

The SAT[®]

IMPORTANT REMINDERS

1

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

2

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

Reading Test

65 MINUTES, 52 QUESTIONS

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

DIRECTIONS

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

Questions 1-10 are based on the following passage.

This passage is adapted from Colm Tóibín, *The Master*. ©2004 by Colm Tóibín. The novel is based on the life of writer Henry James (1843-1916).

On one of his strolls in Rye, Henry stopped at the door of Mr. Milson, who after the first meeting greeted him instantly as Mr. James, and knew him as Line the American writer, having his walk in a Rye he was 5 slowly growing to admire and love. Upon his second or third conversation with Mr. Milson, during his time as a resident of Point Hill, he observed that he longed for a permanent spot in the area, in the countryside, or indeed in the town itself. Since 10 Mr. Milson enjoyed talking, and since he was not interested in literary matters, and since he had not been to America and knew no other Americans, and since Henry's knowledge of ironmongery was rudimentary, the two men discussed houses, ones 15 which had been for rent in the past, others which had been put on the market or sold or withdrawn, and others, much coveted, which had never been bought or sold or rented in living memory. Each time he visited, once they had initiated their subject, 20 Mr. Milson showed him the card on which Henry's London address was inscribed. He had not mislaid it, he had not forgotten, he insisted, and then enticingly would mention some great old house, perfect for a bachelor's needs, but sorrowfully would have to 25 admit that the house remained firmly in its owner's hands and seemed unlikely to leave them in the foreseeable future.

Henry viewed his conversations with Mr. Milson as a form of play, just as his conversations with 30 fishermen about the sea, or with farmers about the harvest, were forms of polite relaxation, a way of drinking in England, allowing its flavors to come to him in phrases, turns of speech and local references. Thus even when he opened the letter which arrived 35 at his London address, having noticed that the handwriting on the envelope was not that of someone accustomed to writing letters, and even when he saw the name Milson as the sender, he was still puzzled by its provenance. Only when he read 40 it a second time did he realize who it was from and then, as though he had received a blow in the stomach, he understood what the letter said. Lamb House in Rye had fallen vacant, Milson told him, and could be had. His first thought was that he would 45 lose it, the house at the quiet corner at the top of a cobbled hill whose garden room Edward Warren had drawn so lovingly, the establishment he had glanced at so achingly and covetously on his many tours of Rye, a house both modest and grand, both 50 central and secluded, the sort of house which seemed to belong so comfortably and naturally to others and to be inhabited so warmly and fruitfully by them. He checked the postmark. He wondered if his ironmonger was freely broadcasting the news of this 55 vacancy to all comers. This was, more than any other, the house he loved and longed for. Nothing had ever come easily, magically like this. He could do what he liked, he could send a cable, he could take the next train, but he remained sure that he would lose it. 60 There was no purchase, however, in thinking, or

regretting or worrying there was only one solution and that was to rush to Rye, thus insuring that no omission on his part could cause him not to become the new inhabitant of Lamb House.

- 65 Before he left he wrote to Edward Warren, imploring him to come to Rye also as soon as he could to inspect the inside of the house whose exterior he had so admired. But he could not wait for Warren and he certainly could not work, and on 70 the train he wondered if anyone watching him would know how momentous this journey was for him, how exciting and how potentially disappointing. He knew that it was merely a house; others bought and sold houses and moved their belongings with 75 ease and nonchalance. It struck him as he traveled towards Rye that no one, save himself, understood the meaning of this. For so many years now he had had no country, no family, no establishment of his own, merely a flat in London where he worked.
- 80 He did not have the necessary shell, and his exposure over the years had left him nervous and exhausted and fearful. It was as though he lived a life which lacked a facade, a stretch of frontage to protect him from the world. Lamb House would offer him 85 beautiful old windows from which to view the outside; the outside, in turn, could peer in only at his invitation.

1

Over the course of the passage, the main focus of the narrative shifts from

- A) a summary of the reasons for Henry's unhappiness in Rye to a description of his attempt to find happiness there.
- B) a depiction of life in the town of Rye to a meditation on Henry's reasons for deciding to move there.
- C) a contrast between Henry's personality and Mr. Milson's personality to a presentation of an important similarity between them.
- D) an account of Mr. Milson's search for a suitable property for Henry to a portrait of Henry's musings on the meaning of having a home.

2

Which choice best summarizes what is learned about Henry and Mr. Milson in the first paragraph of the passage?

- A) Henry is desperate to move to the area; therefore, Mr. Milson tells him about choice properties that are available for Henry to rent.
- B) They have little in common; therefore, they talk about houses in the area that may be of interest to Henry.
- C) Mr. Milson is not fond of new arrivals; therefore, he engages insincerely in discussions with Henry.
- D) They are both new to Rye; therefore, they agree to collaborate in order to help each other find places to live.

3

Which choice most closely captures the literal meaning of the figurative "favors" referred to in line 32?

- A) The qualities of an object that serve to make it memorable
- B) The features of an environment that appeal most directly to the senses
- C) The aspects of a place that give it its particular character
- D) The characteristics of a locale that account for its popularity

4

The passage indicates that Henry has which reaction when he receives Mr. Milson's letter?

- A) He hopes the letter has come from someone other than Mr. Milson.
- B) He initially fails to appreciate the letter's significance.
- C) He suspects the letter contains bad news.
- D) He assumes the letter will communicate false information.

2

5

The passage suggests that after reading and understanding Mr. Milson's letter, Henry

- A) wonders if Mr. Milson is actually knowledgeable about the property in question.
- B) regrets not having paid more attention to the house Mr. Milson is referring to.
- C) suspects that Mr. Milson may not be looking out exclusively for his best interests.
- D) remains confused about Mr. Milson's motivation for helping him.

6

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

- A) Lines 34-39 ("Thus . . . provenance")
- B) Lines 39-42 ("Only . . . said")
- C) Lines 53-55 ("He wondered . . . comers")
- D) Lines 55-56 ("This . . . for")

7

It can be inferred that Henry fears that he will lose the possibility of being able to live in Lamb House because he

- A) realizes that his commitments in London will delay his travels.
- B) cannot believe that a wish he feels so intensely could possibly be fulfilled.
- C) worries that his treatment of Mr. Milson may have compromised his chances.
- D) realizes that his innate indecisiveness might cause him to doubt his own judgment.

8

Which choice best supports the claim that Henry feels that his life has been characterized by a struggle to attain things that he desired?

- A) Lines 56-57 ("Nothing . . . this")
- B) Lines 60-64 ("There was . . . House")
- C) Lines 68-72 ("But he . . . disappointing")
- D) Lines 73-75 ("He knew . . . nonchalance")

9

The last paragraph mainly serves to

- A) sketch a set of events that carry Henry's adventure to its logical conclusion.
- B) provide context that explains Henry's particular aspiration.
- C) create a mood of anticipation that heightens the drama of Henry's arrival.
- D) describe an environment that will serve as the new setting for Henry's experiences.

10

The words "shell," "exposure," "facade," and "frontage" in lines 81-83 primarily serve to

- A) establish a parallel between aspects of Henry's personality and certain features of houses.
- B) identify some of the architectural features that first made Lamb House attractive to Henry.
- C) emphasize a contrast between Lamb House and the other available houses in Rye.
- D) provide a metaphor for Henry's pessimism about being able to acquire the house he desires.

3

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

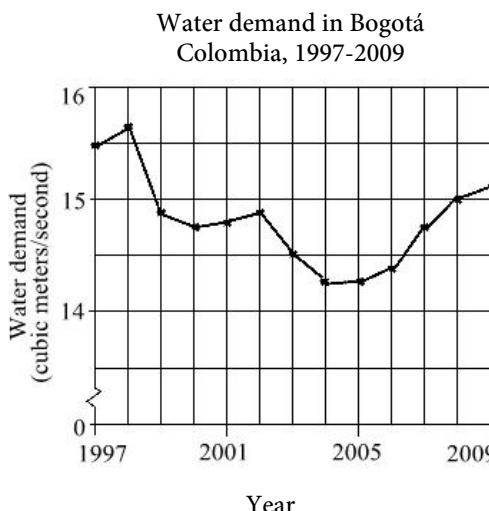
This passage and accompanying figure are adapted from *World Development Report 2015 Mind, Society, and Behavior*. ©2015 by International Bank for Reconstruction and Development/The World Bank.

Behind every intervention lies an assumption about human motivation and behavior. When a tunnel providing water to the city of Bogotá, Colombia, partially collapsed in 1997, triggering a water shortage, the city government declared a public emergency and initiated a communication program to warn inhabitants of the threat of a crisis: 70 percent of the city would be left without water if current water use was not reduced.

- Line 5 **10** The city's strategy was based on the assumption that if individuals were informed of the situation, they would adjust their behavior and reduce usage—after all, no one wants to be without water. But the assumption was wrong. In fact, the city's strategy increased water consumption. Many people did not change their behavior because they did not think they could make a difference and did not know which steps were most important. Some people even started to stockpile water.
- Line 15 **20** Recognizing the mistake in its assumptions, the city government changed its strategy. First, the government reminded people to take action by conserving water at times when they were most likely to overuse it. Stickers featuring a picture of a statue of San Rafael—which was the name of the emergency reservoir the city was relying on after the tunnel collapse—were distributed throughout the city. People were asked to place a sticker by the faucet that a particular household, office, or school used most frequently. The stickers made the need to conserve water at all times salient. Daily reports of the city's water consumption were prominently published in the country's major newspapers. The reports became a part of public discussions about the emergency.
- Line 25 **30** Second, the city government launched engaging and entertaining campaigns to teach individuals the most effective techniques for household water conservation. The campaigns contained memorable slogans and organized 4,000 youth volunteers to go throughout the city to inform people about the emergency and teach them effective strategies to reduce consumption. The mayor himself appeared in a TV ad taking a shower, explaining how the tap could be turned off while soaping.

Line 35 **45** Third, the city government publicized information about who was cooperating and who was not. The chief executive officer of the water company personally awarded households with exceptional water savings a poster of San Rafael with the legend, “Here we follow a rational plan for using the precious liquid.” These awards were made visible in the media. Three months later, when a second tunnel collapsed in the reservoir, the city imposed sanctions for *despilfarradores* (squanderers), those with the highest levels of overconsumption. While the sanctions were minor—squanderers had to participate in a water-saving workshop and were subject to an extra day of water cuts—they were nevertheless effective because they targeted highly visible actors. Car-washing businesses, although collectively not a major source of water waste, were the primary targets.

Line 40 The assumption underlying the new strategy was that conservation would improve if the city created a greater scope for social rewards and punishments that helped to reassure people that achieving the public good—continued access to water—was likely. This time, the assumption was correct. The change in strategy helped to create a social norm of water conservation. By the eighth week of the campaign, citywide water savings had significantly exceeded even the most optimistic technical predictions. Moreover, the reductions in water use persisted long after the tunnel was repaired and the emergency had been addressed.



11

- The main purpose of the passage is to
- analyze the underlying reasons for a city's environmental challenges.
 - compare the strategies used by a city in managing two emergencies.
 - promote the technology used by a city in to cope with an ongoing difficulty.
 - discuss an effective city initiative to address a critical situation.

12

Which choice best describes the overall structure of the passage?

- A complex problem is described, a failed attempt to resolve that problem is summarized, and then the details of a successful resolution are presented.
- A long-term dilemma is discussed, two different solutions to that dilemma are explored, and then a study of the cost of each solution is considered.
- A recurrent conflict is examined, a popular means of addressing that conflict is criticized, and then a seemingly outdated method is championed.
- A major program is outlined, several obstacles to that program's feasibility are analyzed, and then an argument for why the program can work is articulated.

13

Which choice best supports the claim that creative tactics were employed to encourage people to conserve water?

- Lines 2-9 ("When . . . reduced")
- Lines 10-13 ("The city's . . . water")
- Lines 21-24 ("First . . . overuse it")
- Lines 42-44 ("The mayor . . . soaping")

14

The passage implies that the city's first attempt to address the water shortage was inadequate in that it failed to

- apply conservation measures consistently to all neighborhoods.
- explain to residents how to make the best of the new information.
- establish a mechanism by which residents demonstrate their compliance.
- instruct residents about the long-term dangers of the situation at hand.

15

As used in line 18, "steps" most nearly means

- measures.
- strides.
- stairs.
- phrases.

16

According to the passage, the purpose of the stickers distributed by the Bogotá city government was to

- remind people of the ongoing need to avoid wasting water.
- caution people about the possibility of future crises
- inspire people to take pride in their city's conservation efforts.
- reward people for succeeding at water conservation.

17

As used in line 58, "cuts" most nearly means

- channels.
- reductions.
- grades.
- shares.

18

- The conclusion best drawn from the results of the Bogotá city government's campaign is that people are
- A) more responsive to praise than to punishment in most situations.
 - B) interested in learning about new subjects if helpful informational material is available.
 - C) able to educate each other regarding the most effective means of handling emergencies.
 - D) willing to adopt new behaviors if adequate incentives are provided.

19

- Which choice provides the best evidence for the answer to the previous question?
- A) Lines 33-34 (“The reports . . . emergency”)
 - B) Lines 47-51 (“The chief . . . liquid”)
 - C) Lines 63-68 (“The assumption . . . correct”)
 - D) Lines 70-72 (“By the . . . predictions”)

20

- According to the figure, water demand in Bogotá in 2005 was approximately
- A) 14 cubic meters/second.
 - B) 14.25 cubic meters/second.
 - C) 14.5 cubic meters/second.
 - D) 14.75 cubic meters/second

21

- According to the data presented in the figure, water demand in Bogotá is best described as having
- A) dropped considerably from 1999 to 2002.
 - B) risen dramatically from 2000 to 2001.
 - C) declined steadily from 2002 to 2004.
 - D) remained stable from 2007 to 2009.

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

This passage is adapted from Ed Yong, "Razzle Dazzle 'Em." ©2014 by Reed Business Information Ltd.

In 1909, the prevailing belief was that animals hid themselves by matching their surroundings. Then the painter and naturalist Abbott Henderson Thayer suggested a different mechanism was at work: highly conspicuous markings, such as the zebra's stripes and the oystercatcher's black-and-white plumage, are actually disguises. Predators, he reasoned, locate their prey by looking for their outlines, so animals with high-contrast markings that disrupt telltale edges and create false ones can evade detection.

With this and other ideas about animal markings, Thayer earned himself the title "father of camouflage". But although disruptive camouflage was cited in countless textbooks, it remained largely untested until 2005, when Innes Cuthill, Martin Stevens and their colleagues at the University of Bristol, United Kingdom, devised an experiment using fake moths made from paper triangles. By pinning them to oak trees, the researchers found that "moths" with black markings on their edges were less likely to be attacked by birds than those with central markings or uniform colors. "It showed that disruption was indeed a very good way of being hidden," says Stevens, now at the University of Exeter, United Kingdom. Using a similar approach, he and Cuthill later discovered that high-contrast markings become less effective once their contrast exceeds that in the creatures' natural environment. One way to avoid this is for some parts of the body to blend in while others stand out.

Cuthill and Stevens revived interest in disruptive camouflage, but the first real insights into just how it works came only last year. Richard Webster at Carleton University in Ottawa, Canada, asked volunteers to search for virtual moths on a computer screen while an eye-tracker monitored their gaze. "We could almost get inside people's eyes," he says. He found that the more patches moths had on their edges, the more often volunteers failed to notice them, and they needed to fixate their gaze on them for longer to have any chance of spotting them. The eye-tracking vindicated Thayer again: by breaking up an animal's outline, disruptive camouflage does impair a predator's ability to spot its prey.

Although instructive, the experiment had an obvious shortcoming: humans do not prey on moths, let alone computer-generated ones. To test whether disruptive colouring fools its intended audience, 50 Stevens has started field trials. In Zambia and South Africa, his team is studying ground-nesting birds that rely on disruptive camouflage, including nightjars and plovers. His team measures the patterns on the birds' feathers to quantify how well hidden they are 55 in their environment. They also track the birds' survival to determine how effectively they evade predators.

Nightjars and plovers are difficult to spot in the first place, so the researchers have employed sharp-sighted local guides to help find them. This raises the question of whether predators, like the guides, might be less easily fooled by disruptive markings as they become more familiar with them. Last year, Stevens and his team found that people do gradually get 60 better at spotting virtual moths, especially if they see several at the same time. He suspects that the volunteers learn to stop the futile search for outlines, and instead start scanning for the high-contrast markings.

70 Whether non-human predators adopt the same tactic is hard to say. They may not even see camouflage markings in the same way that we do. But if predators can learn to see through disruptive camouflage, it would suggest that this concealment 75 strategy is more likely to evolve in prey that face short-lived or generalist predators than long-lived or specialist ones.

Figure 1

Survival Probability
of Virtual Moth Targets

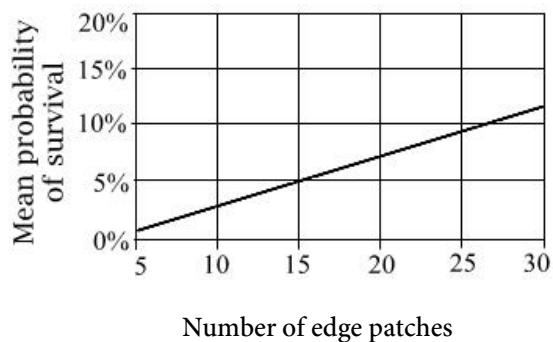
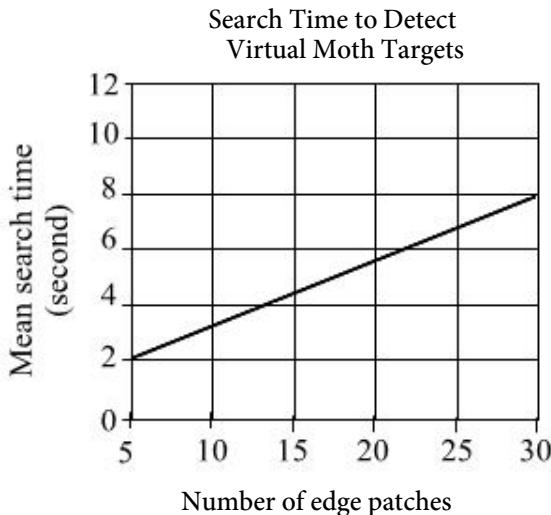


Figure 2

Figures adapted from Richard J. Webster et al, “Disruptive Camouflage Impairs Object Recognition.” © 2013 by Richard J. Webster et al.

22

The main purpose of the passage is to

- A) explain how predators are able to hunt animals that use disruptive camouflage as a defense.
- B) explore how disruptive camouflage helps scientists track wing coloration patterns in moths.
- C) discuss the implications of several scientific studies concerning disruptive camouflage.
- D) defend a theory regarding disruptive camouflage against its critics.

23

The author’s central claim about disruptive camouflage is that it is

- A) readily neutralized by scanning for outlines.
- B) a once-effective protection strategy that has become obsolete.
- C) a viable defense against particular predators.
- D) most useful when it employs colors that differ from the environment.

24

The passage provides a chronological account of how scientists

- A) increased their understanding of a particular camouflage strategy.
- B) accepted and then rejected successive camouflage mechanisms.
- C) gradually lost interest in camouflage-related research.
- D) steadily incorporated human subjects into camouflage-related research.

25

Which choice best states the relationship between Cuthill and Stevens’s work and Thayer’s work?

- A) Cuthill and Stevens provided empirical support for Thayer’s theory.
- B) Cuthill and Stevens refined the logic underlying Thayer’s assumptions.
- C) Cuthill and Stevens continued an experiential procedure that had been introduced by Thayer.
- D) Cuthill and Stevens popularized an idea of Thayer’s that had been largely overlooked.

26

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

- A) Lines 11-13 (“With . . . of camouflage”)
- B) Lines 13-18 (“But . . . triangles”)
- C) Lines 25-28 (“Using . . . environment”)
- D) Lines 29-30 (“One . . . out”)

27

The author most likely uses the word “countless” (line 14) to

- A) describe the variety of textbooks to which camouflage researchers have contributed material.
- B) emphasize the widespread and long-standing acceptance of an untested theory of camouflage.
- C) characterize the number of different camouflage patterns observed in nature.
- D) suggest the impracticality of studying camouflage patterns in every relevant species.

28

As used in line 22, “uniform” most nearly means

- A) indistinguishable.
- B) simple.
- C) unvarying.
- D) symmetric.

29

In the passage, the author suggests that humans and nonhuman predators may differ in their ability to perceive

- A) perceive visual patterns.
- B) detect small motions.
- C) locate ground-nesting bird.
- D) hear high-pitched sounds.

30

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

- A) Lines 38-41 (“He found . . . spotting them”)
- B) Lines 46-50 (“Although . . . trials”)
- C) Lines 63-69 (“Last . . . markings”)
- D) Lines 70-72 (“Whether . . . do”)

31

The data in figure best support which statement about the mean probability of survival for the virtual moths?

- A) It is directly correlated with the total number of virtual moths that are present.
- B) It is easier to determine than is the number of edge patches that are present.
- C) It eventually starts to decrease as the number of edge patches increases.
- D) It increases with the number of patches that are present.

32

According to the data presented in figure 2, what was the mean search time, in seconds, to locate virtual moths with exactly five edge patches?

- A) 2
- B) 4
- C) 6
- D) 8

Questions 33-42 are based on the following passage.

Passage 1 is adapted from a speech delivered to the United Nations General Assembly in 1948 by Eleanor Roosevelt, "On the Adoption of the Universal Declaration of Human Rights." Passage 2 is adapted from Eric Posner, "The Case against Human Rights." ©2014 by Guardian News and Media Limited.

Passage 1

In giving our approval to the declaration today, it is of primary importance that we keep clearly in mind the basic character of the document. It is not a treaty it
^{Line} is not an international agreement. It is not and does not purport to be a statement of law or of legal obligation. It is a Declaration of basic principles of human rights and freedoms, to be stamped with the approval of the General Assembly by formal vote of its members, and to serve as a common standard of achievement for all peoples of all nations.
⁵

We stand today at the threshold of a great event both in the life of the United Nations and in the life of Mankind . . .

At a time when there are so many issues on which we
¹⁵ find it difficult to reach a common basis of agreement, it is a significant fact that 58 states have found such a large measure of agreement in the complex field of human rights. This must be taken as testimony of our common aspiration first voiced in the Charter of the
²⁰ United Nations to lift men

every where to a higher standard of life and to a greater enjoyment of freedom. Man's desire for peace lies behind this Declaration. The realization that the flagrant violation of human rights by Nazi and

²⁵ Fascist countries sowed the seeds of the last world war has supplied the impetus for the work which brings us to the moment of achievement here today.

In a recent speech in Canada, Gladstone Murray said:

- ³⁰ The central fact is that man is fundamentally a moral being, that the light we have is imperfect does not matter so long as we are always trying to improve it . . . we are equal in sharing the moral freedom that distinguishes us as men.
³⁵ Man's status makes each individual an end in himself. No man is by nature simply the servant of the state or of another man . . . the ideal and fact of freedom—and not technology—are the true distinguishing marks of our civilization.

⁴⁰ This Declaration is based upon the spiritual fact that man must have freedom in which to develop his full stature and through common effort to raise the level of human dignity. We have much to do to fully achieve and to assure the rights set forth in this
⁴⁵ Declaration. But having them put before us with the moral backing of 58 nations will be a great step forward.

Passage 2

Many people argue that the incorporation of the idea of human rights into international law is one of
⁵⁰ the great moral achievements of human history. Because human rights law gives rights to all people regardless of nationality, it deprives governments of their traditional riposte when foreigners criticise them for abusing their citizens –namely
⁵⁵ "sovereignty" (which is law-speak for "none of your business"). Thus, international human rights law provides people with invaluable protections against the power of the state.

And yet it is hard to avoid the conclusion that
⁶⁰ governments continue to violate human rights with impunity. Why, for example, do more than 150 countries (out of 193 countries that belong to the UN) engage in torture? Why has the number of authoritarian countries increased in the last several
⁶⁵ years? Why do women remain a subordinate class in nearly all countries of the world? Why do children continue to work in mines and factories in so many countries?

The truth is that human rights law has failed to
⁷⁰ accomplish its objectives. There is little evidence that human rights treaties, on the whole, have improved the wellbeing of people. The reason is that human rights were never as universal as people hoped, and the belief that they could be forced upon countries as
⁷⁵ a matter of international law was shot through with misguided assumptions from the very beginning. . . .

Although the modern notion of human rights emerged during the 18th century, it was on December 10, 1948, that the story began in earnest,
⁸⁰ with the adoption of the Universal Declaration of Human Rights by the UN general assembly. The declaration arose from the ashes of the second world war and aimed to launch a new, brighter era of international relations. . . .

⁸⁵ The weaknesses that would go on to undermine human rights law were there from the start. The universal declaration was not a treaty in the formal sense: no one at the time believed that it

created legally binding obligations. It was not ratified by nations but approved by the general assembly, and the UN charter did not give the general assembly the power to make international law. Moreover, the rights were described in vague, aspirational terms, which could be interpreted in multiple ways.

33

Which choice from Passage 1 best supports the idea that in Roosevelt's view, the cooperation of various nations in the development of the Universal Declaration of Human Rights marks a major accomplishment?

- A) Lines 3-4 ("It is not a . . . agreement")
- B) Lines 14-18 ("At a time . . . rights")
- C) Lines 40-43 ("This . . . dignity")
- D) Lines 43-45 ("We have . . . Declaration")

34

As used in line 19, "testimony" most nearly means

- A) public affirmation.
- B) legal record.
- C) personal account.
- D) divine rule.

35

In passage 1, Roosevelt uses the quotation from Gladstone Murray principle to

- A) reinforce her belief that women have a right to the same basic freedoms as men in all nations.
- B) underscore her fear that a nation's technological aims could compromise the freedoms of its citizens.
- C) develop her idea that rural individuals should exercise their freedoms in the service of the state.
- D) introduce her claim that certain freedoms are required for fulfilling humanity's full potential.

36

In Passage 2, Posner's use of the phrase "none of your business" (lines 55-56) primarily serves to create a

- A) thoughtful tone that encourages reflection on how a term has shifted in significance.
- B) suspicious tone that casts doubt on how a term has changed over time.
- C) comical tone that suggests how a term has been misinterpreted.
- D) wry tone that conveys a disapproving view of how a term has been used.

37

According to Passage 2, when did the idea of human rights as we now understand them first begin to develop?

- A) Prior to the 18th century
- B) During the 18th century
- C) In 1948
- D) After 1948

38

Passage 2 most strongly suggests that a significant flaw of the Universal Declaration of Human Rights is that it

- A) exploits humanity's fear of war in arguing for the importance of human rights.
- B) focuses too narrowly on violations of rights by authoritarian governments.
- C) presents the rights such that they lack clear and precise applications.
- D) excludes certain rights that do not align with the values reflected in the United Nations Charter.

39

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

- A) Lines 85-87 (“The weakness . . . start”)
- B) Lines 87-89 (“The universal . . . obligations”)
- C) Lines 89-92 (“It was . . . law”)
- D) Lines 92-94 (“Moreover . . . ways”)

40

Both passages clarify the nature of the Universal Declaration of Human Rights by

- A) comparing it to notable international agreements of the past.
- B) distinguishing it from legally binding documents.
- C) demonstrating its basis in key democratic principles.
- D) emphasizing its wide adoption by diverse governments.

41

In their discussions of human rights, both passages reflect an underlying concern with the

- A) reaction of United Nations officials to new global initiatives involving human rights.
- B) fallibility of key assumptions underlying the idea of universal human rights.
- C) welfare of people living under oppressive social and political circumstances.
- D) dangers of intervention by democratic governments on behalf of citizens in authoritarian states.

42

Which paragraph of Passage 2 presents a view of human rights law that is most consistent with Roosevelt’s view of human rights in Passage 1?

- A) The first paragraph (lines 48-58)
- B) The second paragraph (lines 59-68)
- C) The third paragraph (lines 69-76)
- D) The last paragraph (lines 85-94)

Questions 43–52 are based on the following passage.

This passage is adapted from Sid Perkins, “Can Sea Monkeys Stir the Sea?” ©2014 by American Association for the Advancement of Science.

Winds, waves, and tides are crucial for mixing the surface waters of lakes and seas, transporting heat downward and simultaneously bringing Line nutrient-rich waters up to the surface where light-
5 harvesting phytoplankton need them to thrive. But small marine creatures help such processes as they migrate to the ocean surface each night to forage and then return to the relative safety of unlit depths during daylight hours, some researchers think. One
10 of the most familiar of these travelers, known to kids worldwide as the sea monkey, is the brine shrimp *Artemia salina*, says John Dabiri, a fluid dynamicist at the California Institute of Technology (Caltech). Although the small swirls created by the fast-
15 churning legs of a single sea monkey are not strong enough to significantly stir the seas, the eddies kicked up by billions of them might do the trick, Dabiri and others have proposed. To test the notion, he and Monica Wilhelmus, also of Caltech, measured the
20 tiny currents triggered by artificially induced migrations of brine shrimp in the lab.

Dabiri and Wilhelmus used blue and green lasers to induce thousands of 5-millimeter-long brine shrimp to “migrate” to and from the bottom of a
25 1.2-meter-deep tank. The creatures are strongly attracted to those colors, Dabiri says. The researchers shone the blue laser into the tank and moved it slowly up and down to control the crustaceans’ vertical movements. The tank’s solid walls could
30 strongly affect the flow patterns generated by the shrimp as they swam, so the researchers kept the shrimp away from the edges of the tank by shining the green laser beam directly down into the center. To help visualize the swirls and eddies generated by
35 the shrimp, the researchers added copious amounts of silver-coated microspheres to the water and illuminated them with a red laser, a color that doesn’t seem to affect the shrimps’ behavior.

The team’s high-speed videos of the teeming,
40 laser-lit migrations captured images of swirls much larger than the creatures themselves, which resulted from the interactions of smaller flows created by individuals. The larger the swirls, the more effective the mixing might be, Dabiri says. “So even for slow
45 migrations, there could be strong effects,” he notes.

Previous studies suggest that light-harvesting phytoplankton, the base of the ocean’s food chain, collect about 60 terawatts of solar energy, Dabiri says. Even if marine organisms that consume
50 phytoplankton convert only 1% of that power into mixing the oceans, that’s collectively comparable to the mixing power of winds and tides, Dabiri and Wilhelmus report.

“This is a really innovative experimental setup
55 that provides a nice illustration of flow velocities,” says Christian Noss, a fluid dynamicist at the University of Koblenz-Landau. Jeannette Yen, a biological oceanographer at the Georgia Institute of Technology, agrees. “I like the idea of using [the
60 shrimps] behavior to lure them to the camera,” she says.

But scientists disagree on how effective billions of churning sea monkey legs might be in blending ocean layers that are hundreds of meters deep.
65 “I wouldn’t want to say just yet that [biomixing] is important at a global scale” solely based on a lab experiment, says Stephen Monismith, a fluid mechanist at Stanford University. André Visser, a physical oceanographer at the Technical University
70 of Denmark, agrees. “Most of the energy [from the shrimp] probably goes into heating the water” rather than mixing it, he says.

In fact, the upper and lower layers of the seas have measurable differences in density, a stratification
75 that, according to theory, would reduce the efficiency of any biomixing. And subsequently, experiments similar to Dabiri’s suggested that stratification stifles mixing. In that research, Noss and colleague Andreas Lorke, also of Koblenz-Landau, studied the effects of
80 large crowds of aquatic creatures called *Daphnia* (commonly known as water fleas) as they migrated up and down in a tank of mildly stratified water. As expected, the stratification squelched the biomixing generated by the swimming *Daphnia*, Noss says.
85 Those results aren’t surprising, Visser says. “It’s difficult to lift heavy water up and to push light water down.”

Dabiri and his colleagues’ next set of lab experiments will look at the effects of sea monkey
90 migrations in stratified waters, he says. Those experiments should reveal whether sea monkeys are better mixers than water fleas.

43

- The main purpose of the passage is to
- describe field observation of a particular type of bipmixing.
 - present a new scientific consensus concerning how biomixing occurs.
 - discuss experimental research on a possible example of bipmixing.
 - reconcile some contradictory findings about the effects of biomixing.

44

- The main purpose of the discussion of blue and green lasers is to
- explain how the researchers were able to see the swirls made by the brine shrimp.
 - describe how the researchers attempted to guide the motions of the brine shrimp.
 - illustrate how the brine shrimp in the researchers' study differ from brine shrimp in the ocean.
 - discuss how the researchers discovered the daily migration pattern of brine shrimp in the ocean.

45

- The passage most strongly suggests that in designing their experiment, Dabiri and Wilhelmus tried to exclude the possibility that
- the duration of the experiment differed from the typical duration of a brine shrimp migration.
 - changes in the data reflected the brine shrimps' adaptation to the experimental conditions.
 - the apparatus in which the brine shrimp were held influenced the results of the experiment.
 - red laser light used to illuminate the microspheres would affect the movement of the brine shrimp.

46

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

- Lines 26-29 ("The researchers . . . movements")
- Lines 29-33 ("The tanks . . . center")
- Lines 34-38 ("To help . . . behavior")
- Lines 39-43 ("The team's . . . individuals")

47

As used in line 40, "captured" most nearly means

- seized.
- imprisoned.
- recorded.
- attracted.

48

The quotations from Noss and Yen (lines 54-61) primarily serve to

- provide expert evaluations of the experimental methods used by Dabiri and wilhelmus.
- explain reservations that other researchers have about Dabiri and Wilhelmus's condusions.
- illustrate the two sides of the scientific debate that Dabiri and Wilhelmus attempted to resolve.
- offer examples of the scholarly consensus that Dabiri and Wilhelmus challenged.

49

According to the passage, Monismith is not convinced that Dabiri and Wilhelmus's results can be

- generalized to the natural environment
- replicated under the same conditions.
- verified by other researchers.
- reconciled with earlier findings.

50

Which choice best supports the idea that the migration of brine shrimp may not have the effect suggested by Dabiri and Wilhelmus?

- A) Lines 65-68 (“I wouldn’t . . . University”)
- B) Lines 70-72 (“Most . . . says”)
- C) Lines 78-82 (“In that . . . water”)
- D) Lines 88-90 (“Dabiri . . . says”)

51

As used in line 82, “mildly” most nearly means

- A) pleasantly.
- B) humbly.
- C) vaguely.
- D) moderately.

52

The information about the study of water feast provided primarily as evidence in support of the idea that

- A) ocean water is stratified in layers of different densities.
- B) the brine shrimp is not the only species that circulates nutrients.
- C) biomixing is less likely to occur in light water than in heavy water.
- D) water stratification reduces the likelihood of successful biomixing.

STOP

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

Writing and Language Test

35 MINUTES, 44 QUESTIONS

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

DIRECTIONS

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

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

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

Questions 1–11 are based on the following passage.

Dinosaur Disaster

Roughly 65 million years **1** ago, dinosaurs along with 65 to 70 percent of other plant and animal species on Earth, became extinct. This massive wave of extinctions—which marked the end of the Cretaceous geologic period—has long fascinated **2** scientists, their proposal of numerous explanations for it. The most well known of these is the Alvarez hypothesis, which holds that a gigantic asteroid struck the planet, causing climate change and ecosystem collapse.

1

- A) NO CHANGE
- B) ago, dinosaurs, along with
- C) ago dinosaurs, along with,
- D) ago dinosaurs along with,

2

- A) NO CHANGE
- B) scientists; proposing
- C) scientists, and they have proposed
- D) scientists, they have proposed

The Alvarez hypothesis first emerged in **3** 1980. In that year, scientists Luis and Walter Alvarez noted the high level of iridium, an element that is rare on Earth but abundant in asteroids, in layers of rock from the Cretaceous period. They proposed that iridium could be evidence of a massive asteroid strike. This hypothesis gained additional support in the 1990s, after researchers determined that a 110-mile-wide crater near the town of Chicxulub, Mexico, was likely caused by an asteroid strike at the end of the Cretaceous period. The asteroid's impact would have ejected a tremendous amount of iridium-containing dust into the atmosphere, blocking sunlight **4** and resulting in global cooling and a darkness that would have halted photosynthesis. These sudden environmental shifts would have rapidly driven many species to extinction, **5** a conclusion supported by sharp declines in the levels of plankton and pollen in the fossil record after the asteroid strike.

3

Which choice best combines the sentences at the underlined portion?

- A) the year 1980, the year when
- B) 1980, in which year
- C) 1980,when
- D) 1980, it was then that

4

- A) NO CHANGE
- B) with results being
- C) and resulting to
- D) with results in

5

The writer is considering deleting the underlined portion, adjusting the punctuation as needed. Should the underlined portion be kept or deleted?

- A) Kept, because it raises an objection to the Alvarez hypothesis that is discussed in more detail in the rest of the passage.
- B) Kept, because it provides evidence of the sudden environmental shifts mentioned earlier in the sentence.
- C) Deleted, because it describes effects of the asteroid impact that have already been discussed in sufficient detail.
- D) Deleted, because it shifts the overall focus of the passage by discussing extinction of life-forms other than dinosaurs.

The Alvarez hypothesis, however, is **6** challenged by research that suggests gradual environmental changes, caused by volcanic eruptions occurring before the asteroid collision, had already stressed dinosaur populations. **7** Finally, a range of volcanoes in western India called the Deccan Traps is thought **8** to have been the site of several huge eruptions near the end of the Cretaceous period. According to Princeton University geologist Gerta Keller, climate-altering gas and dust clouds from these volcanic eruptions could have caused most of the extinctions during this period, **9** leaving the few surviving dinosaur species to be eliminated by the asteroid impact.

6

Which choice best maintains the tone established in the passage?

- A) NO CHANGE
- B) badgered
- C) defied
- D) besieged

7

- A) NO CHANGE
- B) Furthermore,
- C) In fact,
- D) However,

8

- A) NO CHANGE
- B) to have been the sight
- C) to have been the cite
- D) too have been the site

9

- A) NO CHANGE
- B) and leaving
- C) to leave
- D) but leaving

10 In a 2010 article, dozens of scientists reaffirmed the Chicxulub asteroid as the most likely cause of the Cretaceous extinctions, but the available evidence on dinosaur extinctions suggests that environmental changes from these eruptions could have made dinosaurs more vulnerable to the devastation caused by the asteroid strike. The impact of the Chicxulub asteroid continues to be viewed as the event that ended the age of the dinosaurs.

11 But the actual number of species that became extinct at the end of the Cretaceous period has been a subject of debate.

10

Which choice most logically introduces the information in the rest of the sentence?

- A) NO CHANGE
- B) Most researchers dispute Keller's hypothesis that the Deccan eruptions directly caused the majority of the Cretaceous extinctions,
- C) Keller made a controversial claim that the Chicxulub asteroid struck too early in the Cretaceous period to be a major cause of extinctions,
- D) Layers of lava from the Deccan eruptions contain numerous fossils that have been of interest to scientists,

11

The writer wants to reinforce the assertion in the previous sentence in a way that reflects the main ideas of the passage. Which choice best accomplishes this goal?

- A) NO CHANGE
- B) Not all dinosaurs became extinct at that time, though: all modern species of birds are thought to be descended from the dinosaurs that survived.
- C) But whether it did so by itself or was, as geologist Paul Renne puts it, “the final straw, but not the sole cause” will likely inspire research and debate for years to come.
- D) The emphasis on dinosaurs can be misleading however, because so many other plant and animal species became extinct at the same time.

Questions 12–22 are based on the following passage.

Not-So-Ancient Poetry

In the late 1700s, readers across Europe **12** got a big kick out of a series of poems purportedly written by Ossian, a legendary Scottish poet and storyteller from the third century. **13** Ossian was said to have worked in the oral rather than the written tradition, and the French general Napoleon Bonaparte so admired the poems **14** to where he commissioned two paintings of Ossian to be hung in his summer palace. There was just one problem: the poems were largely the invention of their so-called translator, James Macpherson.

Macpherson was a Scottish **15** Highlander who grew up listening to songs and stories in the Gaelic language. When he began his career as a schoolteacher in Ruthven, Scotland, he set about collecting the tales and ballads of the region. A friend persuaded him to translate the Gaelic poem “The Death of Oscar” into English, and in 1760 Macpherson published his translation, along with translations of several other poems, in a volume entitled *Fragments of Ancient Poetry*.

12

Which choice is most consistent with the style used throughout the passage?

- A) NO CHANGE
- B) were tickled pink by
- C) got a rush from
- D) were thrilled by

13

Which choice provides a supporting example that is most similar to the other example in the sentence?

- A) NO CHANGE
- B) Literary critics compared Ossian to the revered poets Homer and Dante,
- C) The poems of Ossian feature well-known characters from other Gaelic poems,
- D) Ossian himself appears in the poems as a narrator,

14

- A) NO CHANGE
- B) so that
- C) which
- D) that

15

- A) NO CHANGE
- B) Highlander, he grew
- C) Highlander; growing
- D) Highlander, he had grown

The *Fragments* immediately captured the public's imagination. Equally captivating was Macpherson's hint in the preface that an epic poem (a poem chronicling heroic deeds of great significance to a culture) might be recovered through further study of ancient manuscripts and oral traditions in the Highlands. Excited patrons provided Macpherson with funds to undertake a research **16** trip, they were not disappointed. **17** In spite of their contributions, Macpherson published two epic poems, *Fingal* and *Temora*, which recounted the feats of ancient Gaelic warriors. Macpherson claimed that the poems had been written by Ossian.

18 The influential English author Samuel Johnson demanded to see the original **19** manuscripts, that Macpherson had translated. When Macpherson refused, Johnson accused him of fraud and undertook a trip to Scotland to debunk Macpherson's claims. Johnson provided a formal account of his suspicions in his 1775 travel book, *A Journey to the Western Islands of Scotland*.

16

- A) NO CHANGE
- B) trip, meanwhile,
- C) trip, and
- D) trip: whereas

17

- A) NO CHANGE
- B) Because of this,
- C) In the years that followed,
- D) To everyone's dismay,

18

At this point, the writer wants to include an effective transition from the previous paragraph to the rest of the passage. Which choice best accomplishes this goal?

- A) The Scottish poet Robert Burns may have been influenced by Ossian.
- B) However, a controversy soon arose over the poems.
- C) Readers assumed that Macpherson was telling the truth.
- D) Macpherson's poems were written in English, not the original Gaelic.

19

- A) NOCHANGE
- B) manuscripts that
- C) manuscripts that;
- D) manuscripts that,

The public remained divided between those who believed in the poems' authenticity those who agreed with Johnson that the poems were a hoax. **20** Today it is believed that Macpherson created the Ossian texts by combining poetry and stories he had heard on his travels with **21** invented material of his own invention. Having set out to find an epic poet in the Highlands, he created one by attributing these amalgamated works to the mythic Ossian. Although many modern critics do not share ohnson's hostility toward Macpherson, Johnson was ultimately correct in thinking that poems such as *Fingal* and *Temora* are better understood as the work of an eighteenth-century poet **22** than as a third-century one.

20

The writer is considering adding the following sentence.

The Ossian incident is mentioned only briefly in James Boswell's 1791 biography *Life of Johnson*.

Should the writer make this addition here?

- A) Yes, because it offers additional context about how important the incident was in *Johnson's life*.
- B) Yes, because it introduces an appropriate supporting detail to the discussion of Ossian's poetry.
- C) No, because it fails to establish Boswells views on the legitimacy of Ossian.
- D) No, because it blurs the focus of the paragraph by introducing extraneous information regarding Johnson.

21

- A) NO CHANGE
- B) material that he invented
- C) made-up material
- D) material

22

- A) NO CHANGE
- B) than those of
- C) than as that of
- D) compared with

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

USPS: You Can Bank On It

In 2014 the Office of Inspector General of the United States Postal Service (USPS) released a report containing a surprising **23** recommendation: post offices should offer their customers banking services such as refillable debit cards, check cashing, and **24** offering small loans. Although the idea may seem strange at first, postal banking has benefited people in many parts of the world and could do so in the United States as well.

A postal banking system would rely on the existing network of post offices to provide essential financial services to residents throughout the United States. **25** In some countries, such as Brazil, post offices partner with commercial banks. In others, such as Japan, the postal service itself acts as a full-scale bank, offering loans and savings accounts. The diverse array of successful postal banking systems around the world shows that post offices can provide many of the same services **26** like banks.

23

- A) NO CHANGE
- B) recommendation post offices should offer;
- C) recommendation, post offices should offer
- D) recommendation—post offices should offer;

24

- A) NO CHANGE
- B) to offer small
- C) small
- D) offer small

25

Which choice provides the best transition from the previous sentence to the sentences that follow in the paragraph?

- A) In a country as large as the United States, the post office network is quite extensive and wide reaching.
- B) Such systems already exist in fifty countries and provide services to about one billion people.
- C) According to a 2014 survey by the Pew Charitable Trusts, about 70 percent of those surveyed were indifferent to the idea of post offices offering financial services,
- D) If implemented, people could cash checks, buy stamps, and mail packages all in the same place: the post office.

26

- A) NO CHANGE
- B) of banks.
- C) that banks provide.
- D) with those offered by banks.

There is a real need for an institution to fill this role in several parts of the United States because **27** people have increasingly been looking to switch from nationwide bank branches to smaller, independent banks. An average of more than 2,300 bank branches closed in the United States each year **28** in the time period between the years 2010 and 2013, leaving customers in many parts of the country living in “bank deserts,” areas

27

Which choice most effectively introduces a main claim of the paragraph?

- A) NO CHANGE
- B) many branches of nationwide banks have closed in recent years.
- C) people who relocate frequently want to do their banking at a familiar branch.
- D) the USPS is trying to increase its customer base.

28

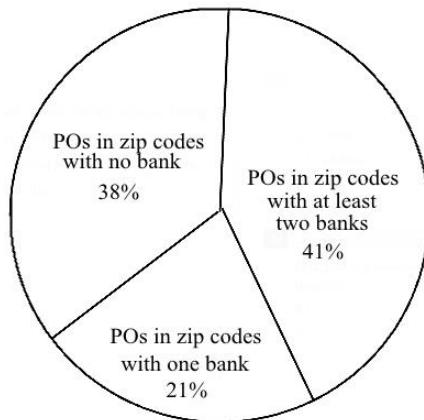
- A) NO CHANGE
- B) in the period of time between
- C) for those years between
- D) between

without local banks. The USPS is ideally suited to

29 undertake this lack of access because many post offices—**30** more than half of them, in fact—are located in zip codes with fewer than two bank branches.

31 Approximately 60 percent of post offices are located in zip codes with one or more banks.

Percent of Post Offices (POs) in Zip Codes Containing
No Banks, One Bank, or At Least Two Banks
(excludes post offices with unique zip codes)



Adapted from US Postal Service Office of Inspector General, "Providing Non-Bank Financial Services for the Underserved." Published in 2014.

29

- A) NO CHANGE
- B) answer
- C) address
- D) sanction

30

Which choice provides accurate information from the chart?

- A) NO CHANGE
- B) almost all of them, as it happens—
- C) roughly 40 percent of them—
- D) but, overall, only about 20 percent of them—

31

The writer wants to conclude the paragraph with accurate, relevant information from the chart that most effectively reinforces the point the writer is making. Which choice best accomplishes this goal?

- A) NO CHANGE
- B) Forty-one percent of post offices are located in zip codes with at least two bank branches.
- C) Post offices in zip codes with no banks actually outnumber post offices in zip codes with at least two banks.
- D) Thirty-eight percent of post offices are located in zip codes with no bank branches at all.

Although postal banking is effective in other countries, many post offices are located in regions where banks are critically needed, some critics of the proposal contend that post offices are ill equipped to act as banks. Postal banking would indeed significantly expand the range of the USPS's duties. **33** However, as Inspector General David C. Williams, notes, US post offices currently offer many similar products: "The post office already sells money orders, runs a huge cash retail business, sells insurance on parcels, and cashes Treasury checks." Even postal banking itself has a precedent in the United States: from 1911 to 1967, the Postal Savings System allowed people to hold savings accounts at their local post offices.

Offering financial services would represent a significant transformation of the USPS, but there is every reason to believe it would be a change for the better. With many citizens now living in bank deserts, offering such services would represent a significant investment in US communities.

32

- A) NO CHANGE
- B) countries and
- C) countries, however,
- D) countries—

33

- A) NO CHANGE
- B) However as Inspector General, David C. Williams, notes
- C) However as Inspector General David C. Williams, notes
- D) However, as Inspector General David C. Williams notes,

Questions 34–44 are based on the following passage.

Costume Curators in the Digital Age

Bridging art and popular culture, costume exhibits have enabled museums to attract media attention and new audiences. Such exhibits are created and overseen by costume **34** curators. The term “costume curators” refers to professionals who oversee the acquisition, maintenance, and display of clothing collections at museums. Costume curators must have a deep knowledge of their collections and must study the materials, construction, and historical significance of the pieces. Also, they must share this knowledge with the public in accessible and entertaining ways. In recent years, some curators have used new technologies such as modeling software and digital displays to study and exhibit their collections. This has allowed curators to bring costumes to life in ways that were **35** previously and formerly impossible.

34

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

- A) curators, strictly speaking, they are
- B) curators—that is to say, “costume curators” are
- C) curators; these are
- D) curators,

35

- A) NO CHANGE
- B) previously
- C) at one point previously
- D) formerly in the past

36

- A) NOCHANGE
- B) in
- C) off of
- D) DELETE the underlined portion.

One of the first costume exhibits to benefit **36** from these technological developments was the 2014 *Charles James: Beyond Fashion* show at the Metropolitan Museum of Art (Met). Early in their preparations, Met curators Harold Koda and Jan Glier Reeder drew on new technologies to **37** reach people who could not visit the exhibit in person. James, one of the most respected do clothing designers of the twentieth century, created sculptural dresses using many layers of unconventional materials. The curators used X-rays and computer models to study the layers of mesh, feathers, cotton, and horsehair that **38** makes up James's "Clover Leaf" gown, which would be one of the centerpieces of their show.

Having come to a fuller understanding of James's work, **39** how to present it in the best way to museum visitors was what the curators had to determine. James's

37

Which choice best sets up the discussion of Koda and Reeder's work that follows in the paragraph?

- A) NO CHANGE
- B) push the boundaries of the creative display of costumes.
- C) achieve a better understanding of James's clothing.
- D) adapt the exhibition space to the digital age.

38

- A) NO CHANGE
- B) make
- C) will make
- D) would make

39

- A) NO CHANGE
- B) museum visitors would have it presented to them in the best way the curators could determine.
- C) the curators had to determine the best way to present it to museum visitors.
- D) it had to be presented to museum visitors in the best way the curators could determine.

dresses presented the curators with one of their most common professional challenges: **40** marketing the exhibit to increase museum admissions. Clothing in museums would quickly fall apart if it were handled frequently, but traditional displays of costumes on mannequins make it difficult for visitors to **41** see how a piece is constructed. Koda and Reeder solved this dilemma by designing computer animations that showed visitors the separate pieces that make up dresses such as the “Clover Leaf” gown, the way these pieces fit together, and the ways the finished dresses fit when they are worn. By doing so, the curators could give museumgoers a sense of their own excitement at being able to see inside James’s designs. **42**

40

Which choice best introduces the discussion that follows in the paragraph?

- A) NO CHANGE
- B) keeping the exhibit in line with the designer’s original vision.
- C) securing enough funding to maintain the clothing.
- D) displaying fragile pieces to the public.

41

- A) NO CHANGE
- B) see how is a piece constructed.
- C) see: how is a piece constructed?
- D) see, in what way is a piece constructed?

42

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

Also featured in the show was James’s “Taxi” wrap dress, which stands in contrast to the “Clover Leaf” gown due to its simple design and the ease with which it can be put on.

Should the writer make this addition here?

- A) Yes, because it offers a second example of the pieces in the exhibit.
- B) Yes, because it provides an effective transition to the next paragraph.
- C) No, because it would be better placed elsewhere in the passage.
- D) No, because it is not related to the paragraph’s focus on the curators methods.

According to Valerie Steele, chief curator of the Museum at the Fashion Institute of Technology, a costume curator's **43** job is to, "tell the story of the meaning of the clothes." New technologies have allowed costume curators to tell their stories in more compelling ways, **44** and other exhibit teams at the Met would do well to imitate the costume curators' approach.

43

- A) NO CHANGE
- B) job is; to
- C) job, is to
- D) job is to

44

The writer wants a conclusion that supports the main discussion of the passage. Which choice best accomplishes this goal?

- A) NO CHANGE
- B) but given the rapid evolution of technology in the twenty-first century, the use of digital technologies in costume curatorship has hardly reached its apex.
- C) making clothing exhibitions such as *Charles James: Beyond Fashion* some of the most popular and exciting museum shows in recent memory.
- D) and they have opened up the possibilities for showcasing Charles James's unique vision through other artistic media.

STOP

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



Math Test—No Calculator

25 MINUTES, 20 QUESTIONS

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

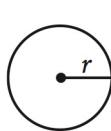
DIRECTIONS

For questions 1–5, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 16–20, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your booklet for scratch work.

NOTES

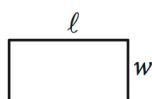
1. The use of a calculator is not permitted.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated,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

REFERENCE



$$A = \pi r^2$$

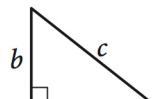
$$C = 2\pi r$$



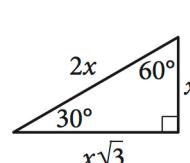
$$A = lw$$



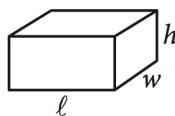
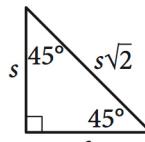
$$A = \frac{1}{2}bh$$



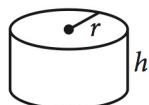
$$c^2 = a^2 + b^2$$



Special Right Triangles



$$V = lwh$$



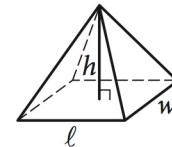
$$V = \pi r^2 h$$



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



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



$$V = \frac{1}{3}lw h$$

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.



1

$$ax = 5$$

In the equation above, a is a constant. For which of the following values of a will the equation have no solution?

- A) 0
- B) 1
- C) 5
- D) 10

2

If $3(3x + 5) = 2x - 8$, what is the value of x ?

- A) $-\frac{23}{7}$
- B) $-\frac{15}{7}$
- C) $-\frac{13}{7}$
- D) $\frac{7}{11}$

3

x	$h(x)$
2	1
4	7
6	13
8	19

For the linear function h , the table above shows several values of x and their corresponding values of $h(x)$. Which of the following defines h ?

- A) $h(x) = 2x - 3$
- B) $h(x) = 3x - 5$
- C) $h(x) = 4x - 7$
- D) $h(x) = 4x - 9$

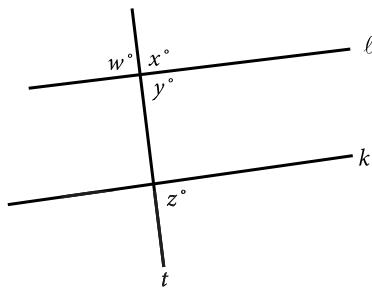
4

Terrence's car contains 8 gallons of fuel. He plans to drive the car m miles using the fuel currently in the car. If the car can drive 20 miles per gallon of fuel, which inequality gives the possible values of m ?

- A) $m \leq (8)(20)$
- B) $m \geq (8)(20)$
- C) $8 \leq 20m$
- D) $8 \geq 20m$



5



Note: Figure not drawn to scale.

In the figure above, line t intersects lines ℓ and k . Which of the following statements, if true, would imply that lines ℓ and k are parallel?

- A) $w = y$
- B) $w = z$
- C) $x = z$
- D) $x + y = 180$

6

Blood volume, V_B , in a human can be determined using the equation $V_B = \frac{V_p}{1-H}$, where V_p is the plasma volume and H is the hematocrit (the fraction of blood volume that is red blood cells). Which of the following correctly expresses the hematocrit in terms of the blood volume and the plasma volume?

- A) $H = 1 - \frac{V_p}{V_B}$
- B) $H = \frac{V_B}{V_p}$
- C) $H = 1 + \frac{V_B}{V_p}$
- D) $H = V_B - V_p$

7

$$\frac{2(x+1)}{x+5} = 1 - \frac{1}{x+5}$$

What is the solution to the equation above?

- A) 0
- B) 2
- C) 3
- D) 5



8

$$2x^2 - 2 = 2x + 3$$

Which of the following is a solution to the equation above?

- A) 2
- B) $1 - \sqrt{11}$
- C) $\frac{1}{2} + \sqrt{11}$
- D) $\frac{1 + \sqrt{11}}{2}$

9

$$2x^3 + 11x^2 + 5x$$

Which of the following is NOT a factor of the polynomial above?

- A) x
- B) $x + 5$
- C) $2x + 1$
- D) $2x + 5$

10

The graph in the xy -plane of the linear function f contains the point $(3, 4)$. For every increase of 5 units in x , $f(x)$ increases by 3 units. Which of the following equations defines the function?

- A) $f(x) = -\frac{5}{3}x + 9$
- B) $f(x) = -\frac{3}{5}x + \frac{29}{5}$
- C) $f(x) = \frac{3}{5}x + \frac{11}{5}$
- D) $f(x) = \frac{5}{3}x - 1$



11

x	$p(x)$
-2	5
-1	0
0	-3
1	-1
2	0

The table above gives selected values of a polynomial function p . Based on the values in the table, which of the following must be a factor of p ?

- A) $(x - 3)$
- B) $(x + 3)$
- C) $(x - 1)(x + 2)$
- D) $(x + 1)(x - 2)$

12

$$g(x) = 2^x - 2$$

The function g is defined by the equation above. Which of the following points in the xy -plane is an x -intercept of the graph of the equation $y = g(x)$?

- A) $(-1, g(-1))$
- B) $(0, g(0))$
- C) $(1, g(1))$
- D) $(2, g(2))$

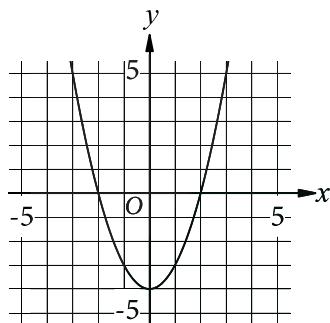


13

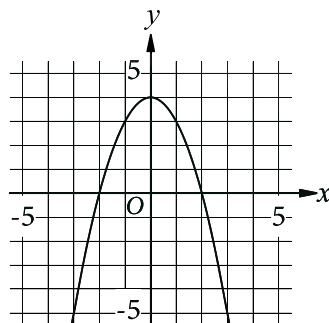
$$y = -x^2 + 4x$$

Which of the following is the graph in the xy -plane of the given equation?

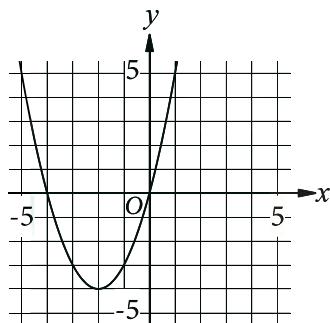
A)



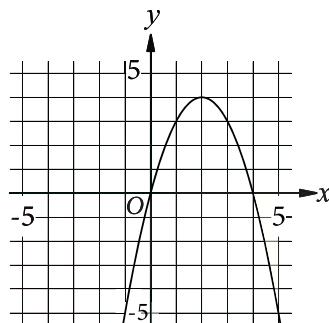
B)



C)



D)



14

$$i^2 + (-i)^2$$

In the complex number system, what is the value of the given expression? (Note: $i = \sqrt{-1}$)

- A) -2
- B) 0
- C) 2
- D) $2i$

15

The dimensions of a right rectangular prism are 4 inches by 5 inches by 6 inches. What is the surface area, in square inches, of the prism?

- A) 30
- B) 74
- C) 120
- D) 148

**DIRECTIONS**

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

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

Write answer in boxes.

Grid in result.

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

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

Fraction line

Answer: 2.5

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

Decimal point

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

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

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

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

Answer: 201 – either position is correct

2	0	1
0	0	0
1	1	1
2	2	2

2	0	1
0	0	0
1	1	1
2	2	2

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



16

$$3x + y = 29$$

$$x = 2$$

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

17

A pizza parlor sells pizza slices for \$3 each and calzones for \$4 each. A group of friends spent \$51 on pizza slices and calzones at the parlor. If they bought 6 calzones, how many pizza slices did they buy?

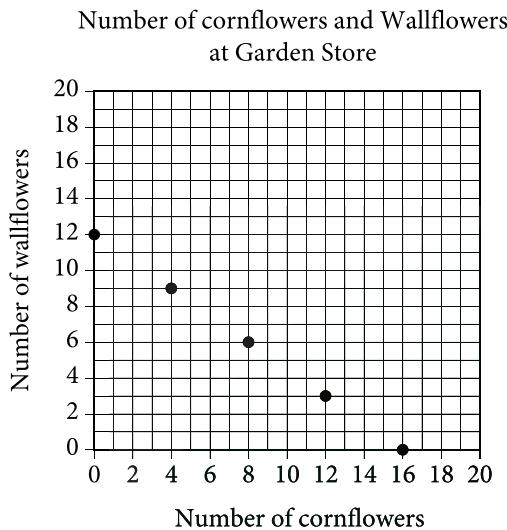
18

$$h(t) = -16t^2 + 48t + 72$$

If air resistance is ignored, the function h defined above models the height above ground, in feet, of a toy rocket t seconds after it is launched from the roof of building. Based on the model, what is the height above ground, in feet, of the toy rocket 1 second after launch?



19



The points plotted in the coordinate plane above represent the possible numbers of wallflowers and cornflowers that someone can buy at the Garden the Store in order to spend exactly \$24.00 total on the two types of flowers. The price of each wallflower is the same and the price of each cornflower is the same. What is the price, in dollars, of 1 cornflower?
(Disregard the \$ sign when gridding your answer.
For example, if your answer is \$9.87, grid 9.87)

20

If $\frac{\sqrt[3]{x^5}}{\sqrt[3]{x^4}} = x^{\frac{a}{b}}$ for all positive values of x , what is the value of $\frac{a}{b}$?

STOP

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



Math Test—Calculator

55 MINUTES, 38 QUESTIONS

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

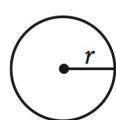
DIRECTIONS

For questions 1–30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding 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 booklet for scratch work.

NOTES

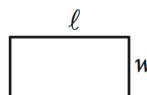
1. The use of a calculator is not permitted.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated,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

REFERENCE

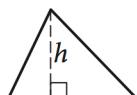


$$A = \pi r^2$$

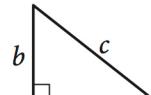
$$C = 2\pi r$$



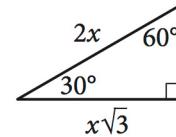
$$A = lw$$



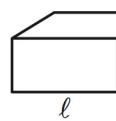
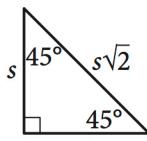
$$A = \frac{1}{2}bh$$



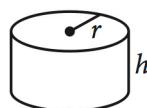
$$c^2 = a^2 + b^2$$



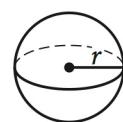
Special Right Triangles



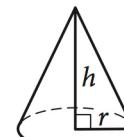
$$V = lwh$$



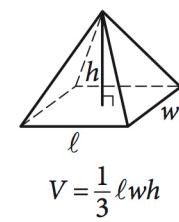
$$V = \pi r^2 h$$



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



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



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

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.



1

A care-sharing service charges \$6 per hour to rent a car plus a \$10 fee for insurance. Which of the following gives the total cost c , in dollars, of a rental that lasts t hours?

- A) $c = 6t + 10$
- B) $c = 6t - 10$
- C) $c = 10t + 6$
- D) $c = 16t$

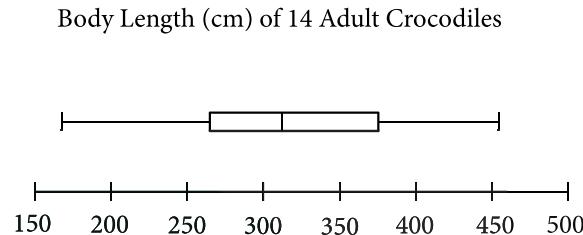
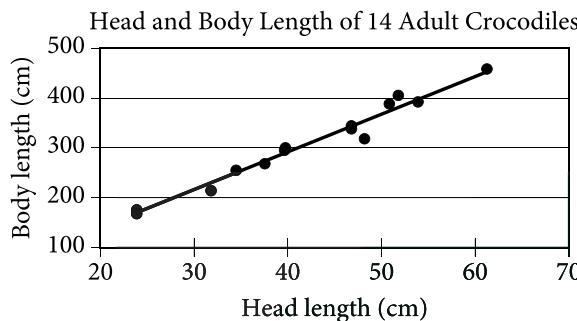
2

If $y = x^2 + ax + a$, where a is a constant, and $y = 11$ when $x = 1$, what is the value of a ?

- A) -5
- B) -2
- C) 2
- D) 5



Questions 3–5 refer to the following information.



The scatterplot above represents the head lengths, in centimeters (cm), and body lengths, in cm, of 14 adult crocodiles. The line of best fit for the data is also shown. The box plot above summarizes the body lengths of the 14 crocodiles.

3

For an adult crocodile with a head length of 30 cm, which of the following is closest to the body length, in cm, predicted by the line of best fit?

- A) 180
- B) 215
- C) 250
- D) 275

5

Based on the box plot, of the following, which is the best estimate of the median body length, in cm, of the 14 adult crocodiles?

- A) 260
- B) 300
- C) 320
- D) 370

4

Based on the line of best fit, of the following, which is the best estimate of the increase in predicted body length, in cm, for every 10 cm increase in head length?

- A) 25
- B) 75
- C) 125
- D) 150



6

If $5x - 7 = 13$, what is the value of $10x - 14$?

- A) 4
- B) 8
- C) 26
- D) 65

7

x	y
1	4
3	12
5	20
40	k

In the table above, the ratio of y to x for each ordered pair is constant. What is the value of k ?

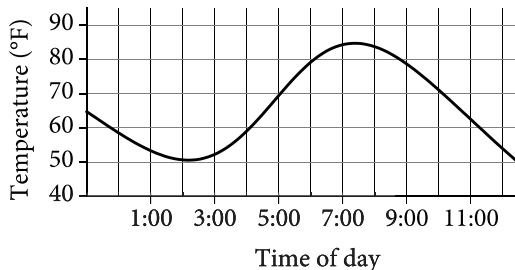
- A) 28
- B) 36
- C) 80
- D) 160

8

Which of the following expressions is equivalent to $2a^2(a + 3)$?

- A) $5a^3$
- B) $8a^5$
- C) $2a^3 + 3$
- D) $2a^3 + 6a^2$

9



The graph above shows the temperature in a room during a day when the thermostat malfunctioned. For which of the following two-hour periods was the difference between the maximum and minimum temperatures greatest?

- A) 1:00 to 3:00
- B) 3:00 to 5:00
- C) 5:00 to 7:00
- D) 7:00 to 9:00

10

$$P(t) = 250 + 10t$$

The population of snow leopards in a certain area can be modeled by the function P defined above, where $P(t)$ is the population t years after 1990. Of the following, which is the best interpretation of the equation $P(30) = 550$?

- A) The snow leopard population in this area is predicted to be 30 in the year 2020.
- B) The snow leopard population in this area is predicted to be 30 in the year 2030.
- C) The snow leopard population in this area is predicted to be 550 in the year 2020.
- D) The snow leopard population in this area is predicted to be 550 in the year 2030.



11

In the xy -plane, which of the following changes to the graph of the equation $y = x^2 + 3$ will result in the graph of the equation $y = (x^2 + 3) - 6$?

- A) A shift 6 units to the left
- B) A shift 6 units to the right
- C) A shift 6 units upward
- D) A shift 6 units downward

12

Tanya earns \$13.50 per hour at her part-time job. When she works z hours, she earns $13.50z$ dollars. Which of the following expression gives the amount, in dollars, Tanya will earn if she works $3z$ hours?

- A) $3(13.50z)$
- B) $3 + 13.50z$
- C) $3z + 13.50z$
- D) $13.50(z + 3)$

13

United States Presidents from 1789 to 2015

Ages	Number
40–44	2
45–49	7
50–54	13
55–59	11
60–64	7
65–69	3

The table above gives the number of United States presidents from 1789 to 2015 whose age at the time they first took office is within the interval listed. Of those presidents who were at least 50 years old when they first took office, what fraction were at least 60 years old?

- A) $\frac{10}{43}$
- B) $\frac{10}{34}$
- C) $\frac{10}{24}$
- D) $\frac{25}{34}$



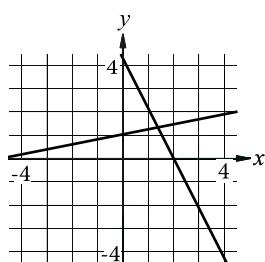
14

$$x + 5y = 5$$

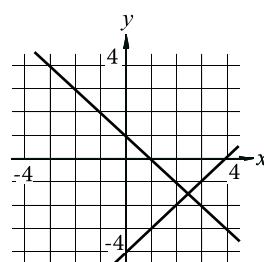
$$2x - y = -4$$

Which of the following graphs in the xy -plane could be used to solve the system of equations above?

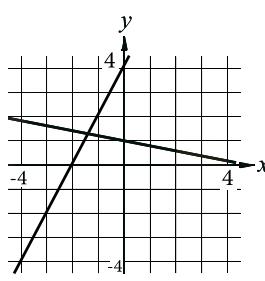
A)



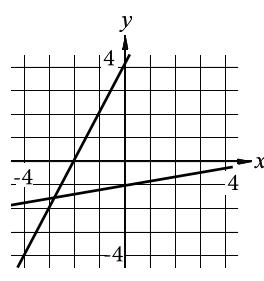
B)



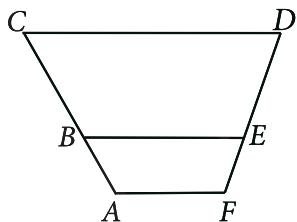
C)



D)



15



In the figure above, \overline{AF} , \overline{BE} , and \overline{CD} are parallel. Points B and E lie on \overline{AC} and \overline{FD} , respectively. If $AB=9$, $BC=18.5$, and $FE=8.5$, what is the length of \overline{ED} , to the nearest tenth?

- A) 16.8
- B) 17.5
- C) 18.4
- D) 19.6



Questions 16 and 17 refer to the following information.

Club Participation in the 2014–2015 School Year

Class	Drama	Robotics	Chess	Band	Total
Juniors	21	15	10	18	64
Seniors	27	20	21	17	85
Total	48	35	31	35	149

Of all juniors and seniors who attended a particular high school during the 2014—2015 school year, 149 participated in the clubs listed in the table above. Each of the 149 students participated in only one of the four school clubs listed. The table shows the distribution of the 149 students by class and club participation.

16

The band was composed of freshmen, sophomores, juniors, and seniors. If 30% of the students in the band were juniors, how many students were in the band?

- A) 49
- B) 54
- C) 56
- D) 60

17

Of the number of juniors and seniors in the drama club, the 25% who walked to school represents $\frac{1}{8}$ of the total number of juniors and seniors who walked to school. How many juniors and seniors walked to school?

- A) 96
- B) 60
- C) 24
- D) 12



18

A bag containing 10,000 beads of assorted colors is purchased from a craft store. To estimate the percent of red beads in the bag, a sample of beads is selected at random. The percent of red beads in the bag was estimated to be 15%, with an associated margin of error of 2%. If r is the actual number of red beads in the bag, which of the following is most plausible?

- A) $r > 1,700$
- B) $1,300 < r < 1,700$
- C) $200 < r < 1,500$
- D) $r < 1,300$

19

x	$f(x)$
0	c
1	$2c$
2	$3c$

For the linear function f , the table above gives some values of x and their corresponding values $f(x)$, where c is a constant. Which of the following equations defines f ?

- A) $f(x) = x + c$
- B) $f(x) = x + 3c$
- C) $f(x) = cx + c$
- D) $f(x) = 3cx + 3c$

20

$$\frac{1}{x^2 + 10x + 25} = 4$$

If x is a solution to the given equation, which of the following is a possible value of $x + 5$?

- A) $\frac{1}{2}$
- B) $\frac{5}{2}$
- C) $\frac{9}{2}$
- D) $\frac{11}{2}$



21

The graph of a line in the xy -plane has a positive slope and intersects the y -axis at a point that has a negative y -coordinate. Which of the following could be an equation of the line?

- A) $-3x + 2y = -5$
- B) $-3x + 2y = 5$
- C) $3x + 2y = -5$
- D) $3x + 2y = 5$

22

$$f(x) = -500x^2 + 25,000x$$

The revenue $f(x)$, in dollars, that a company receives from sales of a product is given by the function f above, where x is the unit price, in dollars, of the product. The graph of $y = f(x)$ in the xy -plane intersects the x -axis at 0 and a . What does a represent?

- A) The revenue, in dollars, when the unit price of the product is \$0
- B) The unit price, in dollars, of the product that will result in maximum revenue
- C) The unit price, in dollars, of the product that will result in a revenue of \$0
- D) The maximum revenue, in dollars, that the company can make

23

The graph of the equation $ax + ky = 6$ is a line in the xy -plane, where a and k are constants. If the line contains the points $(-2, -6)$ and $(0, -3)$, what is the value of k ?

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

24

From 2005 through 2014, the number music CDs sold in the United States declined each year by approximately 15% of the number sold the preceding year. In 2005, approximately 600 million CDs were sold in the United States. Of the following, which best models C , the number of millions of CDs sold in the United States, t years after 2005?

- A) $C = 600(0.15)^t$
- B) $C = 600(0.85)^t$
- C) $C = 600(1.15)^t$
- D) $C = 600(1.85)^t$



25

$$g(t) = -0.34(t - 5.51)^2 + 8.26$$

The function g above models the growth rate of a certain plant, in millimeters per day (mm/day), in terms of the watering time t , in minutes per day (min/day). What is the meaning of $(5.51, g(5.51))$ in this context?

- A) The watering time of 5.51 min/day results in a plant growth rate of $g(5.51)$ mm/day.
- B) The plant growth rate of 5.51 mm/day results in a watering time of $g(5.51)$ min/day.
- C) The watering time increases by $g(5.51)$ min/day for every 5.51 mm/day increase in growth rate.
- D) The growth rate increases by $g(5.51)$ mm/day for every 5.51 min/day increase in watering time.

26

A psychologist designed and conducted a study to determine whether playing a certain educational game increases middle school students' accuracy in adding fractions. For the study, the psychologist chose a random sample of 35 students from all of the students at one of the middle schools in a large city. The psychologist found that students who played the game showed significant improvement in accuracy when adding fractions. What is the largest group to which the results of the study can be generalized?

- A) The 35 students in the sample
- B) All students at the school
- C) All middle school students in the city
- D) All students in the city

27

A manufacturer determined that right cylindrical containers with a height that is 4 inches longer than the radius offer the optimal number of containers to be displayed on a shelf. Which of the following expresses the volume, V , in cubic inches, of such containers, where r is the radius, in inches?

- A) $V = 4\pi r^3$
- B) $V = \pi(2r)^3$
- C) $V = \pi r^2 + 4\pi r$
- D) $V = \pi r^3 + 4\pi r^2$

28

For the function f , if $f(3x) = x - 6$ for all values of x , what is the value of $f(6)$?

- A) -6
- B) -4
- C) 0
- D) 2



29

In the system of equation below, a and c are constant.

$$\begin{aligned}\frac{1}{2}x + \frac{1}{3}y &= \frac{1}{6} \\ ax + y &= 6\end{aligned}$$

If the system of equation has an infinite number of solutions (x, y) , what is the value of a ?

- A) $-\frac{1}{2}$
- B) 0
- C) $\frac{1}{2}$
- D) $\frac{3}{2}$

30

A researcher surveyed 200 adults selected at random from the city of Aldley and 300 adults selected at random from the suburbs of Aldley. Each person surveyed was asked whether he or she owns a car. Some of the results are shown in the partially completed table below.

	Owns car	Does not own car	Total
City of Aldley	80	120	200
Suburbs of Aldley	x	y	300

The researcher found that an adult surveyed in the suburbs of Aldley is twice as likely to own a car as an adult surveyed in the city of Aldley. Of the following, which could be the value of x ?

- A) 120
- B) 160
- C) 210
- D) 240

**DIRECTIONS**

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

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

Write answer in boxes. →

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

← Fraction line

Grid in result.

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

← Decimal point

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

2	/	3
0	0	0
1	1	1
2	●	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8

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

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

Answer: 201 – either position is correct

2	0	1
0	0	0
1	1	1
2	●	2
3	3	3

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



31

Pure beeswax has a density of 0.555 ounce per cubic inch. An online company sells pure beeswax at a price of \$8.00 per ounce. What is the selling price, in dollars per cubic inch, for pure beeswax purchased from this company? (Disregard the \$ sign when gridding your answer. For example, if your answer is \$1.37, grid 1.37)

32

2, 10, 3, 7, 6

The mean of the list of numbers above is what fraction of the sum of the five numbers?

33

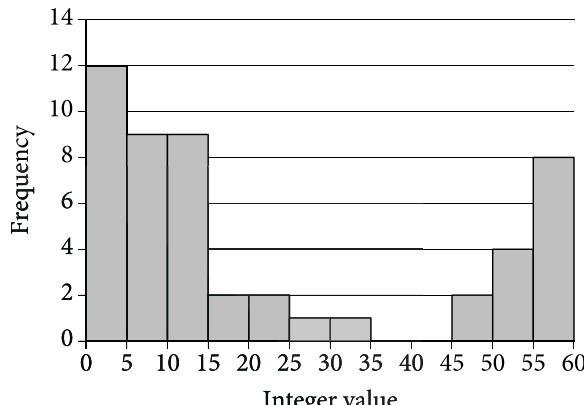
The equation $(x+6)^2 + (y+3)^2 = 121$ defines a circle in the xy -plane. What is the radius of the circle?

34

A baker is gathering the ingredients required to make 15 batches of oatmeal cookies and 1 cake. The cake will require one-quarter bag of flour. The baker needs a total of more than 3 but less than 4 bags of flour. What is one possible value for the fraction of one bag of flour required for each batch of cookies?

35

Distribution of 50 Integers



The histogram summarizes the distribution of a data set composed of 50 integers. The first bar represents the number of integers that are at least 0 but less than 5. The second bar represents the number of integers that are at least 5 but less than 10, and so on. What is a possible value of the median of the data set?

36

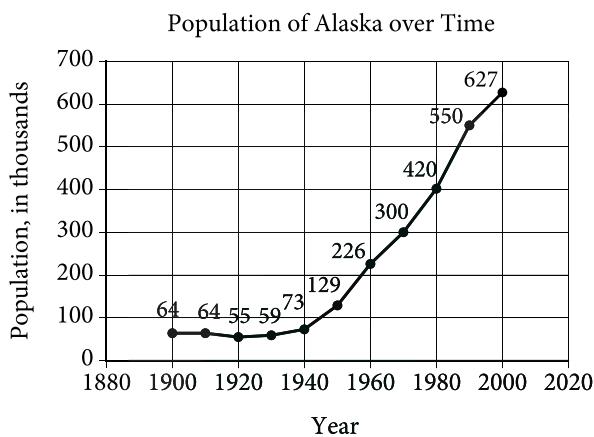
$$K = \frac{200v^2}{2}$$

In the equation above, the kinetic energy, K , of a 200-gram object is given in terms of its speed, v . If the equation is rewritten in the form $v = a\sqrt{K}$, where a is a positive constant, what is the value of a ?

37



Questions 37 and 38 refer to the following information.



The line graph above shows the population, in thousands, of people living in Alaska every 10 years from 1900 to 2000.

37

What was the population of Alaska, in thousands, in 1990?

38

The ratio of the population of Alaska in 1980 to the population of Alaska in 1970 can be written as $a : 1$. What is the value of a ?

STOP

If you finish before time is called, you may check your work on this section only.

Do not turn to any other section.

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May 2019 US Answers

Reading				Writing				Math N/Calc		Math W/Calc	
Question	Answer	Question	Answer	Question	Answer	Question	Answer	Question	Answer	Question	Answer
1	D	41	C	1	B	41	A	1	A	1	A
2	B	42	A	2	C	42	D	2	A	2	D
3	C	43	C	3	C	43	D	3	B	3	B
4	B	44	B	4	A	44	C	4	A	4	B
5	C	45	C	5	B			5	B	5	C
6	C	46	B	6	A			6	A	6	C
7	B	47	C	7	C			7	B	7	D
8	A	48	A	8	A			8	D	8	D
9	B	49	A	9	A			9	D	9	B
10	A	50	B	10	B			10	C	10	C
11	D	51	D	11	C			11	D	11	D
12	A	52	D	12	D			12	C	12	A
13	D			13	B			13	D	13	B
14	B			14	D			14	A	14	C
15	A			15	A			15	D	15	B
16	A			16	C			16	23	16	D
17	B			17	C			17	9	17	A
18	D			18	B			18	104	18	B
19	C			19	B			19	1.5	19	C
20	B			20	D			20	7/6	20	A
21	C			21	D					21	A
22	C			22	C					22	C
23	C			23	A					23	A
24	A			24	C					24	B
25	A			25	B					25	A
26	B			26	C					26	B
27	B			27	B					27	D
28	C			28	D					28	B
29	A			29	C					29	D
30	D			30	A					30	D
31	D			31	D					31	4.44
32	A			32	B					32	1/5
33	B			33	D					33	11
34	A			34	D					34	11/60 < X < 1/4 OR 0.183 < X < 0.25
35	D			35	B					35	10, 11, 12, 13, 14
36	D			36	A					36	1/10
37	B			37	C					37	550
38	C			38	B					38	67/50
39	D			39	C						
40	B			40	D						

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