

# Reading Test

60 MINUTES, 47 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 1-9 are based on the following passage.

This passage is adapted from Zia Haider Rahman, *In the Light of What We Know*. ©2014 by Zia Haider Rahman. The narrator, a Bangladeshi immigrant in London, has been describing a job he had as a teenager, working as an assistant to carpenters.

I warmed to Bill and Dave quickly. I remember that both of them always said “thanks” or “cheers, mate,” even to each other. Such words did not seem to figure in the vocabulary of Sylheti, a language in which, rather than saying thank you, one balanced the whole sentence on terms of deference to age or class. This had the effect, I had noticed, that those who were senior in age or higher in class weren’t required by the language to indicate deference and were therefore saved from stooping for the tools to express gratitude.

My mother had always winced when I said please and thank you. Thank you, I’d say when she gave me a second helping of rice and curry. Or thank you when she handed me a lightbulb as I stood on a chair to change the ceiling light. Thank you was an English phrase that ruptured my spoken Sylheti. My mother would grimace and insist that I stop saying it. Because we never had that kind of relationship, I could never ask her why. I have thought that she couldn’t bear to hear me say thank you because it signified how far away I’d moved from the culture and values she had inherited, even then. But over the years that have passed since boyhood, I have come to regard such explanations, where mere cultural difference is invoked at every turn, as facile and unilluminating. I now consider her distaste as having

had a quality of depth I had not attributed to it before. I think the woman who had raised me, who had provided a family for me, however flawed that family was, was offended that I had turned the web of duties, which bound a family together, into the mere exchange of favors, thank you and please standing for reciprocation. In her mind, I believe, a network of duty and service, tightened under centuries of evolution, had been reduced by my thank you to the trading culture of the West. It was duty and obligation, not measured gains, that reinforced the bonds within the extended family to make something stronger than there would have been otherwise, strong enough and large enough to endure hardships. My understanding came much later, though. But in the summer before college, when I heard Bill and Dave say please and thank you, occasioned at every turn and gesture, I was charmed.

Above all, I liked Bill and Dave because of the banter between them. The two of them talked incessantly about the work in a language that was new to me. A carpenter’s world is steeped in a vocabulary of its own, and Bill and Dave were masters of that vocabulary. It was never just a hammer but a cross pein pin hammer, never just a plane but a rebate plane, never a mere clamp but a three-way edging clamp or a G or an F clamp. Each tool had a specific function, and Bill and Dave would never make do with one tool where another was better suited to the job. I fetched the tools as need arose, and very quickly I came to know each tool’s name and function.

60 By the way, Bill said, you may think knowing the names of tools and hardware is about identifying them, but if that's all you think then you'd be wrong. You see, calling things by their proper names is the beginning of wisdom. That's a Chinese proverb and they invented writing. The wisdom, in case you're wondering, is that when you get names right, you narrow the gap between you and the thing. The most important tool is your hand and you'd be in serious trouble if there were a gap between you and your hand. So names are important. Unless you're talking about roses, that is. But only roses.

1

Over the course of the passage, the focus of the narrator shifts from

- A) reflecting on certain interactions with his mother to describing an insight he gained at work.
- B) introducing individuals who influenced his childhood to examining why those individuals had such an impact.
- C) determining the source of his mother's discontent to comparing his mother with other people.
- D) describing a time in which he sought direction to explaining how a particular profession helped him find that direction.

2

In the context of the passage, the use of the word "ruptured" (line 17) serves mainly to

- A) foreshadow the permanent breach that will occur between the narrator and his country of birth.
- B) indicate the difficulty that the narrator has communicating in his native language.
- C) highlight the state of distrust that has developed between the narrator and his family.
- D) emphasize the extent to which the narrator's adoption of Western ways is incompatible with the culture he grew up in.

3

The passage suggests that working with Bill and Dave had which effect on the narrator?

- A) It caused him to view his mother's habits as quaint and unsophisticated.
- B) It led him eventually to appreciate the complexity of familial relationships in his native culture.
- C) It demonstrated how thoughtless he had always been toward his mother.
- D) It helped him to feel more confident about his language skills in unfamiliar settings.

4

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

- A) Lines 3-11 ("Such . . . gratitude")
- B) Lines 34-42 ("In her . . . hardships")
- C) Lines 43-45 ("But in . . . charmed")
- D) Lines 49-51 ("A carpenter's . . . vocabulary")

5

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

- A) converted.
- B) conquered.
- C) subjugated.
- D) degraded.

6

The passage suggests that the narrator most enjoyed which aspect of carpentry?

- A) The opportunity to practice his spoken English
- B) The experience of learning new jargon
- C) The chance to impress others with his knowledge
- D) The physicality of working with his hands

7

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

- A) Lines 46-49 (“Above . . . me”)
- B) Lines 51-54 (“It was . . . F clamp”)
- C) Lines 55-57 (“Each . . . job”)
- D) Lines 67-70 (“The most . . . hand”)

8

The last paragraph serves primarily to

- A) introduce a way of thinking that opposes the point of view of the narrator’s mother.
- B) question the fundamental relationship between names and the things they designate.
- C) allow insight into the narrator’s way of thinking.
- D) provide a further reflection on the deeper significance of language.

9

In the last paragraph, Bill is characterized primarily as a

- A) strict disciplinarian.
- B) loyal confidant.
- C) thoughtful mentor.
- D) lovable fraud.

**Questions 10-19 are based on the following passage and supplementary material.**

This passage is adapted from David Streitfeld, “Why Web Reviewers Make Up Bad Things.” ©2013 by The New York Times Company.

It’s pretty clear exactly who writes fake positive reviews on the Web: friends or relatives of the author or the shop or restaurant owner, or sometimes the author or shop owner himself. The goal of fake positive reviews is to increase sales, and the reviewers are the ones who benefit, or want their friends to benefit.

But who writes fake negative reviews, denouncing stuff without any obvious reason? The usual assumption is that the perpetrators are competitors of some sort, hoping to get an edge on other novelists or chefs or innkeepers. But are there really so many nasty people in the world who need to get some slight advantage by tearing down the restaurant one block over? The question has been shrouded in mystery.

Until now. A fascinating new academic study sheds light on the fake negative review, finding not only that the source is totally unexpected but also that the problem is much bigger than a few malicious operators.

It turns out that competitors are not necessarily the ones giving one miserable star to products they did not buy or experiences they did not have. Customers do it—in fact, devoted customers.

This is hard to wrap your brain around, so first some background. The study was done by Eric Anderson of Northwestern University and Duncan Simester of the M.I.T. Sloan School of Management, using data from an unnamed apparel company that markets through catalogs, a few stores and a Web site. The company does not use third-party sellers and few of its products turn up on eBay, so it provided a relatively controlled experiment.

Registered customers wrote over 325,000 reviews in the study period. But for 16,000 of those reviews, there is no evidence that the customer bought the item. These reviews are on balance much more negative. (Could the items have been gifts, which could explain a higher level of dissatisfaction? No, the reviewers explicitly said they bought the items. The researchers were also able to rule out other possibilities, such as the negative reviews’ being attributable to differences among items or among reviewers.)



The researchers cannot say directly what the comments look like that accompany these reviews, because then it would be possible to do a Web search and identify the company. But Mr. Simester said they are something like this:

- I should have read all of the negative reviews before ordering. Please bring back the old style.
- I ordered this item over your Web site. Why is it that good designs are always changed? Please go back to the original.
- I am on a “Made in the USA” campaign and so am returning this item. Please stop importing.

The cranky customers are acting, the study concludes, as “self-appointed brand managers.” To put it another way, they are venting. The review forum gives them a simple and direct means of doing so: I hated this product, so listen to me.

As Mr. Simester put it in an interview: “Your best friends are your worst critics.” The study mentions in passing that Harley-Davidson’s customers were upset when the company introduced a perfume. They took it personally. The same phenomenon seems to be operating here and, perhaps, all over the Web, distorting the review process in a way never imagined.

The apparel retailer was somewhat alarmed to discover this was going on, Mr. Simester said. One possible solution is to allow customers to write reviews only if they have purchased the product. Or give customers easier ways to let their feelings be known.

For the rest of us, the rule remains the same: read reviews if you have no other source of information, but never place your full trust in them. Mr. Simester, who says he has never written a review himself, follows this philosophy.

The other conclusion is that behavior online is too easily taken as a mirror of reality when it is nothing of the sort. What seems to be the voice of the masses is the voice of a self-appointed few, magnified and distorted.

“For every thousand customers, only about 15 write these reviews—and one of them is writing negative reviews of products he hasn’t bought,” Mr. Simester said. “How surprised should we be that one out of a thousand people do something we have trouble understanding?”

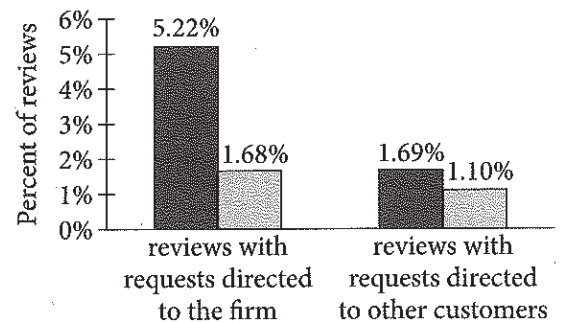
Figure 1

Distribution of Product Ratings

|                | Without a confirmed transaction | With a confirmed transaction | Difference |
|----------------|---------------------------------|------------------------------|------------|
| Average rating | 4.07                            | 4.33                         | -.26       |
| Rating = 1     | 10.66%                          | 5.28%                        | 5.38%      |
| Rating = 2     | 6.99%                           | 5.40%                        | 1.59%      |
| Rating = 3     | 8.01%                           | 6.47%                        | 1.54%      |
| Rating = 4     | 13.83%                          | 16.96%                       | -3.13%     |
| Rating = 5     | 60.51%                          | 65.89%                       | -5.38%     |

Figure 2

Reviews Containing Requests Directed to the Firm versus to Other Customers



■ reviews without a confirmed transaction  
 □ reviews with a confirmed transaction

Figures adapted from Eric T. Anderson and Duncan I. Simester, “Reviews without a Purchase: Low Ratings, Loyal Customers, and Deception.” ©2014 by American Marketing Association.

10

Anderson and Simester's study suggests that a common reason that consumers review an item they have not bought is that they

- A) own a business that competes with the product's brand.
- B) underestimate the economic impact of their actions.
- C) have never shopped online.
- D) do not want the brand's product line to change.

11

Which choice best supports the idea that Anderson and Simester wish to conceal the identity of the company involved in their study?

- A) Lines 8-16 ("But . . . mystery")
- B) Lines 17-21 ("A fascinating . . . operators")
- C) Lines 22-24 ("It turns . . . have")
- D) Lines 46-49 ("The researchers . . . company")

12

As used in line 23, "miserable" most nearly means

- A) meager.
- B) unhappy.
- C) tragic.
- D) suffering.

13

What can most reasonably be inferred from the passage about products made by the company used in Anderson and Simester's study?

- A) They are more popular among people who shop in stores than among online shoppers.
- B) Their quality has improved since the company began manufacturing overseas.
- C) They are usually purchased directly from the company itself.
- D) Their design is changed frequently based on customer feedback.

14

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

- A) Lines 26-27 ("This . . . background")
- B) Lines 27-29 ("The study . . . Management")
- C) Lines 32-33 ("The company . . . eBay")
- D) Lines 33-34 ("so it . . . experiment")

15

The main purposes of the sentences in parentheses in lines 39-45 are to

- A) anticipate readers' questions and rule out possible weaknesses in the study's design.
- B) mention interesting data and explain how they are related to the study's main finding.
- C) explain dissatisfaction with the study's results and encourage critics to reconsider.
- D) point out flaws in the researchers' methods and offer alternate theories on the causes of the behavior being studied.

16

As used in line 68, "operating" most nearly means

- A) managing.
- B) performing.
- C) engaging.
- D) occurring.

17

Which choice best summarizes the two paragraphs in lines 77-86?

- A) Shoppers should read reviews carefully to determine whether the reviewer actually purchased the item.
- B) Only a small percentage of the people who buy a product review it online, so shoppers should not assume reviews represent how most customers feel about a product.
- C) All customers who buy a product should review it online so that online reviews provide shoppers with an accurate reflection of how the product has been received.
- D) As more companies require customers to verify the purchase of an item before they are able to review it, online reviews are becoming more trustworthy.

18

Based on figure 1, which statement is true for both reviewers with confirmed transactions and reviewers without confirmed transactions?

- A) They are more likely to give a product rating of 2 than of 3.
- B) They are most likely to give a product rating of 4 or 5.
- C) They are least likely to give a product rating of 1.
- D) Their product ratings are concentrated at the center of the rating scale.

19

According to figure 2, the highest percentage of requests made in product reviews were written by

- A) reviewers without a confirmed transaction, directed toward the firm selling the product.
- B) reviewers with a confirmed transaction, directed toward the firm selling the product.
- C) reviewers without a confirmed transaction, directed toward all other reviewers.
- D) the firm selling the product, directed toward reviewers with a confirmed transaction.

**Questions 20-28 are based on the following passage and supplementary material.**

This passage is adapted from Niina Heikkinen and ClimateWire, "Does Agave Hold the Secret to Drought-Resistant Farming?" ©2015 by Scientific American, a Division of Nature America, Inc.

Agave is teaching scientists about how to craft more drought-resistant plants. The hardy succulent, along with species like prickly pear (an edible cactus), pineapple, and vanilla orchids, has evolved over millions of years to perform a different kind of photosynthesis that allows the plants to survive in semiarid environments where water isn't always readily available.

The process is called crassulacean acid metabolism, or CAM, and a small group of scientists have been studying it for several decades because the plants that have it use less water. However, it has only been in the last couple of years that a growing number of researchers have been attempting to fully identify and transfer this photosynthetic pathway to other plant species.

Re-creating an entire metabolic pathway in a plant is far from a simple task. Once scientists figure out all the genes associated with its basic function, as well as its regulation, they then have to find a way to add that genetic material into the target plant, or make existing genes and proteins within the plant work the way they want them to. Altogether, that could involve somewhere around 100 genes, the researchers said, though they don't know the exact number yet.

Xiaohan Yang, a staff scientist in the Biosciences Division at Oak Ridge National Laboratory, is one of the researchers working to figure out how to get CAM to work in other types of plants. He said interest in CAM has increased rapidly in the last few years alone, as concern about the effects of drought has gone up and more funding from the federal government has come in.

What makes photosynthesis in agave and cactus so different? Unlike most plants that take up carbon dioxide through stomata [small openings that allow plants to regulate the intake and release of gases] in their leaves during the day (known as  $C_3$  and  $C_4$  plants), CAM plants absorb most of their

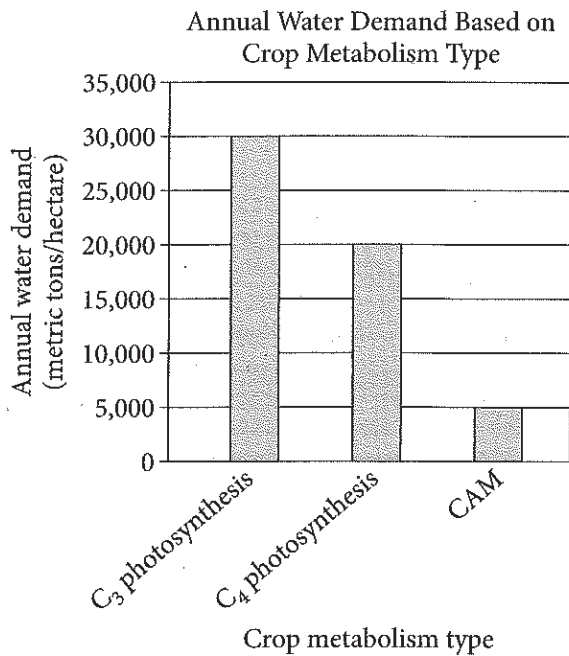
$CO_2$  [carbon dioxide] at night. This timing shift means less water evaporates off of the leaves through transpiration. In fact, CAM plants require between a [sixth] and a [fourth] of the water that  $C_3$  and  $C_4$  plants need, respectively.

However, CAM plants also need a way of storing carbon overnight, because just like other plants, they cannot use it to build energy reserves like sugars and starches without sunlight. They do this by temporarily fixing carbon in a transient pool of mostly malic acid. When the sun rises, the plants break down the organic acids, releasing the  $CO_2$ . At this point, the plant is able to perform photosynthesis like a  $C_3$  plant, except the stomata don't have to stay open because the carbon is already available in the leaf.

The challenge for researchers like Yang is to find a way to get other plants to create this nocturnal carbon storage. Since the genomes of a number of different CAM plants have been sequenced in the past two years, researchers are beginning to develop a better understanding of how the pathway works.

"We have a very good idea of what genes are important for CAM species," Yang said. "Right now, we are working on how those genes come together, and then we test their efficiency."





Adapted from Xiaohan Yang et al., "A Roadmap for Research on Crassulacean Acid Metabolism (CAM) to Enhance Sustainable Food and Bioenergy Production in a Hotter, Drier World." ©2015 by ORNL/UT-Battelle and New Phytologist Trust.

20

The main purpose of the passage is to

- A) describe research that may facilitate the cultivation of plants in conditions of limited water availability.
- B) endorse a promising approach to water conservation as appropriate for agricultural contexts.
- C) explain how crassulacean acid metabolism disrupts photosynthesis in commonly farmed plant species.
- D) clarify why a particular study of plant genetics has not produced results that can be applied to agriculture.

21

Which choice provides the fullest explanation for the recent rise in scientific research on CAM?

- A) Lines 1-2 ("Agave . . . plants")
- B) Lines 9-12 ("The process . . . water")
- C) Lines 30-34 ("He said . . . come in")
- D) Lines 59-62 ("Since . . . works")

22

In lines 2-8, the references to specific plant species serve primarily to

- A) identify plants whose biochemical processes have been artificially altered.
- B) specify the plants that the researchers used in the experiment.
- C) provide examples of plants that rely on an alternative kind of metabolism.
- D) note exceptions to the plant behavior that the scientists observed.

23

As used in line 6, "allows" most nearly means

- A) enables.
- B) authorizes.
- C) excuses.
- D) acknowledges.

24

As used in line 57, "challenge" most nearly means

- A) requirement.
- B) competition.
- C) dispute.
- D) difficulty.



25

Based on the passage, which choice best identifies the point to which genetic research on CAM has advanced?

- A) Scientists believe that once they isolate the genes involved in CAM, they can alter them to perform new functions in CAM plants.
- B) Scientists possess an incomplete understanding of how CAM-related genes function because many CAM species' genomes have yet to be sequenced.
- C) Scientists feel more confident about which genes are involved in CAM than about the precise interactions among those genes.
- D) Scientists know that CAM pathways differ from one species to another but have not yet determined the specific differences.

26

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

- A) Lines 18-23 ("Once . . . them to")
- B) Lines 23-26 ("Altogether . . . yet")
- C) Lines 57-59 ("The challenge . . . storage")
- D) Lines 63-66 ("We have . . . efficiency")

27

According to the graph, approximately how much water does a hectare of CAM plants require per year?

- A) 5,000 metric tons
- B) 10,000 metric tons
- C) 15,000 metric tons
- D) 20,000 metric tons

28

Which of the following choices is a claim in the passage that is supported by the data in the graph?

- A) CAM plants do not leave their stomata open throughout photosynthesis.
- B) CAM plants demand less water on average than either  $C_3$  or  $C_4$  plants do.
- C) CAM plants absorb more  $CO_2$  during the night than during the day.
- D) CAM plants perform a certain phase of photosynthesis in the same manner that  $C_3$  plants do.

**Questions 29-37 are based on the following passage.**

This passage is adapted from George H. W. Bush's inaugural address as president of the United States of America. Delivered in 1989.

America today is a proud, free nation, decent and civil, a place we cannot help but love. We know in our hearts, not loudly and proudly, but as a simple  
 Line fact, that this country has meaning beyond what we  
 5 see, and that our strength is a force for good. But have we changed as a nation even in our time? Are we enthralled with material things, less appreciative of the nobility of work and sacrifice?  
 My friends, we are not the sum of our possessions.  
 10 They are not the measure of our lives. In our hearts we know what matters. We cannot hope only to leave our children a bigger car, a bigger bank account. We must hope to give them a sense of what it means to be a loyal friend, a loving parent, a citizen who leaves  
 15 his home, his neighborhood and town better than he found it. What do we want the men and women who work with us to say when we are no longer there? That we were more driven to succeed than anyone around us? Or that we stopped to ask if a sick child  
 20 had gotten better, and stayed a moment there to trade a word of friendship?

No President, no government, can teach us to remember what is best in what we are. But if the man you have chosen to lead this government can help  
 25 make a difference; if he can celebrate the quieter, deeper successes that are made not of gold and silk, but of better hearts and finer souls; if he can do these things, then he must.

America is never wholly herself unless she is  
 30 engaged in high moral principle. We as a people have such a purpose today. It is to make kinder the face of the Nation and gentler the face of the world. My friends, we have work to do. . . .

The old solution, the old way, was to think that  
 35 public money alone could end these problems. But we have learned that is not so. And in any case, our funds are low. We have a deficit to bring down. We have more will than wallet; but will is what we need. We will make the hard choices, looking at what we  
 40 have and perhaps allocating it differently, making our decisions based on honest need and prudent safety. And then we will do the wisest thing of all: We will turn to the only resource we have that in times of need always grows—the goodness and the courage of  
 45 the American people.

I am speaking of a new engagement in the lives of others, a new activism, hands-on and involved, that gets the job done. We must bring in the generations, harnessing the unused talent of the elderly and the  
 50 unfocused energy of the young. For not only leadership is passed from generation to generation, but so is stewardship. And the generation born after the Second World War has come of age.

I have spoken of a thousand points of light, of all  
 55 the community organizations that are spread like stars throughout the nation, doing good. We will work hand in hand, encouraging, sometimes leading, sometimes being led, rewarding. We will work on this in the White House, in the Cabinet agencies. I  
 60 will go to the people and the programs that are the brighter points of light, and I will ask every member of my government to become involved. The old ideas are new again because they are not old, they are timeless: duty, sacrifice, commitment, and a  
 65 patriotism that finds its expression in taking part and pitching in.

29

Bush's central claim in the speech is that

- A) when the United States overcomes its love of material things, the country will become a beacon to the rest of the world.
- B) even though the United States is economically strong, the country faces many perplexing problems.
- C) if each citizen engages in the kind of behavior that is truly valued in the United States, many of the nation's problems will be addressed.
- D) because each US citizen is a point of light in his or her neighborhood, the country's future will always be bright.

30

Which choice best supports the conclusion that Bush views the president as a moral guide for the nation?

- A) Lines 1-2 ("America . . . love")
- B) Lines 9-10 ("My . . . lives")
- C) Lines 23-28 ("But . . . must")
- D) Lines 62-66 ("The old . . . pitching in")

31

As used in line 10, “measure” most nearly means

- A) course of action.
- B) piece of legislation.
- C) degree of concern.
- D) standard of comparison.

32

In the speech, Bush suggests that, fundamentally, most individuals truly esteem

- A) family members more than friends and neighbors.
- B) personal character more than material acquisitions.
- C) business opportunities more than government programs.
- D) civic activism more than political rhetoric.

33

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

- A) Lines 2-5 (“We know . . . good”)
- B) Lines 7-8 (“Are . . . sacrifice”)
- C) Lines 10-14 (“In our . . . parent”)
- D) Lines 39-44 (“We will . . . grows”)

34

Which choice best describes Bush’s view of the “citizen” described in line 14?

- A) Heartfelt approval
- B) Tempered enthusiasm
- C) Reluctant endorsement
- D) Quiet concern

35

What main effect do the phrases “high moral principle” and “make kinder the face of the Nation,” used in the fourth paragraph (lines 29-33), have on the tone of the speech?

- A) They create an optimistic tone that tempers Bush’s warnings to listeners about challenges that lie ahead.
- B) They create an inspirational tone that contributes to Bush’s efforts at rallying listeners.
- C) They create an ominous tone that lends gravity to Bush’s call for listeners to change their behavior.
- D) They create a calming tone that reassures Bush’s listeners of the ease with which problems can be overcome.

36

In the speech, Bush indicates that at the time of his inauguration, there is a shortage of

- A) financial resources.
- B) political will.
- C) patriotic sentiment.
- D) community organizations.

37

In the speech, Bush characterizes himself as someone who will support

- A) government assistance for both the elderly and the very young.
- B) increased citizen involvement in community organizations.
- C) business leaders who possess and act upon a social conscience.
- D) rugged individualism and self-sufficiency for all Americans.



**Questions 38-47 are based on the following passages.**

Passage 1 is adapted from Stephen Jay Gould, "Cope's Rule as Psychological Artefact." ©1997 by Nature Publishing Group. Passage 2 is adapted from Joseph Dussault, "When It Comes to Evolution, Bigger Really Is Better." ©2015 by The Christian Science Monitor. Both passages consider Cope's rule, the notion that animal lineages tend to increase in physical size over evolutionary time.

**Passage 1**

We should ask a basic, emperor's-new-clothes question about Cope's rule: is it even true at all?

Line One would think that an issue so fundamental, and so eminently testable, had been conclusively resolved 5 long ago—except for a perverse trait of the human psyche. We tend to pick most "notable" cases out of general pools, often for idiosyncratic reasons that can only distort a proper scientific investigation.

Might not our convictions about the validity of 10 Cope's rule be a psychological artefact of singling out lineages that display size increase because we all know that "bigger is better"? Such a procedure might provide an example of another pervasive and lamentable bias of human reasoning: our tendency to 15 focus on extremes that intrigue us, rather than full ranges of variation. The obvious test requires that we abandon our habit of selective search for the expected and, instead, study all lineages in large clades with excellent data over substantial geological 20 intervals. David Jablonski has followed this admirable procedure in the most comprehensive set of data ever assembled to test Cope's rule—and the rule fails in this case.

In 1997, Jablonski studied all 191 bivalve and 25 gastropod lineages of mollusks with sufficient data (including 1,086 species) during 16 million years of Late Cretaceous time for the rich faunas of the Gulf and Atlantic coastal plain of North America. He consistently concentrated on complete ranges of 30 variations, rather than expansion or contraction of extreme values alone.

Jablonski found, first of all, that lineages showing net increase in size (that is, increase in both the smallest and largest species) are no more common 35 than lineages showing net decrease of both the smallest and largest: 27–30% display net increase; 26–27% display net decrease. Moreover, in the additional 25–28% of lineages that show size increase for the largest species, the smallest species also 40 decrease in size over the same interval—yielding a

pattern of expansion in the overall range of variation (at both high and low ends), not a directed trend towards increasing general size. In short, although many individual lineages do show increase in body 45 size, just as many decrease. So a full account of all data provides no support for Cope's rule as a preferential bias for evolution of size.

**Passage 2**

After conducting an extensive study on size, a Stanford research team found that, over time, marine 50 animal lineages generally evolve to be larger.

The team amassed mountains of data under Stanford paleobiologist Jonathan Payne. The hulking dataset they compiled spans 542 million years, and includes five of the major phyla and over 55 17,000 genera—about 75 percent of all marine genera in the fossil record, and nearly 60 percent of all animal genera to have ever lived.

Payne says his research seems to support Cope's rule.

60 "The average animal in the oceans today is 150 times larger in biovolume than the average animal in the oceans during the Cambrian, 540 million years ago," Payne says. "Prior to our study, it was unknown whether there had been size 65 change and, if so, in what direction or by how much."

"We [also] found that size did not result from universal selection toward larger size," Payne adds. "Rather, the classes that were already larger early in 70 the evolution of animal life have diversified differentially across evolutionary time. In other words, our data suggest that larger size favors diversification, rather than that larger sizes are favored in all populations."

75 While the overall increase in marine animal size is pretty much indisputable, some scientists argue that size is not a matter of "active selection," but a result of random, non-selective mutations—a concept known as neutral drift. In other words, neutral drift 80 could cause some lineages to grow in size, but only by chance—that doesn't necessarily mean evolution "favors" size. The neutral drift argument is supported by evidence from bird and insect populations, who have not grown in size as Cope's rule postulates.



85 "It is possible that Cope's rule applies mainly to marine animals," Payne admits. "Understanding the underlying causes better will be critical to determining whether or not we should expect animals in other environments to exhibit the same patterns."

90 But Payne says that, at least in this case, neutral drift isn't his culprit.

38

The main purpose of the first paragraph of Passage 1 is to

- A) cast doubt on the reliability of certain research methods.
- B) present a human tendency for which there is no reasonable explanation.
- C) call into question a scientific concept.
- D) offer new evidence for a traditional theory.

39

As used in line 6, "cases" most nearly means

- A) arguments.
- B) explanations.
- C) circumstances.
- D) examples.

40

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

- A) distinctive.
- B) relevant.
- C) lawful.
- D) legitimate.

41

The author of Passage 1 implies that confidence in Cope's rule is the result of

- A) a common tendency that inhibits scientific inquiry.
- B) a reluctance to contradict scientific authorities.
- C) an arbitrary preference for scientific data that are quantitative rather than observational.
- D) an unwillingness to alter established practices of scientific research.

42

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

- A) Lines 1-2 ("We should . . . all")
- B) Lines 9-12 ("Might . . . better")
- C) Lines 28-31 ("He consistently . . . alone")
- D) Lines 45-47 ("So a . . . size")

43

According to Passage 2, scientists who support the neutral drift argument believe that the overall increase in the size of marine animal life is due to the

- A) random survival of mutations that affect size within particular lineages.
- B) direct influence of evolutionary selection on animal populations.
- C) cumulative effect of long-term shifts in environmental conditions.
- D) psychological biases that often affect researchers' observations.

44

Which choice best states the relationship between the two passages?

- A) Passage 2 disputes the scientific foundation of the work reported in Passage 1.
- B) Passage 2 describes evidence in support of a concept that Passage 1 challenges.
- C) Passage 2 discusses an experiment that Passage 1 rejects as inconclusive.
- D) Passage 2 expands upon the preliminary results of a study outlined in Passage 1.

45

Which statement best identifies the overall structures of the two passages?

- A) Passage 1 explores a sequence of contrasting arguments, while Passage 2 explores a single argument throughout.
- B) Passage 1 supports a position with a series of generalizations, while Passage 2 supports a position through a detailed analysis of scientific data.
- C) Passage 1 considers a topic solely from a historical perspective, while Passage 2 alternates between historical and contemporary perspectives.
- D) Passage 1 shifts from a theoretical discussion to an analysis of specific results, while Passage 2 presents concrete results and then concedes the limitations of a theory that may explain them.

46

The author of Passage 1 would most likely have considered the data set used for Payne's study in Passage 2 to be

- A) exemplary, because Payne excluded data that had been identified as statistically problematic.
- B) promising, because Payne's analysis was wide-ranging and encompassing.
- C) acceptable, because Payne considered differences between marine and terrestrial species.
- D) deficient, because Payne analyzed only 75 percent of all marine animals.

47

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

- A) Lines 6-8 ("We tend . . . investigation")
- B) Lines 12-16 ("Such . . . variation")
- C) Lines 16-20 ("The obvious . . . intervals")
- D) Lines 32-37 ("Jablonski . . . decrease")

## STOP

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