1 1

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.

Questions 1–10 are based on the following passage and supplementary material.

This passage is adapted from Kevin Drum, "*America's Real Criminal Element: Lead*" ©2013 Mother Jones.

Experts often suggest that crime resembles an epidemic. But what kind? Economics professor Karl Smith has a good rule of thumb for categorizing epidemics: If it spreads along lines of communication, he says, the cause is information. Think Bieber Fever.[1] If it travels along major transportation routes, the cause is microbial. Think influenza. If it spreads out like a fan, the cause is an insect. Think malaria. But if it's everywhere, all at once—as both the rise of crime in the '60s and '70s and the fall of crime in the '90s seemed to be—the cause is a molecule.

A molecule? That sounds crazy. What molecule could be responsible for a steep and sudden decline in violent crime?

Well, here's one possibility: $Pb(CH_2CH_3)_4$.

In 1994, Rick Nevin was a consultant working for the US Department of Housing and Urban Development on the costs and benefits of removing lead paint from old houses. A growing body of research had linked lead exposure in small children with a whole raft of complications later in life, including lower IQ, hyperactivity, behavioral problems, and learning disabilities. A recent study had also suggested a link between childhood lead exposure and juvenile delinquency later on. Maybe reducing lead exposure had an effect on violent crime too?

That tip took Nevin in a different direction. The biggest source of lead in the postwar era, it turns out, wasn't paint, but leaded gasoline. If you chart the rise and fall of atmospheric lead caused by the rise and fall of leaded gasoline consumption, you get an upside-down U. Lead emissions from tailpipes rose steadily from the early '40s through the early '70s, nearly quadrupling over that period. Then, as unleaded gasoline began to replace leaded gasoline, emissions plummeted.

Intriguingly, violent crime rates followed the same upside-down U pattern (see the graph). The only thing different was the time period. Crime rates rose dramatically in the '60s through the '80s, and then began dropping steadily starting in the early '90s. The two curves looked eerily identical, but were offset by about 20 years.

So Nevin dug up detailed data on lead emissions and crime rates to see if the similarity of the curves was as good as it seemed. It turned out to be even better. In a 2000 paper he concluded that if you add a lag time of 23 years, lead emissions from automobiles explain 90 percent of the variation in violent crime in America. Toddlers who ingested high levels of lead in the '40s and '50s really were more likely to become violent criminals in the '60s, '70s, and '80s.

[1] Enthusiasm for the music and person of Justin Bieber.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1 1

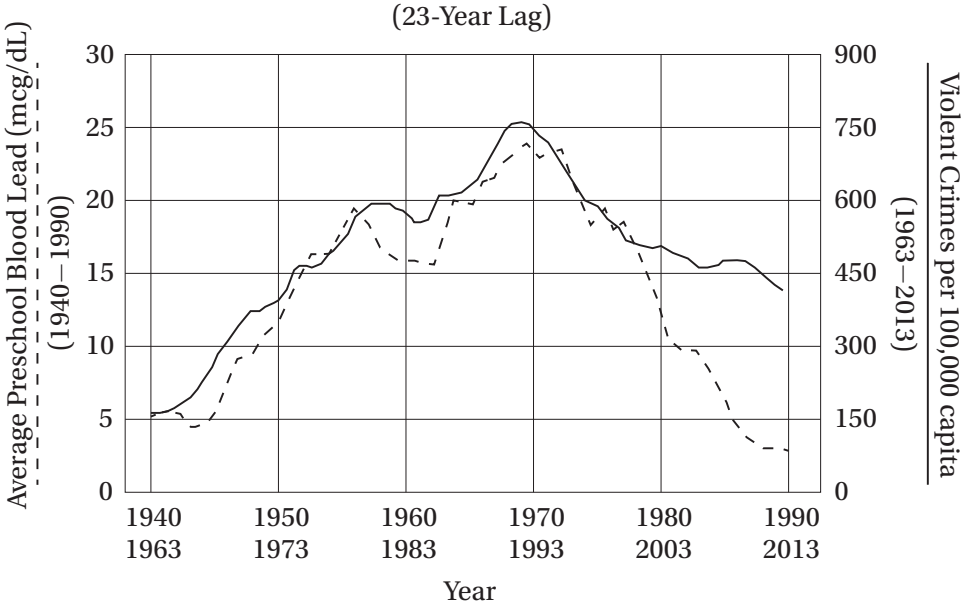
And with that we have our molecule: tetraethyl lead, the gasoline additive invented by General Motors in the 1920s to prevent knocking and pinging in high-performance engines. As auto sales boomed after World War II, and drivers in powerful new cars increasingly asked service station attendants to "fill 'er up with ethyl," they were unwittingly creating a crime wave two decades later.

It was an exciting conjecture, and it prompted an immediate wave of . . . nothing. Nevin's paper was almost completely ignored, and in one sense it's easy to see why—Nevin is an economist, not a criminologist, and his paper was published in *Environmental Research*, not a journal with a big readership in the criminology community. What's more, a single correlation between two curves isn't all that impressive, econometrically speaking. Sales of vinyl LPs rose in the postwar period too, and then declined in the '80s and '90s. No matter how good the fit, if you only have a single correlation it might just be a coincidence. You need to do something more to establish causality.

So in 2007, Nevin collected lead data and crime data for Australia, Canada, Great Britain, Finland, France, Italy, New Zealand and West Germany. Every time, the two curves fit each other astonishingly well.

The gasoline lead hypothesis helps explain some things we might not have realized even needed explaining. For example, murder rates have always been higher in big cities than in towns and small cities. Nevin suggests that, because big cities have lots of cars in a small area, they also had high densities of atmospheric lead during the postwar era. But as lead levels in gasoline decreased, the differences between big and small cities largely went away. And guess what? The difference in murder rates went away too. Today, homicide rates are similar in cities of all sizes. It may be that violent crime isn't an inevitable consequence of being a big city after all.

PRESCHOOL BLOOD LEAD LEVELS VS. VIOLENT CRIME RATES IN THE U.S.
(23-Year Lag)



Source: Rick Nevin, *Lead Poisoning and The Bell Curve*, 2012

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

1

In the first paragraph, Karl Smith's work is presented primarily as

A) a controversial sociological hypothesis.
B) a warning about potentially dangerous economic trends.
C) a useful model for conceptualizing a variety of phenomena.
D) a potential medical solution to a persistent social problem.

2

The author suggests that promising research in the social sciences is sometimes ignored because it

A) is not presented by authorities with the proper credentials.
B) is not supported by controlled scientific experiments.
C) relies on complex mathematical calculations that are not easily understood.
D) uses historical data that are not necessarily valid in the modern era.

3

Which of the following provides the strongest evidence for the answer to the previous question?

A) Lines 24–27 ("A recent study . . . later on")
B) Lines 49–52 ("In a 2000 paper . . . America")
C) Lines 68–72 ("Nevin is . . . community")
D) Lines 72–74 ("What's more . . . speaking")

4

According to the graph, which of the following is closest to the percent increase in violent crime in America from 1963 to 1993?

A) 600%
B) 400%
C) 75%
D) 20%

5

According to the graph, which decade of violent crime statistics provides the LEAST support to Rick Nevin's hypothesis?

A) 1963–1973
B) 1980–1990
C) 1983–1993
D) 2003–2013

6

The author mentions "sales of vinyl LPs" (line 74) primarily as an example of

A) another economic factor that may explain a social trend.
B) how harmful chemicals can be spread via consumer products.
C) a statistic that may be more coincidental than explanatory.
D) a counterintuitive trend in consumer behavior.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

7

The "complications" in line 22 are

A) obstacles to gathering relevant data.
B) controversies about theoretical models.
C) challenges to the implementation of social policies.
D) psychological problems.

8

The author characterizes the "drivers" in line 60 primarily as

A) inadvertent abettors.
B) unintentional heroes.
C) greedy consumers.
D) devious conspirators.

9

In line 49, "even better" most nearly means

A) less controversial.
B) more correlative.
C) easier to calculate.
D) more aesthetically engaging.

10

The final paragraph (lines 85–98) serves primarily to

A) suggest topics for future research.
B) concede a theoretical drawback.
C) propose a novel alternative.
D) describe a supportive implication.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

Questions 11–21 are based on the following passages.

Passage 1 is adapted from an essay written by John Aldridge in 1951. ©1951 by John Aldridge. Passage 2 is adapted from Brom Weber, "*Ernest Hemingway's Genteel Bullfight*," published in The American Novel and the Nineteen Twenties. ©1971 by Hodder Education.

Passage 1

By the time we were old enough to read Hemingway, he had become legendary. Like Lord Byron a century earlier, he had learned to play himself, his own best hero, with superb conviction. He was Hemingway of the rugged outdoor grin and the hairy chest posing beside a lion he had just shot. He was Tarzan Hemingway, crouching in the African bush with elephant gun at ready. He was War Correspondent Hemingway writing a play in the Hotel Florida in Madrid while thirty fascist shells crashed through the roof. Later, he was Task Force Hemingway swathed in ammunition belts and defending his post singlehandedly against fierce German attacks.

But even without the legend, the chest-beating, wisecracking pose that was later to seem so incredibly absurd, his impact upon us was tremendous. The feeling he gave us was one of immense expansiveness, freedom and, at the same time, absolute stability and control. We could follow him, imitate his cold detachment, through all the doubts and fears of adolescence and come out pure and untouched. The words he put down seemed to us to have been carved from the living stone of life. They conveyed exactly the taste, smell and feel of experience as it was, as it might possibly be. And so we began unconsciously to translate our own sensations into their terms and to impose on everything we did and felt the particular emotions they aroused in us.

The Hemingway time was a good time to be young. We had much then that the war later forced out of us, something far greater than Hemingway's strong formative influence.

Later writers who lost or got rid of Hemingway have been able to find nothing to put in his place. They have rejected his time as untrue for them only to fail at finding themselves in their own time. Others, in their embarrassment at the hold he once had over them, have not profited by the lessons he had to teach, and still others were never touched by him at all. These last are perhaps the real unfortunates, for they have been denied access to a powerful tradition.

Passage 2

One wonders why Hemingway's greatest works now seem unable to evoke the same sense of a tottering world that in the 1920s established Ernest Hemingway's reputation. These novels should be speaking to us. Our social structure is as shaken, our philosophical despair as great, our everyday experience as unsatisfying. We have had more war than Hemingway ever dreamed of. Our violence—physical, emotional, and intellectual—is not inferior to that of the 1920s. Yet Hemingway's great novels no longer seem to penetrate deeply the surface of existence. One begins to doubt that they ever did so significantly in the 1920s.

Hemingway's novels indulged the dominant genteel tradition in American culture while seeming to repudiate it. They yielded to the functionalist, technological aesthetic of the culture instead of resisting in the manner of Frank Lloyd Wright. Hemingway, in effect, became a dupe of his culture rather than its moral-aesthetic conscience. As a consequence, the import of his work has diminished. There is some evidence from his stylistic evolution that Hemingway himself must have felt as much, for Hemingway's famous stylistic economy frequently seems to conceal another kind of writer, with much richer rhetorical resources to hand. So, *Death in the Afternoon* (1932), Hemingway's bullfighting opus and his first book after *A Farewell to Arms* (1929), reveals great uneasiness over his earlier accomplishment. In it, he defends his literary method with a doctrine of ambiguity: "If a writer of prose knows enough about what he is writing about he may

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

omit things that he knows and the reader, if the writer is writing truly enough, will have a feeling of those things as strongly as though the writer had stated them."

Hemingway made much the same theoretical point in another way in *Death in the Afternoon* apparently believing that a formal reduction of aesthetic complexity was the only kind of design that had value.

Perhaps the greatest irony of *Death in the Afternoon* is its unmistakably baroque prose, which Hemingway himself embarrassedly admitted was "flowery." Reviewers, unable to challenge Hemingway's expertise in the art of bullfighting, noted that its style was "awkward, tortuous, [and] belligerently clumsy."

Death in the Afternoon is an extraordinarily self-indulgent, unruly, clownish, garrulous, and satiric book, with scrambled chronologies, willful digressions, mock-scholarly apparatuses, fictional interludes, and scathing allusions. Its inflated style can hardly penetrate the façade, let alone deflate humanity.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

11

On which topic do the authors of the two passages most strongly DISAGREE?

A) The economy of Hemingway's writing
B) The incisiveness of Hemingway's prose
C) The sincerity of Hemingway's portrayals
D) The extent of Hemingway's reputation

12

Which pair of sentences provides the strongest evidence for the answer to the previous question?

A) Lines 5–7 ("He was . . . just shot") and lines 85–89 ("Hemingway . . . had value")
B) Lines 37–39 ("Later writers . . . his place") and lines 55–56 ("Our violence . . . the 1920s")
C) Lines 24–26 ("The words . . . stone of life") and lines 56–58 ("Yet . . . existence")
D) Lines 34–36 ("We had much . . . influence") and lines 90–93 ("Perhaps the greatest . . . was 'flowery'")

13

Which of the following best describes how each passage characterizes Hemingway?

A) Passage 1 portrays him as a tortured poet, but Passage 2 portrays him as a crass amateur.
B) Passage 1 portrays him as a master of refinement, but Passage 2 portrays him as a literary revolutionary.
C) Passage 1 portrays him as a hero, but Passage 2 portrays him as a cultural conformist.
D) Passage 1 portrays him as an absurd warmonger, but Passage 2 portrays him as an undisciplined artist.

14

Which statement about Hemingway is supported by both passages?

A) He was an artistic pioneer, although he was underappreciated in his time.
B) He was a consistent practitioner of spare and evocative prose.
C) His characters serve as archetypes for masculine adventure.
D) His wartime narratives do not fully capture the horrors of war.

15

In line 26, the phrase "living stone" most nearly means

A) salient experience.
B) inevitable regret.
C) stubborn resistance.
D) durable memorial.

16

Lines 28–32 ("And so we . . . aroused in us") suggests that many of Hemingway's readers were inclined to

A) emulate his adventures.
B) resent his glorification of war.
C) imitate his literary style.
D) identify with his language.

17

The "lessons" mentioned in line 43 most likely include stories of

A) transformative romantic love.
B) confidence in the face of danger.
C) indulgent self-examination.
D) corporate or political ambition.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

18

In line 49, the word "tottering" is intended to evoke a sense of

A) infantile frailty.
B) economic instability.
C) artistic immaturity.
D) societal upheaval.

19

The author of Passage 1 would most likely regard the statement in lines 66–67 ("Hemingway, in effect . . . conscience"), with

A) journalistic detachment.
B) grudging acquiescence.
C) vehement disagreement.
D) good-natured amusement.

20

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

A) Lines 2–5 ("Like Lord . . . superb conviction")
B) Lines 28–32 ("And so . . . aroused in us")
C) Lines 34–36 ("We had much . . . formative influence")
D) Lines 39–41 ("They have rejected . . . own time")

21

The author of Passage 2 suggests that, in comparison to Hemingway, Frank Lloyd Wright was relatively

A) minimalist.
B) iconoclastic.
C) volatile.
D) traditional.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

Questions 22–32 are based on the following passage.

This passage is from Christopher F. Black, "*The Mystery of the Strong Nuclear Force*." ©2015 by Christopher F. Black and College Hill Coaching.

As any good contractor will tell you, a sound structure requires stable materials. But atoms, the building blocks of everything we know and love—bunnies, brownies, and best friends—don't appear to be models of stability. Why are some atoms, like sodium, so hyperactive while others, like helium, are so aloof? Why do the electrons that inhabit atoms jump around so strangely, from one bizarrely shaped orbital to another? And why do protons, the bits that give atoms their heft and personality, stick together at all?

We are told that every atom has a tiny nucleus containing positively charged protons and uncharged neutrons, swarmed by a cloud of speedy electrons. We are also told that like charges, such as protons, repel each other with a force that shoots up to infinity as they get closer. Even worse, you can't get much closer than two protons in the nucleus of an atom. So what's keeping atomic nuclei from flying apart? Obviously, some other force must be at work inside the atom, something that we can't detect at our human scale. Physicists call this the "strong nuclear force." But where does it come from?

In order for this force to account for the binding of protons in the nucleus, it must have certain interesting features. First, it can't have any sizeable effect beyond the radius of the atom itself, or it would play havoc with the nuclei of adjacent atoms, destroying matter as we know it. Second, it must perfectly balance the repulsive force of electricity at an "equilibrium point" of about 0.7×10^{-15} meters, the average distance between bound protons, in order to create a stable nucleus. Third, it must *repel* at even shorter distances, or else neutrons (which don't have any electrostatic repulsion to balance the strong nuclear force) would collapse into each other. The graph shows the behavior of such a force relative to the repulsive electrostatic force.

In 1935, Japanese physicist Hideki Yukawa proposed that the nuclear force was conveyed by a then-undiscovered heavy subatomic particle he called the pi meson (or "pion"), which (unlike the photon, which conveys the electrostatic force) decays very quickly and therefore conveys a powerful force only over a very short distance. Professor Yukawa's theory, however, was dealt a mortal blow by a series of experiments conducted at Los Alamos National Laboratory in the early 1990s that demonstrated that pions carry force only over distances greater than the distance between bound protons. The pion was a plumber's wrench trying to do a tweezer's job.

Current atomic theory suggests that the strong nuclear force is most likely conveyed by massless particles called "gluons" according to the theory of quantum chromodynamics, or QCD for short. According to QCD, protons and neutrons are composed of smaller particles called quarks, which are held together by the aptly named gluons. This quark-binding force has a "residue" that extends beyond the protons and neutrons themselves to provide just enough force to bind the protons and neutrons together.

If you're hoping that QCD ties up atomic behavior with a tidy little bow, you may be just a bit disappointed. As a quantum theory, it conceives of space and time as tiny chunks that occasionally misbehave, rather than smooth predictable quantities, and its mathematical formulas are perhaps as hard to penetrate as the nucleus itself.

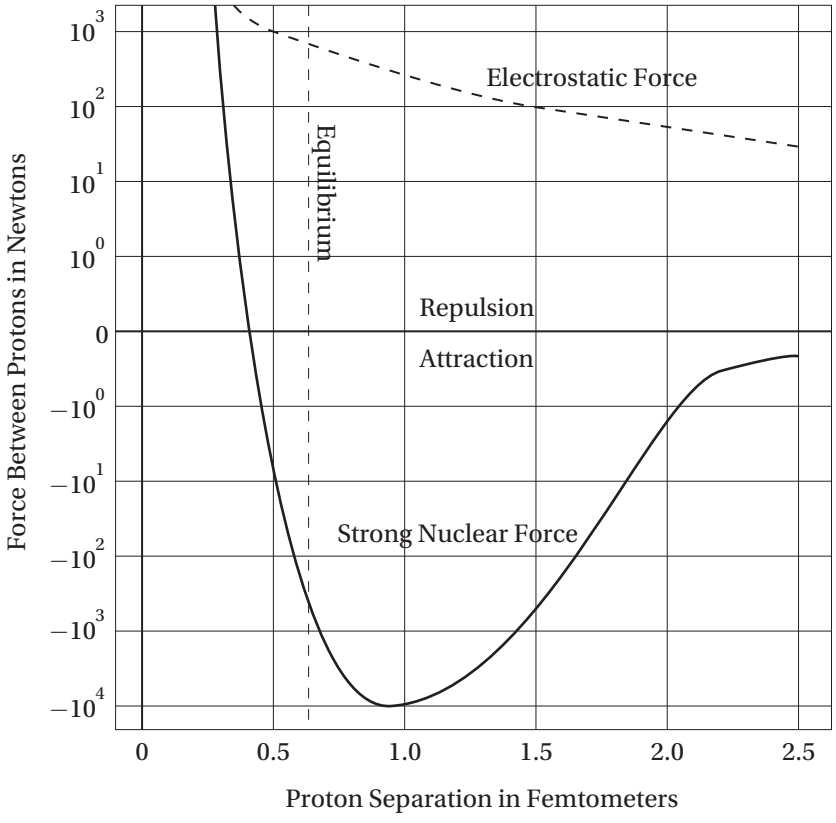
CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

ELECTROSTATIC AND STRONG NUCLEAR FORCES BETWEEN PROTONS



Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

CONTINUE

1

1

22

The primary purpose of the first paragraph (lines 1–12) is to

A) describe a popular misconception.
B) introduce a physical theory.
C) suggest a scientific conundrum.
D) present a personal account.

23

In line 7, "aloof" most nearly means

A) impenetrable.
B) formal.
C) retracted.
D) nonreactive.

24

The question in lines 10–12 ("And why . . . at all?") indicates

A) a minor curiosity to scientists exploring deeper questions.
B) a socially significant puzzle that is unfortunately ignored in scientific circles.
C) a humorous irony in an otherwise serious field of investigation.
D) a central conundrum at the heart of an important scientific field.

25

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

A) Lines 2–5 ("But atoms . . . stability")
B) Lines 19–20 ("Even worse . . . an atom")
C) Lines 55–56 ("The pion . . . tweezer's job")
D) Lines 68–70 ("If you're . . . disappointed")

26

In lines 13–16, the repetition of the phrase "We are" serves primarily to emphasize

A) the predominance of certain conceptions.
B) the personal nature of scientific research.
C) the effectiveness of a particular analogy.
D) the deficiencies in public education.

27

Which of the following best describes the relationship between the electrostatic force and the strong nuclear force between protons at the equilibrium point as shown in the graph?

A) The strong nuclear force is at its maximum, but the electrostatic force is not.
B) The strong nuclear force is at its minimum, but the electrostatic force is near its maximum.
C) The sum of the two forces is zero.
D) The strong nuclear force is zero and the electrostatic force is greater than 100 Newtons.

28

According to the graph, the electrostatic repulsion between two protons separated by 1.5 femtometers is closest to

A) 2 Newtons.
B) 20 Newtons.
C) 100 Newtons.
D) 1,000 Newtons.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

29

The "mortal blow" (line 51) to Hideki Yukawa's theory was the fact that

A) the existence of pions was not confirmed by experimental evidence.

B) pions were discovered to be massless, thereby refuting his theory that they were heavy.

C) experiments showed pions to be ineffective in the range required by atomic theory.

D) pions had a destabilizing effect on atomic nuclei, rather than a stabilizing one.

30

Which of the following best describes the structure of the passage as a whole?

A) a series of intuitive illustrations of a complex physical theory

B) a description of a technical puzzle and the attempts to solve it

C) an account of an experimental finding and its surprising implications

D) a historical overview of a heated scientific controversy

31

The author's writing style is particularly notable for its use of all of the following EXCEPT

A) rhetorical questions.

B) illustrative metaphors.

C) technical specifications.

D) appeals to common intuition.

32

In line 68, "ties up" most nearly means

A) constrains restrictively.

B) resolves neatly.

C) obstructs completely.

D) fastens securely.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

Questions 33–42 are based on the following passage.

This passage is adapted from Jean-Jaques Rousseau, "*Discourse on Inequality and Social Contract.*" Originally published in 1762.

Just as, before putting up a large building, the architect surveys and sounds the site to see if it will bear the weight, the wise legislator does not begin by laying down laws good in themselves, but by investigating the fitness of the people, for which they are destined, to receive them. Plato refused to legislate for the Arcadians and the Cyrenæans,[1] because he knew that both peoples were rich and could not tolerate equality. Also, good laws and bad men were found together in Crete, because Minos had inflicted discipline on a people already burdened with vice.

A thousand nations that have achieved earthly greatness could never have endured good laws. Even those nations that could have endured good laws could have done so only for a very brief period of their long history. Most peoples, like most men, are docile only in youth. As they grow old they become incorrigible. Once customs have become established and prejudices inveterate, it is dangerous and useless to attempt their reformation. The people, like the foolish and cowardly patients who rave at sight of the doctor, can no longer bear that any one should lay hands on its faults to remedy them.

There are indeed times in the history of States when, just as some kinds of illness turn men's heads and make them forget the past, periods of violence and revolution do to peoples what these crises do to individuals. Horror of the past takes the place of forgetfulness, and the state, set on fire by civil wars, is born again, so to speak, from its ashes, and takes on anew, fresh from the jaws of death, the vigor of youth. Such was Sparta at the time of Lycurgus.

But such events are rare exceptions, the cause of which is always to be found in the particular constitution of the state concerned. Such renewals cannot even happen twice to the same nation, for it can make itself free as long as it remains barbarous, but not when the civic impulse has lost its vigor. Then disturbances may destroy it, but revolutions cannot mend it: it needs a master, and not a liberator. Free peoples, be mindful of this maxim: "Liberty may be gained, but can never be recovered."

There is for nations, as for men, a threshold of maturity before which they should not be made subject to laws. But the maturity of a people is not always easily recognizable, and, if it is anticipated, the work is spoiled. One people is amenable to discipline from the beginning; another, not after ten centuries. Russia will never be really civilized, because it was civilized too soon. Peter the Great had a genius for imitation, but he lacked true genius, which is creative and makes all from nothing. He did some good things, but most of what he did was out of place. He saw that his nation was barbarous, but did not see that it was not ripe for civilization: he wanted to civilize it when it needed only hardening. His first wish was to make Germans or Englishmen, when he ought to have been making Russians; and he prevented his subjects from ever becoming what they might have been by persuading them that they were what they are not. In this fashion too a French teacher turns out his pupil to be an infant prodigy, and for the rest of his life to be nothing whatsoever. The empire of Russia will aspire to conquer Europe, but will itself be conquered. The Tartars,[2] its subjects or neighbors, will become its masters and ours, by a revolution that I regard as inevitable.

[1] the peoples of two regions of ancient Greece
[2] a Mongol-Turkic tribe of Eurasia

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

33

This passage is primarily concerned with

A) restoring the reputation of some widely maligned leaders of the past.
B) comparing the merits of various ancient systems of government.
C) examining the social conditions that foster effective legal systems.
D) establishing the philosophical basis for universal democracy.

34

In line 2, the word "sounds" most nearly means

A) resonates.
B) enunciates.
C) probes.
D) appears.

35

In the first paragraph, the author discusses the activities of an architect in order to make the point that

A) the success of a nation's civil code depends on the nature of its people.
B) good laws must be based on sound philosophical principles.
C) nations that lack good laws cannot support a professional class.
D) effective government requires experts to design civic infrastructure.

36

The author suggests that long-established societies are characterized primarily by

A) stubborn resistance to political change.
B) an honorable respect for good laws.
C) periodic but predictable social renewal.
D) a tendency toward imperialist expansion.

37

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

A) Lines 9–12 ("Also, good laws . . . vice")
B) Lines 19–21 ("Once customs . . . reformation")
C) Lines 30–34 ("Horror . . . vigor of youth")
D) Lines 71–73 ("The Tartars . . . as inevitable")

38

In lines 17–18, the distinction between "peoples" and "men" is essentially one between

A) barbarism and civilization.
B) societies and individuals.
C) youth and maturity.
D) rebellion and obedience.

39

The author mentions "Sparta at the time of Lycurgus" (line 35) primarily as an example of a place where

A) the citizens were paralyzed with fear in the face of invasion.
B) the society was rejuvenated through conflict.
C) the people lost sight of their own sacred traditions.
D) the leaders had become foolish and cowardly.

40

In lines 37–38, the phrase "particular constitution of the state" refers most specifically to

A) the documented rules by which a nation defines its governmental institutions.
B) the social composition and cultural habits of a population.
C) the enumeration of popular rights in a democratic society.
D) a manifesto about the philosophical motivations for political change.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1 1

41

In lines 51–52, the phrase "amenable to discipline" most nearly means

A) ready to be governed by the rule of law.
B) susceptible to exploitation by neighboring countries.
C) prepared to accept an oppressive ruler.
D) trained for offensive or defensive military activity.

42

The author suggests that Peter the Great's main flaw was

A) military ruthlessness.
B) undue reverence for custom.
C) excessive political guile.
D) irresolution in exerting control.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

Questions 43–52 are based on the following passage.

This passage is adapted from Bertrand Russell, *A History of Western Philosophy*. ©1945 by Bertrand Russell, renewed by Edith Russell. Reprinted with permission of Simon & Schuster.

To understand the views of Aristotle, as of most Greeks, on physics, it is necessary to apprehend his imaginative background. Every philosopher, in addition to the formal system that he offers to the world, has another much simpler system of which he may be quite unaware. If he is aware of it, he probably realizes that it won't quite do; he therefore conceals it, and sets forth something more sophisticated, which he believes because it is like his crude system, but which he asks others to accept because he thinks he has made it such as cannot be disproved. The sophistication comes in by way of refutation of refutations, but this alone will never give a positive result. It shows, at best, that a theory may be true, not that it must be. The positive result, however little the philosopher may realize it, is due to his imaginative preconceptions, or to what Santayana calls "animal faith."

In relation to physics, Aristotle's imaginative background was very different from that of a modern student. Nowadays, students begin with mechanics, which, by its very name, suggests machines. They are accustomed to automobiles and airplanes; they do not, even in the dimmest recesses of their subconscious imagination, think that an automobile contains some sort of horse inside, or that an airplane flies because its wings are those of a bird possessing magical powers. Animals have lost their importance in our imaginative pictures of the world, in which humans stand comparatively alone as masters of a mainly lifeless and largely subservient material environment.

To the ancient Greek, attempting to give a scientific account of motion, the purely mechanical view hardly suggested itself, except in the case of a few men of genius such as Democritus and Archimedes. Two sets of phenomena seemed important: the movements of animals, and the movements of the heavenly bodies. To the modern man of science, the body of an animal is a very elaborate machine, with an enormously complex physical and chemical structure. Every new discovery consists in diminishing the apparent gulf between animals and machines. To the Greek, it seemed more natural to assimilate apparently lifeless motions to those of animals. A child still distinguishes live animals from other things by the fact that animals can move themselves. To many Greeks, and especially to Aristotle, this peculiarity suggested itself as the basis of a general theory of physics.

But how about the heavenly bodies? They differ from animals by the regularity of their movements, but this may be only due to their superior perfection. Every Greek philosopher, whatever he may have come to think in adult life, had been taught in childhood to regard the sun and moon as gods. Anaxagoras was prosecuted for impiety because he thought that they were not alive. It was natural that a philosopher who could no longer regard the heavenly bodies themselves as divine should think of them as moved by the will of a Divine Being who had a Hellenic love of order and geometric simplicity. Thus the ultimate source of all movement is Will: on earth the capricious Will of human beings, but in heaven the unchanging Will of the Supreme Artificer.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

43

The passage as a whole primarily serves to

A) contrast the ideas of several ancient Greek philosophers.

B) examine the means by which philosophical ideas become popular.

C) describe the conceptions that inform a particular mindset.

D) discuss the debt that modern physics owes to ancient thinkers.

44

The statement that "animals have lost their importance" (line 29) means that

A) humans no longer treat other species with appropriate respect.

B) animistic beliefs no longer inform our physical theories.

C) scientists no longer regard animal behavior as a productive topic of study.

D) humans do not use animals for transportation to the extent that they once did.

45

The "simpler system" in line 5 is a

A) method for translating complex writings of ancient thinkers.

B) streamlined system for reaching logically valid conclusions.

C) formal theory based on a very small number of assumptions.

D) relatively unrefined way of thinking.

46

Which of the following statements about ancient Greek philosophers is best supported by the passage?

A) Their astronomical theories were closely associated with their religious ideas.

B) Their ideas about mechanics inspired many important technological innovations.

C) They regarded human intellect as a divine gift, rather than a cultivated skill.

D) They valued imagination and creativity even more than reason and logic.

47

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

A) lines 61–65 ("It was natural . . . simplicity")

B) lines 45–47 ("To the Greek . . . of animals")

C) lines 40–45 ("To the modern . . . animals and machines")

D) lines 3–6 ("Every philosopher . . . quite unaware")

48

In line 46, "assimilate" most nearly means

A) incorporate.

B) comprehend.

C) embrace.

D) liken.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

1

1

49

The passage suggests that the "men of genius" (line 37) are noteworthy for their

A) creative metaphors for the laws of motion.
B) ability to integrate many different fields of study.
C) effectiveness in articulating their ideas to others.
D) willingness to disregard conventional wisdom.

50

Which of the following would best bridge the "gulf" in line 45?

A) creating a system of gestures to help humans better communicate with dolphins
B) writing a computer program that analyzes and categorizes mockingbird calls
C) discovering the mechanical laws that describe bumblebee flight
D) teaching modern students more about ancient Greek philosophy

51

The passage suggests that the "views of Aristotle" (line 1) are characterized primarily by their

A) logical rigor.
B) animistic tendencies.
C) reliance on refutation.
D) unwavering skepticism.

52

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

A) lines 3–6 ("Every philosopher . . . quite unaware")
B) lines 12–14 ("The sophistication . . . positive result")
C) lines 19–21 ("In relation . . . modern student")
D) lines 45–47 ("To the Greek . . . animals")

STOP

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

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

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.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

Questions 1–11 are based on the following passage and supplementary material.

Physician Assistants

As the American population grows, ages, and gains better access to affordable health insurance, the demand for primary medical services **1** are expected to skyrocket. As a result, the United States Department of Health and Human Services projects a shortage of about 20,000 primary care physicians by 2020. Therefore, an important challenge facing the healthcare industry is how to address this shortfall without sacrificing quality of care. One possible solution is to **2** elevate more medical school graduates to choose primary care as their field instead of **3** their choosing the more lucrative specialties like surgery and dermatology.

1

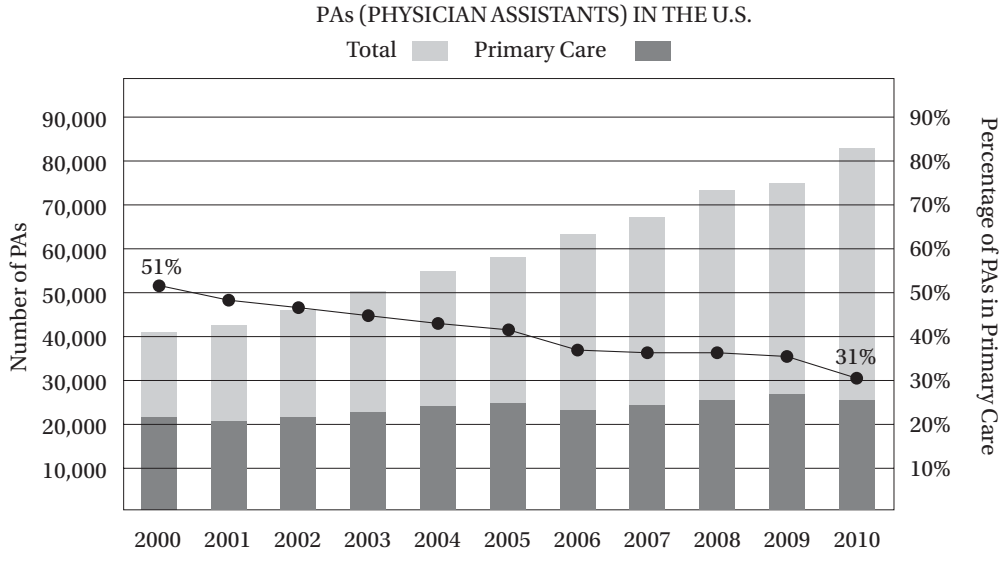
A) NO CHANGE
B) is
C) has been
D) would be

2

A) NO CHANGE
B) interest
C) incentivize
D) expect

3

A) NO CHANGE
B) to choose the more lucrative specialties
C) the more lucrative specialties
D) the more lucrative specialties they might choose



Source: American Academy of PAs, *American Medical News*, September 27, 2011

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

[1] Another option is to incorporate more medical professionals like physician assistants (PAs) and nurse practitioners (NPs) into primary care teams. [2] They can talk with patients about treatment options, prescribe medications, and even **4** perform technical procedures like bone marrow aspirations. [3] Many healthcare providers are moving toward this "team-based" model, **5** where physicians can better focus on their specialties while relying on trained professionals to provide other necessary services. [4] Team-based medicine allows medical practitioners to best utilize their particular skills, **6** still sharing the successes and struggles of the team. [5] If organized around the principles of professionalism, trust, communication, and accountability, these teams may be able to provide better care to patients at less cost. **7**

For all the promise of team-based primary medicine, it cannot work without an adequate supply of well-trained health professionals. Although the total number of PAs in the United States more than doubled between 2000 and 2010, **8** the number of PAs going into primary care has decreased by 20% over that same time period. In the years ahead, we must encourage more of these new PAs to choose careers in primary care.

4

A) NO CHANGE
B) performing technical procedures
C) technical procedures
D) to perform technical procedures

5

A) NO CHANGE
B) whereby
C) by this
D) when

6

A) NO CHANGE
B) while at the same time
C) while
D) although

7

The author is considering inserting the following sentence into this paragraph.

> Although they receive less training than physicians do, these professionals have advanced degrees and can provide direct treatment to patients.

Where should it be placed?

A) After sentence 1
B) After sentence 3
C) After sentence 4
D) After sentence 5

8

Which choice is best supported by the data in the graph?

A) NO CHANGE
B) the number of PAs going into primary care has increased by only 50%
C) more PAs have gone into dermatology than into primary care
D) the fraction of those PAs going into primary care has declined from over one-half to under one-third

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

Undergraduate students considering a career in medicine have many more options **9** than they did just a generation ago. Graduate PA and NP programs, which take about three years, are becoming increasingly attractive, especially **10** being that MD programs, including residency, lasting seven to ten years and often leave students saddled with tens of thousands of dollars in debt.

Anyone thinking about pursuing a PA or NP degree should keep in mind that these programs aren't cheap, either, and that most states impose strict limits on the kinds of treatment **11** they can provide.

9

A) NO CHANGE
B) than
C) than it was
D) to choose from than

10

A) NO CHANGE
B) when MD programs, including residence, are lasting
C) being that MD programs last, including residency,
D) because MD programs, including residency, can last

11

A) NO CHANGE
B) he or she
C) these professions
D) these professionals

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2

2

Questions 12–22 are based on the following passage.

Maria Montessori

What is education? Is it a program of institutionally approved performances, or a collection of self-directed experiences? Such questions absorbed Maria Montessori throughout her life. Born in 1870 in **12** Chiaravalle Italy, Montessori showed a strong independent will even as a child. As a teenager, she told her parents that she wanted to study engineering, **13** a position that was widely thought unladylike. By the age of 20, she had changed her mind and decided to pursue an even less traditional path: medicine. Despite suffering ridicule and isolation, **14** Montessori's medical studies at the University of Rome were completed and she became one of the first female physicians in Italy.

Although Montessori's practice focused on psychiatry, her interests gravitated toward education. In 1900, she was appointed co-director of the *Scuola Magistrale Ortofrenica*, a training institute for special education teachers. Montessori believed that, in order for so-called "deficient" children to thrive, they needed respect and stimulation rather than **15** the regimentation they were receiving in institutions.

12

A) NO CHANGE
B) Chiaraville, Italy. Montessori showed a strong independent will, even
C) Chiaraville, Italy, Montessori showed a strong, independent will, even
D) Chiaraville, Italy; Montessori showed a strong, independent will even

13

A) NO CHANGE
B) despite its reputation for being unladylike
C) although widely considered unladylike
D) which was unladylike in reputation

14

A) NO CHANGE
B) Montessori completed her medical studies at the University of Rome by becoming
C) Montessori's medical studies were completed, at the University of Rome, and thus she became
D) Montessori completed her medical studies at the University of Rome and became

15

A) NO CHANGE
B) receiving regimentation in institutions
C) the regimented institutions they were receiving
D) the regimentation of the institutions they were receiving

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2

2

In 1907 Maria opened the Casa dei Bambini, or "Children's House," a daycare center for impoverished children in which she could test her theory that **16** children's minds each learn according to they're own schedule. She personalized a curriculum for each child rather than providing a standardized course of study. While learning important academic and life skills, many formerly aggressive and unmanageable children became more emotionally balanced and self-directed. Word of her success with the Casa dei Bambini soon began to **17** distribute internationally, and her methods for child-centered education became widely adopted across Europe.

18 In the 25 years after their founding, Montessori schools were regarded as a remedy to the educational problems associated with rapid urban population growth throughout Europe.

16

A) NO CHANGE
B) each child's mind learns according to its own schedule
C) childrens' minds learn according to its own schedule
D) children's minds each learn according to their own schedule

17

A) NO CHANGE
B) increase
C) spread
D) exhibit

18

Which choice provides the most effective introduction to this paragraph?

A) Montessori dedicated herself to travelling the world and preaching the benefits of child-centered education.
B) Montessori's first school enrolled 50 students from poor working families.
C) Montessori did not have a particularly nurturing relationship with her own son, Mario, who was raised by another family.
D) As the Montessori method was gaining a foothold, Europe was undergoing dramatic social and political change.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

19 So as fascism began to proliferate in the 1930s throughout Spain, Italy, and Germany, child-centered education came to be seen as a threat to the power of the state. In 1933, the totalitarian regimes in Italy and Germany closed all Montessori schools and declared **20** them subversive and that they were undermining their power.

Even outside of Europe, **21** the response to Montessori's ideas were divided. Many eminent scholars, inventors, and politicians—among them Alexander Graham Bell, Helen Keller, Thomas Edison, Mahatma Gandhi, and Woodrow Wilson— greeted her ideas with enthusiasm. But her theories were challenged by William H. Kirkpatrick, a leading educational reformer and professor at Teachers College, Columbia University. His 1914 book, *The Montessori System Examined*, declared Montessori's psychological theories wildly out-of-date. **22**

It was not until 1958 that a new generation of Montessorians revived and updated her methods in the United States. In 1958, the first American Montessori school, the Whitby School, was founded in Greenwich, Connecticut, where it thrives today.

19

A) NO CHANGE
B) When
C) However, as
D) Furthermore, as

20

A) NO CHANGE
B) that they were subversive in undermining their power
C) them subversive in undermining power
D) them subversive

21

A) NO CHANGE
B) the response to Montessori's ideas was
C) Montessori's ideas had a response that was
D) Montessori's ideas response was

22

At this point, the paragraph would benefit most from a discussion of

A) how Kirkpatrick's book was received among American educators
B) why totalitarian governments regarded Montessori's methods as a threat
C) those American educators whose influence was comparable to Montessori's
D) how other reform movements of the era contrasted with Montessori's

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

Questions 23–33 are based on the following passage.

Platonic Forms

When we look at the moon, we see a spherical object, but do "spheres" really exist? This may seem to be a silly question, because it's not hard to understand the definition of a sphere: "the set of all points in space that are a fixed distance (called the radius) from a fixed point (called the center)." We see examples of "spherical" objects all the time, don't we?

23 First, nothing that we can observe in our physical world **24** complies perfectly to this mathematical definition of a sphere. The moon, a beach ball, and even water droplets are all "bumpy," at least at the atomic level. So can we say that the concept of "sphere" is real **25** if there is no such thing as a real sphere?

Pondering this question as so many ancient Greek philosophers did, **26** the argument Plato made was that the sphere is an "ideal form," inaccessible to our physical senses yet **27** the mind can apprehend it through pure reason.

23

A) NO CHANGE
B) So
C) While
D) In fact,

24

A) NO CHANGE
B) overlaps
C) corresponds
D) concurs

25

A) NO CHANGE
B) where no such thing exists
C) as if nothing is
D) if there were nothing

26

A) NO CHANGE
B) it was Plato who argued
C) Plato had argued
D) Plato argued

27

A) NO CHANGE
B) it can be apprehended by the mind
C) apprehensible to the mind
D) it is apprehensible to the mind

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

He also reasoned that, since our senses can be fooled, logic provides a much more reliable path to the truth. Therefore, a Platonic idealist believes that these abstract forms are **28** as effective, if not more so, than sensory experience at revealing the nature of reality. **29**

Modern scientists and philosophers are unlikely to be Platonic idealists. Today, we can understand the origin of abstract concepts **30** and not having to believe that they come from a higher, physically inaccessible reality. We simply need to understand **31** the process by which our brains make inferences.

Take an abstract idea like "orangeness." Most of us would say that orangeness "exists" because we see examples of it every day, such as carrots, traffic cones, and pumpkins. But what if, by some magic, we could remove all orange-colored objects from the universe? In other words, what if, as with "sphereness," no real examples of "orangeness" **32** would exist? Would "orangeness" still exist?

28

A) NO CHANGE
B) as effective as, if not more effective than,
C) as effective, if not more effective, than
D) equally as effective, if not more effective than,

29

At this point, the author is considering adding the following true statement:

> The sphere is just one of many ideal forms, like lines and tetrahedrons, that are studied in geometry.

Should the author make this addition here?

A) Yes, because it indicates a particular application of ideal forms.
B) Yes, because explains a claim made in the previous sentence.
C) No, because it detracts from this paragraph's discussion of philosophy.
D) No, because it undermines the Platonists' point of view.

30

A) NO CHANGE
B) in not having to believe
C) and not be believing
D) without having to believe

31

A) NO CHANGE
B) our brain's process by which they
C) the process by which our brain's
D) the process by which our brain

32

A) NO CHANGE
B) would have existed
C) existed
D) had an existence

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

In an important sense, the answer is yes. We can demonstrate the existence of "orangeness" without appealing to any higher reality. We could measure the wavelength of red light (about 650 nm), and yellow light (about 570 nm) and make the reasonable inference, because wavelengths fall on a continuum, that a color exists with an intermediate wavelength, of 610 nm, even if we have never directly measured such light.

Our brains do not contain sophisticated instruments for measuring wavelengths of light, but they do make similar inferences constantly. 33 For instance, when you drive, you unconsciously make inferences about quantities like the speeds of surrounding cars and qualities like dangerous driving conditions. Our brains are continually making inferences based on the limited information from our senses, and these inferences are the substance of abstract thought.

33

Which of the following changes would best improve this sentence's cohesiveness with the rest of the paragraph?

A) Change "For instance" to "Nevertheless."
B) Change both instances of "you" to "we."
C) Change "you unconsciously make changes" to "changes are unconsciously made"
D) Delete the phrase "like dangerous driving conditions."

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

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

The Eureka Effect

You've probably had the experience. After racking your brain for hours to solve a problem, you finally put it aside and move on to other things. Then, much later, seemingly out of **34** nowhere, perhaps while showering or driving—the answer suddenly strikes you. Psychologists call this the "Eureka effect," from the ancient Greek word meaning "I have found it," **35** which Archimides is said to have shouted as he ran naked from his bathtub through the streets of Syracuse upon suddenly solving a vexing physics problem.

Does this feeling arise from our emotional centers or our cognitive centers? In other words, is it simply an emotional response to finding a solution, or does it **36** foretell a fundamental different way of thinking? Psychologists have tried to answer this question by looking inside subjects' brains as they solve problems, using electroencephalograms (EEGs) and other tools.

34

A) NO CHANGE
B) nowhere—perhaps
C) nowhere: perhaps
D) nowhere; perhaps

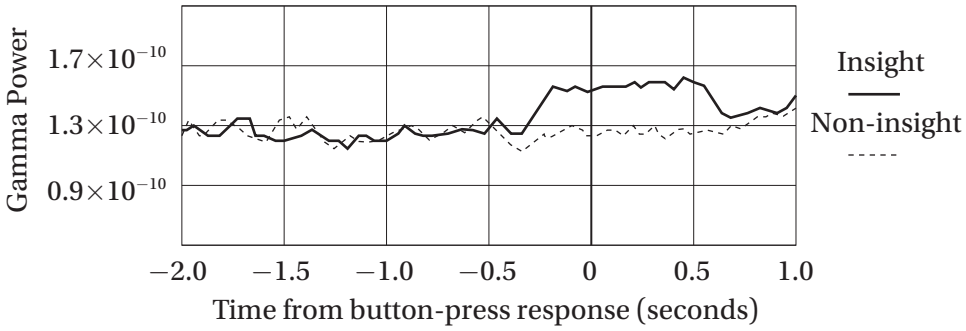
35

A) NO CHANGE
B) what Archmides is said to shout
C) that Archimedes shouted, it is said
D) which Archimedes it is said had shouted

36

A) NO CHANGE
B) indicate
C) provide
D) generate

GAMMA-BAND INTENSITY IN RIGHT ANTERIOR TEMPORAL REGION DURING VERBAL ASSOCIATION TASK



Source: Adapted from Beeman, Bowden et al., "Neural Activity When People Solve Problems with Insight," *PLOS*, 2004

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

In one 37 experiment, subjects performed a word association task, scientists measured the activity in the region of the brain called the right hemisphere anterior superior temporal gyrus (RH aSTG). This region is known to be active in tasks, such as finding a theme in a story, 38 that requires integrating and bringing together information from many distant parts of the brain, but is not particularly active in emotional responses.

The subjects were asked to perform a challenging verbal association task, press a button as soon as 39 solving it, and report whether or not they felt the "Aha!" feeling. If they did, the response was classified as an "insight" solution. If they did not, it was classified as a "non-insight" solution.

40 What was interesting, experimenters found that the insight solutions were accompanied by an elevated level of "gamma band" activity in the RH aSTG, supporting the theory that the feeling 41 had corresponded

37

A) NO CHANGE
B) experiment by which subjects
C) experiment where subjects
D) experiment, in which subjects

38

A) NO CHANGE
B) that require integrating and bringing together
C) that require integrating
D) that requires integrating

39

A) NO CHANGE
B) it was being solved
C) they solved it
D) it's solution

40

A) NO CHANGE
B) The interesting thing was that
C) It was interesting that
D) Interestingly,

41

A) NO CHANGE
B) corresponds
C) is corresponding
D) will correspond

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

2 2

to a cognitive process rather than purely an emotional one. 42

Interpreting 43 this data is not a very simple matter, however. Many questions remain to be answered. For instance, does the increased gamma-band activity represent a transition of cognitive processing from an unconscious state to a conscious one? 44 If that is true, a question would be what are the unconscious processes that are working? Also, in what way do those processes become conscious all of a sudden?

42

At this point in the passage, the author wants to mention specific evidence indicated by the graph. Which statement is most justified by the data in this graph?

A) The gamma power in the RH aSTG for the insight solution is more than double that for the non-insight solution.

B) This increase in activity seems to begin about 0.3 seconds prior to the button-press response, and to lasts about 1 second.

C) The gamma activity for the insight solution appears to be roughly equivalent to that for the non-insight solution until the instant the button is pushed.

D) This increase in activity seems to begin about 0.3 seconds after the button-press response, and to last about 0.5 second.

43

A) NO CHANGE

B) this data are

C) these data are

D) these data is

44

Which of the following best combines the last two sentences into one?

A) If so, what are the unconscious processes that are working, suddenly becoming conscious?

B) If so, what unconscious processes are at work, and how do they suddenly become conscious?

C) If so, what would be the unconscious processes working, and how would they suddenly become conscious?

D) If so, what are both the unconscious process at work, and how do they suddenly become conscious?

STOP

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

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

3 3

Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

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

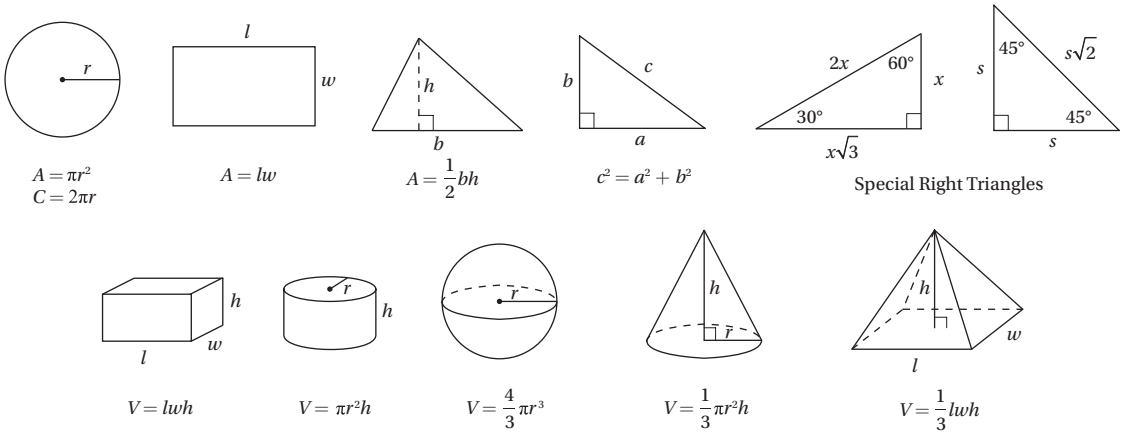
DIRECTIONS

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 you 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 for which $f(x)$ is a real number.

REFERENCE



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

$A = lw$

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

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

Special Right Triangles

$V = lwh$

$V = \pi r^2 h$

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

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

$V = \frac{1}{3}lwh$

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

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

3

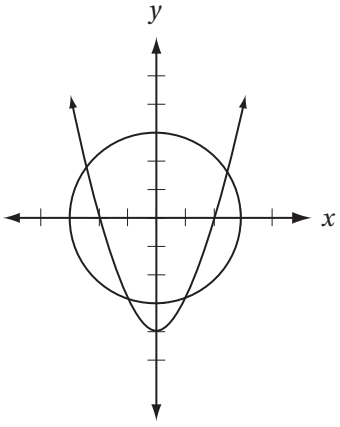
3

1

If $6x + 9 = 30$, what is the value of $2x + 3$?

A) 5
B) 10
C) 15
D) 20

2



$x^2 + y^2 = 9$
$y = x^2 - 4$

A system of two equations and their graphs in the xy-plane are shown above. How many solutions does the system have?

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

3

A total of 300 tickets were sold for a performance of a school play. The ticket prices were \$5 for each adult and \$3 for each child, and the total revenue from tickets was \$1,400. Solving which of the following systems of equations would yield the number of adult tickets sold, a, and the number of children's tickets sold, c?

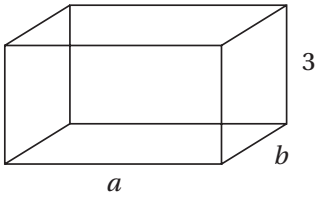
A) $a + c = 1{,}400$
$5a + 3c = 300$
B) $a + c = 300$
$5a + 3c = 1{,}400$
C) $a + c = 300$
$3a + 5c = 1{,}400$
D) $a + c = 300$
$3a + 5c = 1{,}400 \times 2$

4

Which of the following expressions is equivalent to $2(x - 4)^2 - 5x$?

A) $2x^2 - 21x + 32$
B) $2x^2 - 21x - 32$
C) $2x^2 - 13x + 32$
D) $2x^2 - 16x - 21$

5



Note: Figure not drawn to scale

A rectangular solid above has dimensions 3, a, and b, where a and b are integers. Which of the following CANNOT be the areas of three different faces of this solid?

A) 15, 18, and 30
B) 18, 24, and 48
C) 12, 15, and 24
D) 15, 24, and 40

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

3 3

6

The cost in dollars, C, to manufacture n necklaces is given by the equation $C(n) = an + b$, where a and b are positive constants. In this equation, what does a represent?

A) the fixed costs, in dollars, independent of any necklaces being manufactured

B) the total cost, in dollars, to produce n necklaces, not including fixed costs

C) the total cost, in dollars, to produce one necklace, including fixed costs

D) the cost, in dollars, to produce one necklace, not including any fixed costs

7

Line l intersects the graph of the function $f(x) = 2x^2 - 4x + 1$ at two points where $x = -1$ and $x = 2$, respectively. What is the slope of line l?

A) -2

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

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

D) 2

8

Which of the following equations represents a parabola in the xy-plane with a vertex that lies on the x-axis?

A) $y = (x - 3)^2 + 2$

B) $y = 2(x - 3)^2$

C) $y = 2x^2 - 3$

D) $y = 3x^2 + 2$

9

If the function $m(x)$ satisfies the equation $\frac{m(x)}{x+3} - \frac{x+1}{x-1} = 1$ for all values of x greater than 1, then $m(x) =$

A) $\frac{2(x+3)}{x-1}$

B) $\frac{2(x^2+3x+3)}{x-1}$

C) $\frac{2(x+6)}{x-1}$

D) $\frac{2x(x+3)}{x-1}$

10

In the mesosphere, the atmospheric layer between 50 km and 80 km in altitude, the average atmospheric temperature varies linearly with altitude. If the average temperature at 50 km altitude is 10°C and the average temperature at 80 km is −80°C, then at what altitude is the average temperature −50°C?

A) 60 km

B) 65 km

C) 70 km

D) 75 km

11

The graph of the equation $y = 2x^2 - 16x + 14$ intersects the y-axis at point A and the x-axis at points B and C. What is the area of triangle ABC?

A) 42

B) 48

C) 54

D) 56

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

3 3

12

What is the total number of x- and y-intercepts in the graph of the equation $y = (x + 2)^2(x - 3)^2$?

A) Two

B) Three

C) Four

D) Five

13

If the complex number A satisfies the equation $A(2 - i) = 2 + i$, where $i = \sqrt{-1}$, what is the value of A?

A) $5 - i$

B) $5 + i$

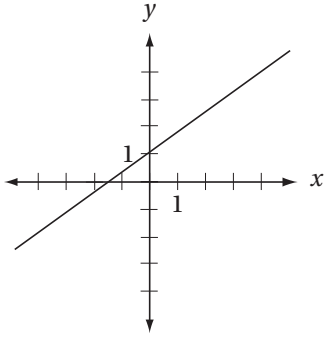
C) $\frac{3}{5} + \frac{4}{5}i$

D) $\frac{3}{4} + \frac{5}{4}i$

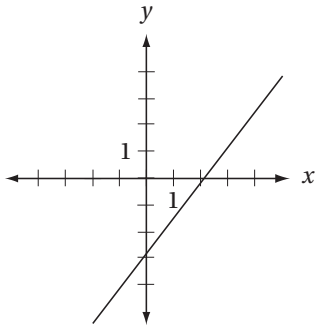
14

If $k > 2$, which of the following could be the graph of $y + x = k(x - 1)$ in the xy-plane?

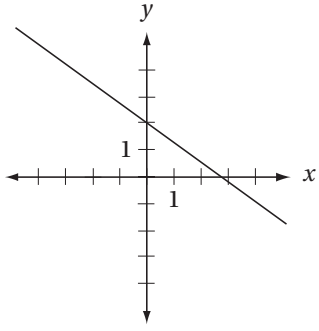
A)



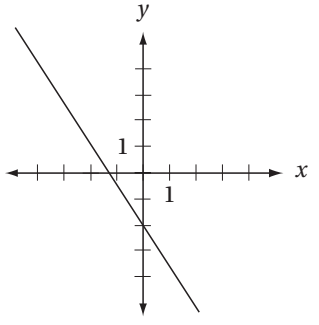
B)



C)



D)



15

The function $g(x) = ax^3 + bx^2 + cx + d$ has zeroes at $x = -2$, $x = 3$, and $x = 6$. If $g(0) < 0$, which of the following must also be negative?

A) $g(-3)$

B) $g(-1)$

C) $g(4)$

D) $g(5)$

CONTINUE

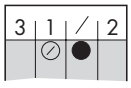
Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

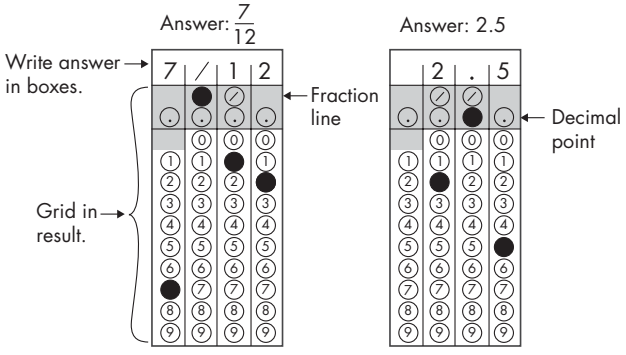
3 3

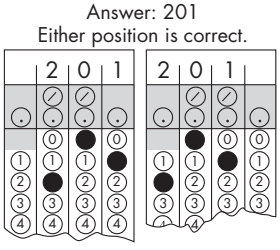
DIRECTIONS

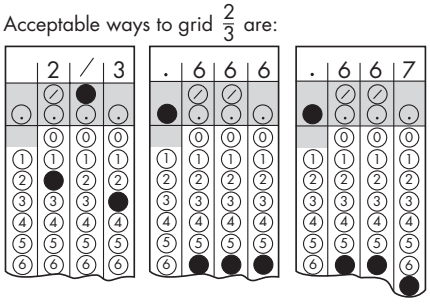
For questions 16–20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

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 $\frac{7}{2}$.

   (If $3\frac{1}{2}$ is entered into the grid as  , 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.







CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

3 3

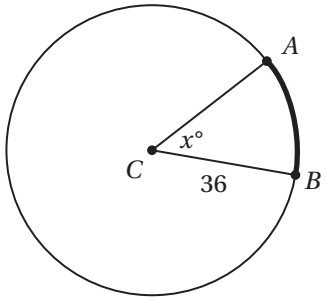
16

If $\frac{2}{3}x+\frac{1}{2}y=5$, what is the value of $4x+3y$?

17

If $\frac{5}{x}-\frac{2}{5}=1$, what is the value of x?

18



Note: Figure not drawn to scale.

In the circle above, arc AB has a measure of 7π. What is the value of x?

19

$$\frac{1}{2}x=\frac{1}{3}y+\frac{1}{10}$$
$$6x-4y=k$$

For what value of k will the system of equations above have at least one solution?

20

If x represents the radian measure of an angle, where $0\le x\le\frac{\pi}{2}$, and $\sin x=\frac{5}{13}$, then what is the value of $\tan\left(\frac{\pi}{2}-x\right)$?

STOP

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

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

Math Test – Calculator

55 MINUTES, 38 QUESTIONS

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

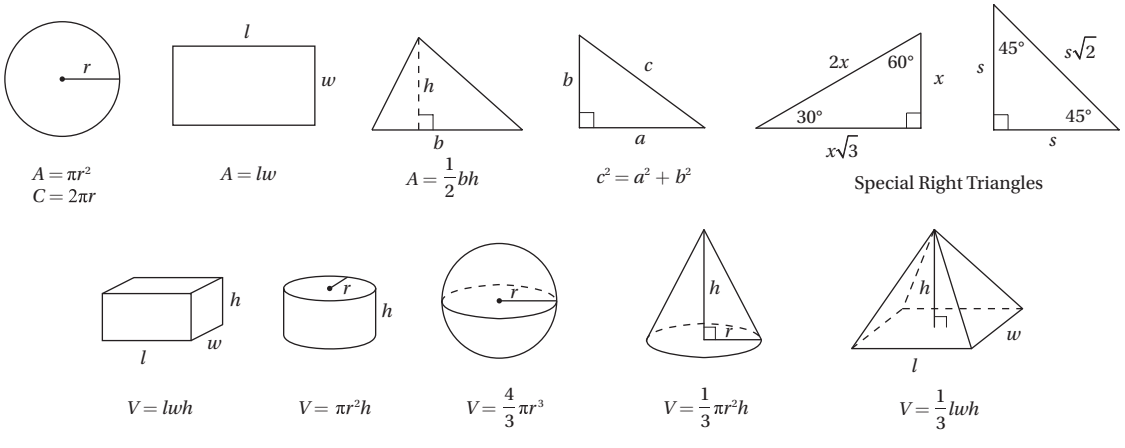
DIRECTIONS

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 for which $f(x)$ is a real number.

REFERENCE



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

$A = lw$

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

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

Special Right Triangles

$V = lwh$

$V = \pi r^2 h$

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

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

$V = \frac{1}{3}lwh$

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

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

1

$$a - b = 10$$
$$a - 2b = 8$$

Based on the system of equations above, what is the value of b?

A) -2
B) -1
C) 1
D) 2

2

The average (arithmetic mean) of three numbers is 50. If two of the numbers have a sum of 85, what is the third number?

A) 75
B) 70
C) 65
D) 55

3

What number is the same percent of 225 as 9 is of 25?

A) 27
B) 54
C) 64
D) 81

4

RESULTS OF FAVORABILITY POLL

	Favorable	Unfavorable	No Opinion	Total
Men	26		12	
Women			13	89
Total	59			162

The table above shows the partial results of a favorability poll for a local politician. If the data shown are correct, how many of the women who were polled viewed the politician unfavorably?

A) 33
B) 43
C) 61
D) It cannot be determined by the information given.

5

If $2^{2n-2} = 32$, what is the value of n?

A) 2.0
B) 2.5
C) 3.0
D) 3.5

6

A bag of Nellie's Nut Mix contains x ounces of walnuts, 15 ounces of peanuts, and 20 ounces of pecans. Which of the following expresses the fraction of the mix, by weight, that is walnuts?

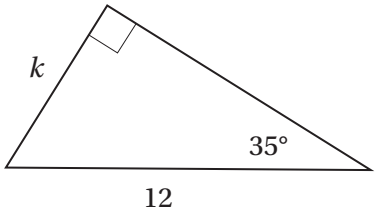
A) $\frac{x}{35}$
B) $\frac{x}{35-x}$
C) $\frac{x}{35+x}$
D) $\frac{35-x}{35+x}$

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

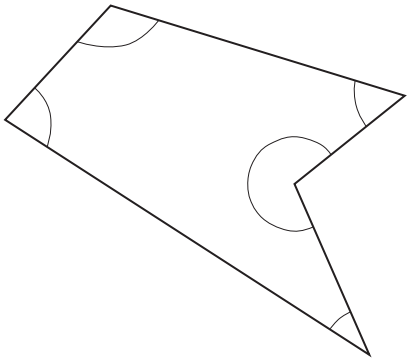
7



In the triangle above, what is the value of k? ($\sin 35° = 0.574$, $\cos 35° = 0.819$, $\tan 35° = 0.700$)

A) 6.00
B) 6.88
C) 8.40
D) 9.83

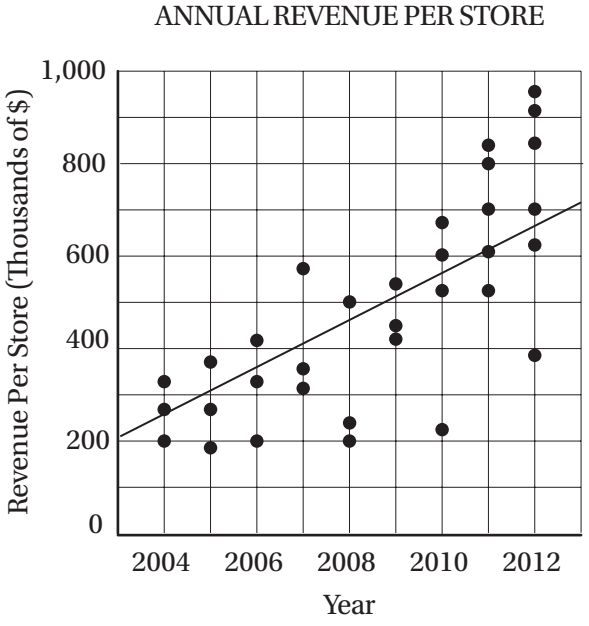
8



The figure above shows a polygon with five sides. What is the average (arithmetic mean) of the measures, in degrees, of the five angles shown?

A) 108°
B) 110°
C) 112°
D) 114°

Questions 9 and 10 are based on the graph below.



9

The scatterplot above shows the annual revenue for each of the individual retail stores operated by a clothing company for each year from 2004 through 2012. Based on the line of best fit to the data shown, which of the following is closest to the average annual increase in revenue per store?

A) $5,000
B) $50,000
C) $100,000
D) $500,000

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

10

Which of the following statements is most directly justified by the data shown in the scatterplot above?

A) The average revenue per store increased by over 100% from 2005 to 2009.

B) The total number of retail stores increased by 50% from 2005 to 2012.

C) The total revenue from all stores in 2012 was more than three times the total revenue from all stores in 2004.

D) The total revenue from all stores in 2008 was over $1 million.

11

Which of the following statements expresses the fact that the product of two numbers, a and b, is 6 greater than their sum?

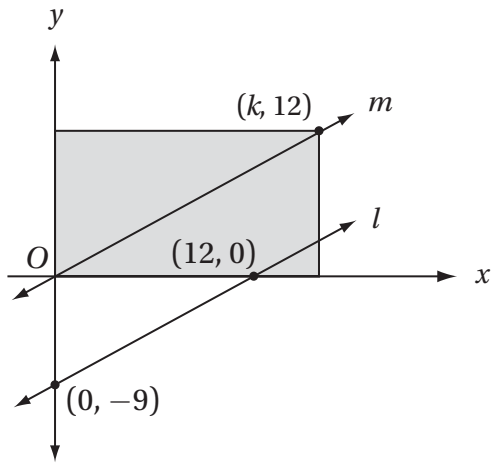
A) $ab + 6 > a + b$

B) $ab = a + b + 6$

C) $ab + 6 = a + b$

D) $ab > a + b + 6$

12



Note: Figure not drawn to scale.

In the figure above, if $m \parallel l$, what is the area, in square units, of the shaded rectangle?

A) 156

B) 168

C) 180

D) 192

13

The Glenville Giants have played a total of 120 games and have a win-to-loss ratio of 2 to 3. How many more games have they lost than won?

A) 24

B) 30

C) 40

D) 48

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

14

A culture of bacteria initially contained p cells, where $p > 100$. After one hour, this population decreased by $\frac{1}{3}$. In the second and third hours, however, the population increased by 40% and 50%, respectively. At the end of those first three hours, what was the population of the culture?

A) $1.3p$

B) $1.4p$

C) $1.5p$

D) $1.6p$

15

If $(6^{-2})(m^{-2}) = \frac{1}{16}$, what is the value of m^2?

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

B) $\frac{4}{9}$

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

D) $\frac{9}{4}$

16

A jar contains only red, white, and blue marbles. It contains twice as many red marbles as white marbles and three times as many white marbles as blue marbles. If a marble is chosen at random, what is the probability that it is <u>not</u> red?

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

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

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

D) $\frac{4}{5}$

17

$$y = -3(x - 2)^2 + 2$$

In the xy-plane, line l passes through the point $(-1, 3)$ and the vertex of the parabola with equation above. What is the slope of line l?

A) $-\frac{2}{3}$

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

C) $-\frac{1}{3}$

D) $\frac{1}{3}$

18

A certain function takes an input value and transforms it into an output value according to the following three-step procedure:

Step 1: Multiply the input value by 6.

Step 2: Add x to this result.

Step 3: Divide this result by 4.

If an input of 7 to this function yields an output of 15, what is the value of x?

A) 12

B) 16

C) 18

D) 24

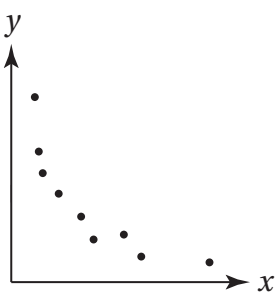
CONTINUE

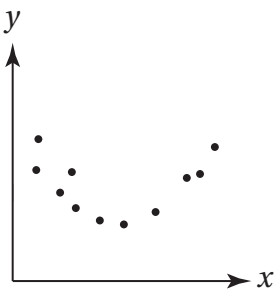
Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

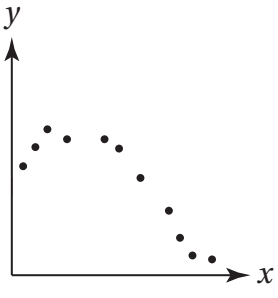
4 4

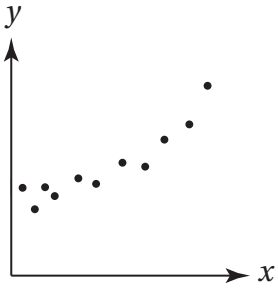
19

The variables x and y are believed to correlate according to the equation $y = ax^2 + bx + c$, where a, b, and c are constants. Which of the following scatterplots would provide the strongest evidence in support of the hypothesis that $a < 0$?

A) 

B) 

C) 

D) 

20

On a number line, the coordinates of points P and R are p and r, respectively, and $p < r$. If the point with coordinate x is closer to p than to r, then which of the following statements must be true?

A) $x < \dfrac{p-r}{2}$

B) $x < \dfrac{p+r}{2}$

C) $|x-p| < r$

D) $|x+p| < r-p$

21

Let function $f(x)$ be defined by the equation $f(x) = \dfrac{1}{2-x}$. If m is a positive integer, then $f\left(\dfrac{1}{m}\right) =$

A) $\dfrac{m}{2m-1}$

B) $\dfrac{m}{m^2-1}$

C) $\dfrac{1}{2-m}$

D) $2 - m$

22

The value of y varies with x according to the equation $y = a(x-2)(x+1)$, where $a < 0$. As the value of x increases from 0 to 5, which of the following best describes the behavior of y?

A) It increases and then decreases.

B) It decreases and then increases.

C) It increases only.

D) It decreases only.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

23

If the expression $\frac{n^2-9}{n^2+3}$ is equivalent to the expression $1-\frac{k}{n^2+3}$ for all values of n, what is the value of k?

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

24

An online trading company charges a 3% commission for all stock purchases. If a trader purchases 200 shares of a stock through this company and is charged \$3,399 including commission, what is the cost per share for this stock?

A) \$16.45
B) \$16.48
C) \$16.50
D) \$16.52

25

For nonzero numbers w and y, if w is 50% greater than y, then what is the ratio of w^{-2} to y^{-2}?

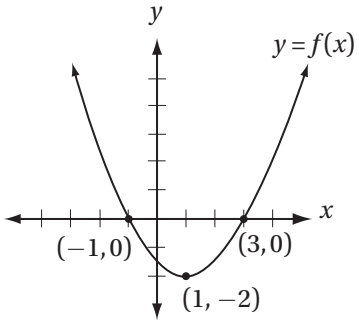
A) 4 to 9
B) 2 to 3
C) 9 to 4
D) 4 to 1

26

Every athlete in a group of 60 female varsity athletes at Greenwich High School either runs track, plays soccer, or does both. If one-third of the athletes in this group who play on the soccer team also run on the track team, and one-half of the athletes in this group who run on the track team also play on the soccer team, which of the following statements must be true?

A) This group contains 40 soccer players.
B) This group contains 20 athletes who play soccer but do not run track.
C) This group contains 20 athletes who play both track and soccer.
D) The number of soccer players in this group is 15 greater than the number of track team members in this group.

27



A portion of the graph of the quadratic function $y=f(x)$ is shown in the xy-plane above. The function g is defined by the equation $g(x)=f(x)+b$. If the equation $g(x)=0$ has exactly one solution, what is the value of b?

A) -2
B) -1
C) 1
D) 2

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

28

If $\cos x = a$, where $\frac{\pi}{2} < x < \pi$, and $\cos y = -a$, then which of the following could be the value of y?

A) $x + 2\pi$

B) $x + \pi$

C) $x + \frac{\pi}{2}$

D) $-x + 2\pi$

Questions 29 and 30 refer to the following table.

OPINION POLL ON PROPOSAL 81A

Age of Voter	Approve	Disapprove	No Opinion	Total
18 to 39	918	204	502	1,624
40 to 64	1,040	502	102	1,644
65 and older	604	420	115	1,139
Total	2,562	1,126	719	4,407

29

Of those surveyed who expressed an opinion on Proposal 81a, approximately what percentage are under 40 years of age?

A) 30%

B) 38%

C) 68%

D) 72%

30

If the data in the table above are assumed to be representative of the general voting population, which of the following statements is most directly justified by these data?

A) The approval rate for Proposal 81a generally decreases with the age of the voter.

B) The disapproval rate for Proposal 81a generally increases with the age of the voter.

C) Those who express an opinion on Proposal 81a are more likely to be over 64 than they are to be under 40.

D) In all three age categories, voters are more than twice as likely to approve of Proposal 18a than to have no opinion about it.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

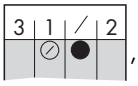
4 4

Student-Produced Response Questions

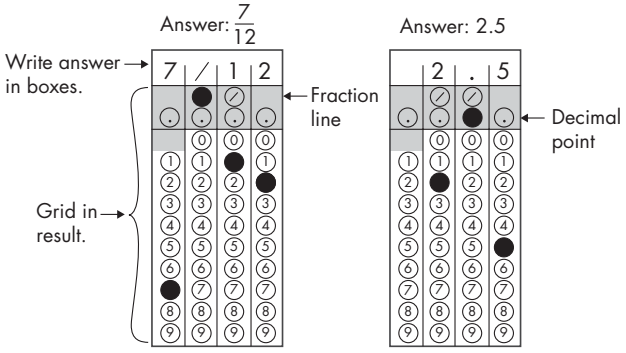
DIRECTIONS

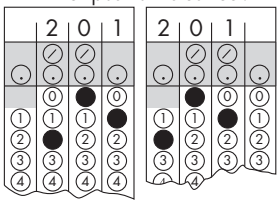
For questions 31–38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

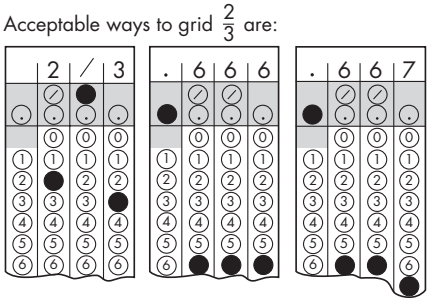
1. Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.
2. Mark no more than one circle in any column.
3. No question has a negative answer.
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 $\frac{7}{2}$.

   (If $3\frac{1}{2}$ is entered into the grid as 

, 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.







CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

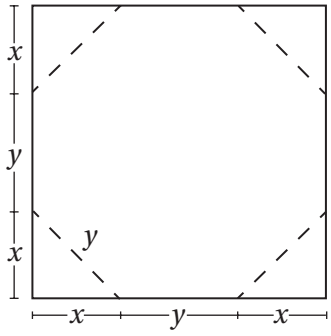
31

If y varies inversely as x, and $y = ½$ when $x = 10$, then for what value of x does $y = 25$?

32

If $x^2 + 12x = 13$, and $x < 0$, what is the value of x^2?

33



Four triangles are to be cut and removed from a square piece of sheet metal to create an octagonal sign with eight equal sides, as shown in the figure above. If the total area of the removed material is 196 square centimeters, what is the perimeter, in centimeters, of the octagon?

34

If m and n are integers such that $m^2 + n^2 = 40$ and $m < 0 < n$, what is the value of $(m + n)^2$?

35

If $(\cos x)(\sin x) = 0.2$, what is the value of $(\cos x + \sin x)^2$?

36

MONTHLY SALES (FEBRUARY)

Item	Price Per Item	Number Sold
Model AT350	$120	20
Model U32	$98	80
Model GY53	$140	62
Model CDP3	$162	38
Model AP14	$110	40

The table above shows information about the February sales for five different cell phone models at a local store. What was the median price, to the nearest dollar, of the 240 phones sold in February?

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

4 4

Questions 37 and 38 are based on the scenario described below. Enter your responses on the corresponding grids on your answer sheet.

Performance Banner Company creates promotional banners that include company logos. The Zypz Running Shoe Company would like a 4-foot high and 20-foot long banner that includes its logo, which has a height-to-length ratio of 5:8.

37

If the logo were scaled so that its height matched the height of the banner and then were placed in the center of the banner, then what would be the width, in feet, of each margin on either side of the logo?

38

Performance Banner Company charges its customers $1.20 per square foot for the banner material, $2.50 per square foot of any printed logo, and $32 in fixed costs per banner. The Zypz Running Shoe Company is considering two options for the banner: one with a single logo, and another with two logos. If these logos are all to be the same size as described in Part 1, what percent of the banner costs would the company save by choosing the single-logo option instead of the two-logo option? (Ignore the % symbol when entering into the grid. For example, enter 27% as 27.)

STOP

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

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

5 5

Essay

50 MINUTES, 1 QUESTION

DIRECTIONS

As you read the passage below, consider how Steven Pinker uses

- evidence, such as facts or examples, to support his claims
- reasoning to develop ideas and connect claims and evidence
- stylistic or persuasive elements, such as word choice or appeals to emotion, to add power to the ideas expressed

Adapted from Steven Pinker, "Mind Over Mass Media." ©2010 by The New York Times. Originally published June 10, 2010.

1 New forms of media have always caused moral panics: the printing press, newspapers, paperbacks and television were all once denounced as threats to their consumers' brainpower and moral fiber.

2 So too with electronic technologies. PowerPoint, we're told, is reducing discourse to bullet points. Search engines lower our intelligence, encouraging us to skim on the surface of knowledge rather than dive to its depths. Twitter is shrinking our attention spans.

3 But such panics often fail reality checks. When comic books were accused of turning juveniles into delinquents in the 1950s, crime was falling to record lows, just as the denunciations of video games in the 1990s coincided with the great American crime decline. The decades of television, transistor radios and rock videos were also decades in which I.Q. scores rose continuously.

4 For a reality check today, take the state of science, which demands high levels of brainwork and is measured by clear benchmarks of discovery. Today, scientists are never far from their e-mail and cannot lecture without PowerPoint. If electronic media were hazardous to intelligence, the quality of science would be plummeting. Yet discoveries are multiplying like fruit flies, and progress is dizzying. Other activities in the life of the mind, like philosophy, history and cultural criticism, are likewise flourishing.

5 Critics of new media sometimes use science itself to press their case, citing research that shows how "experience can change the brain." But cognitive neuroscientists roll their eyes at such talk. Yes, every time we learn a fact or skill the wiring of the brain changes; it's not as if the information is stored in the pancreas. But the existence of neural plasticity does not mean the brain is a blob of clay pounded into shape by experience.

6 Experience does not revamp the basic information-processing capacities of the brain. Speed-reading programs have long claimed to do just that, but the verdict was rendered by Woody Allen after he read War and Peace in one sitting: "It was about Russia." Genuine multitasking, too, has been exposed as a myth, not just by laboratory studies but by the familiar sight of an SUV undulating between lanes as the driver cuts deals on his cellphone.

CONTINUE

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.

5 5

7 Moreover, the evidence indicates that the effects of experience are highly specific to the experiences themselves. If you train people to do one thing, they get better at doing that thing, but almost nothing else. Music doesn't make you better at math; conjugating Latin doesn't make you more logical; brain-training games don't make you smarter. Accomplished people don't bulk up their brains with intellectual calisthenics; they immerse themselves in their fields. Novelists read lots of novels; scientists read lots of science.

8 The effects of consuming electronic media are also likely to be far more limited than the panic implies. Media critics write as if the brain takes on the qualities of whatever it consumes, the informational equivalent of "you are what you eat." As with primitive peoples who believe that eating fierce animals will make them fierce, they assume that watching quick cuts in rock videos turns your mental life into quick cuts or that reading bullet points and Twitter postings turns your thoughts into bullet points and Twitter postings.

9 Yes, the constant arrival of information packets can be distracting or addictive, especially to people with attention deficit disorder. But distraction is not a new phenomenon. The solution is not to bemoan technology but to develop strategies of self-control, as we do with every other temptation in life. Turn off e-mail or Twitter when you work, put away your BlackBerry at dinner time, ask your spouse to call you to bed at a designated hour.

10 And to encourage intellectual depth, don't rail at PowerPoint or Google. It's not as if habits of deep reflection, thorough research and rigorous reasoning ever came naturally to people. They must be acquired in special institutions, which we call universities, and maintained with constant upkeep, which we call analysis, criticism and debate. They are not granted by propping a heavy encyclopedia on your lap, nor are they taken away by efficient access to information on the Internet.

11 The new media have caught on for a reason. Knowledge is increasing exponentially; human brainpower and waking hours are not. Fortunately, the Internet and information technologies are helping us manage, search, and retrieve our collective intellectual output at different scales, from Twitter and previews to e-books and online encyclopedias. Far from making us stupid, these technologies are the only things that will keep us smart.

Write an essay in which you explain how Steven Pinker builds an argument to persuade his audience that new media are not destroying our moral and intellectual abilities. In your essay, analyze how Pinker uses one or more of the features listed in the box above (or features of your own choice) to strengthen the logic and persuasiveness of his argument. Be sure that your analysis focuses on the most relevant features of the passage.

Your essay should NOT explain whether you agree with Pinker's claims, but rather explain how Pinker builds an argument to persuade his audience.

Downloaded by [Ngee Ann Polytechnic 153.20.95.84] at [03/06/17]. Copyright © McGraw-Hill Global Education Holdings, LLC. Not to be redistributed or modified in any way without permission.