, which of the following inequalities must be true?

A) $w + \ell > 25$

B) $2w + 2\ell > 25$

C) $w + \ell < 25$

D) $2w + 2\ell < 25$

CONTINUE

16

Which of the following expressions is equivalent to $(x-3)^2-4$?

A) $(x-6)(x+1)$

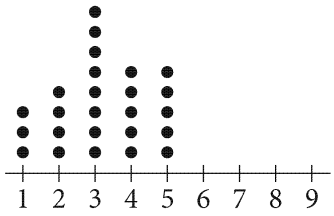
B) $(x+6)(x-1)$

C) $(x-5)(x+1)$

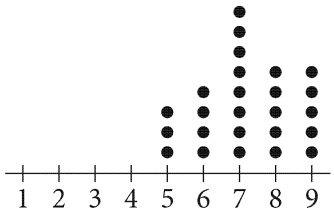
D) $(x-5)(x-1)$

17

Two different data sets are displayed in the dot plots shown. Which of the following statements is true?



Data set I



Data set II

A) The mean of data set I is less than the mean of data set II, but the standard deviations of the data sets are the same.

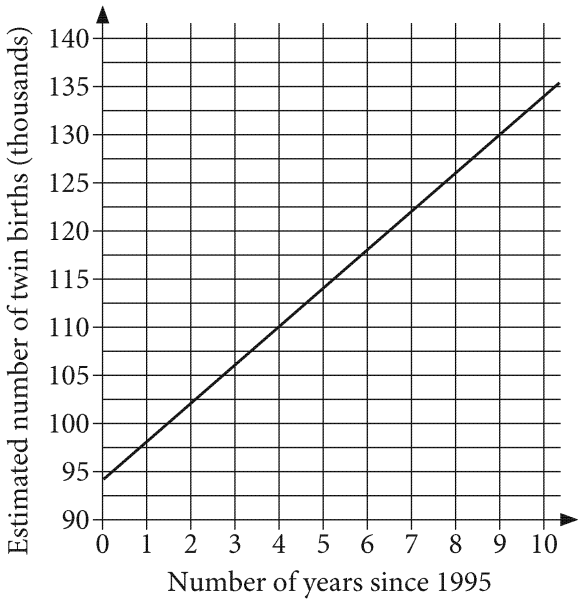
B) The mean of data set I is less than the mean of data set II, but the standard deviation of data set I is greater than the standard deviation of data set II.

C) The mean and standard deviation of data set I are less than the mean and standard deviation of data set II.

D) The mean and standard deviation of data set I are the same as the mean and standard deviation of data set II.

CONTINUE

18



The annual number of twin births in the United States from 1995 to 2005 can be modeled by the linear function f, where $f(x)$ is the estimated annual number of twin births, in thousands, in the United States x years since 1995. The graph of f is shown in the figure. Which of the following could define f?

A) $f(x) = x$

B) $f(x) = x + 94$

C) $f(x) = 4x + 94$

D) $f(x) = \frac{1}{4}x + 94$

19

The ratio of capillary surface area to alveolar surface area in a mouse's lungs is approximately 3 to 2. If the alveolar surface area of a particular mouse is 82.2 cm^2, the capillary surface area in that mouse is closest to which of the following?

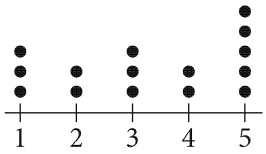
A) 41 cm^2

B) 55 cm^2

C) 123 cm^2

D) 164 cm^2

20



Which of the following statements is true about the mean and median of the 15 data values represented in the dot plot above?

A) The mean is greater than the median.

B) The mean is less than the median.

C) The mean is equal to the median.

D) The relationship between the mean and the median cannot be determined from the information given.

CONTINUE

21

$$x^2 + bx + 16 = 0$$

In the given equation, b is a constant. If the equation has exactly one solution, which of the following could be the value of b ?

A) 16

B) 0

C) −2

D) −8

22

Which of the following is(are) true about $x + 3$ and 3^x ?

I. $x + 3 > 3^x$, for all $x > 0$

II. $x + 3 > 3^x$, for all $x < 0$

A) I only

B) II only

C) I and II

D) Neither I nor II

23

In a collection of objects, y objects have a certain trait and the remaining n do not, when $0 < y < n$. If an object from the collection is selected at random, what is the probability that it has the trait?

A) $\frac{n}{y}$

B) $\frac{y}{n}$

C) $\frac{n}{y+n}$

D) $\frac{y}{y+n}$

24

A certain university classifies students as freshmen, sophomores, juniors, seniors, or graduate level. The mean number of students per classification is 6,000. If students classified as graduate level are excluded from the calculation, the mean number of students per classification is 7,000. Which of the following could be the number of students classified as graduate level?

A) 1,000

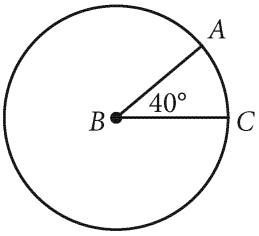
B) 2,000

C) 4,000

D) 5,000

CONTINUE

25



The circle above has center B and radius 6. What is the length of arc $\overset{\frown}{AC}$?

A) $\frac{1}{9}\pi$

B) $\frac{1}{6}\pi$

C) $\frac{2}{3}\pi$

D) $\frac{4}{3}\pi$

26

The percentage of households that owned a videocassette recorder (VCR) in the United States, $f(t)$, each year from 1980 to 1995 can be modeled by the function f, where t is the number of years after 1980. Which of the following is the best interpretation of $f(10) = w$, where w is a constant, in this context?

A) In 1990, there were w households in the United States that owned a VCR.

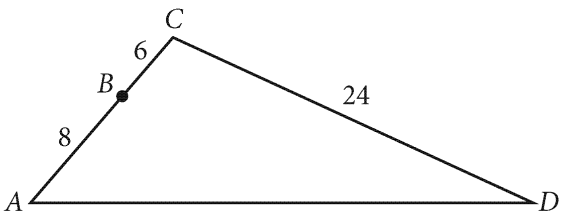
B) In 1990, w% of households in the United States owned a VCR.

C) The percentage of households in the United States that owned a VCR w years after 1990 was 10.

D) There were 10 times more households in the United States that owned a VCR w years after 1980 than in 1980.

CONTINUE

27



In triangle ACD above, point E (not shown) is k units from point C on $\overline{CD}$. If triangle BCE is similar to triangle ACD, what is the value of k ?

A) $\frac{34}{3}$

B) 11

C) $\frac{72}{7}$

D) 10

28

The height of a triangle is h centimeters, and the base of the triangle is 10 centimeters greater than the height. Which of the following represents the area A, in square centimeters, of the triangle?

A) $A = \frac{1}{2}h^2 - 5h$

B) $A = \frac{1}{2}h^2 + 5h$

C) $A = \frac{1}{2}h^2 - 10h$

D) $A = \frac{1}{2}h^2 + 10h$

CONTINUE

29

In 2012, 31.9 million tons of plastics and 11.5 million tons of glass were discarded in the United States. Of the discarded plastics and glass, 8.8% of the plastics and 27.7% of the glass were recycled. The number of tons of recycled glass was approximately what percent greater than the number of tons of recycled plastics?

A) 13.5%

B) 14.7%

C) 15.1%

D) 18.9%

30

The function h is defined by $h(x) = a^x - b$, where a and b are constants. The graph of $y = h(x)$ in the xy-plane passes through the points $(0, -4)$ and $(1, 1)$. What is the value of a ?

A) 3

B) 4

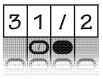
C) 5

D) 6

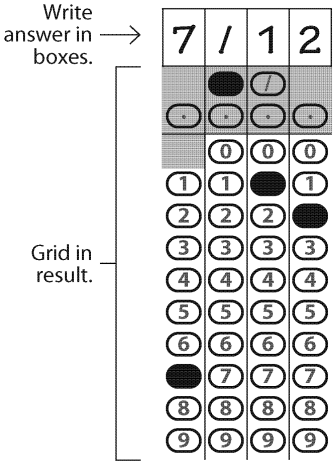
CONTINUE

DIRECTIONS

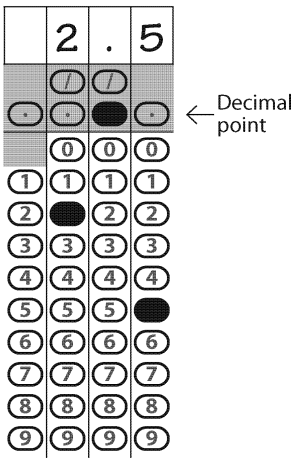
For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

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.

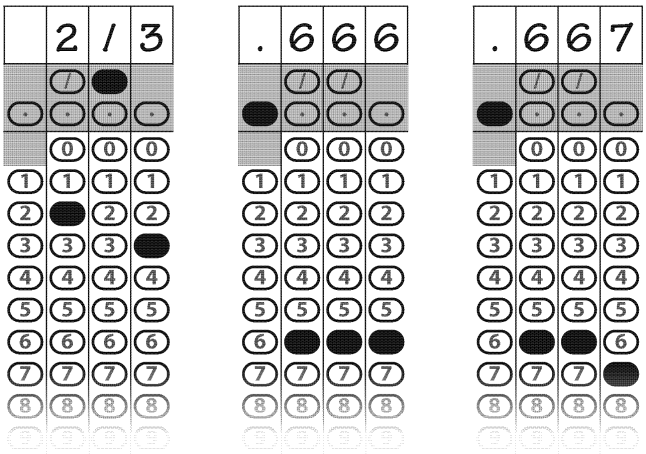
Answer: $\frac{7}{12}$ are:



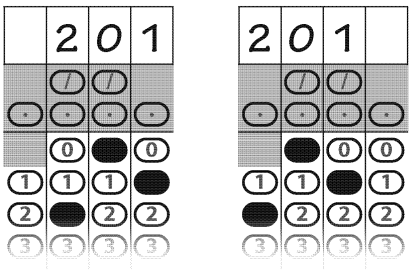
Answer: 2.5



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

A scientist collected a total of 84.0 grams of water in a precipitation gauge during a single weather event. Some water was in the form of rain and some was in the form of snow. This relationship is represented by the equation $25.4x + 1.5y = 84.0$, where x is the number of inches of rain that was collected and y is the number of inches of snow that was collected. Based on the equation, if 1.7 inches of rain was collected, how many inches of snow was collected, to the nearest tenth of an inch?

32

$$y = 2x$$
$$y = 12 - x$$

If (x, y) is the solution to the system of equations above, what is the value of $2(x + y)$?

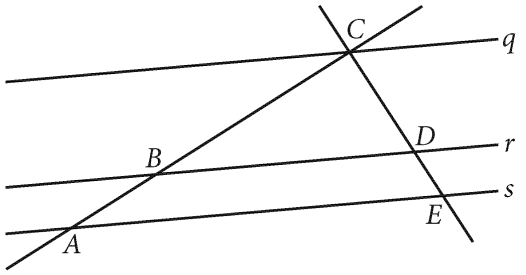
33

A city water company charges \$1.87 per 100 cubic feet of water. If 100 cubic feet of water is 748 gallons, how much, in dollars, does the company charge per 1000 gallons of water? (Disregard the \$ sign when gridding your answer. For example, if your answer is \$1.37, grid 1.37)

CONTINUE

34

Lines q, r, and s are parallel, as shown in the figure below.



Note: Figure not drawn to scale.

If angle BCD is a right angle and $\sin(\angle CBD) = .64$, what is $\cos(\angle CEA)$?

35

The quadratic function f has zeros at $x = 0.5$ and $x = c$. If the graph of the function in the xy-plane has its vertex at $(7, d)$, what is the value of c ?

36

$$\frac{1}{2}x + \frac{1}{3}y = 15$$
$$2x + by = c$$

In the system of equations above, b and c are constants. If the system has infinitely many solutions, what is the value of c ?

CONTINUE

Questions 37 and 38 refer to the following information.

Seven Fastest-Growing Cities in the United States from 2012 to 2013

City	2013 population (in thousands)	Percent increase from 2012 to 2013
Austin, TX	885	2.50
Cape Coral, FL	166	2.41
Charlotte, NC	793	1.92
Dallas, TX	1258	1.91
Ogden, UT	84	2.05
Provo, UT	116	2.48
Raleigh, NC	432	2.15

The table lists the seven fastest-growing cities in the United States, their populations in 2013 (rounded to the nearest thousand), and the percent increase from their 2012 populations to their 2013 populations.

37

The median of the seven population values for 2013 that are in the table is k thousand. What is the value of k ?

38

The percent increase of the population of Raleigh, NC, from 2012 to 2013 was x times the percent increase of the population of Austin, TX, from 2012 to 2013. What is the value of x ?

STOP

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