1

CollegeBoard

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The SAT®

FOR SCHOOL-DAY TESTING

WITH ESSAY

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Test begins on the next page.

Reading Test

65 MINUTES, 52 QUESTIONS

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

DIRECTIONS

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

Questions 1-10 are based on the following passage.

This passage is adapted from Daniyal Mueenuddin, "Nawabdin Electrician." ©2009 by Daniyal Mueenuddin.

Another man might have thrown up his hands—but not Nawabdin. His twelve daughters acted as a spur to his genius, and he looked with satisfaction in the mirror each morning at the face of a warrior going out to do battle. Nawab of course knew that he must proliferate his sources of revenue—the salary he received from K. K. Harouni for tending the tube wells would not even begin to suffice. He set up a little one-room flour mill, run off a condemned electric motor—condemned by him. He tried his hand at fish-farming in a little pond at the edge of his master's fields. He bought broken radios, fixed them, and resold them. He did not demur even when asked to fix watches, though that enterprise did spectacularly badly, and in fact earned him more kicks than kudos, for no watch he took apart ever kept time again.

K. K. Harouni rarely went to his farms, but lived mostly in Lahore. Whenever the old man visited, Nawab would place himself night and day at the door leading from the servants' sitting area into the walled grove of ancient banyan trees where the old farmhouse stood. Grizzled, his peculiar aviator glasses bent and smudged, Nawab tended the household machinery, the air conditioners, water heaters, refrigerators, and water pumps, like an engineer tending the boilers on a foundering steamer in an Atlantic gale. By his superhuman efforts he almost managed to maintain K. K. Harouni in the same mechanical cocoon, cooled and bathed and lighted and fed, that the landowner enjoyed in Lahore.

Harouni of course became familiar with this ubiquitous man, who not only accompanied him on his tours of inspection, but morning and night could be found standing on the master bed rewiring the light fixture or in the bathroom poking at the water heater. Finally, one evening at teatime, gauging the psychological moment, Nawab asked if he might say a word. The landowner, who was cheerfully filing his nails in front of a crackling rosewood fire, told him to go ahead.

"Sir, as you know, your lands stretch from here to the Indus, and on these lands are fully seventeen tube wells, and to tend these seventeen tube wells there is but one man, me, your servant. In your service I have earned these gray hairs"—here he bowed his head to show the gray—"and now I cannot fulfill my duties as I should. Enough, sir, enough. I beg you, forgive me my weakness. Better a darkened house and proud hunger within than disgrace in the light of day. Release me, I ask you, I beg you."

The old man, well accustomed to these sorts of speeches, though not usually this florid, filed away at his nails and waited for the breeze to stop.

"What's the matter, Nawabdin?"

CONTINUE

"Matter, sir? O what could be the matter in your service. I've eaten your salt for all my years. But sir, on the bicycle now, with my old legs, and with the many injuries I've received when heavy machinery fell on me—I cannot any longer bicycle about like a bridegroom from farm to farm, as I could when I first had the good fortune to enter your employment. I beg you, sir, let me go."

"And what's the solution?" asked Harouni, seeing that they had come to the crux. He didn't particularly care one way or the other, except that it touched on his comfort—a matter of great interest to him.

"Well, sir, if I had a motorcycle, then I could somehow limp along, at least until I train up some younger man."

The crops that year had been good, Harouni felt expansive in front of the fire, and so, much to the disgust of the farm managers, Nawab received a brand-new motorcycle, a Honda 70. He even managed to extract an allowance for gasoline.

The motorcycle increased his status, gave him weight, so that people began calling him "Uncle," and asking his opinion on world affairs, about which he knew absolutely nothing. He could now range further, doing a much wider business. Best of all, now he could spend every night with his wife, who had begged to live not on the farm but near her family in Firoza, where also they could educate at least the two eldest daughters. A long straight road ran from the canal headworks near Firoza all the way to the Indus, through the heart of the K. K. Harouni lands. Nawab would fly down this road on his new machine, with bags and cloths hanging from every knob and brace, so that the bike, when he hit a bump, seemed to be flapping numerous small vestigial wings; and with his grinning face, as he rolled up to whichever tube well needed servicing, with his ears almost blown off, he shone with the speed of his arrival.

1

The main purpose of the first paragraph is to

A) characterize Nawab as a loving father.

B) outline the schedule of a typical day in Nawab's life.

C) describe Nawab's various moneymaking ventures.

D) contrast Nawab's and Harouni's lifestyles.

2

As used in line 16, "kicks" most nearly means

A) thrills.

B) complaints.

C) jolts.

D) interests.

3

The author uses the image of an engineer at sea (lines 23-28) most likely to

A) suggest that Nawab often dreams of having a more exciting profession.

B) highlight the fact that Nawab's primary job is to tend to Harouni's tube wells.

C) reinforce the idea that Nawab has had many different occupations in his life.

D) emphasize how demanding Nawab's work for Harouni is.

CONTINUE

4

Which choice best supports the claim that Nawab performs his duties for Harouni well?

A) Lines 28-32 ("By his . . . Lahore")

B) Lines 40-42 ("The landowner . . . ahead")

C) Lines 46-49 ("In your . . . should")

D) Line 58 ("I've . . . years")

5

In the context of the conversation between Nawab and Harouni, Nawab's comments in lines 43-52 ("Sir . . . beg you") mainly serve to

A) flatter Harouni by mentioning how vast his lands are.

B) boast to Harouni about how competent and reliable Nawab is.

C) emphasize Nawab's diligence and loyalty to Harouni.

D) notify Harouni that Nawab intends to quit his job tending the tube wells.

6

Nawab uses the word "bridegroom" (line 62) mainly to emphasize that he's no longer

A) in love.

B) naive.

C) busy.

D) young.

7

It can reasonably be inferred from the passage that Harouni provides Nawab with a motorcycle mainly because

A) Harouni appreciates that Nawab has to work hard to support his family.

B) Harouni sees benefit to himself from giving Nawab a motorcycle.

C) Nawab's speech is the most eloquent that Harouni has ever heard.

D) Nawab threatens to quit if Harouni doesn't agree to give him a motorcycle.

CONTINUE

8

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

A) Lines 65-66 ("And . . . crux")
B) Lines 66-68 ("He didn't . . . him")
C) Lines 75-76 ("He even . . . gasoline")
D) Lines 80-81 ("He could . . . business")

9

The passage states that the farm managers react to Nawab receiving a motorcycle with

A) disgust.
B) happiness.
C) envy.
D) indifference.

10

According to the passage, what does Nawab consider to be the best result of getting the motorcycle?

A) People start calling him "Uncle."
B) He's able to expand his business.
C) He's able to educate his daughters.
D) He can spend more time with his wife.

CONTINUE

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

This passage is adapted from Stephen Coleman, Scott Anthony, and David E. Morrison, "Public Trust in the News." ©2009 by Stephen Coleman.

The news is a form of public knowledge. Unlike personal or private knowledge (such as the health of one's friends and family; the conduct of a private hobby; a secret liaison), public knowledge increases in value as it is shared by more people. The date of an election and the claims of rival candidates; the causes and consequences of an environmental disaster; a debate about how to frame a particular law; the latest reports from a war zone—these are all examples of public knowledge that people are generally expected to know in order to be considered informed citizens. Thus, in contrast to personal or private knowledge, which is generally left to individuals to pursue or ignore, public knowledge is promoted even to those who might not think it matters to them. In short, the circulation of public knowledge, including the news, is generally regarded as a public good which cannot be solely demand-driven.

The production, circulation, and reception of public knowledge is a complex process. It is generally accepted that public knowledge should be authoritative, but there is not always common agreement about what the public needs to know, who is best placed to relate and explain it, and how authoritative reputations should be determined and evaluated. Historically, newspapers such as *The Times* and broadcasters such as the BBC were widely regarded as the trusted shapers of authoritative agendas and conventional wisdom. They embodied the *Oxford English Dictionary's* definition of authority as the "power over, or title to influence, the opinions of others." As part of the general process of the transformation of authority whereby there has been a reluctance to uncritically accept traditional sources of public knowledge, the demand has been for all authority to make explicit the frames of value which determine their decisions. Centres of news production, as our focus groups show, have not been exempt from this process. Not surprisingly perhaps some news journalists feel uneasy about this renegotiation of their authority:

> Editors are increasingly casting a glance at the "most read" lists on their own and other websites to work out which stories matter to readers and viewers. And now the audience—which used to know its place—is being asked to act as a kind of journalistic ombudsman, ruling on our credibility (broadcast journalist, 2008).

> The result of democratising access to TV news could be political disengagement by the majority and a dumbing down through a popularity contest of stories (online news editor, 2007).

Despite the rhetorical bluster of these statements, they amount to more than straightforward professional defensiveness. In their reference to an audience "which used to know its place" and conflation between democratisation and "dumbing down," they are seeking to argue for a particular mode of public knowledge: one which is shaped by experts, immune from populist pressures; and disseminated to attentive, but mainly passive recipients. It is a view of citizenship that closes down opportunities for popular involvement in the making of public knowledge by reinforcing the professional claims of experts. The journalists quoted above are right to feel uneasy, for there is, at almost every institutional level in contemporary society, scepticism towards the epistemological authority of expert elites. There is a growing feeling, as expressed by several of our focus group participants, that the news media should be "informative rather than authoritative"; the job of journalists should be to "give the news as raw as it is, without putting their slant on it"; and people should be given "sufficient information" from which "we would be able to form opinions of our own."

At stake here are two distinct conceptions of authority. The journalists we have quoted are resistant to the democratisation of news: the supremacy of the clickstream (according to which editors raise or lower the profile of stories according to the number of readers clicking on them online); the parity of popular culture with "serious" news; the demands of some audience members for raw news rather than constructed narratives.

CONTINUE

Percentage of Respondents Seeing News Stories as Inaccurate or Favoring One Side

	1985	1992	2003	2007	2011
News organizations...					
• Get the facts straight	55	49	36	39	25
• Often have inaccurate stories	34	44	56	53	66
• Don't know	11	7	8	8	9
• Are pretty independent	37	35	23	23	15
• Are often influenced by powerful people and organizations	53	58	70	69	80
• Don't know	10	7	7	8	5
On political and social issues, news organizations...					
• Deal fairly with all sides	34	31	26	26	16
• Tend to favor one side	53	63	66	66	77
• Don't know	13	6	8	8	7

Adapted from "Pew Research Center for the People & the Press Report on Views of the News Media, 1985–2011." ©2011 by Pew Research Center.

CONTINUE

11

The main purpose of the passage is to

A) analyze the technological developments that have affected the production, circulation, and reception of news stories.

B) discuss changes in the perception of the news media as a source of public knowledge.

C) show how journalists' frames of value influence the production of news stories.

D) challenge the conventional view that news is a form of public knowledge.

12

According to the passage, which expectation do traditional authorities now face?

A) They should be uninfluenced by commercial considerations.

B) They should be committed to bringing about positive social change.

C) They should be respectful of the difference between public and private knowledge.

D) They should be transparent about their beliefs and assumptions.

13

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

A) Lines 2-5 ("Unlike . . . people")

B) Lines 20-21 ("The production . . . process")

C) Lines 33-38 ("As part . . . decisions")

D) Lines 43-46 ("Editors . . . viewers")

14

As used in line 24, "common" most nearly means

A) numerous.

B) familiar.

C) widespread.

D) ordinary.

15

The authors most likely include the extended quotations in lines 43-53 to

A) present contradictory examples.

B) cite representative opinions.

C) criticize typical viewpoints.

D) suggest viable alternatives.

16

The authors indicate that the public is coming to believe that journalists' reports should avoid

A) personal judgments about the events reported.

B) more information than is absolutely necessary.

C) quotations from authorities on the subject matter.

D) details that the subjects of news reports wish to keep private.

CONTINUE

17

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

A) Lines 12-16 ("Thus . . . them")
B) Lines 30-33 ("They . . . others")
C) Lines 40-42 ("Not surprisingly . . . authority")
D) Lines 70-77 ("There . . . own")

18

As used in line 74, "raw" most nearly means

A) unfiltered.
B) exposed.
C) harsh.
D) inexperienced.

19

Based on the table, in which year were people the most trusting of the news media?

A) 1985
B) 1992
C) 2003
D) 2011

20

Which statement is best supported by information presented in the table?

A) Between 1985 and 2011, the proportion of inaccurate news stories rose dramatically.
B) Between 1992 and 2003, the proportion of people who believed that news organizations were biased almost doubled.
C) Between 2003 and 2007, people's views of the accuracy, independence, and fairness of news organizations changed very little.
D) Between 2007 and 2011, people's perception that news organizations are accurate increased, but people's perception that news organizations are fair diminished.

21

The 2011 data in the table best serve as evidence of

A) "political disengagement by the majority" (line 51).
B) "the professional claims of experts" (lines 65-66).
C) "scepticism towards the epistemological authority of expert elites" (lines 69-70).
D) "the supremacy of the clickstream" (line 81).

CONTINUE

Questions 22-32 are based on the following passage.

This passage is adapted from Elsa Youngsteadt, "Decoding a Flower's Message." ©2012 by Sigma Xi, The Scientific Research Society.

Texas gourd vines unfurl their large, flared blossoms in the dim hours before sunrise. Until they close at noon, their yellow petals and mild, squashy aroma attract bees that gather nectar and shuttle pollen from flower to flower. But "when you advertise [to pollinators], you advertise in an open communication network," says chemical ecologist Ian Baldwin of the Max Planck Institute for Chemical Ecology in Germany. "You attract not just the good guys, but you also attract the bad guys." For a Texas gourd plant, striped cucumber beetles are among the very bad guys. They chew up pollen and petals, defecate in the flowers and transmit the dreaded bacterial wilt disease, an infection that can reduce an entire plant to a heap of collapsed tissue in mere days.

In one recent study, Nina Theis and Lynn Adler took on the specific problem of the Texas gourd—how to attract enough pollinators but not too many beetles. The Texas gourd vine's main pollinators are honey bees and specialized squash bees, which respond to its floral scent. The aroma includes 10 compounds, but the most abundant—and the only one that lures squash bees into traps—is 1,4-dimethoxybenzene.

Intuition suggests that more of that aroma should be even more appealing to bees. "We have this assumption that a really fragrant flower is going to attract a lot of pollinators," says Theis, a chemical ecologist at Elms College in Chicopee, Massachusetts. But, she adds, that idea hasn't really been tested—and extra scent could well call in more beetles, too. To find out, she and Adler planted 168 Texas gourd vines in an Iowa field and, throughout the August flowering season, made half the plants more fragrant by tucking dimethoxybenzene-treated swabs deep inside their flowers. Each treated flower emitted about 45 times more fragrance than a normal one; the other half of the plants got swabs without fragrance.

The researchers also wanted to know whether extra beetles would impose a double cost by both damaging flowers and deterring bees, which might not bother to visit (and pollinate) a flower laden with other insects and their feces. So every half hour throughout the experiments, the team plucked all the beetles off of half the fragrance-enhanced flowers and half the control flowers, allowing bees to respond to the blossoms with and without interference by beetles.

Finally, they pollinated by hand half of the female flowers in each of the four combinations of fragrance and beetles. Hand-pollinated flowers should develop into fruits with the maximum number of seeds, providing a benchmark to see whether the fragrance-related activities of bees and beetles resulted in reduced pollination.

"It was very labor intensive," says Theis. "We would be out there at four in the morning, three in the morning, to try and set up before these flowers open." As soon as they did, the team spent the next several hours walking from flower to flower, observing each for two-minute intervals "and writing down everything we saw."

What they saw was double the normal number of beetles on fragrance-enhanced blossoms. Pollinators, to their surprise, did not prefer the highly scented flowers. Squash bees were indifferent, and honey bees visited enhanced flowers less often than normal ones. Theis thinks the bees were repelled not by the fragrance itself, but by the abundance of beetles: The data showed that the more beetles on a flower, the less likely a honey bee was to visit it.

That added up to less reproduction for fragrance-enhanced flowers. Gourds that developed from those blossoms weighed 9 percent less and had, on average, 20 fewer seeds than those from normal flowers. Hand pollination didn't rescue the seed set, indicating that beetles damaged flowers directly —regardless of whether they also repelled pollinators. (Hand pollination did rescue fruit weight, a hard-to-interpret result that suggests that lost bee visits did somehow harm fruit development.)

CONTINUE

85 The new results provide a reason that Texas gourd plants never evolved to produce a stronger scent: "If you really ramp up the odor, you don't get more pollinators, but you can really get ripped apart by your enemies," says Rob Raguso, a chemical ecologist 90 at Cornell University who was not involved in the Texas gourd study.

22

The primary purpose of the passage is to

A) discuss the assumptions and reasoning behind a theory.

B) describe the aim, method, and results of an experiment.

C) present and analyze conflicting data about a phenomenon.

D) show the innovative nature of a procedure used in a study.

23

As presented in the passage, Theis and Adler's research primarily relied on which type of evidence?

A) Direct observation

B) Historical data

C) Expert testimony

D) Random sampling

24

Which statement about striped cucumber beetles can most reasonably be inferred from the passage?

A) They feed primarily on Texas gourd plants.

B) They are less attracted to dimethoxybenzene than honey bees are.

C) They experience only minor negative effects as a result of carrying bacterial wilt disease.

D) They are attracted to the same compound in Texas gourd scent that squash bees are.

25

The author indicates that it seems initially plausible that Texas gourd plants could attract more pollinators if they

A) did not have aromatic flowers.

B) targeted insects other than bees.

C) increased their floral scent.

D) emitted more varied fragrant compounds.

CONTINUE

26

As used in line 38, "treated" most nearly means

A) altered.
B) restored.
C) provided.
D) preserved.

27

What did Theis and Adler do as part of their study that most directly allowed Theis to reason that "bees were repelled not by the fragrance itself" (lines 70-71)?

A) They observed the behavior of bees and beetles both before and after the flowers opened in the morning.
B) They increased the presence of 1,4-dimethoxybenzene only during the August flowering season.
C) They compared the gourds that developed from naturally pollinated flowers to the gourds that developed from hand-pollinated flowers.
D) They gave bees a chance to choose between beetle-free enhanced flowers and beetle-free normal flowers.

28

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

A) Lines 45-50 ("So every . . . beetles")
B) Lines 51-53 ("Finally . . . beetles")
C) Lines 59-61 ("We would . . . open")
D) Lines 76-79 ("Gourds . . . flowers")

29

The primary function of the seventh and eighth paragraphs (lines 65-84) is to

A) summarize Theis and Adler's findings.
B) describe Theis and Adler's hypotheses.
C) illustrate Theis and Adler's methods.
D) explain Theis and Adler's reasoning.

CONTINUE

30

In describing squash bees as "indifferent" (line 68), the author most likely means that they

A) could not distinguish enhanced flowers from normal flowers.

B) visited enhanced flowers and normal flowers at an equal rate.

C) largely preferred normal flowers to enhanced flowers.

D) were as likely to visit beetle-infested enhanced flowers as to visit beetle-free enhanced flowers.

31

According to the passage, Theis and Adler's research offers an answer to which of the following questions?

A) How can Texas gourd plants increase the number of visits they receive from pollinators?

B) Why is there an upper limit on the intensity of the aroma emitted by Texas gourd plants?

C) Why does hand pollination rescue the fruit weight of beetle-infested Texas gourd plants?

D) Why do Texas gourd plants stop producing fragrance attractive to pollinators when beetles are present?

32

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

A) Lines 17-20 ("In one . . . beetles")

B) Lines 22-25 ("The aroma . . . 1,4-dimethoxybenzene")

C) Lines 79-84 ("Hand . . . development")

D) Lines 85-86 ("The new . . . scent")

CONTINUE

Questions 33-42 are based on the following passages.

Passage 1 is adapted from Abraham Lincoln, "Address to the Young Men's Lyceum of Springfield, Illinois." Originally delivered in 1838. Passage 2 is from Henry David Thoreau, "Resistance to Civil Government." Originally published in 1849.

Passage 1

Let every American, every lover of liberty, every well wisher to his posterity, swear by the blood of the Revolution, never to violate in the least particular, the laws of the country; and never to tolerate their violation by others. As the patriots of seventy-six did to the support of the Declaration of Independence, so to the support of the Constitution and Laws, let every American pledge his life, his property, and his sacred honor;—let every man remember that to violate the law, is to trample on the blood of his father, and to tear the character of his own, and his children's liberty. Let reverence for the laws, be breathed by every American mother, to the lisping babe, that prattles on her lap—let it be taught in schools, in seminaries, and in colleges;—let it be written in Primers, spelling books, and in Almanacs;—let it be preached from the pulpit, proclaimed in legislative halls, and enforced in courts of justice. And, in short, let it become the *political religion* of the nation; and let the old and the young, the rich and the poor, the grave and the gay, of all sexes and tongues, and colors and conditions, sacrifice unceasingly upon its altars. . . .

When I so pressingly urge a strict observance of all the laws, let me not be understood as saying there are no bad laws, nor that grievances may not arise, for the redress of which, no legal provisions have been made. I mean to say no such thing. But I do mean to say, that, although bad laws, if they exist, should be repealed as soon as possible, still while they continue in force, for the sake of example, they should be religiously observed. So also in unprovided cases. If such arise, let proper legal provisions be made for them with the least possible delay; but, till then, let them if not too intolerable, be borne with.

There is no grievance that is a fit object of redress by mob law. In any case that arises, as for instance, the promulgation of abolitionism, one of two positions is necessarily true; that is, the thing is right within itself, and therefore deserves the protection of all law and all good citizens; or, it is wrong, and therefore proper to be prohibited by legal enactments; and in neither case, is the interposition of mob law, either necessary, justifiable, or excusable.

Passage 2

Unjust laws exist; shall we be content to obey them, or shall we endeavor to amend them, and obey them until we have succeeded, or shall we transgress them at once? Men generally, under such a government as this, think that they ought to wait until they have persuaded the majority to alter them. They think that, if they should resist, the remedy would be worse than the evil. But it is the fault of the government itself that the remedy is worse than the evil. It makes it worse. Why is it not more apt to anticipate and provide for reform? Why does it not cherish its wise minority? Why does it cry and resist before it is hurt? . . .

If the injustice is part of the necessary friction of the machine of government, let it go, let it go; perchance it will wear smooth—certainly the machine will wear out. If the injustice has a spring, or a pulley, or a rope, or a crank, exclusively for itself, then perhaps you may consider whether the remedy will not be worse than the evil; but if it is of such a nature that it requires you to be the agent of injustice to another, then, I say, break the law. Let your life be a counter friction to stop the machine. What I have to do is to see, at any rate, that I do not lend myself to the wrong which I condemn.

As for adopting the ways which the State has provided for remedying the evil, I know not of such ways. They take too much time, and a man's life will be gone. I have other affairs to attend to. I came into this world, not chiefly to make this a good place to live in, but to live in it, be it good or bad. A man has not everything to do, but something; and because he cannot do everything, it is not necessary that he should do something wrong. . . .

CONTINUE

I do not hesitate to say, that those who call
80 themselves Abolitionists should at once effectually withdraw their support, both in person and property, from the government . . . and not wait till they constitute a majority of one, before they suffer the right to prevail through them. I think that it is
85 enough if they have God on their side, without waiting for that other one. Moreover, any man more right than his neighbors constitutes a majority of one already.

33

In Passage 1, Lincoln contends that breaking the law has which consequence?

A) It slows the repeal of bad laws.
B) It undermines and repudiates the nation's values.
C) It leads slowly but inexorably to rule by the mob.
D) It creates divisions between social groups.

34

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

A) Lines 9-12 ("let every man . . . liberty")
B) Lines 20-23 ("and let . . . altars")
C) Lines 33-35 ("If such . . . borne with")
D) Lines 36-37 ("There . . . law")

35

As used in line 24, "urge" most nearly means

A) hasten.
B) stimulate.
C) require.
D) advocate.

36

The sentence in lines 24-28 ("When . . . made") primarily serves which function in Passage 1?

A) It raises and refutes a potential counterargument to Lincoln's argument.
B) It identifies and concedes a crucial shortcoming of Lincoln's argument.
C) It acknowledges and substantiates a central assumption of Lincoln's argument.
D) It anticipates and corrects a possible misinterpretation of Lincoln's argument.

CONTINUE

37

As used in line 32, "observed" most nearly means

A) followed.
B) scrutinized.
C) contemplated.
D) noticed.

38

In Passage 2, Thoreau indicates that some unjust aspects of government are

A) superficial and can be fixed easily.
B) subtle and must be studied carefully.
C) self-correcting and may be beneficial.
D) inevitable and should be endured.

39

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

A) Lines 45-48 ("Unjust . . . once")
B) Lines 51-52 ("They . . . evil")
C) Lines 58-59 ("If the injustice . . . go")
D) Lines 75-78 ("A man . . . wrong")

CONTINUE

40

The primary purpose of each passage is to

A) make an argument about the difference between legal duties and moral imperatives.

B) discuss how laws ought to be enacted and changed in a democracy.

C) advance a view regarding whether individuals should follow all of the country's laws.

D) articulate standards by which laws can be evaluated as just or unjust.

41

Based on the passages, Lincoln would most likely describe the behavior that Thoreau recommends in lines 64-66 ("if it . . . law") as

A) an excusable reaction to an intolerable situation.

B) a rejection of the country's proper forms of remedy.

C) an honorable response to an unjust law.

D) a misapplication of a core principle of the Constitution.

42

Based on the passages, one commonality in the stances Lincoln and Thoreau take toward abolitionism is that

A) both authors see the cause as warranting drastic action.

B) both authors view the cause as central to their argument.

C) neither author expects the cause to win widespread acceptance.

D) neither author embraces the cause as his own.

CONTINUE

Questions 43-52 are based on the following passage and supplementary material.

This passage is adapted from Kevin Bullis, "What Tech Is Next for the Solar Industry?" ©2013 by MIT Technology Review.

Solar panel installations continue to grow quickly, but the solar panel manufacturing industry is in the doldrums because supply far exceeds demand. The poor market may be slowing innovation, but advances continue; judging by the mood this week at the IEEE Photovoltaics Specialists Conference in Tampa, Florida, people in the industry remain optimistic about its long-term prospects.

The technology that's surprised almost everyone is conventional crystalline silicon. A few years ago, silicon solar panels cost $4 per watt, and Martin Green, professor at the University of New South Wales and one of the leading silicon solar panel researchers, declared that they'd never go below $1 a watt. "Now it's down to something like 50 cents a watt, and there's talk of hitting 36 cents per watt," he says.

The U.S. Department of Energy has set a goal of reaching less than $1 a watt—not just for the solar panels, but for complete, installed systems—by 2020. Green thinks the solar industry will hit that target even sooner than that. If so, that would bring the direct cost of solar power to six cents per kilowatt-hour, which is cheaper than the average cost expected for power from new natural gas power plants.

All parts of the silicon solar panel industry have been looking for ways to cut costs and improve the power output of solar panels, and that's led to steady cost reductions. Green points to something as mundane as the pastes used to screen-print some of the features on solar panels. Green's lab built a solar cell in the 1990s that set a record efficiency for silicon solar cells—a record that stands to this day. To achieve that record, he had to use expensive lithography techniques to make fine wires for collecting current from the solar cell. But gradual improvements have made it possible to use screen printing to produce ever-finer lines. Recent research suggests that screen-printing techniques can produce lines as thin as 30 micrometers—about the width of the lines Green used for his record solar cells, but at costs far lower than his lithography techniques.

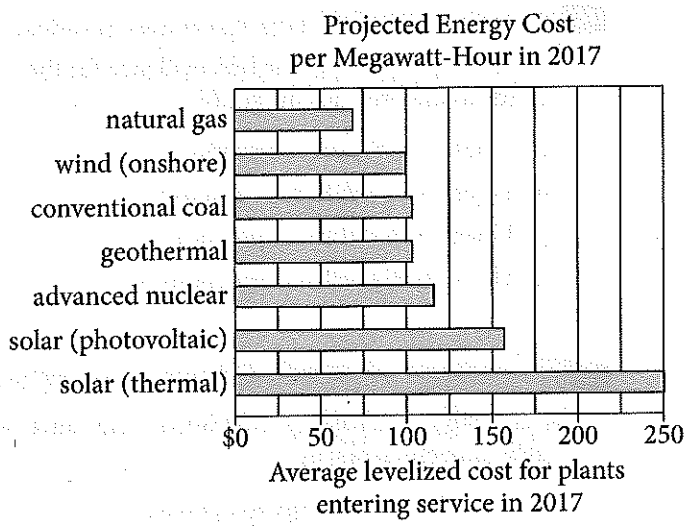
Meanwhile, researchers at the National Renewable Energy Laboratory have made flexible solar cells on a new type of glass from Corning called Willow Glass, which is thin and can be rolled up. The type of solar cell they made is the only current challenger to silicon in terms of large-scale production—thin-film cadmium telluride. Flexible solar cells could lower the cost of installing solar cells, making solar power cheaper.

One of Green's former students and colleagues, Jianhua Zhao, cofounder of solar panel manufacturer China Sunergy, announced this week that he is building a pilot manufacturing line for a two-sided solar cell that can absorb light from both the front and back. The basic idea, which isn't new, is that during some parts of the day, sunlight falls on the land between rows of solar panels in a solar power plant. That light reflects onto the back of the panels and could be harvested to increase the power output. This works particularly well when the solar panels are built on sand, which is highly reflective. Where a one-sided solar panel might generate 340 watts, a two-sided one might generate up to 400 watts. He expects the panels to generate 10 to 20 percent more electricity over the course of a year.

Even longer-term, Green is betting on silicon, aiming to take advantage of the huge reductions in cost already seen with the technology. He hopes to greatly increase the efficiency of silicon solar panels by combining silicon with one or two other semiconductors, each selected to efficiently convert a part of the solar spectrum that silicon doesn't convert efficiently. Adding one semiconductor could boost efficiencies from the 20 to 25 percent range to around 40 percent. Adding another could make efficiencies as high as 50 percent feasible, which would cut in half the number of solar panels needed for a given installation. The challenge is to produce good connections between these semiconductors, something made challenging by the arrangement of silicon atoms in crystalline silicon.

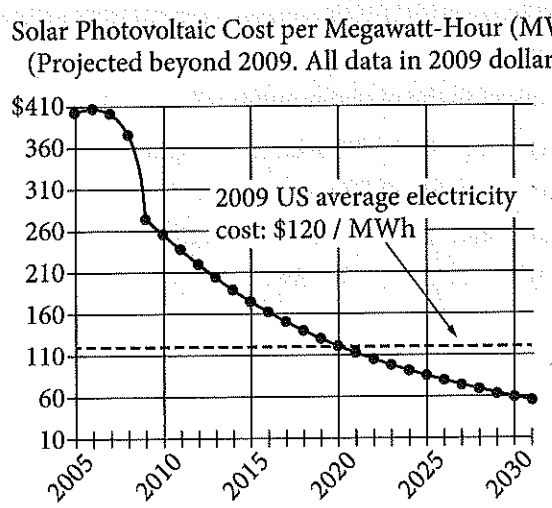
CONTINUE

Figure 1



Adapted from Peter Schwartz, "Abundant Natural Gas and Oil Are Putting the Kibosh on Clean Energy." ©2012 by Condé Nast.

Figure 2



Adapted from Ramez Naam, "Smaller, Cheaper, Faster: Does Moore's Law Apply to Solar Cells?" ©2011 by Scientific American.

CONTINUE

43

The passage is written from the point of view of a

A) consumer evaluating a variety of options.
B) scientist comparing competing research methods.
C) journalist enumerating changes in a field.
D) hobbyist explaining the capabilities of new technology.

44

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

A) weak.
B) humble.
C) pitiable.
D) obsolete.

45

It can most reasonably be inferred from the passage that many people in the solar panel industry believe that

A) consumers don't understand how solar panels work.
B) two-sided cells have weaknesses that have not yet been discovered.
C) the cost of solar panels is too high and their power output too low.
D) Willow Glass is too inefficient to be marketable.

46

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

A) Lines 1-3 ("Solar . . . demand")
B) Lines 10-15 ("A few . . . a watt")
C) Lines 22-26 ("If so . . . plants")
D) Lines 27-30 ("All . . . reductions")

47

According to the passage, two-sided solar panels will likely raise efficiency by

A) requiring little energy to operate.
B) absorbing reflected light.
C) being reasonably inexpensive to manufacture.
D) preventing light from reaching the ground.

48

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

A) Lines 58-61 ("The basic . . . plant")
B) Lines 61-62 ("That . . . output")
C) Lines 63-64 ("This . . . reflective")
D) Lines 64-66 ("Where . . . 400 watts")

CONTINUE

49

As used in line 69, "betting on" most nearly means

A) dabbling in.
B) gambling with.
C) switching from.
D) optimistic about.

50

The last sentence of the passage mainly serves to

A) express concern about the limitations of a material.
B) identify a hurdle that must be overcome.
C) make a prediction about the effective use of certain devices.
D) introduce a potential new area of study.

51

According to figure 1, in 2017, the cost of which of the following fuels is projected to be closest to the 2009 US average electricity cost shown in figure 2?

A) Natural gas
B) Wind (onshore)
C) Conventional coal
D) Advanced nuclear

52

According to figure 2, in what year is the average cost of solar photovoltaic power projected to be equal to the 2009 US average electricity cost?

A) 2018
B) 2020
C) 2025
D) 2027

STOP

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

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 Necessary Resource for Science

In the winter of 1968, scientists David Schindler and Gregg Brunskill poured nitrates and phosphates into Lake 1 227, this is one of the 58 freshwater bodies that compose Canada's remotely located Experimental Lakes Area. Schindler and Brunskill were contaminating the water not out of malice but in the name of research. While deliberately adding chemical compounds to a lake may seem 2 destructive and irresponsible, this method of experimenting is sometimes the most effective way to influence policy and save the environment from even more damaging pollution.

1

A) NO CHANGE
B) 227. Which is one
C) 227. One
D) 227, one

2

A) NO CHANGE
B) destructive, and irresponsible this method
C) destructive and, irresponsible, this method
D) destructive and irresponsible this method,

CONTINUE

Schindler and Brunskill were investigating possible causes for the large blooms of blue-green algae, or cyanobacteria, that had been affecting bodies of water such as Lake Erie. 3 In addition to being unsightly and odorous, these algal blooms cause oxygen depletion. Oxygen depletion kills fish and other wildlife in the lakes. Just weeks after the scientists added the nitrates and phosphates, the water in Lake 227 turned bright 4 green. It was thick with: the same type of algal blooms that had plagued Lake Erie.

3

Which choice most effectively combines the underlined sentences?

A) In addition to being unsightly and odorous, these algal blooms cause oxygen depletion: the result being that it kills fish and other wildlife in the lakes.

B) In addition to being unsightly and odorous, these algal blooms cause oxygen depletion; the algal blooms cause oxygen depletion that kills fish and other wildlife in the lakes.

C) In addition to being unsightly and odorous, these algal blooms cause oxygen depletion, and oxygen depletion caused by the algal blooms kills fish and other wildlife in the lakes.

D) In addition to being unsightly and odorous, these algal blooms cause oxygen depletion, which kills fish and other wildlife in the lakes.

4

A) NO CHANGE

B) green: it was thick with

C) green. It was thick with—

D) green, it was thick with

CONTINUE

5 One mission of the Experimental Lakes Area is to conduct research that helps people better understand threats to the environment. The scientists divided the lake in half by placing a nylon barrier through the narrowest part of its figure-eight shape. In one half of Lake 226, they added phosphates, nitrates, and a source of carbon; in the other, they added just nitrates 6 and a source of carbon was added. Schindler and Brunskill hypothesized that phosphates were responsible for the growth of cyanobacteria. The experiment confirmed their suspicions when the half of the lake containing the phosphates 7 was teeming with blue-green algae.

5

Which choice provides the best transition from the previous paragraph to this one?

A) NO CHANGE
B) The Experimental Lakes Area is located in a sparsely inhabited region that experiences few effects of human and industrial activity.
C) To isolate the cause of the algae, Schindler and Brunskill performed another experiment, this time using Lake 226.
D) The process by which water becomes enriched by dissolved nutrients, such as phosphates, is called eutrophication.

6

A) NO CHANGE
B) and a source of carbon.
C) plus also a source of carbon.
D) but also adding a source of carbon.

7

A) NO CHANGE
B) were teeming
C) are teeming
D) teems

CONTINUE

Schindler and Brunskill's findings were 8 shown off by the journal *Science*. The research demonstrated a clear correlation between introducing phosphates and the growth of blue-green algae. 9 For example, legislators in Canada passed laws banning phosphates in laundry detergents, which had been entering the water supply. 10

8

A) NO CHANGE
B) put in the spotlight of
C) published in
D) put into

9

A) NO CHANGE
B) Similarly,
C) However,
D) Subsequently,

10

At this point, the writer wants to add a second policy outcome of the research described. Which choice best accomplishes this goal?

A) Lake 226 continued to develop blooms of blue-green algae for eight consecutive years after the experiment took place.
B) In the United States, many individual states have also adopted legislation to eliminate, or at least reduce, phosphorous content in laundry detergents.
C) In 1974, Schindler initiated a study of the effects of acid rain, using Lake 223 to examine how sulfuric acid altered aquatic ecosystems.
D) Aerial photos of the lakes taken before and during algal blooms helped convey the effects of phosphates in water to the public.

CONTINUE

Experiments like these can help people understand the unintended consequences of using certain household products. 11 Of course, regulating the use of certain chemical compounds can be a controversial issue. Selectively establishing remote study locations, such as the Experimental Lakes Area, can provide scientists with opportunities to safely conduct controlled research. This research can generate evidence solid enough to persuade policy makers to take action in favor of protecting the larger environment.

11

Which choice most effectively anticipates and addresses a relevant counterargument to the argument in favor of the types of experiments described in the passage?

A) NO CHANGE

B) Many companies now offer phosphate-free alternatives for household cleaning products.

C) Obviously, scientists should not be allowed to randomly perform experiments on just any body of water.

D) Phosphates are sometimes used in agricultural fertilizers, in addition to being used in cleaning products.

CONTINUE

Questions 12-22 are based on the following passage.

A Little to the Left, but Not Too Much!

Italy's Tower of Pisa has been leaning southward since the initial 12 stages of it's construction over 800 years ago. 13 Indeed, if the tower's construction had not taken two centuries and involved significant breaks due to war and civil unrest, which allowed the ground beneath the tower to settle, the tower would likely have collapsed before it was completed.

12

A) NO CHANGE
B) stage's of its'
C) stage's of it's
D) stages of its

13

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

CONTINUE

Luckily, the tower survived, and its tilt has made it an Italian 14 icon, it attracts visitors from all over who flock to Pisa to see one of the greatest architectural 15 weirdnesses in the world. 16 By the late twentieth century, the angle of the tower's tilt had reached an astonishing 5.5 degrees; in 17 1990, Italy's government closed the tower to visitors and appointed a committee to find a way to save it.

14

A) NO CHANGE
B) icon, attracting
C) icon, its attracting
D) icon; attracting

15

A) NO CHANGE
B) deviations
C) oddities
D) abnormalities

16

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

> Unfortunately, the tower's tilt has steadily increased over the centuries, placing the structure in danger of collapse.

Should the writer make this addition here?

A) Yes, because it provides an important restatement of the main claim in the previous sentence.
B) Yes, because it establishes an important shift in emphasis in the paragraph's discussion about the tower's tilt.
C) No, because it interrupts the paragraph's discussion with irrelevant information.
D) No, because it repeats information that is already presented in the first paragraph.

17

A) NO CHANGE
B) 1990, Italy's government, closed
C) 1990 Italy's government, closed,
D) 1990: Italy's government closed

CONTINUE

The committee was charged with saving the tower without ruining its aesthetic, 18 which no one had yet managed to achieve. The committee's first attempt to reduce the angle of the tower's tilt—placing 600 tons of iron ingots (molded pieces of metal) on the tower's north side to create a counterweight—was derided because the bulky weights ruined the tower's appearance. The attempt at a less visible solution—sinking anchors into the ground below the tower—almost caused the tower to fall.

18

Which choice best supports the main point of the paragraph?

A) NO CHANGE

B) although not everyone on the committee agreed completely about what that aesthetic was.

C) which meant somehow preserving the tower's tilt while preventing that tilt from increasing and toppling the tower.

D) which included the pristine white marble finish that has come to be widely associated with the tower's beauty.

CONTINUE

[1] Enter committee member John Burland, 19 he is a geotechnical engineer from England who saved London's clock tower Big Ben from collapse. [2] Burland began a years-long process of drilling out small amounts of soil from under the tower 20 that took several years to complete and then monitoring the tower's resulting movement. [3] Twice daily, Burland evaluated these movements and made recommendations as to how much soil should be removed in the next drilling. [4] By 2001, almost 77 tons of soil had been removed, and the tower's tilt had decreased by over 1.5 degrees; the ugly iron weights were removed, and the tower was reopened to visitors. [5] Burland 21 advocated using soil extraction: removing small amounts of soil from under the tower's north side, opposite its tilt, to enable gravity to straighten the tower. 22

The tower's tilt has not increased since, and the committee is confident that the tower will be safe for another 200 years. Burland is now working on a more permanent solution for keeping the tower upright, but he is adamant that the tower never be completely straightened. In an interview with PBS's *Nova*, Burland explained that it is very important "that we don't really change the character of the monument. That would be quite wrong and quite inappropriate."

19

A) NO CHANGE
B) Burland is
C) his being
D) DELETE the underlined portion.

20

A) NO CHANGE
B) —taking several years to complete—
C) that took him several years to complete
D) DELETE the underlined portion.

21

A) NO CHANGE
B) advocated to use
C) advocated the using of
D) advocating to use

22

To make this paragraph most logical, sentence 5 should be

A) placed after sentence 1.
B) placed after sentence 2.
C) placed after sentence 3.
D) DELETED from the paragraph.

CONTINUE

Questions 23-33 are based on the following passage and supplementary material.

The Physician Assistant Will See You Now

23 The term "paramedics" refers to health care workers who provide routine and clinical services. While the pressures of an aging population, insurance reforms, and health epidemics have increased demand for care, the supply of physicians is not expected to 24 keep pace. The Association of American Medical Colleges predicts a shortage of over 90,000 physicians by 2020; by 2025, that number could climb to more than 130,000. In some parts of the country, shortages are already a sad fact of life. A 2009 report by the Bureau of Health Professions notes that although a fifth of the US population lives in rural areas, less than a tenth of US physicians serves that population. Because a traditionalist response to the crisis—25 amping up medical-college enrollments and expanding physician training programs—is too slow and costly to address the near-term problem, alternatives are being explored. One promising avenue has been greater reliance on physician assistants (PAs).

23

Which choice is the best introduction to the paragraph?

A) NO CHANGE
B) For many Americans, finding a physician is likely to become a growing challenge.
C) Getting treatment for an illness usually requires seeing either a general practitioner or a specialist.
D) Worldwide the costs of health care are increasing at an alarming rate.

24

A) NO CHANGE
B) maintain the tempo.
C) get in line.
D) move along.

25

A) NO CHANGE
B) bolstering
C) arousing
D) revving up

CONTINUE

26 By virtue of 27 there medical training, PAs can perform many of the jobs traditionally done by doctors, including treating chronic and acute conditions, performing minor 28 surgeries: and prescribing some medications. However, although well 29 compensated earning in 2012 a median annual salary of $90,930, PAs cost health care providers less than do the physicians who

26

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

> Several factors argue in favor of such an expanded role.

Should the writer make this addition here?

A) Yes, because it introduces a counterargument for balance.
B) Yes, because it frames the points that the paragraph will examine.
C) No, because it does not specify the education required to be a PA.
D) No, because it presents information that is only tangential to the main argument.

27

A) NO CHANGE
B) they're
C) their
D) his or her

28

A) NO CHANGE
B) surgeries; and
C) surgeries, and,
D) surgeries, and

29

A) NO CHANGE
B) compensated (earning in 2012 a median annual salary of $90,930),
C) compensated, earning in 2012 a median annual salary of $90,930
D) compensated: earning in 2012 a median annual salary of $90,930,

CONTINUE

might otherwise undertake these tasks. Moreover, the training period for PAs is markedly shorter than 30 those for physicians—two to three years versus the seven to eleven required for physicians.

Physician assistants already offer vital primary care in many locations. Some 90,000 PAs were employed nationwide in 2012. Over and above their value in partially compensating for the general physician shortage has been their extraordinary contribution to rural health care. A recent review of the scholarly literature by Texas researchers found that PAs lend cost-efficient, widely appreciated services in underserved areas. 31 In addition, rural-based PAs often provide a broader spectrum of such services than do their urban and suburban counterparts, possibly as a consequence of the limited pool of rural-based physicians.

30

A) NO CHANGE
B) that compared with
C) that for
D) DELETE the underlined portion.

31

A) NO CHANGE
B) Thus,
C) Despite this,
D) On the other hand,

CONTINUE

Increasingly, PAs and other such medical practitioners have become a critical complement to physicians. A 2013 RAND Corporation report estimates that while the number of primary care physicians will increase slowly from 2010 to 2025, the number of physician assistants and nurse-practitioners in primary care will grow at much faster rates. 32 Both by merit and from necessity, PAs are likely to greet more 33 patience than ever before.

Supply of Physicians, Physician Assistants, and Nurse-Practitioners in Primary Care Clinical Practice in 2010 and 2025

	2010		2025 (predicted)	
Provider type	Number	Percent of total	Number	Percent of total
Physicians	210,000	71	216,000	60
Physician assistants	30,000	10	42,000	12
Nurse-practitioners	56,000	19	103,000	28
Total	296,000	100	361,000	100

Adapted from David I. Auerbach et al., "Nurse-Managed Health Centers and Patient-Centered Medical Homes Could Mitigate Expected Primary Care Physician Shortage." ©2013 by Project HOPE: The People-to-People Health Foundation, Inc.

32

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

> In fact, according to the data presented in the table, physician assistants will likely outnumber physicians by 2025.

Should the writer make this addition here?

A) Yes, because it provides additional support for the main point of the paragraph.
B) Yes, because it addresses a possible counterargument to the writer's main claim.
C) No, because it is not an accurate interpretation of the data.
D) No, because it introduces irrelevant information that interrupts the flow of the passage.

33

A) NO CHANGE
B) patience, than
C) patients then
D) patients than

CONTINUE

Questions 34-44 are based on the following passage.

Gold into Silver: The "Reverse Alchemy" of Superhero Comics History

34 Popular film franchises are often "rebooted" in an effort to make their characters and stories fresh and relevant for new audiences. Superhero comic books are periodically reworked to try to increase their appeal to contemporary readers. This practice is almost as 35 elderly as the medium itself and has in large part established the "ages" that compose comic book history. The shift from the Golden to the Silver Age is probably the most successful 36 example: of publishers responding to changing times and tastes.

34

Which choice most effectively combines the underlined sentences?

A) In an effort to make their characters and stories fresh and relevant for new audiences, popular film franchises, which are often "rebooted," are similar to superhero comic books, which are periodically reworked to try to increase their appeal to contemporary readers.

B) Just as popular film franchises are often "rebooted" in an effort to make their characters and stories fresh and relevant for new audiences, superhero comic books are periodically reworked to try to increase their appeal to contemporary readers.

C) Superhero comic books are periodically reworked to try to increase their appeal to contemporary readers, while popular film franchises are often "rebooted" in an effort to make their characters and stories fresh and relevant for new audiences.

D) Superhero comic books are much like popular film franchises in being often "rebooted" in an effort to make their characters and stories fresh and relevant for new audiences and periodically reworked to try to increase their appeal to contemporary readers.

35

A) NO CHANGE

B) old

C) mature

D) geriatric

36

A) NO CHANGE

B) example, of publishers

C) example of publishers,

D) example of publishers

CONTINUE

The start of the first ("Golden") age of comic books is often dated to 1938 with the debut of Superman in *Action Comics* #1. Besides beginning the age, Superman in many respects defined it, becoming the model on which many later superheroes were based. His characterization, as established in *Superman* #1 (1939), was relatively simple. He could "hurdle skyscrapers" and "leap an eighth of a mile"; "run faster than a streamline train"; withstand anything less than a "bursting shell"; and 37 lift a car over his head. Sent to Earth from the "doomed planet" Krypton, he was raised by human foster parents, whose love helped infuse him with an unapologetic desire to "benefit mankind." Admirable but aloof, the Golden Age Superman was arguably more paragon than character, a problem only partially solved by giving him a human alter ego. Other Golden Age superheroes were similarly archetypal: Batman was a crime-fighting millionaire, Wonder Woman a warrior princess from a mythical island.

37

Which choice is most consistent with the previous examples in the sentence?

A) NO CHANGE
B) hold down a regular job as a newspaper reporter.
C) wear a bright blue costume with a flowing red cape.
D) live in the big city of Metropolis instead of the small town where he grew up.

CONTINUE

By contrast, the second ("Silver") age of comics was marked by characters that, though somewhat simplistic by today's standards, 38 were provided with origin stories often involving scientific experiments gone wrong. In addition to super villains, the new, soon-to-be-iconic characters of the 39 age: Spider-Man, the Fantastic Four, and the Hulk among them—had to cope with mundane, real-life problems, including paying the rent, dealing with family squabbles, and facing anger, loneliness, and ostracism. Their interior lives were richer and their motivations more complex. Although sales remained strong for Golden Age stalwarts Superman and, to a lesser extent, Batman, 40 subsequent decades would show the enduring appeal of these characters.

38

Which choice most effectively sets up the main idea of the following two sentences?

A) NO CHANGE
B) reflected the increasing conservatism of the United States in the 1950s.
C) engaged in bizarre adventures frequently inspired by science fiction.
D) were more "realistic" than their Golden Age counterparts.

39

A) NO CHANGE
B) age;
C) age,
D) age—

40

The writer wants a conclusion to the sentence and paragraph that logically completes the discussion of the Silver Age and provides an effective transition into the next paragraph. Which choice best accomplishes these goals?

A) NO CHANGE
B) the distinctions between later stages of comic book history are less well defined than the one between the Golden and Silver Ages.
C) readers increasingly gravitated to the upstarts as the 1960s and the Silver Age drew to a close.
D) these characters themselves underwent significant changes over the course of the Silver Age.

CONTINUE

More transformations would take place in the medium as the Silver Age gave way to the Bronze and Modern (and possibly Postmodern) Ages. Such efforts 41 have yielded diminishing returns, as even the complete relaunch of DC 42 Comics' superhero's, line in 2011 has failed to arrest the steep two-decade decline of comic book sales. For both commercial and, arguably, creative reasons, 43 then, no transition was more successful than 44 those from the Golden to Silver Age.

41

A) NO CHANGE
B) would have yielded
C) were yielding
D) will yield

42

A) NO CHANGE
B) Comic's superhero's
C) Comics superhero's
D) Comics' superhero

43

A) NO CHANGE
B) however,
C) nevertheless,
D) yet,

44

A) NO CHANGE
B) these
C) that
D) DELETE the underlined portion.

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

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

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

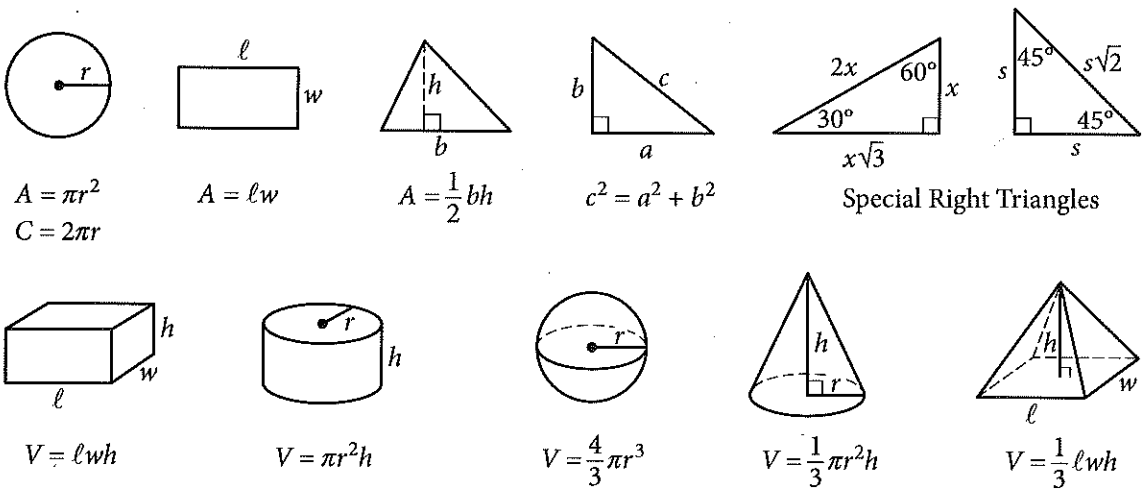
DIRECTIONS

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle 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

Salim wants to purchase tickets from a vendor to watch a tennis match. The vendor charges a one-time service fee for processing the purchase of the tickets. The equation $T = 15n + 12$ represents the total amount T, in dollars, Salim will pay for n tickets. What does 12 represent in the equation?

A) The price of one ticket, in dollars

B) The amount of the service fee, in dollars

C) The total amount, in dollars, Salim will pay for one ticket

D) The total amount, in dollars, Salim will pay for any number of tickets

2

A gardener buys two kinds of fertilizer. Fertilizer A contains 60% filler materials by weight and Fertilizer B contains 40% filler materials by weight. Together, the fertilizers bought by the gardener contain a total of 240 pounds of filler materials. Which equation models this relationship, where x is the number of pounds of Fertilizer A and y is the number of pounds of Fertilizer B?

A) $0.4x + 0.6y = 240$

B) $0.6x + 0.4y = 240$

C) $40x + 60y = 240$

D) $60x + 40y = 240$

3

What is the sum of the complex numbers $2 + 3i$ and $4 + 8i$, where $i = \sqrt{-1}$?

A) 17

B) $17i$

C) $6 + 11i$

D) $8 + 24i$

4

$$4x^2 - 9 = (px + t)(px - t)$$

In the equation above, p and t are constants. Which of the following could be the value of p ?

A) 2

B) 3

C) 4

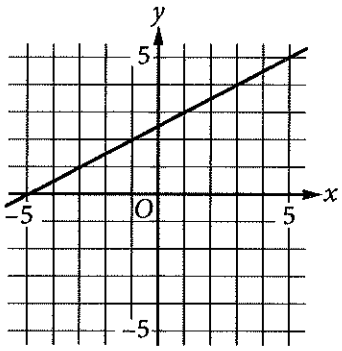
D) 9

CONTINUE

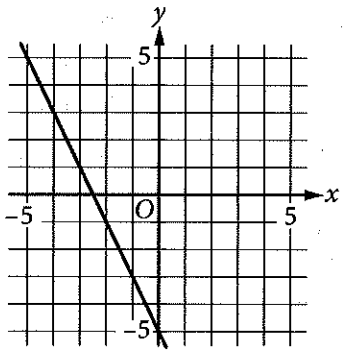
5

Which of the following is the graph of the equation $y = 2x - 5$ in the xy-plane?

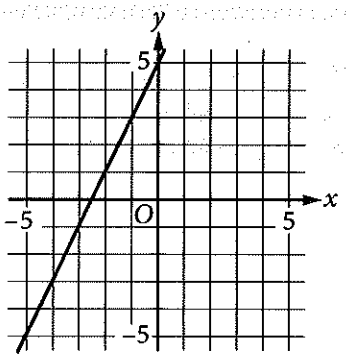
A)



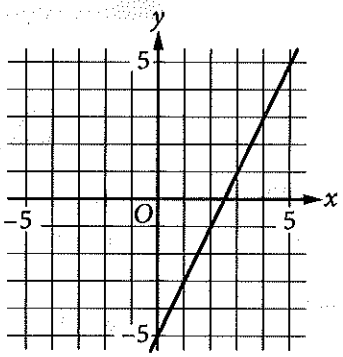
B)



C)



D)



CONTINUE

6

If $x = \frac{2}{3}y$ and $y = 18$, what is the value of $2x - 3$?

A) 21
B) 15
C) 12
D) 10

7

A bricklayer uses the formula $n = 7\ell h$ to estimate the number of bricks, n, needed to build a wall that is ℓ feet long and h feet high. Which of the following correctly expresses ℓ in terms of n and h ?

A) $\ell = \frac{7}{nh}$

B) $\ell = \frac{h}{7n}$

C) $\ell = \frac{n}{7h}$

D) $\ell = \frac{n}{7+h}$

8

x	$w(x)$	$t(x)$
1	−1	−3
2	3	−1
3	4	1
4	3	3
5	−1	5

The table above shows some values of the functions w and t. For which value of x is $w(x) + t(x) = x$?

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

9

If $\sqrt{x} + \sqrt{9} = \sqrt{64}$, what is the value of x ?

A) $\sqrt{5}$
B) 5
C) 25
D) 55

CONTINUE

10

Jaime is preparing for a bicycle race. His goal is to bicycle an average of at least 280 miles per week for 4 weeks. He bicycled 240 miles the first week, 310 miles the second week, and 320 miles the third week. Which inequality can be used to represent the number of miles, x, Jaime could bicycle on the 4th week to meet his goal?

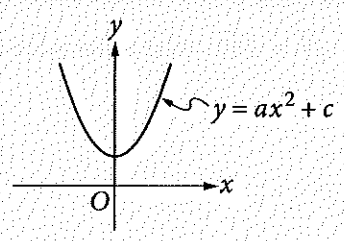
A) $\frac{240 + 310 + 320}{3} + x \geq 280$

B) $240 + 310 + 320 \geq x(280)$

C) $\frac{240}{4} + \frac{310}{4} + \frac{320}{4} + x \geq 280$

D) $240 + 310 + 320 + x \geq 4(280)$

11



The vertex of the parabola in the xy-plane above is $(0, c)$. Which of the following is true about the parabola with the equation $y = -a(x - b)^2 + c$?

A) The vertex is (b, c) and the graph opens upward.

B) The vertex is (b, c) and the graph opens downward.

C) The vertex is $(-b, c)$ and the graph opens upward.

D) The vertex is $(-b, c)$ and the graph opens downward.

12

Which of the following is equivalent to $\frac{4x^2 + 6x}{4x + 2}$?

A) x

B) $x + 4$

C) $x - \frac{2}{4x + 2}$

D) $x + 1 - \frac{2}{4x + 2}$

13

$$2x^2 - 4x = t$$

In the equation above, t is a constant. If the equation has no real solutions, which of the following could be the value of t ?

A) -3

B) -1

C) 1

D) 3

CONTINUE

14

A laundry service is buying detergent and fabric softener from its supplier. The supplier will deliver no more than 300 pounds in a shipment. Each container of detergent weighs 7.35 pounds, and each container of fabric softener weighs 6.2 pounds. The service wants to buy at least twice as many containers of detergent as containers of fabric softener. Let d represent the number of containers of detergent, and let s represent the number of containers of fabric softener, where d and s are nonnegative integers. Which of the following systems of inequalities best represents this situation?

A) $7.35d + 6.2s \leq 300$
$d \geq 2s$

B) $7.35d + 6.2s \leq 300$
$2d \geq s$

C) $14.7d + 6.2s \leq 300$
$d \geq 2s$

D) $14.7d + 6.2s \leq 300$
$2d \geq s$

15

Which of the following is equivalent to $\left(a + \frac{b}{2}\right)^2$?

A) $a^2 + \frac{b^2}{2}$

B) $a^2 + \frac{b^2}{4}$

C) $a^2 + \frac{ab}{2} + \frac{b^2}{2}$

D) $a^2 + ab + \frac{b^2}{4}$

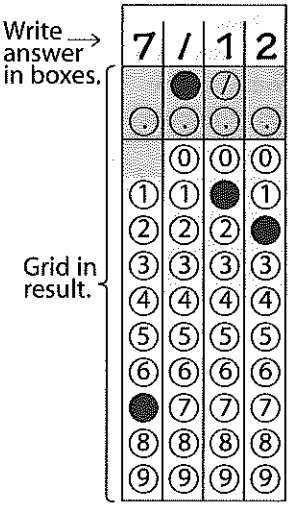
CONTINUE

DIRECTIONS

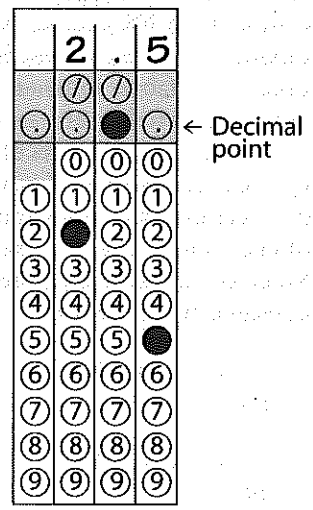
For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

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 circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle 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 3 1 / 2 is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

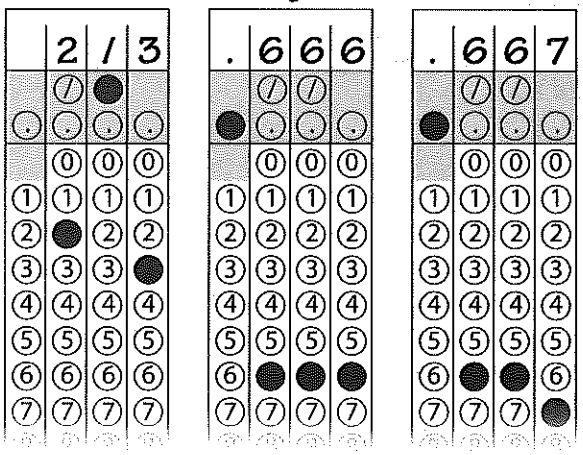
Answer: $\frac{7}{12}$



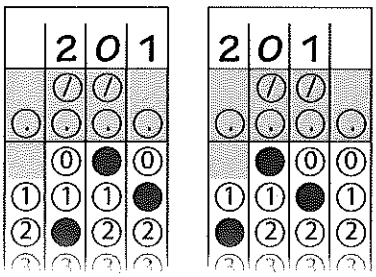
Answer: 2.5



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



Answer: 201 – either position is correct



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

CONTINUE

16

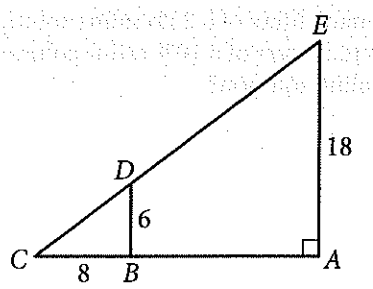
If $a^{\frac{b}{4}} = 16$ for positive integers a and b, what is one possible value of b ?

17

$$\frac{2}{3}t = \frac{5}{2}$$

What value of t is the solution of the equation above?

18



In the figure above, $\overline{BD}$ is parallel to $\overline{AE}$. What is the length of $\overline{CE}$?

CONTINUE

19

How many liters of a 25% saline solution must be added to 3 liters of a 10% saline solution to obtain a 15% saline solution?

20

Points A and B lie on a circle with radius 1, and arc $\widehat{AB}$ has length $\frac{\pi}{3}$. What fraction of the circumference of the circle is the length of arc $\widehat{AB}$?

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

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

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

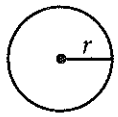
DIRECTIONS

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

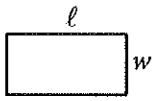
NOTES

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

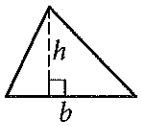
REFERENCE



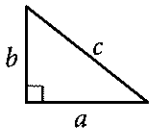
$A = \pi r^2$
$C = 2\pi r$



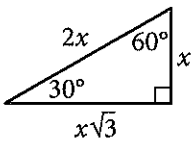
$A = \ell w$

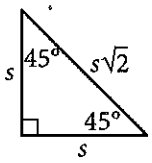


$A = \frac{1}{2}bh$

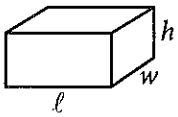


$c^2 = a^2 + b^2$

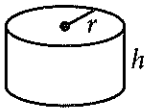




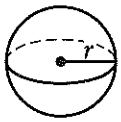
Special Right Triangles



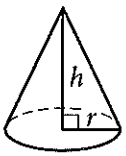
$V = \ell wh$



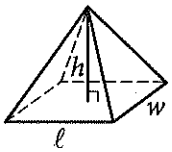
$V = \pi r^2 h$



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



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



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

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

CONTINUE

1

Which expression is equivalent to $(2x^2 - 4) - (-3x^2 + 2x - 7)$?

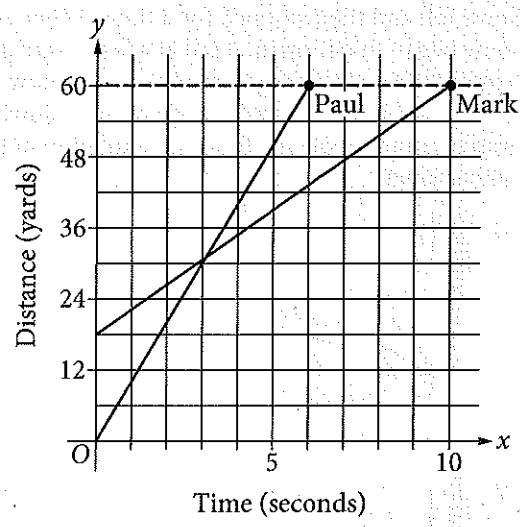
A) $5x^2 - 2x + 3$

B) $5x^2 + 2x - 3$

C) $-x^2 - 2x - 11$

D) $-x^2 + 2x - 11$

2



The graph above shows the positions of Paul and Mark during a race. Paul and Mark each ran at a constant rate, and Mark was given a head start to shorten the distance he needed to run. Paul finished the race in 6 seconds, and Mark finished the race in 10 seconds. According to the graph, Mark was given a head start of how many yards?

A) 3

B) 12

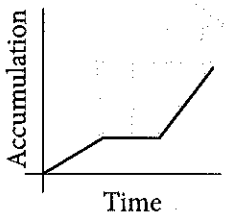
C) 18

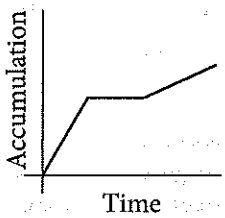
D) 24

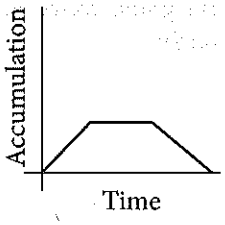
CONTINUE

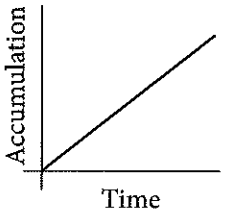
3

Snow fell and then stopped for a time. When the snow began to fall again, it fell at a faster rate than it had initially. Assuming that none of the snow melted during the time indicated, which of the following graphs could model the total accumulation of snow versus time?

A)


B)


C)


D)


4

A website-hosting service charges businesses a onetime setup fee of \$350 plus d dollars for each month. If a business owner paid \$1,010 for the first 12 months, including the setup fee, what is the value of d ?

A) 25

B) 35

C) 45

D) 55

5

$$6x - 9y > 12$$

Which of the following inequalities is equivalent to the inequality above?

A) $x - y > 2$

B) $2x - 3y > 4$

C) $3x - 2y > 4$

D) $3y - 2x > 2$

CONTINUE

6

Where Do People Get Most of Their Medical Information?

Source	Percent of those surveyed
Doctor	63%
Internet	13%
Magazines/brochures	9%
Pharmacy	6%
Television	2%
Other/none of the above	7%

The table above shows a summary of 1,200 responses to a survey question. Based on the table, how many of those surveyed get most of their medical information from either a doctor or the Internet?

A) 865

B) 887

C) 912

D) 926

7

The members of a city council wanted to assess the opinions of all city residents about converting an open field into a dog park. The council surveyed a sample of 500 city residents who own dogs. The survey showed that the majority of those sampled were in favor of the dog park. Which of the following is true about the city council's survey?

A) It shows that the majority of city residents are in favor of the dog park.

B) The survey sample should have included more residents who are dog owners.

C) The survey sample should have consisted entirely of residents who do not own dogs.

D) The survey sample is biased because it is not representative of all city residents.

CONTINUE

8

Ice Cream and Topping Selections

		Flavor	
		Vanilla	Chocolate
Topping	Hot fudge	8	6
	Caramel	5	6

The table above shows the flavors of ice cream and the toppings chosen by the people at a party. Each person chose one flavor of ice cream and one topping. Of the people who chose vanilla ice cream, what fraction chose hot fudge as a topping?

A) $\frac{8}{25}$

B) $\frac{5}{13}$

C) $\frac{13}{25}$

D) $\frac{8}{13}$

9

The total area of a coastal city is 92.1 square miles, of which 11.3 square miles is water. If the city had a population of 621,000 people in the year 2010, which of the following is closest to the population density, in people per square mile of land area, of the city at that time?

A) 6,740

B) 7,690

C) 55,000

D) 76,000

CONTINUE

10

Between 1497 and 1500, Amerigo Vespucci embarked on two voyages to the New World. According to Vespucci's letters, the first voyage lasted 43 days longer than the second voyage, and the two voyages combined lasted a total of 1,003 days. How many days did the second voyage last?

A) 460

B) 480

C) 520

D) 540

11

$$7x + 3y = 8$$
$$6x - 3y = 5$$

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

A) $-\frac{4}{3}$

B) $\frac{2}{3}$

C) $\frac{4}{3}$

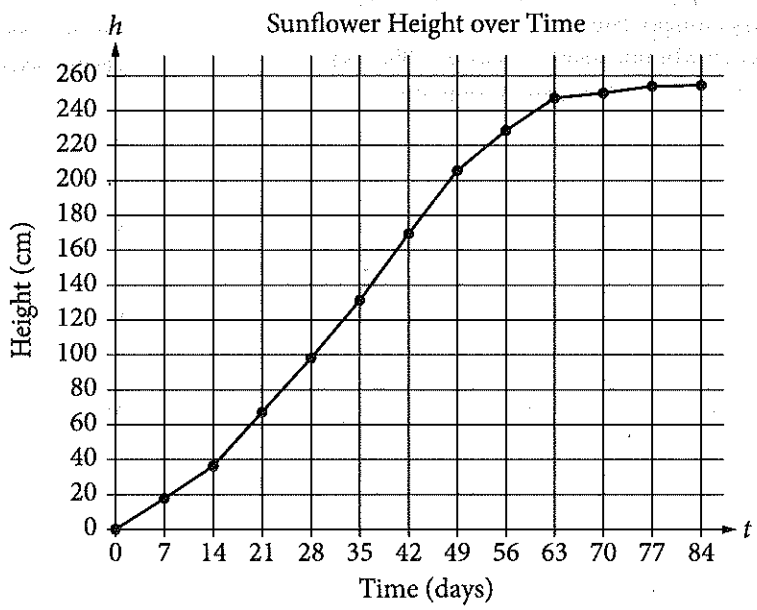
D) $\frac{22}{3}$

CONTINUE

Questions 12-14 refer to the following information.

Sunflower Growth

Day	Height (cm)
0	0.00
7	17.93
14	36.36
21	67.76
28	98.10
35	131.00
42	169.50
49	205.50
56	228.30
63	247.10
70	250.50
77	253.80
84	254.50



In 1919, H. S. Reed and R. H. Holland published a paper on the growth of sunflowers. Included in the paper were the table and graph above, which show the height h, in centimeters, of a sunflower t days after the sunflower begins to grow.

12

Over which of the following time periods is the average growth rate of the sunflower least?

A) Day 0 to Day 21

B) Day 21 to Day 42

C) Day 42 to Day 63

D) Day 63 to Day 84

13

The function h, defined by $h(t) = at + b$, where a and b are constants, models the height, in centimeters, of the sunflower after t days of growth during a time period in which the growth is approximately linear. What does a represent?

A) The predicted number of centimeters the sunflower grows each day during the period

B) The predicted height, in centimeters, of the sunflower at the beginning of the period

C) The predicted height, in centimeters, of the sunflower at the end of the period

D) The predicted total increase in the height of the sunflower, in centimeters, during the period

CONTINUE

14

The growth rate of the sunflower from day 14 to day 35 is nearly constant. On this interval, which of the following equations best models the height h, in centimeters, of the sunflower t days after it begins to grow?

A) $h = 2.1t - 15$

B) $h = 4.5t - 27$

C) $h = 6.8t - 12$

D) $h = 13.2t - 18$

15

x	1	2	3	4	5
y	$\frac{11}{4}$	$\frac{25}{4}$	$\frac{39}{4}$	$\frac{53}{4}$	$\frac{67}{4}$

Which of the following equations relates y to x for the values in the table above?

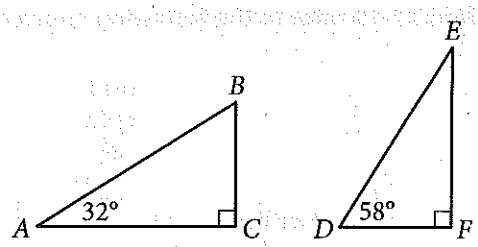
A) $y = \frac{1}{2} \cdot \left(\frac{5}{2}\right)^x$

B) $y = 2 \cdot \left(\frac{3}{4}\right)^x$

C) $y = \frac{3}{4}x + 2$

D) $y = \frac{7}{2}x - \frac{3}{4}$

16



Triangles ABC and DEF are shown above. Which of the following is equal to the ratio $\frac{BC}{AB}$?

A) $\frac{DE}{DF}$

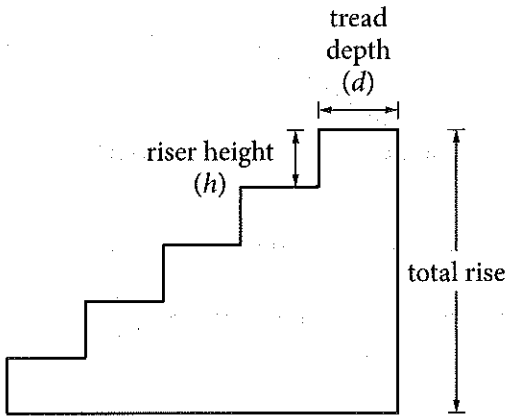
B) $\frac{DF}{DE}$

C) $\frac{DF}{EF}$

D) $\frac{EF}{DE}$

CONTINUE

Questions 17-19 refer to the following information.



Note: Figure not drawn to scale.

When designing a stairway, an architect can use the riser-tread formula $2h + d = 25$, where h is the riser height, in inches, and d is the tread depth, in inches. For any given stairway, the riser heights are the same and the tread depths are the same for all steps in that stairway.

The number of steps in a stairway is the number of its risers. For example, there are 5 steps in the stairway in the figure above. The total rise of a stairway is the sum of the riser heights as shown in the figure.

17

Which of the following expresses the riser height in terms of the tread depth?

A) $h = \frac{1}{2}(25 + d)$

B) $h = \frac{1}{2}(25 - d)$

C) $h = -\frac{1}{2}(25 + d)$

D) $h = -\frac{1}{2}(25 - d)$

18

Some building codes require that, for indoor stairways, the tread depth must be at least 9 inches and the riser height must be at least 5 inches. According to the riser-tread formula, which of the following inequalities represents the set of all possible values for the riser height that meets this code requirement?

A) $0 \le h \le 5$

B) $h \ge 5$

C) $5 \le h \le 8$

D) $8 \le h \le 16$

19

An architect wants to use the riser-tread formula to design a stairway with a total rise of 9 feet, a riser height between 7 and 8 inches, and an odd number of steps. With the architect's constraints, which of the following must be the tread depth, in inches, of the stairway? (1 foot = 12 inches)

A) 7.2

B) 9.5

C) 10.6

D) 15

CONTINUE

20

What is the sum of the solutions to $(x-6)(x+0.7)=0$?

A) -6.7

B) -5.3

C) 5.3

D) 6.7

21

A study was done on the weights of different types of fish in a pond. A random sample of fish were caught and marked in order to ensure that none were weighed more than once. The sample contained 150 largemouth bass, of which 30% weighed more than 2 pounds. Which of the following conclusions is best supported by the sample data?

A) The majority of all fish in the pond weigh less than 2 pounds.

B) The average weight of all fish in the pond is approximately 2 pounds.

C) Approximately 30% of all fish in the pond weigh more than 2 pounds.

D) Approximately 30% of all largemouth bass in the pond weigh more than 2 pounds.

22

Number of States with 10 or More Electoral Votes in 2008

Electoral votes	Frequency
10	4
11	4
12	1
13	1
15	3
17	1
20	1
21	2
27	1
31	1
34	1
55	1

In 2008, there were 21 states with 10 or more electoral votes, as shown in the table above. Based on the table, what was the median number of electoral votes for the 21 states?

A) 13

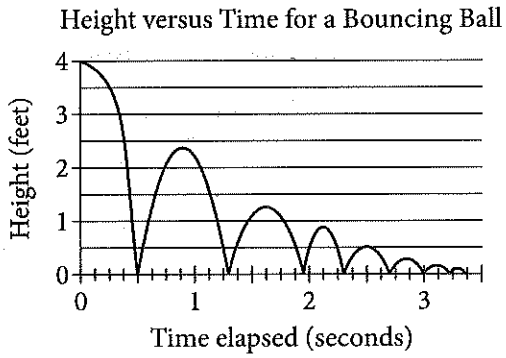
B) 15

C) 17

D) 20

CONTINUE

23



As part of an experiment, a ball was dropped and allowed to bounce repeatedly off the ground until it came to rest. The graph above represents the relationship between the time elapsed after the ball was dropped and the height of the ball above the ground. After it was dropped, how many times was the ball at a height of 2 feet?

A) One
B) Two
C) Three
D) Four

24

A customer's monthly water bill was \$75.74. Due to a rate increase, her monthly bill is now \$79.86. To the nearest tenth of a percent, by what percent did the amount of the customer's water bill increase?

A) 4.1%
B) 5.1%
C) 5.2%
D) 5.4%

25

x	$f(x)$
0	−2
2	4
6	16

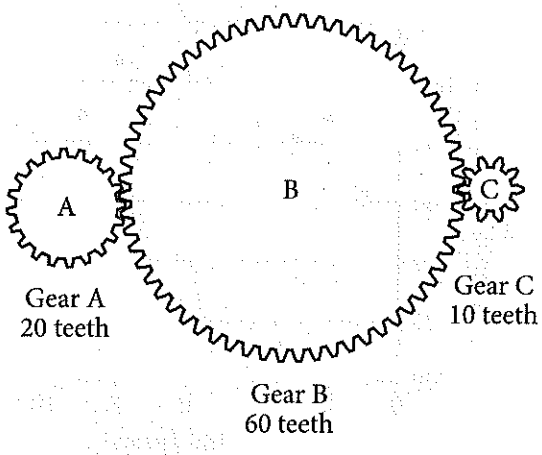
Some values of the linear function f are shown in the table above. What is the value of $f(3)$?

A) 6
B) 7
C) 8
D) 9

CONTINUE

26

A gear ratio $r{:}s$ is the ratio of the number of teeth of two connected gears. The ratio of the number of revolutions per minute (rpm) of two gear wheels is $s{:}r$. In the diagram below, Gear A is turned by a motor. The turning of Gear A causes Gears B and C to turn as well.



If Gear A is rotated by the motor at a rate of 100 rpm, what is the number of revolutions per minute for Gear C?

A) 50

B) 110

C) 200

D) 1,000

27

In the xy-plane, the graph of $2x^2 - 6x + 2y^2 + 2y = 45$ is a circle. What is the radius of the circle?

A) 5

B) 6.5

C) $\sqrt{40}$

D) $\sqrt{50}$

28

Two different points on a number line are both 3 units from the point with coordinate -4. The solution to which of the following equations gives the coordinates of both points?

A) $|x + 4| = 3$

B) $|x - 4| = 3$

C) $|x + 3| = 4$

D) $|x - 3| = 4$

CONTINUE

29

A motor powers a model car so that after starting from rest, the car travels s inches in t seconds, where $s = 16t\sqrt{t}$. Which of the following gives the average speed of the car, in inches per second, over the first t seconds after it starts?

A) $4\sqrt{t}$

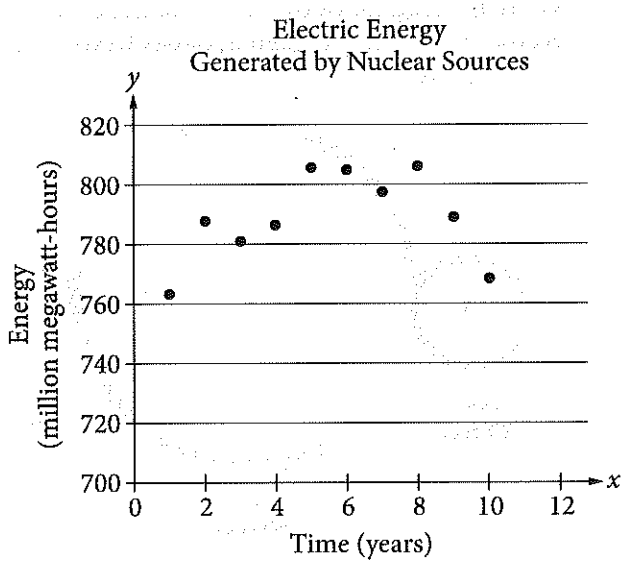
B) $16\sqrt{t}$

C) $\frac{16}{\sqrt{t}}$

D) $16t$

30

The scatterplot below shows the amount of electric energy generated, in millions of megawatt-hours, by nuclear sources over a 10-year period.



Of the following equations, which best models the data in the scatterplot?

A) $y = 1.674x^2 + 19.76x - 745.73$

B) $y = -1.674x^2 - 19.76x - 745.73$

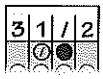
C) $y = 1.674x^2 + 19.76x + 745.73$

D) $y = -1.674x^2 + 19.76x + 745.73$

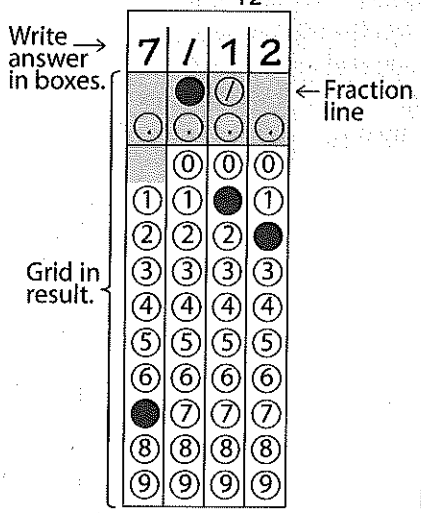
CONTINUE

DIRECTIONS

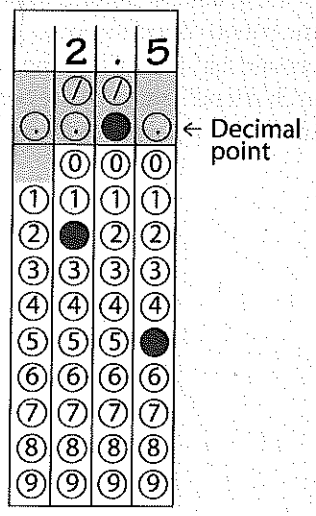
For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

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 circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
4. Some problems may have more than one correct answer. In such cases, grid only one answer.
5. **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If  is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
6. **Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

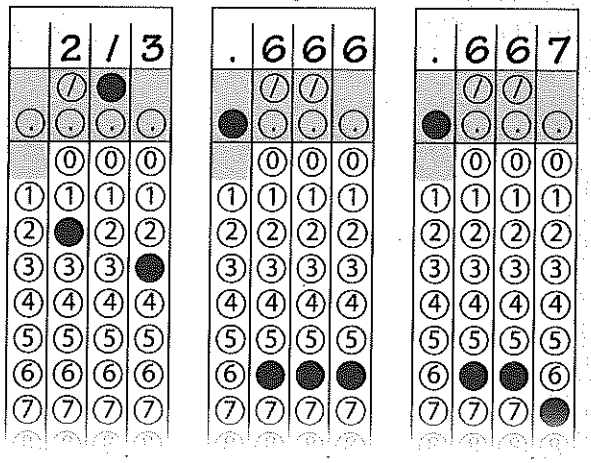
Answer: $\frac{7}{12}$



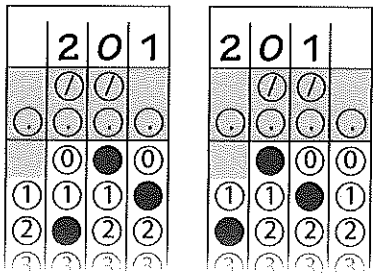
Answer: 2.5



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



Answer: 201 – either position is correct



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

CONTINUE

31

A group of friends decided to divide the \$800 cost of a trip equally among themselves. When two of the friends decided not to go on the trip, those remaining still divided the \$800 cost equally, but each friend's share of the cost increased by \$20. How many friends were in the group originally?

32

$$2(5x - 20) - (15 + 8x) = 7$$

What value of x satisfies the equation above?

CONTINUE

33

A laboratory supply company produces graduated cylinders, each with an internal radius of 2 inches and an internal height between 7.75 inches and 8 inches. What is one possible volume, rounded to the nearest cubic inch, of a graduated cylinder produced by this company?

34

In the xy-plane, the graph of $y = 3x^2 - 14x$ intersects the graph of $y = x$ at the points $(0, 0)$ and (a, a). What is the value of a ?

CONTINUE

35

The line with the equation $\frac{4}{5}x + \frac{1}{3}y = 1$ is graphed in the xy-plane. What is the x-coordinate of the x-intercept of the line?

36

	Masses (kilograms)					
Andrew	2.4	2.5	3.6	3.1	2.5	2.7
Maria	x	3.1	2.7	2.9	3.3	2.8

Andrew and Maria each collected six rocks, and the masses of the rocks are shown in the table above. The mean of the masses of the rocks Maria collected is 0.1 kilogram greater than the mean of the masses of the rocks Andrew collected. What is the value of x ?

CONTINUE

37

Jeremy deposited x dollars in his investment account on January 1, 2001. The amount of money in the account doubled each year until Jeremy had 480 dollars in his investment account on January 1, 2005. What is the value of x ?

38

A school district is forming a committee to discuss plans for the construction of a new high school. Of those invited to join the committee, 15% are parents of students, 45% are teachers from the current high school, 25% are school and district administrators, and the remaining 6 individuals are students. How many more teachers were invited to join the committee than school and district administrators?

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

No Test Material On This Page

YOUR NAME (PRINT) .....
LAST FIRST MI

TEST CENTER .....
NUMBER NAME OF TEST CENTER ROOM NUMBER

The SAT®

GENERAL DIRECTIONS

- You may work on only one section at a time.
- If you finish a section before time is called, check your work on that section. You may NOT turn to any other section.

MARKING ANSWERS

- Be sure to mark your answer sheet properly.

COMPLETE MARK ● EXAMPLES OF INCOMPLETE MARKS

- You must use a No. 2 pencil.
- Carefully mark only one answer for each question.
- Make sure you fill the entire circle darkly and completely.
- Do not make any stray marks on your answer sheet.
- If you erase, do so completely. Incomplete erasures may be scored as intended answers.
- Use only the answer spaces that correspond to the question numbers.

USING YOUR TEST BOOK

- You may use the test book for scratch work, but you will not receive credit for anything that you write in your test book.
- After time has been called, you may not transfer answers from your test book to your answer sheet or fill in circles.
- You may not fold or remove pages or portions of a page from this book, or take the book or answer sheet from the testing room.

SCORING

- For each correct answer, you receive one point.
- You do not lose points for wrong answers; therefore, you should try to answer every question even if you are not sure of the correct answer.

IMPORTANT

The codes below are unique to your test book. Copy them on your answer sheet in boxes 8 and 9 and fill in the corresponding circles exactly as shown.

9	TEST ID					
3	4	1	8	2	0	0

8	FORM CODE					
K	W	M	E	2	0	0

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